

February 26–March 2, 2017

San Diego Convention Center and Marriott Marquis & Marina • San Diego, California

TMS 2017

146th Annual Meeting & Exhibition

THE WORLD COMES HERE.



CO-LOCATED WITH



3rd Pan American
Materials Congress

Energy Materials
2017

FINAL PROGRAM

SEE PAGE 2 FOR
**MAPS AND
FLOORPLANS**



www.tms.org/TMS2017

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PRESIDENT'S WELCOME MESSAGE



Welcome to TMS2017!

It is my honor to welcome you to the TMS 2017 Annual Meeting & Exhibition (TMS2017), which marks the 146th annual meeting of our society. Every annual meeting has special offerings, and TMS2017 is no exception. Summarized below are some of the many new and exciting features to explore at TMS2017.

Opening Plenary Session: Global Energy 2025

I highly encourage you to join your TMS colleagues for the inaugural annual meeting Opening Plenary Session on Sunday evening. The event begins at 5:00 p.m. with the President's Welcoming Reception that will allow you to meet with colleagues—both old and new—before the keynote presentations begin at 6:00 p.m. This year's theme is Global Energy 2025, and the three

invited speakers will provide perspectives from the United States, China, and Europe on energy and sustainability.

Two Co-Located Meetings: One International Event

TMS2017 is pleased to welcome two co-located international meetings: the 3rd Pan American Materials Congress and Energy Materials 2017. The 3rd Pan American Materials Congress was planned in cooperation with nine partner societies from the Americas. Energy Materials 2017 has been organized jointly by TMS and the Chinese Society for Metals. Co-locating these events with TMS2017 gives you not only broader opportunities for technical updates, but also greater opportunities to network with diverse colleagues from around the world.

New Faces in the Crowd

TMS2017 had some of the highest pre-registration numbers in recent TMS history. I suspect that means that quite a few of you are new to the annual meeting as well. If so, please visit the TMS Member Welcome Center to acquire your first-time attendee packet, which includes useful tips for how best to navigate the meeting and a small gift from TMS. And remember, if you registered for the meeting as a nonmember, your registration includes membership in TMS for the remainder of 2017. Please visit the TMS Member Welcome Center, located in the Ballroom 6 lobby, to learn more about us and your membership benefits.

Not a First-Time Attendee?

Then maybe you can lend the expertise you've gained at previous TMS meetings to some of our newer participants. You'll be able to recognize them by the blue "First-Time Attendee" ribbons attached to their badges. If you see any of these ribbons, be sure to introduce yourself to the person wearing it and offer your assistance and collegiality.

Whether you've been to one or many TMS meetings, whether you've traveled a few minutes or many hours to get here, we're glad you've joined us, and we hope you find TMS2017 to be a truly valuable and enjoyable experience.

Sincerely,

A handwritten signature in black ink that reads "Stanley M. Howard".

Stanley M. Howard
2016 TMS President



Be sure to review the TMS2017 program schedule carefully since there are significant changes compared to previous TMS annual meetings. The new Opening Plenary Session event takes place on Sunday evening, the TMS-AIME Awards Ceremony and Banquet is now Wednesday evening, and Thursday offers a full day of session programming.

MAPS & FLOOR PLANS

MEETING INFORMATION



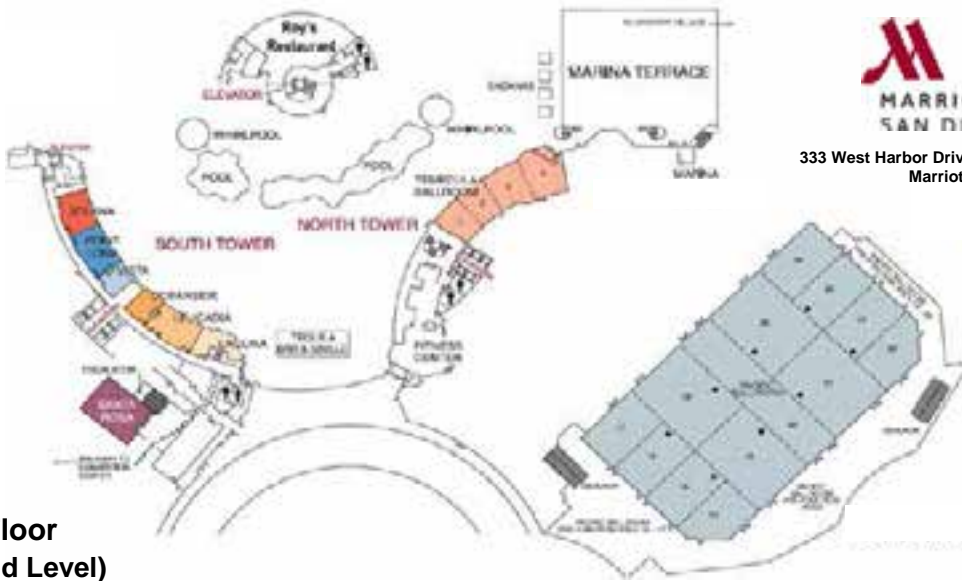
TMS2017 HOTELS AND VENUES

- 1 San Diego Marriott Hotel & Marina
- 2 Best Western Plus Bayside Inn
- 3 Embassy Suites San Diego Bay
- 4 Hilton Gaslamp
- 5 Omni San Diego Hotel
- 6 Palomar
- 7 Porto Vista
- 8 Westin San Diego
- 9 Wyndham San Diego Bayside

MAPS & FLOOR PLANS



333 West Harbor Drive, San Diego, CA 92101
 MarriottMarquisSanDiego.com
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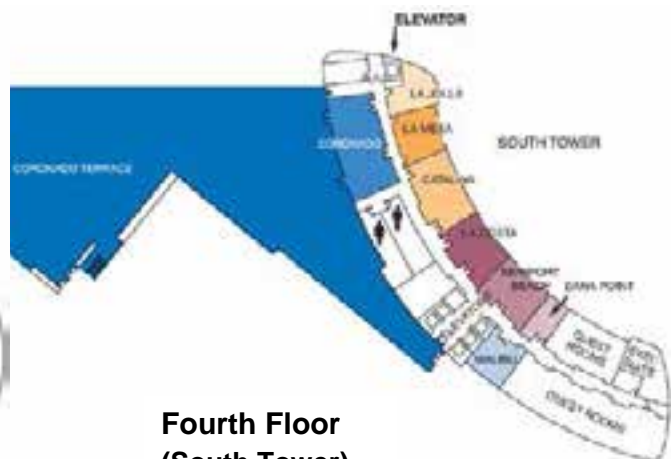
**First Floor
 (Ground Level)**



**Second Floor
 (Lobby Level)**

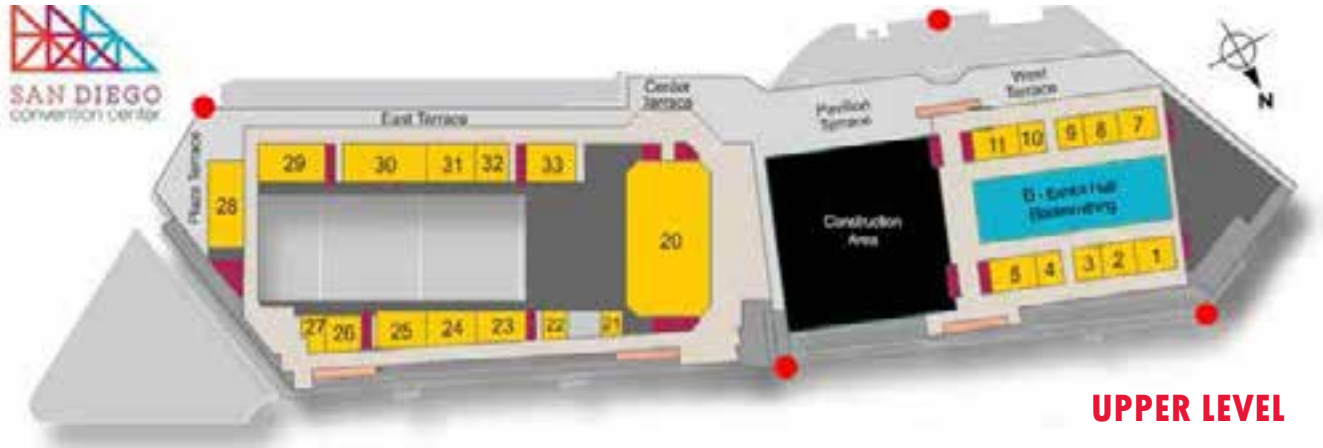


**Third Floor
 (South Tower)**

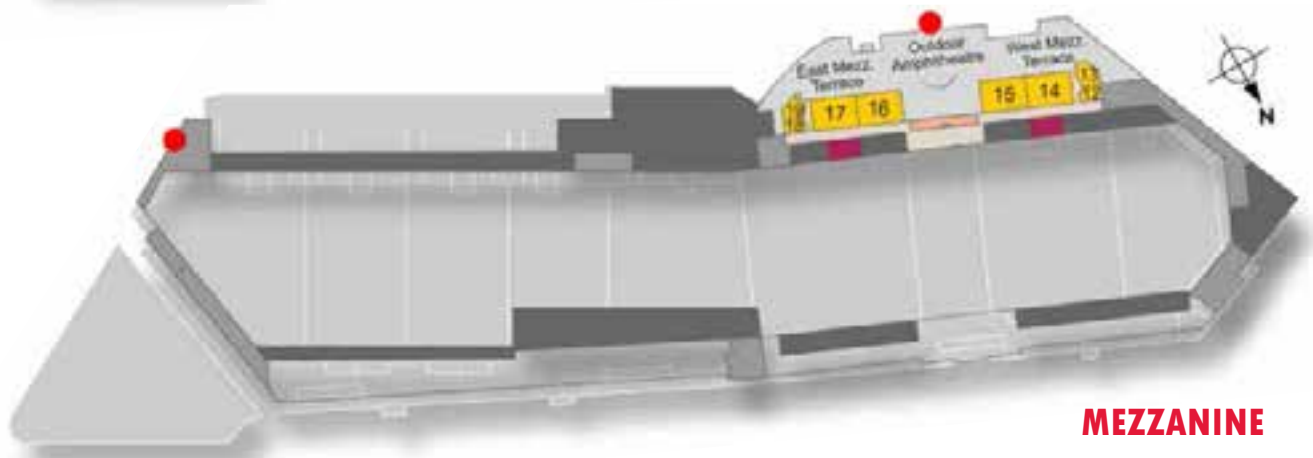


**Fourth Floor
 (South Tower)**

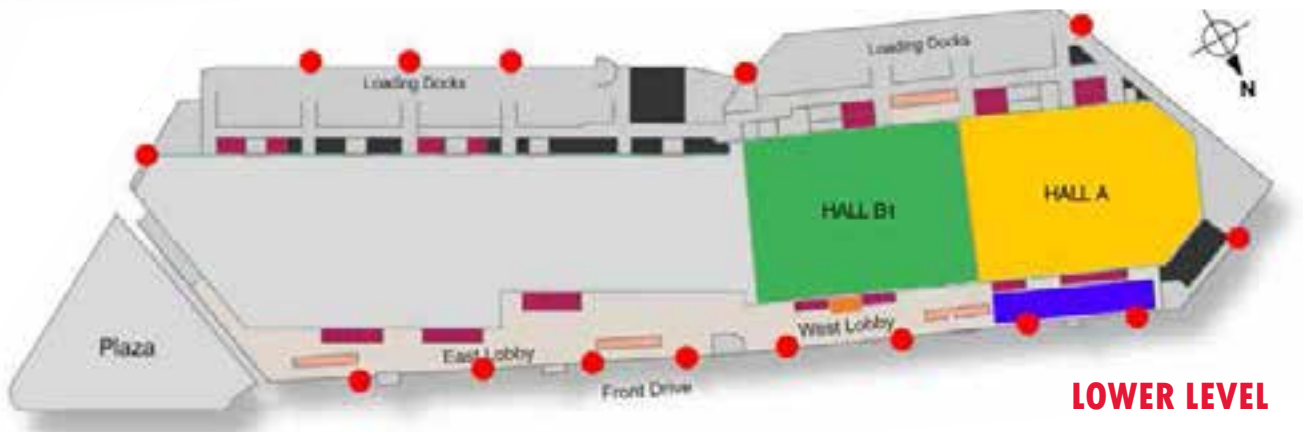
MAPS & FLOOR PLANS












UPPER LEVEL



MEZZANINE



LOWER LEVEL

- | | | | |
|---|-----------------------------------|---|------------------------------|
|  | Lobby/Pre-function |  | Presenters' Coffee & Posters |
|  | Exhibit Space |  | Programming Support Desk |
|  | Meeting Space |  | Registration |
|  | Stairs, Escalators, and Elevators |  | Exits |
|  | Restrooms | | |

BE PREPARED

The chances of an emergency situation occurring at the TMS 2017 Annual Meeting & Exhibition (TMS2017) are quite small. However, being prepared to react effectively in case of an incident is the most critical step in ensuring the health and safety of yourself and those around you.

KNOW YOUR SURROUNDINGS

Please take a few moments to review the maps of the TMS2017 facilities printed in your program. When you enter these buildings, familiarize yourself with the exits and the stairs leading to those exits. In case of evacuation, the elevators and escalators in both the San Diego Convention Center and the San Diego Marriott Marquis & Marina will cease to operate. When you arrive at your session or event location, look for the emergency exits that are in closest proximity to you.

EMERGENCY PHONE NUMBERS

If you are in the San Diego Convention Center and have an emergency, contact the convention center's Security Department by dialing extension 5911 from any of the white courtesy phones located throughout the facility or by calling (619) 525-5911 from a cell phone. If you are located in the Marriot Marquis Hotel, contact hotel security by dialing extension 53 from any house phone or 911 if calling from a cell phone.

ALARMS AND EMERGENCY INSTRUCTIONS

If an alarm or strobe light is activated in the San Diego Convention Center, remain calm and listen for an announcement over the public address system with instructions. The announcement will be repeated until the convention center's emergency response team has determined that the situation is "all clear" or that an "evacuation" or "lock down" needs to take place.

If instructed to evacuate, follow the instructions given over the public address system to exit the building.

In the event of a lock down, shelter in place and await further instructions over the public address system or by security personnel.

EARTHQUAKE SAFETY

As soon as an earthquake begins, drop to the floor and find protection under a table or other furniture. Stay clear of windows. Hold on and protect your face and head from flying debris. If outdoors, quickly move away from buildings, poles, and overhead wires to avoid falling objects. After the shaking stops, remain calm and be alert to aftershocks. If you are in the San Diego Convention Center, remain where you are until you receive instructions from convention center security or police personnel.

MEDICAL EMERGENCIES

First aid services are available in the San Diego Convention Center in Box Office A of the registration area. The hours of operation are as follows:

Sunday, February 26: Noon. to 8:00 p.m.

Monday, February 27: 8:00 a.m. to 5:00 p.m.

Tuesday, February 28: 8:00 a.m. to 5:00 p.m.

Wednesday, March 1: 8:00 a.m. to 5:00 p.m.

Thursday, March 2: 8:00 a.m. to 2:00 p.m.

The convention center also has 14 automatic external defibrillators (AEDs) located throughout the facility, on every level, that can be used in case of sudden cardiac arrest.

If you or someone near you is experiencing a serious medical emergency, *and you are located in the convention center*, dial extension 5911 from any of the white courtesy phones located throughout the facility or call (619) 525-5911 from a cell phone. *Outside of the convention center*, dial 911 from a cell phone. Be prepared to calmly provide details about your specific location and the nature of the medical emergency.

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SGL Group – The Carbon Company, together with the leading aluminum smelting technology providers developed a tool to measure cathode surfaces and side ledge profile of the smelting pot in operational conditions.

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REGISTRATION

All attendees and meeting participants (presenters, exhibitors, etc.) must register for the meeting. Badges must be worn for admission to technical sessions, the exhibition hall, social functions, and other events. Your full-meeting registration badge provides you access to:

- All technical sessions, including the technical programming of the 3rd Pan American Materials Congress, Energy Materials 2017, and all TMS2017 sessions
- A three-day pass to the TMS2017 Exhibition
- President's Welcoming Reception and Opening Plenary Session on Sunday evening
- Exhibit Hall Opening Reception on Monday
- Exhibit Hall Happy Hour on Tuesday
- Admission to the awards ceremony portion of the 2017 TMS-AIME Awards Banquet on Wednesday
- General Poster Sessions and Receptions
- TMS Materials Bowl Competition
- Technical Division Student Poster displays
- Admission to select social and networking events
- Online access to the complete collection of TMS2017 proceedings publications

TICKETS FOR EVENTS

Certain receptions, luncheons, and other activities at TMS2017 require attendees to purchase a ticket in order to attend. If you purchased tickets in advance for one of these events, your ticket will be attached to your name badge. If you would like to add a ticketed event to your registration, please inquire at the registration area.

NOTE ABOUT TIME

All times printed in this program refer to Pacific Standard Time.

NOTICE REGARDING TECHNICAL PROGRAM CANCELLATIONS

Changing the times of presentations is disruptive to the program and may cause delegates to miss valuable presentations. We have asked symposium organizers and session chairs not to adjust presentation times in the event that a speaker is unable to deliver his or her talk due to international travel and/or visa issues resulting in late cancellation or "no show."

WIFI INTERNET ACCESS

Complimentary WiFi internet access is available in Hall B1 of the convention center. (This area is reserved for Presenters' Coffee from 7:00 a.m. to 8:00 a.m. daily, but will be open to all attendees after 8:00 a.m. each day.) WiFi access is also available in the lobby outside of the exhibit hall at the convention center and in the main lobby of the Marriott Marquis & Marina. No password is needed for access.

BUSINESS CENTERS

There is a full-service FedEx Kinkos in the San Diego Convention Center on the ground level outside of Halls C & D. FedEx is open on Sunday from 9:00 a.m. to 5:00 p.m. and Monday through Friday from 8:00 a.m. to 5:00 p.m. For more information on available services, please visit local.fedex.com/ca/san-diego/office-1324/. There is a full-service UPS Store in the San Diego Marriott Marquis and Marina in the South Tower. The UPS Store is open on Sunday from 7:00 a.m. to 5:00 p.m. and Monday through Friday from 7:00 a.m. to 8:00 p.m. For more information on available services, please visit theupsstore.com and specify store number 6200 or contact (619) 230-8940 or store6200@theupsstore.com.

DOWNLOAD

THE TMS2017 MOBILE APPLICATION

(See Page 9 for details.)



REGISTRATION & MEETING LOGISTICS

REFRESHMENTS

There is a Starbucks Coffee located outside of Hall A in the San Diego Convention Center open to visitors and meeting attendees from 8:00 a.m. to 9:00 p.m. daily.

There is also a Starbucks Coffee located in the South Tower of the Marriott Marquis and Marina Hotel. Additional dining options are available at the Marriott including the Marina Kitchen Café (open in the mornings only) and the Marina Kitchen Restaurant. There are many dining options within easy walking distance of the San Diego Convention Center and the TMS hotels. For suggestions and information on dining, visit the convention center Restaurant & Concierge Booth located in lobby B2 of the convention center.

You can also visit www.visitsandiego.com.

ROOMS FOR NURSING MOTHERS

Private, designated rooms are available at the convention center and the Marriott Marquis for nursing mothers. To access the private room at the convention center, contact TMS staff at the Member Welcome Center, located in the Ballroom 6 lobby. To access the private room at the Marriott, contact TMS staff in the Marina Ballroom Foyer.

IS THIS YOUR FIRST TMS ANNUAL MEETING?



Visit the TMS Member Welcome Center to pick up your First-Time Attendee Welcome Packet. This includes

useful tips for navigating the meeting, tools for getting more involved in TMS, and a special gift.

While you're there, you can also learn more about the TMS membership you received as part of your full-conference TMS2017 registration.

TMS MEMBER WELCOME CENTER

FEATURING THE

TMS ARCADE

Location: San Diego Convention Center, Ballroom 6 Lobby

Hours of Operation

Sunday: 7:00 a.m. to 6:00 p.m.
Monday: 7:00 a.m. to 6:00 p.m.
Tuesday: 7:00 a.m. to 5:30 p.m.
Wednesday: 7:00 a.m. to 5:00 p.m.
Thursday: 7:00 a.m. to 5:00 p.m.

If you are attending TMS2017, then you are a member of TMS! Find out how being a part of this extraordinary community of minerals, metals, and materials scientists and engineers can help you to advance your career at the TMS Member Welcome Center:

- Learn about your member benefits
- Update your TMS membership profile
- Preview the new TMS website
- Take a break with the TMS Arcade
- Make a donation of \$25 or more to the TMS Foundation and receive a souvenir mug
- View the winning images from the 2017 TMS Materials Photography Contest

REGISTRATION & MEETING LOGISTICS

TMS2017 MOBILE APP

A lightweight alternative to this printed at-meeting program, the TMS2017 mobile application can serve as your compact, hand-held guide to the meeting. This free conference tool is available on the App Store and the Google Play™ Store. To download the app, search “TMS Annual Meeting” in your respective device store.

The App’s features include:

- Latest programming schedule
- Complete abstracts
- Ability to build your personal schedule and download to your device
- Speaker information
- Exhibit map
- Exhibitors and sponsors
- Venue information
- Access to *TMS2017 News*

The App is also linked to the TMS Personal Conference Scheduler, so if you already created a schedule with that program, you can view it through the app.

TMS2017 NEWS:

YOUR DAILY MEETING NEWSLETTER

Want to stay informed of everything that’s happening at the TMS 2017 Annual Meeting & Exhibition? *TMS2017 News*, a daily newsletter reporting conference activities and events, will be published each morning, Sunday through Thursday, during the conference. You can access the newsletter through the TMS2017 app at any time, through the TMS2017 website, or by clicking on the link in the notification e-mail we’ll send each morning.

Each issue will provide a reminder of the big events planned for the day, as well as recaps and photos from events happening around the meeting. So before you start your day at TMS2017, sit down with a cup of coffee and skim *TMS2017 News* so that you don’t miss a thing!

TWEET YOUR OWN UPDATES

Keep each other updated on meeting activities, interesting talks, and tips on the best local restaurants. Use #MyTMS2017 to tweet your observations to @TMSociety.

TMS2017 MOBILE APP DASHBOARD

The screenshot shows the TMS2017 mobile app dashboard with the following callout boxes:

- Top Left:** Get the full TMS2017 schedule including technical sessions/ presentations, socials, business meetings, and exhibition.
- Top Right:** View a complete list of exhibiting companies, exhibit hall map, and schedule appointments.
- Middle Left (Agenda):** Find updates and information about special events, proceedings publications, and general TMS2017 information.
- Middle Right (Attendees):** Search names of other TMS2017 attendees and send messages.
- Bottom Left (My Meeting):** Access saved sessions you want to attend, exhibitors you wish to visit, notes, and more.
- Bottom Right (Announcements):** Receive important advisories and opt in or out to receive notification pop-ups.
- Bottom Center (Surveys):** Provide feedback about the TMS2017 mobile application, select sessions, and provide comments.
- Bottom Right (Around Here):** Need transportation, restaurant options, or the nearest pharmacy? See what’s nearby.
- Bottom Center (Newsletter):** Keep up with the latest TMS2017 news!

MEETING POLICIES

MEETING BADGES

All attendees must wear registration badges at all times during the meeting to ensure admission to events included in the paid fee such as technical sessions, exhibition, and receptions. “Exhibit Only” badges only provide admittance to the show floor for events in the exhibit hall. “Exhibit Only” attendees may not attend technical sessions.

BADGE REPLACEMENT FEE

There is a \$25 fee to reprint lost badges. Visit the registration area to request a replacement badge.

GUEST SESSION ACCESS

Each full-conference attendee is permitted up to two guests for one session at which they are presenting. This does not include colleagues or exhibitors. This access is intended for family members who wish to listen to one talk presented by their relative. No one under the age of 18 is permitted. Please provide the names of the guests who will be attending your presentations at the registration desk.

GUEST FUNCTION TICKETS

You may purchase additional tickets to social functions for your guests at registration.

REFUND POLICY

The deadline for all refunds was January 20, 2017. No refunds will be issued at the meeting. Fees and tickets are nonrefundable. TMS is not responsible for “no show” presenters. Presenters are scheduled and advertised in good faith based on the presenter’s proposal to be included in the program.

TMS DIVERSITY AND INCLUSION STATEMENT

The Minerals, Metals & Materials Society (TMS) is committed to advancing diversity in the minerals, metals, and materials professions, and to promoting an inclusive professional culture that welcomes and engages all who seek to contribute to the field. TMS recognizes that a diverse minerals, metals, and materials workforce is critical to ensuring that all viewpoints, perspectives, and talents are brought to bear in addressing complex science and engineering challenges. To build and nurture this diverse professional community, TMS welcomes and actively engages the participation of underrepresented groups in all of its initiatives and endeavors.

ANTI-HARASSMENT POLICY

TMS policy prohibits conduct that is disrespectful, unprofessional, or harassing as related to any number of factors including, but not limited to, religion, ethnicity, gender, national origin or ancestry,

physical or mental disability, physical appearance, medical condition, partner status, age, sexual orientation, military and veteran status, or any other characteristic protected by relevant federal, state, or local law or ordinance or regulation. Failure to comply with this policy could lead to censure from the TMS Board of Directors, potential legal action, or other actions. Anyone who witnesses prohibited conduct or who is the target of prohibited verbal or physical conduct should notify a TMS staff member as soon as possible following the incident. It is the duty of the individual reporting the prohibited conduct to make a timely and accurate complaint so that the issue can be resolved swiftly.

PHOTOGRAPHY AND RECORDING POLICY

TMS reserves the right to all audio and video reproductions of presentations at TMS-sponsored meetings. By registering for this meeting, all attendees acknowledge that they may be photographed by TMS personnel while at events, and that those photos may be used for promotional purposes, in and on TMS publications and websites, and on social media sites. Any recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. No photos are to be taken of any presenter’s slides. Attendees violating this policy may be asked to leave the session or the meeting without refund.

ANTITRUST COMPLIANCE POLICY

TMS complies with the antitrust laws of the United States. Attendees are encouraged to consult with their own corporate counsel for further guidance in complying with U.S. and foreign antitrust laws and regulations.

AMERICANS WITH DISABILITIES ACT



TMS strongly supports the federal Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for, those with disabilities. In support of, and in compliance with ADA, we ask those requiring specific equipment or services to contact TMS Meeting Services at the TMS Member Welcome Center.

CELL PHONE USE

In consideration of attendees and presenters, TMS kindly requests that you minimize disturbances by setting all cell phones and other devices on “silent” while in meeting rooms.

CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
Saturday, February 25					
Committee & Business Meetings					
Professional Registration Item Writers Workshop and Committee Meeting	25-Feb	9:00 AM to 5:00 PM	Marriott	Del Mar	R
Financial Planning Committee	25-Feb	2:00 PM to 5:00 PM	Marriott	Encinitas	R
Professional Registration Committee Dinner	25-Feb	6:00 PM to 8:00 PM	Offsite	EddieV's	R
Sunday, February 26					
All-Conference Events					
Registration	26-Feb	7:00 AM to 6:00 PM	SDCC	Hall A- B1 Foyer	O
TMS Member Welcome Center	26-Feb	7:00 AM to 6:00 PM	SDCC	Ballroom 6 Lobby	O
Programming Support Desk	26-Feb	2:00 PM to 6:00 PM	SDCC	Outside Hall B1	O
President's Welcoming Reception	26-Feb	5:00 PM to 6:00 PM	Marriott	Pacific Foyer 20-26	O
Opening Plenary: Global Energy 2025	26-Feb	6:00 PM to 8:00 PM	Marriott	Pacific 21-26	O
Exhibition					
Exhibit Move In	26-Feb	8:00 AM to 5:00 PM	SDCC	Ballroom 6	R
Professional Development & Special Lectures					
Hands On: New Demos and Activities to Engage Students in Materials Science and Engineering Workshop	26-Feb	8:30 AM to 12:00 PM	SDCC	13	T
Managing Sulfur in Cokes, Anodes and Smelter Potline Exhaust Gases Workshop	26-Feb	8:30 AM to 12:00 PM	SDCC	12	T
Hands On: Interactive Materials Data Visualization and Selection Tools for Research and Teaching Workshop	26-Feb	8:30 AM to 12:00 PM	SDCC	18	T
Emerging Electronic Interconnect Materials and Processing for Advanced Packaging Technology Workshop	26-Feb	8:30 AM to 4:30 PM	SDCC	14A	T
Refractory Linings used in Aluminium Production Short Course	26-Feb	8:30 AM to 4:30 PM	SDCC	19	T
Emerging Technologies That Are Poised to Change the Aluminum Industry Workshop	26-Feb	1:00 PM to 4:30 PM	SDCC	13	T
Introduction to Atom Probe Tomography Workshop	26-Feb	1:00 PM to 4:30 PM	SDCC	18	T
Additive Manufacturing Materials and Processes Workshop	26-Feb	1:00 PM to 5:30 PM	SDCC	14B	T
TMS101: Fundamentals of TMS	26-Feb	5:00 PM to 5:45 PM	Marriott	Mission Hills	O
Student & Young Professional Functions					
Materials Bowl	26-Feb	12:00 PM to 6:00 PM	SDCC	3	O
Elimination Rounds	26-Feb	12:00 PM to 4:00 PM	SDCC	3	O
Championship Round	26-Feb	5:00 PM to 6:00 PM	SDCC	3	O
Student Networking Mixer	26-Feb	8:00 PM to 9:30 PM	SDCC	5	O
Social Functions					
TMS Fellows and Invited Guests Reception	26-Feb	4:30 PM to 6:30 PM	Marriott	Marina Kitchen Terrace- The Porch	I

SDCC - San Diego Convention Center,
 Marriott - Marriott-Marriott Marquis & Marina
O - Open to all attendees **R** - Restrictions Apply **I** - Invitation Only **T** - Ticketed Event, Pre-registration required

CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
Committee & Business Meetings					
New Board Member Orientation	26-Feb	8:30 AM to 10:00 AM	Marriott	Cardiff/Carlsbad	I
TMS Board of Directors Meeting	26-Feb	10:00 AM to 1:00 PM	Marriott	Cardiff/Carlsbad	O
Accreditation Committee	26-Feb	12:30 PM to 2:30 PM	Marriott	Laguna	O
Nominating Committee Meeting	26-Feb	1:30 PM to 3:00 PM	Marriott	Encinitas	I
Recycling and Environmental Technologies Committee Meeting	26-Feb	1:30 PM to 3:00 PM	Marriott	Leucadia	O
Magnesium Committee Meeting	26-Feb	1:30 PM to 3:00 PM	SDCC	15A	O
JOM Advisor Briefing	26-Feb	2:00 PM to 3:00 PM	Marriott	Del Mar	I
Aluminum Committee Meeting	26-Feb	2:00 PM to 4:00 PM	SDCC	15B	O
Professional Development Committee	26-Feb	2:00 PM to 4:00 PM	Marriott	Oceanside	I
Materials Characterization Committee Meeting	26-Feb	2:30 PM to 4:00 PM	Marriott	Mission Hills	O
Materials and Society Committee Meeting	26-Feb	3:00 PM to 4:30 PM	Marriott	Vista	O
Pyrometallurgy Committee Meeting	26-Feb	3:00 PM to 4:30 PM	Marriott	Laguna	O
ABET Refresher Training	26-Feb	3:00 PM to 5:00 PM	Marriott	Balboa	O
Hydrometallurgy and Electrometallurgy Committee Meeting	26-Feb	4:00 PM to 5:00 PM	Marriott	Leucadia	O
TMS Program Committee	26-Feb	4:00 PM to 6:00 PM	Marriott	Point Loma/ Solana	I
Additive Manufacturing Committee Meeting	26-Feb	4:00 PM to 5:30 PM	SDCC	15A	O
Diversity Committee Meeting	26-Feb	4:30 PM to 6:00 PM	Marriott	Cardiff/Carlsbad	O
Process Technology and Modeling Committee Meeting	26-Feb	5:00 PM to 6:00 PM	Marriott	Vista	O
Nanomechanical Materials Behavior Committee Meeting	26-Feb	6:00 PM to 7:30 PM	Marriott	Point Loma/ Solana	O
Phase Transformation Committee Meeting	26-Feb	7:30 PM to 9:00 PM	Marriott	Leucadia	O
Mechanical Behavior of Materials Committee Meeting	26-Feb	7:30 PM to 9:00 PM	Marriott	Mission Hills	O

Monday, February 27

All-Conference Events

Registration	27-Feb	7:00 AM to 6:00 PM	SDCC	Hall A- B1 Foyer	O
Programming Support Desk	27-Feb	7:00 AM to 6:00 PM	SDCC	Outside Hall B1	O
Presenters' Coffee	27-Feb	7:00 AM to 8:00 AM	SDCC	Hall B1	O
TMS Member Welcome Center	27-Feb	7:00 AM to 6:00 PM	SDCC	Ballroom 6 Lobby	O
Technical Programming Sessions	27-Feb	8:30 AM to 5:30 PM	SDCC & Marriott	See Technical Program section for complete schedule and locations	
Morning Break	27-Feb	9:50 AM to 10:30 AM	SDCC & Marriott		O
Poster Session I, Job Candidate Poster Session, Young Professional, and Student Poster Set-up	27-Feb	12:00 PM to 2:00 PM	SDCC	Hall B1	O
Poster Session I Gallery Viewing	27-Feb	2:00 PM to 6:00 PM	SDCC	Hall B1	O
Afternoon Break	27-Feb	3:20 PM to 4:00 PM	SDCC & Marriott		O
Poster Session I Presentations and Reception	27-Feb	6:00 PM to 8:00 PM	SDCC	Hall B1	O
Poster Session I Dismantle	27-Feb	8:00 PM to 9:00 PM	SDCC	Hall B1	O

SDCC-San Diego Convention Center, Marriott-Marriott Marquis & Marina

O - Open to all attendees R - Restrictions Apply I - Invitation Only T - Ticketed Event, Pre-registration required

CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
Exhibition					
Participant set-up for Bladesmithing Competition	27-Feb	12:00 PM to 2:00 PM	SDCC	Hall B1	O
TMS2017 Exhibition	27-Feb	2:00 PM to 6:30 PM	SDCC	Ballroom 6	O
Exhibit Opening Reception	27-Feb	5:00 PM to 6:30 PM	SDCC	Ballroom 6	O
Student & Young Professional Functions					
Young Professional Technical Division Poster Contest Viewing	27-Feb	2:00 PM to 8:00 PM	SDCC	Hall B1	O
Meet-a-Mentor	27-Feb	4:30 PM to 6:30 PM	Marriott	Marina F	T
Young Professionals Reception	27-Feb	5:00 PM to 6:00 PM	Marriott	Point Loma/Solana	O
Technical Division Student Poster Contest Judging	27-Feb	5:00 PM to 6:30 PM	SDCC	Hall B1	O
Job Candidate Poster Session	27-Feb	6:00 PM to 8:00 PM	SDCC	Hall B1	O
Social Functions					
SMD Luncheon	27-Feb	12:00 PM to 2:00 PM	Marriott	Pacific 19	T
Pan American Materials Congress Banquet	27-Feb	6:00 PM to 9:00 PM	Offsite	Casa Guadalajara Restaurant	T
Professor Ramana G. Reddy Honorary Symposium: Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies Dinner	27-Feb	6:30 PM to 8:30 PM	Marriott	Miramar	T
Committee & Business Meetings					
<i>Metallurgical and Materials Transactions</i> A Board of Review	27-Feb	7:00 AM to 8:00 AM	Marriott	Balboa	I
Membership & Student Development Committee Meeting	27-Feb	8:15 AM to 9:45 AM	Marriott	Leucadia	R
TMS Executive Committee Meeting	27-Feb	10:00 AM to 11:00 AM	Marriott	Encinitas	I
TMS Past Presidents Meeting	27-Feb	11:30 AM to 1:00 PM	Marriott	Point Loma/Solana	I
Superalloys 2020 Program Committee	27-Feb	12:00 PM to 2:00 PM	Marriott	Laguna	I
Integrated Computational Materials Engineering Committee Meeting	27-Feb	12:15 PM to 1:45 PM	SDCC	10	O
Public & Governmental Affairs Committee	27-Feb	12:30 PM to 2:00 PM	Marriott	Leucadia	O
Powder Materials Committee Meeting	27-Feb	12:30 PM to 2:00 PM	SDCC	9	O
EPD Council Meeting	27-Feb	12:30 PM to 2:00 PM	Marriott	Pacific 22	R
CDSM 2018 Organizing Committee Meeting	27-Feb	2:00 PM to 3:00 PM	Marriott	Balboa	I
Ad Hoc International Affairs Committee Meeting	27-Feb	3:00 PM to 4:30 PM	Marriott	Laguna	I
Superalloys 2020 Organizing Committee Meeting	27-Feb	5:30 PM to 7:30 PM	Marriott	Leucadia	I
Biomaterials Committee Meeting	27-Feb	6:00 PM to 7:00 PM	Marriott	Pacific 15	O
Nuclear Materials Committee Meeting	27-Feb	6:00 PM to 7:30 PM	Marriott	Cardiff	O
Surface Engineering Committee Meeting	27-Feb	6:00 PM to 7:00 PM	Marriott	Pacific 23	O
Advanced Characterization, Testing and Simulation Committee Meeting	27-Feb	6:00 PM to 7:00 PM	SDCC	31B	O
Solidification Committee Meeting	27-Feb	6:00 PM to 7:00 PM	SDCC	19	O
Steels Committee	27-Feb	6:00 PM to 7:00 PM	Marriott	Balboa	O
Chemistry and Physics of Materials Committee Meeting	27-Feb	6:00 PM to 7:30 PM	SDCC	31C	O
Materials Innovation Committee	27-Feb	6:00 PM to 7:30 PM	Marriott	Laguna	O
Shaping and Forming Committee Meeting	27-Feb	6:00 PM to 7:30 PM	SDCC	9	O
Refractory Metals & Materials Committee Meeting	27-Feb	6:30 PM to 7:30 PM	Marriott	Pacific 14	O
Composite Materials Committee Meeting	27-Feb	6:30 PM to 7:30 PM	Marriott	Pacific 25	O

 SDCC-San Diego Convention Center,
 Marriott-Marriott Marquis & Marina
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CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
LMD Council Meeting	27-Feb	6:30 PM to 8:30 PM	Marriott	Pacific 22	R
Alloy Phases Committee Meeting	27-Feb	7:00 PM to 8:30 PM	SDCC	21	O
Computational Materials Science & Engineering Committee Meeting	27-Feb	7:30 PM to 8:30 PM	Marriott	Pacific 15	O

Tuesday, February 28

All-Conference Events

Registration	28-Feb	7:00 AM to 5:30 PM	SDCC	Hall A- B1 Foyer	O
Programming Support Desk	28-Feb	7:00 AM to 6:00 PM	SDCC	Outside Hall B1	O
Presenters' Coffee	28-Feb	7:00 AM to 8:00 AM	SDCC	Hall B1	O
TMS Member Welcome Center	28-Feb	7:00 AM to 5:30 PM	SDCC	Ballroom 6 Lobby	O
Technical Programming Sessions	28-Feb	8:30 AM to 5:30 PM	SDCC & Marriott	See Technical Program section for complete schedule and locations	O
Morning Break	28-Feb	9:50 AM to 10:30 AM	SDCC & Marriott		O
Poster Session II Set-up	28-Feb	12:00 PM to 2:00 PM	SDCC	Hall B1	O
Poster Session II Gallery Viewing	28-Feb	2:00 PM to 6:00 PM	SDCC	Hall B1	O
Bladesmithing Awards Presentation	28-Feb	3:00 PM to 3:30 PM	SDCC	Bladesmithing Booth on Show Floor	O
Afternoon Break	28-Feb	3:20 PM to 4:00 PM	SDCC & Marriott		O
Poster Session II Presentations and Reception	28-Feb	6:00 PM to 8:00 PM	SDCC	Hall B1	O
Poster Session II Dismantle	28-Feb	8:00 PM to 9:00 PM	SDCC	Hall B1	O

Exhibition

TMS2017 Exhibition	28-Feb	9:45 AM to 5:30 PM	SDCC	Ballroom 6	O
Exhibit Hall Happy Hour	28-Feb	4:30 PM to 5:30 PM	SDCC	Ballroom 6	O

Student & Young Professional Functions

Young Professional Tutorial Luncheon	28-Feb	12:00 PM to 12:45 PM	Marriott	Pacific 25	T
Young Professional Tutorial Lecture	28-Feb	12:45 PM to 2:00 PM	Marriott	Pacific 25	O
Student Career Forum	28-Feb	2:00 PM to 4:00 PM	Marriott	Point Loma/Solana	O

Social Functions

EPD/MPMD Luncheon	28-Feb	12:00 PM to 2:00 PM	Marriott	Pacific 19	T
Energy Materials 2017 Dinner	28-Feb	6:00 PM to 9:00 PM	Offsite	Harbor House Restaurant	T

Committee & Business Meetings

<i>Metallurgical and Materials Transactions B</i> Board of Review	28-Feb	7:00 AM to 8:00 AM	Marriott	Balboa	I
Fellows Award Committee Meeting	28-Feb	7:30 AM to 8:30 AM	Marriott	Oceanside	R
JOM Industrial Participation Focus Group	28-Feb	8:00 AM to 9:30 AM	Marriott	Laguna	I
Young Professionals Committee Meeting	28-Feb	8:15 AM to 9:45 AM	Marriott	Pacific 22	O
Honors & Professional Recognition Committee Meeting	28-Feb	8:30 AM to 9:30 AM	Marriott	Oceanside	R
TMS Foundation Board of Trustees Meeting	28-Feb	8:30 AM to 10:00 AM	Marriott	Carlsbad	I

SDCC-San Diego Convention Center, Marriott-Marriott Marquis & Marina

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CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
TMS-MetSoc Leadership Meeting	28-Feb	9:00 AM to 10:00 AM	Marriott	Encinitas	I
TMS-CSM Leadership Meeting	28-Feb	11:00 AM to 12:00 PM	Marriott	Encinitas	I
SMD Council Meeting	28-Feb	12:00 PM to 2:00 PM	Marriott	Pacific 22	R
Electronic Packaging and Interconnection Materials Committee Meeting	28-Feb	12:30 PM to 1:30 PM	Marriott	Leucadia	O
Education Committee	28-Feb	12:30 PM to 2:00 PM	Marriott	Laguna	O
Content Development and Dissemination Committee	28-Feb	5:00 PM to 7:00 PM	Marriott	Leucadia	I
Titanium Committee Meeting	28-Feb	6:00 PM to 7:00 PM	Marriott	Pacific 15	O
Nanomaterials Committee Meeting	28-Feb	6:00 PM to 7:00 PM	Marriott	Pacific 23	O
Thin Films and Interfaces Committee Meeting	28-Feb	6:00 PM to 7:00 PM	SDCC	32A	O
Energy Conversion and Storage Committee Meeting	28-Feb	6:00 PM to 7:00 PM	SDCC	12	O
Corrosion and Environmental Effects Committee Meeting	28-Feb	6:00 PM to 7:00 PM	SDCC	31A	O
Energy Committee Meeting	28-Feb	6:00 PM to 7:00 PM	SDCC	15B	O
High Temperature Alloys Committee Meeting	28-Feb	6:00 PM to 7:30 PM	SDCC	15A	O
MPMD Council Meeting	28-Feb	6:30 PM to 8:30 PM	Marriott	Pacific 22	R
Magnetic Materials Committee Meeting	28-Feb	7:00 PM to 8:00 PM	SDCC	24C	O

Wednesday, March 1

All-Conference Events

Registration	1-Mar	7:00 AM to 5:00 PM	SDCC	Hall A- B1 Foyer	O
Programming Support Desk	1-Mar	7:00 AM to 6:00 PM	SDCC	Outside Hall B1	O
Presenters' Coffee	1-Mar	7:00 AM to 8:00 AM	SDCC	Hall B1	O
TMS Member Welcome Center	1-Mar	7:00 AM to 5:00 PM	SDCC	Ballroom 6 Lobby	O
Technical Programming Sessions	1-Mar	8:30 AM to 5:30 PM	SDCC & Marriott	See Technical Program section for complete schedule and locations	O
Morning Break	1-Mar	9:50 AM to 10:30 AM	SDCC & Marriott		O
Afternoon Break	1-Mar	3:20 PM to 4:00 PM	SDCC & Marriott		O

Exhibition

TMS2017 Exhibition	1-Mar	9:45 AM to 2:00 PM	SDCC	Ballroom 6	O
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Social Functions

Fresh Coffee, Fresh Ideas: Diversity and Inclusion Breakfast	1-Mar	7:00 AM to 8:00 AM	Marriott	Pacific 19	T
LMD Luncheon	1-Mar	12:00 PM to 2:00 PM	Marriott	Pacific 19	T
TMS-AIME Awards Reception	1-Mar	5:30 PM to 6:00 PM	Marriott	Marriott Grand Ballroom 1-5 Foyer	O
TMS2019 Program Planning Mixer	1-Mar	5:30 PM to 6:30 PM	Marriott	Pacific 22	I
TMS-AIME Awards Ceremony	1-Mar	6:00 PM to 7:30 PM	Marriott	Marriott Grand Ballroom 3-4	O
TMS-AIME Awards Banquet	1-Mar	7:30 PM to 10:00 PM	Marriott	Marriott Grand Ballroom 1,2,5	T

 SDCC-San Diego Convention Center,
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CALENDAR OF EVENTS

As of January 21, 2017

Function	Date	Time	Facility	Room	Access
Committee & Business Meetings					
TMS-DGMB Leadership Meeting	1-Mar	9:00 AM to 10:00 AM	Marriott	Encinitas	I
TMS-Nonferrous Metals Society of China Leadership Meeting	1-Mar	11:00 AM to 12:30 PM	Marriott	Encinitas	I
FMD Council Meeting	1-Mar	12:00 PM to 2:00 PM	Marriott	Pacific 22	R
Bladesmithing Committee and Student Meeting	1-Mar	2:00 PM to 3:00 PM	Marriott	Point Loma	O
Reviewer Workshop with Editors of <i>Materials Science and Engineering A</i> by Elsevier	1-Mar	2:00 PM to 3:30 PM	Marriott	Pacific 25	O
Thursday, March 2					
All-Conference Events					
Registration	2-Mar	7:00 AM to 5:00 PM	SDCC	Hall A- B1 Foyer	O
Programming Support Desk	2-Mar	7:00 AM to 5:30 PM	SDCC	Outside Hall B1	O
Presenters' Coffee	2-Mar	7:00 AM to 8:00 AM	SDCC	Hall B1	O
TMS Member Welcome Center	2-Mar	7:00 AM to 5:00 PM	SDCC	Ballroom 6 Lobby	O
Technical Programming Sessions	2-Mar	8:30 AM to 5:30 PM	SDCC & Marriott	See Technical Program section for complete schedule and locations	O
Morning Break	2-Mar	9:50 AM to 10:30 AM	SDCC & Marriott		O
Afternoon Break	2-Mar	3:20 PM to 4:00 PM	SDCC & Marriott		O
Social Functions					
Repeat Attendee Luncheon	2-Mar	11:30 AM to 1:00 PM	Marriott	Pacific 17	I
Committee & Business Meetings					
Audit Committee Meeting	2-Mar	7:00 AM to 7:30 AM	Marriott	Vista	I
TMS Annual Business Meeting	2-Mar	8:25 AM to 8:30 AM	Marriott	Cardiff/Carlsbad	O
TMS Board of Directors Meeting	2-Mar	8:30 AM to 11:45 AM	Marriott	Cardiff/Carlsbad	I
Friday, March 3					
Social Functions					
San Diego Tour with Pan American Materials Congress	3-Mar	8:30 AM to 4:30 PM	Offsite		T

SDCC-San Diego Convention Center, Marriott-Marriott Marquis & Marina

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TMS 2018
147th Annual Meeting & Exhibition



THE WORLD COMES HERE.

SAVE THE DATE!

MARCH 11—MARCH 15, 2018

PHOENIX, ARIZONA, USA

SYMPOSIUM PROPOSALS DUE: MARCH 31, 2017



CALL FOR ABSTRACTS OPENS: MAY 2017

SPECIAL HIGHLIGHTS

CDSM 2018
COMPUTATIONAL DESIGN AND
SIMULATION OF MATERIALS

**The 2nd International Conference on
Computational Design and Simulation of Materials**
Jointly organized by the
Chinese Society for Metals and TMS

TMS
The Minerals, Metals & Materials Society

FEMS
FEDERATION OF EUROPEAN
MATERIALS SOCIETIES

A Selection of New Symposia
Organized by the Federation of European Materials
Societies (FEMS) and TMS

All-Conference Plenary
"Global Trends in Industrial Innovation"

WWW.TMS.ORG/TMS2018

SEE YOU IN PHOENIX!

OPENING PLENARY SESSION

A NEW NETWORKING EVENT

Global Energy 2025 is the theme of the inaugural installment of a new TMS annual meeting tradition—the all-meeting, Opening Plenary Session. Don't miss this opportunity for cross-disciplinary learning through an evening of networking and thought-provoking talks. Global Energy 2025 is organized by the Chinese Society for Metals, the Federation of European Materials Societies, and TMS.



The Chinese Society for Metals



PRESIDENT'S WELCOMING RECEPTION

Date: Sunday, February 26

Time: 5:00 p.m.

Location: Marriott Marquis & Marina, Pacific Foyer 20-26

The evening will begin with the President's Welcoming Reception, where all attendees can meet and network prior to the start of the Global Energy 2025 plenary session. Light refreshments will be provided.

GLOBAL ENERGY 2025: PLENARY PRESENTATIONS

Time: 6:00 p.m. to 8:00 p.m.

Location: Marriott Marquis & Marina, Pacific 21-26

Organizers: Alan A. Luo, chair, TMS Light Metals Division; Cynthia K. Belt, vice chair, TMS Extraction and Processing Division.

Moderator: Jeremy Busby, Editor, *Metallurgical and Materials Transactions E: Materials for Energy Systems*

Meet the Plenary Speakers



"Grand Science Challenges to Energize a New Era of Innovation"

Harriet Kung

Director of Basic Energy Sciences
Office of Science, U.S. Department of Energy

The basis for this talk will be *Challenges at the Frontiers of Matter and Energy: Transformative Opportunities for Discovery Science*, released by the U.S. Basic Energy Sciences (BES) Advisory Committee in November 2015. The report identified emerging grand challenges for basic energy

sciences research whose impacts promise to be transformative for science and energy.



"Advancement of Energy Industries and Related Critical Materials in China"

Zhiling Tian

Vice General Manager
China Iron and Steel Research Institute Group

This presentation reviews the development history of Chinese energy industries and their related critical materials since 1978, with an emphasis on the newly built ultra-super-critical (UCS) fossil fire power plants and pressurized water reactor nuclear power plants. The future outlook of materials-related energy issues in China will also be explored, to include fossil and nuclear power, gas turbines, and oil and gas.



"Establishing the Industrial Leadership of Europe in Advanced Materials for the Energy Union – The Role of Innovation"

Fabrice Stassin

Managing Director
Energy Materials Industrial Research Initiative

This talk will address global trends in low-carbon energy technologies, while highlighting EMRI's contributions to inform stakeholders of the enabling role that the advanced materials industry plays in low-carbon energy technologies in Europe that create growth and jobs. Recommendations to solve European energy challenges and ensure industrial leadership of the sector will also be outlined.

3RD PAN AMERICAN MATERIALS CONGRESS



3rd Pan American Materials Congress

ORGANIZING COMMITTEE

Congress Chair: Marc Meyers, University of California, San Diego

Committee Members

Argentina: Roberto Arce, Sonia Brühl, Carlos Schvezov

Brazil: Andre Costa e Silva, Sergio Neves Monteiro, Horacio Leal

Canada: Mary Wells, Mihaiela Isac

Chile: R.V. Mangalaraja, Claudio Aguilar, Marta Lopez, Enrique Miranda Salinas

Colombia: Henry A. Colorado, Juan Manuel Velez

Mexico: Armando Salinas-Rodriguez, Marco Ramirez-Argaez, J. Gerardo Cabanas-Moreno

Peru: Mery Cecilia Gomez Marroquin, Yovanna Gisela Palomares Yallico, Maria Isabel Gomez Marroquin

USA: Michael Kaufman, Diana Farkas, Olivia Graeve

WELCOME TO THE 3RD PAN AMERICAN MATERIALS CONGRESS

Hosted by TMS and made possible through the efforts of nine materials professional societies, the 3rd Pan American Materials Congress convenes leading experts on the minerals, metals, and materials issues impacting the technological progress of the nations of the Americas. TMS2017 registrants have access to the congress's full technical program, which explores the latest science and engineering developments affecting the region's key industries through nine symposia:

- Advanced Biomaterials
- Advanced Manufacturing
- Materials for Green Energy
- Materials for Infrastructure
- Materials for the Oil and Gas Industry
- Materials for Transportation and Lightweighting
- Minerals Extraction and Processing
- Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses
- Steels

3RD PAN AMERICAN MATERIALS CONGRESS PLENARY SESSIONS

Location: Marriott Marquis & Marina, Marina G

TMS2017 registrants are also encouraged to attend the 3rd Pan American Materials Congress plenary sessions, featuring a roster of world-class speakers and compelling topics.

Tuesday Morning Plenary Session



"Designing Infrastructure Materials for 100-plus Year Service Lives"
Carolyn M. Hansson, Professor of Mechanical and Mechatronics Engineering, University of Waterloo, Canada

Time: 8:40 a.m. to 9:20 a.m.



"Production, Properties, and Applications of Titanium Dioxide Films"

Carlos Schvezov, Professor of Chemical and Natural Sciences, National University of Misiones, Argentina, and CONICET Independent Researcher

Time: 9:20 a.m. to 10:00 a.m.

Tuesday Afternoon Plenary Session



"Circular Economy- A Pathway to Resource Recovery and Recycling"
Diran Apelian, Alcoa-Howmet Professor of Mechanical Engineering, Worcester Polytechnic Institute, USA

Time: 2:00 p.m. to 2:40 p.m.



"Nano-sized Internal Precipitation during Oxidation of an Fe-Cr Alloy in Wet Environment"

Fernando Rizzo, General Director of the Brazilian National Institute for Technology (Instituto Nacional de Tecnologia, INT)

Time: 2:40 p.m. to 3:20 p.m.

3RD PAN AMERICAN MATERIALS CONGRESS

Wednesday Morning Plenary Session



“Recent Progress in High Entropy Alloy Research”
Enrique J. Lavernia, Provost and Executive Vice Chancellor, University of California, Irvine, USA
Time: 8:30 a.m. to 9:10 a.m.



“High Temperature Solutions through Materials and Processes for Engines under Heavy Thermal Fatigue Conditions”
Salvador Valtierra, Chief Technology Process Manager, NEMAK, Mexico
Time: 9:10 a.m. to 9:50 a.m.

Wednesday Afternoon Plenary Session



“What Do Snakes Have to Say About Tribology? Biomimetics Applied to Friction and Wear Studies”
Alejandro Toro, Professor and Senior Researcher at Universidad Nacional de Colombia
Time: 2:00 p.m. to 2:40 p.m.



“Toward a Federation of American Materials Societies: The European Experience”
Pedro D. Portella, Department Head, Materials Engineering, Federal Institute for Materials Research and Testing (BAM), Germany
Time: 2:40 p.m. to 3:20 p.m.

ORGANIZING SOCIETIES:

- Asociación Argentina de Materiales (SAM)
- Associação Brasileira de Metalurgia, Materiais e Mineração (ABM)
- Asociación Peruana de Metalurgia, Materiales Y Minerales (APMMM)
- Colombian Materials Society
- Instituto Ingenieros de Minas de Chile (IIMCh)
- Metallurgy and Materials Society (MetSoc), Canadian Institute of Mining, Metallurgy, and Petroleum (CIM)
- Sociedad Chilena de Metalurgia y Materiales (SOCHIM)
- Sociedad Mexicana de Materiales (SMM)
- TMS (Host Society)



Asociación Argentina de Materiales



abm
Associação Brasileira de Metalurgia, Materiais e Mineração



ASOCIACIÓN PERUANA DE METALURGIA, MATERIALES Y MINERALES

Colombian Materials Society



Energy Materials 2017

ORGANIZING COMMITTEE:



Representing TMS:

Conference Co-chair: Xingbo Liu, West Virginia University

Committee Members: Subodh Das, Phinix; Jeffrey Fergus, Auburn University; Jeffrey Hawk, NETL Department of Energy; Raul Rebak, GE Global Research; Indranil Roy, Schlumberger



Representing the Chinese Society for Metals:

Conference Co-chair: Zhengdong Liu, China Iron & Steel Research Institute Group

Committee Members: Zhancheng Guo, University of Science and Technology Beijing; Chengjia Shang, University of Science and Technology Beijing; Qing Song, The Chinese Society for Metals; Ji Zhang, China Iron & Steel Research Institute Group

WELCOME TO ENERGY MATERIALS 2017

Organized by TMS and the Chinese Society for Metals (CSM), Energy Materials 2017 builds on the success of the inaugural Energy Materials meeting held in 2014 in Xi'an, China.

Energy Materials 2017 will highlight materials research and industrial innovations for both established and emerging energy systems and technologies through seven symposia highlighted by keynote and featured presentations. All Energy Materials 2017 technical programming is open to TMS2017 registrants.

ENERGY AND ENVIRONMENTAL ISSUES IN MATERIALS MANUFACTURING AND PROCESSING KEYNOTE

Location: San Diego Convention Center, Room 14B

“Green Development is the Future Direction for Chinese Steel Industry” **Chunxia Zhang**, Central Iron & Steel Research Institute

Date: Tuesday, February 28, 8:30 a.m.

MATERIALS IN CLEAN POWER HIGHLIGHTS

Location: San Diego Convention Center, Room 15A

“Creep-Fatigue-Oxidation Interactions under Fossil Energy Service Conditions”

Sebastien Dryepontd, Oak Ridge National Laboratory

Date: Monday, February 27, 8:30 a.m.

“High Temperature Oxidation of Ni-base Alloys and Stainless Steels in Supercritical CO₂ for Power Systems Applications”

Gordon Holcomb, National Energy Technology Laboratory

Date: Monday, February 27, 2:00 p.m.

MATERIALS FOR COAL-BASED POWER KEYNOTES

Location: San Diego Convention Center, Room 12

“Advances in Materials Technology to Enable Advanced Ultrasupercritical (A-USC) and Supercritical CO₂ (sCO₂) Power Cycles”

John Shingledecker, Electric Power Research Institute

Date: Tuesday, February 28, 2:00 p.m.

“Creep Strength and Oxidation Resistance of Industrially Made G115 Steel Pipe”

Zhengdong Liu, China Iron & Steel Research Institute Group

Date: Wednesday, March 1, 8:30 a.m.

MATERIALS FOR ENERGY CONVERSION WITH EMPHASIS ON SOFC HIGHLIGHTS

Location: San Diego Convention Center, Room 12

“Low Temperature RAA Process for SOFC Stacks”

Jung Pyung Choi, Pacific Northwest National Laboratory

Date: Monday, February 27, 8:40 a.m.

“Plasma Sprayed Protective Coatings on Metallic SOFC Interconnects: Interplay between Processing and Performance”

Sanjay Sampath, Stony Brook University

Date: Monday, February 27, 2:00 p.m.

“New Materials for Solid Oxide Fuel Cells”

Shriram Ramanathan, Purdue University

Date: Tuesday, February 28, 8:30 a.m.

MATERIALS FOR GAS TURBINES KEYNOTES

Location: San Diego Convention Center, Room 13

“Multilayered, Multifunctional Thermal Barrier Coatings for Gas Turbine Engines”

Sanjay Sampath, Stony Brook University

Date: Monday, February 27, 8:30 a.m.

“Development of High Strength Hot Corrosion Resistant Single Crystal Superalloys Based on Understanding the Effect of Key Elements on Hot Corrosion Behavior”

Jian Zhang, Institute of Metal Research, Chinese Academy of Sciences

Date: Monday, February 27, 3:10 p.m.

MATERIALS FOR NUCLEAR ENERGY KEYNOTES

Location: Marriott Marquis & Marina, Miramar Room

“Is There a Role for Advanced Materials in Light Water Reactors?”

Kurt Terrani, Oak Ridge National Laboratory

Date: Wednesday, March 1, 8:30 a.m.

“Development of a Novel Structural Material (SIMP steel) for Nuclear Equipment with Balanced Resistances to High Temperature, Radiation and LBE Corrosion”

Yiyin Shan, Institute of Metal Research, Chinese Academy of Sciences

Date: Wednesday, March 1, 9:10 a.m.

MATERIALS FOR OIL AND GAS (AND AMREE-III) HIGHLIGHTS

Location: San Diego Convention Center, Room 14A

KEYNOTES:

“Stabilizing Nanostructures in Metals via Interface Architectures”

Ke Lu, Institute of Metal Research, Chinese Academy of Sciences

Date: Monday, February 27, 8:30 a.m.

“The Four R's to Promote Ductility of Metallic Glasses”

Evan Ma, Johns Hopkins University

Date: Monday, February 27, 10:20 a.m.

“Potential of Crystal Defects for Enhancing Bulk Functional Nanomaterials”

Michael Zehetbauer, University of Vienna

Date: Monday, February 27, 2:00 p.m.

“The Microstructural Origin of the Multifunctional Properties of Energy Metals”

Niels Hansen, Technical University of Denmark

Date: Monday, February 27, 3:50 p.m.

“Technological Innovation and Creative Destruction in the Energy Sector”

Ram Shenoy, RBR Group and U.S. Department of Energy

Date: Tuesday, February 28, 8:30 a.m.

“Interfacial Engineering for Efficiency Enhancements in Energy-Water-Food”

Kripa Varanasi, Massachusetts Institute of Technology (MIT)

Date: Tuesday, February 28, 9:00 a.m.

“Shell's Game Changer—Delivering Disruptive Technologies through Partnership in Innovation”

Hani Elshahawi, Shell Exploration & Production, Co.

Date: Tuesday, February 28, 9:30 a.m.

“Accelerated Materials Innovation—Technology Enablers for Enhanced Reliability, Efficiency and Production in Oil & Gas”

Partha Ganguly, Baker Hughes

Date: Tuesday, February 28, 10:20 a.m.

“Immigration Trends in the Energy Sector and Options for Professionals”

Rehan Alimohammad, Alimohammad & Zafar, PLLC

Date: Tuesday, February 28, 10:50 a.m.

“Hydrogen-Assisted Failure in Ni-base Superalloy 718 Studied under In-situ Hydrogen Charging: The Role of Localized Deformation in Crack Propagation”

Dirk Ponge, Max-Planck-Institut für Eisenforschung GmbH

Date: Tuesday, February 28, 2:00 p.m.

“Microstructure and Properties of High Performance Pipeline Steels”

Lei Zheng, Baosteel

Date: Wednesday, March 1, 8:30 a.m.

PANEL DISCUSSION:

“Innovations and Materials as Technology Enablers for Improving Cost & Performance Efficiencies in Energy”

Moderator: Indranil Roy, Schlumberger

Panelists: Ram Shenoy, RBR group and U.S. Department of Energy; Kripa Varanasi, MIT.

Hani Elshahawi, Shell; Partha Ganguly, Baker Hughes.

Date: Tuesday, February 28, 11:20 a.m.

TMS 101: FUNDAMENTALS OF TMS

Date: Sunday, February 26, 2017

Time: 5:00 p.m. to 5:45 p.m.

Location: Marriott Marquis & Marina, Mission Hills

Sponsored by the TMS Professional Development Committee

Want to get more involved in TMS, but don't know where to start? Attend TMS 101: Fundamentals of TMS. This half-hour presentation will provide a brief overview of how TMS works and a concise, practical explanation of how you can get more involved in the society's activities. Led by experienced TMS volunteers, TMS 101 will help you to take advantage of the many networking and professional development opportunities within the organization.

This session is open to all TMS2017 attendees but will be especially valuable to new members, international members, and graduate students.

GLOBAL ALUMINUM INDUSTRY 2017: A LOOK FORWARD

The *Light Metals* Keynote Session

Date: Monday, February 27, 2017

Time: 8:30 a.m. to 10:00 a.m.

Location: San Diego Convention Center, Room 1A

Organizer: Edward Williams, Alcoa

This opening keynote session, featuring talks from invited speakers, will kick off the light metals programming at TMS2017 and will include presentations by the following speakers:



"Alcoa Perspectives on the Global Aluminum Industry"

Agnello Borim

Smelting VP Technology & Strategy, Alcoa, Brazil



"Rio Tinto Perspectives on the Global Aluminum Industry"

Vincent Christ

Vice-President, Technology & Project Development – Aluminium, Rio Tinto, Canada



"Arconic Perspectives on the Global Aluminum Industry"

Moustapha Mbaye

President – Technology, Engineering and Operational Excellence, Arconic, USA

MAGNESIUM TECHNOLOGY KEYNOTE SESSION

Date: Monday, February 27, 2017

Time: 8:30 a.m. to Noon

Location: San Diego Convention Center, Room 5A

Organizers: Kiran N. Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science, Japan; Neale R. Neelameggham, Ind LLC

This year, the Magnesium Technology Symposium will open with a special keynote session, featuring the following presentations:

"Multi-scale Investigation on Yield 'Symmetry' and Reduced Strength Differential in an Mg-Y Alloy"

Enrique Lavernia

University of California Davis, USA

"Targeting High Impact R&D for Automotive Magnesium Alloys"

William Joost

U.S. Department of Energy, USA

"Magnesium Development as a Lightweight Material – In Competition with Other Structural Materials"

Alan Luo

The Ohio State University, USA

"The Continued Quest for Low-temperature Formability in Mg Alloys: Historical Developments and Future Opportunities"

Suveen Mathaudhu

University of California Riverside, USA

FEATURED SESSIONS

STUDENT-RUN SYMPOSIUM: BUILDING BRIDGES – CONNECTING ACADEMIC AND INDUSTRY RESEARCH

Date: Monday, February 27, 2017

Time: 8:30 a.m. to 4:30 p.m.

Location: San Diego Convention Center, Room 22

Organizers: Katherine Vinson, Omar Rodriguez, Ben White, Dallin Barton, and Rachel White, The University of Alabama

This symposium, arranged by graduate students, will focus on the link between academia and industry research. Relationships between academic institutions and advancing technologies in industry are challenging to navigate because the two have traditionally been seen as distinctly separate research entities. The symposium will address this separation and provide a foundation to explore opportunities for mutually beneficial academic and industry partnerships.

ADDITIVE MANUFACTURING: PAST, PRESENT, AND FUTURE KEYNOTE SESSION

Date: Monday, February 27, 2017

Time: 2:00 p.m. to 5:30 p.m.

Location: San Diego Convention Center, Room 7A

Organizers: John S. Carpenter and James Foley, Los Alamos National Laboratory; Eric A. Lass and Mark R. Stoudt, National Institute of Standards and Technology

This inaugural joint keynote session is comprised of talks that represent the three Additive Manufacturing-related symposia at TMS2017: Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships, Additive Manufacturing: Building the Pathway towards Process and Material Qualification, and Pioneers in Additive Manufacturing. This session will include presentations by:

- **Thomas Starr**, University of Louisville, USA
- **David Keicher**, Sandia National Laboratories, USA
- **Joseph Beaman**, University of Texas, USA
- **Jack Beuth**, Carnegie Mellon University, USA
- **Christian Leinenbach**, Empa-Swiss Federal Laboratories for Materials Science and Technology, Switzerland
- **Christopher Tuck**, University of Nottingham, United Kingdom

A PROSPECTIVE LOOK AT THE MGI AFTER FIVE YEARS

Date: Monday, February 27, 2017

Time: 3:30 p.m. to 5:30 p.m.

Location: San Diego Convention Center, Room 9

Sponsored by: TMS Materials Innovation Committee; *Organizers:* Charles H. Ward, Air Force Research Laboratory; Kevin Hemker, Johns Hopkins University; John Allison, University of Michigan

The Materials Genome Initiative (MGI), launched in the United States just over five years ago, sets four national goals that call for Enabling a Paradigm Shift in Culture; Integrating Experiments, Computation, and Theory; Facilitating Access to Materials Data; and Equipping the Next-Generation Materials Workforce. This symposium will examine the successes of the MGI to date against these goals and will provide an outlook on where materials science and engineering is headed over the next five years in this context. This symposium will include presentations by:

- **Dennis Dimiduk**, BlueQuartz Software, LLC, USA
- **Kevin Anderson**, Brunswick Corporation, USA
- **Bryce Meredith**, Citrine Informatics, USA
- **Tresa Pollock**, University of California Santa Barbara, USA

PIONEERS IN ADDITIVE MANUFACTURING

Date: Tuesday, February 28, 2017

Time: 8:30 a.m. to 5:30 p.m.

Location: San Diego Convention Center, Room 8

Organizers: James Foley, Los Alamos National Laboratory; Paul D. Prichard, Kennametal Inc.; Iver E. Anderson, Iowa State University/Ames Laboratory; David L. Bourell, University of Texas at Austin

While additive manufacturing is a relatively new materials processing technology, its roots go back at least a couple of decades when it was a new processing research area, described as 3-D Printing or Rapid (Metal) Prototyping. While some of the pioneering work was conducted with stereo lithography of polymers, many of the process technologies for metal “freeform fabrication” were an extension of thermal spray deposition, atomization spray deposition, laser cladding, various welding (e.g., hard-facing build-up) processes, and binder-assisted powder metal sintering.

This symposium will feature talks by pioneers in the field of additive manufacturing, along with current innovators in the field, to present ground-breaking work that solved materials problems and enabled highly advanced manufacturing production. This symposium will include presentations by:

- **David Bourell**, University of Texas, USA
- **Michael Cima**, MIT, USA
- **Michael Feygin**, Cubic Technologies, Inc., USA
- **Hamish Fraser**, The Ohio State University, USA
- **Dan Thoma**, University of Wisconsin-Madison, USA
- **James Sears**, GE GRC, USA
- **Brent Stucker**, 3DSIM, USA
- **Khershed Cooper**, National Science Foundation, USA
- **Phill Dickens**, University of Nottingham, United Kingdom
- **John Smugeresky**, Additive Manufacturing Materials Consultants, USA
- **Pamela Kobryn**, U.S. Air Force Research Laboratory, USA
- **Ralph Napolitano**, Iowa State University, USA

TMS2017 ACTA MATERIALIA SYMPOSIUM

Date: Tuesday, February 28, 2017

Time: 3:15 p.m. to 4:55 p.m.

Location: San Diego Convention Center, Room 22

This special symposium will honor three TMS members who will be accepting their prestigious Acta Materialia Awards at the TMS 2017 Annual Meeting & Exhibition. The session will include the following presentations by the award recipients:



Acta Materialia Gold Medal
Lecture:
“Dynamic Transformation of Austenite at Temperatures Well Above the Ae3”
John Jonas, McGill University



Acta Materialia Silver Medal
Lecture:
“Advanced Ceramics for Environmental Protection Materials in Extreme Conditions”
Jingyang Wang, Institute of Metal Research, Chinese Academy of Sciences



Acta Materialia Hollomon Award for Materials and Society Lecture:
“Advanced Materials Manufacturing for Global Mobility”
Warren Poole, University of British Columbia

JOHN CAHN MEMORIAL SYMPOSIUM



Date: Wednesday, March 1, 2017

Time: 8:30 a.m. to 5:30 p.m.

Location: San Diego Convention Center, Room 22

Organizer: James A. Warren, National Institute of Standards and Technology

This one-day symposium will feature a series of invited talks on the extraordinary career in materials science of John W. Cahn. Cahn’s pioneering research in the thermodynamics and kinetics of materials provided profound insights, yielding a consequent capability to rationally engineer matter. This symposium will include presentations by:

- **Peter Voorhees**, Northwestern University, USA
- **David Srolovitz**, University of Pennsylvania, USA
- **John Blendell**, Purdue University, USA
- **Kevin Hemker**, Johns Hopkins University, USA
- **Mark Asta**, University of California Berkeley, USA
- **Elizabeth Holm**, Carnegie Mellon University, USA
- **Jörg Weissmüller**, Hamburg University of Technology, Germany
- **Srinivasan Srivilliputhur**, University of North Texas, USA
- **Jean Taylor**, Professor Emerita at Rutgers University and Visiting Faculty at Courant Institute, NYU, USA
- **Leonid Bendersky**, NIST, USA
- **Olivier Hardouin Duparc**, Ecole Polytechnique, France
- **Lyle Schwartz**, University of Maryland, USA

TMS TECHNICAL DIVISION HONORARY SYMPOSIA

Each year, the TMS Technical Divisions recognize accomplished individuals with honorary symposia, inviting leaders in the honorees' fields to discuss progress and recent developments on important topics. The following honorary symposia are planned for the TMS 2017 Annual Meeting & Exhibition:

APPLICATIONS OF PROCESS ENGINEERING PRINCIPLES IN MATERIALS PROCESSING, ENERGY AND ENVIRONMENTAL TECHNOLOGIES



An Extraction & Processing Division Symposium in Honor of Professor Ramana G. Reddy

Dates: Monday, February 27 to Thursday, March 2

Location: San Diego Convention Center, Room 15B

This symposium, which honors Professor Ramana Reddy, will provide a forum where industrial, research institutes, and university professionals can interact and exchange with other stakeholders to facilitate the advancement of materials processes and engineering. The impact of Reddy's work and achievements is in the introduction and application of process engineering principles to the quantitative description of materials processing reactions, and industrial operations. His contributions include the development of the Reddy-Blander model, by which the impurities capacities of oxide melts can be predicted a priori with the fundamental structure and thermodynamic properties data of melts. He has formulated quantitative methodologies based on first principles of thermodynamics, phase equilibria, and kinetics to: design of slags and fluxes for production and purification of metals and alloys; development of novel ionic liquid electrolytes for materials processing; design materials for Fuel Cells and Capacitors; use of thermodynamic approaches to predict thermos-physical properties of materials for industrial applications; nuclear energy waste separation and remediation; and thermal energy storage.

FRONTIERS IN MATERIALS SCIENCE, ENGINEERING, AND TECHNOLOGY



A Functional Materials Division Symposium in Honor of Sungho Jin

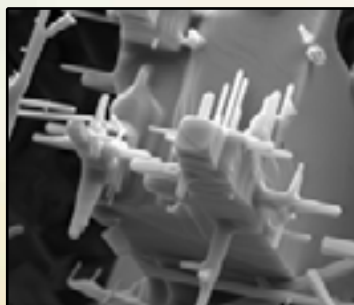
Dates: Monday, February 27 to Wednesday, March 1

Location: San Diego Convention Center, Room 33B

This symposium honors Professor Sungho Jin, recipient of the 2016 Acta Materialia Gold Medal Award and professor emeritus at the University of California–San Diego, where he was Distinguished Professor of Materials Science in the Departments of Mechanical and Aerospace Engineering and held the Iwama Endowed Chair until his recent retirement. This symposium is dedicated to Jin's seminal research contributions, to his leadership in materials science worldwide through various professional societies, and to the University of California – San Diego. This symposium includes coverage of recent advances in electronic, magnetic, optical, superconducting materials, devices and structures, electronic packaging, and MEMS materials and devices, nano-bio materials, and energy related materials.

AND THE WINNER IS...

See the winners of the **2017 TMS Materials Photography Contest** at the TMS Member Welcome Center, San Diego Convention Center, Ballroom 6 Lobby.



TMS TECHNICAL DIVISION HONORARY SYMPOSIA

MATERIALS BY DESIGN



A Materials Processing & Manufacturing Division Symposium Honoring Greg Olson on the Occasion of his 70th Birthday

Dates: Tuesday, February 28 to Wednesday, March 1

Location: San Diego Convention Center, Room 10

The foundation of computational materials design and integration of computational materials engineering (ICME) have been pioneered by Professor Greg Olson over the last thirty years. Olson has successfully demonstrated the use of a systems design approach for designing new materials by calculating optimum composition and processing routes to achieve desired materials properties. This approach has dramatically reduced the time and cost of the alloy development process. This symposium is dedicated to Olson on the occasion of his 70th birthday.

A series of invited papers will be presented on the topics of:

- Martensitic transformations
- Transformation induced plasticity and its application to ductility and fracture toughness
- Kinetics of coupled diffusional/displacive transformations
- Electronic basis of embrittlement mechanisms in metals
- Structure-property relations
- Applications of high resolution microanalysis

ATTENTION FIRST-TIME ATTENDEES

\$10 FOR 10 MINUTES.

Take ten minutes to complete your membership profile with TMS and you'll receive \$10 off your 2018 TMS membership dues. To learn more, visit the TMS Member Welcome Center, San Diego Convention Center, Ballroom 6 Lobby.

MECHANICAL AND CREEP BEHAVIOR OF ADVANCED MATERIALS



A Structural Materials Division Symposium Honoring Prof. K. Linga Murty

Dates: Monday, February 27 to Thursday, March 2

Location: San Diego Convention Center, Room 24A

This symposium will celebrate the 75th birthday and life-long contributions of Professor K.L. Murty and provide a forum to discuss the present status and recent advances in research areas in which he has made seminal contributions. These areas include:

- High-temperature creep deformation of materials and micromechanistic interpretation
- Prediction of mechanical behavior of HCP metals/alloys using crystallographic texture
- Creep and fatigue behavior of microelectronic solders
- Radiation tolerance of nanostructured materials
- Development and application of ball indentation techniques as a non-destructive monitoring method of structural materials
- Characterization of dynamical behavior of point and line defects using nuclear magnetic resonance techniques

THE SCIENCE OF MELT REFINING

A Light Metals Division Symposium in Honor of Christian Simensen and Thorvald Abel Engh

Dates: Tuesday, February 28

Location: San Diego Convention Center, Room 3

This year, dedicated sessions in Cast Shop Technology will honor the contributions by Thorvald Engh and Christian Simensen of Norway to the science and technology of alloying practice, melt oxidation, melt characterization, and melt refining.

SPECIAL LECTURES

Monday, February 27

EXTRACTION & PROCESSING DIVISION DISTINGUISHED LECTURER

Date: Monday, February 27, 8:35 a.m.

Location: San Diego Convention Center, Room 15B



Speaker: Corby G. Anderson, Harrison Western Professor, Kroll Institute for Extractive Metallurgy at the Colorado School of Mines

Lecture Title: "The Theory and Application of Alkaline Sulfide Leaching and Nitrogen Species Catalyzed Pressure Oxidation

Hydrometallurgical Technologies"

About the Topic: This presentation will cover the development, fundamentals, and applications of two distinct industrial hydrometallurgical technologies. First is Alkaline Sulfide Leaching (ASL) which was commercialized for production of antimony. In its 60-year history, the ASL plant provided antimony metal and compounds while also abating copper smelting penalties. Aspects of the thermodynamic and kinetic fundamentals and some economic aspects of this selective technology will be elucidated along with applications to gold, arsenic, mercury, and tin from primary and secondary sources. The second technology is Nitrogen Species Catalyzed Pressure Oxidation (NSC). The NSC plant was commercialized as a low-temperature process for treatment of copper concentrates with non-cyanide precious metals recovery. The facility operated successfully for more than a decade. Again, some of the thermodynamic and kinetic fundamentals and some economic aspects of this selective technology will be elucidated along with applications for molybdenum, nickel, cobalt, zinc, PGM, and gold-bearing materials.

WILLIAM HUME-ROTHERY AWARD

Date: Monday, February 27, 8:40 a.m.

Location: San Diego Convention Center, Room 31C



Speaker: George Smith, Professor of Materials Science, University of Oxford

Lecture Title: "The Role of Atom Probe Tomography in Decoding the Materials Genome"

About the Topic: The experimental technique of Atom Probe Tomography (APT) is unique in its capability to image and identify single atoms within solids and to establish their location with sub-nanometer precision. Iteration of this process enables the three-dimensional reconstruction of the nanoscale microstructure and chemistry of a wide range of materials. The mission and purpose of this work closely resembles the objectives of molecular biology. It involves taking materials apart at the atomic level in order to find out how they work, and then seeking ways to improve their design and assembly, in order to make them work better. This lecture will outline the successive stages of development of the APT method, and illustrate its breadth of application by reference to recent studies of metals and alloys, catalysts, semiconductors, and photonic materials.

STRUCTURAL MATERIALS DIVISION LUNCHEON LECTURE*

Date: Monday, February 27, Noon to 2:00 p.m.

Location: Marriott Marquis & Marina, Pacific 19



Speaker: Nikhilesh Chawla, Fulton Professor of Materials Science and Engineering (MSE), Arizona State University

Lecture Title: "In Situ Materials Science: Probing Microstructural Evolution of Metallic Materials in Real-Time"

About the Topic: The field of materials science and engineering (MSE) is based on the fundamental principle that microstructure controls properties. Traditionally, the study of material structure has been limited by sectioning and post mortem observations. This approach is often inaccurate or inadequate for solving many fundamental problems. It is also often laborious and time-consuming. Advances in experimental methods, analytical techniques, and computational approaches have now enabled the development of in situ techniques that allow us to probe the behavior of materials in real-time. The study of microstructures under an external stimulus (e.g., stress, temperature, environment) as a function of time is particularly exciting. Examples include an understanding of time-dependent deformation structures, phase transformations, compositional evolution, magnetic domains, etc.

X-ray synchrotron micro and nano-tomography provides a wonderful means of characterization damage in materials non-destructively. This talk will describe experiments and simulations that address the critical link between microstructure and deformation behavior of metallic materials, by using a three-dimensional (3D) virtual microstructure obtained by x-ray synchrotron tomography. The approach involves capturing the microstructure by novel and sophisticated in situ testing in an x-ray synchrotron, followed by x-ray tomography and image analysis, and 3D reconstruction of the microstructure. Case studies on fundamental precipitation evolution and deformation phenomena in aluminum alloys under cyclic loading and in a corrosive environment will be presented and discussed. New opportunities for x-ray microtomography, including lab-scale tomography and the next generation of x-ray synchrotron tomography will be highlighted.

**This lecture is open to all meeting attendees, but only those who purchased tickets in advance will receive a catered lunch.*

Tuesday, February 28

JAPAN INSTITUTE OF METALS INTERNATIONAL SCHOLAR

Date: Tuesday, February 28, 11:30 a.m.

Location: San Diego Convention Center, Room 16B



Speaker: Daisuke Ando, Assistant Professor, Tohoku University in Japan

Lecture Title: "Mg-Sc Based Alloy and its Functionality"

About the Topic: Magnesium alloys have been expected as a next-generation structural material for decades. However, because of low formability, low corrosion resistance, and high cost, Mg alloys have not been used widely yet. Therefore, in order to break the wall, our group has attempted to add some functionality, such as high strength, super-elasticity, and shape memory effect into Mg alloys using metastable body-centered cubic (BCC) phase in Mg-Sc alloys. This alloy shows ultra-high strength after aging due to fine HCP precipitation from BCC matrix. Furthermore, the alloys show super-elasticity of 4.4% at -150°C and shape recovery upon heating. The shape memory properties are

caused by reversible martensitic transformation. Its density is around 2 g/cm³, which is one-third less than that of practical TiNi shape memory alloy. The study shows a possibility to use metastable BCC phase for novel microstructural control and adding functionality into Mg alloys.

EXTRACTION & PROCESSING DIVISION/MATERIALS PROCESSING & MANUFACTURING DIVISION LUNCHEON LECTURE*

Date: Tuesday, February 28, Noon to 2:00 p.m.

Location: Marriott Marquis & Marina, Pacific 19



Speaker: Diran Apelian, Alcoa-Howmet Professor of Engineering and Founding Director of the Metal Processing Institute (MPI), Worcester Polytechnic Institute

Lecture Title: "A Renaissance of Extractive Metallurgy in the 21st

Century"

About the Topic: The 21st Century is the Innovation Era and the onset of the Fourth Industrial Revolution. This is the era when we will witness a major shift in the organization of global value chains. The focus of the presentation is on one of the grand challenges of the 21st century: How to sustain development in the 21st century? The presentation will be materials centric and will address the opportunities in extractive and process metallurgy. In this presentation, Apelian will highlight the context of the paradigm shifts we are witnessing and propose pathways to move forward in three specific arenas: Education, Public Policy, and Technological Innovations needed in resource recovery and recycling.

**This lecture is open to all meeting attendees, but only those who purchased tickets in advance will receive a catered lunch.*

SPECIAL LECTURES

YOUNG PROFESSIONAL TUTORIAL LUNCHEON LECTURE

Date: Tuesday, February 28

Luncheon: Noon to 12:45 p.m.

(Tickets must be purchased in advance)

Lectures: 12:45 p.m. to 2:00 p.m.

(Open to all meeting attendees)

Location: Marriott Marquis & Marina, Pacific 25



Speaker: Kristin Persson, Staff Scientist, Lawrence Berkeley National Laboratory

Lecture Title: “The Materials Project: Accelerated Materials Design in the Information Age”

About the Topic: The Materials Project (www.materialsproject.org)—part of the broader Materials Genome Initiative—is an effort to compute the properties of all known inorganic materials and beyond, and offer that data to the community together with online analysis and design algorithms. The current release contains data derived from density functional theory (DFT) calculations for more than 66,000 materials, with searchable associated properties such as relaxed structure, electronic state, energy storage capability, elastic behavior, piezoelectric response, aqueous and solid stability, and more. Furthermore, software algorithms are offered by the Materials Project and can be used by researchers for materials informatics, including both interactive web-based tools like the Phase Diagram App and the Pourbaix App, as well as open-source codebases and data access tools such as the pymatgen materials analysis library, FireWorks workflow software,³ and Materials API. Today—five years after launch—the Materials Project is driving materials innovation in broad chemical and structural spaces, for applications as varied as energy storage, energy production, thermoelectricity, transparent conductors, auxetics, materials synthesis conditions etc. This talk will highlight the development of the project, its growth attracting more than 18,000 users world-wide and a few of the many in-house projects that have been successfully concluded or are being pursued using the capabilities and materials understanding that has emerged from our approach of data informed materials design. Such projects are i) stability

of inorganic materials in aqueous electrolytes for battery, fuel cell and catalysis applications, and design principles for ii) novel multivalent intercalation cathode discovery and iii) electrolytes.



Speaker: Guihua Yu, Assistant Professor, University of Texas

Lecture Title: “A Soft Approach towards Grand Energy Challenges – An Emerging Class of Functional Polymers”

About the Topic: In this presentation, Yu will discuss his personal research journey in designing novel energy materials for improved energy efficiency. Nanostructured materials become critically important in many areas of technology, ranging from renewable energy, electronics, and photonics to biology and medicine, because of their unusual physical/chemical properties due to confined dimensions of such materials. The presentation will start with the introduction of a special class of bulk polymeric materials, hydrogels that are based on three-dimensional (3D) microstructured polymeric networks bearing similarities to natural tissues, and have been used for many biotechnological applications, such as scaffolds for tissue engineering and vehicles for drug delivery. However, due to their intrinsic insulating properties, hydrogels are rarely useful for electronics and energy-related applications. The presentation will then discuss a smart ‘soft’ approach for turning these widely accessible ‘biogels’ to super ‘energy gels’ with well-controlled nanostructured frameworks for greatly improved electrical, thermal and electrochemical properties. These functional organic building blocks have been creatively demonstrated powerful for a number of significant applications in energy, environmental and health-related technologies. Several examples on developing this emerging class of functional polymers for energy storage and conversion devices will be discussed to illustrate ‘structure-derived functions’ of these special materials. The presentation will conclude with discussions on current challenges and issues in bringing them closer to practical applications in energy devices and possible potential solutions.

Wednesday, March 1

LIGHT METALS DIVISION LUNCHEON LECTURE*

Date: Wednesday, March 1, Noon to 2:00 p.m.
Location: Marriott Marquis & Marina, Pacific 19



Speaker: Karl Ulrich Kainer,
Director, Magnesium Innovation
Center, Helmholtz-Zentrum
Geesthacht, Germany
Lecture Title: "Status and Future
of Metallic Light Weight Materials
for Sustainable Vehicle Concepts"

About the Topic: In the last decades, structural light metals were implemented in conventional vehicle concepts. The focus was the use of this class of materials predominantly in premium cars with some exceptions in mass car production. Due to the request to reduce the emission of cars with combustion engines and the implementation of new vehicle concepts for hybrid, electrical, or fuel cell cars, the interest in metallic lightweight materials was growing. For those applications, life-cycle assessment of materials used became an important criteria for the selection. This presentation will report in the first part on the status of development and applications of light metals in automotive industries with a focus on the European point of view. The second part will address potential, challenges, and new developments of magnesium alloys for the transportation industries.

**This lecture is open to all meeting attendees, but only those who purchased tickets in advance will receive a catered lunch.*

INSTITUTE OF METALS/ROBERT FRANKLIN MEHL AWARD

Date: Wednesday, March 1, 2:00 p.m.
Location: Marriott Marquis & Marina, Del Mar



Speaker: Steven Zinkle,
Governors Chair Professor,
University of Tennessee
Lecture Title: "Microstructure of
Irradiated Materials"

About the Topic: Energetic particle irradiation can induce pronounced microstructural changes and corresponding dramatic property changes in materials. This presentation will provide an overview of radiation-induced microstructural changes, with particular emphasis on similarities and differences between metals and ceramics. There are several key temperature regimes for all irradiated materials (defined by the onset temperatures for migration of interstitials and vacancies, thermal dissolution of in-cascade produced vacancy clusters, and thermal evaporation of cavities). In general, radiation tolerance in one temperature regime does not universally translate to radiation tolerance in other temperature regimes due to different controlling physical parameters. The fluence dependence of defect accumulation also is generally significantly different in the various temperature regimes. The roles of primary knock on atom energy, damage rate, atomic mass, crystal structure, and other material parameters will be briefly discussed.

WANT TO GET INVOLVED?

Attend one of our open technical committee meetings this week to meet colleagues with similar interests and become a contributing member of the TMS community. See the **CALENDAR OF EVENTS** beginning on **PAGE 11** for meeting times and locations.

NETWORKING, STUDENT & SOCIAL EVENTS

Sunday, February 26

TMS2017 MATERIALS BOWL



Date: Sunday, February 26

Elimination Rounds: Noon to 4:00 p.m.

Championship Round: 5:00 p.m. to 6:00 p.m.

Location: San Diego Convention Center, Room 3
Open to all attendees

Even if you aren't competing in the materials-themed quiz-show competition, you're welcome to attend the elimination rounds or the final championship round. Play along to test your materials science and engineering knowledge or cheer on your favorite school.

Sponsored by:



PRESIDENT'S WELCOMING RECEPTION



Date: Sunday, February 26

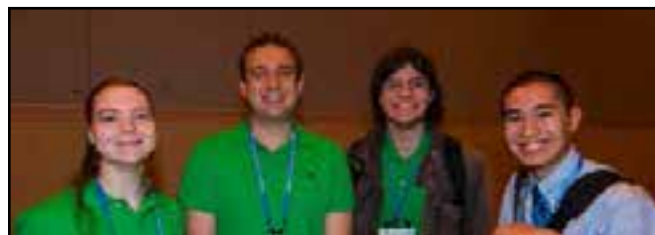
Time: 5:00 p.m. to 6:00 p.m.

Location: Marriott Marquis & Marina, Pacific Foyer 20-26

Open to all attendees

Kick off the TMS 2017 Annual Meeting & Exhibition with this social networking event, to be held immediately before the Global Energy 2025 Opening Plenary Session. Refreshments will be provided.

STUDENT MIXER



Date: Sunday, February 26

Time: 8:00 p.m. to 9:30 p.m.

Location: San Diego Convention Center, Room 5
Open to all attendees

Take a break and have some fun at this informal social event. Students will have the opportunity to interact with each other and with professionals in a relaxed setting. Refreshments will be provided.

Monday, February 27

MEET A MENTOR



Date: Monday, February 27

Time: 4:30 p.m. to 6:30 p.m.

Location: Marriott Marquis & Marina, Marina F
Pre-Registration Required

This event will provide an opportunity for professionals with established experience in their field (mentors) to engage in face-to-face, scheduled meetings with early-career professionals (mentees).

STUDENT POSTER CONTEST

Date: Monday, February 27

Judging and Presentation of Posters: 5:00 p.m. to 6:30 p.m.

Location: San Diego Convention Center, Hall B1
Stop by and browse the student poster displays at your leisure or attend the official judging session to ask questions of the participants. If you are participating in the student poster contest, you must be present at the judging session to answer questions about your work.

YOUNG PROFESSIONAL HAPPY HOUR RECEPTION

Date: Monday, February 27

Time: 5:00 p.m. to 6:00 p.m.

Location: Marriott Marquis & Marina, Point Loma/Solana

This reception provides young professionals the opportunity to network with more experienced TMS members in a relaxed, social atmosphere.

EXHIBIT OPENING RECEPTION

Date: Monday, February 27

Time: 5:00 p.m. to 6:30 p.m.

Location: San Diego Convention Center, Ballroom 6

Open to all attendees

You are invited to meet in the exhibit hall for appetizers, beverages, and networking with exhibitors and other colleagues on the first day of the TMS2017 Exhibition.

JOB CANDIDATE POSTER SESSION

Date: Monday, February 27

Time: 6:00 p.m. to 8:00 p.m.

Location: San Diego Convention Center, Hall B1
Graduate students, post-docs, and early career professionals will show potential employers their qualifications—not just their current research—at a special poster session. Sponsored by the TMS Young Professional Committee, the Job Candidate Poster Session allows young professionals to network with employers looking for high-caliber personnel for positions in national laboratories, academia, and industry.

PAN AMERICAN MATERIALS CONGRESS DINNER

Date: Monday, February 27

Time: 6:00 p.m. to 9:00 p.m.

Location: Casa Guadalajara Restaurant (offsite)
Advance Registration Required

Enjoy an evening with your colleagues at this networking event, featuring live music and dinner at Casa Guadalajara, a Mexican restaurant located in Old Town, San Diego.

Tuesday, February 28

STUDENT CAREER FORUM

Date: Tuesday, February 28

Time: 2:00 p.m. to 4:00 p.m.

Location: Marriott Marquis & Marina, Point Loma/Solana

“When should I start my job search?” “Should I continue to graduate school or begin my career?” “How important is networking to my career?” If you find yourself asking questions like these about your future, then you should attend the Student Career Forum. Organized by the TMS Young Professional Committee, this session will feature speakers from various stages of their careers and diverse materials science backgrounds to discuss how to navigate a successful career path in the fields of minerals, metals, and materials.

2017 TMS BLADESMITHING COMPETITION



Prizes Awarded: Tuesday, February 28

Time: 3:00 p.m. to 3:30 p.m.

Location: San Diego Convention Center, TMS2017 Exhibit Hall, Booth #1147

View an exhibit of knife and sword blades forged by your fellow minerals, metals, and materials science and engineering students—and learn how they did it. Blades will be on display Monday through Wednesday in the TMS2017 Exhibit Hall.

EXHIBIT HALL HAPPY HOUR

Date: Tuesday, February 28

Time: 4:30 p.m. to 5:30 p.m.

Location: San Diego Convention Center, Ballroom 6

All attendees are invited to gather in the exhibit hall for appetizers, beverages, and networking with exhibitors and colleagues.

NETWORKING, STUDENT & SOCIAL EVENTS

ENERGY MATERIALS 2017 DINNER

Date: Tuesday, February 28

Time: 6:00 p.m. to 9:00 p.m.

Location: Harbor House Restaurant (offsite)

Tickets Required

Join your Energy Materials 2017 colleagues for an evening of networking and dining at Harbor House, a San Diego seafood and steak restaurant.

Wednesday, March 1

FRESH COFFEE, FRESH IDEAS: DIVERSITY AND INCLUSION BREAKFAST

(Formerly the Women in Science Breakfast)



Date: Wednesday, March 1

Time: 7:00 a.m. to 8:00 a.m.

Location: Marriott Marquis & Marina, Pacific 19

Tickets Required

Building on the success of the Women in Science Breakfast series at past TMS Annual Meetings, this event, organized by the TMS Diversity Committee, offers an opportunity for TMS members to network and discuss issues related to diversity and inclusion in the minerals, metals, and materials professions.

Friday, March 3

SAN DIEGO TOUR WITH PAN AMERICAN MATERIALS CONGRESS

Date: Friday, March 3

Time: 8:30 a.m. to 4:30 p.m.

Tickets Required

Gain first-hand insights into the connection between materials and nature. This full-day experience combines tours of the San Diego Zoo and Birch Aquarium with a visit to the laboratory of Marc Meyers, professor of Mechanical and Aerospace Engineering at the University of California, San Diego (UCSD) and lead organizer of the Pan American Materials Congress.



INSPIRING MINDS. BUILDING LEADERS. SHAPING OUR PROFESSION.

LEARN ABOUT MORE SUCCESS STORIES MADE POSSIBLE BY THE TMS FOUNDATION—AND HOW YOU CAN BE PART OF FUTURE ONES.



“The TMS Foundation has played, and will continue to play, a major role in my professional career, by allowing me to engage with and hold leadership roles in professional development and diversity initiatives, as well as scientific committees.”

—Kinga Unocic, Oak Ridge National Laboratory, 2017 TMS/JIM Young Leaders International Scholar

Visit the TMS Member Welcome Center, located in the San Diego Convention Center, Ballroom 6 Lobby, to learn more and to offer your support by making a donation to the TMS Foundation. Receive a souvenir mug with a donation of \$25 or more.

www.TMSFoundation.org



Battelle
The Business of Innovation



**Join us in the Exhibit Hall
for the
2017 TMS Bladesmithing
Competition Exhibit!**

Booth #1147

More than 25 hand-forged knife and sword blades will be on display as part of the 2017 TMS Bladesmithing Competition. Come and see the blades, along with technical posters and videos depicting their production, in the Exhibit Hall this week.

Stop by the TMS 2017 Bladesmithing Competition booth during the following exhibit hours to view the competition entries:

Monday, February 27
2:00 p.m. to 6:30 p.m.

Tuesday, February 28
9:45 a.m. to 5:30 p.m.

Wednesday, March 1
9:45 a.m. to 2:00 p.m.

**Who Will Win? Find out Tuesday,
February 28!**

Winners will be announced during a special ceremony (open to all) on Tuesday, February 28, from 3:00 p.m. to 3:30 p.m. at the Bladesmithing booth in the Exhibit Hall.

TMS 2017

TMS-AIME Awards Ceremony and Banquet



SCHEDULE OF EVENTS

Date: Wednesday, March 1, 2017

Location: Marriott Grand Ballroom,
Marriott Marquis & Marina

Reception: 5:30 p.m.
(Open to all TMS2017 attendees)

Awards Ceremony: 6:00 p.m.
(Open to all TMS2017 attendees)

Dinner: 7:30 p.m.
(Tickets required; purchase a ticket for \$95
through the TMS2017 registration form)

Entertainment: 8:15 p.m.
(included with dinner ticket)

The reception and ceremony are open to all meeting attendees, but tickets are required for the dinner and entertainment portion of the evening.

The 2017 TMS-AIME Awards Ceremony and Banquet will be an elegant event, designed to honor the significant professional achievements of members of the minerals, metals, and materials communities. The ceremony includes presentations of awards from both TMS and the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME), of which TMS is a member society. Additional awards, including three Acta Materialia awards and the Brimacombe Prize, will also be presented to TMS members.

The evening will consist of three parts. First, award recipients and their guests will be welcomed at a cocktail reception. Following the reception, participants will be seated for the awards ceremony, where individual recipients will be honored for their accomplishments. After the ceremony, those participants who have purchased banquet tickets will proceed to the adjacent ballroom for an elegant dinner and live entertainment.

Following dinner, attendees will be treated to a Sock Hop Performance by San Diego's Hang Ten Hoppers. These costumed professional dancers will perform 1950s dances, such as the twist and the jitterbug, to songs from the era.

Installation of the 2017 TMS President: David H. DeYoung



During the 2017 TMS-AIME Awards Banquet, TMS will install David H. DeYoung, director research and development, Global Primary Products, Alcoa, as the society's 2017 president. DeYoung has been a TMS member since 1981 and has served TMS in an array of volunteer leadership positions, including chair of both the Aluminum Committee (2008-2009) and the Process Technology and Modeling Committee (1998-2000). He is also a member of the Aluminum Processing Committee and Energy Committees, the TMS Nominating Committee, and the Brimacombe Medalist, Robert Lansing Hardy Award, and Early Career Faculty Fellow Award Subcommittee.

AIME Awards Ceremony Presenters

The ceremony will be hosted by James J. Robinson, TMS executive director, and will include comments from Stanley Howard, 2016 TMS president, and David DeYoung, 2017 TMS president. In addition, the following presenters will announce the awards:

- **Nikhil C. Trivedi**, Idekin International and 2016 AIME President
- **Michele Lawrie-Munro**, AIME Executive Director
- **Carolyn Hansson**, University of Waterloo and Acta Materialia Executive Secretary
- **George T. "Rusty" Gray III**, Los Alamos National Laboratory and Acta Materialia Chair & Treasurer
- **Brian Thomas**, University of Illinois and Brimacombe Prize Committee
- **Michele V. Manuel**, University of Florida and 2014 Early Career Faculty Fellow
- **Brajendra Mishra**, Worcester Polytechnic Institute, 2006 TMS President, and 2016 TMS Fellow
- **Marc Meyers**, University of California, 2011 TMS Fellow and 2015 Morris Cohen Award recipient

2017 Award Recipients

SOCIETY AWARDS

TMS Fellow Award – Class of 2017

Long-Qing Chen
*Distinguished Professor,
Pennsylvania State
University*

Ke Lu
*Director, Institute of Metal
Research*

Gary Was
*Professor, University of
Michigan*

Yuntian Zhu
*Distinguished Professor,
North Carolina State
University*

Brimacombe Medalist – Class of 2017

Matthew Barnett
*Research Fellow, Deakin
University*

Eric Brown
*Explosive Science and
Shock Physics Division
Leader, Los Alamos National
Laboratory*

Amit Misra
*Professor and Department
Chair, University of Michigan*

Yue Qi
*Associate Professor,
Michigan State University*

Gregory Thompson
*Professor, University of
Alabama*

Application to Practice Award

Sanjay Sampath
*Distinguished Professor and
Director, State University of
New York*

Robert Wagstaff
*Director and Global Team
Leader, Novelis Corporation*

Bruce Chalmers Award

S. Lee Semiatin
*Senior Scientist, U.S. Air
Force Research Laboratory*

Morris Cohen Award

Robert Ritchie
*Professor, University of
California, Berkeley*

Early Career Faculty Fellow Award

Kristin Persson
*Staff Scientist, Lawrence
Berkeley National Laboratory*

Guihua Yu
*Assistant Professor,
University of Texas*

Educator Award

Ramana Reddy
*Professor, University of
Alabama*

William Hume-Rothery Award

George Smith
*Professor of Materials
Science, University of Oxford*

Institute of Metals Lecturer/ Robert Franklin Mehl Award

Steven Zinkle
*Governors Chair Professor,
University of Tennessee*

Leadership Award

John Allison
*Professor, University of
Michigan*

Alexander Scott Distinguished Service Award

James Foley
*Scientist, Los Alamos
National Laboratory*

Cyril Stanley Smith Award

Stephen Foiles
*Distinguished Member of
Technical Staff, Sandia
National Laboratories*

Ellen Swallow Richards Diversity Award

Lorna Gibson
*Professor, Massachusetts
Institute of Technology*

Frank Crossley Diversity Award

Lawrence Crosby
*Ph.D. Candidate,
Northwestern University*

AIME AWARDS

AIME Honorary Membership

Reza Abbaschian
*Dean of Bourns College of
Engineering, University of
California, Riverside*

Rohit Trivedi
*Professor Emeritus, Iowa
State University*

TMS/SME/AIME James Douglas Gold Medal

William F. Riggs
*Retired, Mentors
International Inc.*

AIME Robert Lansing Hardy Award

Corinne Packard
*Assistant Professor,
Colorado School of Mines*

AIME Champion H. Mathewson Award

Joseph D. Robson
*Professor of Metallurgy,
University of Manchester*

AIME Henry DeWitt Smith Scholarship

Alexandra Anderson
*Student, Colorado School of
Mines*

Lizeth Nayibe Ortiz Reyes
*Student, University of
Wisconsin*

OTHER AWARDS

Acta Materialia Gold Medal Award

John J. Jonas
*Henry Birks Professor
Emeritus, McGill University*

Acta Materialia Silver Medal Award

Jingyang Wang
*Professor and Deputy
Head, Shenyang National
Laboratory for Materials
Science*

Acta Materialia Holloman Materials & Society Award

Warren Poole
*Department Head, University
of British Columbia*

Brimacombe Prize

Robertus Boom
*Professor, Delft University of
Technology*

EXTRACTION & PROCESSING DIVISION (EPD) AWARDS

Distinguished Lecturer Award

Corby Anderson
*Harrison Western Professor,
Colorado School of Mines*

2017 Award Recipients

Distinguished Service Award

Shijie Wang

Principal Advisor, Rio Tinto Kennecott Utah Copper Corporation

Pyrometallurgy Best Paper Award

Joalet Steenkamp

Chief Engineer, MINTEK

Jacobus Johannes Sutherland

Transalloys Pty Ltd.,

Derek Hayman

Chief Technician, MINTEK

Jacques Muller

Consulting Process Engineer, Algoness Pty Ltd.

Science Award

Micro Wegener

Sales Director Europe, SOPAT GmbH

Luckman Muhmood

Associate Professor, KJ Somaiya College of Engineering

Shouyi Sun

Research Program Leader, CSIRO Process Science and Engineering

Alexandre Deev

Principal Research Scientist, CSIRO Process Science and Engineering

Technology Award

Mark Taylor

Professor, University of Auckland

John J.J. Chen

Professor, University of Auckland

Nagy El-Kaddah Award for Best Paper in MHD Material Processing

Bo Wang

Student, University of the Chinese Academy of Science

Xiaodong Wang

Professor, University of Chinese Academy of Science

Jacqueline Etay

Senior Researcher, SIMAP EMP

Xianzhao Na

Professor, Central Iron and Steel Research Institute

Xinde Zhang

Master, Central Iron and Steel Research Institute

Yves Fautrelle

Professor, Grenoble Institute of Technology

FUNCTIONAL MATERIALS DIVISION (FMD) AWARDS

Distinguished Scientist/Engineer Award

Sinn-wen Chen

Professor, National Tsing Hua University

John Bardeen Award

Carol Handwerker

Professor of Materials Engineering, Purdue University

LIGHT METALS DIVISION (LMD) AWARDS

Light Metals Award

Bradley Hogan

Principal Process Engineer, WorleyParsons

Andrew Furlong

Principal Process Engineer, WorleyParsons

Distinguished Service Award

Wilhelmus Sillekens

Project Manager, European Space Agency

Energy Best Paper Award - Professional

Tao Wang

Metallurgical Engineer, Nucor Steel

Rama Mahapatra

Chief Metallurgist, Castrip LLC

Walter Blejde

Director of Technology, Castrip LLC

Energy Best Paper Award - Student

Caryn Havlovick

Graduate Teaching Assistant, Idaho State University

Chaston Ellis

Research Intern, Idaho National Laboratory

Donna Post Guillen

Distinguished Research Engineer, Idaho National Laboratory

Kevin Feris

Professor, Boise State University

Erik Coats

Professor and Director of Engineering Management Program, University of Idaho

Armando McDonald

Professor, University of Idaho

JOM Best Paper Award

Grant J. McIntosh

Research Fellow, University of Auckland

Gordon E.K. Agbenyegah

Student, University of Auckland

Margaret M. Hyland

Associate Director, University of Auckland

James B. Metson

Associate Director, University of Auckland

Light Metals Subject Award - Aluminum Alloys

Dimitry G. Sediako

Canadian Nuclear Laboratories

Wojciech Kasprzak

CanmetMATERIALS

Frank Czerwinski

CanmetMATERIALS

Ahmed M. Nabawy

Canadian Nuclear Laboratories

Amir R. Farkoosh

Postdoc Fellow, McGill University

Light Metals Subject Award - Aluminum Reduction Technology

Nick Depree

Senior Project Engineer, University of Auckland

Roman Duessel

Reduction Dept. Manager, TRIMET Aluminium SE

2017 Award Recipients

Pretesh Patel

Business Development
Manager, University of
Auckland

Till Reek

Potroom Manager, TRIMET
Aluminium SE

**Light Metals Subject Award
- Electrode Technology for
Aluminum Production****Wojciech Gebarowski**

Norwegian University of
Science and Technology

Camilla Sommerseth

SINTEF

Arne Petter Ratvik

Senior Scientist, SINTEF

Espen Sandnes

Associate Professor,
Norwegian University of
Science and Technology

Lorentz Petter Lossius

Principal Engineer, Hydro
Aluminium AS

Hogne Linga

Manager, Carbon R&D,
Hydro Aluminium AS

Ann Mari Svensson

Professor, Norwegian
University of Science and
Technology

**LMD/EPD Subject Award -
Recycling****Gisele Azimi**

Assistant Professor,
University of Toronto

Mugdha Walawalkar

Solutions Consultant, SAP
Ariba

Connie K. Nichol

Research Scientist, Agrium
Inc.

**Light Metals Subject
Award - Warren Peterson
Cast Shop for Aluminum
Production****Michael Powell**

Industrial Engineer,
Southwire Company LLC

Kiran Manchiraju

Director R&D, Southwire
Company LLC

Qingyou Han

Professor, Purdue University

**Magnesium Technology
Award - Application****Sindo Kou**

Professor, University of
Wisconsin-Madison

Tao Yuan

Ph.D. Student, Beijing
University of Technology

Xiao Chai

Metallurgy Scientist, Novelis
Global Research and
Technology Center

**Magnesium Technology
Award -Fundamental
Research****Jan Bohlen**

Scientist, Helmholtz-Zentrum
Geesthacht

Oliver Schlung

Helmholtz-Zentrum
Geesthacht

Sven Gall

Professor, Technische
Universität Berlin

Sören Müller

Head of Research Extrusion,
Technische Universität Berlin

Dietmar Letzig

Head of Department,
Helmholtz-Zentrum
Geesthacht

**Magnesium Technology
Award - Student Paper****Ellen Solomon**

Student, University of
Michigan

Emmanuelle Marquis

Associate Professor,
University of Michigan

**Magnesium Technology
Award - Poster****Chaitanya Paramatmuni**

Research Scholar, Indian
Institute of Technology,
Madras

Anand Kanjarla

Assistant Professor, Indian
Institute of Technology,
Madras

**MATERIALS
PROCESSING &
MANUFACTURING
DIVISION (MPMD)
AWARDS****Distinguished Service
Award****Mark Stoudt**

Materials Research
Engineer, National Institute
of Standards and Technology

**Distinguished Scientist/
Engineer Award****Neville Moody**

Retired, Sandia National
Laboratories

**STRUCTURAL
MATERIALS
DIVISION (SMD)
AWARDS****Distinguished Scientist/
Engineer Award****Somnath Ghosh**

Professor, Johns Hopkins
University

JOM Best Paper Award**Amirhossein
Khalajhedayati**

University of California, Irvine

Timothy J. Rupert

Assistant Professor,
University of California, Irvine

**YOUNG
PROFESSIONAL
AWARDS****EPD Young Leaders
Professional Development
Awards****Yousef Mohassab**

Research Associate,
University of Utah

Huayi Yin

Postdoctoral Associate,
Massachusetts Institute of
Technology

**FMD Young Leaders
Professional Development
Award****Fadi Abdeljawad**

Senior Member of Technical
Staff, Sandia National
Laboratories

2017 Award Recipients

LMD Young Leaders Professional Development Awards

Wenjun Cai
Assistant Professor,
University of South Florida

Yi Eva Wang
Materials Scientist, Novelis
Inc.

MPMD Young Leaders Professional Development Awards

Verena Maier-Kiener
Group Leader, Erich-Schmid-
Institute, Austrian Academy
of Sciences

Siddhartha Pathak
Assistant Professor,
University of Nevada

SMD Young Leaders Professional Development Awards

Joshua Kacher
Assistant Professor, Georgia
Institute of Technology

C. Robert Maass
Assistant Professor,
University of Illinois at
Urbana-Champaign

TMS/FEMS Young Leaders International Scholar

Mohsen Asle Zaeem
Assistant Professor, Missouri
University of Science and
Technology

TMS/JIM Young Leaders International Scholar

Kinga Unocic
Research Staff Scientist,
Oak Ridge National
Laboratory

JIM Young Leaders International Scholar

Daisuke Ando
Assistant Professor, Tohoku
University

STUDENT AWARDS

EPD Scholarship

Ellie Avyette Somerville
Student, University of Utah

FMD Gilbert Chin Scholarship

Emily Foley
Student, University of Illinois
at Urbana-Champaign

Kaufman CALPHAD Scholarship

Zach Jensen
Student, University of
Wisconsin-Madison

LMD Scholarship

Michael Cain
Student, Queen's University
at Kingston

MPMD Scholarships

Joseph Lee Ogea Jr.
Student, Virginia Polytechnic
Institute and State University

Nisrit Pandey
Student, University of
Wisconsin

SMD Scholarships

Danish Dhamani
Student, Drexel University

Jonathan Healy
Student, Case Western
Reserve University

TMS Best Paper Contest – Graduate Division

First Place

Gian Song
Student, University of
Tennessee

Second Place

Kazi Tasneem
Student, Vanderbilt University

TMS Best Paper Contest – Undergraduate Division

First Place

Shelly Jorgensen
Student, University of
Nebraska

2016-2017 TMS BOARD OF DIRECTORS

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Primary Products, Alcoa Inc.

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NEW RESOURCES FOR YOUR BOOKSHELF:

TMS 2017

146th Annual Meeting & Exhibition

ANNUAL MEETING PROCEEDINGS

TMS 2017 Annual Meeting & Exhibition attendees in all registration classes receive free online access to the complete collection of proceedings publications. Complimentary proceedings content must be downloaded before March 31, 2017, at which time standard pricing will take effect. For details on how to access the proceedings publications, see the instructions attached to your registration badge.

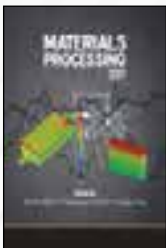
INDIVIDUAL VOLUMES FOR PURCHASE

TMS members receive a 20% discount off hard copies of the following volumes, which are available for purchase at the Springer booth, located in the TMS2017 Registration Area at the San Diego Convention Center.

- *8th International Symposium on High-Temperature Metallurgical Processing*
- *Characterization of Minerals, Metals, and Materials 2017*
- *Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: A Symposium in Honor of Professor Ramana G. Reddy*
- *Energy Materials 2017*
- *Energy Technology 2017: Carbon Dioxide Management and Other Technologies*
- *Friction Stir Welding and Processing IX*
- *Light Metals 2017*
- *Magnesium Technology 2017*
- *Materials Processing Fundamentals 2017*
- *Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty*
- *Proceedings of the 3rd Pan American Materials Congress*
- *Rare Metal Technology 2017*
- *TMS 2017 Supplemental Proceedings*

For more information on TMS publications, visit www.tms.org/publications.

Join us as we celebrate a new collaboration on the TMS-Springer Book Series. Cake will be served on Tuesday, February 28, from 2:00 p.m. to 4:00 p.m. at the Springer booth, located in the registration area on the main floor of the San Diego Convention Center.



TMS 2017

146th Annual Meeting & Exhibition



31ST EXHIBITION

LOCATED IN THE SAN DIEGO CONVENTION CENTER, BALLROOM 6

EXHIBIT HOURS

Monday, February 27

2:00 p.m. to 6:30 p.m.

Exhibit Opening Reception from 5:00 p.m. to 6:30 p.m.

Tuesday, February 28

9:45 a.m. to 5:30 p.m.

Exhibit Hall Happy Hour from 4:30 p.m. to 5:30 p.m.

Wednesday, March 1

9:45 a.m. to 2:00 p.m.

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ENTRANCE

COMPANY DESCRIPTIONS

ABB Measurement & Analytical

Booth #1116

ABB Inc. Measurement & Analytics - Measurement Products Group designs, manufactures and markets high-performance analytical system solutions for petroleum, chemical, life sciences, academic, semiconductor, metallurgy, and remote sensing/space markets. Building on more than 40 years of experience in analytical instrumentation, ABB has established itself as a worldwide leader in inclusion and hydrogen measurements in liquid aluminum. The company offers a complete range of analytical solutions to the aluminum industry: AISCAN™ hydrogen analyzer, LiMCA inclusion analyzer, Prefil®-Footprinter melt cleanliness analyzer, PoDFA inclusion identification, and quantification analysis. ABB also offers metallographic analysis service for its customers.

AdValue Technology LLC

Booth #1217

AdValue Technology specializes in areas of Alumina, Fused Quartz, Sapphire, and Zirconia. Products range from Alumina and Silicon Dioxide Powders, Crucibles, Tubes & Rods, Plates & Discs, Sample Pans, UV Cuvettes, Quartz Wool, Ceramic Membranes, and Cerium Polishing Powders. We strive to be your valuable partner in Material Science!

Advanced Dynamics Corp., Ltd.

Booth #1105

For over almost five decades, Advanced Dynamics (ADCL) has supplied our global customer base with state-of-the-art material handling systems for carbon plants and cast houses. Our handling technology includes fully automated or semi-automated equipment for aluminum and primary metals sectors. ADCL is a one-stop shop for your material handling needs including mechanical and controls engineering, fabrication, assembly, test, and commissioning. Whether you need a new system or upgrades to existing systems or simply individual pieces of equipment, we can help improve your company's productivity. Remember "When it's critical to your operations, it's an Advanced Dynamics mission" when you think of ADCL for your next project.

Almex, USA

Booth #1228

Almex USA is the leading supplier of commercial and aerospace aluminum billet and slab casting technology and equipment. The company specializes in complete turnkey casthouse engineering and equipment supply. The latest Minicast product line for extruders includes furnaces, degassing systems, DC casting machines, billet casting systems, and automated process control. Almex is engaged in equipment and processes involving green technology for efficient recycling of aluminum alloys. Almex's process technology and equipment are in use at more than 30 plants around the world.

ALTEK, LLC

Booth #1109

ALTEK is a technology-based company with specialist expertise and experience in the design, manufacture, and installation of aluminium dross and scrap processing systems. Our engineers have, between them, over 200 years of international experience in developing and refining solutions to dross and scrap recycling. They are a unique skill resource for our worldwide customers.

AluCellTech Inc.

Booth #1211

AluCellTech provides novel technologies to upgrade existing aluminium reduction cells to save power, extend potlife and to improve current distribution and current efficiency, including: Magnetic mounted potshell cooling fins, and magnetic mounted insulation blankets to control frozen bath ledge thickness, Nickel Plating of anode rod stems to reduce clamp voltage drop, Anode Nails to reduce Stub to Carbon voltage drop and improve current distribution, Cathode Nails to reduce cathode voltage drop and improve current distribution and Thermal Imaging & Analysis to diagnose pot operating conditions, also providing thermal image training for potline operators & technicians. Please contact Will.Berends@AluCellTech.com for further information.

Aluminium International Today

Booth #1202

Aluminium International Today is the Aluminium Industry's leading international publication reporting on aluminium production and processing worldwide. Founded in 1989, the journal has consistently provided a wealth of technical features aimed at equipping producers and processors with information on latest developments. Added to this is a regular digest of industry news, contracts, events, new technology, product reviews, and conference reports. Supported by the Aluminium Federation in the UK, Aluminium International Today publishes six times a year in English plus one Russian issue and supplements in Chinese. Aluminium International Today is a subscription magazine. For additional information visit www.aluminiumtoday.com Contact: Aluminium International Today Quartz Business Media, Quartz House, 20 Clarendon Road, Redhill, Surrey RH1 1QX, UK. Tel +44 (0)1737 855000 Fax +44 (0)1737 855034 e-mail aluminium@quartzltd.com web www.aluminiumtoday.com

COMPANY DESCRIPTIONS

Aluminium Times

Booth #1019

Aluminium Times was launched in 1998 with the objective to promote equipment, consumables and products to managers and operators involved in purchase decisions and employed with aluminium primary or secondary producers, rolling mills, forgers or extruders anywhere in the world. The magazine is sent to them free of charge. Since the journal was founded there have been three surveys undertaken to determine reader's requirements of an international magazine serving the aluminium industry. With 5,300 copies posted every issue, the 2013 reader survey suggests that on average 4 readers see each copy of Aluminium Times. 84% become aware of new products through Aluminium Times whilst 17% have purchased products after first reading it in Aluminium Times. Aluminium Times is published five times a year and features during the year aluminium industry maps and directories covering the sectors of rolling, extrusion, primary and secondary production. Our Booth will feature copies of our latest issues.

Anton Paar USA

Booth #1000

TriTec, formerly CSM Instruments and now part of Anton Paar, offers a wide range of instruments and testing services for surface mechanical properties characterization, including: Hardness Testers, Scratch Testers & Tribometers. 3D-imaging options are available with the ConScan or AFM objective. CSM manufactures standalone instruments and testing modules that can be combined together on an automated platform.

Bloom Engineering Company, Inc.

Booth #1113

Bloom Engineering has developed a reputation for quality industrial burners and combustion systems. Our professional staff and years of experience have been the cornerstone of our business. Bloom's products can be used for a variety of applications and can be operated with a wide array of fuels and capacity ranges. The industrial burners operate with Low to Ultra Low NOx emissions. Bloom Engineering prides itself on having in-depth knowledge of the various heating applications in which its equipment is used. Bloom's customizable product line, extensive installation list, R&D capability, and on-site field service experience, allows Bloom the ability to provide the best possible solution for each unique situation.

Bruker Nano

Booth #1007

Bruker's Nano Surfaces Division recently released a nanoscale scratch option for its NanoForce Nanomechanical Testing System. The new option brings the industry-leading low-noise floor, precision, and stability of the NanoForce to controlled lateral displacement between tip and sample during nanoindentation. This significantly expands the platform's capabilities to characterize the resistance of thin films and coatings to scratching, cracking, chipping, scuffing, and delamination, without compromising its ability to accurately investigate the uniformity of mechanical properties via instrumented indentation tests on nanoscale surfaces and structures over large sample areas.

California Nanotechnologies

Booth #1209

California Nanotechnologies is an industry leader in Spark Plasma Sintering, an advanced consolidation technique for every type of material, and Cryogenic Milling, used for particle reduction as well as grain refinement. As the exclusive technical and training partner of FUJI-SPS, inventor of SPS technology, we offer R&D and production toll services, training and maintenance of SPS machines.

Carl Zeiss Microscopy, LLC

Booth #1201

Throughout the world, ZEISS stands for the highest quality and reliability. Carl Zeiss Microscopy is part of the Carl Zeiss group, a leading organization of companies operating worldwide in the optical and optoelectronic industry. As the world's only manufacturer of light, X-ray and electron/ion microscopes, Carl Zeiss Microscopy offers tailor-made systems for industry, materials research and academia. A dedicated and well-trained sales force, an extensive support infrastructure and a responsive service team enable customers to use their ZEISS microscope systems to their full potential.

Claudius Peters

Booth #1121

Since its founding in 1906, Claudius Peters has become one of the world's most respected engineering houses and an innovative world leader. Its German engineering excellence continues to set benchmarks for the design, manufacture and commissioning of materials handling and processing systems for the gypsum, cement, coal, alumina, steel, and other bulk-handling industries. From conception and installation through to commissioning and after-sales support, Claudius Peters provides world-class service to the world's biggest bulk materials producers. The Claudius Peters Group GmbH is headquartered in Buxtehude near Hamburg, Germany, with regional offices in the Americas, Asia and Europe.

COMPANY DESCRIPTIONS

CompuTherm LLC

Booth #1102

CompuTherm LLC, established in 1996, develops CALPHAD modeling tools in the framework of ICME. A key feature of the newly released Pandat2017 is the high-throughput calculation through which thousands of calculations can be performed by a simple setting and alloys with user-defined optimum properties can be mined from the calculated results. Pandat Demo version can be downloaded from <http://www.compuTherm.com>. Live binary phase diagrams are available at iPandat (<http://ipandat.compuTherm.com>).

CRC Press/Taylor & Francis

Booth #1023

Take your research skills to the next level with CRC Press, Taylor & Francis Group leading publisher of technical references and textbooks in Materials Science. Visit our Booth for the latest and bestselling books in Polymers, Ceramics, Metals, Composites, Biomaterials, Electronic Materials, and Nanomaterials. Receive 15-25% off an authoritative range of titles and 50% on conference specials. Review our journal selections and pick up complimentary sample copies. Talk to us about being a CRC Press Author! Visit our Booth for the latest and bestselling books in Materials Science.

De Gruyter



Booth #1204

De Gruyter publishes first-class scholarship and has done so for more than 260 years. The De Gruyter Group publishes over 1,300 new titles each year in the humanities, social sciences, medicine, natural sciences, and law, more than 750 journals, and a variety of digital media. Due to distribution agreements De Gruyter provides all Columbia University Press, Cornell University Press, Harvard University Press, Penn Press, Princeton University, Toronto University Press and Yale University Press eBooks.

EBSA Analytical

Booth #1142

EBSA Analytical provides advanced materials characterization services using EBSD/EDS/SEM techniques. We specialize in providing texture, grain size, ODF, grain boundary analysis, and phase ID including elemental composition. We also can provide strain analysis using Cross Court software and high resolution EBSD patterns. With over 20 years' experience in EBSD and EDS, we have analyzed many thousands of different sample types. We guarantee our results will exceed your expectations as we work with you to solve your materials problems.

3 conferences - 3 short courses


ALTA 2017 is the 22nd year of one of the world's premier annual metallurgical events. The conference is an annual gathering of the global Nickel, Cobalt, Copper, Uranium-REE and Gold-PM industries and attracts delegates from 20+ countries. ALTA conferences are renowned for highly-focused, innovative programs, including topical forums and panel discussions. The technical program includes 70+ presentations by key international speakers.


PROGRAM OVERVIEW							
Saturday 20 May	Sunday 21 May	Monday 22 May	Tuesday 23 May	Wednesday 24 May	Thursday 25 May	Friday 26 May	Saturday 27 May
Short Course	Short Course	Conference Sessions					Short Course
Treatment of Nickel-Cobalt Laterites	Copper SX/EW Basic Principles & Detailed Plant Design	Nickel-Cobalt-Copper Including Pressure Acid Leaching Forum & Panel		Uranium-REE Including Lixim Processing Forum & Panel <i>in parallel with</i> Gold-PM Including Cyanide Alternatives/Alternative Forum & Panel		Heap Leaching and its Application to Copper, Gold, Uranium & Nickel Ores	
		Welcomes Reception	Conference Dinner		Happy Hour		
Exhibition							


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COMPANY DESCRIPTIONS

EDAX Inc. Booth #1129

EDAX is a leading provider of innovative materials characterization systems encompassing Energy Dispersive Spectrometry (EDS), Wavelength Dispersive Spectrometry (WDS), Electron Backscatter Diffraction (EBSD), and Micro X-ray Fluorescence (XRF). The company designs, manufactures, distributes, and services hardware and software solutions for a broad range of industries, educational institutions and research organizations.

Elsevier Booth #1010

Explore Elsevier's high-impact Materials Science content. Our books explore elements of applied physics and chemistry, as well as chemical, mechanical, civil, and electrical engineering and Elsevier's material science books cover seven major sub-disciplines: Energy & Power, Metals & Alloys, Ceramics, Composite Material Science, Polymer Science & Biomaterials, Interdisciplinary Materials Science, and Structural Materials. Lead the way exploring the latest in research news from journals such as Materials Today. Discover our highly regarded electronic research and solution tools via ScienceDirect!

EMC Booth #1120

Energoprom Group Booth #1037

Energoprom Group is the leading manufacturer of electrode, cathode, graphite and carbon-based products in Russia. • We are one of the top 5 global producers of carbon and graphite • We supply our products to silicon, steel, aluminum, chemical, nuclear, aerospace and electronics industries. • Our sales network covers more than 60 countries around the world. • Our main focus is on expanding product portfolio and customer's satisfaction. • Our R&D Center develops new products, such as isostatic graphite, anode materials for lithium-ion batteries, new types of composite materials for electric transport, large-sized items made of silicified graphite.

Eutectix, LLC Booth #1008

Eutectix, LLC is a metal and metal alloy manufacturing company with plants in Troy, MI and Tolleson, AZ. It supplies Eutectix™ rare earth element (REE) alloy and Co-based master alloy powders for manufacturing sintered magnets, superalloy rods, hydrogen storage alloy powders and various master alloy products (Ca-Ni, Mg-Ni, La-Ni, Hf-Ni, etc.) primarily for superalloy production. Recently, Eutectix has been named by Materion Performance Alloys and Composites as its manufacturer of crystalline alloys for bulk metallic glass (BMG) products. Since the TMS show highlights BMG R&D, the Booth will focus on the Eutectix-Materion relationship and provide an exposure to BMG microstructure as modeled by

REE magnet bars connecting clusters of spheres. The Booth will also feature a Eutectix "guess the alloy" contest.

FEI Booth #1110

FEI is showcasing the popular Avizo® 3D visualization and analysis software application for materials research and development. From state-of-the art visualization to advanced image processing, quantification, analysis, and reporting, Avizo provides a comprehensive, multimodal digital lab for characterizing materials' structures, properties, and performance, in a wide range of applications (metals and alloys, ceramics, composites and polymers, semiconductors, food, and more).

Fives Booth #1100

Fives designs and supplies process equipment and manages complete installations in the 3 key sectors of aluminium: - Reduction: Gas Treatment Centers, ECL Pot Tending Machines and Pot Equipment. - Carbon: High Capacity Green Anode Plants including Carbon Butts Processing and Pitch Fume Treatment, Pitch storage and processing, Firing Systems & Fume Treatment Centers for anode baking furnaces, ECL Furnace Tending Assemblies, Anode Handling & Storage, Bath Processing Units and Anode Rodding Shops - Casthouse: Melting & Holding furnaces including water cooling systems. Fives also proposes EPC solutions for secondary aluminium plants.

Fritsch Milling and Sizing Booth #1141

Fritsch is an internationally respected German manufacturer of application-oriented laboratory instruments. Our instruments are used worldwide for particle size reduction, sample preparation, materials science, product development, and particle analysis for fast paced industrial process monitoring and critical applications in QA, QC, and R&D. Particle sizes from nano range on up. FRITSCH, founded 1920 as an independent family business. Today 80+ employees work in the headquarters with subsidiaries in Russia, France, Singapore, China, USA. Our core competence is the innovative development and production of premium instruments. We are familiar with challenges and offer constructive solutions across industries. FRITSCH offer the highest dependability, innovative technology, and simplest operation. We insist on quality (CE/DIN EN ISO 9001) without compromise and extensive service. Service offers individual and competent consultation, technical support, installation, maintenance, and repair.

COMPANY DESCRIPTIONS

Gillespie & Powers, Inc. **Booth #1004**

Gillespie & Powers, Inc. has over 75 years of experience in the design, supply, and installation of furnace equipment for the non-ferrous melting industries. Our special expertise in the furnishing of melting and holding equipment is the total quantitative approach to all phases of the design. We work closely with our clients to design the equipment that will work for their long-term goals without compromising flexibility in their process. We can offer custom solutions found nowhere else in the industry. Gillespie & Powers is a safety oriented company. Our EMR rating is .062. Safety first ALWAYS.

GLAMA Maschinenbau GmbH **Booth #1101**

GLAMA has designed and built heavy-duty Equipment for Aluminium pot rooms, cast houses and anode rodding shops throughout the world for more than 50 years. The following type of equipment is available: - Anode Changing Vehicles - Anode Pallet Transporters - Butt Cleaning Manipulators - Coil Lift Trucks - Furnace Charging Machines - Furnace Tending Machines - Hammer Crustbreakers - Ladle Charging Trucks - Molten Metal Carriers - Tapping Trucks GLAMA's experience of many years of producing machines with a unique combination of advanced control and rugged, reliable construction is evident in the several hundred machines now in service. GLAMA equipment withstands the heat, dust, vibration and battering of heavy industry while delivering precise handling performance. More details: www.glama.de

GNA alutech **Booth #1107**

GNA specialises in the design and construction of furnaces, machinery and process control systems for the aluminium industries. The company's product line includes cathode sealing equipment, melting and holding furnaces, heat treatment furnaces, homogenising furnaces, annealing furnaces and associated machinery. Its high-performance melting and holding furnaces are in operation around the world. GNA provides complete furnaces and machinery for aluminium billet casting and homogenising systems. GNA has sales offices in Canada, Brazil and Taiwan and has been serving the world's aluminium industries for more than 30 years.

Goodfellow Corporation **Booth #1140**

Goodfellow supplies small quantities of metals, alloys, ceramics, and polymers to meet the research, development, and specialist product requirements of science industry worldwide. The company offers two distinct services: The first meets the needs of those customers who require small quantities of our standard catalog products for immediate shipment. The second is for those who require larger quantities or further processing of the company's standard products, or who need products, which fall within our general supply

capabilities. Our web catalog lists a comprehensive range of materials in many forms including rods, wires, tubes, and foils. There is no minimum order quantity and items are in stock ready for immediate shipment worldwide with no extra shipping charge. Custom made items are available to special order.

Gouda Refractories **Booth #1200**

Gouda Refractories is an innovative refractory producer (refractory bricks, castables, mortar, self-flowing castables, complex pre-cast shapes) with global experience and a long track record of supplying superior quality refractories all over the world for more than 100 years. Gouda Refractories develops, manufactures, sells top quality refractory linings. Gouda's solutions play an important role in, non-ferrous metal (mainly aluminium), petrochemical, environmental, and energy industries. Based on an industry-oriented structure and highly competent employees, Gouda Refractories guarantees an optimal support which results in efficiency and reduction of refractory cost. Gouda Refractories supplies total solutions to customers which are cost effective, state of the art, and reliable. Gouda's R&D department is conducted in close co-operation with its customers and renowned research institutes. Gouda's quality assurance is based on the international ISO 9001 standard.

Granta Design **Booth #1125**

Granta will demonstrate its software and resources for materials education, research, and product development, and run a hands-on workshop on 'Interactive Materials Data Visualization and Selection Tools for Research and Teaching' at the TMS Annual Meeting. We are a hub for communication, information and inspiration – our Education Division supports thousands of university educators worldwide with resources to teach materials or related topics across engineering, science, and design. Granta helps to organize the Materials Education Symposia, global events for materials educators. As the materials information technology experts, Granta also helps hundreds of industrial enterprises to manage materials information and make better materials decisions.

Haarslev Industries Press Technology GmbH & Co. KG **Booth #1118**

Haarslev Industries Press Technology, Service and Sales of Wear and Spare Parts Components for Anode Paste Mixers for the Aluminum Industry. Haarslev Industries Press Technology is a manufacturer of high-class equipment and spare parts for various industries with wear-intensive products and therefore the leading expert for various surface protection methods and wear protection materials. We are certified according to DIN ISO 9001 and our internal processes guarantee that we supply stable, high-quality products in accord with international norms

and regulations. The high requirements for special wear-protected surfaces for the production of anode paste were the driving force of Haarslev Industries to further develop existing wear protection materials and application methods to extend life time and reduce production costs. All of our wear and spare parts for the Aluminium Industry are manufactured in Germany in our own manufacturing facilities to guarantee a high quality level and a long life time.

Hycast AS

Booth #1225

Hycast is now celebrating 25 years of operation and innovation. Hycast was established in 1990 by Hydro Aluminium as a spin off from Hydro R&D. Hycast provides One Stop Shop for complete casthouse solutions for competitive processes and quality end-products: RAM – Removal of Alkaline Metals; SIR – Inline Melt Refining; Hycast Launder Systems and Rod Feeders; CMV – Casting Machine Vertical for extrusion ingot and sheet ingot casting; GC – Gas Cushion extrusion ingot technology; LPC – Low Pressure Casting extrusion ingot technology; AFM – Adjustable Flexible Moulds sheet ingot technology; FM – Flexible Moulds sheet ingot technology; CCS – Casting Control Systems, automation and human/machine interface; and Hycast Services, Knowledge and Competence. Most of the Hycast products have been captive during the last two and half decades. Hycast supports customers to constantly achieve better quality at lower operation cost and thereby increases the competitiveness of its customers.

Hysitron

Booth #1122

As the world leader in nanomechanical testing, Hysitron® is dedicated to the development of next-generation testing solutions for nanoscale materials characterization. Hysitron's comprehensive nanomechanical testing suite of in-situ techniques (including TEM/SEM Nanomechanics, heating/cooling, nanoDMA®, and nanoECR®) and modular instrument platforms will keep you at the forefront of technology. Stop by our Booth to learn about our exciting new developments and for in-depth discussions with our application specialists about our latest nanomechanical testing solutions.

innovatherm GmbH + Co., KG

Booth #1128

innovatherm GmbH +Co KG, Butzbach / Germany is an engineering company specialised in optimization of thermal processes. innovatherm offers a comprehensive range of products and services including consulting, process analysis, engineering, process optimisation, supervision of installation, commissioning, and maintenance. The company possesses versatile know-how, experience and innovative technologies for improvement of customers' production facilities. The highly qualified staff are mainly engineers who have, in addition to their detailed knowledge of automation and computer systems,

special knowledge in treatment and optimization of thermal processes. innovatherm also provides a wide range of products in the field of process technology and process automation, such as the ProBake firing and control system for anode/cathode baking furnaces in the primary aluminium industry, ProClean fume treatment plants for anode baking furnaces, and ProCast process control systems for cast houses.

International ALUMINIUM Journal

Booth #1146

International ALUMINIUM Journal deals with all facets of aluminium's value chain from the production of the metal via its processing through to recycling. The editorial focus is on smelting and semis production including the suppliers of plant, equipment and technology. Consideration is given to economic, technical and environmental/ecological topics as well as other aspects that affect the metal and its product applications in the different target markets. Aluminium relevant research articles from companies and institutes are also published. The publication is thus of particular interest to smelters and remelters, semis producers, foundries, fabricators and converters, metal traders, semis stock holders and research facilities. International ALUMINIUM Journal is circulated in over 40 countries worldwide – made in Germany, distributed to the world. Articles that are of global interest are published in English or bilingually (German and English).

IOP Publishing

Booth #1002

IOP Publishing provides a range of journals, books, websites, magazines, conference proceedings and services through which leading-edge scientific research is distributed worldwide. IOP Publishing is central to the Institute of Physics, a not-for-profit society. Any financial surplus earned by IOP Publishing goes to support science through the Institute's activities.

COMPANY DESCRIPTIONS

Laboratorio Elettrofisico Walker

LDJ Scientific

Booth #1143

Laboratorio Elettrofisico is a global company that specializes in engineering, designing, and manufacturing the world's most precise magnetizing and magnetic measuring equipment. Founded in 1959, the company is headquartered in the Nerviano area of Milan, Italy. In addition to design and manufacturing operations in Italy and the United States, LE has laboratories, testing facilities, support staff, and services centers in the United States, China, and India.

Light Metal Age

Booth #1003

Light Metal Age (LMA) is the pre-eminent magazine of the light metal world. LMA covers the technology of primary production and semi-fabrication of the light metals. Aluminum is the largest of the light metal markets and that is where LMA concentrates its attention, starting at the smelter and the entire primary production process and moving with the metal to include all semi-fabricating processes, such as extrusion, rolling, and also remelt, basically LMA covers the technology of aluminum processing. Circulation is international and goes to primary and secondary smelters; casthouses; extrusion operations; rolling mills; sheet, rod, and wire mills; and foundries. Some editorial topics include: potline technology, direct chill casting, secondary production, casthouse metal quality, furnaces and melting, filtration, extrusion and handling, automation and process control, surface technologies (such as anodizing), rolling mill technology, and markets for aluminum, such as automotive.

Maschinenfabrik Gustav Eirich

GmbH & Co KG

Booth #1224

Maschinenfabrik Gustav Eirich is a leading German supplier of industrial material processing solutions. For the carbon sector we offer paste preparation equipment for the production of prebake anodes, Soederberg, graphite electrodes, cathodes, metallurgy and carbon & graphite specialties. Our key products are the continuously operated EIRICH Mixing Cascade (EMC®) and the EIRICH Intensive Remixer-Cooler for anode paste preparation as well as the batchwise operated EIRICH integrated preparation system for various applications in the carbon sector. Up to now, EIRICH has delivered more than 220 continuously operated machines to the carbon industry worldwide.

Mecfor Inc.

Booth #1212

Mecfor specializes in the design and manufacturing of specialised equipment used in all sectors of the aluminium industry. We work with you to understand what you need; then we make it. The acquisition of the Brochot IPs' for the Aluminium and Magnesium division complements Mecfor's offer and expertise. Consolidating its leading position of equipment designer and manufacturer, Mecfor maintains its strong offer in vehicles, stationary, and custom designed equipment. All Mecfor equipment take into account the harsh working environment. Our trademark: sturdy, reliable and safe equipment. Mecfor delivers on time and supports its products worldwide. Over the years, Mecfor has developed valuable skills. Products: AGV, LTV, Haulers, Casthouse Solution (QuickConnect), BTM, ASCM, Ecumax, Descaling Arm, Pot Ramming Machine, Anode rodding shop and handling, Ingot casting and stacking line. Discover our proven technologies at: www.mecfor.com. Come to discuss with us, Booth No. 1212.

Mechatherm International Ltd

Booth #1144

Established in 1973, Mechatherm International Ltd. is a world leading company of industrial engineering experts specializing in the design, supply and commissioning of furnaces and casthouse equipment for the aluminium industry. Operating in numerous countries across all continents and with a large portfolio of clients, Mechatherm is known for its advanced casthouse technology and competency in executing international turnkey projects. Our engineers have, between them, over 150 years' experience in developing and refining bespoke solutions to satisfy our clients' individual requirements.

Metallurgy and Materials Society of CIM

Booth #1216

We are excited to host the 7th International World Gold conference and the Nickel Cobalt conference at our Annual Conference of Metallurgist in Vancouver, Canada. We are a world class Canadian organization that serves society and the needs of professionals in the global metallurgy and materials community. The purpose of MetSoc is to serve our members, society and others involved in the research, development and application of the science and technologies for the environmentally responsible extraction, fabrication, utilization, and recycling of metals and materials.

COMPANY DESCRIPTIONS

Micro Materials LTD

Booth # 1222

Micro Materials Ltd (MML) was established in 1988 and since then has pioneered many advances nanomechanical test instrumentation. Measurements can be done at temperatures up to 850°C, in liquids and under vacuum conditions. We excel at providing platforms capable of depth sensing indentation and tribological measurements that can be done over a wide load range. Tribological techniques include scratch and wear, high strain rate nano-impact and nano-fretting. This year Micro Materials is launching an addition to our existing instrument range. The CORE range of dedicated mechanical testing platforms are designed to provide a testing solution for users requiring only a single test technique. This makes the CORE range the perfect tools for both academic teaching and industrial QA users. For more information, please contact our sales team at info@micromaterials.co.uk Tel +44 (0)1978 261615 or visit the MML website: www.micromaterials.co.uk

Microtrac

Booth #1242

Microtrac, a global pioneer of particle characterization technologies, provides the world with innovative, reliable, and repeatable instruments.

Microtrac's instruments can provide particle sizing, zeta potential, 3-D dynamic image analysis, molecular weight, surface analysis, and particle counting measurements.

Microtrac also offers contract laboratory services.

www.fritsch-us.com

Visit us at Booth #1141



Worldwide standard in industry and research

High-performance mills

Sieve Shakers

Particle Sizing Instruments

Sample Dividers



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COMPANY DESCRIPTIONS

MIPAR Image Analysis **Booth #1024**

MIPAR is a revolutionary image analysis software, capable of identifying and measuring features from nearly any image one can capture. Our users have shown it to be perhaps the most the efficient and flexible image processing software on the planet. Through five integrated applications, MIPAR offers powerful and efficient environments for the different tasks performed during 2D and 3D image analysis. We started in materials science, but realized it was so much more. Developed by scientists, it is uniquely designed to offer workflows that are well-suited to solve a variety of scientific image analysis problems. Today, MIPAR is used by companies and universities, large and small, from anything from atomic imaging to aerial photography. Other software simply cannot offer the same ease-of-use and flexibility as MIPAR's Recipe technology — it's efficient and effective. No multi-tabbed ribbon interfaces, no recording macros. Recipes just work, and we have the testimony to back it up.

MTS Systems Corp **Booth #1136**

Engineers and researchers worldwide rely on MTS to address the full spectrum of materials testing challenges—from tension/compression tests to fracture mechanics to complex multi-axial fatigue studies at elevated temperatures. With high-performance testing systems, versatile application software and precision accessories, MTS provides leading-edge technology for testing advanced metals, polymers and composites. And standard solutions and software templates optimize efficiency for many testing applications, including high-cycle fatigue, low-cycle fatigue, thermomechanical fatigue and direct current potential drop. Explore the MTS Booth and discover how innovative solutions and decades of industry expertise can enhance your test program.

nanoHUB **Booth #1111**

nanoHUB.org is the premier place for computational nanotechnology research, education, and collaboration. Our site hosts a rapidly growing collection of simulation tools for nanoscale phenomena that run in the cloud and are accessible through a web browser. In addition to simulations, nanoHUB provides online presentations, cutting-edge nanoHUB-U short courses, animations, teaching materials, and more. These resources help users learn about our simulation tools and about nanotechnology in general. A good starting page for those new to our site or to nanotechnology is <https://nanohub.org/> education. Materials science content is collected here: <https://nanohub.org/groups/materials>. Our site offers researchers a venue to explore, collaborate, and publish content, as well. Much of these collaborative efforts occur via workspaces, user groups, and projects. Uncertainty Quantification (UQ) is now automatically available for most nanoHUB tools, and adds

powerful analytical and predictive capabilities for researchers.

Nanomechanics, Inc. **Booth #1104**

Our principal mission is to enable our customers to evaluate and understand the mechanical performance of their materials on micro and nano-scales. With field experts in nanomechanical testing, data acquisition, system integration and software development on our staff, we are well positioned to provide you with the most accurate results along with leading edge characterization.

Nanovea Inc. **Booth #1016**

From the Irvine, CA office Nanovea designs and manufactures 3D Non Contact Profilometers, Mechanical Testers & Tribometers to combine the most advanced testing capabilities in the industry: Indentation Hardness, Scratch Adhesion, Wear Friction & 3D Non-Contact Metrology at Nano, Micro & Macro range. Unlike other manufacturers, Nanovea also provides Laboratory Services, offering clients availability to the latest technology and optimal results through improvements in material testing standards.

NASA **Booth #1220**

NASA's Physical Sciences Informatics (PSI) data repository is the raw and analyzed data collection of physical science experiments performed on the International Space Station (ISS). The PSI system is a resource for researchers to data mine and expand upon the valuable research performed on the ISS. This envelope of experiments will take what would be a single investigator research opportunity and turn it into multi-investigator research opportunities. In essence, promoting and enabling "Open Science" to share and collaborate in new and exciting physical science experiment observation and research. <http://psi.nasa.gov>

Netsch Instruments NA LLC **Booth #1012**

Thermal analysis & thermal properties measurement instruments, calorimeters, and contract testing services; Featuring the new DSC 214 Polyma, engineered for polymer analysis from the ground up with specially-designed furnace and sensor combination for fastest heating & cooling, new Concavus crucibles and unique sample-cutting tool. New instruments for Battery Calorimetry - introducing R&D 100 Award-winning IBC 284 Isothermal Battery Calorimeter for Large Format Li-Ion Batteries with and new MMC Nexus calorimeter module for characterization of coin-cells. Top-loading TGA and STA (DSC-TGA) with no hang-down wires, optimized for ease-of-use and for coupling to FTIR, MS, and GC-MS. Also offering DMA, TMA, Dilatometers, and DEA (Dielectric Analyzer for in-situ cure monitoring). We will also feature the new LFA 467 HyperFlash Light Flash Analyzer for

COMPANY DESCRIPTIONS

measurement of thermal diffusivity and thermal conductivity.

NKM Noell GmbH **Booth #1106**

NKM Noell Special Cranes (NNSC) has built a strong technical force based on specialists who individually have up to 25 years' experience in Primary Aluminium Industry for Potroom as well as Carbon Area, being the only independent equipment supplier. For more than 40 years on the market through its constitutive companies, with more than 1,000 cranes in operation worldwide, NNSC is developing its mission for the Primary Aluminium Smelters and Nuclear plants: > To be a global supplier of handling systems, process equipment and solutions, > To integrate the client's process objectives in the design of the products through a continuous flow of mutual exchange.

Nuclear Science User Facilities **Booth #1150**

Nuclear energy is a clean and affordable energy source that reduces greenhouse gas emissions and supports a secure domestic energy portfolio. Research is needed to understand how radiation environments affect existing and proposed new reactor materials over time. Nuclear Science User Facilities merges the national nuclear research infrastructure with intellectual capital to pair the best ideas with the needed capability. NSUF provides no-cost access to specialized instrumentation and expertise to carry out experiments that could not be done in individual laboratories. Nuclear Science User Facilities and its partners represent a prototype laboratory for the future. This unique model utilizes a distributed partnership with each facility bringing exceptional capabilities to the relationship including reactors, beamlines, state-of-the-art instruments, hot cells and most importantly, expert mentors.

Outotec Ltd. **Booth #1117**

Outotec develops and provides technology solutions for the sustainable use of Earth's natural resources. As the global leader in minerals and metals processing technology, Outotec has developed several breakthrough technologies. Outotec serves the light metals industries including the provision of cutting-edge alumina refineries and aluminum smelters. Outotec has over 50 years' experience helping customers worldwide in both segments of the aluminum process to reach their goals.

P-D Refractories GmbH **Booth #1134**

P-D Refractories Group belongs to the most competitive suppliers of high-quality refractories for the primary aluminium industry - especially for open and closed anode baking furnaces and the barrier-brick lining of reduction cells. The know-how, we acquired in the aluminium industry over decades, and advanced manufacturing technologies combined with our

continuous activities to meet our customers' needs are the basis for the success of our refractory bricks in anode baking furnaces and reduction cells. Customers from all over the world rely on our well-known qualities.

Photron Inc. **Booth #1133**

Photron manufactures high speed cameras for slow motion analysis of events or phenomena that occur too fast for the eye to see or comprehend. Recording at frame rates from 60 to over one million frames per second (fps) for replay at conventional video rates of 30 fps or slower, Photron cameras are available in color or monochrome and utilize the latest CMOS sensor technology to provide unparalleled light sensitivity and image quality, regardless of the frame rate or shutter speed selected.

PolarOnyx, Inc. **Booth #1208**

PolarOnyx has developed the world's first Additive Manufacturing (AM) and Subtractive Manufacturing (SM) system (Tungsten-LAM) for refractory materials such as Tungsten. With its innovation is femtosecond fiber lasers and AM/SM processes, this machine is capable of melting materials with high melting temperatures (>4000C) and high thermal conductivities, and fabricating complex structures. Both industrial grade and research grade systems are available to meet customers' needs.

Precision Light and Air Pty Ltd **Booth #1210**

We are an instrumentation manufacturer specializing in process analysers for the minerals processing sector. Clarifier, Thickener, Washer, and CCD Mud Divers are our specialty. Our analysers are particularly suited to high-scale and high temperature applications as seen in the Alumina and Nickel Industries. Currently we have installations in 17 countries around the world with our core product "SmartDiver" and a full line-up of process analysers including: - AL-CARK Caustic Analyser - Slurry Liquor Phase Density - Refractometer AL-DCIK A/C Analyser - Slurry Steel/Ceramic - Conductivity Probe Smart Dose - Longwall Emulsion Station - Slurry Density Analysers Clarity/Suspended Solids Sensors.

Proto Manufacturing **Booth #1123**

Residual stress affects crack initiation and propagation, fatigue life, stress corrosion cracking, and distortion. For over 25 years, Proto Manufacturing has been providing both measurement services and equipment for measuring residual stress in metal components. Proto's leading edge x-ray diffraction (XRD) technology is portable, cost effective, and provides the necessary data for making informed decisions about the health of components. Tel: 1-734-946-0974 E-Mail: proto@protoxrd.com Web: <http://www.protoxrd.com>

COMPANY DESCRIPTIONS

RHI AG

Booth #1205

RHI AG - Solutions for the nonferrous industry. Our comprehensive product and service program ranges from basic and non-basic bricks and mixes, prefabricated components, slide gate plates and gas purging systems to special machinery, repair systems, and the installation of refractory products in a variety of units for the nonferrous metals industry around the world. The optimization of all processes in the nonferrous metals industry, increasing efficiency, and enhancing safety of melting plants as well as the development of optimal refractories solutions for pyrometallurgical vessels. Comprehensive knowledge of processes in combination with unique refractories applications ensure perfectly developed and implemented concepts for re-linings, Greenfield projects and the expansion of melting units. From the development of refractory quality concepts to their realization - your refractory solution by RHI.

Riedhammer GmbH

Booth #1130

Riedhammer (RH) is the leading technology supplier of industrial kilns and delivers innovative technologies for various industries. For the Carbon Industry, RH only offers complete solutions and its proven furnace technologies for baking anodes, cathodes, electrodes, and special carbon products. Today, Riedhammer gives you the perfect answer for furnace rebuilding and modernization demands, up to turn-key plants based on the most advanced technology. We combine as best your needs with our experience.

Sandia National Laboratories

Booth #1131

Sandia National Laboratories is the nation's premier science and engineering lab for national security and technology innovation, with teams of specialists focused on cutting-edge work in a broad array of areas. Some of the main reasons we love our jobs: - Challenging work with amazing impact that contributes to security, peace, and freedom worldwide - Extraordinary co-workers - Some of the best tools, equipment, and research facilities in the world - Career advancement and enrichment opportunities - Flexible schedules, generous vacations, excellent medical and other benefits, competitive 401k, learning opportunities, relocation assistance and amenities aimed at creating a solid work/life balance World-changing technologies. Life-changing careers. Learn more about Sandia at: www.sandia.gov/careers

Sente Software Ltd.

Booth #1011

Developers of JMatPro®, a powerful, extensively validated simulation software for calculating a wide range of materials properties and behavior for multi-components alloys based upon chemical composition input, with data exports to casting, forming, forging and heat treatment simulation packages. We

have a proven track record for innovation and excellence with our customers worldwide.

Southwire SCR Technologies

Booth #1005

Southwire operates continuous casting lines for both Copper and Aluminum rod and the SCR Technologies division provides equipment for continuous cast rod systems and technology. SCR aluminum systems range in capacity from 2.5 to 15 metric tons/hour of EC aluminum and alloyed aluminum rod. SCR Technologies has developed a patented state of the art ultrasonic degasser that solves multiple challenges across a spectrum of aluminum casting industries. This ultrasonic degasser marketed under the brand name Ultra-D™ degasser produces the highest quality of aluminum without the use of any corrosive chemicals. The Ultra-D degasser can be easily integrated into the die casting, foundry, continuous cast and billet casting market segments.

Springer Nature

Booth #101 Lobby

Springer Nature is one of the world's leading global research, educational and professional publishers, home to an array of respected and trusted brands providing quality content through a range of innovative products and services. Springer Nature is the world's largest academic book publisher, publisher of the world's most influential journals and a pioneer in the field of open research. The company numbers almost 13,000 staff in over 50 countries and has a turnover of approximately EUR 1.5 billion. Springer Nature was formed in 2015 through the merger of Nature Publishing Group, Palgrave Macmillan, Macmillan Education and Springer Science+Business Media. Find out more: www.springernature.com

STAS

Booth #1112

STAS Inc. is a Canadian based company specialized in the development, fabrication, and commercialisation of process equipment for the aluminium industry. STAS is a world leader in providing various equipment to improve productivity and the quality of molten aluminium. Aluminium producers that can benefit from such technologies are found throughout the spectrum of aluminium producers, ranging from primary smelter plants down to secondary smelters and including rolling mills and aluminium extruders as well. The company has been in business for more than 25 years and has clients on all continents. Most of STAS' sales activities are managed from STAS' head office in Canada, with a network of well-known agents around the globe. STAS employs more than 125 persons, including a technical team – made up of more than 70 engineers and technicians – with a broad expertise in processes and engineering.

COMPANY DESCRIPTIONS

SYKJ

Booth #1013

SYKJ (Shenyang Kejing Auto-instrument Co. Ltd) is one of three production factories of KJ Group formed by MTI Corporation. MTI Corporation has been providing a total solution for materials research labs since 1995. MTI & SYKJ supplies ceramic, crystals, metallic substrates from A-Z and nanopowder. We also provide laboratory R&D equipment including alloy melting, casting, annealing, sectioning, polishing, mixing machines, high-temperature muffle furnace and tube furnaces, pressing machines, film coaters, high vacuum systems, high-pressure furnaces, RTP furnaces, as well as compact XRD/XRF for metallographic analysis, and equipment for Materials Genome Initiative (MGI) High Throughput & Productivity.

Synton-MDP

Booth #1213

Synton-MDP is a manufacturer of diamond stylus for microtechnical instruments. Most of the diamond tips are used in metrological equipment (surface finish, profile, form, nano-indentation, hardness, scratch, and other characteristics). We specialize in small spherical diamond tips, with a high level of dimensional accuracy in ultra-compact configurations, and diamond points with razor sharp edges. We are accustomed to producing the smallest possible shapes with small tolerances. Our home is in the heart of the Swiss watch industry. These are the best conditions for us to partner with you for stylus tips.

TA Instruments

Booth #1017

TA Instruments provides premier technology for thermal analysis, rheology, microcalorimetry, dilatometry, and thermal conductivity measurements. We provide innovative instrumentation for materials characterization for polymers, biomaterials, paints and coatings, metals, ceramics, and more. Visit to learn more about our newest range of products for traditional and optical dilatometry as well as a complete line-up of tools for thermal conductivity and thermal diffusivity by heat flow meters, guarded hot places, and the laser flash method.

Techmo Car

Booth #1148

Techmo is an Italian, independent company focused in the engineering and production of special mobile and stationary equipment for the aluminium and non-ferrous metals industry. The full range of purpose designed machines covers different types of equipment performing a large number of operations in pot-rooms, rodding shops, and cast-houses. The company's aim is to provide the most innovative, rational, cost effective, and user friendly technical solutions. Among the most significant families of mobile equipment are the Tapping Vehicles, Anode Transporters, Crucible Transporters and Tilters, Alumina/ AIF₃ Feeding Vehicles, Furnace Charging Vehicles and Furnace Tending Vehicles, Multipurpose Anode Changers, and Crust

Breakers. Beside its line of purposed designed vehicles, Techmo provides a number of stationary equipment such as Crucible Cleaning Machines, the Crucible Tilting stations, and the Anode Butts Cleaning Stations.

Tekna

Booth #1218

Tekna is the world leader in induction plasma technology. For over 25 years, Tekna has specialized in the development, design and construction of integrated plasma systems for nanoparticle synthesis, coating applications, and powder plasma treatments such as spheroidization and purification, for laboratory research and industrial-scale processes. Tekna is also specialized in the production of high quality micropowders and nanopowders. They are available off-the-shelf, or on a custom basis, in small or large quantities. In particular, Tekna is specialized in material development for Additive Manufacturing.

Thermo-Calc Software

Booth #1001

Thermo-Calc Software is a leading developer of software and databases for calculations involving computational thermodynamics and diffusion controlled simulations. Thermo-Calc is a powerful tool for performing thermodynamic calculations for multicomponent systems. Calculations are based on thermodynamic databases produced by the CALPHAD method. Databases are available for steels, ferrous based slags, Ti, Al, Mg, Ni-superalloys, and other materials. Programming interfaces are available which enables Thermo-Calc to be called directly from in-house developed software or MatLab. DICTRA is used for accurate simulations of diffusion in multicomponent alloys; applications include: • Homogenization of alloys. • Microsegregation during solidification. • Coarsening of precipitates. • Joining. TC-PRISMA: a new tool for predictions of concurrent nucleation, growth, dissolution, and coarsening of precipitate phases.

Thorpe Technologies, Inc.

Booth #1135

Thorpe Technologies Inc. manufactures custom mill duty furnace and process equipment for the aluminum and forging industries. Thorpe's product line includes scrap delacquering and decoating systems; stationary and tilting furnaces for melting and holding molten metal; rotary furnaces; continuous, stationary, and shuttle homogenizing and process furnaces; box and rotary hearth forging furnaces; die heating furnaces. Thorpe also manufactures ancillary equipment including charge machines for the furnace and process equipment it manufactures. Thorpe has been serving industry's heat processing equipment needs domestically and internationally from its Los Angeles based operations since 1932.

COMPANY DESCRIPTIONS

TMS Bladesmithing Competition

Booth #1147

More than 25 hand-forged knife and sword blades will be on display as part of the 2017 TMS Bladesmithing Competition. View these works of art and science, as well as the technical posters and videos depicting their production, in the Exhibit Hall. The Bladesmithing Competition winners will be revealed at a ceremony open to all on Tuesday, February 28 from 3:00 PM- 3:30 PM at the Bladesmithing booth.

UES

Booth #1132

RoboMet.3D® is a fully automated, serial sectioning system that generates two-dimensional data for three-dimensional reconstruction. With sectioning rates up to 100 times faster than manual sectioning, Robo-Met.3D collects data in a matter of hours, not months. Robo-Met.3D enables more time for data analysis and characterization and ensures repeatable and accurate data is collected in an efficient and cost-effective manner. UES, Inc. is an innovative science and technology company that provides its industry and government customers with superior research and development expertise. We create products and services from our technology breakthroughs and successfully commercialize them.



Visit us at Booth #1102

We are proud to announce the release of Pandat™ version 2017

Pandat™ Software

- ◆ Calculates multi-component multi-phase thermodynamic properties and phase equilibria
- ◆ Simulates diffusion-controlled precipitation kinetics during heat treatment processes
- ◆ Optimizes thermodynamic model parameters and thermophysical properties for database development

PanEngine API

- ◆ Dynamic-linked library that can be integrated with user's in-house code to create custom applications such as solidification, heat-treatment, casting, welding, corrosion, and phase field simulation

Databases

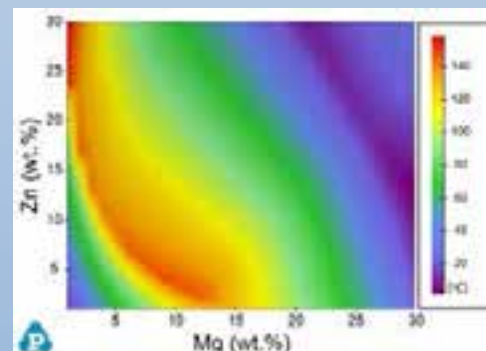
- ◆ Thermodynamic databases for multi-component Al-, Co-, Cu-, Fe-, Mg-, Mo-, Nb-, Ni-, Ti-, TiAl- based commercial alloys, high entropy alloys, noble metal alloys, and Zr-based metallic glasses
- ◆ Mobility databases for Al-, Fe-, Ni- and Ti-based alloys

Consultation

- ◆ Provides materials solutions on multi-component phase equilibria, diffusion, precipitation, weldability, castability and more
- ◆ Develops customized thermodynamic databases, mobility databases and thermophysical property databases and more
- ◆ Supports software integration with PanEngine API to obtain instant thermodynamic input for custom applications

New features of Pandat™ 2017 and databases

- ◆ High-throughput calculation performs thousands of calculations by a simple setting and alloy compositions with user-defined properties can be mined from the calculated results. The results can be presented as a color diagram. The figure below shows the solidification range (lever-rule) in the Al-Mg-Zn system with varying compositions of Mg and Zn
- ◆ New database for TiAl-based alloys



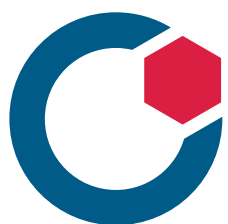
CompuTherm, LLC
8401 Greenway Blvd., Suite 248, Middleton, WI 53562, USA

Phone: 1-608-203-8843
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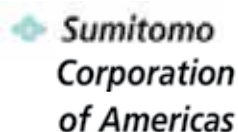
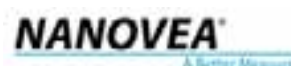
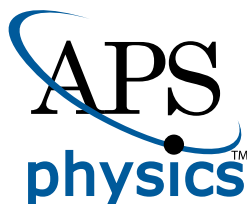
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TMS 2017

146th Annual Meeting & Exhibition



TECHNICAL PROGRAM

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PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
2017 EPD Distinguished Lecture				
Keynote Session	MON AM	SDCC	15B	80
2017 Light Metals Keynote				
Global Aluminum Industry 2017: A Look Forward	MON AM	SDCC	1A	80
2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology				
Novel Nanomaterials and Techniques	MON AM	Marriott	Pacific 26	80
2D Nanomaterials for Nanoelectronics	MON PM	Marriott	Pacific 26	103
Materials Design	TUE AM	Marriott	Pacific 26	127
Nanomaterials for Nanoelectronics	TUE PM	Marriott	Pacific 26	155
Poster Session	TUE EVE	SDCC	Hall B1	294
Nanomaterials for BT Applications	WED AM	Marriott	Pacific 24	183
Nanomaterials for ET Applications	WED AM	Marriott	Pacific 26	184
Low Dimensional Nanomaterials	WED PM	Marriott	Pacific 26	211
Nanomaterials Generals	WED PM	Marriott	Pacific 24	212
2017 Technical Division Student Poster Competition				
Extraction and Processing Division (EPD) Graduate Students	MON PM	SDCC	Hall B1	278
Extraction and Processing Division (EPD) Undergraduate Students	MON PM	SDCC	Hall B1	278
Functional Materials Division (FMD) Graduate Students	MON PM	SDCC	Hall B1	278
Functional Materials Division (FMD) Undergraduate Students	MON PM	SDCC	Hall B1	278
Light Metals Division (LMD) Graduate Students	MON PM	SDCC	Hall B1	278
Light Metals Division (LMD) Undergraduate Students	MON PM	SDCC	Hall B1	279
Materials Processing and Manufacturing Division (MPMD) Graduate Students	MON PM	SDCC	Hall B1	279
Materials Processing and Manufacturing Division (MPMD) Undergraduate Students	MON PM	SDCC	Hall B1	279
Structural Materials Division (SMD) Graduate Students	MON PM	SDCC	Hall B1	279
Structural Materials Division (SMD) Undergraduate Students	MON PM	SDCC	Hall B1	280
2017 Technical Division Young Professional Poster Competition				
Functional Materials Division (FMD)	MON EVE	SDCC	Hall B1	280
Light Metals Division (LMD)	MON EVE	SDCC	Hall B1	280
Materials Processing and Manufacturing Division (MPMD)	MON EVE	SDCC	Hall B1	280
Structural Materials Division (SMD)	MON EVE	SDCC	Hall B1	280
8th International Symposium on High Temperature Metallurgical Processing				
Energy Efficient Clean Metallurgical Technology	MON AM	SDCC	18	81
Simulation of High Temperature Process	MON PM	SDCC	18	103
Poster Session I	MON EVE	SDCC	Hall B1	281
Poster Session II	MON EVE	SDCC	Hall B1	281
Fundamental Research of Metallurgical Process	TUE AM	SDCC	18	127
Alloys and Materials Preparation	TUE PM	SDCC	18	155
Extraction and Recovery of Metals	WED AM	SDCC	18	184

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
Ironmaking and Steelmaking	WED PM	SDCC	18	212
Treatment of Recycling Slag/Wastes	THU AM	SDCC	18	238
Utilization of Complex Ores	THU PM	SDCC	18	260
A Prospective Look at the MGI After Five Years				
Keynote Session	MON PM	SDCC	9	104
Acta Materialia Symposium				
Award Session	TUE PM	SDCC	22	156
Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships				
Novel Material Systems	MON AM	SDCC	7B	81
Poster Session	MON EVE	SDCC	Hall B1	281
Beam Line Studies and In Situ Monitoring	TUE AM	SDCC	7B	128
Process Qualification Part I	TUE PM	SDCC	7B	156
Process Qualification Part II	WED AM	SDCC	7B	185
Novel Technologies	WED PM	SDCC	7B	213
Feedstock	THU AM	SDCC	7B	239
Defects and Mechanical Properties	THU PM	SDCC	7B	260
Additive Manufacturing: Building the Pathway towards Process and Material Qualification				
Process Parameter Development in Additive Manufacturing	MON AM	SDCC	8	82
Poster Session	MON EVE	SDCC	Hall B1	283
The Melt Pool and Cellular Foams	TUE AM	SDCC	8	104
Mechanical Properties of Additively Manufactured Metals	TUE PM	SDCC	8	128
New Frontiers in Additive Manufacturing	WED AM	SDCC	8	156
Additive Manufacturing of Ti - 6Al - 4V	WED PM	SDCC	8	185
Additive Manufacturing of Polymers and Non-metals	THU AM	SDCC	8	213
Advanced Characterization Techniques and Feedstock	THU PM	SDCC	8	261
Additive Manufacturing: Past, Present, and Future				
Joint Keynote Session	MON PM	SDCC	8	104
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms				
Session I	MON AM	SDCC	33C	82
Session II	MON PM	SDCC	33C	104
Session III	TUE AM	SDCC	33C	129
Session IV	TUE PM	SDCC	33C	157
Poster Session	TUE EVE	SDCC	Hall B1	295
Session V	WED AM	SDCC	33C	186
Session VI	WED PM	SDCC	33C	214
Session VII	THU AM	SDCC	33C	240
Session VIII	THU PM	SDCC	33C	261

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
Advanced High-Strength Steels				
Fundamentals of Steel Design	MON AM	SDCC	17A	83
Recent Developments in High-/Medium Mn Steels	MON PM	SDCC	17A	105
Poster Session	MON EVE	SDCC	Hall B1	285
Planar Defects and Interfaces	TUE AM	SDCC	17A	129
Impacts of Solutes	TUE PM	SDCC	17A	157
Nanostructures and Precipitates	WED AM	SDCC	17A	186
Microstructure Property Relationship	WED PM	SDCC	17A	214
Processing of Advanced Steels	THU AM	SDCC	17A	240
Advanced Materials for Energy Conversion and Storage				
Poster Session	MON EVE	SDCC	Hall B1	285
Micro & Macro Reliability	TUE AM	SDCC	15A	130
Energy Storage I	TUE PM	SDCC	15A	158
Energy Storage II	WED AM	SDCC	15A	187
Functional Materials I	WED PM	SDCC	15A	215
Functional Materials II	THU AM	SDCC	15A	241
Energy Storage III	THU PM	SDCC	15A	262
Advanced Materials in Dental and Orthopedic Applications				
Session I	MON AM	Marriott	Pacific 14	83
Session II	MON PM	Marriott	Pacific 14	105
Poster Session	TUE EVE	SDCC	Hall B1	295
Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques				
In Situ Techniques I	MON AM	SDCC	32A	84
In Situ Techniques II	MON PM	SDCC	32A	106
In Situ Techniques III	TUE AM	SDCC	32A	130
In Situ Techniques IV	TUE PM	SDCC	32A	158
Poster Session	TUE EVE	SDCC	Hall B1	295
In Situ Techniques V	WED AM	SDCC	32A	187
Advances in Environmental Technologies: Recycling and Sustainability Joint Session				
Advances in Environmental Technologies: Characterization and Uncertainty	MON AM	SDCC	14B	84
Advances in Environmental Technologies: New Areas of Value Recovery	MON PM	SDCC	14B	106
Poster Session	MON EVE	SDCC	Hall B1	286
Alloys and Compounds for Thermoelectric and Solar Cell Applications V				
Session I	MON AM	SDCC	21	85
Session II	MON PM	SDCC	21	107
Session III	TUE AM	SDCC	21	131
Session IV	TUE PM	SDCC	21	159

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
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Student Poster Session
Session V

TUE EVE	SDCC	Hall B1	296
THU AM	SDCC	22	241

Alumina and Bauxite

Digestion and Calcination
Bauxite Residues Technology
Poster Session
Non-traditional Resources

MON PM	SDCC	5B	107
TUE AM	SDCC	1B	131
TUE EVE	SDCC	Hall B1	296
WED AM	SDCC	3	188

Aluminum Alloys, Processing, and Characterization

Alloy Development and Applications
Heat Treatment
Plasticity and Mechanical Behavior
Poster Session
Solidification and Casting
Characterization

MON PM	SDCC	4	107
TUE AM	SDCC	4	131
TUE PM	SDCC	4	159
TUE EVE	SDCC	Hall B1	296
WED AM	SDCC	4	188
WED PM	SDCC	4	215

Aluminum Reduction Technology

Electrolyte and Fundamentals, Anode Effects and PFC Emissions
Joint Session on Cell Lining Materials
Cell Voltage and Pot Control
Dry Scrubbing, Alumina Transport and Dissolution
Modelling and Cell Design, Potroom Operations
Technology Development

MON PM	SDCC	2	108
TUE AM	SDCC	2	132
TUE PM	SDCC	2	160
WED AM	SDCC	2	188
WED PM	SDCC	2	216
THU AM	SDCC	2	241

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy

Plenary Session
Electrometallurgy
Hydrometallurgy
Pyrometallurgy I
Poster Session
Pyrometallurgy II
Materials Processing and Plasma Processing
Energy Storage and Engineering Issues
Modeling and Simulation
Thermodynamics and Kinetics

MON AM	SDCC	15B	85
MON PM	SDCC	15B	108
TUE AM	SDCC	15B	132
TUE PM	SDCC	15B	160
TUE EVE	SDCC	Hall B1	297
WED AM	SDCC	15B	189
WED PM	SDCC	15B	216
THU AM	SDCC	15B	242
THU PM	SDCC	15B	262
THU PM	SDCC	16A	263

Applications of Solidification Fundamentals

Characterization of Solidification Structures I
Characterization of Solidification Structures II
Phase Field Modeling
Simulation and Modeling of Solidification Behavior
Solidification of Iron and Steel

MON AM	SDCC	19	86
MON PM	SDCC	19	109
TUE AM	SDCC	19	133
TUE PM	SDCC	19	161
WED AM	SDCC	19	189

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
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Bio-Nano Interfaces and Engineering Applications

Bio-Nano Interfaces: Fundamentals I	MON AM	Marriott	Pacific 21	86
Bio-Nano Interfaces: Biomedical Applications	MON PM	Marriott	Pacific 21	109
Bio-Nano Interfaces: Fundamentals II	TUE AM	Marriott	Pacific 21	133
Bio-Nano Interfaces: Engineering Applications	TUE PM	Marriott	Pacific 21	161
Poster Session	TUE EVE	SDCC	Hall B1	297
Functional BionanoInterfaces	WED AM	Marriott	Pacific 21	189

Biological Materials Science

Synthesis of Bio-inspired Composites	MON AM	Marriott	Pacific 15	86
Biomaterials and Biomedical Applications	MON PM	Marriott	Pacific 15	110
Bones, Teeth and Dental Materials	TUE AM	Marriott	Pacific 15	133
Structural Biological Materials I	TUE PM	Marriott	Pacific 15	161
Biological Materials Science Poster Session	TUE EVE	SDCC	Hall B1	297
Biological Materials Science Student Poster Contest	TUE EVE	SDCC	Hall B1	298
Structural Biological Materials II	WED AM	Marriott	Pacific 15	190
Functional Biological Materials	WED PM	Marriott	Pacific 15	216

Bulk Metallic Glasses XIV

Alloy Development and Application I	MON AM	SDCC	33A	87
Alloy Development and Application II	MON PM	SDCC	33A	110
Structures and Mechanical Properties I	TUE AM	SDCC	33A	134
Structures and Mechanical Properties II	TUE PM	SDCC	33A	162
Poster Session	TUE EVE	SDCC	Hall B1	298
Structures and Mechanical Properties III	WED AM	SDCC	33A	190
Structures and Characterization	WED PM	SDCC	33A	217
Mechanical and Other Properties I	THU AM	SDCC	33B	242
Structures and Modeling I	THU AM	SDCC	33A	243
Mechanical and Other Properties II	THU PM	SDCC	33B	263
Structures and Modeling II	THU PM	SDCC	33A	264

Cast Shop Technology

Continuous Strip Casting	MON PM	SDCC	1A	111
Foundry and Shape Casting	MON PM	SDCC	3	111
Melting, Energy, and Dross	TUE AM	SDCC	1A	134
DC Casting and Macrosegregation	WED AM	SDCC	1A	191
Grain Refining and Solidification	WED PM	SDCC	1A	217
Casthouse Management and Automation	THU AM	SDCC	1A	243

Cast Shop Technology: Recycling and Sustainability Joint Session

Cast Shop/Recycling Joint Session	TUE PM	SDCC	1A	162
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Ceramic Materials for Nuclear Energy Research and Applications

Microstructural Evolution under Irradiation in Oxide Ceramics	MON PM	Marriott	Palomar	87
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Fuel Performance Modeling and Fundamental Defect Science in Ceramics	MON PM	Marriott	Palomar	111
Fundamental Defect Science in Ceramics and Thermal Transport	TUE AM	Marriott	Palomar	135
Advanced Sintering, Characterization, and Measurement	TUE PM	Marriott	Palomar	163
Non-oxide Ceramics for Nuclear Applications I	WED AM	Marriott	Palomar	191
Non-oxide Ceramics for Nuclear Applications II	WED PM	Marriott	Palomar	218
Characterization of Materials through High Resolution Coherent Imaging				
Coherent Imaging I	MON AM	SDCC	25B	88
Coherent Imaging II	MON PM	SDCC	25B	112
Coherent Imaging and Phase Contrast I	TUE AM	SDCC	25B	135
Phase Contrast Imaging II	TUE PM	SDCC	25B	163
Characterization of Minerals, Metals, and Materials				
Clays and Ceramics	MON AM	SDCC	32B	88
Soft Materials	MON AM	SDCC	31B	89
Electronic, Magnetic, Environmental, and Advanced Materials	MON PM	SDCC	31B	112
Nano Materials	MON PM	SDCC	32B	113
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Powders and Foams	TUE PM	SDCC	31B	164
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Minerals	WED AM	SDCC	31B	192
Ferrous Metals	WED PM	SDCC	31A	217
Material Processing and Corrosion	WED PM	SDCC	31B	218
Composites	THU AM	SDCC	31A	218
Method Development	THU AM	SDCC	30D	244
Welding and Solidification	THU AM	SDCC	31B	245
Materials Extraction	THU PM	SDCC	31B	264
Non-Ferrous Metals	THU PM	SDCC	31A	265
Computational Approaches to Materials for Energy Applications				
Session I	WED AM	SDCC	7A	192
Session II	WED PM	SDCC	7A	219
Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials				
Materials Informatics Approaches	MON AM	SDCC	11A	89
2D Materials and Materials Epitaxy	MON PM	SDCC	11A	113
Materials Surfaces, Interfaces, and Electrochemistry	TUE AM	SDCC	11A	136
Electronic, Magnetic, and Optical Properties	TUE PM	SDCC	11A	164
Mechanical Properties	WED AM	SDCC	11A	193
Bulk Material Structures and Properties	WED PM	SDCC	11A	219
Kinetics and Processing	THU AM	SDCC	11A	245

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Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions

Poster Session	MON EVE	SDCC	Hall B1	286
Mathematical Tools for Uncertainty Quantification and Propagation	WED AM	SDCC	10	196
Uncertainty Quantification in Density Functional Theory (DFT)	WED PM	SDCC	10	220
Uncertainty Quantification and Model Validation for Classical Force Fields	THU AM	SDCC	10	246
Uncertainty Quantification for Multiscale and Continuum Methods (FEM, Crystal Plasticity, etc.)	THU PM	SDCC	10	265

Computational Thermodynamics and Kinetics

Microstructure Evolution I	MON AM	SDCC	11B	90
Thermodynamics and Alloy Design	MON PM	SDCC	11B	114
Poster Session	MON EVE	SDCC	Hall B1	286
Grain Boundaries and Defects I	TUE AM	SDCC	11B	137
Diffusion and Kinetics I	TUE PM	SDCC	11B	165
Materials Physics	WED AM	SDCC	11B	194
Microstructure Evolution II, Thermodynamics and Alloys II	WED PM	SDCC	11B	220
Grain Boundaries and Defects II	THU AM	SDCC	11B	246
Diffusion and Kinetics II	THU PM	SDCC	11A	266

Defects and Properties of Cast Metals

Defects I - Molten Metal and Inclusions	MON AM	SDCC	23A	90
Defects II & Properties I	MON PM	SDCC	23A	114
Properties II & Hot Tearing	TUE AM	SDCC	23A	137
Porosity	TUE PM	SDCC	23A	165
Poster Session	TUE EVE	SDCC	Hall B1	301
Cast Iron & Steel	WED AM	SDCC	23A	194
Continuous and DC Casting	WED PM	SDCC	23A	221

Deformation and Transitions at Interfaces

Grain Boundary Structure	MON AM	SDCC	23B	91
Defects/Grain Boundary Interactions	MON PM	SDCC	23B	114
Meso/Microstructural Scale Mechanical Behavior of Polycrystals I	TUE AM	SDCC	23B	138
Fracture and Decohesion	TUE PM	SDCC	23B	166
Poster Session	TUE EVE	SDCC	Hall B1	301
Meso/Microstructural Scale Mechanical Behavior of Polycrystals II	WED AM	SDCC	23B	195
Interfaces in Materials	WED PM	SDCC	23B	221
Grain Boundary Interactions with Dislocation and Twins in Hexagonal Metals	THU AM	SDCC	23B	246
Deformation and Grain Growth in Polycrystalline Materials	THU PM	SDCC	23B	266

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Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session

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Deriving Value from Challenging Waste I	WED PM	SDCC	14B	222
Deriving Value from Challenging Waste II	THU AM	SDCC	14B	247
Deriving Value from Challenging Waste III	THU PM	SDCC	14B	267

Electrode Technology

Anode Characterization	MON PM	SDCC	1B	115
Electrodes: Raw Materials and Anode Quality	TUE PM	SDCC	1B	131
Baking Furnace/Electrode Design	WED AM	SDCC	1B	166
Operation/Practice	WED PM	SDCC	1B	195

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology

Cu- and Ag- related Bonding Materials	MON AM	SDCC	30E	91
Mechanical Properties of Pb-free Materials	MON PM	SDCC	30E	115
Electromigration, Thermomigration and Electrochemical Behaviors	TUE AM	SDCC	30E	138
Alloying and Doping of Pb-free Materials	TUE PM	SDCC	30E	167
Poster Session	TUE EVE	SDCC	Hall B1	302
Intermetallic Compound and Microstructural Evolution of Pb-free Materials	WED AM	SDCC	30E	196
Tin Whisker and Wettability	WED PM	SDCC	30E	222
Transient Liquid Phase Bonding and Nanosolder	THU AM	SDCC	30E	247

Energy Materials 2017: Energy and Environmental Issues in Materials Manufacturing and Processing

Poster Session	MON EVE	SDCC	Hall B1	287
Opportunities in the Steel Industry	TUE AM	SDCC	14B	84
Opportunities in Aluminum Production, Waste Heat and Water Recovery	TUE PM	SDCC	14B	106
Energy and Environmental Issues in Materials Manufacturing and Processing III	WED AM	SDCC	14B	196

Energy Materials 2017: Materials for Coal-Based Power

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Session V	THU PM	SDCC	12	267

Energy Materials 2017: Materials for Energy Conversion with Emphasis on SOFC

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Session II	MON PM	SDCC	12	116
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Hot Corrosion and New Materials	MON PM	SDCC	13	116
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Creep and Failure	TUE AM	SDCC	13	140
Microstructure and Processing	TUE PM	SDCC	13	168
Energy Materials 2017: Materials for Nuclear Energy				
Poster Session	MON EVE	SDCC	Hall B1	288
Materials for Nuclear Applications I	WED AM	Marriott	Miramar	197
Materials for Nuclear Applications II	WED PM	Marriott	Miramar	223
Environmental Effects	THU AM	Marriott	Miramar	248
Accident Tolerant Fuels & Irradiation Effects	THU PM	Marriott	Miramar	267
Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III				
Harnessing Bulk Nanostructured Materials for Energy - I	MON AM	SDCC	14A	92
Harnessing Bulk Nanostructured Materials for Energy - II	MON PM	SDCC	14A	116
Technological Innovation for Efficiency Enhancements in Energy	TUE AM	SDCC	14A	140
Hydrogen Effects on Materials in Energy	TUE PM	SDCC	14A	168
Materials, Interfaces and Innovations for Hostile Oil and Gas / Energy - I	WED AM	SDCC	14A	197
Materials, Interfaces and Innovations for Hostile Oil and Gas / Energy - II	WED PM	SDCC	14A	223
Energy Materials 2017: Materials in Clean Power				
Session I	MON AM	SDCC	15A	93
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Energy Technologies				
Poster Session	MON EVE	SDCC	Hall B1	289
Energy Technologies	WED AM	SDCC	13	198
Novel Technologies	WED PM	SDCC	13	224
CO2 Management and Sustainable Metallurgical Processes	THU AM	SDCC	13	248
Heat Recovery	THU PM	SDCC	13	268
Environmentally Assisted Cracking: Theory and Practice				
Hydrogen Embrittlement I	MON AM	SDCC	31A	93
Stress Corrosion Cracking I	MON PM	SDCC	31A	117
Hydrogen Embrittlement II	TUE AM	SDCC	31A	140
Stress Corrosion Cracking I	TUE PM	SDCC	31A	169
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Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention

Data-Driven Investigations of Fatigue	MON AM	SDCC	23C	94
Modeling Approaches to Improve Fatigue Predictions	MON PM	SDCC	23C	118
Relationships Among Processing, Microstructure, and Fatigue Properties	TUE AM	SDCC	23C	141
Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D	TUE PM	SDCC	23C	169
Poster Session	TUE EVE	SDCC	Hall B1	302
Creep, Fatigue, and Environmental Interactions	WED AM	SDCC	23C	199
Fatigue Behaviors of Engineering Alloys	WED PM	SDCC	23C	225

Fracture Properties and Residual Stresses in Small Dimensions

Fracture Mechanisms and Modeling	WED AM	SDCC	21	199
In Situ Fracture Testing Methodologies	WED PM	SDCC	21	225
Fracture Testing Methodologies	THU AM	SDCC	21	249
Interface Dominated Fracture	THU PM	SDCC	21	268

Friction Stir Welding and Processing IX

High Temperature Applications I	MON AM	SDCC	9	94
Poster Session	MON EVE	SDCC	Hall B1	289
High Temperature Applications II	TUE AM	SDCC	9	141
Derivative Applications	TUE PM	SDCC	9	170
Lightweight Applications	WED AM	SDCC	9	200
Dissimilar Applications	WED PM	SDCC	9	226
Industrial Applications	THU AM	SDCC	9	249
Control and Simulation	THU PM	SDCC	9	269

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin

Process-Property-Performance Correlations: Metals, Alloys and Ferroelectrics	MON AM	SDCC	33B	95
Process-Property-Performance Correlations: Q-D, 2-D and 3-D Materials & Structures	MON PM	SDCC	33B	118
Structure-Property-Performance Correlations: Carbon Nanotubes, Boron Nitride and Biomaterials	TUE AM	SDCC	33B	142
Process-Property-Performance Correlations: Titanates, Transition Metal Oxides, Chalcogenides & Beyond	TUE PM	SDCC	33B	170
Process-Property-Performance Correlations: Ferrites, Alloys, Devices & Systems	WED AM	SDCC	33B	200
Process-Property-Performance Correlations: Devices, Circuits, Lead Free Solder & Packaging	WED PM	SDCC	33B	226

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Titanium and Advanced Materials	MON AM	SDCC	16A	95
Powder Atomization and Synthesis	MON PM	SDCC	16A	119
Field-assisted Processing	TUE AM	SDCC	16A	142
Fundamentals of Powder Consolidation	TUE PM	SDCC	16A	171
Gamma (FCC)/Gamma-Prime (L1₂) Co-Based Superalloys II				
Microstructural Evolution	TUE AM	Marriott	Pacific 14	143
Alloy Development	TUE PM	Marriott	Pacific 14	171
Processing and Environmental Resistance	WED AM	Marriott	Pacific 14	201
Mechanical Behavior I	WED PM	Marriott	Pacific 14	227
Mechanical Behavior II	THU AM	Marriott	Palomar	250
GAT-2017 (Gamma Alloys Technology - 2017)				
Keynote and Aero-Engine Blades Applications	MON AM	Marriott	Pacific 17	96
Surface Protection with Panel Discussion and Oral Posters	MON PM	Marriott	Pacific 17	119
Poster Session	MON EVE	SDCC	Hall B1	289
Other Applications and Materials-Processes Development Efforts	TUE AM	Marriott	Pacific 17	143
Microstructure Evolution, Simulation and Prediction	TUE PM	Marriott	Pacific 17	172
Processing-Microstructure-Property Relationships	WED AM	Marriott	Pacific 17	201
Microstructure Development and Directional Solidification	WED PM	Marriott	Pacific 17	227
Novel Processing - Additive Manufacturing and SPS	THU AM	Marriott	Solana	250
Technologically Critical Areas - Discussions	THU PM	Marriott	Solana	269
General Poster Session				
General Poster Session	TUE EVE	SDCC	Hall B1	303
High Entropy Alloys V				
Alloy Development and Applications I	TUE AM	SDCC	32B	144
Alloy Development and Applications II	TUE PM	SDCC	32B	172
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Structures and Mechanical Properties I	WED AM	SDCC	32B	202
Mechanical and Other Properties	WED PM	SDCC	32A	228
Structures and Mechanical Properties II	WED PM	SDCC	32B	228
Structures and Characterization	THU AM	SDCC	32A	251
Structures and Modeling I	THU AM	SDCC	32B	251
Structures and Modeling II	THU PM	SDCC	32B	270
Thermal and Other Properties	THU PM	SDCC	32A	270
High Temperature Electrochemistry III				
Nuclear Materials	WED AM	SDCC	16A	202
Materials Electrochemistry I	WED PM	SDCC	16A	229
Materials Electrochemistry II	THU AM	SDCC	16A	252

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Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges

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Session II	MON PM	SDCC	31C	120
Session III	TUE AM	SDCC	31C	144
Session IV	TUE PM	SDCC	31C	173
Session V	WED AM	SDCC	31C	203

ICME Gap Analysis: Structural Materials for Automotive Applications

High-Temperature Alloys for Automotive Applications	MON AM	SDCC	10	97
Light-weight Materials for Automotive Applications	MON PM	SDCC	10	120

In-situ Methods for Unraveling Structure-Property Relationships in Light Metals

Imaging and Acoustic Emission	TUE AM	SDCC	5B	145
Diffraction and Other Novel Methods	TUE PM	SDCC	5B	173
Poster Session	TUE EVE	SDCC	Hall B1	305

Interface-Mediated Properties of Nanostructured Materials

Nanolaminates and Nanotwinned Materials I	MON AM	Marriott	Pacific 23	97
Nanolaminates and Nanotwinned Materials II	MON PM	Marriott	Pacific 23	120
Hierarchical Nanostructured Materials	TUE AM	Marriott	Pacific 23	145
Measurement and Modeling of Nanoscale Deformation	TUE PM	Marriott	Pacific 23	174

Job Candidate Poster Session

Job Candidate Poster Session	MON EVE	SDCC	Hall B1	290
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Magnesium Technology 2017

Keynote Session	MON AM	SDCC	5A	97
Poster Preview Session	MON PM	SDCC	5A	121
Alloy Development	TUE AM	SDCC	5A	146
Solidification and Processing I	TUE PM	SDCC	5A	174
Poster Session	TUE EVE	SDCC	Hall B1	305
Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue I	WED AM	SDCC	5B	203
Solidification and Processing II	WED AM	SDCC	5A	203
Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue II	WED PM	SDCC	5B	229
Solidification and Processing III and Magnesium-Rare Earth Alloys I	WED PM	SDCC	5A	229
Corrosion	THU AM	SDCC	5B	252
Magnesium-Rare Earth Alloys II	THU AM	SDCC	5A	252
Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue III	THU PM	SDCC	5B	271

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Materials and Fuels for the Current and Advanced Nuclear Reactors VI				
Fuels I	MON AM	Marriott	Cardiff	98
Fuels II	MON PM	Marriott	Cardiff	121
Poster Session	MON EVE	SDCC	Hall B1	290
Fuels III	TUE AM	Marriott	Cardiff	146
Structural Materials I	TUE PM	Marriott	Cardiff	175
Structural Materials II	WED AM	Marriott	Cardiff	204
Structural Materials III	WED PM	Marriott	Cardiff	230
Structural Materials IV	THU AM	Marriott	Point Loma	253
Modeling	THU PM	Marriott	Point Loma	271
Materials by Design: An MPMD Symposium Honoring Greg Olson on the Occasion of His 70th Birthday				
Materials Design I	TUE AM	SDCC	10	147
Materials Design II	TUE PM	SDCC	10	175
Materials Engineering of Soft Magnets for Power and Energy Applications				
Nanocomposite Soft Magnetic Alloys for Power Electronics, Transformers, and Inductors	WED AM	SDCC	25B	204
Ferrites, Soft Magnetic Composites, and Bulk Soft Magnet Materials	WED PM	SDCC	25B	230
Advanced Soft Magnetic Material Characterization and Development Techniques	THU AM	SDCC	25B	253
Advanced Silicon Steels and Soft Magnetic Alloys for Rotating Electrical Machinery	THU PM	SDCC	25B	272
Materials for High Temperature Applications: Next Generation Superalloys and Beyond				
Next Generation Superalloys I	MON AM	Marriott	Pacific 16	98
Next Generation Superalloys II	MON PM	Marriott	Pacific 16	121
Poster Session	MON EVE	SDCC	Hall B1	291
Emerging Materials and Refractory Metals	TUE AM	Marriott	Pacific 16	147
Refractory Metals	TUE PM	Marriott	Pacific 16	175
Intermetallics and Additive Manufacturing of Superalloys	WED AM	Marriott	Pacific 16	205
Coatings and Environmental Resistance	WED PM	Marriott	Pacific 16	231
Ir Alloys and Next Generation Superalloys	THU AM	Marriott	Balboa	254
Materials Processing Fundamentals				
Poster Session	MON EVE	SDCC	Hall B1	291
Steelmaking	WED AM	SDCC	17B	205
Metal Extraction	WED PM	SDCC	17B	231
Solid-state Processing	THU AM	SDCC	17B	254
Molten & Gas State Processing	THU PM	SDCC	17B	272
Materials Science for High-Performance Permanent Magnets				
Nd-Fe-B: Microstructure and Properties	MON PM	SDCC	24C	122
Coercivity Mechanism	TUE AM	SDCC	24C	147
Magnetization Process / Microstructural Stability	TUE PM	SDCC	24C	176

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Nd-Fe-B Processing / New RE-lean Hard Magnets
 Search for New Hard Magnets / Non-Rare Earth Magnets
 Synthesis and Processing

WED AM	SDCC	24C	205
THU AM	SDCC	24C	255
THU PM	SDCC	24C	272

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty

Introductory Session: Unique Mechanical Behavior and Technologies
 High Temperature Creep of Structural Materials
 Crystal Defects: Experiments and Modeling/Simulation
 Advanced Materials and Processing
 Poster Session
 Materials for Nuclear Environments
 Creep, Creep-Fatigue and Related High Temperature Mechanical Behavior
 Miscellaneous Structure-property Correlations
 Mechanical Behavior of Titanium and Zirconium Containing Alloys

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MON PM	SDCC	24A	122
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WED AM	SDCC	24A	206
WED PM	SDCC	24A	232
THU AM	SDCC	24A	255
THU PM	SDCC	24A	273

Mechanical Behavior of Nanostructured Materials

Mechanical Behavior of Bulk Nanostructured Materials I
 Mechanical Milling
 Mechanical Behavior of Bulk Nanostructured Materials II
 Metallic Glass and High Entropy Alloys
 Poster Session
 Mechanical Properties of Thin Films, Low Dimensional Material
 Modeling and Thermal Stability, Radiation, Corrosion of Nanocrystals

MON AM	SDCC	30D	99
MON PM	SDCC	30D	123
TUE AM	SDCC	30D	148
TUE PM	SDCC	30D	177
TUE EVE	SDCC	Hall B1	306
WED AM	SDCC	30D	206
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Microstructural Processes in Irradiated Materials

Advanced Characterization and Techniques
 Reactor Pressure Vessel Steels
 Poster Session
 Ferritic and Ferritic-Martensitic Alloys I
 Ferritic and Ferritic-Martensitic Alloys II
 Austenitic Alloys
 Fusion Materials and High-Temperature Alloys
 Zr-Alloys and Advanced Modeling
 Nuclear Fuels and Ceramics

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MON PM	Marriott	Del Mar	123
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Heterogeneous Materials	MON PM	SDCC	24B	124
Heterogeneous and Gradient Materials	TUE AM	SDCC	24B	149
Laminated Materials	TUE PM	SDCC	24B	178
Poster Session	TUE EVE	SDCC	Hall B1	308
Materials with Architected Structures	WED AM	SDCC	24B	207
Novel and Complex Materials I	WED PM	SDCC	24B	233
Novel and Complex Materials II	THU AM	SDCC	24B	256
Nanocomposites IV: Nanoscience for Renewable Energy				
NanoScience Part I	MON AM	Marriott	Pacific 25	101
NanoScience Part II	MON PM	Marriott	Pacific 25	124
Poster Session	TUE EVE	SDCC	Hall B1	308
Nanostructured Materials for Nuclear Applications II				
Session I	MON AM	Marriott	Pacific 24	101
Session II	MON PM	Marriott	Pacific 24	125
Session III	TUE AM	Marriott	Pacific 24	150
Session IV	TUE PM	Marriott	Pacific 24	178
Poster Session	TUE EVE	SDCC	Hall B1	308
Nanostructured Surfaces for Improved Functional Properties				
Poster Session	TUE EVE	SDCC	Hall B1	309
Session I	WED AM	Marriott	Pacific 23	208
Session II	WED PM	Marriott	Pacific 23	234
Pan American Materials Congress Plenary				
Session I	TUE AM	Marriott	Marina G	150
Session II	TUE PM	Marriott	Marina G	179
Session III	WED AM	Marriott	Marina G	208
Session IV	WED PM	Marriott	Marina G	234
Pan American Materials Congress: Advanced Biomaterials				
Poster Session	TUE EVE	Marriott	Poster Area	309
Bioinspired, Drug Delivery and Biomimetic Materials	WED AM	Marriott	Mission Hills	208
Scaffolds and Nanobiomaterials	WED PM	Marriott	Mission Hills	234
Antibacterial and Nanostructured Materials	THU AM	Marriott	Mission Hills	257
Implants, Bone Graft and Drug Delivery	THU PM	Marriott	Mission Hills	274
Pan American Materials Congress: Advanced Manufacturing				
Materials Processing	TUE AM	Marriott	Marina D	150
Metals and Alloys	TUE PM	Marriott	Marina D	179

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Polymer, Composites, and Metals	WED AM	Marriott	Marina D	209
Pan American Materials Congress: Materials for Green Energy				
Materials for Green Energy	TUE AM	Marriott	Marina G	151
Environmental Assessment of Green Energy	TUE PM	Marriott	Marina G	179
Poster Session	TUE EVE	Marriott	Poster Area	309
Battery Technologies for Green Energy	WED AM	Marriott	Marina G	209
Pan American Materials Congress: Materials for Infrastructure				
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Session II	THU PM	Marriott	Palomar	274
Pan American Materials Congress: Materials for Oil and Gas Industry				
Poster Session	TUE EVE	Marriott	Poster Area	310
Next Generation of Metallic and Non-metallic Materials Design, Manufacture and Processing	WED PM	Marriott	Marina G	235
Welding Technology, Corrosion Protection, Non-Destructive Evaluation, and Structural Integrity	THU AM	Marriott	Marina G	257
Pan American Materials Congress: Materials for Transportation and Lightweighting				
Processing-Structure-Property Relationships I	TUE AM	Marriott	Mission Hills	151
Structure-Property Relationships II	TUE PM	Marriott	Mission Hills	180
Poster Session	TUE EVE	Marriott	Poster Area	310
Aluminum Processing	WED PM	Marriott	Marina D	235
Composite Materials I	THU AM	Marriott	Marina D	258
Composite Materials II	THU PM	Marriott	Marina D	275
Joining	THU PM	Marriott	Marina G	275
Pan American Materials Congress: Minerals Extraction and Processing				
Poster Session	TUE EVE	Marriott	Poster Area	311
Waste Treatment and Processing	WED PM	Marriott	Marina E	235
Hydrometallurgical Processing	THU AM	Marriott	Marina E	258
Ore Processing	THU PM	Marriott	Marina E	276

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
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Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses

SPD Processing, Mechanical Properties of Nanocrystalline Materials, BMG	TUE AM	Marriott	Marina F	151
Mechanical Properties of Structural Materials Processed by SPD	TUE PM	Marriott	Marina F	180
Poster Session	TUE EVE	Marriott	Poster Area	311
Microstructure Evolution	WED AM	Marriott	Marina F	209
Superplasticity, Wear, Corrosion, Magnetic, Electric and Functional Properties	WED PM	Marriott	Marina F	236
Additional Topics in SPD Processing and Mechanical Properties	THU AM	Marriott	Marina F	258
Phase, Interface and Crystalline Defects Evolution during SPD	THU PM	Marriott	Marina F	276
Student Session	THU PM	Marriott	Balboa	276

Pan American Materials Congress: Steels

Properties and Performance	TUE AM	Marriott	Marina E	152
Steelmaking & Solidification	TUE PM	Marriott	Marina E	180
Poster Session	TUE EVE	Marriott	Poster Area	312
Thermomechanical Processing and Properties	WED AM	Marriott	Marina E	210

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI

Phase Stability on Energy Materials	MON PM	SDCC	25A	101
Phase Stability & Phase Equilibria	MON PM	SDCC	25A	125
Electromigration	TUE AM	SDCC	25A	152
Electronic Interconnection	TUE PM	SDCC	25A	181
Poster Session	TUE EVE	SDCC	Hall B1	312
Electrochemistry & Pb-free Soldering	WED AM	SDCC	25A	210
Pb-free Soldering & UBM	WED PM	SDCC	25A	236

Phase Transformations and Microstructural Evolution

Steels & General	MON AM	SDCC	16B	102
Ti & Zr, and Lightweight Metals Al & Mg	MON PM	SDCC	16B	126
Poster Session	MON EVE	SDCC	Hall B1	293
Shape Memory Alloys, and Lightweight Metals Al & Mg	TUE AM	SDCC	16B	153
Ti & Zr, and Steels	TUE PM	SDCC	16B	181
Shape Memory Alloys, and General	WED AM	SDCC	16B	211
Ti & Zr	WED PM	SDCC	16B	237
Steels and Shape Memory, and General	THU AM	SDCC	16B	259

Pioneers in Additive Manufacturing

Poster Session	MON EVE	SDCC	Hall B1	293
Session I	TUE AM	SDCC	7A	153
Session II	TUE PM	SDCC	7A	182

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Building	Room	Page
Rare Metal Extraction & Processing				
Rare Earth Elements I	MON PM	SDCC	17B	126
Poster Session	MON EVE	SDCC	Hall B1	293
Rare Earth Elements II and Platinum Group Metals	TUE AM	SDCC	17B	153
Base and Rare Metals	TUE PM	SDCC	17B	182
Recent Developments in Biological, Structural and Functional Thin Films and Coatings				
Biomaterials and Functional Films	MON AM	Marriott	Pacific 18	102
Multiscale Modeling of Thin Films	MON PM	Marriott	Pacific 18	126
Functional Surfaces and Thin Films I	TUE AM	Marriott	Pacific 18	154
Functional Surfaces and Thin Films II	TUE PM	Marriott	Pacific 18	182
Poster Session	TUE EVE	SDCC	Hall B1	312
Solar Cell Silicon				
Silicon Production, Crystallization, and Properties	WED PM	SDCC	19	237
Silicon Impurity Removal and Refining	THU AM	SDCC	19	259
Silicon Photovoltaics	THU PM	SDCC	19	277
Solid State Precipitation				
Poster Session	TUE EVE	SDCC	Hall B1	313
Session I	WED PM	SDCC	24C	237
Session II	THU AM	SDCC	25A	255
Session III	THU PM	SDCC	25A	277
Student-Run Symposium: Building Bridges – Connecting Academic and Industry Research				
Session I	MON PM	SDCC	22	103
Session II	MON PM	SDCC	22	127
The John Cahn Memorial Symposium				
Session I	WED AM	SDCC	22	211
Session II	WED PM	SDCC	22	238
The Science of Melt Refining: An LMD Symposium in Honor of Christian Simensen and Thorvald Abel Engh				
TAE/CJS Honorary Symposium I: Inclusion Removal	TUE AM	SDCC	3	154
TAE/CJS II Degassing and Oxidation	TUE PM	SDCC	3	183
TMS-Chinese Society for Metals-Federation of European Materials Societies Global Energy 2025				
Plenary Session	SUN PM	Marriott	Pacific Ballroom 21-26	80

TMS-Chinese Society for Metals-Federation of European Materials Societies Global Energy 2025 — Plenary Session

Sunday PM
February 26, 2017

Room: Pacific Ballroom 21-26
Location: Marriott Marquis Hotel

Session Chair: Jeremy Busby, Oak Ridge National Laboratory

6:00 PM Introductory Comments

6:05 PM Plenary

Grand Science Challenges to Energize a New Era of Innovation: *Harriet Kung*¹; ¹DOE Office of Basic Energy Sciences

6:35 PM Plenary

Advancement of Energy Industries and Related Critical Materials in China: *Zhiling Tian*¹; ¹Central Iron and Steel Research Institute (CISRI)

7:05 PM Plenary

Establishing Industrial Leadership of Europe in Advanced Materials for Low Carbon Energy: *Fabrice Stassin*¹; ¹EMIRI Association

7:35 PM Panel Discussion

8:00 PM Concluding Comments

2017 EPD Distinguished Lecture — Keynote session

Sponsored by: TMS Extraction and Processing Division
Program Organizer: Mark Schlesinger, Missouri University of Science and Technology

Monday AM
February 27, 2017

Room: 15B
Location: San Diego Convention Ctr

Session Chair: Mark Schlesinger, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:35 AM Keynote

The Theory and Application of Alkaline Sulfide Leaching and Nitrogen Species Catalyzed Pressure Oxidation Hydrometallurgical Technologies: *Corby Anderson*¹; ¹Colorado School of Mines

9:15 AM Break

2017 Light Metals Keynote Session — Global Aluminum Industry 2017: A Look Forward

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Edward Williams, Alcoa

Monday AM
February 27, 2017

Room: 1A
Location: San Diego Convention Ctr

Session Chair: Edward Williams, Alcoa

8:30 AM Introductory Comments

8:35 AM Keynote

Alcoa Corporation -- Strength Across the Value Chain: *Agnello Borim*¹; ¹Alcoa

9:00 AM Keynote

Rio Tinto Perspectives on the Global Aluminum Industry: *Vincent Christ*¹; ¹Rio Tinto

9:25 AM Keynote

Arconic Perspectives on the Global Aluminum Industry: *Moustapha Mbaye*¹; ¹Arconic

9:50 AM Question and Answer Period

10:10 AM Break

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Novel Nanomaterials and Techniques

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Monday AM
February 27, 2017

Room: Pacific 26
Location: Marriott Marquis Hotel

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Chang-Yong Nam, Brookhaven National Lab

8:30 AM Introductory Comments

8:40 AM Invited

Sequential Infiltration Synthesis (SIS) for Versatile Nanomaterials Fabrication: *Seth Darling*¹; Jeffrey Elam¹; ¹Argonne National Laboratory

9:10 AM Invited

Organometallic Infiltration into Polymers toward the Formation of Hybrid Organic-inorganic Nanomaterials: *Jesse Jur*¹; Halil Akyildiz¹; Richard Padbury¹; ¹North Carolina State University

9:40 AM

Direct Patterning Inorganic Nanostructures and Synthesis of Hybrid Materials via Infiltration Synthesis: *Chang-Yong Nam*¹; ¹Brookhaven National Laboratory

10:00 AM Break

10:20 AM Invited

Carbon-metal Oxides Nanocomposites by Atomic Layer Deposition: *Nicola Pinna*¹; ¹Humboldt-Universität zu Berlin

10:50 AM

Ultra-high Elastic Strain Energy Storage in AlOx-infiltrated SU-8 Photoresist Nanopillars: *Keith Dusoe*¹; Aaron Stein²; Chang-Yong Nam²; Seok-Woo Lee¹; ¹University of Connecticut; ²Brookhaven National Laboratory

11:10 AM Invited

Bi₂Te₃ Nanowire Materials and Devices: Interplay between Thermoelectric and Topological Insulators Properties: *Kornelius Nielsch*¹; ¹Leibniz Institute for Solid State and Materials Research

11:40 AM

Graphene-ZnO Hybrid with Enhanced Electronic Properties by Atomic Layer Deposition: *Myung Mo Sung*¹; ¹Hanyang University

12:00 PM

1-D, 2-D and 3-D Nanoscale Architectures: Fundamentals, Materials and Applications: *Simona Hunyadi Murph*¹; ¹Savannah River National Laboratory & University of Georgia

8th International Symposium on High Temperature Metallurgical Processing — Energy Efficient Clean Metallurgical Technology

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Monday AM Room: 18
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Zhiwei Peng, Central South University

9:20 AM Introductory Comments

9:25 AM

Flash Ironmaking from Magnetite Concentrate in a Laboratory Reactor: Experimental and CFD Work: Mohamed Elzohiery¹; De Qiu Fan¹; Yousef Mohassab¹; *H.Y. Sohn*¹; ¹University of Utah

9:45 AM

Synthesis of Chromite for Subsequent Carburization by Methane-hydrogen Gas Mixture: *Vincent Canaguier*¹; Leiv Kolbeinsen¹; Ingeborg-Helene Svenum²; ¹Norwegian University of Science and Technology; ²SINTEF Materials and Chemistry

10:05 AM Break

10:20 AM

Effects of Hydrogen-enriched Reduction on Metallurgical Properties of Iron-bearing Burdens under BF Operation with Cog Injection: Hongtao Wang¹; *Mansheng Chu*¹; Chuanguang Bi²; Zhenggen Liu¹; ¹Northeastern University; ²Shanghai Meishan Iron and Steel Corporation Ltd

10:40 AM

Investigations on Matrix Reactivity towards the Efficiency of the LSI Process: *Simge Tülbez*¹; Arcan Dericioglu¹; ¹Middle East Technical University

11:00 AM

Refractory Challenges in Lead Recycling Furnaces: *Dean Gregurek*¹; Katja Reinharter¹; Viktoria Reiter¹; Christine Wenzl¹; Alfred Spanring¹; ¹RHI AG

11:20 AM

Synthesis of Carbide Ceramics via Reduction of Adsorbed Anions on an Activated Carbon Matrix: *Grant Wallace*¹; Jerome Downey¹; Jannette Chorney¹; David Hutchins¹; Alaina Mallard¹; ¹Montana Tech of the Univ of MT

11:40 AM

Metals and Mattes Air Atomization: A New Method to Increase Productivity: Sina Mostaghel¹; Lily Lai Chi So¹; Santiago Faucher¹; Mahdi Mahdi¹; *Daan Sauter*¹; ¹Hatch Ltd.

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Materials, Methods, and Microstructures

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Monday AM Room: 7B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Eric Lass, NIST; Anthony Rollett, Carnegie Mellon University

8:30 AM Introductory Comments

8:35 AM Invited

Influence of Feedstock Characteristics in Additive Manufacturing: *Todd Palmer*¹; ¹Penn State

9:05 AM Invited

The Origin and Effect of HAZ Banding in Large Scale Wire-Arc Additive Manufacture with Ti-6Al-4V: Alistair Ho¹; Jack Donoghue¹; Thays Machry²; Jialuo Ding³; Filomeno Martina³; Stewart Williams³; *Phil Prangnell*¹; ¹The University of Manchester; ²Airbus Group Innovations; ³Cranfield University

9:35 AM

Investigation on the Effect of Process Parameters on the Grain Structures Formed during Wire-arc Additive Manufacture (WAAM) of 2xxx Series Aluminium Alloys: *Joseph Fixter*¹; Philip Prangnell¹; Eloise Eimer²; Jialuo Ding²; Stewart Williams²; ¹University of Manchester; ²Cranfield University

9:55 AM

Investigation into the Different Behavior of Gas and Water Atomized 316L Stainless Steel Powders in Selective Laser Melting: *Umberto Scipioni Bertoli*¹; Alexander Wolfer²; Manyalibo Matthews³; Saad Khairallah³; Kevin Wheeler⁴; Dogan Timucin⁴; Jean-Pierre Delplanque²; Julie Schoenung¹; ¹University of California, Irvine; ²University of California, Davis; ³Lawrence Livermore National Laboratory; ⁴NASA

10:15 AM Break

10:35 AM Invited

Selective Electron Beam Melting: A Powder Bed Based Additive Manufacturing Technology for High Performance Materials: *Carolin Körner*¹; ¹Universität Erlangen-Nürnberg

11:05 AM

Additive Manufacturing of Metals: Differing Microstructures with Varying Builds: *Roberta Beal*¹; Veronica Livescu¹; Manny Lovato¹; ¹Los Alamos National Laboratory

11:25 AM Invited

Small Features and Microstructures in 3D Printed Heat Exchangers: Samikshya Subedi¹; Erfan Rasouli²; Eric Truong²; Vinod Narayanan²; *Anthony Rollett*¹; ¹Carnegie Mellon University; ²University of California Davis

11:55 AM

Fundamental Study of the Effect of Process Variables in LMD Repairs with Inconel 718: *Faye McCarthy*¹; Chris Heason²; Gavin Baxter²; Phil Prangnell¹; ¹The University of Manchester; ²Rolls Royce Plc

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Novel Material Systems

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Monday AM
February 27, 2017

Room: 8
Location: San Diego Convention Ctr

Session Chairs: Amanda Wu, Lawrence Livermore National Laboratory; Michael Kirka, Oak Ridge National Laboratory

8:30 AM

Structure / Property (Constitutive and Dynamic Strength / Damage) Characterization of Additively Manufactured (AM) Tantalum Produced Using Different AM Build Methods: *George Gray*¹; Veronica Livescu¹; Cameron Knapp¹; Carl Trujillo¹; Roberta Beal¹; David Jones¹; ¹Los Alamos National Laboratory

8:50 AM

Microstructures of Nickel-base Superalloy IN100 Fabricated through Scanning Laser Epitaxy: *Amrita Basak*¹; Ranadip Acharya¹; Suman Das¹; ¹Georgia Institute of Technology

9:10 AM

Development of Titanium Alloys Optimized for Additive Manufacturing Employing Laser Deposition of Powders: Brian Welk¹; *Hamish Fraser*¹; ¹The Ohio State University

9:30 AM

Understanding the Influence of Powder Bed Fusion Processing on the Shape Memory Alloy, Uranium-6 wt. Pct. Niobium: *Amanda Wu*¹; Donald Brown²; Bjorn Clausen²; John Elmer¹; ¹Lawrence Livermore National Laboratory; ²Los Alamos National Laboratory

9:50 AM

Influence of Powder Characteristics on the Defects and Oxidation of High Purity Tungsten Produced via Selective Laser Melting (SLM): *Amanda Field*¹; Luke Carter¹; Nicholas Adkins¹; Mike Gorley²; Moataz Attallah¹; ¹University of Birmingham; ²UKAEA

10:10 AM Break

10:30 AM

Processing, Microstructure, and Tensile Behavior of MarM-247 Fabricated by Electron Beam Melting: *Michael Kirka*¹; Yousub Lee¹; Alfred Okello¹; Christopher Romanoski²; Kinga Unocic¹; Michael Massey³; Suresh Babu³; Ryan Dehoff²; ¹Oak Ridge National Laboratory; ²Vanderbilt University; ³University of Tennessee

10:50 AM

Additive Manufacturing of Polymer-derived Ceramics: Zak Eckel¹; Scott Biesboer¹; Kenneth Cante¹; John Martin¹; Brennan Yahata¹; Jacob Hundley¹; *Tobias Schaedler*¹; ¹HRL Laboratories, LLC

11:10 AM

A Comparison of Mechanical Properties of Additively Manufactured and Conventionally Manufactured Components: *Joy Forsmark*¹; ¹Ford Motor Company

11:30 AM

Additive Manufacturing of Alloy 718 by Powder Bed Fusion Methods: *John Porter*¹; Brian Hayes¹; Kenneth Davis²; Holly Garich³; Francesco Simonetti⁴; ¹UES Inc; ²CalRAM; ³Faraday Technology, Inc.; ⁴University of Cincinnati

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Monday AM
February 27, 2017

Room: 33C
Location: San Diego Convention Ctr

Session Chairs: David Collins, University of Oxford; Ricardo Lebensohn, Los Alamos National Laboratory

8:30 AM Invited

Recent Applications of Micromechanical Modeling Directly Coupled with Advanced Characterization Techniques of Polycrystalline Materials: *Ricardo Lebensohn*¹; Reemu Pokharel¹; ¹Los Alamos National Laboratory

8:50 AM

Effects of Crystallographic Structure on Damage Evolution Using Diffraction-amalgamated Grain-boundary Tracking Technique: *Kyosuke Hirayama*¹; Hiroyuki Toda¹; Teruyuki Shimoji¹; Yasuto Tanabe¹; Kentaro Uesugi²; Akihisa Takeuchi²; ¹Kyushu University; ²Japan Synchrotron Radiation Research Institute

9:10 AM

A Correlation between Digital Image Correlation and Grain Misorientation Distribution Mapping to Capture the Localized Plastic Deformation in a Polycrystalline Titanium Alloy: *Vahid Khademi*¹; Carl Boehlert¹; Thomas Bieler¹; Masahiko Ikeda²; Samantha Daly³; Zhe Chen³; ¹Michigan State University; ²Kansai University; ³University of California Santa Barbara

9:30 AM

Mapping the Deformation of Brazed Joints in Ti-6Al-4V Specimens Using High Angular Resolution Electron Backscatter Diffraction (HR-EBSD) and High Spatial Resolution Digital Image Correlation (HR-DIC): Jun Jiang¹; *Yongjuan Jing*²; Ben Britton¹; ¹Imperial College London; ²Beijing Research Institute of Aviation Engineering

9:50 AM Break

10:10 AM

Effect of Strain and Stress Holds on Deformation in Ti-6Al-4V: Microscale Evidence of Load Shedding: David Collins¹; Hamidreza Abdolvand²; Zhen Zhang³; Fionn Dunne³; Angus Wilkinson¹; ¹University of Oxford; ²Western University; ³Imperial College London

10:30 AM

Analysis of Strain Localization During Creep of a Polycrystalline Superalloy Using SEM-DIC: *Comor Slone*¹; Michael Mills¹; ¹The Ohio State University

10:50 AM

High Resolution Strain Measurements in a Polycrystalline Superalloy during Deformation at Intermediate Temperature: *J.C. Stinville*¹; M.P. Echlin¹; W.C. Lenthe¹; F. Bridier²; M. Soare³; S. Ismonov³; P. Bocher⁴; T.M. Pollock¹; ¹University of California Santa Barbara; ²DCNS Research; ³GE Global Research; ⁴Department of Mechanical Engineering, École de Technologie Supérieure, Montréal, Canada

11:10 AM

Understanding the Role of Competing Slip Systems during Formation of Stress Hotspots in Hexagonal Close Packed (HCP) Materials: *Ankita Mangal*¹; Elizabeth Holm¹; ¹Carnegie Mellon University

11:30 AM

In-situ Neutron Diffraction Studies of Load Path Changes in 316L and AZ31: *Tobias Panzner*¹; Tram Trang¹; Karl Sofinowski¹; Steven Van Petegem¹; Manas Upadhyay¹; Helena Van Swygenhoven²; ¹Paul Scherrer Institut; ²Paul Scherrer Institute & EPFL

11:50 AM

A Multi-scale FE-FFT Approach to Study Lattice Strain Evolution during Biaxial Strain Path Changes: *Manas Upadhyay*¹; Anirban Patra²; Wei Wen²; Steven Van Petegem¹; Tobias Panzner¹; Ricardo Lebensohn²; Carlos Tome²; Helena Van Swygenhoven³; ¹Paul Scherrer Institute; ²Los Alamos National Laboratory; ³Paul Scherrer Institute & EPFL

Advanced High-Strength Steels — Fundamentals of Steel Design

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Monday AM
February 27, 2017

Room: 17A
Location: San Diego Convention Ctr

Session Chairs: Tilmann Hickel, Max-Planck-Institut für Eisenforschung; Dong Woo Suh, Pohang University of Science and Technology

8:30 AM Invited

Ab Initio Guided Design of High Strength Steels: Where Do We Stand?: *Joerg Neugebauer*¹; Gerard Leyson¹; Xie Zhang¹; Fritz Koermann¹; Blazej Grabowski¹; Tilmann Hickel¹; ¹Max-Planck-Institut fuer Eisenforschung

9:00 AM

Paving the Bridge from Ab Initio to Atomistic Modeling of Advanced High-strength Steels: *Christopher Barrett*¹; Haitham El Kadiri¹; Robert Moser²; ¹Mississippi State University; ²US Army Corps of Engineers - ERDC

9:20 AM

Interface Guided Design of High-strength Steels: A Dream Coming True?: *Ivan Gutierrez-Urrutia*¹; ¹National Institute for Materials Science

9:40 AM

Is Twinning Important for Twinning-induced Plasticity Steels?: *Mingxin Huang*¹; ¹The University of Hong Kong

10:00 AM

New Law to Describe Plastic Anisotropy in BCC Metals: *Lucile Dezerald*¹; David Rodney²; Emmanuel Clouet³; Lisa Ventelon³; François Willaime³; ¹Université de Lorraine; ²Université Lyon 1; ³CEA Saclay

10:20 AM Break

10:40 AM

Deformation-Induced Martensite: A Thermodynamic Study: *Gh. Ali Nemaollahi*¹; Soundes Djaziri¹; Yujiao Li¹; Blazej Grabowski¹; Christoph Kirchlechner¹; Aleksander Kostka²; Shoji Goto¹; Dierk Raabe¹; Gerhard Dehm¹; Jörg Neugebauer¹; ¹Max-Planck Institut für Eisenforschung; ²Lehrstuhl Werkstoffdesign Institut für Werkstoffe Fakultät für Maschinenbau Ruhr-Universität Bochum

11:00 AM

The Development and Application of a Thermodynamic Database for Low-density Steels: *Reza Naraghi*¹; ¹Thermo-Calc Software AB

11:20 AM

Data Science Approaches for Predicting Fatigue Strength of Steels: *Ankit Agrawal*¹; Alok Choudhary¹; ¹Northwestern University

11:40 AM

Three Dimensional Atom Probe and First-principles Studies on Spinodal Decomposition of Cr in a High Strength Maraging Stainless Steel: *Wei Wang*¹; ¹Institute of Metal Research

Advanced Materials in Dental and Orthopedic Applications — Session I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Rajendra Kasinath, DePuy Synthes Products, LLC

Monday AM
February 27, 2017

Room: Pacific 14
Location: Marriott Marquis Hotel

Session Chairs: Holly Martin, Youngstown State University; Terry Lowe, Colorado School of Mines; Tolou Shokuhfar, University of Illinois at Chicago

8:30 AM Invited

Examining the Long-Term Exposure Effects of Simulated Body Fluid on the Behavior of Chitosan Bonded to Titanium Using Three Biocompatible Solvents: *Holly Martin*¹; Eruj Arif¹; Cameron Carroll¹; Vincent Pilolli¹; Snjezana Balaz²; ¹Department of Chemical Engineering, Youngstown State University; ²Department of Physics and Astronomy, Youngstown State University

9:00 AM

A New Ni-free Beta-Ti Alloy with Large and Stable Room Temperature Super-elasticity: *Song Cai*¹; J Schaffer¹; ¹Fort Wayne Metals Research Products Corp.

9:20 AM

A Novel Strengthening Strategy Using Stacking Faults for Biomedical Co-Cr-Mo Alloys: *Kenta Yamanaka*¹; Manami Mori²; Shigeo Sato³; Akihiko Chiba¹; ¹Tohoku University; ²National Institute of Technology, Sendai College; ³Ibaraki University

9:40 AM

Biomimetic Tooth Repair: Amelogenin-derived Peptides Enable In Vitro and In Vivo Enamel Remineralization: *Deniz Yucesoy*¹; Carolyn Gresswell¹; Sanaz Saadat¹; Hanson Fong¹; Sami Dogan¹; Mehmet Sarikaya¹; ¹University of Washington

10:00 AM Break

10:20 AM

Cellular Response of Escherichia Coli to Mg-2Zn-2Gd Alloy with Different Grain Structure: Mechanism of Disruption of Colonization: *Pramanshu Trivedi*¹; K.C. Nune¹; R.D.K. Misra¹; A.K. Patel²; K. Balani²; R. Jayathan²; ¹University of Texas at El Paso, Texas; ²Indian Institute of Technology

10:40 AM

Characterization of Chitin Synthesized from Snail Shell: *Samson Adeosun*¹; Oluwashina Gbenedor¹; Emmanuel Akpan¹; Adebayo Olaleye¹; ¹University of Lagos

11:00 AM

Failure Analysis and Fatigue Properties of a New Generation β -based Ti-Nb Alloy and Cp-4 Titanium Osteosynthesis Plates: *André Reckl*¹; Andreas Kaiser²; Stefan Pilz¹; Ulrich Thormann²; Volker Alt²; Annett Gebert³; Christian Hei³; Martina Zimmermann¹; ¹Dresden University of Technology; ²University Hospital Giessen-Marburg GmbH; ³Leibniz Institute for Solid State and Materials Research Dresden

11:20 AM

Functionalization of Dental Titanium Implants for Improved Osteointegration: Genevieve Pourroy¹; Fabienne Perrin-Schmitt²; Van Quang Le¹; Mathilde Giraudel¹; Caroline Fischer²; Géraldine Koenig²; Leandro Jacomine³; Luc Behr⁴; Alain Chalom⁴; Laurence Fiette⁴; Alexis Morlet⁴; *Adele Carradò*¹; ¹Université de Strasbourg IPCMS; ²Université de Strasbourg INSERM, UMRS1121; ³Institute Charles Sadron; ⁴Institut Mutualiste Montsouris

11:40 AM

Biodegradable Boron Coating for Wound Healing and Bone Regeneration Implants Via; DIMOX, Rheocasting and Thixocasting: *Bakr Rabeeh*¹; Nora Abu Bakr¹; ¹German University in Cairo, GUC

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In Situ Techniques I

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; Maria Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Monday AM Room: 32A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Sanjit Bhowmick, Hysitron, Inc.; Josh Kacher, Gatech

8:30 AM Keynote

Local Strains and Crack Initiation in Lamellar Gamma-TiAl: Thomas Edwards¹; Fabio Di Gioacchino¹; Rocio Munoz-Moreno¹; Mark Dixon²; Nigel Martin²; *William Clegg*¹; ¹University of Cambridge; ²Rolls-Royce plc

9:05 AM

In Situ TEM Imaging of Defects in Metallic Samples Deforming at High Strain Rates: *Thomas Voisin*¹; Michael Grapes¹; Yong Zhang¹; Nicholas Lorenzo²; Jonathan Ligda²; Brian Schuster²; Tian Li²; Melissa Santala²; Geoffrey Campbell³; Timothy Weihs¹; ¹Johns Hopkins University; ²Army Research Laboratory; ³Lawrence Livermore National Laboratory

9:25 AM

Investigating Grain Rotations in Ultrafine-grained Aluminum Films Using In Situ TEM Straining with Automated Crystal Orientation Mapping: *Ehsan Izadi*¹; Amith Darbal²; Rohit Sarkar¹; Jagannathan Rajagopalan¹; ¹Arizona State University; ²AppFive LLC.

9:45 AM Invited

A Greater Understanding of Deformation in BCC Nanocrystalline Metals Using Quantitative In Situ TEM Techniques: *Mitra Taheri*¹; Gregory Vetterick¹; Asher Leff¹; M Marshall²; Khalid Hattar²; J. Kevin Baldwin²; Amit Misra⁴; ¹Drexel University; ²Sandia National Laboratories; ³Los Alamos National Laboratory; ⁴University of Michigan

10:10 AM Break

10:30 AM

In Situ TEM Study of Atomic Level Phase Transformation in Cerium-based Oxides during Redox Processes: *Ruigang Wang*¹; ¹The University of Alabama

10:50 AM

A New Designed Rig for In Situ Neutron Diffraction Creep Experiments under Different Boundary Conditions: *Yiqiang Wang*¹; Saurabh Kabra²; Shuyan Zhang²; Sayeed Hossain¹; David Smith¹; ¹University of Bristol; ²ISIS, Science and Technology Facilities Council

11:10 AM

Progress in In-situ Testing in the Electron Microscope at Cryogenic Temperatures: *Jeffrey Wheeler*¹; ¹ETH Zurich

11:30 AM

Dislocation Drag Coefficient Measurements via In-situ Micropillar Compression Experiments: *Tommaso Giovannini*¹; Finn Giuliani¹; Daniel Balint¹; Ayan Bhowmik¹; ¹Imperial College London

11:50 AM

Unusual Brittle to Ductile Transition in Single Crystalline Silicon: In Situ Micro-scale Fracture Studies at Elevated Temperature: *Nagamani Jaya Balila*¹; Jeffrey Wheeler²; Juri Wehrs³; James Best³; Johannes Michler²;

Christoph Kirchlechner¹; Gerhard Dehm¹; ¹MPIE GmbH; ²ETH Zurich; ³EMPA-Swiss Federal Laboratories for Materials Science and Technology

Advances in Environmental Technologies: Recycling and Sustainability Joint Session — Advances in Environmental Technologies: Characterization and Uncertainty

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Pyrometallurgy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Mark Kennedy, Proval Partners SA; Naiyang Ma, ArcelorMittal; Elsa Olivetti, Massachusetts Institute of Technology; Randolph Kirchain, Massachusetts Institute of Technology

Monday AM Room: 14B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Naiyang Ma, Arcelor Mittal; Randolph Kirchain, MIT

8:30 AM

Understanding Scrap Recycling and the Potential of Hand-held Elemental Analyzers: *Teija Mortvedt*¹; Adam Gesing²; Subodh Das³; Gabrielle Gaustad¹; Elsa Olivetti⁴; ¹Rochester Institute of Technology; ²Gesing Consultants; ³Phinix, LLC; ⁴Massachusetts Institute of Technology

8:50 AM

Characteristics of Municipal Solid Waste Incineration Bottom Ash with Particulate Matters PM2.5 ~PM10: *Ahn Ji Whan*¹; Thenepalli Thriveni²; ¹Korea Research Institute of Geoscience and Mineral Resources(KIGAM); ²Korea Research Institute of Geoscience and Mineral Resources(KIGAM)

9:10 AM

Development of Open Source Software Tool for Life Cycle Assessment of Rare Earth Elements Production: *Ehsan Vahidi*¹; Praneet Arshi¹; Fu Zhao¹; ¹Purdue University

9:30 AM

Scoping the Potential of Coal Ash as a Source of Rare Earth Elements: *Gabrielle Gaustad*¹; Vasken Xhaxhollari¹; Eric Williams¹; Saptarshi Das¹; ¹Rochester Institute of Technology

9:50 AM Break

10:10 AM

Addressing Criticality in Rare Earth Elements through Strategic Recycling: *Cajetan Nlebedim*¹; ¹Ames Laboratory, US Department of Energy

10:30 AM

Environmental Implications of Laser Metal Deposition: The Role of Feedstock Powder and Material Utilization Fraction: *Kaka Ma*¹; Julie Schoenung²; ¹Colorado State University; ²University of California Irvine

10:50 AM

Development of a Separation Process of NBR/ HNBR Rubber from Metal Substrate: Mariana Nascimento¹; *Sarah Scardelatto*¹; ¹Centro Universitário Fundação Santo André

11:10 AM Poster Session Preview

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Session I

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

Monday AM
February 27, 2017

Room: 21
Location: San Diego Convention Ctr

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Philippe Jund, Institut Charles Gerhardt Montpellier - UMR 5253 CNRS-UM-ENSCM

8:30 AM Introductory Comments

8:35 AM Invited

Novel Approaches on the Design of Thermoelectric Materials for Power Generation: Present and Future Prospects: *Dinesh Misra*¹; ¹CSIR-NPL

8:55 AM Invited

The ALMA Project: Extending First-principles Thermal Conductivity Calculations beyond Single Crystals: *Jesús Carrete Montaña*¹; ¹Technological University of Vienna

9:15 AM Invited

Combinatorial Approach in Thermoelectric Materials Research: *Winnie Wong-Ng*¹; *Yonggao Yan*²; *Joshua Martin*¹; *Makoto Otani*¹; *Sara Barron*¹; *Nam Nguyen*¹; *Evan Thomas*³; *Kevin Talley*¹; *Martin Green*¹; ¹NIST; ²Wuhan University of Technology; ³AFRL

9:35 AM

Data Science Approaches for Predicting Thermoelectric Properties: *Al'ona Furmanchuk*¹; *Ankit Agrawal*¹; *Alok Choudhary*¹; ¹Northwestern University

9:55 AM Invited

High-Throughput Computational Screening for Two-Dimensional Thermoelectric Materials: *Lan Li*¹; *Izaak Williamson*¹; ¹Boise State University

10:15 AM Break

10:35 AM Invited

Thermoelectricity in Full-Heusler Systems: From Ab-initio Calculations Towards Promising Materials Design: *Ernst Bauer*¹; *Igor Knapp*¹; *Sergei Khmelevskiy*¹; *Peter Prenninger*²; ¹Vienna University of Technology; ²AVL List

10:55 AM Invited

Band Engineering and Phonon Interactions in Thermoelectric Materials from First-Principles Calculations: *Yue Chen*¹; ¹The University of Hong Kong

11:15 AM Invited

Ab Initio Calculations of the Lattice Thermal Conductivity and the Discovery of New Thermoelectric Materials: *Laurent Chaput*¹; ¹LEMETA

11:35 AM

Integrating High-throughput Computations and Experimental Knowledge to Advance Design and Discovery of Novel Thermoelectric Materials: *Vladan Stevanovic*¹; ¹Colorado School of Mines

11:55 AM

Thermoelectric Properties of Synthesized Sulfides –Adjusted on First Principle Calculation for Screening-: *Tomohiro Sato*¹; *Shuhei Ishikawa*¹; *Toshiki Akamune*¹; *Ken-ichi Saitoh*¹; *Masanori Takuma*¹; *Yoshimasa Takahashi*¹; ¹Kansai University

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Plenary Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Monday AM
February 27, 2017

Room: 15B
Location: San Diego Convention Ctr

Session Chair: Hong Yong Sohn, University of Utah

9:20 AM

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies-Contributions of Professor Ramana Reddy: *Shijie Wang*¹; ¹National Institute of Technology

9:50 AM

Towards the Innovation Economy: An Industry Perspective on Radical Innovation: *Tom Hennebel*¹; *Isabel Vermeulen*¹; *Karolien Vasseur*¹; *Lennart Scheunis*¹; *Christina Meskers*¹; *Marleen Esprit*¹; *Maurits Van Camp*¹; ¹Umicore

10:20 AM Break

10:35 AM

Status of the Development of Flash Ironmaking Technology: *H.Y. Sohn*¹; *Yousef Mohassab*¹; *Mohamed Elzohiery*¹; *De Qiu Fan*¹; *Amr Abdelghany*¹; ¹University of Utah

11:05 AM

Innovations and Insights in Fluid Flow and Slime Adhesion for Improved Copper Electrorefining: *Weizhi Zeng*¹; *Michael Free*¹; *Shijie Wang*²; ¹University of Utah; ²Rio Tinto Kennecott Utah Copper

11:35 AM

Molten Flux Design for Solid Oxide Membrane-Based Electrolysis of Aluminum from Alumina: *Shizhao Su*¹; *Thomas Villalon*¹; *Uday Pal*¹; ¹Boston University

12:05 PM

Effect of Slag Phase on Mixing and Mass Transfer in a Model Creusot Loire Uddeholm (CLU) Converter: *Rauf Eric*¹; *Admire Chaendera*¹; ¹University of the Witwatersrand

Applications of Solidification Fundamentals — Characterization of Solidification Structures I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, McMaster University; Amber Genau, University of Alabama at Birmingham; Lifeng Zhang, University of Science and Technology Beijing

Monday AM Room: 19
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Amber Genau, University of Alabama at Birmingham; Melis Serefoglu, Koc University

8:30 AM Invited

In-situ Imaging of Metallic Alloy Solidification Dynamics for Advanced Manufacturing: *Amy Clarke*¹; Seth Imhoff²; Damien Tournet²; John Gibbs²; James Mertens²; Younggil Song³; Kamel Fezzaa⁴; James Hunter²; Michelle Espy²; Frank Merrill²; Fesseha Mariam²; Carl Wilde²; Brian Patterson²; Ricardo Lebensohn²; Joseph McKeown²; John Roehling²; Theron Rodgers²; Jonathan Madison⁶; Paul Gibbs⁶; Kevin Baldwin²; Alain Karma³; ¹Colorado School of Mines; ²Los Alamos National Laboratory; ³Northeastern University; ⁴Argonne National Laboratory; ⁵Lawrence Livermore National Laboratory; ⁶Sandia National Laboratories

8:50 AM

4D Synchrotron X-ray Tomography of Dendritic Microstructure Evolution in a Co Based Alloy during Solidification: *Mohammed Azeem*¹; Peter Rockett²; Andre Phillion³; Shyamprasad Karagadde¹; Robert Atwood²; Loic Courtois¹; Peter Lee¹; ¹Manchester University; ²Oxford University; ³McMaster University; ⁴Diamond Light Source

9:10 AM

Quantifying Dendritic Evolution in Mg Alloys Using In Situ Synchrotron Tomography: *Enyu Guo*¹; André Phillion²; Daniil Kazantsev¹; Sansan Shuai¹; Tao Jing³; Peter Lee¹; ¹University of Manchester; ²McMaster University; ³Tsinghua University

9:30 AM

Using Synchrotron X-ray Radiography to Measure the Statistics of Intermetallic Compound (IMC) Selection and Growth during Solidification: *Shikang Feng*¹; Enzo Liotti¹; Andrew Lui¹; Sundaram Kumar¹; Keyna O'Reilly¹; Patrick Grant¹; ¹University of Oxford

9:50 AM

Analytics on Large Microstructure Datasets Using Two Point Statistics: Application to Coarsening Dendritic Solid-Liquid Mixtures: *Yue Sun*¹; Ahmet Cecen²; Surya Kalidindi²; Peter Voorhees¹; ¹Northwestern University; ²Georgia Institute of Technology

10:10 AM Break

10:30 AM

Four Dimensional Real-time Studies of Metal Solidification under External Fields: *Wenjia Du*¹; Chuangnan Wang¹; Billy Koe¹; Jiawei Mi¹; ¹University of Hull

10:50 AM

Scandium Effect on Undercooling and Dendrite Morphology of Al-4.5 wt.%Cu Droplets: *Jonas Vallotton*¹; Abdoul-Aziz Bogno¹; Daniel Auras²; Marie Bedel²; Guillaume Reinhart³; Hani Henein¹; ¹University of Alberta; ²ENSAM; ³Aix Marseille Univ, CNRS, IM2NP

11:10 AM

Fluid Flow and Its Influence on Crystal Growth Kinetics in Undercooled Melts: *Dieter Herlach*¹; Sven Reutzel¹; Sven Binder¹; Hailong Peng¹; Thomas Voigtmann¹; ¹Deutsches Zentrum für Luft- und Raumfahrt

11:30 AM

In-situ Observation of Multiple Equiaxed Dendrite Interaction under Reduced Gravity Conditions: *Laszlo Sturz*¹; Janin Eiken¹; Gerhard Zimmermann¹; ¹Access e.V.

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Fundamentals I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Monday AM Room: Pacific 15
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Candan Tamerler, University of Kansas; Terry Lowe, Colorado School of Mines

8:30 AM Keynote

Principles of Molecular Biomimetics versus Materials Science and Engineering: *Mehmet Sarikaya*¹; ¹University of Washington

9:10 AM Invited

Materials Construction through Peptide Design and Solution Assembly: *Darrin Pochan*¹; ¹University of Delaware

9:40 AM Invited

Interfaces Drive the Mechanics of Hard Biological Materials: Discrete Element Models and Bioinspired Prototypes: *Francois Barthelat*¹; ¹McGill University

10:10 AM Break

10:30 AM Keynote

Engineering Solid Binding Proteins to Control Functional Nanostructure Assembly, Solid Interactions and Inorganic Mineralization: *François Baneyx*¹; ¹University of Washington

11:10 AM

Quasiparticle Approach to Self-assembly Kinetics of DNA and RNA Molecules: *Helena Zapolsky*¹; Mykola Lavrskyi¹; Armen Khachaturyan²; ¹University of Normandy, Rouen; ²University of California and Rutgers University

11:30 AM Keynote

Multidimensional Atomic Force Microscopy for Physical and Biological Interfaces: Seeing the Invisible and Feeling the Insensible?: *Ramesh Lal*¹; ¹University California, San Diego

Biological Materials Science — Synthesis of Bio-inspired Composites

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Monday AM Room: Pacific 15
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Po-Yu Chen, National Tsing Hua University; Steven Naleway, University of Utah

8:30 AM Invited

3D Printing of Hierarchical Porous Materials: *Andre Studart*¹; Clara Minas¹; Davide Carnelli¹; Elena Tervoort¹; ¹ETH Zurich

9:00 AM

Bio-inspired Flexible Armors with 3D Printed Tailored Architectures: Roberto Martini¹; Yanis Balit¹; David VanZyl¹; *Francois Barthelat*¹; ¹McGill University

9:20 AM

Intrinsic and Extrinsic Control of Bioinspired Freeze Casting: *Steven Naleway*¹; Marc Meyers²; Joanna McKittrick²; ¹University of Utah; ²University of California, San Diego

9:40 AM

Fabrication and Characterization of Bioinspired Alumina with a Bulk Metallic Glass Matrix: *Amy Wat*¹; Jein Lee²; Bernd Gludovatz³; Eun Soo Park²; Robert Ritchie¹; ¹University of California, Berkeley; ²Seoul National University; ³Lawrence Berkeley National Laboratory

10:00 AM Break

10:20 AM Keynote

Bioinspired Structural Materials - "Nacre-Like" Compliant-Phase Ceramics: Where Are We Now?: *Robert Ritchie*¹; Antoni Tomsia²; ¹Lawrence Berkeley National Laboratory/University of California, Berkeley; ²Lawrence Berkeley National Laboratory

11:00 AM

Porcupine Fish Inspired Radial and Concentric Freeze: *Frances Su*¹; Joyce Mok¹; Joanna McKittrick¹; ¹University of California, San Diego

11:20 AM

Fabrication, Characterization and Modeling of Freeze-casted Ceramic Platelet Composites: *Majid Minary*¹; ¹University of Texas at Dallas

11:40 AM

Synergistic Porous Structures from Magnetic Freeze Casting with Surface Magnetized Alumina Particles and Platelets: *Michael Frank*¹; Sze Hei Siu¹; Steven Naleway¹; Chin-Hung Liu¹; Keyur Karandikar¹; Olivia Graeve¹; Joanna McKittrick¹; ¹UC San Diego

Bulk Metallic Glasses XIV — Alloy Development and Application I

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Monday AM
February 27, 2017

Room: 33A
Location: San Diego Convention Ctr

Session Chairs: Peter Liaw, The University of Tennessee; William Johnson, California Institute of Technology

8:30 AM Keynote

Buckle Modes: A Simple Model for the Thermodynamics of Configurational Excitations in Metallic Glass Forming Liquids: *William Johnson*¹; ¹California Institute of Technology

9:00 AM Invited

A Strategy Towards Decreasing the Cost of Humanoid Robotics Utilizing Bulk Metallic Glasses (Part 1): *Douglas Hofmann*¹; Scott Roberts¹; Peter Dillon¹; ¹NASA JPL/Caltech

9:20 AM Invited

The Development, Manufacturing and Testing of New Robotics Gearbox Enabled by Bulk Metallic Glass (Part 2): *Douglas Hofmann*¹; Scott Roberts¹; Peter Dillon¹; ¹NASA JPL/Caltech

9:40 AM Invited

Manufacturing of Metallic Glasses by Rapid Discharge Forming: *Marios Demetriou*¹; William Johnson²; ¹Glassmetal Technology; ²California Institute of Technology

10:00 AM Invited

Interface-Mediated Monatomic Metallic Glasses Formation Through Ultrafast Liquid Quenching: Li Zhong¹; Jiangwei Wang¹; Hongwei Sheng²; Ze Zhang³; *Scott Mao*¹; ¹University of Pittsburgh; ²George Mason University; ³Zhejiang University

10:20 AM Break

10:40 AM Invited

Fabrication and Characterization of Roll Bonded, Laminated Bulk Metallic Glass/Metal Composites: Sina Shahrezaei¹; Stephanie O'Keeffe²;

Irene Beyerlein³; *Suveen Mathaudhu*¹; ¹University of California Riverside; ²Liquidmetal Technologies, Inc.; ³University of California, Santa Barbara

11:00 AM Invited

Improving the Fracture Toughness of Bulk Metallic Glasses by Thermomechanical Treatments: *Jamie Kruzic*¹; Bosong Li¹; Shenghui Xie²; Hamed Shakur Shahabi³; Sergio Scudino³; Jürgen Eckert⁴; ¹UNSW Australia; ²Shenzhen University; ³IFW Dresden; ⁴Montanuniversität Leoben

11:20 AM Invited

Formation and Properties of Biodegradable Mg-Zn-Ca-Sr Bulk Metallic Glasses for Biomedical Applications: *Shujie Pang*¹; Haifei Li¹; Ying Liu¹; Peter K. Liaw²; Tao Zhang¹; ¹Beihang University; ²University of Tennessee

11:40 AM Invited

Critical Cooling Rate versus Critical Heating Rate in BMG-forming Alloys: C.W. Ryu¹; *E.S. Park*¹; G.W. Lee²; K.F. Kelton³; ¹Seoul National University; ²Korea Research Institute of Standards and Science; ³Washington University

Ceramic Materials for Nuclear Energy Research and Applications — Microstructural Evolution under Irradiation in Oxide Ceramics

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee
Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Monday AM
February 27, 2017

Room: Palomar
Location: Marriott Marquis Hotel

Session Chairs: Yongfeng Zhang, Idaho National Laboratory; Thierry Wiss, EC - JRC - Institute for Transuranium Elements

8:30 AM Invited

Ceramic Materials for Nuclear Energy Research and Applications: *Kurt Sickafus*¹; ¹University of Tennessee

9:00 AM

Alpha-damage Formation in Mixed Americium-uranium Compounds: *Thierry Wiss*¹; Oliver Dieste¹; Rudy Konings¹; Ondrej Benes¹; Jean-Yves Colle¹; Joaquina Zappey¹; Florent Lebreton²; Thibaud Delahaye²; Enrica Epifano²; Philippe Martin²; Christine Guéneau²; Damien Prieur¹; Joe Somers¹; ¹European Commission; ²CEA

9:20 AM

Microstructural Characterization of the Processes, Stability, and End-of-Range Effects in Heavily Irradiated Pyrochlores: *Terry Holesinger*¹; James Valdez¹; Cortney Kreller¹; Yongqiang Wang¹; Blas Uberuaga¹; ¹Los Alamos National Laboratory

9:40 AM

Probing Oxygen Defects in Ion Irradiated Actinide and Analogue Oxides Using Neutron Total Scattering: *Raul Palomares*¹; Jacob Shamblyn¹; Cameron Tracy²; Christina Trautmann³; Maik Lang¹; ¹The University of Tennessee; ²Stanford University; ³GSF Helmholtzzentrum für Schwerionenforschung

10:00 AM Break

10:20 AM Invited

High Burn-up Nuclear Fuel, Impact of Fission Gases: *Jean Noiroi*¹; Philippe Bienvenu¹; Isabelle Zacharie-Aubrun¹; Karine Hanifi¹; Laurent Fayette¹; Aurelien Moy¹; Yves Pontillon¹; ¹CEA

10:50 AM Invited

Irradiation Effects on Electrochemical Performance of TiO₂ Anode: *Janelle Wharry*¹; Kassiopeia Smith²; Hui Xiong²; Darryl Butt³; ¹Purdue University; ²Boise State University; ³University of Utah

11:20 AM

Role of Ion Species in Radiation Effects of $\text{Lu}_2\text{Ti}_2\text{O}_7$: Dongyan Yang¹; Yuhong Li¹; ¹Lanzhou University

11:40 AM

In-Situ Tritium Measurements from γ - LiAlO_2 Pellets Irradiated in TMIST-3A: Walter Luscher¹; David Senor¹; Kevin Clayton²; ¹Pacific Northwest National Laboratory; ²Idaho National Laboratory

Characterization of Materials through High Resolution Coherent Imaging — Coherent Imaging I

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Lab; Xianghui Xiao, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Saryu Fensin, Los Alamos National Laboratory; Brian Abbey, LaTrobe University; Ana Diaz, Paul Scherrer Institut

Monday AM
February 27, 2017

Room: 25B
Location: San Diego Convention Ctr

Session Chair: Brian Abbey, ARC Centre of Excellence for Advanced Molecular Imaging

8:30 AM

High Resolution Coherent Imaging for Materials: Anthony Rollett¹; ¹Carnegie Mellon University

9:10 AM

Applications of High Resolution Coherent X-Ray Imaging Techniques for Investigating Additively Manufactured Materials: Ross Cunningham¹; Anthony Rollett¹; ¹Carnegie Mellon University

9:30 AM

3D Imaging of High-pressure Induced Deformation Twinning in a Nanocrystal: Xiaojing Huang¹; Wenge Yang²; Ross Harder³; Yugang Sun⁴; Ming Lu¹; Yong Chu¹; Ian Robinson⁵; Ho-kwang Mao²; ¹Brookhaven National Laboratory; ²HPSTAR; ³Advanced Photon Source; ⁴Center for Nanoscale Materials; ⁵University College London

9:50 AM

Nanoscale Chemical Imaging of an Individual Catalyst Particle with Soft X-ray Ptychography: Johanna Weker¹; Anna Wise¹; Sam Kalirai²; Maryam Farmand³; David Shapiro³; Florian Meirer²; Bert Weckhuysen²; ¹SLAC National Accelerator Laboratory; ²Utrecht University; ³Lawrence Berkeley National Laboratory

10:10 AM Break

10:30 AM

3D X-ray Imaging of Defect Dynamics in Nanostructured Materials: Andrew Ulvestad¹; ¹Argonne National Laboratory

11:00 AM

Characterizing Evolving Processes through Coupled CDI and Molecular Dynamics Studies: Mathew Cherukara¹; Kiran Sasikumar¹; Subramanian Sankaranarayanan¹; Ross Harder¹; ¹Argonne National Lab

11:30 AM

Coherent Diffractive Imaging with Wavelength Spatial Resolution using 13.5nm High Harmonics: Full Field, High-contrast Imaging on a Tabletop: Dennis Gardner¹; Michael Tanksalvala¹; Elisabeth Shanblatt¹; Xiaoshi Zhang²; Benjamin Galloway¹; Christina Porter¹; Robert Karl¹; Charles Bevis¹; Margaret Murnane¹; Henry Kaptyen¹; Daniel Adams¹; Giulia Mancini¹; ¹University of Colorado; ²KM Labs

11:50 AM

Revolutions in Coherent X-ray Sources Will Enable Dynamic Nanometer Scale Strain Imaging in Structural Materials: Richard Sandberg¹; Saryu Fensin¹; Ross Harder²; John Barber¹; Richard Sheffield¹; Reeru Pokharel¹; Ricardo Lebensohn¹; Cris Barnes¹; ¹Los Alamos National Laboratory; ²Argonne National Laboratory

Characterization of Minerals, Metals, and Materials — Clays and Ceramics

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Monday AM
February 27, 2017

Room: 32B
Location: San Diego Convention Ctr

Session Chairs: Bowen Li, Michigan Technological University; Carlos Fontes Vieira, UENF

8:30 AM

Effect of Skin-Core Hierarchical Structure on Dielectric Constant of Injection Molded and Cast Film Extruded Liquid Crystalline Polymer: Mark Shooter¹; Anil Saigal¹; Michael Zimmerman¹; ¹Tufts University

8:50 AM

Aging Behaviour in $\text{Ni}_{0.5}\text{Co}_x\text{Mn}_{2.5-x}\text{O}_4$ ($x=0.5, 0.8$ and 1.1) Thermistors: Gökhan Hardal¹; Berat Yüksel Price¹; ¹Istanbul University

9:10 AM

Adsorption of Lead from Aqueous Solutions to Bentonite and Composite: Zhu Shu Jing¹; Ying Qin²; ¹Michigan Technological University; ²Wuhan University of Technology

9:30 AM

Fabrication of Transparent Lanthana-doped Yttria Ceramics by Spark Plasma Sintering: Esin Korkmaz¹; ¹Istanbul Technical University

9:50 AM

Microstructure and Mechanical Properties of Silicon Doped Boron Carbide: Luoning Ma¹; Fatih Toksoy²; Kelvin Xie¹; Kanak Kuwelkar²; Richard Haber²; Kevin Hemker¹; ¹Johns Hopkins University; ²Rutgers University

10:10 AM Break

10:25 AM

Synthesis and Characterization of Textured BCZT Ceramics Prepared by Molten Salt Synthesis Method: Jai Shree K¹; Chandrakala E¹; Dibakar Das¹; ¹University of Hyderabad

10:45 AM

Mechanical Analysis of Artificial Stone Produced with Glass Waste in Polymeric Matrix: Lucas Martins¹; Carlos Maurício Vieira¹; Elaine Carvalho¹; Sérgio Monteiro²; ¹UENF; ²IME

11:05 AM

Phase Transformation of Andalusite-Mullite and Its Roles to Microstructure and Sinterability of Refractory Ceramic: Bowen Li¹; Mengsheng He¹; Huaguang Wang¹; ¹Michigan Technological University

11:25 AM

Structural Characterization of LaxSr1-xCoO_3 (LSC 113) / ($\text{LaxSr1-x})_2\text{CoO}_4$ (LSC 214) Hetero-Interface Cathode for Intermediate Temperature Solid Oxide Fuel Cells: Dogancan Sari¹; Eren Kalay¹; Tayfur Ozturk¹; ¹METU

11:45 AM

Production and Characterization of Magnesium Aluminate Spinel (MgAl_2O_4) Ceramics with Light Transmission by Spark Plasma Sintering: Seyran Saridas¹; Filiz Sahin¹; ¹Istanbul Technical University

Characterization of Minerals, Metals, and Materials — Soft Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Monday AM
February 27, 2017

Room: 31B
Location: San Diego Convention Ctr

Session Chairs: Sérgio Monteiro, IME; Andrew Brown, UNSW Canberra

8:30 AM

Analysis of the Elastic Properties and Reaction Kinetics of an Epoxy Resin Polymer during Cure Relaxation: *Manon Heili*¹; Andrew Bielawski²; John Kieffer²; ¹University of Michigan; ²University of Michigan

8:50 AM

Charpy Toughness Behavior of Figue Fabric Reinforced Polyester Matrix Composites: Artur Camposo Pereira¹; *Foluke Salgado de Assis*¹; Sergio Neves Monteiro¹; Henry Colorado²; ¹Instituto Militar de Engenharia; ²Universidad de Antioquia

9:10 AM

Comparative Analysis of Curaua Fiber Density Using the Geometric Characterization and Pycnometry Technique: *Natália Maciel*¹; Carolina Ribeiro¹; Janaina Vieira¹; Jordana Ferreira¹; Frederico Margem¹; Carlos Mauricio Vieira¹; Sérgio Monteiro²; Cláudio Roberto Marciano¹; ¹UENF; ²IME

9:30 AM

Izod Impact Tests in Polyester Matrix Composites Reinforced with Blanket of the Malva and Jute Fibers: Carolina Ribeiro¹; Frederico Margem²; Jean Margem³; *Sérgio Monteiro*⁴; Ygor de Moraes¹; João Batista Gomes³; ¹State University of the Northern Rio de Janeiro; ²Faculdade Redentor; ³ISECENSA; ⁴Instituto Militar de Engenharia

9:50 AM

Tensile Behavior of Epoxy Matrix Composites Reinforced with Eucalyptus Fibers: *Caroline Gomes de Oliveira*¹; Anna Carolina Cerqueira Neves¹; Gilson Vieira Fernandes¹; Marcos Vinícius Fonseca Ferreira¹; Frederico Margem Muylaert²; Sérgio Neves Monteiro³; ¹UENF - Universidade Estadual do Norte Fluminense; ²Faculdade Redentor; ³Instituto Militar de Engenharia

10:10 AM Break

10:25 AM

Izod Toughness Behavior of Continuous PALF Fibers Reinforced Polyester Matrix Composites: *Gabriel Glória*¹; Giulio Altoé²; Maycon Gomes³; Maria Carolina Teles¹; Frederico Muylaert¹; Carlos Mauricio Vieira¹; Sérgio Monteiro⁴; ¹State University of the Northern Rio de Janeiro; ²Pontificia Universidade Católica do Rio de Janeiro; ³Instituto Federal Fluminense; ⁴Instituto Militar de Engenharia

10:45 AM

Mechanical, Thermal, Morphology and Barrier Properties of Flexible Film Based on Polyethylene-ethylene Vinyl Alcohol Blend Reinforced with Graphene Oxide: Julyana Santana¹; Angel Ortiz¹; Rene Oliveira¹; Vijaya Rangari²; Olgun Güven³; *Esperidiana Moura*¹; ¹Instituto de Pesquisas Energéticas e Nucleares; ²Tuskegee University; ³Hacettepe University, Department of Chemistry, Polymer Chemistry Division

11:05 AM

Izod Impact Tests in Epoxy Matrix Reinforced with Figue Fibers: Maria Carolina Teles¹; Sérgio Monteiro²; Djalma Souza¹; *Frederico Margem*³; ¹State

University of the Northern Rio de Janeiro; ²Instituto Militar de Engenharia; ³Faculdade Redentor

11:25 AM

Radiation Effects on Crosslinking of Butyl Rubber Compounds: *Sandra Scagliusi*¹; Elizabeth Cardoso¹; Ademar Lugao¹; ¹IPEN

11:45 AM

Viscoelastic Properties of Human Dental Pulp Tissue: *Burak Ozcan*¹; Ece Bayrak¹; Cevat Eriskan¹; ¹TOBB University of Economics and Technology

12:05 PM

The Dimensional Characterization of Jute Fabric Strips for Reinforcement in Composite Polymer: *Frederico Margem*¹; Sergio Monteiro²; Vinicius de Oliveira Barbosa³; Glênio Fernando Daniel³; André Raeli Gomes³; Victor Barbosa de Souza³; ¹UENF; ²IME; ³Redentor

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Materials Informatics Approaches

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Monday AM
February 27, 2017

Room: 11A
Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Invariant Representations for Robust Materials Prediction: *Gus Hart*¹; Conrad Rosenbrock¹; Gábor Csányi²; ¹Brigham Young University; ²Cambridge University

9:00 AM

A Tetrahedron Tiling Method for Crystal Structure Prediction: *Qijun Hong*¹; Axel van de Walle¹; ¹Brown University

9:20 AM

An Unsupervised Pattern Recognition Approach for Local Structural Analysis of Condensed Matter: *Arash Dehghan Banadaki*¹; Srikanth Patala¹; ¹North Carolina State University

9:40 AM

A Tree Search Approach to Designing Kinetically Active Molecular Materials: Charles Manion¹; Ryan Arlitt¹; Laura de Sousa Oliveira²; Matthew Campbell¹; *P Greaney*²; ¹Oregon State University; ²University of California, Riverside

10:00 AM Break

10:15 AM Invited

Benchmarking and Validation of Density Functional Theory for Solids: *Francesca Tavazza*¹; ¹National Institute of Standards and Technology

10:45 AM

Design of Experiments Approach to Optimizing Complex Bond Order and Reactive Potentials: *Efrain Hernandez-Rivera*¹; Souma Chowdhury²; Mark Tschoopp¹; Shawn Coleman¹; ¹U.S. Army Research Lab; ²University of Buffalo

11:05 AM

The OpenKIM Testing Framework for Interatomic Potentials: *Ellad Tadmor*¹; Ryan Elliott¹; Daniel Karls¹; Matthew Bierbaum²; James Sethna²; ¹University of Minnesota; ²Cornell University

11:25 AM

On the Fly Materials Design Using Efficient Global Optimization Techniques: *Anjana Talapatra*¹; Thien Duong¹; Raymundo Arroyave¹; ¹Texas A&M University

11:45 AM

Guided Discovery in Multi-phase, Multi-component Thermodynamic Spaces as Solution to a Constraint Satisfaction Problem: *Raymundo Arroyave*¹; Sean Gibbons¹; Edgar Galvan¹; Richard Malak¹; ¹Texas A & M University

Computational Thermodynamics and Kinetics — Microstructure Evolution I

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Monday AM Room: 11B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: David Montiel, University of Michigan; William Andrews, University of Michigan

8:30 AM Invited

Predicting the Evolution of He Precipitate Networks in Metals Using Phase-field Models: *Dina Yuryev*¹; *Michael Demkowicz*²; ¹Massachusetts Institute of Technology; ²Texas A&M University

9:00 AM

3-D Phase-field Modeling of Electromigration-induced Damage in Polycrystalline Thin Films : Grain-boundary Slit Propagation and Hillock Formation: *Arnab Mukherjee*¹; Kumar Ankit²; Britta Nestler²; ¹Karlsruhe University of Applied Sciences; ²Karlsruhe Institute of Technology

9:20 AM

Capillary-Mediated Interfacial Perturbation Fields: Their Exposure via Phase Field Equilibration: *Martin Glicksman*¹; Kumar Ankit²; ¹Florida Institute of Technology; ²Karlsruhe Institute of Technology (KIT), Campus South

9:40 AM

Comparison of the Phase-field Models to Predict the Recrystallization Kinetics: *Julia Kundin*¹; ¹University Bayreuth

10:00 AM Break

10:20 AM Invited

Grain Boundary Segregation in Binary Alloys: A Diffuse Interface Model: *Fadi Abdeljawad*¹; Stephen Foiles¹; Brad Boyce¹; Khalid Hattar¹; Blythe Clark¹; ¹Sandia National Laboratories

10:50 AM

Strong Interfacial Energy Anisotropy in the PRISMS-PF Phase Field Model Code: *William Andrews*¹; Stephen DeWitt¹; Shiva Rudraraju¹; Larry Aagesen²; Katsuyo Thornton¹; ¹University of Michigan; ²Idaho National Lab

11:10 AM

First-principles/Phase-field Modeling of Equilibrium θ' Precipitation in Al-Cu Alloys: *Kyoungdoc Kim*¹; M. P. Gururajan²; C. Wolverton¹; P. W. Voorhees¹; ¹Northwestern University; ²Indian Institute of Technology Bombay

11:30 AM

Conversion of an Internal Freedom to Configurational Freedom by Cluster Variation Method: *Tetsuo Mohri*¹; ¹Tohoku University

11:50 AM

Nonlinear Elastic Effects in Phase Field Crystal and Amplitude Equations: Comparison to Ab Initio Simulations of bcc Metals and Graphene: *Claas Hüter*¹; Martin Friak²; Marc Weikamp¹; Jörg Neugebauer²; Nigel Goldenfeld⁴; Bob Svendsen⁵; Robert Spatschek¹; ¹Forschungszentrum Jülich; ²Institute of Physics of Materials, Academy of Sciences of the Czech

Republic; ³MPIE; ⁴University of Illinois at Urbana-Champaign; ⁵RWTH Aachen University

Defects and Properties of Cast Metals — Defects I - Molten Metal and Inclusions

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Monday AM Room: 23A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Mark Jolly, Cranfield University; Matthew Krane, Purdue University

8:30 AM Introductory Comments

8:35 AM Invited

Uncertainty Quantification in Modeling an Industrial High Pressure Die Casting Process: *Jiahong Fu*¹; John Coleman²; Amy Marconnet¹; *Matthew Krane*²; ¹School of Mechanical Engineering, Purdue University; ²School of Materials Engineering, Purdue Center for Metal Casting Research, Purdue University

8:55 AM Invited

Casting Defects Prediction and Control in GE's Brilliant Factory: *Lang Yuan*¹; Ade Makinde¹; Huijuan Dai¹; Aymeric Moinet¹; Matteo Bellucci¹; ¹GE Global Research

9:15 AM

Effect of Solidification Conditions on the Formation of Sludge in High Pressure Die Casting of Aluminum Alloy AA383: *Tao Liu*¹; Laurentiu Nastac¹; Luke Brewer¹; Vishweshwar Arvikar²; Ilya Levin²; ¹The University of Alabama; ²Nemak Alabama

9:35 AM

Wetting Characteristics of CMSX-4 on Various Ceramic Substrates for Use in Investment Casting of Turbine Blades: *Logan Kroneman*¹; Matthew Krane¹; Kevin Trumble¹; ¹Purdue University

9:55 AM Break

10:15 AM Invited

Modeling of Air Entrainment and Inclusions in Steel Casting: Seyyed Hojjat Majidi¹; *Christoph Beckermann*¹; ¹University of Iowa

10:35 AM

Modeling of Mechanical Properties of Al Oxide Films Using Molecular Dynamics: *Jialin Liu*¹; Qigui Wang²; Yue Qi¹; ¹Michigan State University; ²General Motors Company

10:55 AM

Porosity Change of A356 by Excess Sr Addition: Baturalp Atakav¹; Ozen Gursoy¹; *Eray Erzi*¹; Derya Dispinar¹; ¹Istanbul University

11:15 AM

Rejection Rate-melt Quality Relationship in High Pressure Die Casting of Al-Si Alloys: Halil Kalkan¹; Omer Vardar¹; Eray Erzi¹; *Derya Dispinar*¹; ¹Istanbul University

11:35 AM

Quantification of A356 Melt Quality Change after Several Recycling: Abdullah Sasmaz¹; *Ozen Gursoy*¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

11:55 AM

Modification Efficiency of Sr in A360 and A413 and Its Relation with Melt Quality: *Inal Kaan Duygun*¹; Ozen Gursoy¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

Deformation and Transitions at Interfaces — Grain Boundary Structure

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, University of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Monday AM Room: 23B
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Influence of Grain Boundary Structure and Character on the Deformation Mechanisms of Grain Boundaries: *Diana Farkas*¹; Bryan Kuhr¹; Ian Robertson²; Gary Was³; ¹Virginia Tech; ²University of Wisconsin; ³University of Michigan

8:50 AM Invited

Quantifying Structure-Property Relationships of Grain Boundaries and Interfaces at the Atomic Scale for Design of Polycrystalline Materials: *Mark Tschopp*¹; ¹Army Research Laboratory

9:10 AM

A Mesoscale Model of Grain Boundary Faceting: The Role of Facet Junctions: *Fadi Abdeljawad*¹; Douglas Medlin¹; Jonathan Zimmerman¹; Khalid Hattar¹; Stephen Foiles¹; ¹Sandia National Laboratories

9:30 AM Invited

Alloy Stabilization of Nanocrystalline Grain Structures: Case Study of Pt-Au: *Stephen Foiles*¹; Christopher O'Brien¹; Ping Lu¹; Michael Chandross¹; Nicholas Argibay¹; Brad Boyce¹; ¹Sandia National Laboratories

9:50 AM Invited

Kinetic Monte Carlo Simulations of Grain Boundary Kinetic Events: Kathleen Alexander¹; *Christopher Schuh*¹; ¹Massachusetts Institute of Technology

10:10 AM Break

10:30 AM Invited

The Role of Collective Atomic Motion on Interface Migration and Deformation: *Hao Zhang*¹; ¹University of Alberta

10:50 AM Invited

Grain Boundaries, Disorder, and Mass Transport in Complex Oxides: *Blas Uberuaga*¹; Romain Perriot¹; ¹Los Alamos National Laboratory

11:10 AM

Non-Arrhenius Grain Growth, Interfacial Complexion Transitions and the Grain Boundary Character Evolution in SrTiO₃: *Madeleine Kelly*¹; Gregory Rohrer¹; Wolfgang Rheinheimer²; Michael Hoffmann²; ¹Carnegie Mellon University; ²KIT

11:30 AM Invited

The Impact of Irradiation Dose Rate and Temperature on Grain Structure Evolution in Nuclear Fuel: *Michael Tonks*¹; ¹Pennsylvania State University

11:50 AM Invited

The Effect of Interface Elastic Fields on Interface Sink Strengths: Aurelien Vattré¹; Thomas Jourdan¹; Hepeng Ding²; Cosmin Marinica¹; *Michael Demkowicz*²; ¹CEA; ²Texas A&M University

12:10 PM Invited

Virtual Diffraction of Grain Boundaries: Characterize, Optimize, and Drive Motion: *Shawn Coleman*¹; ¹U.S. Army Research Laboratory

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Cu- and Ag-related Bonding Materials

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Monday AM Room: 30E
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: C. Robert Kao, National Taiwan University; Kwang-Lung Lin, National Cheng Kung University

8:30 AM Invited

Low-Temperature Cu-to-Cu Direct Bonding Enabled by Highly (111)-oriented and Nanotwinned Cu: *Chih Chen*¹; Chien-Min Liu¹; Tien-Lin Lu¹; Han-wen Lin¹; Yi Cheng Chu¹; Chia-Ling Lu¹; Jing-Ye Juang¹; Kuan-Neng Chen¹; King-Ning Tu²; ¹National Chiao Tung University; ²University of California at Los Angeles

8:50 AM

The Materials Science of Solder Joints in Cu Pillar/Interposer Geometries: Francis Mutuku¹; Mohammed Genanu²; Babak Arfaei³; *Eric Cotts*²; Eric Perfecto⁴; ¹Universal Instruments; ²Binghamton University; ³Ford Motor Co; ⁴Global Foundries

9:10 AM

Mechanisms of Copper Pumping and Its Impact on the Reliability of 3D Electronic Devices: *Henry Yang*¹; Tae-Kyu Lee²; Indranath Dutta¹; ¹Washington State University; ²Portland State University

9:30 AM

Influence of Annealing Conditions on the Microstructure of Cu-filled Through-silicon Vias: *Zhao Xuwei*¹; Limin Ma¹; Fu Guo¹; ¹Beijing University of Technology

9:50 AM Break

10:10 AM

The Effect of Interlayer on Abnormal Grain Growth of Nanotwinned Copper Thin Film during Annealing Process: *Leh-Ping Chang*¹; Hsin-Yuan Chen¹; Fan-Yi Ouyang¹; ¹National Tsing Hua University

10:30 AM

Fabrication and Characterisation of Electroplated Nanotwinned-copper Films on Polymer Substrates: *Liang-Hsien Chang*¹; Chih Chen¹; Dyi-Chung Hu²; Ray Tain³; Yu-Hua Chen³; ¹National Chiao Tung University; ²SiPlus Company; ³New Business Development Division Unimicron Technology Corp.

10:50 AM

A Study of Microstructure, Electronic Flame-off Characteristics and Electrical Properties of 15um Ag-Pd-Au-Pt (APAP) Alloy Wires: *Che-Wei Hsu*¹; Fei-Yi Hung¹; Truan-Sheng Lui¹; ¹National Cheng Kung University

11:10 AM

In-situ Evolution of the Nanoporous Microstructure of Sintered Ag at High Temperature: Azdine Nait-Ali¹; Diouwel Tandiang¹; Marc Legros²; Yijin Liu³; Douglas Van Campen³; *Xavier Milhet*¹; ¹Institut Pprime CNRS; ²CEMES CNRS; ³SLAC National Accelerator Laboratory

Energy Materials 2017: Materials for Energy Conversion with Emphasis on SOFC — Session I

Sponsored by: Chinese Society for Metals

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Teruhisa Horita, AIST; Minfang Han, China University of Mining and Technology, Beijing

Monday AM Room: 12
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Amit Pandey, LGFCS; Kyle Brinkman, Clemson University

8:30 AM Introductory Comments

8:40 AM Invited

Low Temperature RAA Process for SOFC Stacks: *Jung Pyung Choi*¹; Jeffrey Stevenson¹; ¹Pacific Northwest National Laboratory

9:05 AM

Oxygen Reduction Reaction Mechanisms on Ruddlesden-Popper Cathodes for Intermediate-Temperature Solid Oxide Fuel Cells: Wenyan Li¹; Bo Guan¹; Xinxin Zhang¹; *Xingbo Liu*¹; ¹West Virginia University

9:25 AM Invited

Oxygen Reduction Reaction at the Cathode of Solid Oxide Fuel Cell Enhanced with Oxide Particles: *Changrong Xia*¹; ¹University of Science and Technology of China

9:50 AM Break

10:10 AM

Analysis of the Effects of Chromium Poisoning on LSM-based Cathode Using Polarization Modeling and Impedance Measurements: Ruofan Wang¹; Manuel Würth²; Boshan Mo¹; *Uday Pal*¹; Srikanth Gopalan¹; Soumendra Basu¹; ¹Boston University; ²Technische Universität München

10:30 AM

Enhanced Performance of Doped Ceria Electrolyte by the Addition of Barium Carbonate in Solid Oxide Fuel Cells: *Tao Hong*¹; Devin Harkins¹; Kyle Brinkman¹; ¹Clemson University (CU)

10:50 AM

Mitigation of Chromium Poisoning in Solid Oxide Fuel Cells: *Jeffrey Fergus*¹; ¹Auburn University

Energy Materials 2017: Materials for Gas Turbines — Coatings

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Fergus, Auburn University; Ji Zhang, China Iron and Steel Research Institute Group

Monday AM Room: 13
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Sanjay Sampath, Stony Brook University; Jeffrey Fergus, Auburn University

8:30 AM Keynote

Multilayered, Multifunctional Thermal Barrier Coatings for Gas Turbine Engines: *Sanjay Sampath*¹; Vaishak Vishwanathan¹; Gopal Dwivedi¹; ¹Stony Brook University

9:10 AM Invited

Thermal Barrier Coatings for More Efficient Gas-Turbine Engines: *Nitin Padture*¹; ¹Brown University

9:40 AM

Evolution of the Thermal Conductivity of Sm₂Zr₂O₇ under CMAS Attack: Ahmet Bakal¹; Kai Roebbecke¹; Honglong Wang¹; Wenzhuo Deng¹; Xingxing Zhang¹; *Jeffrey Fergus*¹; ¹Auburn University

10:00 AM Break

10:20 AM Invited

The Effect of Superalloy and Coating Composition and Specimen Geometry on TBC Lifetime: *Bruce Pint*¹; ¹Oak Ridge National Laboratory

10:50 AM

Thermal Gradient Mechanical Fatigue Testing and Life Modeling of Thermal Barrier Coating Systems: *Zhongjiao Zhou*¹; Changpeng Li²; Guofeng Chen²; Xu Hua²; ¹Tsinghua University; ²Corporate Technology, Siemens

11:10 AM

Porous Yttria-stabilized Zirconia Microspheres for Advanced Reflective Thermal Barrier Coatings: *Ricardo Castro*¹; Pieter Stroeve¹; Roland Faller¹; Maria Perez-Page¹; Dereck Muche¹; ¹University of California, Davis

11:30 AM Invited

Electrodeposited MCrAlY Coatings for Gas Turbine Engine Applications: *Ying Zhang*¹; ¹Tennessee Technological University

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Harnessing Bulk Nanostructured Materials for Energy I

Sponsored by: Chinese Society for Metals

Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Monday AM Room: 14A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Indranil Roy, Schlumberger; Partha Ganguly, Baker Hughes

8:30 AM Keynote

Stabilizing Nanostructures in Metals via Interface Architectures: *Ke Lu*¹; ¹Institute of Metal Research, Chinese Academy of Sciences

9:00 AM Invited

Scientific and Technological Foundations for Pilot Scale Production of Nanostructured Metals: *Terry Lowe*¹; ¹Colorado School of Mines

9:30 AM Invited

Bulk Nanomaterials with Superior Strength and Thermostability: *Ruslan Valiev*¹; Ilchat Sabirov²; Maxim Murashkin³; Nariman Enikeev³; ¹Laboratory for Mechanics of Bulk Nanomaterials, Saint Petersburg State University; ²IMDEA Materials Institute; ³Ufa State Aviation Technical University

10:00 AM Break

10:20 AM Keynote

The Four R's to Promote Ductility of Metallic Glasses: *Evan Ma*¹; ¹Johns Hopkins University

10:50 AM Invited

Iron-based Amorphous Metals for Impact and Corrosion Resistance Applications: The Effect of Pressure and Current on Devitrification Kinetics: *Olivia Graeve*¹; James Kelly²; Gauri Khanolkar³; Michael Rauls⁴; Andrea Hodge³; Veronica Eliasson³; ¹University of California San Diego; ²Alfred University; ³University of Southern California; ⁴California Institute of Technology

11:20 AM

The World of Water Reactive or Degradable Alloys: Oilfield, Defense, Bio-Medical and Beyond: *Indranil Roy*¹; ¹Schlumberger

11:50 AM

Sensitivity Variation of Nanomaterials at Different Operating Temperature Conditions: *Enobong Bassey*¹; Philip Sallis²; Krishnamachar Prasad²; ¹Coventry University; ²Auckland University of Technology

Energy Materials 2017: Materials in Clean Power — Session I

Sponsored by: Chinese Society for Metals, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Jeffrey Fergus, Auburn University; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Ji Zhang, China Iron and Steel Research Institute Group

Monday AM
February 27, 2017

Room: 15A
Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Creep-Fatigue-Oxidation Interactions under Fossil Energy Service Conditions: *Sebastien Dryepondt*¹; Amit Shyam¹; Sumit Bah²; Charles Hawkins¹; Dana McClurg¹; ¹Oak Ridge National Laboratory; ²Indian Institute of Science

9:00 AM

Microstructural Stability of High Cr Containing FeCrAl Alloys with Minor Alloying Additions: *Yukinori Yamamoto*¹; Bruce Pint¹; Benjamin Shassere²; Sudarsanam Babu²; ¹Oak Ridge National Laboratory; ²University of Tennessee

9:20 AM Invited

Effect of Pressure and Thermal Cycling on Compatibility in CO₂ for Concentrated Solar Power Applications: *Bruce Pint*¹; Robert Brese¹; James Keiser¹; ¹Oak Ridge National Laboratory

9:50 AM

The Composite Materials with Semiconductor and Ionic Conductor for Novel Low Temperature Solid Oxide Fuel Cells: *Xunying Wang*¹; Bin Zhu¹; ¹Hubei University

10:10 AM Break

10:30 AM Invited

The Impacts of Alternative Fuels and Associated High Water Vapor Content Environments on the Stability and Aging of Turbine Hot-Section Materials: *Daniel Mumm*¹; ¹University of California-Irvine

11:00 AM

Early Stage Oxidation of Alloy 617 in CO₂ Power Cycle Environments: *Richard Oleksak*¹; John Baltrus¹; Casey Carney¹; Jinichiro Nakano¹; Anna Nakano¹; Gordon Holcomb¹; Omer Dogan¹; ¹National Energy Technology Laboratory

11:20 AM

Nickel-doped Titania Nanotube Arrays and Their Application in Hydrogen Production: *Joaquin Tirano Vanegas*¹; Hugo Zea¹; Claudia Luhrs²; ¹Universidad Nacional de Colombia; ²Naval Postgraduate School

11:40 AM

Phase Relation Prediction for Ag_xCu_{1-x}Ga_yIn_{1-y}Se₂ PV Absorber Layers: Zhi Li¹; Christopher Muzzillo¹; Shun-li Shang²; Jianyun Shen³; Po-Hsin Liao¹; Zi-kui Liu²; *Timothy Anderson*¹; ¹University of Florida; ²Pennsylvania State University; ³General Research Institute For Nonferrous Metals

Environmentally Assisted Cracking: Theory and Practice — Hydrogen Embrittlement I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rakkam, Advanced Cooling Technologies

Monday AM
February 27, 2017

Room: 31A
Location: San Diego Convention Ctr

Session Chairs: Ian Robertson, University of Wisconsin-Madison; Petros Sofronis, University of Illinois at Urbana-Champaign

8:30 AM Introductory Comments Speaker: Prof. Ian Robertson / Bai Cui

8:45 AM Invited

Linking Hydrogen-enhanced Plasticity to Hydrogen-induced Failure Mode: Kelly Nygren¹; Shuai Wang²; *Ian Robertson*²; ¹University of Illinois; ²University of Wisconsin-Madison

9:25 AM

Effects of Trace Impurities on the Strength and Fracture of Hydrogen-Charged Ni-201: *Samantha Lawrence*¹; Richard Karnesky¹; Khalid Hattar¹; Stephen Foiles¹; Brian Somerday²; ¹Sandia National Laboratories; ²Southwest Research Institute

9:45 AM

Macro- and Micro-scale Study of Hydrogen Susceptibility of Advanced High Strength Sheet Steels: *Yiran Lu*¹; Shrikant Bhat²; Clyde Briant¹; Sharvan Kumar¹; ¹Brown University; ²ArcelorMittal, Global R&D

10:05 AM Break

10:20 AM Invited

Hydrogen-Induced Fracture: From Fundamentals to Prognosis: *Petros Sofronis*¹; Mohsen Dadfarnia¹; Akihide Nagao²; Shuai Wang³; May Martin¹; Brian Somerday⁴; Reiner Kirchheim⁵; Robert Ritchie⁶; Ian Robertson³; ¹University of Illinois; ²JFE Steel Corporation; ³University of Wisconsin; ⁴South West Research Institute; ⁵Georg-August-Universität Göttingen; ⁶University of California-Berkeley

11:00 AM

Atomic Insights on Hydrogen Embrittlement in Iron: Ilaksh Adlakha¹; *Kiran Solanki*¹; ¹Arizona State University

11:20 AM

Effects of Internal and External Hydrogen Environments on Crack Growth in an Iron Based Superalloy: *Neville Moody*¹; Warren Garrison²; S. Robinson¹; M. Perra¹; William W. Gerberich³; ¹Sandia National Laboratories; ²Carnegie Mellon University; ³University of Minnesota

11:40 AM

Hydrogen Embrittlement and Hydrogen-enhanced Strain-induced Vacancies in α -iron: *Yuya Matsumoto*¹; Nami Kurihara¹; Hiroshi Suzuki¹; Kenichi Takai¹; ¹Sophia University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Data-Driven Investigations of Fatigue

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Monday AM Room: 23C
 February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Ashley Spear, University of Utah

8:30 AM

Nondestructive Evaluation as a Link between Fatigue Diagnostics and Prognostics: Brian Wisner¹; Ryan Whitmore¹; Konstantinos Baxevanakis¹; Antonios Kotsos¹; ¹Drexel University

8:50 AM Invited

Linking Length Scales during Fatigue: Investigating the Effect of Microscale Strain Localization on Macroscopic Response: *Samantha Daly*¹; ¹University of California at Santa Barbara

9:10 AM

Strain Field Mining of Cyclic Damage Accumulation in Nonwoven Fiber Composites: *Yoon Joo Na*¹; James Collins¹; Christopher Muhlstein¹; ¹Georgia Institute of Technology

9:30 AM Invited

Correlation of Microstructural Configurations to Fatigue Indicator Parameters: *Sushant Jha*¹; Robert Brockman²; Rebecca Hoffman²; Vikas Sinha³; William Porter²; Dennis Buchanan²; Adam Pilchak⁴; James Larsen⁴; Reji John⁴; ¹US Air Force Research Laboratory/Universal Technology Corporation; ²University of Dayton Research Institute; ³UES, Inc.; ⁴US Air Force Research Laboratory

9:50 AM

Investigation of Neighborhood Effects on Crack Initiation Sites in Different Ti Microstructures: *Vahid Tari*¹; Michael Groeber²; Adam Pilchak²; Anthony Rollett¹; ¹Carnegie Mellon University; ²Air Force Research Laboratory (AFRL/RXCM)

10:10 AM Break

10:30 AM

Toward the Use of Machine Learning to Understand and Predict Microstructurally Small Fatigue-Crack Evolution: Nathan Wilkinson¹; Brian Phung¹; Jacob Hochhalter¹; *Ashley Spear*¹; ¹University of Utah

10:50 AM Invited

Correlating Experiments and Simulations to Develop Predictive Capabilities for Fatigue Crack Initiation in Ni-based Superalloys: Jun Jiang¹; Fionn Dunne¹; *T Ben Britton*¹; ¹Department of Materials, Imperial College

11:10 AM

A General Probabilistic Framework Combining Experiments and Simulations to Identify the Small Crack Driving Force: *Andrea Rovinelli*¹; Michael Sangid¹; Ricardo Lebensohn²; Wolfgang Ludwig³; Yoann Guilhem⁴; Henry Proudhon⁵; ¹Purdue University; ²Los Alamos National Lab; ³ESRF; ⁴ENS de Cachan; ⁵MINES ParisTech

11:30 AM

Cloud-based Data-driven Modeling for Fatigue Life Prediction in Ti-6Al-4V: *Ayman Salem*¹; Joshua Shaffer¹; Richard Kublik¹; Daniel Satko¹; ¹Materials Resources LLC

Friction Stir Welding and Processing IX — High Temperature Applications I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Monday AM Room: 9
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Tracy Nelson, Brigham Young University; Yutaka Sato, Tohoku University

8:30 AM Introductory Comments

8:35 AM Invited

Effect of Thermal Aging on the Corrosion and Mechanical Properties of Friction Stir Welded 250 Grade Maraging Steel: *Todd Curtis*¹; Bharat Jasthi¹; Christian Widener¹; Michael West¹; Brendon Kellogg¹; ¹South Dakota School of Mines and Technology

8:55 AM Invited

FSW Studies to Achieve High Charpy Impact Energy in 19 mm Thick ASTM-A6 Steel: Murray Mahoney¹; Russell Steel¹; *Dale Fleck*¹; Steve Larson¹; Trever Davis¹; ¹MegaStir

9:15 AM Invited

Friction Stir Processing of 304L Stainless Steel for Crack Repair: *Michael Miles*¹; Cameron Gunter¹; Fengchao Liu¹; Tracy Nelson¹; ¹Brigham Young University

9:35 AM

Influence of Underwater Operation on Friction Stir Welding of Medium Carbon Steel: *Tomoko Miyamori*¹; Yutaka Sato¹; Hiroyuki Kokawa¹; ¹Tohoku University

9:55 AM Invited

Friction Stir Welding of Steel-two Innovative Welding Methods: *Hidetoshi Fujii*¹; ¹Osaka University

10:15 AM Break

10:30 AM Invited

High Temperature Properties and Microstructures of ODS and RAFM Alloys FSW: *Wei Tang*¹; Xinghua Yu¹; David Hoelzer¹; Zhili Feng¹; ¹Oak Ridge National Lab

10:50 AM

Feasibility of Iridium Containing Nickel Base Superalloy Tool to Friction Stir Spot Welding of High Strength Steel: *Kunihiro Tanaka*¹; Tatsuya Nakazawa¹; Koichi Sakairi¹; Yutaka Sato²; Hiroyuki Kokawa²; Toshihiro Omori²; Kiyohito Ishida²; ¹Tanaka Kikinzoku Kogyo K.K.; ²Tohoku University

11:10 AM

Effect of Friction Stir Processing on Microstructure and Mechanical Properties of Cast Eglin Steel (ES-1): *Vedavyas Tungala*¹; Matthew Carl¹; Amit Arora²; Marcus Young¹; Rajiv Mishra¹; Kyu Cho³; Raymond Brennan³; ¹University of North Texas; ²Indian Institute of Technology, Gandhinagar; ³Army Research Laboratory

11:30 AM

Friction Stir Processing of 2507 Super Duplex Stainless Steel: Microstructure and Corrosion Behaviour: *M.K. Mishra*¹; G. Gunasekaran²; A.G. Rao²; B.P. Kashyap¹; N. Prabhu¹; ¹Indian Institute of Technology Bombay; ²Naval Materials Research Laboratory

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Process-Property-Performance Correlations: Metals, Alloys and Ferroelectrics

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Monday AM Room: 33B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Sung Kang, IBM; Nuggehalli Ravindra, New Jersey Institute of Technology

8:30 AM Introductory Comments

8:40 AM Invited

The Grain Refinement of Martensitic Steel by Thermal Processes: *John Morris*¹; ¹University of California Berkeley

9:10 AM Invited

Extreme Deformation and Failure of Materials: *Marc Meyers*¹; Bruce Remington²; Chris Wehrenberg²; Hye-Sook Park²; T. Remington²; Eduardo Bringa³; Bimal Kadl¹; Eric Hahn¹; Shiteng Zhao¹; ¹University of California San Diego; ²Lawrence Livermore National Laboratory; ³CONICET-Universidad Nacional de Cuyo

9:40 AM Invited

Application of Thermodynamics to Rare Earth-based Alloy Design: *Patrice Turchi*¹; Aurelien Perron¹; Per Soderlind¹; Alexander Landa¹; Orlando Rios²; ¹Lawrence Livermore National Laboratory; ²Oak Ridge National Laboratory

10:10 AM Break

10:25 AM

Growth of Cu₆Sn₅ and Cu₃Sn Intermetallic Compounds on (111)-, (100)- and Randomly-oriented Copper Films: *Yu-Jin Li*¹; Chih Chen¹; ¹National Chiao Tung University

10:45 AM Invited

Low-Temperature and Pressureless Cu-to-Cu Bonding By Electroless Nickel Plating: *C. Robert Kao*¹; ¹National Taiwan University

11:15 AM Invited

Visualizing In-situ Microstructure Dependent Crack Tip Stress Distribution in IN-617 Using Nano-mechanical Raman Spectroscopy: Yang Zhang¹; Vikas Tomar¹; ¹Purdue University

11:45 AM

High-throughput Computational Discovery of Epitaxial Thin Films with Enhanced Ferroelectric Properties: *Thomas Angsten*¹; Lane Martin¹; Mark Asta¹; ¹UC Berkeley

Fundamental Aspects and Modeling Powder Metal Synthesis and Processing — Titanium and Advanced Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: Paul Prichard, Kennametal; Eugene Olevsky, San Diego State University; Iver Anderson, Ames Laboratory

Monday AM Room: 16A
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Paul Prichard, Kennametal

8:30 AM

Engineering the Microstructure and Mechanical Properties of Titanium Alloys via Hydrogen Sintering and Phase Transformation (HSPT): *James Paramore*¹; Brady Butler¹; Jonathan Ligda¹; Z. Zak Fang²; Matt Dunstan²; ¹United States Army Research Laboratory; ²University of Utah

8:50 AM

Titanium Hydrides Enhancing Improvement of Ductility of PM a-Ti Material: *Katsuyoshi Kondoh*¹; Takafumi Mimoto¹; Junko Umeda¹; Hisashi Imai¹; ¹Osaka University

9:10 AM

Particle Charging during Electron-beam Additive Manufacturing: *Zachary Cordero*¹; Harry Meyer¹; Peeyush Nandwana¹; Ryan Dehoff³; ¹Oak Ridge National Laboratory

9:30 AM

Titanium-Based Alloys with Gradient Structures Fabricated by Blended Elemental Powder Metallurgy (BEPM): *Dmytro Savvakyn*¹; Pavlo Markovskyy¹; Orest Ivasishin¹; *Sergey Prikhodko*²; ¹G.V. Kurdyumov Institute for Metal Physics, National Academy of Science of Ukraine; ²University of California, Los Angeles

9:50 AM Break

10:10 AM

Characterizing the Effect of Powder Properties on In-Machine Performance in Powder Bed Direct Metal Additive Manufacturing: *Ross Cunningham*¹; Ola Harrysson²; Jack Beuth¹; Fred Higgs III¹; Anthony Rollett¹; ¹Carnegie Mellon University; ²North Carolina State Univ.

10:30 AM

Sintering of Titanium-Magnesium Alloys with Stable Nanocrystalline Structure: *Kathrin Graetz*¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

10:50 AM

Enhanced Texture and Magnetic Energy Product in Alnico Magnets Utilizing Solid State Processing: *Aaron Kassen*¹; Emma White¹; Wei Tang¹; Lin Zhou¹; Matthew Kramer¹; Iver Anderson¹; ¹Iowa State University

11:10 AM

Size-Scaled High-Performance Alnico Magnets with Enhanced Mechanical Properties and Near-Final Shape: *Liangfa Hu*¹; Iver Anderson¹; Aaron Kassen¹; Emma White¹; Wei Tang¹; Lin Zhou¹; Matt Kramer¹; ¹Ames Laboratory

11:30 AM

Self-propagating High-temperature Synthesis for Synthesizing Tantalum Carbide from Ta Metal Scraps: *Jae-Jin Sim*¹; Sang-Hun Choi¹; Won Ju¹; Won-Jung Choi¹; Basit Ali¹; Tae-Hyuk Lee²; Kyung-Mook Lim¹; Bum-Sung Kim¹; Taek-Soo Kim¹; Kyoung-Tae Park¹; ¹Korea Institute of Industrial Technology; ²Department of Materials Science & Engineering, University of Sheffield

GAT-2017 (Gamma Alloys Technology - 2017) — Keynote and Aero-Engine Blades Applications

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Monday AM
February 27, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Dennis Dimiduk, BlueQuartz Software; Alain Couret, CEMES

8:30 AM Introductory Comments : Young-Won Kim, Gamteck

8:40 AM Keynote

Development and Application of Gamma TiAl Components: *Wilfried Smarsly*¹; Joerg Esslinger¹; ¹MTU Aero Engines GmbH

9:15 AM Invited

Advancement of Plasma Cold-hearth Melting for Production of Gamma Titanium Aluminide Alloys within Arconic: *Ernie Crist*¹; Fusheng Sun¹; ¹Arconic Titanium & Engineered Products

9:40 AM

Advances in the Systems and Processes for the Production of Gamma Titanium Aluminide Bars and Powder: *Rob Haun*¹; ¹Retech Systems, LLC

10:00 AM Break

10:15 AM Invited

Implementation of γ -TiAl Alloys for Low Pressure Turbine Blades: Opportunities and New Challenges: *Pierre Sallot*¹; Guillaume Martin¹; Stéphane Knittel¹; ¹SAFRAN

10:40 AM

Study on Milling of a TiAl Alloy under Minimum Quantity of Lubrication Condition: Sajjad Kolahdouz¹; Siavash Zamani¹; Fatemeh Heydari¹; Ali Bakhshi¹; ¹MAPNA Turbine Blade Eng. & Mfg. Co. - PARTO

11:00 AM Invited

Titanium Aluminide Investment Casting Technology Development: *Matthias Bünck*¹; Todor Stoyanov¹; Rüdiger Tiefers¹; Jan Schievenbusch¹; ¹Access e.V.

11:25 AM

High Temperature and High Strain Rate Deformation Behavior of Powder Metallurgical TiAl-Nb Composite: *Yong Liu*¹; Bin Liu¹; Qihong Fang²; Xiang Zan³; ¹Central South University; ²Hunan University; ³Hefei University of Technology

11:45 AM

Plastic Deformation Behaviour and Crack Initiation Mechanisms of γ -TiAl in High Temperature, High Cycle Fatigue: *Thomas Edwards*¹; Fabio Di Gioacchino¹; Nigel Martin²; Mark Dixon²; William Clegg¹; ¹Department of Materials Science and Metallurgy, University of Cambridge; ²Rolls-Royce plc

Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges — Session I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Shuanglin Chen, CompuTherm LLC; Frederic Danoix, Université de Rouen; Indrajit Charit, University of Idaho

Monday AM
February 27, 2017

Room: 31C
Location: San Diego Convention Ctr

Session Chairs: Patrick Grant, University of Oxford; David Larson, CAMECA

8:30 AM Introductory Comments: Given by Prof. Patrick Grant, Department Head of Materials Science, University of Oxford

8:40 AM Keynote

The Role of Atom Probe Tomography in Decoding the Materials Genome: *George Smith*¹; ¹Oxford University

9:20 AM Invited

Atomic-scale Analytical Tomography: *Thomas Kelly*¹; ¹CAMECA Instruments, Inc.

9:50 AM

Unique Insights from the Correlated Combination of Atom Probe and Electron Tomography: *Peter Wells*¹; Stephan Krämer¹; Christian Oberdorfer²; Soupitak Pal¹; Yuan Wu¹; Takuya Yamamoto¹; G. Odette¹; ¹UC Santa Barbara; ²Ohio State University

10:10 AM Break

10:30 AM Invited

On the Amazing Role of Atom Probe Tomography in Nuclear Materials Research: Some Seminal Contributions and Opportunities for Developing a New Lab On a Chip Paradigm: *G. Robert Odette*¹; Peter Wells¹; Nicholas Cunningham²; Nathan Almirall¹; ¹University of California Santa Barbara; ²ATI

11:00 AM Invited

Revisiting Field Ion Microscopy: *Baptiste Gault*¹; Michal Dagan²; Shyam Katnagallu¹; Frédéric De Geuser³; François Vurpillot⁴; Dierk Raabe¹; Michael Moody²; ¹Max-Planck-Institut für Eisenforschung GmbH; ²University of Oxford; ³CNRS, SIMAP; ⁴Normandie Université

11:30 AM Invited

Quantification of Hydrogen using Atom Probe Tomography: *Daniel Haley*¹; Yi-Sheng Chen¹; Paul Bagot¹; Michael Moody¹; ¹University of Oxford

ICME Gap Analysis: Structural Materials for Automotive Applications — High-Temperature Alloys for Automotive Applications

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; Jerry Gibbs, Department of Energy; Will Joost, Department of Energy; Nicholas Hatcher, QuesTek Innovations, LLC

Monday AM Room: 10
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Jerry Gibbs, Department of Energy; Dognwon Shin, Oak Ridge National Laboratory

8:30 AM Invited

Bridging the Gap between ICME Design and Implementation of Third Generation Advanced High Strength Steels for Automotive Applications: *Louis Hector Jr¹; Anil Sachdev¹; Tyson Brown¹; ¹General Motors*

9:10 AM Invited

Application of ICME in the Development of Cast Steel Alloys: *Rick Huff¹; Caian Qiu¹; Adrian Catalina¹; ¹Caterpillar*

9:50 AM Break

10:05 AM Invited

ICME Model Development and Gap Analysis for Advanced Cast Aluminum and Magnesium Alloys for Automotive Applications: *Mei Li¹; ¹Ford Motor Company*

10:45 AM Invited

Progress and Gaps in Thermodynamic Modeling for the Development of Advanced Cast Aluminum Alloys using Integrated Computational Materials Engineering: *Mike Walker¹; Andrew Bobel²; WeiWei Zhang³; Nick Hatcher³; Abhinav Saboo³; Dana Frankel³; Kyoungdoc Kim²; Christopher Wolverton²; ¹General Motors; ²Northwestern University; ³QuesTek Innovations, LLC*

11:25 AM Invited

An Assessment of Modeling Tools for High Temperature Aluminum Alloy Development: The Good, the Bad and the Ugly: *Amit Shyam¹; Dongwon Shin¹; Shibayan Roy¹; Adrian Sabau¹; Yukinori Yamamoto¹; James Haynes¹; ¹Oak Ridge National Laboratory*

Interface-Mediated Properties of Nanostructured Materials — Nanolaminates and Nanotwinned Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Caizhi Zhou, Missouri University of Science and Technology; Nan Li, Los Alamos National Laboratory; Peter Anderson, The Ohio State University; Michael Demkowicz, Texas A&M University

Monday AM Room: Pacific 23
 February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Caizhi Zhou, Missouri University of Science and Technology; Nan Li, Los Alamos National Laboratory

8:30 AM

Micro-scale Scratch Behavior of Copper-silver Nanolayers: *Madhavan Radhakrishnan¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois*

8:50 AM Invited

Plasticity in Small-scale Metallic Composites: *Amit Misra¹; Jian Wang²; ¹University of Michigan; ²University of Nebraska*

9:20 AM Invited

Intrinsic Twin Boundary Defects and Strength in Nanotwinned Ag and Ag-Cu Alloys: *Frederic Sansoz¹; Xing Ke¹; Qiongjiali Fang¹; ¹The University of Vermont*

9:50 AM Break

10:10 AM Invited

Atomistic Simulations at Reduced Strain Rates of Dislocation Interactions in Nanocrystalline Al: *Maxime Dupraz¹; Helena Van Swygenhoven²; Zhen Sun³; Christian Brandl⁴; ¹Paul Scherrer Institut; ²Paul Scherrer Institute; Ecole Polytechnique Fédérale de Lausanne; ³Paul Scherrer Institut; École Polytechnique Fédérale de Lausanne; ⁴Karlsruhe Institute of Technology*

10:30 AM Invited

Collective Deformation Mechanisms and their Effect on Nanoscale Interfacial Networks: *Timothy Rupert¹; ¹University of California, Irvine*

11:00 AM

Intrinsic Surface Stress Effects on Surface Dislocation Nucleation in Nanoscale Pristine Metals: *Qingjie Li¹; Bin Xu²; Evan Ma¹; ¹Johns Hopkins University; ²Shanghai JiaoTong University*

11:20 AM

Influence of Crystalline Nanoprecipitates on Shear-band Propagation in Cu-Zr-based Metallic Glasses: A Computational Study: *Tobias Brink¹; Karsten Albe¹; ¹TU Darmstadt*

Magnesium Technology 2017 — Keynote Session

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Monday AM Room: 5A
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University

8:30 AM Introductory Comments

8:45 AM Keynote

Multi-scale Investigation on Yield “Symmetry” and Reduced Strength Differential in an Mg-Y Alloy: *Dalong Zhang¹; Lin Jiang²; Xin Wang³; M. Kumar⁴; Irene Beyerlein⁴; Julie Schoenung³; Mo Li⁵; Subhash Mahajan²; Enrique Lavernia³; ¹University of California Irvine; ²University of California, Davis; ³University of California, Irvine; ⁴Los Alamos National Laboratory; ⁵Georgia Institute of Technology*

9:25 AM Keynote

Targeting High Impact R&D for Automotive Magnesium Alloys: *William Joost¹; ¹U.S. Department of Energy*

10:05 AM Break

10:30 AM Keynote

Magnesium Development as a Lightweight Material - In Competition with Other Structural Materials: *Alan Luo¹; ¹The Ohio State University*

11:10 AM Keynote

The Continued Quest for Low-temperature Formability in Mg Alloys: Historical Developments and Future Opportunities: *Suveen Mathaudhu¹; ¹University of California, Riverside*

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Fuels I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday AM
 February 27, 2017
 Room: Cardiff
 Location: Marriott Marquis Hotel

Session Chairs: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory

8:30 AM

Results of Microstructural Characterization Focused on the U-10Mo/Zr Diffusion Barrier Interface in Irradiated Monolithic Fuel Plates: *Dennis Keiser¹; Jan-Fong Jue¹; Brandon Miller¹; Jian Gan¹; Adam Robinson¹; James Madden¹; Assel Aitkaliyeva¹; ¹Idaho National Laboratory*

8:50 AM

Nanoscale Structural and Compositional Analysis of U-10Mo Fuels: *Arun Devaraj¹; Vineet Joshi¹; Libor Kovarik¹; Saamyadeep Jana¹; Bruce Arey¹; Curt Lavender¹; ¹Pacific Northwest National Laboratory*

9:10 AM

Recrystallization Texture in U10Mo Alloy: *Karun Kalia¹; David Field¹; Vineet Joshi²; ¹Washington State University; ²Pacific Northwest National Laboratory*

9:30 AM

Electron Backscatter Diffraction Analysis of Irradiated U-Mo Plate Fuel for the US High Performance Research Reactor Development Program: *Bjorn Westman¹; Brandon Miller²; Julie Tucker¹; ¹Oregon State University; ²Idaho National Laboratory*

9:50 AM

Eutectoid Transformation Kinetics of As-Cast U - 8 wt% Mo Established by In Situ Neutron Diffraction: *Matthew Steiner¹; Christopher Calhoun¹; Robert Klein¹; Ke An²; Elena Garlea³; Sean Agnew¹; ¹University of Virginia; ²Oak Ridge National Lab; ³Y12 National Security Complex*

10:10 AM Break

10:30 AM

Assessment of the Suppression Methods for Porosity Growth in U-Mo/Al Dispersion Fuel: *Yeon Soo Kim¹; Gwan Yoon Jeong²; Dong-Seong Sohn²; ¹Argonne National Laboratory; ²UNIST*

10:50 AM

Microstructural Development of UMo-Al Dispersion Fuels after Thermal Annealing: *Laura Jamison¹; Bei Ye¹; Sumit Bhattacharya²; Abdellatif Yacout¹; ¹Argonne National Laboratory; ²Argonne National Laboratory and Northwestern University*

11:10 AM

Effect of Grain Morphology on Gas Bubble Swelling in UMo Fuels – A 3D Microstructure Dependent Booth Model: *Shenyang Hu¹; Curt Lavender¹; Vineet Joshi¹; ¹Pacific Northwest National Laboratory*

11:30 AM

An Integrated Simulation for Deformation and Irradiation-Induced Grain Growth in, U-10 wt%Mo: *William Frazier¹; Vineet Joshi¹; Shenyang Hu¹; ¹Pacific Northwest National Laboratory*

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Next Generation Superalloys I

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmaier, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Monday AM
 February 27, 2017
 Room: Pacific 16
 Location: Marriott Marquis Hotel

Session Chairs: Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime

8:30 AM Keynote

The Drive for Greater Efficiencies: Creating New Materials to Meet the Challenge: *David Shifler¹; ¹Office of Naval Research*

9:00 AM Invited

Challenges and Future of Ni-based SX Superalloys Components: *Jonathan Cormier¹; ¹ENSMA / Institut Pprime - UPR CNRS 3346*

9:30 AM

The Influence of Ta and Ti on Heat-treatability and γ/γ' -partitioning of High W Containing Re-free Nickel-based-superalloys: *Nils Ritter¹; Ralf Rettig¹; Robert Singer¹; ¹University of Erlangen-Nuremberg*

9:50 AM

Improved 3rd Generation Single Crystal Superalloy CMSX-4® Plus: *Jacqueline Wahl¹; Ken Harris¹; ¹Cannon-Muskegon*

10:10 AM Break

10:30 AM

Improvement of Creep Resistance at 950 °C/400MPa in Ru-containing Single Crystal Superalloys: *Jiajie Huo¹; Qianying Shi²; Qiang Feng¹; ¹University of Science and Technology Beijing; ²University of Michigan*

10:50 AM

Improved Creep Strength of Nickel-base Superalloys by Optimized γ/γ' -partitioning Behavior of Solid Solution Strengthening Elements: *Steffen Neumeier¹; Martin Pröbstle²; Sven Giese²; Ralf Rettig²; Mathias Göken²; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg ; ²Friedrich-Alexander-Universität Erlangen-Nürnberg*

11:10 AM

Sources of Creep Dislocations in Ni-base, Single Crystal Superalloys Revisited: *Farangis Ram¹; Zhuangming Li²; Zailing Zhu³; Masood Hafez Haghghat²; Stefan Zaeferrer²; Dierk Raabe²; Roger Reed³; ¹Carnegie Mellon University; ²Max-Planck Institut für Eisenforschung GmbH; ³University of Oxford*

11:30 AM

Influence of Stress Triaxiality and Relaxation on the Creep Behavior under Oxidizing Conditions of the Nickel-based Single-crystal Superalloy CMSX-4: Experiments and Numerical Approach: *Vincenzo Caccari¹; Jonathan Cormier²; Rodrigue Desmorat³; Clara Moriconi⁴; ¹ENSMA -Institut P'/LMT Cachan/Safran Helicopter Engines; ²ENSMA -Institut P'; ³LMT Cachan; ⁴Safran Helicopter Engines*

11:50 AM

Determination of Gamma/Gamma Prime Lattice Misfit in Ni-based Single Crystal Superalloys at High Temperatures by Neutron Diffraction: *Shenyang Huang¹; Yan Gao¹; Akane Suzuki¹; Ke An²; ¹GE Global Research; ²Oak Ridge National Laboratory*

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Introductory Session: Unique Mechanical Behavior and Technologies

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Monday AM Room: 24A
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University

8:30 AM Introductory Comments: A short commentary on Prof. K. Linga Murty's short biography and seminal contributions to the field of mechanical and creep behavior of materials

8:35 AM Keynote

Creep, Deformation and Fracture Studies of Materials for Various Technologies in the Nuclear Materials Research Group at NC State: *Korukonda Murty*¹; ¹North Carolina State University

9:05 AM Keynote

Fundamental Discovery of Q-phases and Direct Conversion of Carbon into Diamond and h-BN into c-BN: *Jagdish (Jay) Narayan*¹; Anagh Bhaumik¹; ¹North Carolina State University

9:35 AM Invited

Anisotropy and Creep Mechanisms during the Hot Forming of Light Alloy Sheet Materials: *Eric Taleff*¹; ¹The University of Texas at Austin

9:55 AM Break

10:10 AM Keynote

In-situ TEM Observation of the Peculiar Movement of $\langle c+a \rangle$ Dislocations in Mg: Dalong Zhang¹; Lin Jiang¹; Irene Beyerlein²; Julie Schoenung¹; Subhash Mahajan³; *Enrique Lavernia*¹; ¹University of California-Irvine; ²Theoretical Division, Los Alamos National Laboratory; ³Chemical Engineering and Materials Science, University of California, Davis

10:40 AM Invited

The Representation of Grain Boundary Texture Using Hyperspherical Harmonics: *Srikanth Patala*¹; Jeremy Mason²; ¹North Carolina State University; ²Bogaziçi University

11:00 AM Invited

Irradiation Creep of Zr-Alloys: *Malcolm Griffiths*¹; Grant Bickel¹; Robert DeAbreu¹; Wenjing Li¹; ¹Canadian Nuclear Laboratories

11:20 AM

The Microstructural Evolution of Hot Deformed Ti-IF Steel: Philip Noell¹; *Ryann Rupp*¹; Eric Taleff¹; ¹The University of Texas at Austin

11:40 AM

Effect of Mo and Bi Additions on the Microstructure of Zr-Cr-Fe Alloy after β -quenching: *Jianmin Wang*¹; Baifeng Luan¹; Korukonda Murty²; Qing Liu¹; ¹Chongqing University; ²North Carolina State University

Mechanical Behavior of Nanostructured Materials — Mechanical Behavior of Bulk Nanostructured Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Monday AM Room: 30D
 February 27, 2017 Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Xinghang Zhang, Purdue University; Ron Scattergood, North Carolina State University; Kris Darling, Army Research Laboratory

8:30 AM Introductory Comments

8:40 AM Invited

High Temperature Mechanical Properties of Ultrafine-grained and Nanocrystalline Materials: Megumi Kawasaki¹; Roberto Figueiredo²; Terence Langdon³; ¹Hanyang University; ²Universidade Federal de Minas Gerais; ³University of Southern California

9:05 AM Invited

15 Years SPD-Processed Bulk Nanostructured Materials: From Mechanical to Functional Highlights: *Michael Zehetbauer*¹; ¹University of Vienna

9:30 AM Invited

Bulk Nanocrystalline Materials: Mechanical Behavior and Deformation Mechanisms: *Farghalli Mohamed*¹; ¹University of California, Irvine

9:55 AM Invited

Hardening by Annealing and Abnormal Hall-Petch Relationship in Nanocrystalline Elements and Alloys: *T. D. Shen*¹; B. R. Sun¹; S. W. Xin¹; ¹Yanshan University

10:20 AM Break

10:40 AM Invited

Twinning in Small-scaled BCC Crystals: Jiangwei Wang¹; Zhi Zeng²; Christopher Weinberger³; Ze Zhang⁴; Ting Zhu²; *Scott Mao*¹; ¹University of Pittsburgh; ²Georgia Institute of Technology; ³Sandia National Laboratories; ⁴Zhejiang University

11:05 AM

Mechanical Properties of Nanotwinned Al: *Xinghang Zhang*¹; Sichuang Xue¹; Qiang Li²; Dan Bufford³; Yue Liu⁴; Haiyan Wang²; ¹Texas A&M University; ²Purdue University; ³Sandia National Laboratories; ⁴Los Alamos National Laboratory

11:25 AM

The Effects of Solute on the Tensile Strength of Nano-twinned Ag Thin Films at Various Temperatures: *Jie Geng*¹; M. F. Besser¹; F. Q. Meng¹; R. T. Ott¹; ¹Ames Laboratory

11:45 AM

Correlation between Nanotwin Density and Texture Transformation in Thin Ag Films: *Nathaniel Rogers*¹; Shelby Johnson¹; Elizabeth Ellis¹; Kyle Flemington²; Paul Lashomb²; Jonathon Yuly²; Brandon Hoffman²; Shefford Baker¹; ¹Cornell University; ²Houghton College

12:05 PM

On the Relationship between the Grain Boundary Character and the Microhardness in Nanocrystalline Ni-W: Mathieu Lagarde¹; Niusha Shakibi Nia¹; Julie Bourgon²; Egle Conforto¹; Patrick Girault¹; Stéphane Cohendoz¹; Juan Creus¹; Xavier Feaugas¹; Catherine Savall¹; ¹Université de La Rochelle; ²ICMPE

Microstructural Processes in Irradiated Materials — Advanced Characterization and Techniques

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Monday AM
February 27, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Philip Edmondson, Oak Ridge National Laboratory; Philippe Pareige, Rouen University

8:30 AM Introductory Comments

8:35 AM Invited

Atom Probe Characterization of Microstructures in Irradiated Materials: *Philippe Pareige*¹; Bertrand Radiguet¹; Auriane Etienne¹; Cristelle Pareige¹; ¹Rouen University

9:05 AM

On the Influence of the Irradiation Depth on the Microstructural Evolution of FeCrX (X=Ni,Si,P) Alloys under Ion Irradiation: *Begoña Gómez-Ferrer*¹; Cristelle Pareige¹; Philippe Pareige¹; ¹University of Rouen

9:25 AM

Prismatic Dislocation Loop Interaction with Free Surface in BCC Metals: *Jan Fikar*¹; Roman Gröger¹; Robin Schäublin²; ¹IPM; ²ETHZ

9:45 AM

Determination of the Type, Burgers Vector and Density of Dislocation Loops by X-ray Line Profile Analysis in Proton Irradiated Zr Alloys: *Tamás Ungár*¹; Matthew Topping¹; Philipp Frankel¹; Michael Preuss¹; ¹The University of Manchester

10:05 AM Break

10:20 AM

High Resolution EBSD and Strain Mapping of Nanoindentation in Ion-irradiated Steels: *Anna Kareer*¹; Hamid Abdolvand²; Steve Roberts¹; ¹University of Oxford; ²Western University

10:40 AM Invited

Deformation Behavior of Ion-irradiated Materials under Nanoindentation: *Ryuta Kasada*¹; Satoshi Konishi¹; Hyoseong Gwon¹; Takeshi Miyazawa¹; Masami Ando¹; Hiroyasu Tanigawa¹; ¹Kyoto University

11:10 AM

Characterizing Radiation Damage in Stainless Steels Using Spherical Nanoindentation Stress-Strain Curves: *Jordan Weaver*¹; Siddhartha Pathak²; Ashley Reichardt³; Peter Hosemann³; Nathan Mara¹; ¹Los Alamos National Laboratory; ²University of Nevada Reno; ³University of California Berkeley

11:30 AM

Novel Methods of Recording Flow Curves in Proton Irradiated Material: *Albert Smith*¹; Jack Donoghue¹; Bartłomiej Winiarski¹; Alistair Garner¹; Nick Riddle²; Keith Wilford²; Philip Withers¹; Michael Preuss¹; ¹University of Manchester; ²Rolls-Royce

11:50 AM Invited

Small Scale Mechanical Testing on He Bubble Containing and Irradiated Materials: *Peter Hosemann*¹; Zhangjie Wang¹; David Frazer¹; Frances Allen¹; ¹University of California Berkeley

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Gradient Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Monday AM
February 27, 2017

Room: 24B
Location: San Diego Convention Ctr

Session Chairs: Ke Lu, Institute of Metal Research; Xiaolei Wu, Institute of Mechanics

8:30 AM Introductory Comments

8:35 AM Invited

Fatigue Behavior of Gradient Nanograined Cu: Qingsong Pan¹; *Lei Lu*¹; Jianzhou Long¹; ¹Institute of Metal Research, CAS

9:00 AM

Strain Incompatibility and Ductility in a Gradient Nanostructure of IF Steel: *Xiaolei Wu*¹; Yuntian Zhu²; ¹Institute of Mechanics, Chinese Academy of Sciences; ²North Carolina State University

9:20 AM Invited

Effect of Gradient on Mechanical Behavior of Ni Based Gradient Materials: Y Lin¹; R.Q. Cao¹; J Pan¹; *Yi Li*¹; ¹Institute of Metal Research

9:45 AM

Suppression of Surface Fatigue Cracking in Steels with a Gradient Nanostructured Surface Layer: *Z.B. Wang*¹; K. Zhang¹; H.W. Huang¹; K. Lu¹; ¹Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

10:05 AM Break

10:25 AM Invited

Superior Combinations of High Strength and Ductility in Compositionally Graded Martensitic Steels: *Hatem Zurob*¹; Hamid Azizi¹; Olivier Bouazziz²; David Embury¹; ¹McMaster University; ²University of Lorraine

10:50 AM

Tensile Behaviors of Gradient Nano-grained Copper at 77K: *Xiuyan Li*¹; Xin Zhou¹; Ke Lu¹; ¹Shenyang National Laboratory for Materials Science, Institute of Metal Research, CAS

11:10 AM Invited

Stress and Strain Gradients in a Low Carbon Steel Deformed under Heavy Sliding: *Xiaodan Zhang*¹; Niels Hansen¹; Xiaoxu Huang¹; ¹Technical University of Denmark

11:35 AM

Novel Contributions to Deformation and Properties in Gradient Materials: *Shan "Cecelia" Cao*¹; Christian Roach¹; Yuntian Zhu¹; Suveen Mathaudhu¹; ¹University of California Riverside

Nanocomposites IV: Nanoscience for Renewable Energy — NanoScience Part I

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Changsoo Kim, University of Wisconsin-Milwaukee; Simona Murph, Savannah River National Laboratories; Muralidharan Paramsothy, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology

Monday AM Room: Pacific 25
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Simona Murph, Savannah River National Laboratory (SRNL); Muralidharan Paramsothy, NanoWorld Innovations (NWI)

8:30 AM Keynote

Multifunctional Materials for Renewable Energy Technologies: *Federico Rosei*¹; ¹INRS

9:10 AM Invited

Ceramic Composites in Diverse Applications Ranging from Oxygen Production to Nuclear Waste Immobilization: *Kyle Brinkman*¹; ¹Clemson University

9:50 AM Break

10:10 AM Invited

Conditions for Effective Nanocrystal Shape Control in Colloidal SILAR Reactions: *Andrew Greytak*¹; ¹University of South Carolina

10:50 AM Invited

Hydrogen Storage, Ionic Conduction, and Photophysical Properties of Fullerene Based Materials: *Joseph Teprovič*¹; Patrick Ward¹; Aaron Washington¹; Hector Colon-Mercado¹; Ragaïy Zidan¹; ¹Savannah River National Laboratory

Nanostructured Materials for Nuclear Applications II — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Idaho National Laboratory; Khalid Hattar, Sandia National Laboratories; Celine Hin, Virginia Tech; Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Mitra Taheri, Drexel University; Haiming Wen, Idaho State University

Monday AM Room: Pacific 24
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Khalid Hattar, Sandia National Laboratory; Mitra Taheri, Drexel University

8:30 AM Invited

Understanding and Predicting Nanoscale Precipitate Formation and Associated Reactor Pressure Vessel Embrittlement: *Dane Morgan*¹; Huibin Ke¹; Mahmood Mamivand¹; Shipeng Shu¹; Henry Wu¹; Peter Wells²; Nicholas Cunningham²; Nathan Almirall²; G. Robert Odette²; ¹University of Wisconsin - Madison; ²University of California, Santa Barbara

9:00 AM

Search for Radiation Resistance Materials: As Revealed by Computer Simulations: *Fei Gao*¹; Liangliang Liu¹; Nanjun Chen¹; Chenyang Lu¹; Lumin Wang¹; ¹University of Michigan

9:20 AM

Kinetic Monte Carlo Simulation of Radiation-induced Segregation in Quaternary Fe-Ti-Y-O: *Christopher Nellis*¹; Celine Hin¹; ¹Virginia Tech

9:40 AM

Molecular Dynamic Cascade Simulations of Yttria Nanoclusters in an Alpha Fe Matrix: *Mike Higgins*¹; Fei Gao¹; ¹University of Michigan

10:00 AM Break

10:20 AM Invited

Irradiation Response of Nanostructured Oxides to Ionization and Displacement Damage: *Yanwen Zhang*¹; Dilpuneet Aidhy²; Tamas Varga³; Philip Edmondson¹; Fereydoon Namavar⁴; William Weber⁵; ¹Oak Ridge National Laboratory; ²University of Wyoming; ³Pacific Northwest National Laboratory; ⁴University of Nebraska Medical Center; ⁵University of Tennessee

10:50 AM

Evolution of Microstructures and Mechanical Properties of Zr-containing Ferritic Alloys under Self-ion Irradiation: *Tianyi Chen*¹; Mo-Rigen He²; Lizhen Tan¹; Ying Yang¹; Beata Tyburska-Püschel²; Kumar Sridharan²; ¹Oak Ridge National Laboratory; ²University of Wisconsin, Madison

11:10 AM

Stability of 14YWT Nanostructured Ferritic Alloys under Irradiation and Thermal Aging: *Eda Aydogan*¹; Stuart Maloy¹; Osman Anderoglu¹; Sven Vogel¹; Clarissa Yablinsky¹; Nathan Almirall²; G. Robert Odette²; Jonathan Gigax³; Lloyd Price³; Di Chen³; Lin Shao³; Frank Garner³; ¹Los Alamos National Laboratory; ²University of California Santa Barbara; ³Texas A&M University

11:30 AM

In-situ TEM Study of Defect-grain Interactions under Irradiation in Bulk Severe Plastically Deformed Model Ni Alloys: *Christopher Barr*¹; Marquis Kirk²; Meimei Li²; Mitra Taheri¹; ¹Drexel University; ²Argonne National Laboratory

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Phase Stability on Energy Materials

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Monday AM Room: 25A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Yu Zhong, Florida International University; Thomas Reichmann, Karlsruhe Institute of Technology

8:30 AM Invited

Phase Transformations at Thermoelectric-Metal Interfaces - Thermodynamic Modeling: *Yong-Jie Hu*¹; Yi Wang¹; Samad Firdosy²; Zi-Kui Liu¹; Samad Firdosy²; Kurt Star²; Jean-Pierre Fleurial²; Vilupanur Ravi²; ¹Pennsylvania State University; ²Jet Propulsion Laboratory/California Institute of Technology

9:00 AM

Phase Transformations at Thermoelectric-Metal Interfaces - Experimental Analysis: *Samad Firdosy*¹; Kurt Star¹; Jean-Pierre fleurial¹; Vilupanur Ravi²; Yong-Jie Hu³; Yi Wang³; Zi-Kui Liu³; ¹Jet Propulsion Laboratory/California Institute of Technology; ²Jet Propulsion Laboratory/California Institute of Technology and Cal Poly Pomona, Pomona, Ca; ³Pennsylvania State University

9:20 AM

Thermal-to-electrical Energy Conversion Using Ferroelectric Materials: *G.P. Zheng*¹; ¹Hong Kong Polytechnic University

9:40 AM

The Thermodynamic Investigation of the Effect of CO₂ to the Stability of (La_{0.8}Sr_{0.2})_{0.98}MnO_{3±d}: *Shadi Darvish*¹; Yu Zhong¹; ¹Florida International University

10:00 AM

Weight Loss Mechanism of (La_{0.8}Sr_{0.2})_{0.98}MnO_{3±d} During Thermal Cycles: *Shadi Darvish*¹; Yu Zhong¹; ¹Florida International University

10:20 AM Break

10:35 AM Invited

Thermodynamics and Electrochemical Behavior of Advanced Electrode Materials for Lithium Batteries: *Hans Seifert*¹; ¹Karlsruhe Institute of Technology

11:00 AM Invited

Intermetallic Alloy Systems for Li-ion Batteries: *Clemens Schmetterer*¹; Siegfried Fürtauer¹; Alexander Beutl¹; Hans Flandorfer¹; ¹University of Vienna

11:25 AM

Calorimetry on Coin Cells with a DSC-like Battery Calorimeter for Lithium-ion Batteries: *David Henriques*¹; Hans Giel¹; Torsten Markus¹; ¹Mannheim University of Applied Sciences

11:45 AM

Dependence of Grain Size Distribution on the Conductivity of Ceria - Approach by Spark Plasma Sintering: Po-Heng Lin¹; Eric Tseng¹; *Shih-Yun Chen*¹; Yang-Yuan Chen²; ¹National Taiwan University of Science and Technology; ²Institute of Physics, Academia Sinica

Phase Transformations and Microstructural Evolution — Steels & General

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Monday AM

February 27, 2017

Room: 16B

Location: San Diego Convention Ctr

Session Chair: Sudarsanam Babu, The University of Tennessee, Knoxville

8:30 AM Invited

A Direct Evidence of Solute Interactions with a Moving Ferrite/Austenite Interface in a Model Fe-C-Mn Alloy: *Goune Mohamed*¹; Frédéric Danoix²; Xavier Sauvage²; Didier Huin³; Lionel Germain⁴; ¹ICMCB-Bordeaux1; ²GPM - Université de Rouen; ³ArcelorMittal; ⁴Université de Lorraine

9:00 AM

An Experimental Assessment of the $\alpha + \alpha'$ Miscibility Gap in Fe-Cr: *Alexander Dahlstrom*¹; Frederic Danoix¹; Peter Hedstrom²; Joakim Odqvist²; Helena Zapolsky¹; ¹Normandy University; ²KTH (Royal Institute of Technology)

9:20 AM

Diffusion Behavior of Alloy Elements in Martensite-austenite Constituent Formed in the Heat-affected Zone of a Low Alloy Carbon Steel: *Masahiro Inomoto*¹; Hidenori Nako¹; ¹Kobe Steel, Ltd.

9:40 AM

Direct Observation of the Movement of the Austenite-ferrite Interface in Fe-C-Mn Steels: William Rainforth¹; *John Nutter*¹; ¹The University of Sheffield

10:00 AM Break

10:20 AM Invited

Synchrotron High-energy X-rays for In-situ Study of Phase Transformation of Advanced Materials: *Yang Ren*¹; ¹Argonne National Laboratory

10:50 AM

Harnessing the Kirkendall Effect for the Fabrication of Metallic Microtubes and Hollow Scaffolds: *Ashley Paz y Puente*¹; Dinc Erdeniz¹; David Dunand¹; ¹Northwestern University

11:10 AM

Interfacial Energy Evaluation in Binary Systems Using Diffusion-Multiples and Simulations: *Qiaofu Zhang*¹; Surendra Makineni²; John Allison²; Ji-Cheng Zhao¹; ¹The Ohio State University; ²University of Michigan

11:30 AM

Assessing Chemical and Microstructural Evolution at Interfaces of γ' - Strengthened Superalloys at High Temperatures by In Situ TEM Heating Experiments: *Yolita Eggeler*¹; Erdmann Spiecker¹; ¹Friedrich Alexander Universität Erlangen-Nürnberg

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Biomaterials and Functional Films

Sponsored by: TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, UTEP; Heinz Palkowski, Clausthal Univ of Technology; Vikas Tomar, Purdue Univ; Nuggehalli Ravindra, NJIT

Monday AM

February 27, 2017

Room: Pacific 18

Location: Marriott Marquis Hotel

Session Chairs: Adele Carradò, Université de Strasbourg IPCMS; Heinz Palkowski, TU Clausthal IMET

8:30 AM Keynote

Osteogenic Potential of a Biomimetic Layer-by-layer Platform: Khalil Abdelkebir¹; Fabien Gaudière¹; Laura Tesson¹; Jean-Pierre Vannier¹; Hassan Atmani¹; Sandrine Morin-Grognet¹; Béatrice Labat¹; *Guy Ladam*¹; ¹University of Rouen Normandy

9:10 AM

Synthesis of CNT Reinforced Hydroxyapatite Coatings over Bio Materials Surfaces through Electrodepositions: *Rajib Chakraborty*¹; Srijan Sengupta¹; Partha Saha¹; Karabi Das¹; Siddhartha Das¹; ¹Indian Institute of Technology, Kharagpur

9:30 AM

Osteoanabolic Implant Materials for Orthopaedic Treatment: *Xiaobo Chen*¹; Yun-Fei Ding¹; Rachel Li²; M. Nakai³; M. Niinomi³; Paul Smith²; Nick Birbilis¹; ¹Monash University; ²The Australian National University; ³Tohoku University

9:50 AM Break

10:10 AM Keynote

Multifunctional Magnetic Biomaterials: Dendronized Nanoparticles and Magnetic Microbubbles: *Geneviève Pourroy*¹; ¹CNRS University of Strasbourg-IPCMS

10:50 AM

Comparing Various Corrosion Inhibitors Absorbed on to Chitosan bonded to Steel and the Resulting Corrosion Protection: *Holly Martin*¹; Stephen Cornich¹; John Crowe¹; Jacob Millerleile¹; Snjezana Balaz²; ¹Department of Chemical Engineering, Youngstown State University; ²Department of Physics and Astronomy, Youngstown State University

11:10 AM

Development of Enamel Coatings in Accordance with Recent Regulations of Food Contact Materials: *Meltem Ipekci*¹; Kagan Benzesik¹; Onuralp Yucel¹; Filiz Cinar Sahin¹; Alper Yesilcubuk²; ¹Istanbul Technical University; ²Arçelik A.S.

11:30 AM

Super-stretchable Metallic Interconnect Films with a Linear Strain of up to 100%: Yeasir Arafat¹; Indranath Dutta¹; *Rahul Panat*¹; ¹Washington State University

Student-Run Symposium: Building Bridges – Connecting Academic and Industry Research – Session I

Sponsored by: TMS: Education Committee

Program Organizers: Katherine Vinson, The University of Alabama; Omar Rodriguez, The University of Alabama; Ben White, The University of Alabama; Dallin Barton, The University of Alabama; Rachel White, The University of Alabama

Monday AM
February 27, 2017

Room: 22
Location: San Diego Convention Ctr

Session Chairs: Omar Rodriguez, The University of Alabama; Dallin Barton, The University of Alabama

8:30 AM Introductory Comments: Dr. Garry W. Warren

8:40 AM Invited

Building Bridges: Transitioning from Academia to Industry: *Lucille Giannuzzi*¹; ¹EXpressLO LLC

9:20 AM Invited

Building Bridges: Connecting Academic and Industry Research: *Nanci Hardwick*¹; Jianqing Su¹; ¹Aeroprobe Corporation

9:40 AM Invited

The Faculty Entrepreneur: Finding Win-Win Commercialization Opportunities for University Research: *Christian Widener*¹; ¹South Dakota School of Mines and Technology

10:00 AM Invited

Four Pillars of Academia: A Cultural Shift to include Entrepreneurship: *Michael Sealy*¹; ¹University of Nebraska-Lincoln

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology – 2D Nanomaterials for Nanoelectronics

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Monday PM
February 27, 2017

Room: Pacific 26
Location: Marriott Marquis Hotel

Session Chairs: Stephen McDonnell, University of Virginia; Myung Mo Sung, HanYang University

2:00 PM Invited

Graphene for Alternative Digital Logic Applications: *Byoung Hun Lee*¹; ¹Gwangju Institute of Science and Technology

2:30 PM Invited

Two-dimensional Materials for Next Generations of Electronic Devices: *Saptarshi Das*¹; ¹Pennsylvania State University

3:00 PM Invited

Two-dimensional Nanosheets for Electron Device Applications: *Seongil Im*¹; ¹Yonsei University

3:30 PM Break

3:50 PM Invited

Realizing Large-scale 2-D Materials: Properties and Applications: *Joshua Robinson*¹; ¹The Pennsylvania State University

4:20 PM Invited

Nucleation of ALD on Graphene and Transition Metal Dichalcogenide (TMDs): Iljo Kwak¹; Jun Hong Park¹; Bernd Fruhberger¹; *Andrew Kummel*¹; ¹University of California, San Diego

4:50 PM Invited

Using Ions to Control Transport in Two-dimensional Materials for Electronics: Susan Fullerton¹; *Ke Xu*¹; Jierui Liang¹; ¹University of Pittsburgh

5:20 PM

Novel In Situ Electrical Characterization of the Dielectric Deposition Process on 2-D Transition Metal Dichalcogenides: *Antonio Lucero*¹; Lanxia Cheng¹; Joy Lee¹; Jaebeom Lee¹; Xin Meng¹; Arul Ravichandran¹; Young-Chul Byun¹; Jaegil Lee¹; Jiyoung Kim¹; ¹University of Texas at Dallas

8th International Symposium on High Temperature Metallurgical Processing – Simulation of High Temperature Process

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Monday PM
February 27, 2017

Room: 18
Location: San Diego Convention Ctr

Session Chairs: Varadarajan Seshadri, Universidade Federal de Minas Gerais; Yousef Mohassab, University of Utah

2:00 PM Introductory Comments

2:05 PM

A CFD Based Algorithm for Kinetics Analysis of the Reduction of Hematite Concentrate by H₂+CO Mixtures in a Drop Tube Reactor: De Qiu Fan¹; Mohamed Elzohiery¹; Yousef Mohassab¹; *H.Y. Sohn*¹; ¹University of Utah

2:25 PM

A Continuous Dynamic Process Model to Design a Carbon Profile toward Yield Improvement: *Mohammed Tayeb*¹; Narottam Behera¹; Raja Mathu²; ¹SABIC Metals SBU; ²HADEED

2:45 PM

Alloy Yield Prediction Model Based on the Data Analysis in EAF Steelmaking Process: *Lingzhi Yang*¹; ¹Central South University

3:05 PM

Analysis of Jet Behavior and Surface Fluctuations in the Meniscus of Fluid in a Physical Model of a Beam Blank Mold and CFD Modelling: John Peixoto¹; Wesley Gabriel²; Ciro Silva²; Leticia Ribeiro²; Carlos Silva²; Itavahn Silva²; *Varadarajan Seshadri*³; ¹Federal University of Brazil, Ouro Preto; ²Federal University of Brazil, Ouro Preto; ³Universidade Federal de Minas Gerais

3:25 PM

CFD Study of Gas-liquid Phase Interaction Inside a Submerged Lance Smelting Furnace for Copper Smelting: Guangwu Tang¹; Armin Silaen¹; Hongjie Yan²; Zhixiang Cui³; Zhi Wang³; Haibin Wang³; Kaile Tang²; Ping Zhou²; *Chenn Zhou*¹; ¹Purdue University Northwest; ²Central South University; ³Dongying Fangyuan Nonferrous Metals

3:45 PM Break

4:05 PM

Debottlenecking High Temperature Metallurgical Plants through Modeling and Simulation: *Kamal Adham*¹; ¹Hatch Ltd.

4:25 PM

Assessment of Slag Entrainment in a RH Degasser through Physical Modelling Using Circulating Fluids of Different Densities/Oil Systems for Simulating Steel Melt/Slag: *John Peixoto*¹; *Natalia Barony*¹; *Weslei Gabriel*¹; *Carlos Silva*¹; *Itavahn Silva*¹; *Varadarajan Seshadri*²; ¹Federal University of Ouro Preto; ²Universidade Federal de Minas Gerais

A Prospective Look at the MGI After Five Years — Keynote Session

Sponsored by: TMS: Materials Innovation Committee

Program Organizers: Charles Ward, Air Force Research Laboratory; Kevin Hemker, Johns Hopkins University; John Allison, University of Michigan

Monday PM

Room: 9

February 27, 2017

Location: San Diego Convention Ctr

Session Chairs: Charles Ward, Air Force Research Laboratory; Kevin Hemker, Johns Hopkins University; John Allison, The University of Michigan

3:25 PM Introductory Comments

3:30 PM Keynote

Spatiotemporally Integrated Theory, Computation and Experiments: A Frontier of the Materials Genome Initiative: *Dennis Dimiduk*¹; ¹BlueQuartz Software, LLC and Ohio State University

4:00 PM Keynote

The Materials Genome Initiative – Leading a Culture Shift in Materials Research: *Kevin Anderson*¹; ¹Brunswick Corporation – Mercury Marine Division

4:30 PM Keynote

Democratizing Large-scale Data and Machine Learning in Materials Research: *Bryce Meredith*¹; ¹Citrine Informatics

5:00 PM Keynote

The Materials Genome after Five Years: An Academic Perspective: *Tresa Pollock*¹; ¹University of California Santa Barbara

Additive Manufacturing: Past, Present, and Future — Joint Keynote Session

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; James Foley, Los Alamos National Laboratory; Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology

Monday PM

Room: 8

February 27, 2017

Location: San Diego Convention Ctr

Session Chair: David Bourell, University of Texas

2:00 PM Introductory Comments

2:05 PM Keynote

The New Metallurgy of Additive Manufacturing: *Thomas Starr*¹; ¹University of Louisville

2:45 PM Keynote

Laser Engineered Net Shaping (LENS™): Past, Present and Future: *David Keicher*¹; *John Smugeresky*¹; ¹Sandia National Laboratories

3:15 PM Keynote

Additive Manufacturing Machines from the University of Texas at Austin: *Joseph Beaman*¹; *Scott Fish*¹; ¹University of Texas

3:45 PM Break

4:00 PM Keynote

Location Specific Control of Solidification Microstructure across AM Alloys and Processes: *Sneha Narra*¹; *Jack Beuth*¹; ¹Carnegie Mellon University

4:30 PM Keynote

Unraveling Out-of-equilibrium Phase and Microstructure Formation in Alloys towards Alloy Design for Additive Manufacturing: *Christian Leinenbach*¹; *Christoph Kenel*¹; *Xiaoshuan Li*¹; *Toni Ivas*¹; ¹Empa-Swiss Federal Laboratories for Materials Science and Technology

5:00 PM Keynote

The Move to Multifunctionality: Additive Manufacturing of Graded and Multimaterial Structures: *Christopher Tuck*¹; *Ricky Wildman*¹; *Ian Ashcroft*¹; *Richard Leach*¹; *Richard Hague*¹; *Adam Clare*¹; ¹University of Nottingham

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Monday PM

Room: 33C

February 27, 2017

Location: San Diego Convention Ctr

Session Chairs: Thomas Bieler, Michigan State University; Xavier Sauvage, Normandy University

2:00 PM Invited

Atomic Scale Investigation of Co-deformation and Mechanical Mixing in Severely Deformed Multiphase Structures: *Xavier Sauvage*¹; ¹Normandy University

2:20 PM

Strain Localization Structures in Textured Magnesium AZ31 under Reversed Loading via Multi-scale Digital Image Correlation: *Enver Kapan*¹; *Nima Shafaghi*¹; *Sevinç Uçar*¹; *Cahit Aydinler*¹; ¹Bogazici University

2:40 PM

Kink Band Propagation during Plastic Deformation of Bulk Metallic Nanolaminates: *Thomas Nizolek*¹; *Nathan Mara*²; *Rodney McCabe*³; *Irene Beyerlein*⁴; *Jaclyn Avallone*¹; *Tresa Pollock*¹; ¹Materials Department, University of California Santa Barbara; ²Institute for Materials Science and the Center for Integrated Nanotechnologies, Los Alamos National Laboratory; ³Materials Science and Technology Division 8, Los Alamos National Laboratory; ⁴Mechanical Engineering Department, University of California Santa Barbara

3:00 PM

A Novel In Situ TEM Technique: High Strain Rate Tensile Testing in the Dynamic TEM: *Thomas Voisin*¹; *Michael Grapes*¹; *Yong Zhang*¹; *Nicholas Lorenzo*²; *Jonathan Ligda*²; *Brian Schuster*²; *Tian Li*³; *Melissa Santala*³; *Geoffrey Campbell*³; *Timothy Weihs*¹; ¹Johns Hopkins University; ²Army Research Laboratory; ³Lawrence Livermore National Laboratory

3:20 PM Break

3:40 PM

Deformation and Strengthening Mechanisms in AISI 321 Austenitic Stainless Steel under both Dynamic and Quasi-static Loading Conditions: *Ahmed Tihamiyu*¹; *Akindele Odeshi*¹; *Jerzy Szpunar*¹; ¹University of Saskatchewan

4:00 PM

Study of Homophase Interfaces in Structural Materials by ECCI and EBSD in the SEM: *Ivan Gutierrez-Urrutia*¹; ¹National Institute for Materials Science

4:20 PM

Comparison of Measured and Simulated Elastic Strain States in Crystal Plasticity Simulation of Experimentally Deformed and Characterized Microstructure Patches: *Thomas Bieler*¹; Chen Zhang¹; Harsha Phukan¹; Quan Zhou¹; Philip Eisenlohr¹; Martin Crimp¹; Carl Boehlert¹; Leyun Wang²; Peter Kenesei³; Jun-Sang Park³; Ruxing Xu³; Wenjun Liu³; ¹Michigan State University; ²Shanghai Jiao Tong University; ³Argonne National Laboratory

4:40 PM

In Situ Strain Mapping of Deformation Processes in Metallic Specimens: *Thomas Pekin*¹; Colin Ophus²; Jim Ciston²; Christoph Gammer³; Andrew Minor¹; ¹University of California, Berkeley; ²National Center for Electron Microscopy; ³Erich Schmid Institute of Materials Science

5:00 PM

Effect of Thermal and Mechanical Loadings on the Residual Strain Field in a Shot-peened Nickel Based Superalloy Investigated Using the Synchrotron X-ray Microdiffraction Technique: *Gader Altinkurt*¹; *Mathieu Fèvre*¹; Guillaume Geandier²; Odile Robach³; Moukrane Dehmas²; ¹Onera-The French Aerospace Lab; ²Institut Jean Lamour; ³CEA

Advanced High-Strength Steels — Recent Developments in High-/Medium Mn Steels

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Monday PM

Room: 17A

February 27, 2017

Location: San Diego Convention Ctr

Session Chairs: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung; Young-Kook Lee, Yonsei University

2:00 PM Introductory Comments

2:05 PM Invited

Strain Path Dependence of Retained Austenite Mechanical Stability in a Medium Manganese Steel Stamping: *Louis Hector Jr*¹; Yu-wei Wang²; Wei Wu²; Feng Zu²; Panagiotis Makrygiannis²; Fadi Abu-Farha³; Xin Sun⁴; Xiaohua Hu⁴; Yang Ren⁵; ¹General Motors; ²AK Steel; ³Clemson University; ⁴Pacific Northwest National Laboratory; ⁵Argonne National Laboratory

2:35 PM

Segregation Engineering in Medium Manganese Steels: *Dirk Ponge*¹; Margarita Kuzmina¹; Alisson Kwiatkoski¹; Meimei Wang¹; Stefanie Sandlöbes¹; Michael Herbig¹; Dierk Raabe¹; ¹Max-Planck-Institut für Eisenforschung GmbH

2:55 PM

High Strength Nb-bearing Medium Mn Steel for Warm Stamping: *Jae-Hoon Nam*¹; Jeongho Han²; Young-Kook Lee¹; ¹Yonsei University; ²Max-Planck-Institut für Eisenforschung

3:15 PM

High Strain Rate Deformation of High-Mn and Medium-Mn TWIP-TRIP Steel: *Jake Benzing*¹; Whitney Poling²; Dean Pierce³; Kip Findley²; Dirk Ponge⁴; Dierk Raabe⁴; James Wittig¹; ¹Vanderbilt University; ²Colorado School of Mines; ³Oak Ridge National Laboratory; ⁴Max-Planck-Institut für Eisenforschung

3:35 PM Break

3:50 PM

Effect of Retained Austenite Transformation Holding Time and Temperature on the Microstructural Development and Properties of a Medium Mn Third Generation Advanced High Strength Steel: *Kazi Bhadon*¹; *Joseph McDermid*¹; Elizabeth McNally¹; Frank Goodwin²; ¹McMaster University; ²International Zinc Association

4:10 PM

Effect of Starting Microstructure and Intercritical Annealing Parameters on Mechanical Properties of a Medium-Mn Third-generation Advanced High Strength Steel: *Daniella Pallisco*¹; Joseph McDermid¹; Elizabeth McNally¹; Frank Goodwin²; ¹McMaster University; ²International Zinc Association

4:30 PM

Influence of Cooling and Strain Rate on the Hot Ductility Behavior of High Manganese Steels within the System Fe-Mn-C: *Bernhard Steenken*¹; Dieter Senk¹; Joao L. L. Rezende¹; ¹RWTH Aachen

4:50 PM

Austenite Formation along Dislocations in Medium Manganese Steels: *Margarita Kuzmina*¹; *Dirk Ponge*¹; Stefanie Sandlöbes¹; Michael Herbig¹; Dierk Raabe¹; ¹Max-Planck-Institut für Eisenforschung GmbH

5:10 PM

Ultrahigh Strength and Excellent Ductility Achieved by Grain Refinement in Low-carbon High-manganese Steels: *Hung-Wei Yen*¹; Yu-Han Huang¹; Ching-Yuan Huang²; Steve Ooi³; ¹National Taiwan University; ²China Steel Corporation; ³University of Cambridge

Advanced Materials in Dental and Orthopedic Applications — Session II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Rajendra Kasinath, DePuy Synthes Products, LLC

Monday PM

Room: Pacific 14

February 27, 2017

Location: Marriott Marquis Hotel

Session Chairs: Holly Martin, Youngstown State University; Tolou Shokuhfar, University of Illinois at Chicago; Terry Lowe, Colorado School of Mines

2:00 PM Invited

Rapid Mechanical Assessment of Dental Materials for the Mitigation of Cracks in Natural Teeth: *Shweta Bhatnagar*¹; Cheryl Sheets²; *James Earthman*¹; ¹University of California, Irvine; ²Newport Coast Oral Facial Institute

2:30 PM

Orthopedic Implants with Graded Mechanical Behavior Made from Metastable Beta Ti Alloys: *Rubens Caram*¹; Eder Lopes¹; ¹University of Campinas

2:50 PM

Preparation and Characterizations of Nano Composites Based on Biphasic Mixture of Bioactive Ceramics for Biomedical Applications: *Nida Iqbal*¹; Muhammad Abdul Rafiq¹; ¹Universiti Teknologi Malaysia

3:10 PM

Repelling Biofilm Formation on Dental Materials via Piezoelectric Fillers: *Santiago Orrego*¹; Anna Pizzano¹; Kavan Hazeli²; Mary Anne Melo³; ¹Johns Hopkins University; ²The University of Alabama in Huntsville; ³University of Maryland School of Dentistry

3:30 PM Break**3:50 PM**

Surface Modified Drug Releasing Total Hip Implant: R. Manoj Kumar¹; Pallavi Gupta¹; Partha Roy¹; *Debrupa Lahiri*¹; ¹Indian Institute of Technology Roorkee

4:10 PM

Tailoring of the Mechanical Properties of Alloys of the Ti-Zr-Mo System through Alloying and Heat Treatments: *Caio Xavier*¹; Carlos Grandini¹; Luis Rocha¹; ¹UNESP

4:30 PM

The Effects of Inclusions on the Fatigue Performance of Superelastic Nitinol Fine Wires: *Janet Gbur*¹; John Lewandowski¹; ¹Case Western Reserve University

4:50 PM

Thermomechanical Processing of Beta-Ti Alloys for Load-bearing Implant Applications: *Stefan Pilz*¹; André Reck²; Mariana Calin¹; Jens Freudenberger¹; Martina Zimmermann²; Jürgen Eckert³; Annett Gebert¹; ¹Leibniz Institute for Solid State and Materials Research Dresden, Dresden, Germany; ²Institute of Materials Science, Dresden University of Technology, Dresden, Germany; ³Department Materials Physics, Montanuniversität Leoben, Leoben, Austria

5:10 PM

Microstructures and Properties of Mg AZ Alloys Subject to High Shear Deformation: *Casey Davis*¹; Jacob Edick²; Terry Lowe¹; ¹Colorado School of Mines; ²Boston Scientific Corporation

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In Situ Techniques II

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Monday PM
February 27, 2017

Room: 32A
Location: San Diego Convention Ctr

Session Chairs: Teresa Prado, IMDEA- Spain; Amit Pandey, LG Fuel Cell Systems

2:00 PM Invited

Advanced In Situ Loading Environments for High Energy Synchrotron X-ray Experiments: *Paul Shade*¹; Basil Blank²; Jay Schuren¹; Joel Bernier³; Darren Pagan³; David Menasche⁴; Robert Suter⁴; Armand Beaudoin⁵; Peter Kenesei⁶; Jun-Sang Park⁶; Jonathan Almer⁶; Darren Dale⁷; Peter Ko⁷; Todd Turner¹; ¹Air Force Research Laboratory; ²PulseRay; ³Lawrence Livermore National Laboratory; ⁴Carnegie Mellon University; ⁵University of Illinois at Urbana Champaign; ⁶Argonne National Laboratory; ⁷Cornell University

2:25 PM

Unveiling the Micromechanical Response of Mg Alloys by EBSD-assisted Slip Trace Analysis: Carmen M. Cepeda-Jiménez¹; *María Teresa Pérez Prado*¹; ¹IMDEA Materials Institute

2:45 PM

Development of a High Temperature Tensile Tester for Micromechanical Characterization of Materials Supporting Meso-Scale ICME Models: Zafir Alam¹; *David Eastman*¹; Minjea Jo¹; Kevin Hemker¹; ¹Johns Hopkins University

3:05 PM Invited

In Situ Micro-mechanical Testing of Ion Irradiated Materials: *Dhriti Bhattacharyya*¹; Alan Xu¹; Lyndon Edwards¹; ¹ANSTO

3:30 PM Break**3:50 PM**

Grain Growth and Mechanical Behavior of Nanostructured Intermetallic Films Studied Using In Situ TEM Annealing and Tensile Straining: *Rohit Sarkar*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

4:10 PM

Crystal Size and Temperature Effects on the Transformation in Deformation Modes in Twin Oriented Mg Single Crystals: *Gi-Dong Sim*¹; Kelvin Xie¹; Kevin Hemker¹; Jaafar El-Awady¹; ¹Johns Hopkins University

4:30 PM Invited

In Situ Characterization of Electromigration and Thermal Cycling Damage and Grain Growth in Cu/Pure Sn/Cu Solder Joints: Antony Kirubanandham¹; *Nikhil Chawla*¹; ¹Arizona State University

4:55 PM Invited

Plasticity of Nano-Sized Metallic Glasses: *Dongchan Jang*¹; ¹Korea Advanced Institute of Science and Technology

5:20 PM

In-situ Experiments Combining SEM and X-ray Computed Tomography: Torin Quick¹; *Nathan Sesar*²; Robert Wheeler³; ¹Air Force Research Laboratory; ²Southwestern Ohio Center for Higher Education; ³MicroTesting Solutions LLC

Advances in Environmental Technologies: Recycling and Sustainability Joint Session — Advances in Environmental Technologies: New Areas of Value Recovery

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Pyrometallurgy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Mark Kennedy, Proval Partners SA; Naiyang Ma, ArcelorMittal; Elsa Olivetti, Massachusetts Institute of Technology; Randolph Kirchain, Massachusetts Institute of Technology

Monday PM
February 27, 2017

Room: 14B
Location: San Diego Convention Ctr

Session Chairs: Mark Kennedy, Proval Partners SA; John Howarter, Purdue University; Elsa Olivetti, MIT

2:00 PM

Accelerating Life-cycle Management Protocols for New Generation Batteries: Timothy Ellis¹; John Howes²; *Travis Hesterberg*¹; ¹RSR Technologies, Inc.; ²Redland Energy Group

2:20 PM

Recovery of Aluminum from the Secondary Aluminum Production Dust: *Myungwon Jung*¹; Brajendra Mishra¹; ¹Worcester Polytechnic Institute

2:40 PM

Fabrication of Aluminum Foam from Aluminum Scrap: *Abdel-Nasser Omran*¹; Hamza Osman¹; A. Atlam¹; Moatasem Kh¹; ¹Mining and Metallurgical Engineering Depart., Faculty of Engineering, Azhar University

3:00 PM

A Low Temperature Procedure for the Delamination of Brominated Epoxy Resin of Waste Printed Circuit Boards: *Himanshu Verma*¹; Kamalesh Singh¹; Tilak Mankhand¹; ¹IIT(BHU)

3:20 PM Break**3:40 PM**

Recovery of Metals and Nonmetals from Waste Printed Circuit Boards (PCBs) by Physical Recycling Techniques: *Muammer Kaya*¹; ¹ESOGÜ

4:00 PM

Recovery of Electrolytic Zinc from Aqueous Wastes: An Approach to the Industry of Hot Dip Galvanized: Luz Ocampo Carmona¹; Andres Meza Rodriguez²; ¹Universidad Nacional de Colombia

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Session II

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

Monday PM Room: 21
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Lan Li, Boise State University; Takao Mori, National Institute for Materials Science

2:00 PM Invited

Bottom-up Nanostructuring for Thermoelectrics: Takao Mori¹; ¹National Institute for Materials Science (NIMS)

2:20 PM

A Facile Route for Ge Addition to Nanostructured Fe-Si Alloys Towards Improved Thermoelectric Properties: Naiming Liu¹; Wade Jensen¹; Long Chen¹; Brian Donovan¹; Patrick Hopkins¹; Jerrold Floro¹; ¹University of Virginia

2:40 PM

Silicon Carbide Particles as Nano-inclusions for Improved Thermoelectrics: Devin Coleman¹; Sabah Bux²; Lorenzo Mangolini¹; ¹University of California, Riverside; ²Jet Propulsion Laboratory

3:00 PM Invited

Enhancement of Thermoelectric of PbTe Bulks Via Heterogeneous Nanostructure: Hongchao Wang¹; Junphil Hwang²; Chunlei Wang¹; Woochul Kim²; ¹Shandong University; ²Yonsei University

3:20 PM Break

3:40 PM Invited

Phononic Crystal Nanopatterning in Si and SiGe Thin Films for Thermoelectric Application: Masahiro Nomura¹; ¹University of Tokyo

4:00 PM

Nanostructure of Si/transition Metal Silicide Composite Prepared by a Melt Spinning Method: Yuji Ohishi¹; Tomoki Ebata¹; Jun Xie¹; Hiroaki Muta¹; Ken Kurosaki¹; Shinsuke Yamanaka¹; ¹Osaka University

4:20 PM

Incorporation of HfO₂ Nanoprecipitates: Way to Improve Half-Heusler Thermoelectric Material: Alizée Visconti¹; Guillaume Bernard-Granger²; Christelle Navone¹; ¹CEA Grenoble; ²CEA Marcoule

4:40 PM

Microstructure and Thermoelectric Properties of Silicon and Metal Silicides Nanocomposites Synthesized by a Melt Spinning Method: Ken Kurosaki¹; Sora-at Tanusilp¹; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University

5:00 PM Invited

Binary Titanium Alloys as Templates for Co-doping Titanium Oxide Photocatalysts: J. Shang¹; Zhengchao Xu²; Qi Li²; ¹University of Illinois; ²Institute of Metal Research

Alumina & Bauxite — Digestion and Calcination

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Zhang Ting'an, Northeastern University

Monday PM Room: 5B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Fernanda Silva, Federal University of Rio de Janeiro; Adriana Felix, Federal Institute of Education Science and Technology of Rio de Janeiro

2:00 PM Introductory Comments

2:05 PM

CFB Alumina Calciners - New and Future Generation Opportunities for Green Field Refineries: Linus Perander¹; Alessio Scarsella¹; Edgar Gasafi¹; Hans-Werner Schmidt¹; ¹Outotec GmbH

2:30 PM

Evolutional Development of Alkaline Aluminosilicates Processing Technology: Sergey Vinogradov¹; Andrey Panov²; Svyatoslav Engalychev¹; ¹RUSAL Engineering and Technology Center; ²RUSAL Engineering and Technology Center

2:55 PM

Characterization and Ore Dressing of Bauxite from Brazil: Fernanda Silva¹; Karoline Ferreira²; Carla Barbato³; Adriana Felix⁴; Luiz Bertolino⁵; Marta Medeiros¹; Francisco Garrido¹; Daniel Barcellos¹; Antônio Guerra¹; Bruna Novo⁶; Danielle Castro¹; ¹IQ/UFRJ; ²EQ-UFRJ/CETEM; ³EQ-UFRJ; ⁴FRJ-CMAR; ⁵CETEM; ⁶IQ-UFRJ/CETEM

3:20 PM

Process Optimization for Diaspore Digestion Equilibrium Using Response Surface Methodology: Zhengyong Zhang¹; ¹Chalco

3:45 PM Break

4:00 PM

Leaching Behavior of Alumina from Smelting Reduction Calcium Aluminate Slag with Sodium Carbonate Solution: Z. F. Tong¹; Yingjie Li¹; ¹Jiangxi University of Science and Technology

4:25 PM

Thermodynamic Analysis and Formation Law of Q Phase of Calcium Aluminate Clinker: Long Lu¹; Dongdong Ma¹; Tianxu Zhang²; Bo Wang¹; ¹Hebei University of Science and Technology; ²Chengde Petroleum College

Aluminum Alloys, Processing and Characterization — Alloy Development and Applications

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Yanjun Li, Norwegian University of Science and Technology

Monday PM Room: 4
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: In-Ho Jung, McGill University

2:00 PM Introductory Comments

2:05 PM Keynote

Aluminium, Current and Future Development: Juergen Hirsch¹; ¹Hydro Aluminium Rolled Products GmbH

2:35 PM

Design of New 6xxx Series Al Alloy Using the CALPHAD Thermodynamic Database: Senlin Cui¹; Raja Mishra²; In-Ho Jung¹; ¹McGill University; ²General Motors R&D Center

3:00 PM

Study of an Al-Ca Alloy with Low Young's Modulus: *Jun Yu*¹; Yasuo Ishiwata¹; Yoshihiro Taguchi¹; Daisuke Shimosaka¹; Ryosuke Taniguchi¹; Takutoshi Kondo²; Nobuki Tezuka³; ¹Nippon Light Metal; ²Nikkei Niigata co. Ltd; ³Tohoku University

3:25 PM

Production of 3004 Aluminum Alloy Sheet for Structural Applications from Twin Roll Casting: *Ali Malcioglu*¹; Seda Ertan¹; ¹ASAS Alüminyum Sanayi ve Ticaret A.S.

3:50 PM Break

4:05 PM

Aluminum Alloys with Tailored TiB₂ Particles for Composite Applications: Xingtao Liu¹; Yanfei Liu¹; David Yan²; Qingyou Han¹; Xiaoming Wang¹; ¹Purdue University; ²University of Wisconsin-Green Bay

4:30 PM

Development of Low Expansion and High Strength Aluminium Hybrid Composite: *Jamuna Sethi*¹; Siddhartha Das¹; Karabi Das¹; ¹Indian Institute of Technology Kharagpur

4:55 PM Poster Session Previews: Select poster presenters in the Tuesday, February 28 poster session will give five-minute previews of their work during this time.

Aluminum Reduction Technology — Electrolyte and Fundamentals, Anode Effects and PFC Emissions

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Monday PM
February 27, 2017

Room: 2
Location: San Diego Convention Ctr

Session Chairs: Jayson Tessier, Alcoa; Thor Aarhaug, SINTEF

2:00 PM Introductory Comments

2:05 PM

Bauxite Processing via Chloride Route to Produce Chloride Products and Subsequent Electrolysis of Aluminium Chloride to Produce Aluminium Metal: *Sankar Namboothiri*¹; Subash Mallick¹; ¹Gharda Scientific Research Foundation

2:30 PM

Stability of Chlorides in Cryolitic Electrolyte: Luis Espinoza-Nava¹; Xiangwen Wang¹; ¹Alcoa Technical Center

2:55 PM

Sodium in Aluminium as a Cell Performance Indicator: A Quantitative Framework: *Asbjorn Solheim*¹; ¹SINTEF

3:20 PM

Role of Heat Transfer in the Formation of Carbon Oxides in Smelting Cells: Mark Dorreen¹; N.E. Richards²; *Barry Welch*³; ¹Light Metals Research Centre, The University of Auckland; ²Retired; ³University of Auckland; University of New South Wales

3:45 PM Break

4:00 PM

Partial Anode Effect in a Two-Compartment Laboratory Alumina Reduction Cell: Henrik Åsheim¹; *Thor Aarhaug*²; Wojciech Gebarowski¹; Asbjorn Solheim²; Geir Haarberg¹; ¹NTNU; ²SINTEF

4:25 PM

Co-evolution of Carbon Oxides and Fluorides during the Electrowinning of Aluminium with Molten NaF-AlF₃-CaF₂-Al₂O₃ Electrolytes: Mark Dorreen¹; Margaret Hyland¹; R. G. Haverkamp²; James Metson¹; Ali Jassim³; B.J. Welch⁴; *Alton Tabereaux*⁵; ¹University of Auckland; Light Metals Research Centre; ²University of Auckland; ³University of New South Wales; ⁴University of Auckland; University of New South Wales; ⁵Consultant

4:50 PM

Preventive Treatment of Anode Effects Using On-Line Individual Anode Current Monitoring: *Lukas Dion*¹; François Laflamme²; Antoine Godefroy²; Charles-Luc Lagacé²; James Evans³; László Kiss¹; Sándor Poncsák¹; ¹Université du Québec à Chicoutimi; ²Aluminerie Alouette inc.; ³Wireless Industrial Technologies

5:15 PM

Reduction in EGA Jebel Ali Potroom GHG Emissions: *Daniel Whitfield*¹; Sergey Akhmetov¹; Najeeba Al-Jabri¹; ¹Emirates Global Aluminium (EGA)

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Electrometallurgy

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Monday PM
February 27, 2017

Room: 15B
Location: San Diego Convention Ctr

Session Chair: Shijie Wang, Rio Tinto Kennecott Utah Copper

2:00 PM

Modeling of Aluminum Electrowinning in Ionic Liquid Electrolytes: *Mingming Zhang*¹; Ramana Reddy²; ¹ArcelorMittal Global R&D; ²The University of Alabama

2:25 PM

Electrochemical Processing of Rare Earth Alloys: *Karen Osen*¹; Ana Maria Martinez¹; Henrik Gudbrandsen¹; Anne Store¹; Ole Kjos¹; ¹SINTEF Materials and Chemistry

2:50 PM

Effect of Cobalt Concentration on the Potential for Oxygen Evolution from Pb-Ca-Sn Anodes in Synthetic Copper Electrowinning Electrolytes: *Charles Abbey*¹; Michael Moats¹; ¹Missouri University of Science and Technology

3:15 PM

Corrosion Resistance of Ni-P-Zn Alloy Deposit Coated Using a Sulfate Electroless Bath: *Amir Kordijazi*¹; Mohsen Manjili¹; ¹University of Wisconsin-Milwaukee

3:40 PM Break

4:00 PM

Cobalt Electrodeposition from Cobalt Chloride Using Urea and Choline Chloride Ionic Liquid: Effect of Temperature, Applied Voltage, and Cobalt Chloride Concentration on Current Efficiency and Energy Consumption: *Andrea Kim*¹; Ramana Reddy¹; ¹University of Alabama

4:25 PM

Mathematical Modeling of Molten Salt Electrolytic Cells for Sodium and Lithium Production: Donghui Li¹; Lei Gao¹; Boyd Davis²; Rüdiger Schwarze³; Amjad Asad³; Christoph Kratzsch³; *Kinnor Chattopadhyay*¹; ¹University of Toronto; ²Kingston Process Metallurgy inc; ³TU Bergakademie Freiberg

4:50 PM

An Investigation on the Kinetics and Mechanism of Alkali Reduction of Mine Waste Containing Titaniferous Minerals for the Recovery of Metals: *Stephen Parirenyatwa*¹; Animesh Jha¹; Lidia Escudero Castejon¹; Sergio Sanchez-Segado¹; Yotamu Hara¹; ¹University of Leeds

Applications of Solidification Fundamentals — Characterization of Solidification Structures II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, McMaster University; Amber Genau, University of Alabama at Birmingham; Lifeng Zhang, University of Science and Technology Beijing

Monday PM
February 27, 2017

Room: 19
Location: San Diego Convention Ctr

Session Chairs: Sabine Bottin-Rousseau, Institut des Nanosciences de Paris; Amy Clarke, Colorado School of Mines

2:00 PM Invited

Real-time Study on Microstructure Evolution of a Three-phased Eutectic System in Quasi-2D Samples: Samira Mohagheghi¹; *Melis Serefoglu*¹; ¹Koc University

2:20 PM Invited

Effect of Crystal Orientation Relationships on Lamellar Eutectic Solidification Microstructures: *Sabine Bottin-Rousseau*¹; Oriane Senninger¹; Gabriel Faivre¹; Silvere Akamatsu¹; ¹UPMC-CNRS

2:40 PM

Influence of Crystal Orientation on the Dynamical Selection of Propagative Cellular Solidification Patterns: Younggil Song¹; Sabine Bottin-Rousseau²; *Silvere Akamatsu*²; Alain Karma¹; ¹Northeastern University; ²CNRS - UPMC

3:00 PM

4D Synchrotron X-ray Quantification of the Cellular to Dendritic Transition: Biao Cai¹; *Peter Lee*¹; Andrew Kao²; Andre Phillion³; Koulis Pericleous⁴; ¹University of Manchester; ²University of Greenwich; ³McMaster University; ⁴University of Greenwich

3:20 PM

Thermal Analysis of Cu-Cu₂O Eutectic: Cécile FOSSE¹; Manuel Castro-Román²; *Jacques Lacaze*¹; Luc Robbiola¹; ¹Université de Toulouse; ²CINVESTAV Saltillo

3:40 PM Break

4:00 PM

Microstructural Development During Thin Film Solidification: Comparison of Experiments and Simulations: *Theron Rodgers*¹; Amy Clarke²; John Gibbs³; James Mertens³; Daniel Coughlin³; Harrison Whitt³; Joseph McKeown⁴; John Roehling⁴; J. Baldwin³; Seth Imhoff³; Damien Turret³; Jonathan Madison¹; ¹Sandia National Laboratories; ²Colorado School of Mines; ³Los Alamos National Laboratories; ⁴Lawrence Livermore National Laboratory

4:20 PM

Investigation of the Metatectic Reaction in Boron Containing Steels: *Kara Luitjohan*¹; Matthew Krane¹; Volkan Ortalan¹; David Johnson¹; ¹Purdue University

4:40 PM

Solidification Characteristics of CNTs/Mg Composite with Ultrasonic: *Yuansheng Yang*¹; Fuze Zhao¹; Xiaohui Feng¹; ¹Institute of Metal Research, Chinese Academy of Sciences

5:00 PM

Microstructure Characteristics of A356 Nanocomposites Manufactured via Ultrasonic Cavitation Processing under Controlled Solidification Conditions: *Yang Xuan*¹; Laurentiu Nastac¹; ¹The University of Alabama

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Biomedical Applications

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Monday PM
February 27, 2017

Room: Pacific 21
Location: Marriott Marquis Hotel

Session Chairs: Feride Sermin Utku, Yeditepe University; Jaroslav Drelich, Michigan Technological University

2:00 PM Keynote

The Role of Silica in Composite Materials for Bioengineering Applications Including Bone Regeneration and Cell Based Therapies- The Importance of the Interface: *Carole Perry*¹; ¹Nottingham Trent University

2:40 PM

Silica Nanostructured Platform for Affinity Capture of Tumor-Derived Exosomes: *Parissa Ziaei*¹; ¹Washington State University

3:00 PM Invited

Nanometrically Smooth Ultrafine Grained Titanium Alloy Surfaces: *Paige Stock*¹; Casey Davis¹; Rebecca Reiss²; Terry Lowe¹; ¹Colorado School of Mines; ²New Mexico Tech

3:30 PM Break

3:50 PM Invited

Engineered Bio-Nano Interfaces of Titanium Biomedical Implants: *Sermin Utku*¹; ¹Yeditepe University, Faculty of Engineering, Department of Biomedical Engineering

4:20 PM Invited

Early Study on Surface Nano-engineering of Endovascular Zinc Implants and Resulting Effects on Biodegradation and Biocompatibility: Adam Drelich¹; Roger Guillory¹; Jeremy Goldman¹; *Jaroslav Drelich*¹; ¹Michigan Technological University

4:50 PM

A Bone-mimetic 3D Metastasis Cancer Tumor Model: *Kalpana Katti*¹; MD Shahjahan Molla¹; Sumanta Kar¹; Dinesh Katti¹; ¹North Dakota State University

5:10 PM

Nanostructured Surfaces for Dental Implant Applications: *Carlos Elias*¹; Daniel Fernandes¹; ¹Instituto Militar de Engenharia

5:40 PM

Modulation of Antimicrobial Peptide Activity at the Medical Implant Interface through Chimeric Peptide Spacer Design: *Cate Wisdom*¹; Sarah VanOosten¹; Kyle Boone¹; Paul Arnold²; Malcolm Snead³; Candan Tamerler⁴; ¹University of Kansas, Bioengineering Program; ²University of Kansas Medical Center, Department of Neurosurgery; ³The University of Southern California, Center for Craniofacial Molecular Biology, Herman Ostrow School of Dentistry; ⁴University of Kansas, Mechanical Engineering Department

Biological Materials Science — Biomaterials and Biomedical Applications

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Monday PM
 February 27, 2017

Room: Pacific 15
 Location: Marriott Marquis Hotel

Session Chairs: Francois Barthelat, McGill University; Benjamin Hatton, University of Toronto

2:00 PM Keynote

Peptide-Enabled Materials & Systems for Technology & Medicine: *Mehmet Sarikaya*¹; David Starkebaum¹; Carolyn Gresswell¹; Deniz Yucesoy¹; Hanson Fong¹; ¹University of Washington

2:40 PM

Nano- and Micro- scale Mechanical Properties of the Sclera following Proteoglycan Degradation: *Zhuola Zhuola*¹; Riaz Akhtar¹; *Zhuo Chang*¹; ¹University of Liverpool

3:00 PM

Synthesis of Magnetic Nanoparticles as Effective Hyperthermia Agent: *Jun Ding*¹; ¹National University of Singapore

3:20 PM

Localized Nanomechanical Characterization of Arterial Stiffening in Human Arteries with the PeakForce Quantitative Nanomechanical Mapping Technique: *Zhuo Chang*¹; Riaz Akhtar²; Maria Hansen³; Lars Rasmussen⁴; Po-Yu Chen⁵; Paolo Paoletti⁶; ¹University of Liverpool; ²Centre for Materials and Structures, School of Engineering, University of Liverpool; ³Department of Cardiothoracic and Vascular Surgery, Odense University Hospital; ⁴Department of Clinical Biochemistry and Pharmacology, Centre of Individualized Medicine in Arterial Diseases, Odense University Hospital; ⁵Department of Materials Science and Engineering, National Tsing Hua University; ⁶Centre for Engineering Dynamics, School of Engineering, University of Liverpool

3:40 PM Break

3:50 PM Invited

Engineering Antibacterial and Anti-Biofilm Surfaces: *Dalal Asker*¹; *Benjamin Hatton*²; ¹University of Toronto; Alexandria University; ²University of Toronto

4:20 PM

Development of Sponge Structure and Casting Conditions for Absorbable Magnesium Bone Implants: *Stefan Julmi*¹; Christian Klose¹; Ann-Kathrin Krüger¹; Peter Wriggers¹; Hans Jürgen Maier¹; ¹Leibniz Universität Hannover

4:40 PM

Wet-lay Textile Technique for Biological Fiber Reinforced Hydrogel Scaffolds: *Andrew Wood*¹; *Vinoy Thomas*¹; ¹University of Alabama at Birmingham

5:00 PM

Mechanical Properties of Synthetic Bone and Tissue Simulants: *Andrew Brown*¹; Juan Pablo Escobedo-Diaz¹; Paul Hazell¹; ¹UNSW Australia

5:20 PM

Design of Novel Low-Ni Shape Memory Alloys for Biomedical Applications: *Dana Frankel*¹; Ida Berglund¹; Weiwei Zhang¹; Nicholas Hatcher¹; Jason Sebastian¹; Gregory Olson²; ¹QuesTek Innovations LLC; ²Northwestern University

Bulk Metallic Glasses XIV — Alloy Development and Application II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Monday PM
 February 27, 2017

Room: 33A
 Location: San Diego Convention Ctr

Session Chairs: Frans Spaepen, Harvard School of Engrg & Appl Sciences; Jinn Chu, National Taiwan University of Science and Technology

2:00 PM Keynote

Stress Measurements on Colloidal Glasses: *J. Terdik*¹; *David Weitz*¹; *Frans Spaepen*¹; ¹Harvard School of Engrg & Appl Sciences

2:30 PM Invited

Structure Modulation and Brittle-to-ductile Transition in Metallic Glasses: *Juergen Eckert*¹; ¹Montanuniversität Leoben

2:50 PM Invited

Thin Film Metallic Glasses: Novel Diffusion Barrier Materials for Solar Cell and Electronic Packaging Applications: *Chia-chi Yu*¹; *Cheng-Min Lee*¹; *Chia-Lin Li*¹; *Chia-Hao Chang*¹; *Jinn Chu*¹; ¹National Taiwan University of Science and Technology

3:10 PM

Improving the Glass Formation and Mechanical Behavior of Ni-free TiZr-based Bulk Metallic Glasses by Ga Additions: *Mariana Calin*¹; *Supriya Bera*¹; *Ramasamy Parthiban*¹; *Mihai Stoica*¹; *Jürgen Eckert*²; ¹IFW Dresden; ²Montanuniversität Leoben

3:30 PM Break

3:50 PM

Minimizing Losses in Ferromagnetic Metallic Glass Power Transformers: *Michael Floyd*¹; *Marios Demetriou*²; *William Johnson*¹; ¹California Institute of Technology; ²Glassmetal Technology

4:10 PM Invited

Property Enhancement of BMG Based Nanoglasses Prepared by RF Sputtering of Thin Films: *Hans Fecht*¹; *Pierre Denis*¹; ¹Ulm University

4:30 PM Invited

Design and Development of Catalytic Amorphous Metals for Energy Conversion and Environmental Remediation: *Sundeep Mukherjee*¹; ¹University of North Texas

4:50 PM

Manufacturing of Cu-based Metallic Glasses Matrix Composites by Spark Plasma Sintering: *Sandrine Cardinal*¹; *Jean-Marc Pelletier*¹; *Guoqiang Xie*¹; *Jichao Qiao*¹; ¹INSA

Cast Shop Technology — Continuous Strip Casting

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Monday PM Room: 1A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Kai-Friedrich Karhausen, Hydro Aluminium Rolled Products GmbH; Murat Dundar, Assan Aluminium

2:00 PM Introductory Comments**2:05 PM**

Effect of Grain Refiners on Aluminum Twin Roll Casting Process: *Yu Matsui*¹; Koichi Takahashi¹; ¹UACJ Corporation

2:30 PM

Influence of Process Conditions on Segregation Behavior in Twin-Roll Casting of an AlFeSi Alloy: *Christian Schmidt*¹; Dag Mortensen²; Kai Karhausen¹; ¹Hydro Aluminium Rolled Products GmbH; ²Institute for Energy Technology

2:55 PM

Effect of Magnesium Content on Microstructure and Mechanical Properties of Twin-Roll Cast Aluminum Alloys: *Onur Meydanoglu*¹; Cemil Isiksan¹; Hatice Mollaoglu Altuner¹; Mert Günyüz¹; Onur Birbasar¹; ¹Assan Alüminyum San. Tic. AS

3:20 PM Break**3:35 PM**

Influence of Sticking on the Roll Topography at Twin-roll Casting of Aluminum Alloys: *Olexandr Grydin*¹; Florian Nürnberger²; Mirko Schaper¹; ¹University of Paderborn; ²Leibniz Universität Hannover

4:00 PM

Material Surface Roughness Change in Twin Roll Casting of Aluminium as Cast Sheet Product: *Ali Ulus*¹; Ceyhun Kuru¹; Özgür Özahin¹; Sadik Kaan Ipek¹; Eda Dagdelen¹; ¹Teknik Aluminium

4:25 PM

Twin-roll Casting of Aluminum-steel Clad Strips: Static and Dynamic Mechanical Properties of the Composite: *Mykhailo Stolbchenko*¹; Olexandr Grydin¹; Mirko Schaper¹; ¹Paderborn University

Cast Shop Technology — Foundry and Shape Casting

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Monday PM Room: 3
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Ning Sun, Worcester Polytechnic Institute

2:00 PM Introductory Comments**2:05 PM**

Operational and Economic Impact of Super Vacuum Die Casting Technologies: *Muhammad Farooq*¹; Randolph Kirchain¹; Richard Roth¹; Alan Luo²; Diran Apelian³; Andrew Klarner²; Joshua Curto³; Libo Wang³; ¹Massachusetts Institute of Technology; ²The Ohio State University; ³Worcester Polytechnic Institute

2:30 PM

Multi-Component High Pressure Die Casting (M-HPDC): Influencing Factors on the Material Temperature during the Joining of Metal-plastic-hybrids: *Patrick Messer*¹; Uwe Vroomen¹; Andreas Bührig-Polaczek¹; ¹Foundry Institute RWTH Aachen University

2:55 PM

X-Ray Computed Tomographic Investigation of High Pressure Die Castings: *Shouxun Ji*¹; Douglas Watson²; Zhongyun Fan¹; ¹Brunel University; ²Jaguar Cars Ltd

3:20 PM

The Comparison of Intensive Riser Cooling of Castings after Solidification in Three Classic Metals: *Shangguan Haolong*¹; Kang Jinwu¹; ¹Tsinghua University

3:45 PM Break**4:00 PM**

Sequential Gravity Casting in Functionally Graded Aluminum Alloys Development: *Mario Rosso*¹; Silvia Lombardo¹; Federico Gobber¹; ¹POLITECNICO di Torino

4:25 PM

Assessment of Eutectic Modification Level in Al-Si Alloys via Thermal Analysis: *Maiada Abdelrahman*¹; Mahmoud Abdu¹; Waleed Khalifa¹; ¹Cairo University

Ceramic Materials for Nuclear Energy Research and Applications — Fuel Performance Modeling and Fundamental Defect Science in Ceramics

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee
Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Monday PM Room: Palomar
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Michael Tonks, Penn State University; Chris Stanek, Los Alamos National Laboratory

2:00 PM Invited

Highlights of Ceramic Nuclear Fuel Research within the Nuclear Energy Advanced Modeling and Simulation (NEAMS) Program: *Chris Stanek*¹; ¹Los Alamos National Laboratory

2:30 PM

Modeling the Effect of Percolation on Fission Gas Release in UO₂ Nuclear Fuels: *Larry Aagesen*¹; Daniel Schwen¹; ¹Idaho National Laboratory

2:50 PM

Irradiation-induced Recrystallization in UO₂: A Phase Field Study: *Karim Ahmed*¹; Xianming Bai¹; Yongfeng Zhang¹; Daniel Schwen¹; Cody Permann¹; Bulent Biner¹; ¹Idaho National Laboratory

3:10 PM

Sensitivity Analysis and Uncertainty Quantification of the MARMOT Mesoscale Fuel Performance Code: *Marina Sessim*¹; Michael Tonks¹; Jie Lian²; ¹Pennsylvania State University; ²Rensselaer Polytechnic Institute

3:30 PM Break**4:00 PM Invited**

Theoretical and Experimental Investigation of the Interrelationship Between Radiation Damage and Ionic Transport in Pyrochlore: *Blas Uberuaga*¹; Romain Perriot¹; James Valdez¹; Terry Holesinger¹; Yongqiang Wang¹; Cortney Kreller¹; ¹Los Alamos National Laboratory

4:30 PM

Atomistic Simulation of Swift Heavy Ion Irradiation Effects in UO₂ and CeO₂: *Ram Devanathan*¹; ¹Pacific Northwest National Laboratory

4:50 PM

One-Dimensional String-like Relaxation in Actinide Oxides: *Ajay Annamareddy*¹; Jacob Eapen¹; ¹NC State University

Characterization of Materials through High Resolution Coherent Imaging — Coherent Imaging II

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Ross Harder, Argonne National Lab; Xianghui Xiao, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Saryu Fensin, Los Alamos National Laboratory; Brian Abbey, LaTrobe University; Ana Diaz, Paul Scherrer Institut

Monday PM Room: 25B
 February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Xiaojing Huang, Brookhaven National Laboratory

2:00 PM

Coherent X-ray Diffraction Measurements of Lattice Distortions Caused by Ion Bombardment: *Felix Hofmann*¹; Edmund Tarleton¹; Ross Harder²; Nicholas Phillips³; Jesse Clark⁴; Ian Robinson⁵; Brian Abbey³; Wenjun Liu²; Yevhen Zayachuk¹; Christian Beck¹; ¹University of Oxford; ²Argonne National Lab; ³LaTrobe University; ⁴SLAC National Accelerator Laboratory; ⁵University College

2:30 PM

Unraveling the Structure-function Relationships in Ion Implanted Nanodiamonds: Salman Maqbool¹; Alastair Stacey²; Nicholas Phillips¹; Henry Kirkwood¹; Brett Johnson²; Ross Harder³; David Hoxley¹; *Brian Abbey*¹; ¹La Trobe University; ²The University of Melbourne; ³Advanced Photon Source

3:00 PM

Imaging Strain Fields by Ptychographic Topography: *Steven Van Petegem*¹; Ana Diaz¹; Maxime Dupraz²; Ainara Irastorza¹; ¹Paul Scherrer Institut

3:20 PM Break

3:40 PM

Progress towards Dichroic Bragg Coherent Diffractive Imaging: *Jonathan Logan*¹; Ross Harder¹; Luxi Li¹; Daniel Haskel¹; Daniel Rosenmann¹; Martin Holt¹; Yihua Liu¹; Tenzin Sangpo¹; Robert Winarski¹; Ian McNulty¹; ¹Argonne National Laboratory

4:10 PM

Photoelastic Ptychography: A New Approach for Quantitative Stress Determination: *Guido Cadenazzi*¹; Keith Nugent¹; Nicholas Anthony¹; Brian Abbey¹; ¹La Trobe University

4:30 PM

Soft-X-ray Ptychographic Imaging of Shale: Namhey Lee¹; Peter Nico¹; David Shapiro¹; Manika Prasad²; Timothy Kneafsey¹; *Benjamin Gilbert*¹; ¹Lawrence Berkeley National Lab; ²Colorado School of Mines

4:50 PM

Polychromatic Bragg Coherent X-ray Diffraction Imaging for Rapid Measurements: *Wonsuk Cha*¹; Stephan Hruszkewycz¹; Matthew Highland¹; Ross Harder¹; Wenjun Liu¹; Ruqing Xu¹; Paul Fuoss¹; ¹Argonne National Laboratory

5:10 PM

Coherent X-ray Imaging at Future High Brightness Synchrotron Sources: *Ross Harder*¹; ¹Argonne National Laboratory

Characterization of Minerals, Metals, and Materials — Electronic, Magnetic, Environmental, and Advanced Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Monday PM Room: 31B
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Shadia Ikhmayies, Al Isra University; Zhiwei Peng, Central South University

2:00 PM

Characterization of Defects in Metal Oxide Thin Films Using Electron Channeling Contrast Imaging (ECCI) and TEM: *Isha Kashyap*¹; Marc De Graef¹; ¹Carnegie Mellon University

2:20 PM

Characterization of Low-zinc Electric Arc Furnace Dust: *Zhiwei Peng*¹; Xiaolong Lin¹; Jiaying Yan¹; Jiann-Yang Hwang¹; Yuanbo Zhang¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University

2:40 PM

Formation of ZrO₂ in Coating on AZ31 Mg Alloy via Plasma Electrolytic Oxidation: Phase and Structure of Zirconia: *Jung-Woo Choi*¹; Gye-Won Kim¹; Bongyoung Yoo¹; Dong-Hyuk Shin¹; ¹Hanyang University

3:00 PM

Gamma-radiation Effect on Biodegradability of Synthetic PLA Structural Foams PP/HMSPP Based: *Elizabeth Cardoso*¹; Sandra Scagliusi¹; Ademair Lugão¹; ¹IPEN - Instituto de Pesquisas Energéticas e Nucleares

3:20 PM

Study of Flexible Films Prepared From PLA/PBAT Blend and PLA E-Beam Irradiated as Compatibilizing Agent: *Elizabeth Cardoso*¹; Esperidiana Moura, A. B.¹; Glauson Mahado¹; René Oliveira¹; ¹IPEN - Instituto de Pesquisas Energéticas e Nucleares

3:40 PM Break

3:55 PM

Study on the Electrically Assisted Springback Reduction of Super-elastic Titanium Alloys: *Yong-Ha Jeong*¹; Viet Tien Luu¹; Trung Thien Nguyen¹; Sung-Tae Hong¹; Hyunwoo So²; Heung Nam Han³; Sangwoo So⁴; Hyun-Tae Hwang⁴; ¹University of Ulsan; ²LG electronics; ³Seoul National University; ⁴Ulsan Technopark

4:15 PM

Electrical and Microstructural Investigation of Ni_{0.5}Co_{0.5}Cu_{0.3}Zn_{0.3}Mn_{1.4}O₄ Temperature Sensors: *Gökhan Hardal*¹; Berat Yüksel Price¹; ¹Istanbul University

4:35 PM

Domain Wall Behavior and Phase Transitions of Ba(Zr_{0.2}Ti_{0.8})O₃-50(Ba_{0.7}Ca_{0.3})TiO₃ under Frequency of 0.2Hz-1.2 MHz: *Le Zhang*¹; Michael Carpenter²; Xiaobing Ren¹; ¹Xi'an Jiaotong University; ²University of Cambridge

4:55 PM

Synthesis of ZnO Micro Prisms on Glass Substrates by the Spray Pyrolysis Method: *Shadia Ikhmayies*¹; ¹Al Isra University

Characterization of Minerals, Metals, and Materials — Nano Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Monday PM Room: 32B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: John Carpenter, Los Alamos National Laboratory; Tyler Ley, Oklahoma State University

2:00 PM

Enhanced Physical Properties of Thin Film Nanocomposites: *T. Thuy Minh Nguyen*¹; Sathish Lageshetty¹; Paul Bernazzani¹; ¹Lamar University

2:20 PM

Grain Size and Mechanical Properties in Severely Rolled Duplex Steel: *John Carpenter*¹; Nan Li¹; Rodney McCabe¹; Nathan Mara¹; Irene Beyerlein²; ¹Los Alamos National Laboratory; ²University of California - Santa Barbara

2:40 PM

Effect of Incorporation of POSS into Fluoroelastomer Matrix: *Heloisa Zen*¹; Ademar Lugão¹; ¹IPEN

3:00 PM

A Study on the Size and Type of Inclusions in Si-Mn Combined Deoxidated Low Carbon Steel Strip: *Ting Wang*¹; ¹Shanghai University

3:20 PM

To Twin or Not to Twin in Boron Carbide: *Kelvin Xie*¹; Fatih Toksoy²; Vlad Domnich³; James McCauley⁴; Rich Haber³; Kevin Hemker¹; ¹Johns Hopkins University; ²Rutgers University; ³Rutgers University; ⁴U.S. Army Research Lab

3:40 PM Break

3:55 PM

The Influence of Grain Boundaries and Grain Orientations on the Stochastic Responses to Low Load Nanoindentation in Cu: *Benjamin Schuessler*¹; Pui Ching Wo¹; Hussein Zbib¹; ¹Washington State University

4:15 PM

Magnetic Property and Core-shell Nanostructure of Ni Nanoparticles Coated on Si₃N₄ Powders: *Huazhang Zhai*¹; ¹Beijing Institute of Technology

4:35 PM

Dielectric Property, Characterization and Preparation of 3Y-ZrO₂/TiO₂ Solid Solution Ceramics: *Huazhang Zhai*¹; ¹Beijing Institute of Technology

4:55 PM

Effect of Argon Gas Purging of Spark Plasma Sintered ZrB₂+SiC Nanopowder Composites: *Naidu Seetala*¹; Owen Reedy¹; Lawrence Matson²; HeeDong Lee³; Thomas Key³; ¹Grambling State University; ²Wright-Patterson Air Force Research Lab; ³UES, Inc.

5:15 PM

Stochastic Character of Plastic Deformation in FIB-milled Copper Micropillars Investigated by the Acoustic Emission Technique: *Michal Knapek*¹; Ádám Hegyi²; Péter Ispánovity²; Kristián Máthis¹; František Chmelík¹; István Groma²; ¹Charles University; ²Eötvös Loránd University

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — 2D Materials and Materials Epitaxy

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Monday PM Room: 11A
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

Polyphony in B Flat -- Is the Two-dimensional Boron Truly Emerging?: *Boris Yakobson*¹; Yuanyue Liu²; ¹Rice University; ²Caltech

2:30 PM

Topology-Scaling Identification of Layered Compounds and Stable Exfoliated 2D Materials: Michael Ashton¹; Joshua Paul¹; Susan Sinnott²; *Richard Hennig*¹; ¹University of Florida; ²Pennsylvania State University

2:50 PM

Two-Dimensional Multiferroics for Novel Multifunctional Mechano-Opto-Electronic Devices: Hua Wang¹; Xiaofeng Qian¹; ¹Texas A&M University

3:10 PM

Opening Electronic Band Gaps in 2D Materials by Deformation Twins: *Dingyi Sun*¹; David Rojas²; Mauricio Ponga²; ¹California Institute of Technology; ²University of British Columbia

3:30 PM Break

3:45 PM Invited

Tailoring Properties of 2D Transition Metal Dichalcogenides: Looking Beyond Graphene: *Talat Rahman*¹; ¹University of Central Florida

4:15 PM

Structural and Vibrational Properties of Transition Metal Dichalcogenide Polymorphs: *Kamal Choudhary*¹; Arunima Singh¹; Francesca Tavazza¹; ¹National Institute of Standards and Technology

4:35 PM Invited

Van der Waals Interactions in Nanoscale Materials: A Solved Problem ?: *Alexandre Tkatchenko*¹; ¹University of Luxembourg

5:05 PM

Two-Dimensional Materials-by-Design for Electronic and Energy Conversion Applications: *Lan Li*¹; Izaak Williamson¹; ¹Boise State University

5:25 PM

A Three-Dimensional Phase-Field Crystal Model for 2D Materials Using Multiple-Point Correlation Functions: *David Montiel*¹; Guanglong Huang¹; Matthew Seymour²; Nikolas Provatas²; Katsuyo Thornton¹; ¹University of Michigan; ²McGill University

Computational Thermodynamics and Kinetics — Thermodynamics and Alloy Design

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Monday PM Room: 11B
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Amit Shyam, Oak Ridge National Laboratory; Fadi Abdeljawad, Sandia National Laboratories

2:00 PM Invited

Computational Discovery of Novel Structural and Functional Heusler Compounds: *Chris Wolverton*¹; ¹Northwestern University

2:30 PM

Computational Design and Optimization of Shape Memory Alloys for Solid State Cooling and Refrigeration: *Brian Blankenau*¹; ¹University of Illinois

2:50 PM Invited

High Temperature Aluminum Alloy Development: Computational Thermodynamics and Kinetics: *Amit Shyam*¹; Dongwon Shin¹; Shibayan Roy¹; Lawrence Allard¹; Yukinori Yamamoto¹; James Haynes¹; ¹Oak Ridge National Laboratory

3:20 PM Break

3:40 PM

Development of a Thermodynamic Database for a Co Based Superalloy for GT Vanes to Predict the Service Induced fcc-hcp Martensitic Transformation: *Erica Vacchieri*¹; Gabriele Cacciamani²; Giacomo Roncallo²; Alessio Costa¹; ¹Ansaldo Sviluppo Energia S.p.A.; ²Chemistry Department, University of Genoa

4:00 PM

Thermodynamic Models for the Design of Stable Nanocrystalline Alloys: *Jason Trelewicz*¹; Heather Murdoch²; Fadi Abdeljawad³; ¹Stony Brook University; ²Army Research Laboratory; ³Sandia National Laboratories

4:20 PM

Surface Stability of Austenitic Stainless Steel Alloys under Pressurized Water Reactor (PWR) Conditions: *Zsolt Rak*¹; Donald Brenner¹; ¹NCSU

4:40 PM

Metropolis-Hastings Algorithm for Bayesian Uncertainty Analysis of CALPHAD Model: *Thien Duong*¹; Pejman Honarmandi¹; Raymundo Arroyave¹; ¹Texas A&M University

Defects and Properties of Cast Metals — Defects II & Properties I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Monday PM Room: 23A
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Steven Cockcroft, University of British Columbia; Andrew Kao, University of Greenwich

2:00 PM Introductory Comments: Defects II session

2:05 PM

Reducing Freckle Formation with External Magnetic Fields: *Andrew Kao*¹; Koulis Pericleous¹; ¹University of Greenwich

2:25 PM

Modelling the Effects of Fluid Flow on Microstructure Evolution at the Component Scale: *Matthaios Alexandrakis*¹; Andrew Kao¹; Koulis Pericleous¹; ¹University of Greenwich

2:45 PM

Determining Eutectic Grain Size and Casting Defects in an Al-12Si-0.8Cu-0.5Fe-0.9Mg-0.7Ni-0.2Zn Alloy: Jiehua Li¹; Bernd Oberdorfer²; Daniel Habe²; *Peter Schumacher*³; ¹University of Leoben; ²Austrian Foundry Research Institute; ³University of Leoben, Austrian Foundry Research Institute

3:05 PM

A Modeling and Experimental Investigation on the Formation of Acicular Silicon and Sludge in High Pressure Die Casting of a Modified A383 Alloy: *Mikko Kärkkäinen*¹; Laurentiu Nastac¹; Luke Brewer¹; Vishweshwar Arvikar²; Ilya Levin²; ¹The University of Alabama; ²Nemak

3:25 PM Break

3:45 PM Introductory Comments Properties I Session

3:50 PM Invited

Influence of Geometry and Aluminum Content on the Microstructure and Tensile Behavior of HPDC Mg AM Series Alloys: *Erin Deda*¹; John Allison¹; ¹University of Michigan

4:10 PM

Corrosion Behaviour of V and B Grain Refined A360: *Eda Ergun Songul*¹; Cemre Bas¹; Derya Dispinar¹; Gökhan Orhan¹; ¹Istanbul University

4:30 PM

Assessment of the Impact of Water-Cooled Chill Technology on Microstructure Length-Scales in an A319 Engine Block Casting: *Farzaneh Farhang Mehr*¹; Steve Cockcroft¹; Daan Maijer¹; Robert MacKay²; Wade Marquardt³; ¹UBC; ²Nemak of Canada Corporation; ³Highland Foundry Ltd.

Deformation and Transitions at Interfaces — Defects/Grain Boundary Interactions

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Monday PM Room: 23B
 February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Remi Dingreville, PO box 5800

2:00 PM Invited

A Concurrent Atomistic-continuum Study of Sequential Slip Transfer of Curved Dislocations across Grain Boundaries: Shuozhi Xu¹; *David McDowell*¹; Liming Xiong²; Youping Chen³; ¹Georgia Institute of Technology; ²Iowa State University; ³University of Florida

2:20 PM Invited

Investigation of Slip Transfer across Grain Boundaries with Application to Cold Dwell Facet Fatigue: *Zebang Zheng*¹; Daniel Balint¹; Fionn Dunne¹; ¹Imperial College

2:40 PM

Atomistic Simulation Algorithm for Studying Dislocation Glide Loop – Grain Boundary Interactions in Aluminum: Khanh Dang¹; Laurent Capolungo²; *Douglas Spearot*¹; ¹University of Florida; ²Los Alamos National Laboratory

3:00 PM

A Micro-Compression Test Study of Grain Boundary Sliding: *Jicheng Gong*¹; Angus Wilkinson¹; ¹University of Oxford

3:20 PM Invited

Criteria for Grain Boundary Dislocation Nucleation on Different Slip Systems Obtained by Atomistic Simulations: *Eric Homer*¹; Ricky Wyman¹; ¹Brigham Young University

3:40 PM Break**4:00 PM Invited**

Interface-Mediated Twinning in Small-Scaled BCC Bi-crystals: Jiangwei Wang¹; *Scott Mao*¹; ¹University of Pittsburgh

4:20 PM Invited

Intrinsic Scale Effects in Metal Deformation: *Christopher Woodward*¹; Satish Rao²; Ahmed Hussein¹; Brahim Akdim¹; Edwin Antillon¹; Triplicane Parthasarathy¹; ¹Air Force Research Laboratory; ²École Polytechnique Fédérale

4:40 PM Invited

Quantifying the Dislocation Emission Process from Grain Boundaries with Traction Fields: *Huck Beng Chew*¹; Ruizhi Li¹; ¹University of Illinois at Urbana-Champaign

5:00 PM Invited

Stresses in Reverse-deformed Single Crystal Cu: Quantitative Tests of the Composite Model: *Lyle Levine*¹; Thien Phan¹; I-Fang Lee²; Ruqing Xu³; Yaakov Idell¹; Michael Kassner²; ¹National Institute of Standards and Technology; ²University of Southern California; ³Argonne National Laboratory

5:20 PM Invited

The Development of Physically Based Atomistic Microstructure: The Effect on the Mechanical Response of Polycrystals: *Jacob Gruber*¹; Fadi Abdeljawad²; Hojun Lim²; Stephen Foiles²; Garritt Tucker¹; ¹Drexel University; ²Sandia National Laboratories

Electrode Technology — Anode Characterization

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Houshang Alamdari, Laval University

Monday PM
February 27, 2017

Room: 1B
Location: San Diego Convention Ctr

Session Chair: Duygu Kocaefe, University of Quebec at Chicoutimi

2:00 PM Introductory Comments**2:05 PM**

Characterization of Prebake Anodes by Micro X-ray Computed Tomography: *Stein Rørvik*¹; Lorentz Lossius²; ¹SINTEF Materials & Chemistry; ²Hydro Aluminium

2:30 PM

Development of Techniques and Tools for the Determination of Carbon Anode Quality: *Duygu Kocaefe*¹; Yasar Kocaefe¹; Dipankar Bhattacharyay¹; Bazoumana Sanogo¹; Yao Ahoutou¹; Hang Sun¹; Patrick Coulombe²; ¹University of Quebec at Chicoutimi; ²Aluminerie Alouette Inc.

2:55 PM

Non-destructive Testing of Baked Anodes Based on Modal Analysis and Principal Component Analysis: Moez Ben Boubaker¹; Donald Picard¹; *Carl Duchesne*¹; Jayson Tessier²; Houshang Alamdari¹; Mario Fafard¹; ¹Laval University; ²Alcoa Primary Metals Smelting Center of Excellence

3:20 PM

3D Automated Anode Stub Inspection System: *Jean-Pierre Gagne*¹; Remi St-Pierre¹; Pascal Coté¹; Harold Frenette²; ¹STAS; ²Alcoa

3:45 PM Break**4:00 PM**

Identification of the Stress Intensity Factor of Carbon Cathode by Digital Image Correlation: *Donald Picard*¹; Luca Sorelli¹; Julien Réthoré²; Houshang Alamdari¹; Marc-Antoine Baril¹; Mario Fafard¹; ¹Université Laval; ²Université de Lyon

4:25 PM

The Impact of Anode Nails on the Stub to Carbon Electrical Contact Resistance of Anode Assemblies with Simulated Corroded Stubs: *William Berends*¹; ¹AluCellTech

4:50 PM

Finite Element Analysis of Slot Size Effect on the Thermal-Electrical Behaviour of the Anode: *Hicham Chaouki*¹; Mounir Baiteche¹; Alain Jacques²; Edward Gosselin²; Mario Fafard¹; Houshang Alamdari¹; ¹Laval University; ²SAWNODE

5:15 PM

Hydrodynamic and Thermoelectric 3D Mathematical Model of Aluminium Electrolysis Cell to Investigate Slotted Carbon Anode Efficiency: *Mounir Baiteche*¹; Hicham Chaouki¹; Edward Gosselin²; Alain Jacques²; Houshang Alamdari¹; Mario Fafard¹; ¹REGAL, Aluminium Research Centre, University Laval; ²SAWNODE

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Mechanical Properties of Pb-free Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Monday PM
February 27, 2017

Room: 30E
Location: San Diego Convention Ctr

Session Chairs: Fay Hua, Intel Corporation; Carol Handwerker, Purdue University

2:00 PM Invited

Impact of Interrupted Thermal Cycling on Sn-Ag-Cu Interconnection Performance: *Tae-Kyu Lee*¹; Zhiqiang Chen¹; Greg Baty¹; Thomas R. Bieler²; Choong-Un Kim³; ¹Portland State University; ²Michigan State University; ³University of Texas, Arlington

2:20 PM

Thermal Cycling Performance of Sn-0.5Cu(Pd)-Al(Si)-Ge Solder Joints for Power Control Unit of Automotive: *Won Sik Hong*¹; Chulmin Oh¹; ¹Korea Electronics Technology Institute(KETI)

2:40 PM

Thermocycling Stress Induced Slip Band Sliding in Ultra-thin ENEPIG Joints: *Tzu-Ting Chou*¹; Cheng-Ying Ho¹; Wei-Yu Chen¹; Jenq-Gong Duh¹; ¹National Tsing Hua University

3:00 PM

The Variation of Grain Structure and the Enhancement of Shear Strength in SAC305-0.1Ni/Cu Solder Joint before and after Aging: *Collin Fleshman*¹; ¹National Tsing Hua University

3:20 PM Break**3:40 PM**

Electrical and Mechanical Properties of Sn-Ag-Cu Solder Pastes for Reverse-offset Printing Depending on Particle Concentration: *Min-jung Son*¹; Minwoo Kim¹; Taik-Min Lee¹; Hoo-Jeong Lee²; Inyoung Kim¹; ¹Korea Institute of Machinery & Materials (KIMM); ²Sungkyunkwan University

4:00 PM

The Strengthening Effects of Bismuth in Aged Lead-Free Solder Alloys Characterized using Transmission Electron Microscopy (TEM): *André Delhaise*¹; Doug Perovic¹; ¹University of Toronto

Energy Materials 2017: Materials for Energy Conversion with Emphasis on SOFC — Session II

Sponsored by: Chinese Society for Metals

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Teruhisa Horita, AIST; Minfang Han, China University of Mining and Technology, Beijing

Monday PM Room: 12
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Jung Choi, PNNL; Srikanth Gopalan, Boston University

2:00 PM Invited

Plasma Sprayed Protective Coatings on Metallic SOFC Interconnects: Interplay between Processing and Performance: *Sanjay Sampath*¹; Su Jung Han¹; Hwasoo Lee¹; ¹Stony Brook University

2:30 PM

Chromium Impurity Effects on SOFC Cathodes Using Half-cell Measurements: *Yiwen Gong*¹; Yuexing Zhu¹; Soumendra Basu¹; Uday Pal¹; Srikanth Gopalan¹; ¹Boston University

2:50 PM Invited

Development of Solid Oxide Fuel Cell Residential CHP System: *Yuya Takuwa*¹; Shuichi Inoue¹; Minoru Suzuki¹; ¹Osaka Gas Co., Ltd

3:15 PM

Effect of Strontium Content and Strain on Surface Segregation in LSCF: Yang Yu¹; Karl Ludwig¹; Srikanth Gopalan¹; Uday Pal¹; *Soumendra Basu*¹; ¹Boston University

3:35 PM Break

3:55 PM

Fabrication and Operation of a 600W Anode-supported Tubular SOFC Stack: *Zhengguang Yu*¹; Shaorong Wang²; ¹Dongfang Turbine Co., Ltd; ²Shanghai Institute of Ceramics, Chinese Academy of Sciences

4:15 PM Invited

Phase Stability and Electrical Properties of La₂NiO₄: Rare-Earth Doped Ceria Composite Cathode Materials for Solid Oxide Fuel Cells: Deniz Cetin¹; Sophie Poizeau²; *Srikanth Gopalan*¹; ¹Boston University; ²Saint Gobain Northborough R&D Center

Energy Materials 2017: Materials for Gas Turbines — Hot Corrosion and New Materials

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Fergus, Auburn University; Ji Zhang, China Iron and Steel Research Institute Group

Monday PM Room: 13
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Brian Gleeson, University of Pittsburgh; Bruce Pint, Oak Ridge National Laboratory

2:00 PM

Development of a New High Strength and Hot Corrosion Resistant Directionally Solidified Superalloy DZ409: *Juntao Li*¹; Jiantao Wu¹; Ping Yan¹; Jianxin Dong²; Lei Wang³; Qiang Zeng¹; ¹China Iron & Steel Research Institute Group; ²University of Science and Technology Beijing; ³Northeastern University

2:40 PM Invited

Deposit-Induced Hot Corrosion and Materials Design Strategies to Reduce Its Impact: *Brian Gleeson*¹; ¹University of Pittsburgh

3:10 PM Keynote

Development of High Strength Hot Corrosion Resistant Single Crystal Superalloys Based on Understanding the Effect of Key Elements on Hot Corrosion Behavior: Jianxiu Chang¹; Dong Wang¹; Langhong Lou¹; *Jian Zhang*¹; ¹Institute of Metal Research, Chinese Academy of Sciences

3:30 PM Break

3:50 PM Invited

Advanced Characterization of the Hot Corrosion Behavior of Gas Turbine Alloys under Burner Rig Test Exposures: *Maryam Zahiri Azar*¹; Kliah Soto Leytan¹; Daniel Mumm¹; ¹The University of California, Irvine

4:20 PM Invited

Efforts to Introduce TiAl Alloys for Gas Turbine Applications: *Ji Zhang*¹; Helena Oskarsson²; ¹China Iron and Steel Research Institute Group; ²Siemens Industrial Turbomachinery AB

4:50 PM

Effect of Alloying Elements (Cr and Al) in Nickel-based Alloys in Molten Sulfate Environments: *Kuldeep Kumar*¹; Hojong Kim¹; ¹The Pennsylvania State University

5:10 PM Invited

The Materials, Manufacturing and Equipments of the Large Disk Forgings for Industrial Gas Turbines: *Shichong Yuan*¹; ¹China National Erzhong Group Co.

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Harnessing Bulk Nanostructured Materials for Energy II

Sponsored by: Chinese Society for Metals

Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Monday PM Room: 14A
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Kripa Varanasi, MIT; Ting Chen, Massachusetts Institute of Technology

2:00 PM Keynote

Potential of Crystal Defects for Enhancing Bulk Functional Nanomaterials: *Michael Zehetbauer*¹; ¹University of Vienna

2:30 PM Invited

Gradient Materials: Microstructure, Texture and Properties: Jordan Moering¹; Xiaolei Wu²; *Yuntian Zhu*¹; ¹North Carolina State University; ²Institute of Mechanics, Chinese Academy of Sciences

3:00 PM Invited

High Temperature Shape Memory Alloys for Potential Applications in Oil and Gas Industry: *Ibrahim Karaman*¹; ¹Texas A&M University

3:30 PM Break

3:50 PM Keynote

The Microstructural Origin of the Multifunctional Properties of Energy Metals: *Niels Hansen*¹; ¹Technical University of Denmark

4:20 PM

Effect of Severe Plastic Deformation (SPD) Surface Treatment on Corrosion Resistance and Environmental Cracking (EC) Susceptibility of Various Alloys: Ting Chen¹; Manasa Varanasi¹; *Kripa Varanasi*¹; ¹Massachusetts Institute of Technology

4:50 PM

Processing Aluminum 6061 by Equal Channel Angular Extrusion for Oil and Gas Applications: *Ramatou Ly*¹; Karl T. Hartwig¹; Homero Castaneda-Lopez¹; ¹University Texas A&M

Energy Materials 2017: Materials in Clean Power — Session II

Sponsored by: Chinese Society for Metals, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Jeffrey Fergus, Auburn University; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Ji Zhang, China Iron and Steel Research Institute Group

Monday PM
February 27, 2017

Room: 15A
Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

High Temperature Oxidation of Ni-base Alloys and Stainless Steels in Supercritical CO₂ for Power Systems Applications: *Gordon Holcomb*¹; Omer Dogan¹; Joseph Tylczak¹; Casey Carney²; Kyle Rozman¹; Jeffrey Hawk¹; ¹National Energy Technology Laboratory; ²National Energy Technology Laboratory, AECOM

2:30 PM

Corrosion of Energy System Materials in Supercritical Carbon Dioxide (sCO₂): *Benjamin Adam*¹; Lucas Teeter¹; Sebastien Teysseyre²; Julie Tucker¹; ¹Oregon State University; ²Idaho National Laboratory

2:50 PM

Manipulating Creep through Modifying Gamma Prime Coarsening Rate in Haynes 282 for A-USC Power Plants: *Jeffrey Hawk*¹; John Sears²; Paul Jablonski¹; ¹U.S. Department of Energy, National Energy Technology Laboratory; ²AECOM

3:10 PM

Defect Chemistry of Black Anatase TiO₂: An Ab Initio Study: *Heechea Choi*¹; Taeseup Song²; Seungchul Kim³; ¹Virtual Lab Inc. ; ²Yeungnam University; ³KIST

3:30 PM Break

3:50 PM Invited

Solid-State, High-Shear Manufacturing to Enable Lower Cost and Higher Performance Materials for Energy Conversion: *Glenn Grant*¹; David Catalini¹; Jens Darsell¹; Anthony Reynolds¹; Suveen Mathaudhu¹; ¹Pacific Northwest National Laboratory

4:20 PM

Transient Liquid Phase Bonding of Ni-based-superalloy-H230 for Microchannel Heat Exchanger for Application in Supercritical CO₂ Cycles: *Monica Kapoor*¹; Omer Dogan¹; Brian Paul²; Rajesh Saranam²; Patrick McNuff²; ¹National Energy Technology Lab; ²Oregon State University

4:40 PM Invited

Pb-Bi-Sb and Pb-Bi-Ge: Novel Alternative Alloys for Application as Heat-transport Fluids in Concentrated Solar Power Systems: *Miroslav Popovic*¹; Alan Bolind¹; Mark Asta¹; Peter Hosemann¹; Ruijie Shao¹; ¹UC Berkeley

Environmentally Assisted Cracking: Theory and Practice — Stress Corrosion Cracking I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

Monday PM
February 27, 2017

Room: 31A
Location: San Diego Convention Ctr

Session Chairs: Gary Was, University of Michigan; Sergei Shipilov, Oak Ridge National Laboratory

2:00 PM Invited

The Importance of Radiation and Deformation in Environmentally Assisted Cracking: *Gary Was*¹; Drew Johnson¹; Ian Robertson²; Diana Farkas³; ¹University of Michigan; ²University of Wisconsin; ³Virginia Tech

2:40 PM

Correlating Grain Boundary Microchemistry in Austenitic Stainless Steels with Their Susceptibility to Irradiation-assisted Stress Corrosion Cracking: *Mo-Rigen He*¹; Drew Johnson²; Bai Cui³; Gary Was²; Ian Robertson¹; ¹University of Wisconsin-Madison; ²University of Michigan; ³University of Nebraska-Lincoln

3:00 PM

Fundamental Mechanisms of Mitigating Stress Corrosion Cracking of Austenitic Stainless Steels by Laser Shock Peening: *Bai Cui*¹; Fei Wang¹; Xiaoxing Qiu¹; Chenfei Zhang¹; Yongfeng Lu¹; Michael Nastasi¹; ¹University of Nebraska–Lincoln

3:20 PM

Modeling Corrosion Damage and Crack Propagation Using Novel Meshless Peridynamics Framework: *Srujan Rokkam*¹; Michael Brothers¹; Max Gunzburger²; Kishan Goel³; ¹Advanced Cooling Technologies, Inc.; ²Florida State University; ³Naval Air Systems Command

3:40 PM Break

4:00 PM

Peridynamic Modeling of Autonomous Lacy Cover Formation and of SCC: *Siavash Jafarzadeh*¹; Ziguang Chen¹; Florin Bobaru¹; ¹University of Nebraska-Lincoln

4:20 PM

Crack Growth Prediction for Stress Corrosion Cracking and Corrosion Fatigue of Irradiated Stainless Steels: *Robert Fuller*¹; Jutima Simsiriwong²; Nima Shamsaei²; ¹Entergy Operations; ²Mississippi State University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Modeling Approaches to Improve Fatigue Predictions

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Monday PM Room: 23C
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Jean-Briac le Graverend, Texas A&M University

2:00 PM Keynote

ICME and Computational Mechanics for Advancing Predictive Capabilities in Fatigue Modeling: *Somnath Ghosh*¹; ¹Johns Hopkins University

2:40 PM Invited

Perspectives and Prospects for Microstructure-based Models to Quantify Fatigue Life: *Dennis Dimiduk*¹; ¹BlueQuartz Software, LLC

3:00 PM

Advances in Mesoscale Crystal Plasticity under Cyclic Loading: *Gustavo Castelluccio*¹; ¹Sandia National Laboratories

3:20 PM Invited

Physically-based Simulation of Surface Microcrack Initiation and Comparison with Experimental Data: *Maxime Sauzay*¹; Jia Liu¹; Jérôme Hazan¹; ¹CEA

3:40 PM Break

4:00 PM

Simulation of Microstructurally-influenced Fatigue Crack Propagation: *Patrick Golden*¹; Robert Brockman²; Rebecca Hoffman²; William Musinski¹; Sushant Jha³; Reji John¹; ¹Air Force Research Laboratory; ²University of Dayton Research Institute; ³Universal Technology Corporation

4:20 PM

Probabilistic Analysis of the Fatigue Incubation Life Distribution in an A713 Cast Aluminum Alloy Based on a Multi-sized Pore-sensitive Numerical Model: Lin Yang¹; Yan Jin¹; Zhiqiang Xu²; *Tongguang Zhai*¹; ¹University of Kentucky; ²Yanshan University

4:40 PM

Statistical Prediction of Crack Initiating Rate from Pre-fractured Constituent Particles in High Strength Al Alloys: *Pei Cai*¹; Yan Jin¹; Lin Yang¹; Tongguang Zhai¹; ¹University of Kentucky

5:00 PM

Finite Elements Simulation and Statistical Analysis of Elastic Stress Field at Surface of Ti6Al4V Polycrystals in the Presence of Textured Regions: *Loic Signor*¹; Van Truong Dang¹; Patrick Villechaise¹; Samuel Hemery¹; ¹Prime Institute (CNRS - ISAE/ENSMA - Poitiers University)

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Process-Property-Performance Correlations: Q-D, 2-D and 3-D Materials & Structures

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Monday PM Room: 33B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Choong-Un Kim, University of Texas - Arlington; Srinivasa Rao Singamaneni, North Carolina State University

2:00 PM Introductory Comments

2:10 PM Keynote

Direct Conversion of h-BN into c-BN and Formation of Epitaxial c-BN/Diamond Heterostructures: *Jagdish (Jay) Narayan*¹; ¹North Carolina State University

2:40 PM Invited

Elastic Coupling between Layers in Two-dimensional Materials: Yang Gao¹; Angelo Bongiorno²; *Elisa Riedo*¹; ¹City University of New York Advanced Science Research Center, The City College of New York; ²CUNY College of Staten Island

3:10 PM

Synthesis and Characterization of Nitrogen-vacancy (NV) Centers in Diamond Nanostructure Formed by Laser Annealing Technique: *Anagh Bhaumik*¹; Ariful Haque¹; Jagdish Narayan¹; ¹North Carolina State University

3:30 PM Break

3:45 PM Invited

In-situ TEM Characterization of Nanoscale Systems in Complex Environments: *Shen Dillon*¹; ¹University of Illinois at Urbana-Champaign

4:15 PM Invited

Materials Science in Two Dimensions: *Daniel Kaplan*¹; ¹U.S. Army RDECOM-ARDEC

4:45 PM

Pulsed Laser Deposition of Cubic Boron Nitride Films: *Ariful Haque*¹; Anagh Bhaumik¹; Jagdish Narayan¹; ¹NCSU

5:05 PM Invited

Quantum Dot Formation In Core-Shell Nanowires: Q. Zhang¹; S.H. Davis¹; *Peter Voorhees*¹; ¹Northwestern University

Fundamental Aspects and Modeling Powder Metal Synthesis and Processing — Powder Atomization and Synthesis

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: Paul Prichard, Kennametal; Eugene Olevsky, San Diego State University; Iver Anderson, Ames Laboratory

Monday PM
February 27, 2017

Room: 16A
Location: San Diego Convention Ctr

Session Chair: Iver Anderson, Ames Laboratory - DOE

2:00 PM Invited

Fundamental Parameters for Control of Two-Fluid Close-Coupled Gas Atomization: Process Observations and Modeling with Correlations to Metal Powder Yields: *Iver Anderson*¹; Emma White¹; Jonathan Regele²; Vince McDonnell³; David Byrd¹; Ross Anderson¹; ¹Ames Laboratory; ²Iowa State University; ³University California-Irvine

2:40 PM

A Study of the Brazing Filler Pastes by Gas Atomized Cu-Fe Powders for Cu/STS Joints: *Won-Jung Choi*¹; Sang-Hun Choi¹; Jae-Jin Sim¹; Won Ju¹; Basit Ali¹; Tae-hyuk Lee²; Kyung-Mook Lim¹; Bum-Sung Kim¹; Taek-Soo Kim¹; Kyoung-Tae Park¹; ¹Korea Institute of Industrial Technology; ²Sheffield University

3:00 PM

Fabrication of Ti Powder by Combined Techniques of Cold Crucible and Gas Atomization: *Taek-Soo Kim*¹; Sun-Woo Nam¹; Sang-Hyun Lee¹; Jae-Jin Sim¹; Seok Jun Seo¹; Kyung-Mook Lim¹; Bum-Sung Kim¹; Kyoung-Tae Park¹; ¹Korea Institute of Industrial Technology

3:20 PM

Microstructural Development in Binary Aluminum-Copper Alloy Powders during Gas Atomization: *Tian Liu*¹; Luke Brewer¹; ¹University of Alabama

3:40 PM Break

4:00 PM

Influence of the Plasma Gas Composition and Power Level on the Processing of Powders by Induction Plasma: Siwen Xue¹; Richard Dolbec¹; Thomas Kinsey¹; ¹Tekna Plasma Systems Inc

4:20 PM

Mesoscale Modeling of Single Particle Impact Induced Microstructural Evolution during Cold Spray of Aluminum Powders: *Sumit Suresh*¹; Benjamin Bedard¹; Tyler Flanagan¹; Seok-Woo Lee¹; Mark Aindow¹; Harold Brody¹; Xuemei Wang²; Victor Champagne³; Avinash Dongare¹; ¹University of Connecticut; ²United Technologies Research Center; ³U.S. Army Research Laboratory

4:40 PM

Algorithmic Prediction of Bulk Properties from Powdered Feedstock Consolidated via Laser-assisted Cold Spray: *Aaron Birt*¹; Diran Apelian¹; ¹Worcester Polytechnic Institute

5:00 PM

Formation of Nano-lamellar Structure in Ni-Al High-density Energetic Material by Cryomilling: *Minseok Oh*¹; Byungmin Ahn¹; ¹Ajou University

5:20 PM

Microstructural Evolution in Dilute Mg-X Binary Alloys Processed by Mechanical Alloying: *Christian Roach*¹; Kiran Solanki²; Suveen Mathaudhu¹; ¹UC: Riverside; ²Arizona State University

GAT-2017 (Gamma Alloys Technology - 2017) — Surface Protection with Panel Discussion and Oral Posters

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Monday PM
February 27, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Al Sommer, Del West Engineering; Laiqi Zhang, Univ. of Science and Technology Beijing

2:00 PM Invited

The Role of Surface Protection for High Temperature Performance of TiAl Alloys: *Michael Schütze*¹; ¹DECHEMA-Forschungsinstitut

2:25 PM

Effect of Surface Condition on the RT Tensile Properties and Oxidation Resistance of TiAl Alloys: *Bochao Lin*¹; Renci Liu¹; Qing Jia¹; Yuyou Cui¹; Rui Yang¹; ¹Institute of Metal Research

2:45 PM

Mechanical Properties and Environment Induced Embrittlement of a High Nb Containing TiAl Alloy: *Tiebang Zhang*¹; Zeen Wu¹; Hongchao Kou¹; Jinshan Li¹; ¹Northwestern Polytechnical University

3:05 PM Panel Discussion Topic 1 (Surface Engineering) : Al Sommer (Del West Engineering) and Michael Schuetze (DECHEMA)

3:40 PM Break

3:55 PM

Observation of Modulated Structure in High Nb-containing TiAl Alloy by Synchrotron Radiation and Electron Microscopy: *J. Sun*¹; ¹Shanghai Jiaotong University

4:15 PM

Origin of Enhanced Ductility of TiAl Alloys: A Hybrid Study on the Deformation Behavior of Gamma Phase in TiAl Alloys Using In-situ Transmission Electron Microscopy Experiments and Molecular Dynamics: *Seong-Woong Kim*¹; Seung-Hwa Ryu²; Jaemin Kim²; Young-Sang Na¹; Seung-Eon Kim¹; Jong-Taek Yeom¹; Andrew Minor³; ¹Korea Institute of Materials Science (KIMS); ²KAIST; ³Lawrence Berkeley National Laboratory

4:35 PM

Determination of the Isothermal Sections of the Ti-Al-Nb Ternary System at 1300 °C and 1400 °C: *Shuai Xu*¹; Yong Xu²; Xiangjun Xu³; Jianping He¹; Yongfeng Liang¹; Junpin Lin¹; ¹University of Science and Technology Beijing; ²Shandong Jianzhu University; ³Zhongyuan University of Technology

4:55 PM Concluding Comments Briefing of Selected Posters

Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges — Session II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Shuanglin Chen, CompuTherm LLC; Frederic Danoix, Université de Rouen; Indrajit Charit, University of Idaho

Monday PM Room: 31C
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Dieter Isheim, Northwestern University; Duc Nguyen-Manh, Culham Centre for Fusion Energy

2:00 PM Invited

Arranging Atoms for Fun and Profit: A Tale of Two Smiths: *Greg Olson*¹; ¹Northwestern University

2:30 PM Invited

Solute Segregation to Migrating Ferrite/Austenite Interfaces: *Hatem Zurob*¹; Brian Langelier¹; Hugo Van Landeghem²; Andreas Korinek¹; Baptiste Gault³; Gianluigi Botton¹; ¹McMaster University; ²SIMaP; ³Max-Planck Institut für Eisenforschung

3:00 PM

Microstructural Characterization of Mn-Ni-Si Precipitates in Reactor Pressure Vessel Steels from the High Fluence Intermediate Flux UCSB ATR-2 Irradiation: *Nathan Almirall*¹; Peter Wells¹; Takuya Yamamoto¹; G. R. Odette¹; Randy Nanstad²; Keith Wilford³; Tim Williams³; Lynne Ecker⁴; David Sprouster⁴; ¹University of California Santa Barbara; ²Oak Ridge National Laboratory; ³Rolls Royce; ⁴Brookhaven National Laboratory

3:20 PM Break

3:40 PM Invited

Nanoalloys & Nanoparticles for Catalysis: Insights from Atom Probe Tomography & Complementary Techniques: Paul Bagot¹; Eric Marceau²; Anne-Félicie Lamic-Humbolt³; Daniel Haley¹; Tomas Martin¹; Michael Moody¹; George Smith¹; Qifeng Yang¹; *Tong Li*⁴; ¹University of Oxford; ²Université Lille 1; ³Université Pierre et Marie Curie; ⁴Ruhr-Universität Bochum; Max-Planck-Institut für Eisenforschung

4:10 PM

Grain Boundaries in Molybdenum. The Role of Segregation for an Improved Ductility: *Katharina Babinsky*¹; Sophie Primig²; Wolfram Knabl³; Alexander Lorich³; Helmut Clemens³; Verena Maier-Kiener¹; ¹Montanuniversität Leoben; ²UNSW Australia; ³Plansee SE

4:30 PM

Prediction of Segregation Induced Precipitation at Dislocations via Atomistic Simulations: *Chad Sinclair*¹; Evgeniya Dontsova²; Joerg Rottler¹; ¹University of British Columbia; ²University of Houston

4:50 PM

Local Order and Lattice Dynamics in a Shape Memory Strain Glass Alloy: *Paul Stonaha*¹; Michael Manley¹; ¹Oak Ridge National Laboratory

ICME Gap Analysis: Structural Materials for Automotive Applications — Light-weight Materials for Automotive Applications

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; Jerry Gibbs, Department of Energy; Will Joost, Department of Energy; Nicholas Hatcher, QuesTek Innovations, LLC

Monday PM Room: 10
 February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Will Joost, Department of Energy; Nick Hatcher, QuesTek Innovations, LLC

2:00 PM Invited

The Phase Field Method and Materials Design: K. Kim¹; M.P. Guruajan¹; C. Wolverton¹; *Peter Voorhees*¹; ¹Northwestern University

2:40 PM Invited

Case Studies and Gap Analyses in ICME for Structural Materials in Automotive Applications: *Xin Sun*¹; ¹Pacific Northwest National Laboratory

3:20 PM Break

3:35 PM Invited

ICME for Automotive Composites – Development of Predictive Integrated Stochastic Manufacturing and Structural Performance Models: *Venkat Aitharaju*¹; ¹General Motors

4:15 PM Invited

Integrated Computational Materials Engineering for Automotive Light Metals: *Alan Luo*¹; ¹The Ohio State University

4:55 PM Invited

Limitation of the ICME Approach for Mg Alloy Production via Twin Roll Casting Process: *In-Ho Jung*¹; ¹McGill University

Interface-Mediated Properties of Nanostructured Materials — Nanolaminates and Nanotwinned Materials II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Caizhi Zhou, Missouri University of Science and Technology; Nan Li, Los Alamos National Laboratory; Peter Anderson, The Ohio State University; Michael Demkowicz, Texas A&M University

Monday PM Room: Pacific 23
 February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Michal Demkowicz, Texas A&M University; Caizhi Zhou, Missouri University of Science and Technology

2:00 PM Invited

Strength, Plasticity, and Toughness of Nanolaminated Materials: *Jian Wang*¹; ¹University of Nebraska-Lincoln

2:30 PM Invited

Fracture Behavior of Nanostructured Heavily Cold Drawn Pearlite: Influence of the Interface: *Nagamani Jaya Balila*¹; Christoph Kirchlechner¹; Gerhard Dehn¹; ¹MPIE GmbH

3:00 PM

Excess Volume and Defect Annealing in Ultrafine-grained Ni Studied by Difference Dilatometry: Jaromir Kotzurek¹; Anton Hohenwarter²; Macej Krystian³; *Wolfgang Sprengel*¹; Reinhard Pippan²; Roland Würschum¹; ¹Graz University of Technology; ²University of Leoben; ³Austrian Institute of Technology

3:20 PM

Mechanisms for Stable Nanocrystalline Materials via Nanometallic Multilayers: *Juan Riaño Zambrano*¹; Andrea Hodge¹; ¹University of Southern California

3:40 PM Break

3:55 PM Invited

On the Frank-Bilby Equation and the Corresponding Relaxed Dislocation Structures: *Aurélien Vattré*¹; ¹CEA

4:25 PM Invited

Deformation Mode Transitions in Amorphous Cu₄₅Zr₅₅/Crystalline Cu Nanolaminates: Christian Sterwerf¹; Tyler Kaub²; Chuang Deng³; Greg Thompson²; *Lin Li*²; ¹Bielefeld University; ²University of Alabama; ³University of Manitoba

4:55 PM

Dislocation Nucleation Controlled Deformation in Angstrom Scaled FCC Twins: Jiangwei Wang¹; Frederic Sansoz²; *Scott Mao*¹; ¹University of Pittsburgh; ²The University of Vermont

5:15 PM

Grain Boundary Anisotropy-mediated Properties of fcc and bcc Materials: *Brandon Runnels*¹; ¹University of Colorado Colorado Springs

5:35 PM

Molecular Dynamics Simulation of Face-centered Cubic Metallic Nanospheres under Uniaxial Compression: Selim Bel Haj Salah¹; *Celine Gerard*¹; Laurent Pizzagalli¹; ¹Institut Pprime, CNRS - ENSMA - Université de Poitiers

Magnesium Technology 2017 — Poster Preview Session

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Monday PM

Room: 5A

February 27, 2017

Location: San Diego Convention Ctr

Session Chair: To Be Announced

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Fuels II

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday PM

Room: Cardiff

February 27, 2017

Location: Marriott Marquis Hotel

Session Chairs: Yongho Sohn, University of Central Florida; Vineet Joshi, Pacific Northwest National Laboratory

2:00 PM

Reduced Modulus and Hardness of Uranium-molybdenum Solid Solution as a Function of Mo Composition and Related Phase Transformations: *Ryan Newell*¹; Youngjoo Park¹; Abhihek Mehta¹; Dennis Keiser²; Yongho Sohn¹; ¹University of Central Florida; ²Idaho National Laboratory

2:20 PM

Interdiffusion and Reaction between U and Zr: *Youngjoo Park*¹; Ryan Newell¹; Abhishek Mehta¹; Dennis Keiser²; Yongho Sohn¹; ¹University of Central Florida; ²Idaho National Laboratory

2:40 PM

Microstructural Analysis of Electrochemically Formed Zirconium Coatings for Uranium-Molybdenum Nuclear Fuels: *Alexander Smirnov*¹; John Scott O'Dell¹; ¹Plasma Processes LLC

3:00 PM

Sensitivity Analysis on the Temperature of U-Mo/Al Plate-type Dispersion Fuel: *Faris B. Sweidan*¹; Jeong Sik Yim²; Ho Jin Ryu¹; ¹Korea Advanced Institute of Science and Technology; ²Korea Atomic Energy Research Institute (KAERI)

3:20 PM

Characterization of Metallic Fuel Slugs Fabricated by Injection Casting: *Jeong-Yong Park*¹; Jong-Hwan Kim¹; Ki-Hwan Kim¹; Hoon Song¹; Jung-Won Lee¹; Seok-Jin Oh¹; Seoung-Woo Kuk¹; Young-Mo Ko¹; Yoon-Myung Woo¹; Chan-Bock Lee¹; ¹Korea Atomic Energy Research Institute

3:40 PM Break

4:00 PM

Characterization of Nuclear Fuels by Neutron Diffraction and Energy-resolved Neutron Imaging: *Sven Vogel*¹; ¹Los Alamos National Laboratory

4:20 PM

Microstructure Evolution during Spark Plasma Sintering of Nuclear Fuel Pellets and Their Large-scale Manufacturability: *Ghatu Subhash*¹; James Tulenko¹; ¹University of Florida

4:40 PM

Fabrication and Characterization of TRISO Particles Using 800µm Uranium Nitride and Surrogate ZrO₂ Kernels: *Brian Jolly*¹; Grant Helmreich¹; Kevin Cooley¹; John Dyer¹; Kurt Terrani¹; ¹Oak Ridge National Laboratory

5:00 PM

Fission Product Electron Microscopy Analysis of Post Irradiated TRISO-coated Particles from the Second Advanced Gas Reactor Experiment: *Clemente Parga*¹; Jeffery Aguiar¹; Isabella van Rooyen¹; ¹Idaho National Laboratory

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Next Generation Superalloys II

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmair, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Monday PM

Room: Pacific 16

February 27, 2017

Location: Marriott Marquis Hotel

Session Chairs: Howard Stone, University of Cambridge; Nathalie Bozzolo, MINES-ParisTech

2:00 PM Invited

Nickel-based Superalloys Reinforced by Gamma Prime and Gamma Double Prime Precipitates: *Howard Stone*¹; Paul Mignanelli¹; Nicholas Jones¹; Ed Pickering²; Olivier Messé¹; Catherine Rae¹; Mark Hardy³; ¹University of Cambridge; ²University of Manchester; ³Rolls-Royce plc

2:30 PM

Effect of Alloying on the Microstructure and Properties of Superalloys Containing Gamma Prime and Gamma Double Prime Precipitates: *Paul Mignanelli*¹; Nicholas Jones¹; Giles Rought Whitta¹; Felicity Dear¹; Mark Hardy²; Howard Stone¹; ¹University of Cambridge; ²Rolls-Royce plc

2:50 PM

Gamma-Prime Strengthened Superalloys for Heavy Duty Gas Turbine Applications: *Andrew Detor*¹; Reza Sharghi-Moshtaghin¹; Ning Zhou¹; Shenyang Huang¹; Richard DiDomizio¹; ¹General Electric Global Research

3:10 PM

ICME Approach to Design γ/γ' Composite Precipitate Microstructure for Ni-based IN718 Super Alloys: *Rongpei Shi*¹; Donald McAllister¹; Ning Zhou²; Andrew Detor²; Richard DiDomizio²; Sanket Sarkar²; Michael Mills¹; Yunzhi Wang¹; ¹The Ohio State University; ²GE Global Research

3:30 PM Break

3:50 PM Invited

About the Predictability of Microstructure Evolution upon Thermomechanical Processing of Nickel-based Superalloys: *Nathalie Bozzolo*¹; Charbel Moussa¹; Marc Bernacki¹; ¹MINES ParisTech

4:20 PM

Solubility Limits and Phase Stability in Advanced Polycrystalline Ni-base Superalloys: *Sammy Tin*¹; ¹Illinois Institute of Technology

4:40 PM

Comparative Study of High-temperature Grain Boundary Engineering of Two Powder Processed Low Stacking-fault Energy Ni-base Superalloys: *Joshua McCarley*¹; Martin Detrois¹; Sammy Tin¹; ¹Illinois Institute of Technology

5:00 PM

Benchmarking Multi-scale Models with Microtensile Experiments and 3D Microstructural Characterization of René 88DT: *David Eastman*¹; Paul Shade²; Michael Uchic²; George Weber¹; Somnath Ghosh¹; Will Lenthe²; Tresa Pollock³; Kevin Hemker¹; ¹Johns Hopkins University; ²AFRL; ³University of California, Santa Barbara

5:20 PM

Development of an Oxide Dispersion Strengthened Ni-Based Superalloy Enabling Heavy Duty Gas Turbine Wheels for Improved Combined Cycle Efficiency: Erica Sampson¹; Rich DiDomizio¹; Reza Sharghi-Moshtaghin¹; Sharon Huang¹; Andrew Detor¹; ¹GE Global Research

5:40 PM

Room and Elevated Temperature Fatigue Life Improvement of ATI 718Plus Using LSP Treatment: Micheal Kattoura¹; Seetha Ramaiah Mannava¹; Dong Qian²; Vijay Vasudevan¹; ¹University of Cincinnati; ²University of Texas at Dallas

Materials Science for High-Performance Permanent Magnets — Nd-Fe-B: Microstructure and Properties

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirosawa, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Monday PM
February 27, 2017

Room: 24C
Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Satoshi Hirosawa, National Institute for Materials Science; Josef Fidler, Vienna University of Technology

2:00 PM Invited

The Current State and Future of the Rare Earth Magnets: *Hajime Nakamura*¹; ¹Shin-Etsu Chemical Co., Ltd.

2:30 PM

Quantifying the True Enhancement in Coercivity by Dy Diffusion into Sintered Nd-Fe-B Alloys: *Cajetan Nlebedim*¹; Matthew Kramer¹; ¹Ames Laboratory, US Department of Energy

2:50 PM

Microstructure and Coercivity in Ultra-fine Grained Nd-Fe-B Sintered Magnets: *Taisuke Sasaki*¹; Tadakatsu Ohkubo¹; Yasuhiro Une²; Hirokazu Kubo²; Masato Sagawa²; ¹National Institute for Materials Science; ²Intermetallics Co. Ltd.

3:10 PM Invited

Grain Size Refinement of Ga-doped Nd-Fe-B Magnet: *Yasuhiro Une*¹; Kazuhiro Kubo¹; Tetsuhiko Mizoguchi¹; Takahiko Iriyama¹; Masato Sagawa¹; Masashi Matsuura²; Satoshi Sugimoto²; ¹Intermetallics Co., Ltd; ²Tohoku University

3:40 PM Break

4:00 PM Invited

High-coercivity Dy-free Nd-Fe-B Permanent Magnets: *Kazuhiro Hono*¹; ¹National Institute for Materials Science

4:30 PM

Microstructural Engineering of Nd-Fe-B Permanent Magnets with Significantly Reduced Dy: *Matt Tianen*¹; Catherine Galligan¹; Jie Li¹; Peter Moran¹; Yongmei Jin¹; ¹Michigan Tech

4:50 PM

Electrical Resistivity Enhancement by Doping with Eutectic DyF₃-LiF Salt Mixture in Nd-Fe-B Die-upset Magnet: *Hae-Woong Kwon*¹; Kyung Min Kim¹; Dong Hwan Kim²; Jung Gu Lee³; Ji Hoon Yu³; ¹Pukyong National University; ²Star-group Ind. Co.; ³Korea Institute of Materials Science

5:10 PM

Coercivity Enhancement of Hot-deformed NdFeB Magnets by GBDP with NdHx and Metallic Nanoparticles: *Jungwoo Lee*¹; Heeryoung Cha¹; Younkyoung Baek¹; Jihun Yu¹; Haewoong Kwon¹; ¹Korea Institute of Materials Science

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — High Temperature Creep of Structural Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Monday PM
February 27, 2017

Room: 24A
Location: San Diego Convention Ctr

Session Chairs: James Earthman, University of California - Irvine; Rajiv Mishra, University of North Texas

2:00 PM Keynote

Fundamentals of Creep in Aluminum Over a Very Wide Temperature Range: *Michael Kassner*¹; Kamia Smith¹; ¹University of Southern California

2:30 PM Invited

Development of Creep-Resistant Austenitic Stainless Steels for High Temperature Applications: *Philip Maziasz*¹; ¹Oak Ridge National Laboratory

2:50 PM Invited

Effect of Dynamic Strain Aging on Creep in Titanium Alloys: Priyanka Agrawal¹; S. Karthikeyan¹; *Dipankar Banerjee*¹; ¹Indian Institute of Science

3:10 PM Invited

Mechanisms Governing the Creep Behavior of High Temperature Alloys for Generation IV Nuclear Energy Applications: *Vijay Vasudevan*¹; Xingshuo Wen²; Laura Carroll³; Richard Wright³; T. L. Sham⁴; ¹University of Cincinnati; ²Electrodiesel Corp; ³Idaho National Laboratory; ⁴Oak Ridge National Laboratory

3:30 PM Break

3:45 PM Keynote

Creep of Dispersion Strengthened Materials – Emergence of Paradigms Challenging the Old Theories: *Rajiv Mishra*¹; ¹University of North Texas

4:15 PM Invited

Uniaxial and Multiaxial Miniature Specimen Creep Testing of Single Crystal Ni-base Superalloys (SX): *Gunther Eggeler*¹; Philip Wollgramm¹; David Bürger¹; Lijie Cao¹; Xiaoxiang Wu¹; Alireza Parsa¹; ¹Ruhr University Bochum

4:35 PM

TerraPower HT9 Mechanical and Thermal Creep Properties: *Cheng Xu*¹; Micah Hackett¹; ¹TerraPower

4:55 PM

Creep Behavior of a Microstructurally Stable Nanocrystalline Alloy: K. Darling¹; M Rajagopalan²; M Komarasamy³; M Bhatia²; B Hornbuckle¹; R Mishra³; *Kiran Solanki*²; ¹ARL; ²Arizona State University; ³UNT

5:15 PM

On the Creep Behavior of Dual-Scale Particle Strengthened Nickel Based Alloy: Aniket Dutt¹; *Somayeh Pasebani*²; Indrajit Charit²; Rajiv Mishra¹; ¹University of North Texas; ²University of Idaho

Mechanical Behavior of Nanostructured Materials — Mechanical Milling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Monday PM
February 27, 2017

Room: 30D
Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: C. Suryanarayana, University of Central Florida; Pascal Bellon, University of Illinois, Urbana-Champaign; Tongde Shen, Yanshan University

2:00 PM Invited

Processing and Properties of Nanostructured Metallic Systems: *John Lewandowski*¹; ¹Case Western Reserve University

2:25 PM

Dependence of Shear Mixing on Alloy Properties: A Study on Cu-X-Mo Ternary Alloys: *Nisha Verma*¹; Nirab Pant¹; John Beach¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois at Urbana-Champaign

2:45 PM Invited

Mechanical Alloying by Severe Plastic Deformation: *Reinhard Pippan*¹; Andrea Bachmaier¹; Lisa Kraemer¹; Pradipta Ghosh¹; Karoline Kormout¹; Timo Mueller¹; Anton Hohenwarter²; Oliver Renk¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; ²Montanuniversität Leoben

3:10 PM

Nanostructured Ferritic Steels: Synthesis, Microstructure and Mechanical Properties: *Somayeh Pasebani*¹; *Indrajit Charit*¹; Yaqiao Wu²; Jatuporn Burns²; James Cole³; Darryl Butt²; ¹University of Idaho; ²Boise State University; ³Idaho National Laboratory

3:30 PM Break**3:50 PM Invited**

Microstructures and Mechanical Properties of Nanostructured and Ultrafine Grained Al Alloy and Cu Matrix Nanocomposites Fabricated by Thermomechanical Powder Consolidation: *Deliang Zhang*¹; Dengshan Zhou¹; Xun Yao²; Jiamiao Liang²; Wei Zeng²; Charlie Kong³; Paul Munroe³; ¹Northeastern University; ²Shanghai Jiao Tong University; ³University of New South Wales

4:15 PM

Mechanical Properties of Aluminum Composites with Nano Alumina Reinforcement: *William Harrigan*¹; ¹Gamma Technology, LLC

4:35 PM Invited

Ultrahigh-strength Nanostructured Magnesium Alloys via Mechanical Alloying: *Suveen Mathaudhu*¹; ¹University of California Riverside

5:00 PM

Suppressing Oxide Nanoparticle Coarsening and Cu Nanograin Growth in Nanostructured Cu Matrix Nanocomposites by Adding Ti: *Dengshan Zhou*¹; Wei Zeng²; Charlie Kong³; Paul Munroe³; Deliang Zhang¹; ¹Northeastern University; ²Shanghai Jiao Tong University; ³The University of New South Wales

5:20 PM

Achieving Enhanced Room Temperature Ductility in Bulk Nanostructured Mg: *Xin Wang*¹; Lin Jiang¹; Dalong Zhang¹; Enrique Lavernia¹; Julie Schoenung¹; ¹University of California, Irvine

Microstructural Processes in Irradiated Materials — Reactor Pressure Vessel Steels

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Monday PM
February 27, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Peter Wells, University of California-Santa Barbara; Peter Hosemann, University of California-Berkeley

2:00 PM Invited

A Summary of ATR-2 Reactor Pressure Vessel Steel High Fluence Irradiation: Some New Science and Implications to Extended Reactor Life: *G. Robert Odette*¹; Peter Wells¹; Takuya Yamamoto¹; Nathan Almirall¹; Randy Nanstad²; ¹University of California Santa Barbara; ²Oak Ridge National Laboratory

2:30 PM

Structural Characterization of Precipitates in Neutron Irradiated Surveillance Reactor Pressure Vessel Steels: *David Sprouster*¹; E Dooryhee¹; S Ghose¹; M Elbakhshwan¹; P Wells¹; T Stan¹; N Almirall²; G. R. Odette²; M. Sokolov³; R. Nanstad³; L Ecker¹; ¹Brookhaven National Laboratory; ²Materials Department, University of California, Santa Barbara; ³Oak Ridge National Laboratory

2:50 PM

Modeling Cu-Mn-Ni-Si Precipitation in Reactor Pressure Vessels: *Mahmood Mamivand*¹; Huibin Ke¹; Peter Wells²; George Odette²; Dane Morgan¹; ¹University of Wisconsin-Madison; ²University of California-Santa Barbara

3:10 PM

Kinetic Monte Carlo Modeling of CuMnNiSi Precipitation in Reactor Pressure Vessel Steels: *Shipeng Shu*¹; Dane Morgan¹; Peter Wells²; Nathan Almirall²; Robert Odette²; ¹University of Wisconsin-Madison; ²University of California, Santa Barbara

3:30 PM

Phase-field Modelling of Gamma-precipitate Behaviour in RPV Steel: *Kunok Chang*¹; Junhyun Kwon¹; ¹Korea Atomic Energy Research Institute

3:50 PM Break

4:05 PM Invited

Effect of Heat Load on Microstructural Development in Irradiated Steels: *Naoyuki Hashimoto*¹; Eriko Suzuki²; ¹Hokkaido University; ²Japan Atomic Energy Agency

4:35 PM

Instrumental Methodology at the Atomic Scale to a Better Understanding of Grain Boundary Segregation Mechanisms in Steels: *Alfia Akhatova*¹; Bertrand Radiguet¹; Fabien Cuvilly¹; Emmanuel Cadel¹; Auriane Etienne¹; Laurence Chevalier¹; David Gibouin¹; Philippe Pareige¹; ¹GPM, University of Rouen

4:55 PM

Hardening Mechanism of a Neutron Irradiated Reactor Pressure Vessel Steel Studied by APT, PAS and WB-STEM: *Masaki Shimodaira*¹; Takeshi Toyama¹; Kenta Yoshida¹; Koji Inoue¹; Yasuyoshi Nagai¹; Toshimasa Yoshiie²; Milan Konstantinovic³; Robert Gerard⁴; ¹Tohoku University; ²Kyoto University; ³SCK-CEN; ⁴Tractebel ENGIE

5:15 PM

Chemistry Factor Development for Prediction of Reactor Pressure Vessel Embrittlement: *Peter Wells*¹; Takuya Yamamoto¹; Huibin Ke²; Nathan Almirall¹; Dane Morgan²; G Odette¹; ¹UC Santa Barbara; ²University of Wisconsin, Madison

5:35 PM

Computer Simulation of Defect-free Channel Formation by the Monte Carlo Method: *Peter Doyle*¹; Kelsa Benensky¹; Steven Zinkle¹; ¹University of Tennessee, Knoxville

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Heterogeneous Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Monday PM

February 27, 2017

Room: 24B

Location: San Diego Convention Ctr

Session Chairs: Yuntian Zhu, NC State University; Kei Ameyama, Ritsumeikan University

2:00 PM Invited

Unique Deformation Behavior of Harmonic Structure Materials with High Strength and High Ductility: *Kei Ameyama*¹; Mie Ota¹; ¹Ritsumeikan University

2:25 PM

Deformation Mechanisms in Multiscale Architected Harmonic-structured Nickel: *Dmytro Orlov*¹; Stephen Hall¹; Jinming Zhou¹; Mie Ota²; Kei Ameyama²; ¹Lund University; ²Ritsumeikan University

2:45 PM Invited

Atomistic and Mesoscale Modeling Investigation of Deformation Mechanisms in Heterogeneous Materials: *Shenyang Hu*¹; ¹Pacific Northwest National Laboratory

3:10 PM Invited

Tensile Properties of Heterogeneous Structures Embedded with Nanotwins: *Nairong Tao*¹; F.K. Yan¹; H.Y. Yi¹; Y. Zhang¹; Y.S. Li¹; ¹Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

3:35 PM Break

3:55 PM Invited

Investigation of Effects of Microstructural Heterogeneity on Mechanical Properties Using Samples Prepared by Park Plasma Sintering: *Andy Godfrey*¹; Kainan Zhu¹; Chenglu Zhang¹; ¹Tsinghua University

4:20 PM Invited

Taming Microstructure of Nanostructured Alloy through the Concurrence of Phase Transition and Grain Growth: *Feng Liu*¹; ¹Northwestern Polytechnical University

4:45 PM Invited

Tuning Heterogeneity in Metals for Better Hardenability and Deformability: Examples from TWIP Steels and High Entropy Alloys: *Yujie Wei*¹; ¹LNM, Institute of Mechanics, CAS

5:10 PM

Heterogeneous Structures: A New Paradigm for Designing Super Strong and Tough Materials: Xiaolei Wu¹; *Yuntian Zhu*²; ¹Institute of Mechanics, Chinese Academy of Sciences; ²North Carolina State University

Nanocomposites IV: Nanoscience for Renewable Energy — NanoScience Part II

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Changsoo Kim, University of Wisconsin-Milwaukee; Simona Murph, Savannah River National Laboratories; Muralidharan Paramsothy, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology

Monday PM

February 27, 2017

Room: Pacific 25

Location: Marriott Marquis Hotel

Session Chairs: Changsoo Kim, University of Wisconsin-Milwaukee; Meisha Shofner, Georgia Institute of Technology

2:00 PM Invited

Combinatorial Fabrication of Composite Photocatalytic Nanostructures by Oblique Angle Co-Deposition: Steven Larson¹; Weijie Huang¹; *Yiping Zhao*¹; ¹University of Georgia

2:40 PM

Introducing Dislocation Lines for Controlled Thermal Conductivity in Si-based Nanocomposites by Liquid-phase Sintering: *Jun Xie*¹; Yuji Ohishi¹; Satoshi Ichikawa¹; Aikebaier Yusufu²; Hiroaki Muta¹; Ken Kurosaki¹; Shinsuke Yamanaka¹; ¹Osaka University; ²University of Fukui

3:00 PM

Fabrication of Silicon/Graphite Nanocomposite as Promising Anode Material for Lithium-ion Battery Applications: *Maziar Ashuri*¹; Qianran He¹; Leon Shaw¹; ¹Illinois Institute of Technology (IIT)

3:20 PM Break

3:40 PM Invited

Photonic Curing for Advanced Thin Film and Device Development: *Pooran Joshi*¹; Teja Kuruganti¹; Tolga Aytug¹; ¹Oak Ridge National Laboratory

4:20 PM

Surface-Functionalized Nanoporous Carbons for Kinetically Stabilized Complex Hydrides through Lewis acid-Lewis base Chemistry: *Christopher Carr*¹; Eric Majzoub¹; ¹University of Missouri St. Louis

4:40 PM

Polypyrrole Coated Silver Nanowire Supercapacitors: Recep Yuksel¹; *Husnu Unalan*¹; ¹Middle East Technical University

Nanostructured Materials for Nuclear Applications II — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Idaho National Laboratory; Khalid Hattar, Sandia National Laboratories; Celine Hin, Virginia Tech; Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Mitra Taheri, Drexel University; Haiming Wen, Idaho State University

Monday PM
February 27, 2017

Room: Pacific 24
Location: Marriott Marquis Hotel

Session Chairs: Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory

2:00 PM Invited

Radiation Interaction of Nanostructured Ceramics: Tiankai Yao¹; Fengyuan Lu²; *Jie Lian*¹; ¹Rensselaer Polytechnic Institute; ²Louisiana State University

2:30 PM Invited

Magnetic and Electrical Responses of Nanomaterials under Irradiation - New Type of Radiation Detection: *You Qiang*¹; ¹University of Idaho

3:00 PM

Point Defect Diffusion in Oxide Dispersion Strengthened Steels: *Markus Mock*¹; Karsten Albe¹; ¹TU Darmstadt

3:20 PM

Defect Evolution in Stannate Pyrochlores under Swift Heavy Ion Irradiation: *Chien-Hung Chen*¹; Cameron Tracy¹; Maik Lang²; Christina Trautmann³; Rodney Ewing¹; ¹Stanford University; ²University of Tennessee; ³GSI Helmholtz Centre for Heavy Ion Research

3:40 PM Break

4:00 PM Invited

Probing Nanoscale Damage Gradients in Irradiated Materials with Spherical Nanoindentation: *Siddhartha Pathak*¹; Jordan Weaver²; Cheng Sun²; Yongqiang Wang²; Russ Doerner³; Surya Kalidindi⁴; Nathan Mara²; ¹University of Nevada, Reno; ²Los Alamos National Laboratory; ³University of California at San Diego; ⁴Georgia Institute of Technology

4:30 PM

Radiation Effects on the Mechanical Properties of Nanoporous Gold: *Nicolas Briot*¹; T. John Balk¹; Remi Dingreville²; Khalid Hattar²; ¹University of Kentucky; ²Sandia National Laboratories

4:50 PM

Radiation Resistance of a FeCr Model Alloy Nanostructured by Severe Plastic Deformation: *Bertrand Radigue*¹; Nariman Enikeev²; Marina Abramova²; Julia Ivanisenko³; Helena Zapolsky¹; Xavier Sauvage¹; Auriane Etienne¹; Cristelle Pareige¹; Ruslan Valiev²; ¹GPM UMR CNRS 6634 - Université et INSA de Rouen; ²Ufa State Aviation Technical University; ³Institute of Nanotechnology, Karlsruhe Institute of Technology

5:10 PM

Synthesis and Microstructural Characterization of Zirconium Oxide Dispersion Strengthened Model Alloy and 9 Cr Ferritic Steel: *Raghavendra K G*¹; Arup Dasgupta¹; Raj Narayan Hajra¹; K. Jayasankar²; S. Saroja¹; ¹IGCAR Kalpakkam; ²CSIR-IMMT

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Phase Stability & Phase Equilibria

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Monday PM
February 27, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chairs: Shih-kang Lin, National Cheng Kung University; Chih-Ming Chen, National Chung Hsing University

2:00 PM Invited

Zirconia Mystery? Why and How Zirconia Phases and Phase Diagrams Have Been Misunderstood for a Long Time?: *Masahiro Yoshimura*¹; ¹National Cheng Kung University

2:30 PM

Searching for New Permanent Magnetic Phases: The Systems Bi-Mn-T (T = Ni, Rh, Pt): Peter Kainzbauer¹; Martin Marker¹; Klaus Richter¹; *Herbert Ipser*¹; ¹University of Vienna

2:50 PM

Phase Stability of Mixed-Cation Alkaline-Earth Hexaborides: Insights from X-ray Diffraction and High-resolution Transmission Electron Microscopy: *James Cahill*¹; Michael Alberga²; Doreen Edwards²; Scott Mixture²; Victor Vasquez²; Olivia Graeve¹; ¹University of California, San Diego; ²Alfred University; ³University of Nevada, Reno

3:10 PM

Effect of Structural Order on Pulsed Laser Crystallization Kinetics of Amorphous Germanium Thin Films: *Tian Li*¹; Leonardus Bimo Bayu Aji¹; Tae Wook Heo¹; Melissa Santala²; Sergei Kucheyev¹; Geoffrey Campbell¹; ¹Lawrence Livermore National Laboratory; ²Oregon State University

3:30 PM Break

3:50 PM

In-situ Characterization of the Transverse Propagation Mechanism for Crystallization of Amorphous Germanium and the Resulting Microstructure: *Garth Egan*¹; Tian Li¹; John Roehling¹; Joseph Mckeown¹; Geoffrey Campbell¹; ¹Lawrence Livermore National Laboratory

4:10 PM

High Temperature Phase Stability of α_2 -Cu₃Al in Binary Cu-Al Alloys: Issues in the Al-Cu Phase Diagram: *Valery Ouharov-Bancalero*¹; Choong-Un Kim¹; ¹The University of Texas at Arlington

4:30 PM

Thermodynamic Study on PMN-PT Single Crystals: *Hooman Sabarou*¹; Yu Zhong¹; ¹Florida International University

Phase Transformations and Microstructural Evolution — Ti & Zr, and Lightweight Metals Al & Mg

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Monday PM Room: 16B
February 27, 2017 Location: San Diego Convention Ctr

Session Chair: Rajarshi Banerjee, University of North Texas

2:00 PM

Investigation of Nano-scale Instabilities in Titanium Alloys: *Yufeng Zheng*¹; Robert Williams¹; Rajarshi Banerjee²; Dipankar Banerjee³; Hamish Fraser¹; ¹The Ohio State University; ²University of North Texas; ³Indian Institute of Science

2:20 PM

Deformation Modes in High-pressure ω -phase of Zr: A First-principles Study: *Anil Kumar*¹; M. Arul Kumar¹; Irene Beyerlein¹; ¹Los Alamos National Laboratory

2:40 PM

Crystallization Pathway in Al-Sm Alloys Prepared by Melt Spinning and Magnetron Sputtering: *Fanqiang Meng*¹; Wenjie Wang¹; Shihuai Zhou¹; Matthew Besser¹; Matthew Kramer¹; Ryan Ott¹; ¹Ames Laboratory

3:00 PM

Microstructural and Texture Transitions Observed Using Shear Assisted Processing and Extrusion (ShAPE) of Melt Spun AZ91E Precursors: *Nicole Overman*¹; Scott Whalen¹; Matt Olszta¹; Karen Kruska¹; Jens Darsell¹; Vineet Joshi¹; Hellen Jiang¹; Suveen Mathaudhu¹; ¹Pacific Northwest National Laboratory

3:20 PM Break

3:40 PM

Neutron Diffraction Study on Atomic Structures and Phase Transition of Magnesium-lithium Alloy: *Ye Cui*¹; Zhongwu Zhang¹; ¹Harbin Engineering University

4:00 PM

Solute Segregation in Aluminum Alloys: *Dongwon Shin*¹; Shibayan Roy¹; Baishakhi Mazumder¹; Larry Allard¹; James Haynes¹; Amit Shyam¹; ¹Oak Ridge National Laboratory

Rare Metal Extraction & Processing — Rare Earth Elements I

Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Hojong Kim, The Pennsylvania State University; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Neale Neelameggham, Ind LLC; Takanari Ouchi, Massachusetts Institute of Technology

Monday PM Room: 17B
February 27, 2017 Location: San Diego Convention Ctr

Session Chairs: Shafiq Alam, University of Saskatchewan; Takanari Ouchi, MIT

2:00 PM Keynote

The Economics of the Search Minerals Direct Extraction Process for Rare Earth Recovery: *David Dreisinger*¹; ¹Search Minerals

2:35 PM

Recovery of Critical Rare Earth Elements for Green Energy Technologies: *Rajesh Kumar Jyothi*¹; Jin-Young Lee¹; ¹Korea Institute of Geoscience and Mineral Resources (KIGAM)

3:00 PM

Selective Reduction and Separation of Europium from Mixed Rare-earth Oxides from Waste Fluorescent Lamp Phosphors: *Mark Strauss*¹; Brajendra Mishra¹; Gerald Martins²; ¹WPI; ²Colorado School of Mines

3:25 PM

Application of Rare Earths for Higher Efficiencies in Energy Conversion: *William Judge*¹; Z.W. Xiao¹; Georges Kipouros¹; ¹University of Saskatchewan

3:50 PM Break

4:10 PM

Microwave Treatment for Extraction of Rare Earth Elements from Phosphogypsum: *Adrian Lambert*¹; Jason Tam¹; *Gisele Azimi*¹; ¹University of Toronto

4:35 PM

Selective Separation of Rare Earth Elements Utilizing Vapor Phase Extraction: *Katelyn Lyons*¹; Jerome Downey¹; Jannette Chorney¹; ¹Montana Tech of the University of Montana

5:00 PM

Observation of Oxidation of Nd-Magnet In High Temperature Recycling/ Recovery Process: *Muhamad Firdaus*¹; M Rhamdhani¹; W Rankin²; Kathie McGregor²; Yvonne Durandet¹; Nathan Webster²; ¹Swinburne University of Technology; ²CSIRO Minerals Resources

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Multiscale Modeling of Thin Films

Sponsored by: TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, UTEP; Heinz Palkowski, Clausthal Univ of Technology; Vikas Tomar, Purdue Univ; Nuggehalli Ravindra, NJIT

Monday PM Room: Pacific 18
February 27, 2017 Location: Marriott Marquis Hotel

Session Chairs: Ramana Chintalapalle, University of Texas at El Paso, UTEP; Adele Carradò, Université de Strasbourg IPCMS

2:00 PM Keynote

Atomic-Scale Modeling of Thin Films and Nanomaterials: *Christine Goyhenex*¹; ¹IPCMS

2:40 PM

Transmission Probability of Diffusing Particles – A Case Study: *Kinnari Shah*¹; Ravindra Nuggehalli¹; ¹New Jersey Institute of Technology

3:00 PM

Magnetic Field Assisted Assembly - Modeling, Design and Implementation: *Yan Liu*¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

3:20 PM

Interface Mechanical Strength and Interface Elastic Constants Calculations in Thin Films of Polymer Composites, and Natural Materials: *Devendra Verma*¹; *Vikas Tomar*¹; ¹Purdue University

3:40 PM Break

4:00 PM

Modeling of Spatial Temperature Distribution in Silicon: *Ashvin Kumar Vasudevan*¹; Chihlin Huang¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

4:20 PM

Barrierless Cu–Ni–M thin films on Silicon Based on the Stable Solid Solution Cluster Model: Xiaona Li¹; Yuehong Zheng¹; Miao Wang¹; Chuang Dong¹; ¹Dalian University of Technology

4:40 PM

Black Silicon Based Microbolometer: Sita Rajyalaxmi Marthi¹; Asahel Banobre¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

Student-Run Symposium: Building Bridges – Connecting Academic and Industry Research – Session II

*Sponsored by:*TMS: Education Committee

Program Organizers: Katherine Vinson, The University of Alabama; Omar Rodriguez, The University of Alabama; Ben White, The University of Alabama; Dallin Barton, The University of Alabama; Rachel White, The University of Alabama

Monday PM

Room: 22

February 27, 2017

Location: San Diego Convention Ctr

Session Chairs: Rachel White, The University of Alabama; Ben White, The University of Alabama; Katherine Vinson, The University of Alabama

2:00 PM Invited

The Role of Government in Supporting Industry-Academic Interactions: Eric Wuchina¹; ¹Office of Naval Research

2:20 PM

An HPC4Mfg Project Update: Developing Computational Tools for the Glass Manufacturing Using High Performance Computing Resources: Vic Castillo¹; ¹Lawrence Livermore National Laboratory

2:40 PM

Fundamental Principles for a Successful Collaboration between University and Metalworking Industries: Silvia Lombardo¹; Federico Simone Gobber¹; Mario Rosso¹; ¹Politecnico di Torino

3:00 PM Break

3:20 PM **Introductory Comments:** Dr. Hani Henein

3:30 PM **Panel Discussion:** Dr. Eric Wuchina, Dr. Christian Widener, Nanci Hardwick, Dr. Michael Sealy

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology – Materials Design

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoun Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Tuesday AM

Room: Pacific 26

February 28, 2017

Location: Marriott Marquis Hotel

Session Chairs: Vinu Unnikrishnan, University of Alabama; KyeongJae Cho, University of Texas at Dallas

8:30 AM

Tribological Properties of Carbyne on Nickel Surface: Scott Muller¹; Arun Nair¹; ¹University of Arkansas

8:50 AM

A Screening of Transition Metal Nitrides with Dopants as Electrocatalysts for Oxygen Reduction Reaction: Doosun Hong¹; Soonho Kwon¹; Hyuck Mo Lee¹; ¹KAIST

9:10 AM

Atomic and Electronic Structures of Stabilized Metal Monolayer: Kyeongjae Cho¹; ¹University of Texas at Dallas

9:30 AM Invited

Theory and Applications for Two-dimensional Phase Change Materials: Yao Li¹; Karel-Alexander Duerloo¹; Yao Zhou¹; Evan Reed¹; ¹Stanford University

10:00 AM Break

10:20 AM Invited

New 2-D Material Recipes from Scratch: Susan Sinnott¹; ¹Penn State University

10:50 AM

Controlling Topological Phase Transition in Van Der Waals Stacked 2-D Materials for Topological Device Applications: Xiaofeng Qian¹; ¹Texas A&M University

11:10 AM Invited

Cu-based Nanoparticles and Nanowires for Applications in Printed Electronics and Transparent Electrode: Changsoo Lee¹; Na Rae Kim¹; Jahyun Koo¹; Cho Rong Chu¹; Hyuck Mo Lee¹; ¹KAIST

11:40 AM Invited

Correlation between Morphology and Field Emission Behavior of Various CuO Nanostructures: Gurjinder Kaur¹; Krishna Saini¹; Narasimha Pulagara¹; Indranil Lahiri¹; ¹Indian Institute of Technology Roorkee

8th International Symposium on High Temperature Metallurgical Processing – Fundamental Research of Metallurgical Process

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Tuesday AM

Room: 18

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Mark Kennedy, Proval Partners SA; Xuewei Lv, Chongqing University

8:30 AM Introductory Comments

8:35 AM

Kinetics of Dephosphorization between Bloated Metal Droplet and Slag Containing Iron Oxide: Kezhuan Gu¹; Kenneth Coley¹; Neslihan Dogan¹; ¹McMaster University

8:55 AM

Kinetic Study of Low Grade Nickel Ores by Pyrometallurgical Processes: Sandra Diaz¹; Oscar Restrepo¹; ¹Universidad Nacional de Colombia

9:15 AM

Investigate on the Phase Composition of Vanadium Slag with High CaO Content and Influence of P₂O₅ on Crystallization Kinetics of Spinel: Wang Zhou¹; Bing Xie¹; Zhao-Qun Ke¹; Jiang Diao¹; Wen-Feng Tan¹; Yu-Hao Liu¹; Hong-Yi Li¹; Tao Zhang¹; ¹Chongqing University

9:35 AM

Effect of Carbon to Hematite (Fe₂O₃) Molar Ratio on the Reduction Behaviour of Iron Ore-coal Composite Pellets in Multi-layer Bed Rotary Hearth Furnace (RHF): Srinibash Mishra¹; Gour Gopal Roy²; ¹Indian Institute of Technology Kharagpur; ²Indian Institute of Technology Kharagpur

9:55 AM

The Kinetics Study on the Reaction Rate Constant of Pulverized-coal Combustion at Different Heating Rates: *Ruiling Du*¹; ¹University of Science and Technology Beijing

10:15 AM Break

10:35 AM

Evaluation of High Temperature Refractory Corrosion by Liquid Al₂O₃-Fe₂O₃-MgO-SiO₂: *Christoph Sagadin*¹; Stefan Luidold¹; Christine Wenzl²; Christoph Wagner²; ¹Montanuniversitaet Leoben; ²RHI AG

10:55 AM

Thermodynamic Calculation on the Reactivity between Slag and Ti-stabilized Stainless Steel: *Zhuo Chen*¹; Kun-peng Xu¹; Sheng-ping He¹; Qian Wang¹; ¹Chongqing University

11:15 AM

Phase Equilibria and Thermodynamics of CaO-SiO₂-Dy₂O₃ System: *Fei Wang*¹; Thu Hoai Le²; Bin Yang¹; Muxing Guo²; ¹Kunming University of Science and Technology; ²Kunming University of Science and Technology Leuven

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Local Microstructural Control and Graded Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Tuesday AM
February 28, 2017

Room: 7B
Location: San Diego Convention Ctr

Session Chairs: Mark Stoudt, NIST; John Lewandowski, Case Western Reserve University

8:30 AM Invited

Location- and Orientation-dependent Properties in AM Systems: *John Lewandowski*¹; ¹Case Western Reserve University

9:00 AM Invited

Development of Ti-6Al-4V to 304L Stainless Steel Functionally Graded Components Fabricated with Laser Deposition: *R. Peter Dillon*¹; John Paul Borgonia¹; Ashley Reichardt²; Bryan McEnerney¹; Andrew Shapiro¹; Peter Hosemann²; ¹Jet Propulsion Laboratory; ²University of California, Berkeley

9:30 AM

Characterization of Maraging Steel to Austenitic Stainless Steel Gradient Components Fabricated with Laser Deposition: *Ashley Reichardt*¹; John Paul Borgonia²; R. Peter Dillon²; Bryan McEnerney²; Andrew Shapiro²; Peter Hosemann¹; ¹University of California, Berkeley; ²Jet Propulsion Laboratory

9:50 AM

Microstructural Control in SLM Ti-6Al-4V: Key Factors Facilitating In Situ α Martensite Decomposition: *Wei Xu*¹; Edward Lui²; *Ma Qian*²; Milan Brandt²; ¹Macquarie University; ²Royal Melbourne Institute of Technology University

10:10 AM Break

10:30 AM

Multiphase Samples Built by Additive Manufacturing: *Thomas Watkins*¹; Amit Shyam¹; Yukinori Yamamoto¹; Niyanth Sridharan¹; Ercan Cakmak¹; Kinga Unocic¹; Ryan Dehoff¹; Sarma Gorti¹; Srdjan Simunovic¹; S. Suresh Babu²; ¹ORNL; ²University of Tennessee

10:50 AM

Tailoring the Mechanical Properties of Ni-base Superalloys Processed by Direct Metal Laser Melting (DMLM): *Thomas Etter*¹; Fabian Geiger¹; Karsten Kunze²; ¹General Electric (Switzerland) GmbH; ²ETH Zurich (ScopeM)

11:10 AM

Characterization of Microstructure and Material Properties of Selective Laser Sintered Ni-alloy 625: *Kevin Kaufmann*¹; Tyler Harrington¹; Kenneth Vecchio¹; ¹University of California San Diego

11:30 AM

Influence of Processing Parameters on the Development of Microstructure and Texture in EBM Ti-6Al-4V: *Todd Butler*¹; Kevin Chaput²; Benjamin Georjgin²; Edwin Schwalbach²; ¹UES, Inc. / AFRL; ²Wright-Patterson AFRL

11:50 AM

Mapping the Decomposition of β to α in Composition and Temperature Space in Titanium Alloys: *Deep Choudhuri*¹; *Srinivas Mantri*¹; Chris Yannetta¹; Rajarshi Banerjee¹; Dipankar Banerjee²; ¹University of North Texas; ²Indian Institute of Science

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Beam Line Studies and In Situ Monitoring

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Tuesday AM
February 28, 2017

Room: 8
Location: San Diego Convention Ctr

Session Chairs: Manyalibo Matthews, Lawrence Livermore National Laboratory; Jason Fox, National Institute of Standards and Technology

8:30 AM Invited

Process Monitoring for Powder Bed Fusion of Metal Alloys Using High Speed Optical Diagnostics: *Manyalibo Matthews*¹; Gabe Guss¹; Nicholas Calta¹; Sheldon Wu¹; Sonny Ly²; Michael Crumb¹; ¹Lawrence Livermore National Laboratory; ²LLNL

9:00 AM

The Use of Laser Ultrasound to Detect Defects in Laser Melted Parts: *Phill Dickens*¹; Sarah Everton¹; Chris Tuck¹; Ben Dutton²; David Wimpenny²; ¹University of Nottingham; ²MTC

9:20 AM

Embedding Fiber Bragg Gratings with Ultrasonic Additive Manufacturing: *Adam Hehr*¹; Mark Norfolk¹; ¹Fabrisonic LLC

9:40 AM

The Development of a L-PBF Test Bed and Evaluation of In-process Sensing Technologies: *Bryant Foster*¹; ¹EWI

10:00 AM Break

10:20 AM Invited

Using Neutron and High Energy X-ray Diffraction to Probe Additively Manufactured Materials Over a Range of Length and Time Scales: *Donald Brown*¹; John Carpenter¹; Bjorn Clausen¹; Jason Cooley¹; John Bernal¹; Mark Bourke¹; ¹Los Alamos National Lab

10:50 AM

Residual Stress Characterization of Additively Manufactured Components: *Maria Strantzal*¹; Danny Van Hemelrijck¹; Patrick Guillaume¹; ¹Vrije Universiteit Brussel

11:10 AM

In Situ Observation of Porosity Formation in Selective Laser Melting Using Synchrotron-based High Speed X-ray Imaging: *Ross Cunningham*¹; Robert Suter¹; Anthony Rollett¹; Jack Beuth¹; ¹Carnegie Mellon University

11:30 AM

Characterizing Microstructure in Ti Alloys Using Synchrotron-based MicroCT: *Johanna Weker*¹; Ryan Ott²; Yinmin Wang³; Kevin Stone¹; Chris Tassone¹; Matthew Kramer⁴; Tony Van Buuren³; Michael Toney¹; ¹SLAC National Accelerator Laboratory; ²AMES; ³Lawrence Livermore National Laboratory; ⁴AMES Laboratory

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Tuesday AM

Room: 33C

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Philip Eisenlohr, Michigan State University; Søren Schmidt, Technical University of Denmark

8:30 AM Invited

3D Orientation Mapping in the Transmission Electron Microscope: *Søren Schmidt*¹; Peter Mahler Larsen¹; Hossein Alimadadi¹; Takeshi Kasama¹; Xiaoxu Huang¹; ¹Technical University of Denmark

8:50 AM

Shear-Coupled Grain Growth and Texture Development in a Nanocrystalline Ni-Fe Alloy during Cold Rolling: *Li Li*¹; Tamas Ungar²; L Toth³; Z Skrotzki⁴; Y Ren⁵; Zs Fogarassy⁶; X.T. Zhou¹; Peter Liaw⁷; ¹Shanghai Institute of Applied Physics-Chinese Academy of Science; ²Eötvös University Budapest; ³Université de Lorraine; ⁴Technische Universität Dresden; ⁵Argonne National Laboratory; ⁶Hungarian Academy of Science; ⁷The University of Tennessee

9:10 AM

Unambiguous Complexion Identification and Inspection in High Purity Binary Alloy Systems: *Jennifer Schuler*¹; Timothy Rupert¹; ¹University of California Irvine (UCI)

9:30 AM

In Situ TEM Compression Testing of IN718 Fabricated by Electron Beam Melting: *Kinga Unocic*¹; Michael Kirka¹; Ryan Dehoff¹; ¹ORNL

9:50 AM Break

10:10 AM

Characterization and Deformation Behavior of Microstructural Gradients in the Low Solvus High Refractory (LSHR) Nickel Base Superalloy: *Samuel Kuhr*¹; Gopal Viswanathan¹; Hamish Fraser¹; ¹The Ohio State University

10:30 AM

Atomic Resolution Energy Dispersive X-ray Spectroscopy of Segregation Along SESFs in Ni-Based Disk Alloys: *Timothy Smith*¹; Bryan Esser¹; Nikolas Antolin¹; Robert Williams¹; Andrew Wessman²; Hamish Fraser¹; Wolfgang Windl¹; David McComb¹; Michael Mills¹; ¹The Ohio State University; ²GE Aviation

10:50 AM

How Important are the Smallest Grains for their Aggregate Mechanics?: Tias Maiti¹; *Philip Eisenlohr*¹; ¹Michigan State University

11:10 AM

The Origin of Stochastic Behavior during Nanoindentation near a Grain Boundary in Cu: Benjamin Schuessler¹; Mehdi Hamid¹; *Pui Ching Wo*¹; Hussein Zbib¹; ¹Washington State University

11:30 AM

Improved Angular and Spatial Resolution of Measured Lattice Rotations in Highly Deformed Bulk Materials through Combining Low-kV EBSD with the Dictionary Indexing Approach: Ali Gholinia¹; Timothy Burnett¹; Bart Winiarski¹; *Farangis Ram*²; Saransh Singh²; Marc De Graef²; ¹University of Manchester; ²Carnegie Mellon University

Advanced High-Strength Steels — Planar Defects and Interfaces

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Tuesday AM

Room: 17A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Tadashi Furuhashi, Tohoku University; Chad Sinclair, University of British Columbia

8:30 AM Invited

Parameter-free Finite-temperature Computations of Stacking Fault Energies for Magnetic Materials: *Fritz Körmann*¹; Ivan Bleskov²; Björn Alling²; Blazej Grabowski²; Biswanath Dutta²; Tilmann Hickel²; Jörg Neugebauer²; ¹Delft University of Technology and Max-Planck-Institut für Eisenforschung; ²Max-Planck-Institut für Eisenforschung

8:50 AM

Analysis of the Aging Behavior and Orientation Relationships with Respect to β -Mn Phase in Austenite-based Low-density Steel: *Keunho Lee*¹; Seong-Jun Park²; Jun-Yun Kang²; Siwook Park¹; Anthony Rollett³; Sukbin Lee⁴; Kyu Hwan Oh¹; Heung Nam Han¹; ¹Seoul National University; ²Korea Institute of Materials Science; ³Carnegie Mellon University; ⁴Ulsan National Institute of Science and Technology (UNIST)

9:10 AM

Relationship between Impact Toughness, Prior Austenite Grain Boundaries and Microstructural Morphology in Medium Mn Steel: *Jeongho Han*¹; Alisson Kwiatkowski da Silva¹; Dirk Pongel¹; Dierk Raabe¹; Sang-Min Lee²; Young-Kook Lee²; Sang-In Lee³; Byoungchul Hwang³; ¹Max-Planck-Institut für Eisenforschung; ²Yonsei University; ³Seoul National University of Science and Technology

9:30 AM

Experimental Determination of Magnitude of Shear of Stacking Faults, Twins and α' -martensite in TRIP/TWIP Steels: *Anja Weidner*¹; Horst Biermann¹; ¹TU Bergakademie Freiberg

9:50 AM

Effect of Interfacial Mn Partitioning on Carbon Partitioning and Interface Migration during Quenching and Partitioning: *Zongbiao Dai*¹; Jianguo He¹; Zhigang Yang¹; Chi Zhang¹; Hao Chen¹; ¹Tsinghua University

10:10 AM Break

10:30 AM

Molecular Dynamics Simulations of the Interaction of Helium Clusters with Grain Boundaries and Dislocations bcc Iron: Tegar Wicaksono¹; Yu Yue²; *Matthias Militzer*¹; ¹The University of British Columbia; ²Tsinghua University

10:50 AM

Interface Dominated Process in Modern Steels: *Goune Mohamed*¹; Frédéric Danoix²; Xavier Sauvage²; Didier Huin³; Lionel Germain⁴; ¹ICMCB-Bordeaux¹; ²GPM - Université de Rouen; ³ArcelorMittal; ⁴LEM3-Université de Lorraine

11:10 AM

New Insights in the Atomic Interface Structure of Kappa Carbides in High-Mn Steels: Christian Liebscher¹; Marta Lipinska-Chwalek²; Menji Yao¹; Michael Herbig¹; Baptiste Gault¹; Joachim Mayer²; Dierk Raabe¹; *Christina Scheu*¹; ¹Max-Planck-Max-Planck-Institut fuer Eisenforschung GmbH; ²Ernst Ruska-Centrum and RWTH Aachen

11:30 AM

An Interface Controlled Transformation Model Predicting the Kinetics for Isothermal Bainite Formation in Medium Mn Steels: *Hussein Farahan*¹; Wei Xu²; Sybrand van der Zwaag¹; ¹Delft University of Technology; ²Northeastern University, China

Advanced Materials for Energy Conversion and Storage — Micro & Macro Reliability

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee

Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Tuesday AM

Room: 15A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Amit Pandey, LGFCS; Dwayne Arola, University of Washington

8:30 AM Introductory Comments**8:35 AM Keynote**

Quantifying Alloy and Coating Degradation Mechanisms for Energy-Related Applications: *Bruce Pini*¹; ¹Oak Ridge National Laboratory

9:05 AM Invited

Young's Modulus and Poisson's Ratio Changes in Machined Porous Microcracked Cordierite: *Ryan Cooper*¹; Giovanni Bruno²; Yener Onel²; Axel Lange²; Thomas Watkins³; Amit Shyam³; ¹University of Connecticut; ²BAM Federal Institute for Materials Research and Testing; ³Oak Ridge National Laboratory

9:30 AM Invited

Precision High Temperature Elasticity Studies of Novel Ceramics: *Joseph Gladden*¹; Sumudu Tennakoon¹; Ashoka Karunaratne¹; Amit Pandey²; Richard Goettler²; ¹University of Mississippi; ²LG Fuel Cell Systems Inc.

9:55 AM Break**10:15 AM Invited**

Durability and Reliability of Materials and Components for Solid-Oxide Fuel Cells: *Edgar Lara-Curzio*¹; ¹Oak Ridge National Laboratory

10:40 AM

Elastic-Anelastic-Inelastic Boundaries in Materials for High Temperature Applications: *Amit Pandey*¹; Robert Wheeler²; Amit Shyam³; Thomas Stoughton⁴; ¹LG Fuel Cell Systems Inc.; ²MicroTesting Solutions LLC; ³Oak Ridge National Laboratory; ⁴General Motors Research and Development Center

11:00 AM Invited

Importance of Flaws to the Reliability of MMA Substrates: Alex Stark¹; Sandra Murcia¹; Amit Pandey²; Richard Goettler²; *Dwayne Arola*¹; ¹University of Washington; ²LG Fuel Cell Systems Inc.

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In Situ Techniques III

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Tuesday AM

Room: 32A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Jon Molina, IMDEA- Spain; Sanjit Bhowmick, Hysitron, Inc.

8:30 AM Keynote

Elevated Temperature Mechanical Properties of Three Component Nanolaminate Thin Films: *David Bahr*¹; Rachel Schoepner¹; Jeffery Wheeler²; ¹Purdue University; ²ETH Zurich

9:10 AM

In-situ Imaging and Diffraction Studies of Shear Band Nucleation and Propagation in Metallic Glass and Composites: Jia Chuan Khong¹; *Jiawei Mi*¹; ¹University of Hull

9:30 AM Invited

Plasticity and Time Dependent Stress Relaxation in FCC Nanowires: *Horacio Espinosa*¹; Rajaprakash Ramachandramoorthy¹; Yanming Wang²; Rodrigo Bernal¹; Amin Aghaei²; Gunther Richter³; Wei Cai²; ¹Northwestern University; ²Stanford University; ³Max Planck Institute

10:00 AM Break**10:20 AM**

In-situ Neutron Diffraction Analysis for Dynamic Ferrite Transformation Behavior in Low-carbon Steels: *Akinobu Shibata*¹; Yasunari Takeda¹; Wu Gong¹; Stefanus Harjo²; Takuro Kawasaki²; Nobuhiro Tsuji¹; ¹Kyoto University; ²Japan Atomic Energy Agency

10:40 AM

In Situ 4D Tomographic Examination of Semi-solid Indentation Behaviour in Ni and Co Based Alloys: *Mohammed Azeem*¹; Chedtha Puncreobutr²; Robert Atwood³; Rahman Khandaker⁴; David Dye⁴; Peter Lee¹; ¹Manchester University; ²Chulalongkorn University; ³Diamond Light Source; ⁴Imperial College London

11:00 AM

In-situ Micro-Laue Diffraction and HR-EBSD Investigation to Understand the Microstructure-deformation Interactions in Dual-phase Titanium Alloy, Ti6242, Using Micro-pillar Compression: Tea-Sung Jun¹; Xavier Maeder²; Gaylord Guillonneau³; Johann Michler²; Finn Giuliani¹; *T Ben Britton*¹; ¹Department of Materials, Imperial College; ²EMPA; ³Laboratoire de Tribologie et Dynamique des Système, Université de Lyon

11:20 AM

In Situ X-ray Diffraction Study of Strain Path Change Effects in Al-5wt% Mg (AlMg5) Using a Miniaturized Multi-axial Deformation Machine: Karl Sofinowski¹; *Maxime Dupraz*²; Steven Van Petegem²; Helena Van Swygenhoven¹; ¹Paul Scherrer Institut & EPFL; ²Paul Scherrer Institut

11:40 AM

Characterizing Thermal- and Moisture-induced Glass Transitions Using Nanoindentation-based Dynamic Mechanical Analysis: *Joseph Jakes*¹; ¹USDA Forest Products Laboratory

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Session III

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday AM Room: 21
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Albert Wu, National Central University; Soon-jik Hong, Kongju National University

8:30 AM Invited

Enhanced Thermoelectric Figure of Merit in Bi-Sb-Te based Composites with Dispersed ZrO₂ Nanoparticles: Babu Madavali¹; Chul-Hee Lee¹; Hyo-Seob Kim²; Kap-Ho Lee³; *Soon-Jik Hong*¹; ¹Kongju National University and Institute for Rare Metals; ²Ames Laboratory; ³Chungnam National University

8:50 AM Invited

Bismuth Telluride Based Compounds with High-density Current Stressing: Dopant Migration, Structural Evolution and Transport Property Modulation: Yao-Hsiang Chen¹; Cheng-Tang Li¹; *Chien-Neng Liao*¹; ¹National Tsing Hua University

9:10 AM

Fabrication of BiSbTe-based Thermoelectric Materials Using Water Atomization and Spark-plasma Sintering Techniques: *ChulHee Lee*¹; EunBeen Kim¹; KapHo Lee²; P Dharmiah¹; M Babu¹; SoonJik Hong¹; ¹Kongju National University; ²Chungnam National University

9:30 AM

Enhanced Thermoelectric Properties of Sb₂Te₃ Nanoplates Incorporated Bi_{0.5}Sb_{1.5}Te₃ Composites: *Peyala Dharmiah*¹; Chul Lee¹; Dongwon Shin¹; Jar-Myung Koo¹; Soon-Jik Hong¹; ¹Kongju National University

9:50 AM Break

10:10 AM Invited

Interfacial Reactions at the Joints of PbTe Thermoelectric Modules: *Sinn-wen Chen*¹; Jen-chieh Wang¹; Ling-chieh Chen¹; ¹National Tsing Hua University

10:30 AM Invited

Evaluation of Cobalt Diffusion Barrier for Low and Medium Temperature Thermoelectric Module: *Albert T. Wu*¹; Hsien-Chien Hsieh¹; Chun-Hsien Wang¹; ¹National Central University

10:50 AM

Investigation of Defects in CZT Single Crystals: *Bengisu Yasar*¹; Merve Kabukcuoglu¹; Yasin Ergunt¹; Mehmet Parlak¹; Rasit Turan¹; Eren Kalay¹; ¹METU

11:10 AM

Scalable Synthesis of Silicon-implanted CZTS Nanoparticles for Catalysis and Thermoelectrics: *Stephen Exarhos*¹; Edgar Palmes¹; Alejandro Alvarez¹; Lorenzo Mangolini¹; ¹University of California, Riverside

11:30 AM

Thermoelectric Behaviour of Polyvinyl Acetate /CNT Composites: Hussein Badr¹; Mostafa Youssef¹; Mohamed Gamal¹; Hebatullah Abdelsalam¹; Mirna Mohamed¹; *Iman El Mahallawi*¹; Ahmed Abdel-rehim²; ¹Cairo University; ²British University in Egypt

11:50 AM Invited

Nanostructure and Phonon Engineering in Oxide Thermoelectric Materials: *Michitaka Ohtaki*¹; ¹Kyushu University

Alumina & Bauxite — Bauxite Residues Technology

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Zhang Ting'an, Northeastern University

Tuesday AM Room: 1B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Guanghui Li, Central South University

8:30 AM Introductory Comments

8:35 AM

Security Disposal and Comprehensive Utilization of Bauxite Residues: *Songqing Gu*¹; Zhonglin Yin¹; Lijuan Qi¹; ¹Chalco

9:00 AM

Application of Tricalcium Aluminate Instead of Lime for the Recovery of Aluminum in Middle-low Grade Bauxite in Calcification-Carbonization Process: *Yanxiu Wang*¹; Zhang Ting'an¹; Guozhi Lv¹; Xiaofeng Zhu¹; Weiguang Zhang¹; Liqun Xie¹; ¹Northeastern University

9:25 AM

Low Temperature Reduction of Hematite in Red-Mud to Magnetite: *Sumedh Gostu*¹; ¹Worcester Polytechnic Institute

9:50 AM Break

10:05 AM

Recovery of Iron-, Titanium-bearing Constituents from Bauxite Ore Residue via Magnetic Separation Followed by Sulfuric Acid Leaching: *Guanghui Li*¹; Foquan Gu¹; Jun Luo¹; Bona Deng¹; Zhiwei Peng¹; Tao Jiang¹; ¹School of Minerals Processing and Bioengineering, Central South University

10:30 AM

Processing Diasporic Red Mud by the Calcification-carbonation Method: Xiaofeng Zhu¹; Zhang Ting'an¹; Guozhi Lv¹; Fangfang Guo¹; Weiguang Zhang¹; *Yanxiu Wang*¹; Liqun Xie¹; Long Wang¹; ¹Northeastern University

10:55 AM

Research of Flocculants and Dewatering Additives for Filtration of Red Mud: *Cao Wenzhong*¹; Zheng Fuliang¹; Tian Weiwei¹; Zhong Hong¹; ¹Nanchang University

11:20 AM

Characterization of Activated Alumina Production via Spray Pyrolysis: *Long Wang*¹; Zhang Ting'an¹; Guozhi Lv¹; Xiaofeng Zhu¹; Weiguang Zhang¹; Sida Ma¹; ¹Northeastern University

Aluminum Alloys, Processing and Characterization — Heat Treatment

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Yanjun Li, Norwegian University of Science and Technology

Tuesday AM Room: 4
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Ramasis Goswami, Naval Research Laboratory

8:30 AM Introductory Comments

8:35 AM

The Optimization of the Homogenization Treatment of AA7075: Gheorghe Dobra¹; *Ioan Sava*¹; Marin Petre¹; Gheorghe Popa¹; ¹ALRO

9:00 AM

Precipitation Modeling and Validation of Al-5%Cu-0.4%Mn Alloy Using Quench Factor Analysis: *Yisen Hu*¹; Gang Wang¹; Wenguang Wang¹; Mao Ye¹; Yiming Rong¹; ¹Tsinghua University

9:25 AM

Young's Modulus of Al-Si-Mg-Cu Based Alloys under Different Heat Treatment Processes: *Sajjad Amir Khanlou*¹; Shouxun Ji¹; Yijie Zhang¹; Douglas Watson²; Zhongyuan Fan¹; ¹Brunel University London; ²Jaguar Cars Ltd

9:50 AM

Intergranular Corrosion Investigation on EN-AW 6082 Redraw Rod: *Luisa Marzoli*¹; Dominique Cance²; Christiane Mathies¹; Magali Guizard²; Peter Baumgart²; Hubert Koch¹; ¹TRIMET Aluminium SE; ²TRIMET France

10:15 AM Break

10:30 AM

The Influence of Process Parameters and Thermomechanical History on Streaking Defects in AA6060 Extrusions: *Steven Babaniaris*¹; Aiden Beer¹; Matthew Barnett¹; ¹Deakin University - Institute for Frontier Materials

10:55 AM

Effect of Heat-treatment on Microstructure and Mechanical Properties of Sonicated Multicomponent AlMgSiCuZn Alloy: *Kwangjun Euh*¹; Jae-Gil Jung¹; Eunji Baek¹; Jung-Moo Lee¹; Hyoung-Wook Kim¹; ¹Korea Institute of Materials Science

11:20 AM

Effect of Interrupted Quenching on Al-Zn-Mg-Cu alloys: *Gernot K.-H. Kolb*¹; Helmut Antrekowitsch¹; Daniel Pöschmann²; Peter Uggowitzer³; Stefan Pogatscher¹; ¹Montanuniversität Leoben; ²AMAG rolling GmbH; ³ETH Zürich

11:45 AM

Manganese-induced Precipitation in a Modified AA6061 (Al-Mg-Si-Cu) Alloy during Homogenization: *Gongwang Zhang*¹; Yi Han²; Qi Zhou³; Hiromi Nagami²; Gang Sha³; Chad Parish⁴; Donovan Leonard⁴; Tongguang Zhai¹; ¹University of Kentucky; ²Suzhou Research Institute for Nonferrous Metals; ³Nanjing University of Science and Technology; ⁴Oak Ridge National Laboratory

Aluminum Reduction Technology — Joint Session on Cell Lining Materials

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Tuesday AM

Room: 2

February 28, 2017

Location: San Diego Convention Ctr

Session Chair: Stephan Broek, Hatch

8:30 AM Introductory Comments

8:35 AM

Chemical Stability of Thermal Insulating Materials in Sodium Vapour Environment: *Raymond Luneng*¹; Søren N. Bertel²; Jørgen Mikkelsen²; Arne P. Ratvik³; Tor Grande¹; ¹NTNU; ²Skamol A/S; ³SINTEF Materials and Chemistry

9:00 AM

Aging of Insulating Linings in Aluminium Electrolysis Cells: *Ove Paulsen*¹; Christian Schønning¹; Ove Darell¹; Arne Ratvik¹; ¹SINTEF

9:25 AM

Cathode Wear Based on Autopsy of a Shut down Aluminium Electrolysis Cell: *Samuel Senanu*¹; Tor Grande¹; Arne Petter Ratvik²; Zhaohui Wang²; Stein Rørvik²; Christian Schønning²; ¹Norwegian University of Science and Technology; ²SINTEF Materials and Chemistry

9:50 AM Break

10:05 AM

SPL Recycling and Re-Processing: Victor Mann¹; Vitalii Pingin²; Aleksey Zherdev²; Aleksandr Proshkin²; Sergey Pavlov²; *Yurii Bogdanov*²; Vladimir Somov²; ¹RUSAL Global Management B.V.; ²RUSAL ETC LLC

10:30 AM

Alternative Applications of SPL: Testing Ideas through Experiments and Mathematical Modeling: Dawei Yu¹; Vishnuvardhan Mambakkam²; Lei Gao³; Donghui Li²; *Kinnor Chattopadhyay*²; ¹Canmet MINING, Natural Resources Canada; ²University of Toronto; ³Kunming University of Science and Technology

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Hydrometallurgy

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Tuesday AM

Room: 15B

February 28, 2017

Location: San Diego Convention Ctr

Session Chair: Shafiq Alam, University of Saskatchewan

8:30 AM

P-CAC, a Unique Separation Technology for PGM Recovery: *Shijie Wang*¹; Tracy Morris¹; ¹Rio Tinto Kennecott Utah Copper

8:50 AM

The Physical Characteristics of Electrorefined Copper Starter Sheet Material: Daniel Majuste¹; Paul Laforest²; *Michael Moats*²; ¹Universidade Federal de Minas Gerais; ²Missouri S&T

9:10 AM

Extraction of Copper from Sulfate-chloride Solutions by Using Hydroxyoxime Extractants: *Maria Ruiz*¹; Ivan Gonzalez¹; Javier Salgado¹; Rafael Padilla¹; ¹University of Concepcion

9:30 AM

Hydrometallurgical Processes for the Recovery of Rare Earths, Nickel and Cobalt in Chloride Medium: *M.A. Halim*¹; V. I. Lakshmanan¹; R. Sridhar¹; Darcy Tait¹; ¹Process Research Ortech Inc.

9:50 AM Break

10:10 AM

Leaching Characteristics of Sodium-Iron-Silicate Slags: *Doug Schriener*¹; Patrick Taylor¹; Joe Grogan²; ¹Colorado School of Mines; ²Gopher Resource

10:30 AM

A Cr⁶⁺-free Extraction of Chromium Oxide from Chromite Ores Using Carbothermic Reduction in the Presence of Alkali: *Lidia Escudero Castejon*¹; Sergio Sanchez-Segado¹; Stephen Parirenyatwa¹; Yotamu Hara¹; Animesh Jha¹; ¹University of Leeds

10:50 AM

METTOP-BRX Technology – Eliminating Concerns and Highlighting Potentials of the Concept of Tankhouse Optimization: *Andreas Filzwieser*¹; Iris Filzwieser¹; Stefan Wallner¹; ¹Metttop GmbH

11:15 AM

Gold and PGM Recoveries from Complex Feed Streams: *Shijie Wang*¹; Jeff Lucht²; Jamie Baker³; Nickvinder Bhath³; ¹Rio Tinto Kennecott Utah Copper; ²Johnson Matthey Inc.; ³Johnson Matthey Plc

Applications of Solidification Fundamentals — Phase Field Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, McMaster University; Amber Genau, University of Alabama at Birmingham; Lifeng Zhang, University of Science and Technology Beijing

Tuesday AM
February 28, 2017

Room: 19
Location: San Diego Convention Ctr

Session Chairs: Ebrahim Asadi, University of Memphis; Damien Tournet, Los Alamos National Laboratory

8:30 AM

On the Solidification Kinetics of Metal Alloys: A Study Using 3-D Phase Field Modeling and Synchrotron X-ray Image Techniques: *Zhipeng Guo*¹; Manhong Yang¹; Shuo Wang¹; Shoumei Xiong¹; ¹Tsinghua University

8:50 AM

3D Phase-field Simulations of Graphite Growth in Ductile Cast Iron Considering Interaction between Local Expansion and Microsegregation: *Janin Eiken*¹; Bernd Böttger¹; ¹Access

9:10 AM

Dendritic Grain Growth Competition in Directional Solidification of Alloys: A Phase-field Study

: *Damien Tournet*¹; Younggil Song²; Amy Clarke³; Alain Karma²; ¹Los Alamos National Laboratory; ²Northeastern University; ³Colorado School of Mines

9:30 AM

Phase Field Modelling of Snowflakes Growth: *Gilles Demange*¹; Helena Zapolsky¹; Renaud Patte¹; Marc Brunel²; ¹Université de Rouen/GPM/ERAFEN; ²Université de Rouen/CORIA

9:50 AM

Quantitative Phase-Field Crystal Model for Coarsening in Pb-Sn Solid-Liquid Mixtures: Ahmad Nourian Avval¹; *Ebrahim Asadi*¹; ¹University of Memphis

10:10 AM Break

10:25 AM

Pattern Formation during In-variant Three-phase Eutectic Growth: *Abhik Choudhury*¹; ¹Indian Institute of Science

10:45 AM

Pattern Formation during Directional Solidification of the Ternary Eutectic Alloy Al-Ag-Cu under Influence of Velocity Changes: *Johannes Hötzer*¹; Philipp Steinmetz²; Michael Kellner²; Anne Dennstedt³; Amber Genau⁴; Britta Nestler²; ¹University of Applied Science Karlsruhe; ²KIT; ³Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR); ⁴University of Alabama at Birmingham

11:05 AM

Pattern Formation during the Directional Solidification of Ternary Eutectic Alloys and the Influence of the Average Front Undercooling: *Philipp Steinmetz*¹; Johannes Hötzer¹; Michael Kellner¹; Britta Nestler¹; ¹Karlsruhe Institute of Technology

11:25 AM

Three Dimensional Eutectic Colony Morphologies in Multi-component, Multi-phase Alloys: *Arka Lahiri*¹; Abhik Choudhury¹; ¹Indian Institute of Science

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Fundamentals II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Tuesday AM
February 28, 2017

Room: Pacific 21
Location: Marriott Marquis Hotel

Session Chairs: Hendrik Heinz, University of Colorado Boulder; Stefano Corni, University of Modena

8:30 AM Invited

Computational Models of Peptide-Surface Interactions Drawn from Bacterial Display Studies: *Margaret Hurley*¹; Meagan Small¹; Dimitra Stratis-Cullum¹; Deborah Sarkes¹; Justin Jahnke¹; Jessica Terrell¹; Hong Dong¹; ¹US Army Research Laboratory

9:00 AM

Formation of Planer Lipid Bilayers on 2D Materials Assisted by Self-assembled Peptides: *Takakazu Seki*¹; Tomohiro Tanaka¹; Yuhei Hayamizu¹; ¹Tokyo Institute of Technology

9:20 AM Invited

Computational Design of Biological-Inorganic Materials from the Nanoscale: *Hendrik Heinz*¹; ¹University Of Colorado-Boulder

9:50 AM Break

10:10 AM Invited

Atomistic Simulations of the Interaction of Gold Surfaces and Nanoparticles with Amyloidogenic Proteins and Peptides: *Stefano Corni*¹; ¹CNR Istituto Nanoscienze

10:40 AM Invited

Modeling of Nanocomposite Scaffolds and Interfacial Behavior during Tissue Regeneration and Scaffold Degradation: A Multiscale Mechanics Approach: *Dinesh Katti*¹; Anurag Sharma¹; Kalpana Katti¹; ¹North Dakota State University

11:10 AM

Designing Peptides with Antimicrobial Properties using Rules of Induction: *Kyle Boone*¹; Kyle Camarda¹; Candan Tamerler¹; ¹University of Kansas

11:30 AM Invited

Interfacing Biomolecules with Nanomaterials: Structure and Function at the Atomic-scale: *Tiff Walsh*¹; ¹Deakin University

Biological Materials Science — Bones, Teeth and Dental Materials

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Tuesday AM
February 28, 2017

Room: Pacific 15
Location: Marriott Marquis Hotel

Session Chairs: Dwayne Arola, University of Washington; Michael Porter, Clemson University

8:30 AM Invited

Improving the Performance of Dental Restorative Composites: *Jamie Krucic*¹; Dmytro Khvostenko²; Thomas Hilton³; Jack Ferracane³; John Mitchell⁴; ¹UNSW Australia; ²Oregon State University; ³Oregon Health & Science University; ⁴Midwestern University

9:00 AM

Multiscale Experiment and Computational Insight into Mechanical and Electromechanical Behavior of Collagen: Zhong Zhou¹; Dong Qian¹; *Majid Minary*²; ¹University of Texas at Dallas; ²University of Texas at Dallas

9:20 AM

Nanofibrous Composites Enriched with Growth Factors for Tendon-bone Interface Regeneration: *Ece Bayrak*¹; Burak Ozcan¹; Cevat Eriskan¹; ¹TOBB University of Economics and Technology

9:40 AM

Osteoporosis and Fatigue Fracture Prevention by Analysis of Bone Microdamage: *Gerardo Presbitero*¹; David Gutierrez²; David Taylor³; ¹National Autonomous University of Mexico; ²Center for Research and Advanced Studies (Cinvestav), at Monterrey, Mexico; ³Trinity College Dublin

10:00 AM Break

10:15 AM Invited

Spatial Variations in the Rate of Aging of Mineralized Tissues: *Dwayne Arola*¹; W. Yan¹; C. Montoya²; E.A. Ossa²; ¹University of Washington; ²Universidad Eafit

10:45 AM

Time Dependent Deformation Behavior of Aged Dentin: *Carolina Montoya*¹; Alex Ossa¹; Dwayne Arola²; ¹Eafit University; ²University of Washington

11:05 AM

The Geometric Effects of a Woodpecker's Hyoid Apparatus for Stress Wave Mitigation: *Lakiesha Williams*¹; Nayeon Lee¹; Mark Horstemeyer¹; Raj Prabhu¹; Jun Liao¹; Hongjoo Rhee¹; Yossef Hammi¹; Robert Moser²; ¹Mississippi State Univ.; ²US Army Engineering Research and Development Center

11:25 AM

Avoiding Brain Injury: A Structural Role of the Frontal Overhang on the Skull Bone of Woodpeckers: *Jae-Young Jung*¹; Andrei Pissarenko¹; Steven Naleway²; Kathryn Kang¹; Nicholas Yaraghi³; Eric Bushong¹; Mark Ellisman¹; David Kisalius³; Marc Meyers¹; Joanna McKittrick¹; ¹UC San Diego; ²University of Utah; ³UC Riverside

Bulk Metallic Glasses XIV — Structures and Mechanical Properties I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Tuesday AM

Room: 33A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Takeshi Egami, The University of Tennessee; Katharine Flores, Washington University

8:30 AM Keynote

Dynamic Atomic Cooperativity in Liquids and Glasses: *Takeshi Egami*¹; ¹University of Tennessee

9:00 AM Invited

Flexibility Volume as a Universal Structural Parameter to Quantitatively Predict Metallic Glass Properties: *Evan Ma*¹; ¹Johns Hopkins University

9:20 AM Invited

Deformation Induced Heterogeneities in Metallic Glasses: *Robert Maass*¹; ¹University of Illinois at Urbana-Champaign

9:40 AM Invited

Hierarchical Heterogeneities in Bulk Metallic Glasses: Peter Tsai¹; Kelly Kranjc¹; *Katharine Flores*¹; ¹Washington University

10:00 AM Invited

A Study on the Formation and Propagation Behavior of Shear Bands in Metallic Glasses: *Ke-Fu Yao*¹; Guan-Nan Yang¹; Yang Shao¹; ¹Tsinghua University

10:20 AM Break

10:40 AM Invited

An Assessment of Ternary Bulk Metallic Glasses: Correlations between Structure, Glass Forming Ability & Stability: *Kevin Laws*¹; Daniel Miracle²; Dmitri Louzguine-Luzgin³; Larissa Louzguina-Luzgina³; ¹University of New South Wales; ²Air Force Research Laboratory; ³Tohoku University

11:00 AM Invited

High Pressure, High Temperature Structural Study of Zr-based Glasses: *Wojciech Dmowski*¹; Stanislaw Gierlotka²; Yoshihiko Yokoyama³; Takeshi Egami¹; ¹University of Tennessee; ²Institute of High Pressure Physics of the Polish Academy of Sciences; ³Tohoku University

11:20 AM Invited

Effect of Stress on Crystallization Pathways in Metallic Glasses: M. Naeem¹; S. Lan¹; B. Wang¹; Yang Ren²; *Xun-Li Wang*¹; ¹City University of Hong Kong; ²Argonne National Laboratory

11:40 AM

Discovering a Unique Thermal-driven Glass-glass Transition in Metallic Glass: *Qing Du*¹; Xiongjun Liu¹; Qiaoshi Zeng²; En Ma³; Hui Wang¹; Yuan Wu¹; Z.P. Lu¹; ¹University of Science and Technology Beijing; ²Center for High Pressure Science and Technology Advanced Research; ³Johns Hopkins University

Cast Shop Technology — Melting, Energy, and Dross

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Tuesday AM

Room: 1A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Cindy Belt, Metals Energy Management, LLC; Mark Jolly, Cranfield University

8:30 AM Introductory Comments

8:40 AM

Application and Results of Oxipyr Diluted Combustion in Aluminum Furnaces: *Michael Potesser*¹; Johannes Rauch¹; ¹Messer Group

9:05 AM

Case Study of Magnetically-Stirred Casting Furnaces at New Zealand Aluminium Smelters Limited.: *Ray Cook*¹; Marcos Varayud¹; Steve Iijima²; Eishin Takahashi²; ¹New Zealand Aluminium Smelters Limited; ²Zmag, Ltd.

9:30 AM

Energy Efficiency Status-quo of UK Foundries: The “Small-Is-Beautiful” Project: *Mark Jolly*¹; Konstantinos Salonitis¹; Fiona Charnley¹; Peter Ball²; Hamid Mehrabi¹; Emanuele Pagone¹; ¹Cranfield University; ²University of York

9:55 AM Break

10:10 AM

Optimization of Recovery Efficiency for Briquetted Aluminum Chips up to Briquetting Parameters: *Ali Ulus*¹; Hamdi Ekici¹; Erdem Güler¹; ¹Teknik Aluminium

10:35 AM

The Evaluation of Hot Dross Processing Systems: *David Roth*¹; ¹GPS Global Solutions

Ceramic Materials for Nuclear Energy Research and Applications — Fundamental Defect Science in Ceramics and Thermal Transport

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee
Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Tuesday AM
February 28, 2017
Room: Palomar
Location: Marriott Marquis Hotel

Session Chairs: Blas Uberuaga, Los Alamos National Laboratory; Marat Khafizov, Ohio State University

8:30 AM Invited

Radiation Damage on UO_2 and UN: *Lingfeng He*¹; Jian Gan¹; Marquis Kirk²; Beata Tyburska-Pueschel³; Brian Jaques⁴; ¹Idaho National Laboratory; ²Argonne National Laboratory; ³University of Wisconsin-Madison; ⁴Boise State University

9:00 AM

Five-dimensional Representation of Grain Boundary Energies in UO_2 : *Yongfeng Zhang*¹; Timothy Harbison²; Jarin French²; Joseph Carmack³; Evan Hansen²; ¹Idaho National Lab; ²Brigham Young University-Idaho; ³University of Arkansas

9:20 AM

Study of Point and Extended Defects in Fluorite UO_2 with Variable Charges Empirical Potentials: *Aurélien Soulié*¹; Jean-Paul Crocombette¹; Emmanuel Clouet¹; Frederico Garrido¹; ¹Commissariat à l'Énergie Atomique

9:40 AM

The Roles of Surfaces, Chemical Interfaces, and Disorder on Plutonium Incorporation in Pyrochlores: *Romain Perriot*¹; Pratik Dholabhai¹; Blas Uberuaga¹; ¹Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited

Effect of Burn-up on the Thermal Conductivity of Fast Reactor MOX Fuel: *Dragos Staicu*¹; Thierry Wiss¹; Rudy Konings¹; ¹European Commission, Joint Research Centre, Nuclear Safety and Security Directorate

10:50 AM Invited

Thermal Transport Properties of Uranium Dioxide from Atomistic Simulations: *Aleksandr Chernatynskiy*¹; Simon Phillpot²; ¹Missouri Science and Technology University; ²University of Florida

11:20 AM

Molecular Dynamics Simulations of Thermal Transport in Uranium Dioxide with Intrinsic Defects and Fission Products: *Xiang-Yang Liu*¹; M.W.D. Cooper¹; K.J. McClellan¹; J.C. Lashley¹; D.D. Byler¹; B.D.C. Bell²; R.W. Grimes²; C.R. Stanek¹; D.A. Andersson¹; ¹Los Alamos National Lab; ²Imperial College London

11:40 AM

Anisotropic Thermal Conductivity and Interface Resistance in Pyrolytic Carbon Coated Zirconia Particles: *Yuzhou Wang*¹; David Hurley²; Erik Luther³; Miles Beaux³; Venkateswara Rao³; Igor Usov³; Marat Khafizov¹; ¹The Ohio State University; ²Idaho National Laboratory; ³Los Alamos National Laboratory

Characterization of Materials through High Resolution Coherent Imaging — Coherent Imaging and Phase Contrast I

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Ross Harder, Argonne National Lab; Xianghui Xiao, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Saryu Fensin, Los Alamos National Laboratory; Brian Abbey, LaTrobe University; Ana Diaz, Paul Scherrer Institut

Tuesday AM
February 28, 2017
Room: 25B
Location: San Diego Convention Ctr

Session Chair: Xianghui Xiao, Argonne National Laboratory

8:30 AM

Biomimetic $CaCO_3$ Complex Morphologies Studied by Coherent X-ray Diffraction Imaging: *Yuriy Chushkin*¹; Thomas Beuvier²; Federico Zontone¹; Oxana Cherkas²; Alain Gibaud²; ¹European Synchrotron Radiation Facility; ²Université du Maine

9:00 AM

Biological and Bio-inspired Multifunctional Structural Materials: *Ling Li*¹; ¹Harvard University

9:30 AM

Biological Imaging Using Combined Ptychography and X-ray Fluorescence: *Karolina Stachnik*¹; Martin Warmer¹; Pawel Wrobel²; Felix Marschall³; Istvan Mohacsi³; Pontus Fischer¹; Ismo Vartiainen⁴; Christian David³; Marek Lankosz²; Alke Meents¹; ¹Deutsches Elektronen-Synchrotron DESY; ²AGH University of Science and Technology; ³Paul Scherrer Institut; ⁴University of Eastern Finland

9:50 AM

Speckle-based X-ray Imaging at Diamond Light Source: *Hongchang Wang*¹; Yogesh Kashyap¹; Kawal Sawhney¹; ¹Diamond Light Source

10:20 AM Break

10:40 AM

Real-time Direct and Diffraction Hard X-ray Imaging of Ultra-fast Processes: *Alexander Rack*¹; Margie Olbinado¹; Mario Scheel²; Jörg Grenzer²; Andreas Danilewsky⁴; ¹ESRF; ²Synchrotron Soleil; ³Helmholtz-Zentrum Rossendorf; ⁴Albert-Ludwigs-University Freiburg

11:20 AM

Some Recent Advances in the Theory and Modeling of Phase Contrast Imaging: *John Barber*¹; ¹Los Alamos National Laboratory

11:50 AM

Nanoscale 4D Microstructural Evolution of Precipitates in Aluminum Alloys Using Transmission X-Ray Microscopy (TXM): *C. Shashank Kaira*¹; S.S. Singh¹; C. Kantzos¹; A. Kirubanandham¹; V. De Andrade²; F. De Carlo²; Nikhilesh Chawla¹; ¹Arizona State University; ²Argonne National Lab

Characterization of Minerals, Metals, and Materials — Alloys

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Tuesday AM Room: 31B
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Eren Kalay, METU; Juan Escobedo-Diaz, University of New South Wales-Canberra

8:30 AM

Characterization of Surface Roughness of Laser Deposited Titanium Alloy and Copper Using AFM: *Mutiu Erinosh*¹; Esther Akinlabi¹; ¹University of Johannesburg

8:50 AM

Contribution of Phosphorus Addition to Strength after Intercritical Hot-rolling in HSLA Steels: *Yan Li*¹; Wei Ding¹; Zengwu Zhao¹; ¹Inner Mongolia University of Science and Technology

9:10 AM

Creation of Thermally Stable Precipitate Structures in a Ni-Base Superalloy through Compositional Modification: *Donald McAllister*¹; Andrew Deter²; Richard DiDomizio²; Rongpei Shi¹; Yunzhi Wang¹; Michael Mills¹; ¹The Ohio State University; ²GE Global Research

9:30 AM

Characterizing γ' Shape Evolution in Nickel-base Superalloys Using Lower Order Moment Invariants: *Ryan Harrison*¹; Patrick Callahan²; Tresa Pollock²; Marc De Graef¹; ¹Carnegie Mellon University; ²University of California, Santa Barbara

9:50 AM

Developing Al-Sm Alloys for Structural Applications: *Gokhan Polat*¹; Eren Kalay¹; ¹METU

10:10 AM Break

10:25 AM

Microstructural Characterization of Oxide Layers Formed on Fe-Cr-Al-steels during the Exposure to Heavy Liquid Metals: *Miroslav Popovic*¹; Alan Bolind¹; Peter Hosemann¹; Mark Asta¹; Jan Schroers²; ¹UC Berkeley; ²Yale University

10:45 AM

Investigating the Anisotropic Behaviour of Lean Duplex Stainless Steel 2101: *Ali Ameri*¹; Juan Escobedo-Diaz¹; Mahmud Ashraf¹; Md. Quadir¹; ¹University of New South Wales-Canberra

11:05 AM

Microstructural Investigation and Impact Testing of Additive Manufactured Ti-6Al-4V: Danielle Austin¹; Ali Ameri¹; Daniel East²; Juan P. Escobedo-Diaz¹; A.D. Brown¹; M.Z. Quadir³; PJ Hazell¹; Sammy Chan⁴; Matt Bevan⁴; ¹School of Engineering and Information Technology, UNSW Australia; ²Manufacturing Flagship, CSIRO Clayton; ³Microscopy and Microanalysis Facility (MMF), John de Laeter Centre (JdLC), Curtin University; ⁴UNSW Australia

11:25 AM

Net Shaping of Steel-Tungsten Metal Hybrid via Binder Jet Additive Manufacturing: *Amy Elliott*¹; Derek Siddel¹; Christopher Shafer¹; ¹Oak Ridge National Lab

11:45 AM

Texture Evolution of Binary Mg-Gd Alloys during Extrusion: *Aidin Imandoust*¹; Haitham El Kadiri²; ¹Mississippi State University; ²Mississippi State University

12:05 PM

Thermo Chemical Nitriding of Ti6Al4V Alloy: *Farid Siyahjani*¹; ¹Istanbul Technical University

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Materials Surfaces, Interfaces, and Electrochemistry

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Tuesday AM Room: 11A
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Ab-initio Description of Oxides in an Electrochemical Environment: *Mira Todorova*¹; Anoop Vatti¹; Suhyun Yoo¹; Joerg Neugebauer¹; ¹Max-Planck-Institut fuer Eisenforschung GmbH

9:00 AM

Computational Discovery of Highly Active Catalysts to Enhance Electrochemical Reactions in Li-O₂ Batteries: *Jianjun Liu*¹; ¹Shanghai Institute of Ceramics, Chinese Academy of Sciences

9:20 AM Invited

The Electrostatic Double Layer of Pt/Water Interfaces from First Principles Molecular Dynamics: *Clotilde Cucinotta*¹; ¹Trinity College

9:50 AM Invited

Metal-Organic Frameworks for Gas Capture and Storage: Computational Discovery and Experimental Validation: *Donald Siegel*¹; ¹University of Michigan

10:20 AM Break

10:35 AM

Machine Learning the Atomistic “Building Blocks” of Grain Boundary Systems: *Conrad Rosenbrock*¹; Gus Hart¹; Eric Homer¹; ¹Brigham Young University

10:55 AM

A Theoretical Study of Interfaces between Transition Metals and a-C:H: Matous Mrovec¹; *Srinivasan Rajagopalan*²; Davide Di Stefano¹; Christian Elsaesser¹; ¹Fraunhofer Institute for Mechanics of Materials IWM; ²ExxonMobil Research and Engineering Company

11:15 AM Invited

Computational Materials Discovery: From Reduced Pt Catalysts to Lightweight Alloys: *Houlong Zhuang*¹; Alexander Tkalych¹; Mohan Chen¹; Emily Carter¹; ¹Princeton University

11:45 AM

High-throughput Screening on Relationship between Selectivity and Working Capacity of Porous Materials for Propylene/Propane Adsorptive Separation: *Byung Chul Yeo*¹; Sang Soo Han¹; ¹Korea Institute of Science and Technology

12:05 PM

A Study on the Effects of Temperature and Composition on the Templated Two-Phase Growth of a Thin Film by the Means of Computer Simulation: *Xiao Lu*¹; Jian-Gang Zhu²; David Laughlin²; Jingxi Zhu¹; ¹Sun Yat-sen University-Carnegie Mellon University Joint Institute of Engineering.; ²Carnegie Mellon University

Computational Thermodynamics and Kinetics — Grain Boundaries and Defects I

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Tuesday AM
February 28, 2017

Room: 11B
Location: San Diego Convention Ctr

Session Chairs: Elizabeth Holm, Carnegie Mellon University; James Morris, Oak Ridge National Laboratory

8:30 AM Invited

MPMC Discrete Thermodynamic Simulations of Grain Growth in Nanotwinned Polycrystalline Films: *Elizabeth Holm*¹; Philip Goins¹; ¹Carnegie Mellon University

9:00 AM

Construction of Grain Boundary “Phase” Diagrams with Atomistic Simulation: *Shengfeng Yang*¹; Naixie Zhou¹; Jian Luo¹; ¹University of California, San Diego

9:20 AM

Grain Growth in Thin Films as a Truly Three-dimensional Problem: A Simulation Study: *Dana Zöllner*¹; Ahu Öncü¹; ¹Otto von Guericke University Magdeburg

9:40 AM

Interaction of Shear-coupled Grain Boundary Motion with Crack Studied by Molecular Dynamics Simulations: Aramfard Mohammad¹; *Chuang Deng*¹; ¹University of Manitoba

10:00 AM Break

10:15 AM Invited

Stochastic Grain Boundary Dynamics in a DSC Model for Shear Coupling: Jian Han¹; Vaclav Vitek¹; *David Srolovitz*¹; ¹University of Pennsylvania

10:45 AM

A Universal Discrete Dislocation Model for Thermal Activation and Diffusion-assisted Climb: Run Zhu¹; *Srinath Chakravarthy*¹; ¹Northeastern University

11:05 AM

Non-Schmid Effects on Dislocation Core Structure and Influence on Dislocation Mobility in Titanium: *Max Poschmann*¹; Daryl Chrzan¹; Mark Asta¹; ¹UC Berkeley

11:25 AM

A Dislocation Density Approach to Determine Pipe Diffusivity: *Chaoyi Zhu*¹; Tyler Harrington¹; Kenneth Vecchio¹; ¹UC San Diego

11:45 AM

Developing the Third Generation of Calphad Databases - Modelling Al as a Case Study: *Sedigheh Bigdeli*¹; Alber Glensk²; Blazej Grabowski²; Alexandra Khvan³; Huahai Mao¹; Malin Selleby¹; ¹KTH Royal Institute of Technology; ²Max-Planck-Institut für Eisenforschung GmbH; ³National University of Science and Technology MISIS

Defects and Properties of Cast Metals — Properties II & Hot Tearing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Tuesday AM
February 28, 2017

Room: 23A
Location: San Diego Convention Ctr

Session Chairs: Hongbiao Dong, University of Leicester; Daan Maijer, The University of British Columbia

8:30 AM Introductory Comments: Properties II

8:35 AM Invited

Study of The Species Macro-segregation in A356 Wheel Casting: *Pan Fan*¹; Andre Phillion²; Steven Cockcroft¹; Daan Maijer¹; Carl Reilly¹; Lu Yao¹; ¹University of British Columbia; ²McMaster University

8:55 AM Invited

The Mechanism of a Rapidly Solidified Structure in Spray Forming: *Hani Henein*¹; ¹University of Alberta

9:15 AM

Update on Bifilms - The Fundamental Defect in Cast Metals.: *John Campbell*¹; ¹University of Birmingham

9:35 AM

4D Synchrotron X-ray Imaging of Magnetically Controlled Al Alloy Solidification: *Biao Cai*¹; Andrew Kao²; K. Pericleous²; Peter Lee¹; ¹University of Manchester; ²University of Greenwich

9:55 AM

In-situ Synchrotron X-ray Imaging of Inter-dendritic Fluid Flow Using a Model Al-Pb Alloy: *Enzo Liotti*¹; Andrew Lui¹; André Phillion²; Patrick Grant¹; ¹University of Oxford; ²McMaster University

10:15 AM Break

10:35 AM Introductory Comments: Hot Tearing

10:40 AM Keynote

Prediction of Hot Tearing in Steel and Aluminum alloys: *Andre Phillion*¹; ¹McMaster University

11:00 AM Keynote

X-ray Imaging of Solidification Cracking during Welding of Steel: *Hongbiao Dong*¹; ¹University of Leicester

11:20 AM

Hot-tearing of Multicomponent Al-Cu Alloys Based on Casting Load Measurements in a Constrained Permanent Mold: *Adrian Sabau*¹; Seyed Seyed Mirmiran²; Christopher Gaspie²; Shimin Li³; Diran Apelian³; Amit Shyam¹; J. Haynes¹; Andres Rodriguez⁴; ¹Oak Ridge National Laboratory; ²Fiat Chrysler Automobiles North America; ³Worcester Polytechnic Institute; ⁴Nemak Monterrey

11:40 AM

Semi-solid Mechanical Behaviour and Hot-tearing of a 7050 Alloy: Experimental Analysis and Thermomechanical Modeling: *Kjerstin Ellingsen*¹; Arne Nordmark¹; Mohammed M'Hamdi¹; ¹SINTEF

12:00 PM

The Nucleation and Growth of Hot Tearing during Strip Casting Steel: *Wanqiang Xu*¹; Michael Ferry¹; ¹The University of New South Wales

12:20 PM

Investigation of Hot Tearing A380.1 In “T Shape Mold”: *Muhammet Uludag*¹; Remzi Cetin²; Derya Dispinar³; Murat Tiryakioglu⁴; ¹Selcuk University; ²Halic University; ³Istanbul University; ⁴University of North Florida

TUESDAY AM

TECHNICAL PROGRAM

Deformation and Transitions at Interfaces — Meso/ Microstructural Scale Mechanical Behavior of Polycrystals I

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Tuesday AM Room: 23B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

New Insights into Plasticity at Grain Boundaries by Nano- and Micromechanics: *Christoph Kirchlechner*¹; Nataliya Malyar¹; Nicolas Peter¹; Gerhard Dehm¹; ¹Max-Planck-Institut für Eisenforschung GmbH

8:50 AM Invited

Grain Boundary-Mediated Deformation Mechanisms Accommodating Mechanical Grain Growth in Nanocrystalline Metals: *Jason Trelewicz*¹; ¹Stony Brook University

9:10 AM Invited

Studying the Mechanical Response of Regions within Grains and Near Grain Boundaries Using Spherical Nanoindentation: *Siddhartha Pathak*¹; ¹University of Nevada, Reno

9:30 AM

Influence of Dislocation Density on Plastic Deformation near Grain Boundary in Alpha-titanium Studied by Nanoindentations and Modeling: *Yang Su*¹; Philip Eisenlohr¹; Thomas Bieler¹; Martin Crimp¹; ¹Michigan State University

9:50 AM Invited

Deformation Mechanisms of Single and Polycrystalline Zirconia Nanopillars: Ning Zhang¹; *Mohsen Asle Zaeem*¹; ¹Missouri University of Science and Technology

10:10 AM Break

10:30 AM Invited

Mechanical Characterization of Grain Boundary Regions Using Spherical Nanoindentation: *Shraddha Vachhani*¹; Roger Doherty²; Surya Kalidindi³; ¹Hysitron, Inc; ²Drexel University; ³Georgia Institute of Technology

10:50 AM Invited

Phases and Phase Transformations at Interfaces: Tim Frolov¹; Mark Asta²; *Y. Mishin*³; ¹Lawrence Livermore National Laboratory; ²University of California - Berkeley; ³George Mason University

11:10 AM Invited

Atomistic Simulations of Transient Testing in Nanocrystalline Al: *Maxime Dupraz*¹; Zhen Sun²; Christian Brandl³; Helena Van Swygenhoven²; ¹Paul Scherrer Institut; ²Paul Scherrer Institut & EPFL; ³Karlsruhe Institute of Technology

11:30 AM

Stabilization of Nanocrystalline Alloys at High Temperatures via Utilizing High-entropy Grain Boundary Complexions: *Naixie Zhou*¹; Tao Hu¹; Mingde Qin¹; Jiajia Huang¹; Jian Luo¹; ¹UCSD Nanoengineering

11:50 AM Invited

Observation and Characterization of Grain Boundary Complexions in Hot-pressed Boron Carbide: *Kristopher Behler*¹; Scott Walck¹; Christopher Marvel²; Jerry LaSalvia³; Martin Harmer²; ¹U.S. Army Research Laboratory (SURVICE Engineering); ²Lehigh University; ³U.S. Army Research Laboratory

12:10 PM Invited

Complexion Transitions in Metals: Unique Opportunities for Mechanical Behavior and Materials Processing: *Timothy Rupert*¹; ¹University of California, Irvine

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Electromigration, Thermomigration and Electrochemical Behaviors

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Tuesday AM Room: 30E
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: John W Elmer, Lawrence Livermore National Laboratory; Yan Li, Intel Corporation

8:30 AM Invited

The Grain Refinement of Metal Alloy by Electromigration: PinChu Liang¹; *Kwang-Lung Lin*¹; ¹National Cheng Kung University

8:50 AM

In Situ Characterization of Electromigration Damage in Single Crystal and Bi-crystal Pure Tin Solder Joints: *Marion Branch Kelly*¹; Antony Kirubanandham¹; Nikhilesh Chawla¹; ¹Arizona State University

9:10 AM

DZ* Value of the Sn Diffuser in Cu₆Sn₅ under Various Current Densities: Cheng-Hsien Yang¹; *Pei-Tzu Lee*¹; Han-Lin Chung¹; Cheng-En Ho¹; ¹Yuan Ze Univeristy

9:30 AM

Study of Electromigration Mechanism in Pb-free Tricrystals Ball Grid Array Solder Joints: *Yu Tian*¹; Jing Han¹; Fu Guo¹; ¹Beijing University of Technology

9:50 AM

Intermetallic Compound Movement Behavior of Cu Reinforced Composite Solder under Current Stressing: Fu Guo¹; *Yan Wang*¹; Jing Han¹; ¹Beijing University of Technology

10:10 AM Break

10:30 AM

Effective Suppression of Thermomigration-induced Cu Dissolution in Micro-scale Pb-free Interconnects by Ag₃Sn interlayer: *Gong-Lin Hong*¹; Yu-Fang Lin¹; Fan-Yi Ouyang¹; ¹Dept. of Engineering and System Science, National Tsing Hua University

10:50 AM

Corrosion Resistance for High Reliability Devices: *Tsan-Hsien Tseng*¹; Albert T. Wu¹; ¹National Central University

11:10 AM

Failure Mechanism and Reliability of Ag-4Pd Alloy Wire Bonded on Al-Si Metallization under High Temperature Storage and Thermal Cycle Tests in Corrosive Environments: *Yan Wen Tsau*¹; Jui-Nung Wang¹; Fan-Yi Ouyang¹; ¹National Tsing Hua University

Energy Materials 2017: Energy and Environmental Issues in Materials Manufacturing and Processing — Opportunities in the Steel Industry

Sponsored by: Chinese Society for Metals, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Subodh Das, Phinix, LLC; Zhancheng Guo, University of Science and Technology Beijing; Minfang Han, China University of Mining and Technology, Beijing; Teruhisa Horita, AIST; Elsa Olivetti, Massachusetts Institute of Technology; Xingbo Liu, West Virginia University

Tuesday AM
February 28, 2017

Room: 14B
Location: San Diego Convention Ctr

Session Chair: Subodh Das, Phinix, LLC

8:30 AM Keynote

Green Development is the Future Direction for Chinese Steel Industry: *Chunxia Zhang*¹; Fangqin Shanguan¹; Haifeng Wang¹; Shourong Zhang²; Ruiyu Yin¹; ¹Central Iron & Steel Research Institute; ²Wuhan Iron and Steel (Group) Co. Ltd (WISCO)

9:00 AM Invited

The Combined Cycle Power Plant (CCPP) Used In Energy Conversion of Steel Smelting Production: *Chunqing Tan*¹; Xuezhi Dong¹; Yixiang Yuan¹; ¹Chinese Academy of Sciences

9:30 AM

Green Manufacturing Process of Shougang Jingtang Steel Plant: *Fuming Zhang*¹; Jianxin Xie¹; ¹Shougang Group

9:50 AM Invited

The Introduction and Process Optimization Research of Oxygen Blast Furnace Ironmaking Technology: *Qingguo Xue*¹; Zeshang Dong¹; Jingsong Wang¹; Zeyi Jiang¹; Haibin Zuo¹; Xuefeng She¹; Guang Wang¹; ¹University of Science and Technology Beijing

10:10 AM Break

10:30 AM

Prediction and Optimal Scheduling of Byproduct Gases in Steel Mill: Trends and Challenges: *Xiancong Zhao*¹; *Hao Bai*¹; Qi Shi¹; Zhancheng Guo¹; ¹State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

10:50 AM

Processing Non-Oriented Electrical Steels Using Inclined/Skew Rolling Schemes: *Youliang He*¹; Mehdi Sanjari¹; Erik J. Hilinski²; ¹Natural Resources Canada; ²Tempel Steel Co.

11:10 AM Invited

A Possible Way for Efficient Utilization of Coal Energy: The Combined Process of Ironmaking with Gasoline Synthesis and Electricity Generation: *Zhancheng Guo*¹; ¹University of Science and Technology Beijing

11:30 AM

Waste Energy Recovery Technology of Iron and Steel Industry in China: *Xu Zhang*¹; *Hao Bai*¹; Juxian Hao¹; Zhancheng Guo¹; ¹State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Energy Materials 2017: Materials for Energy Conversion with Emphasis on SOFC — Session III

Sponsored by: Chinese Society for Metals
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Teruhisa Horita, AIST; Minfang Han, China University of Mining and Technology, Beijing

Tuesday AM
February 28, 2017

Room: 12
Location: San Diego Convention Ctr

Session Chairs: Soumendra Basu, Boston University; Teruhisa Horita, AIST

8:30 AM Invited

New Materials for Solid Oxide Fuel Cells: *Shriram Ramanathan*¹; ¹Purdue University

8:55 AM Invited

Investigation on Cathode Interlayer and Electrolyte for Improving Electric Power Efficiency of SOFCs: *Takaaki Somekawa*¹; Yoshio Matsuzaki¹; Yuya Tachikawa²; Hiroshige Matsumoto²; Shunsuke Taniguchi²; Kazunari Sasaki²; ¹Tokyo Gas Co., Ltd.; ²Kyushu University

9:20 AM Invited

Poisoning Mechanism and Performance Degradation at SOFC Cathode/Electrolyte Interfaces: *Teruhisa Horita*¹; Masahiro Ishiyama¹; Katherine Develos-Bagarinao¹; Haruo Kishimoto¹; Katsuhiko Yamaji¹; ¹AIST

9:40 AM

Phase Field Modelling of Microstructure and Conductivity Evolution of SOFC Electrodes: *Yinkai Lei*¹; Tianle Cheng¹; Youhai Wen¹; ¹National Energy Technology Laboratory

10:00 AM Break

10:20 AM

Reactive Synthesis of Spinel Contact Layers with Metallic Precursor Powders: *Jiahong Zhu*¹; Yutian Yu¹; ¹Tennessee Technological University

10:40 AM Invited

Electrophoretically Deposited Copper Manganese Spinel Coatings for Interconnections in Solid Oxide Fuel Cells: *Zhihao Sun*¹; Srikanth Gopalan¹; Uday Pal¹; *Soumendra Basu*¹; ¹Boston University

11:05 AM

Synthesis and Characterisation of Perovskite Type Anode Material and Its Tape Casting for IT-SOFC Application: *Subhajit Pan*¹; Ramesh Biswal¹; Koushik Biswas¹; ¹IIT Kharagpur

11:25 AM Invited

Modified SOFC Cermet Anodes for Improved Catalysis at High Fuel Utilization: *Paul Gasper*¹; *Yanchen Lu*¹; *Uday Pal*¹; *Soumendra Basu*¹; *Srikanth Gopalan*¹; ¹Boston University

Energy Materials 2017: Materials for Gas Turbines — Creep and Failure

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Fergus, Auburn University; Ji Zhang, China Iron and Steel Research Institute Group

Tuesday AM
February 28, 2017

Room: 13
Location: San Diego Convention Ctr

Session Chair: Ying Zhang, Tennessee Technological University

8:30 AM Invited

Alloy Development for Promoting γ/γ' Microstructural Stability and Creep Properties of Multi-component Co-base Superalloys: Wendao Li¹; Haijing Zhou¹; Song Lu¹; Fei Xue²; *Qiang Feng*¹; ¹University of Science and Technology Beijing; ²Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

9:00 AM

Rafting Prediction Criterion and Creep Life for Nickel-based Single Crystal Superalloys under Multiaxial Stress States: *Zhixun Wen*¹; Huan Yang¹; Zhufeng Yue¹; Chengjiang Zhang¹; ¹Northwestern Polytechnical University

9:20 AM

Effect of C Addition on Creep and Microstructure Stability of Lamellar TiAl Alloys: *Xiwen Zhang*¹; Ji Zhang¹; Jing Zhu²; ¹China Iron and Steel Research Institute Group; ²Tsinghua University

9:40 AM

Revisiting the Sources of Creep Dislocations in Ni-base, Single Crystal Superalloys: *Farangis Ram*¹; Zhuangming Li²; Zailing Zhu³; Masood Hafez Haghghat²; Stefan Zaeferrer²; Dierk Raabe²; Roger Reed³; ¹Carnegie Mellon University; ²Max-Planck Institut für Eisenforschung GmbH; ³University of Oxford

10:00 AM Break

10:20 AM

Development Activities for the Manufacture of Rotor Forgings for Turbines in High Efficiency Power Plants: *Nikolaus Blaes*¹; B. Donth²; Andreas Diwo²; D. Bokelmann¹; M. Baues²; ¹Saarschmiede GmbH Freiformschmiede; ²Saarschmiede GmbH Freiformschmiede

10:40 AM

Mechanisms of Fracture in Laser Powder Bed Additive Manufactured Superalloys: *Håkan Brodin*¹; Per Sandahl²; ¹Siemens Industrial Turbomachinery AB; ²Exova AB

11:00 AM

Wang: High Temperature Oxidation of the New Type γ' -strengthened Cobalt-base Superalloys: *Lei Wang*¹; Yang Liu¹; Bo Gao²; Xiu Song¹; Shuyu Yang²; ¹Northeastern University; ²Shenyang University

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Technological Innovation for Efficiency Enhancements in Energy

Sponsored by: Chinese Society for Metals

Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Tuesday AM
February 28, 2017

Room: 14A
Location: San Diego Convention Ctr

Session Chair: Indranil Roy, Schlumberger

8:30 AM Keynote

Technological Innovation and Creative Destruction in the Energy Sector: *Ram Shenoy*¹; ¹RBR Group and Department of Energy

9:00 AM Keynote

Interfacial Engineering for Efficiency Enhancements in Energy-Water-Food: *Kripa Varanasi*¹; ¹Massachusetts Institute of Technology

9:30 AM Keynote

Shell's Game Changer - Delivering Disruptive Technologies through Partnership in Innovation: *Hani Elshahawi*¹; ¹Shell

10:00 AM Break

10:20 AM Keynote

Accelerated Materials Innovation – Technology Enablers for enhanced reliability, efficiency and production in Oil & Gas: *Partha Ganguly*¹; ¹Baker Hughes

10:50 AM Keynote

Immigration Trends in the Energy Sector and Options for Professionals: *Rehan Alimohammad*¹; ¹Alimohammad & Zafar, PLLC

11:20 AM Panel Discussion Topic: Innovations and Materials as Technology Enablers for Improving Cost & Performance Efficiencies in Energy

Panelists: Ram Shenoy, Kripa Varanasi, Hani Elshahawi, Partha Ganguly

Moderator: Indranil Roy

Environmentally Assisted Cracking: Theory and Practice — Hydrogen Embrittlement II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

Tuesday AM
February 28, 2017

Room: 31A
Location: San Diego Convention Ctr

Session Chairs: John Scully, University of Virginia; Brian Somerday, Southwest Research Institute

8:30 AM Invited

Quantification of Hydrogen-Metal Interactions in Engineering Alloys in Confined Spaces: Challenges and Opportunities: *John Scully*¹; ¹University of Virginia

9:10 AM

The Effect of Microstructural Variation on Hydrogen Environment-Assisted Cracking Susceptibility of Monel K-500: *Zachary Harris*¹; Brendy Rincon Troconis¹; John Scully¹; James Burns¹; ¹University of Virginia

9:30 AM

Factors Causing Hydrogen Embrittlement of Cold-drawn Pearlitic Steel Fractured under Elastic/Plastic Region: *Ryosuke Konno*¹; Toshiyuki Manabe²; Naoki Matsui²; Daisuke Hirakami²; Kenichi Takai¹; ¹Sophia University; ²Nippon Steel & Sumitomo Metal Corporation

9:50 AM Break

10:00 AM Invited

Factors Governing Hydrogen-Assisted Intergranular Cracking: Ni as a Model System: *Brian Somerday*¹; Samantha Lawrence¹; Zachary Harris²; ¹Sandia National Laboratories; ²University of Virginia

10:40 AM

Stacking Fault Energy Based Alloy Identification for Hydrogen Compatibility: *Paul Gibbs*¹; Patricia Hough¹; Konrad Thurmer¹; Brian Somerday²; Christopher San Marchi¹; Jonathan Zimmerman¹; ¹Sandia National Laboratories; ²Southwest Research Institute

11:00 AM

Hydrogen Embrittlement Mediated by Reaction between Dislocation and Grain Boundary in Iron: *Liang Wan*¹; Wen-Tong Geng¹; Jun-Ping Du²; Akio Ishii¹; Hajime Kimizuka¹; Shigenobu Ogata¹; ¹Osaka University; ²Kyoto University

11:20 AM

Role of Hydrogen on Metal Plasticity: An Ab-Initio Study: *Pulkit Garg*¹; Ilaksh Adlakha¹; Kiran Solanki¹; ¹SEMTE

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Relationships Among Processing, Microstructure, and Fatigue Properties

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday AM
February 28, 2017

Room: 23C
Location: San Diego Convention Ctr

Session Chair: Ashley Spear, University of Utah

8:30 AM Keynote

Research Directions in Materials Engineering and Fatigue: An NSF Engineering Perspective: *Alexis Lewis*¹; ¹National Science Foundation

9:10 AM

Low Cycle Fatigue Behavior of Direct Metal Laser Sintered Inconel Alloy 718: Experiments and Crystal Plasticity Modeling: *Marko Knezevic*¹; Saeede Ghorbanpour¹; ¹University of New Hampshire

9:30 AM

The Effect of Grain Boundaries on Short Crack Growth Behavior in WE43 Magnesium: *Jacob Adams*¹; Wayne Jones¹; John Allison¹; ¹University of Michigan

9:50 AM

Enhancing Fatigue Life through Ultrasonic Shot Peening: *Garrett Pataky*¹; Vivic Harrinanan¹; ¹Clemson University

10:10 AM Break

10:30 AM

Development of Advanced Nickel-Titanium-Hafnium Alloys for Tribology Applications: *Sean Mills*¹; Ronald Noebe²; Christopher DellaCorte²; Aaron Stebner¹; ¹Colorado School of Mines; ²NASA Glenn Research Center

10:50 AM

Effects of Alloying and Microstructure on Ultrasonic Fatigue Behavior of Binary Ti-Al Alloys: *Qianying Shi*¹; Sinsar Hsieh¹; J. Wayne Jones¹; John Allison¹; ¹University of Michigan

11:10 AM

Low Cycle Fatigue Properties of a CoCrFeMnNi Equiatomic High-entropy Alloys: *Tsung-Ruei Sui*¹; E-Wen Huang¹; Jien-Wei Yeh²; ¹National Chiao Tung University; ²National Tsing Hua University

Friction Stir Welding and Processing IX — High Temperature Applications II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Tuesday AM
February 28, 2017

Room: 9
Location: San Diego Convention Ctr

Session Chairs: Murray Mahoney, Retired from Rockwell Scientific; Hidetoshi Fujii, Osaka University

8:30 AM Introductory Comments

8:35 AM Invited

Evaluation of Ausformed H13 Tool Steel for FSW Tools: *Murray Mahoney*¹; John Baumann²; Anthony Reynolds³; ¹Retired from Rockwell Scientific; ²Boeing; ³University of South Carolina

8:55 AM Invited

Development of Friction Stir Processing for Repair of Nuclear Dry Cask Storage System Canisters: *Kenneth Ross*¹; Ben Sutton²; Glenn Grant¹; Gary Cannell³; Greg Frederick²; Robert Couch²; ¹Pacific Northwest National Laboratory; ²Electric Power Research Institute; ³FLUOR

9:15 AM Invited

Friction-Stir-Processing Microstructure Improvement Related to Fatigue-strength and Charpy-absorbed-Energy Increase of TIG-welded SS400 Steels: *Kazuhiro Ito*¹; Tatsuya Okuda¹; Hiroki Izumi¹; Makoto Takahashi¹; Kazuyuki Kohama¹; Hajime Yamamoto¹; Hidetoshi Fujii¹; ¹Osaka University

9:35 AM Invited

Performance of Tungsten-based Alloy Tool Developed for Friction Stir Welding of Austenitic Stainless Steel: *Yutaka Sato*¹; Ayuri Tsuji²; Tomohiro Takida²; Akihiko Ikegaya²; Akinori Shibata³; Hiroshi Ishizuka³; Hideki Moriguchi³; Shinichi Susukida¹; Hiroyuki Kokawa¹; ¹Tohoku University; ²Allied Material; ³Nippon ITF

9:55 AM Break

10:10 AM

Microstructure and Mechanical Properties of Beta-type Ti-15V-3Cr-3Al-3Sn Alloy Joints Fabricated by Friction Stir Welding: *Huihong Liu*¹; Hidetoshi Fujii¹; ¹Joining and Welding Research Institute, Osaka University, Japan

10:30 AM Invited

Effect of Hydrogenation on Superplastic Behavior of Nugget in Friction Stir Welded Ti-6Al-4V Joints: *Z.Y. Ma*¹; L.H. Wu¹; B.L. Xiao¹; ¹Institute of Metal Research, Chinese Academy of Sciences

10:50 AM

Investigation of Process Parameters for Friction Stir Processing (FSP) of Ti-6Al-4V Alloy: *Sandip Chougule*¹; Digvijay Sheed¹; Rajkumar Singh¹; Nithyanand Prabhu²; Bhagwati Kashyap²; Kaushal Jha³; ¹Bharat Forge Ltd.; ²Indian Institute of Technology, Bombay; ³Bhabha Atomic Research Centre, Mumbai

TUESDAY AM

TECHNICAL PROGRAM

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Structure-Property-Performance Correlations: Carbon Nanotubes, Boron Nitride and Biomaterials

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Tuesday AM Room: 33B
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Seung Kang, Qualcomm Incorporated; Roger Narayan, UNC/NCSU

8:30 AM Introductory Comments

8:40 AM Invited

Multifunctional Carbon Nanotube Films and Composites: Liwen Zhang¹; Xin Wang¹; Qingwen Li²; *Yuntian Zhu*¹; ¹North Carolina State University; ²Suzhou Institute of Nanotechnology and Nanobionics

9:10 AM Invited

Boron-Filled Hybrid Carbon Nanotubes: *Rajen Patel*¹; Alokik Kanwal²; Tseng-Ming Chou³; Joseph Lefebvre⁴; Frank Owens⁵; David Apigo²; Zafar Iqbal²; ¹Picatinny Arsenal, NJ; ²NJIT; ³SIT; ⁴Hysitron; ⁵Hunter College

9:40 AM

Direct Conversion of h-BN into Phase Pure c-BN and Size Dependent Raman Spectroscopy of Nano and Micro Structures, and Thin Films of c-BN: *Ariful Haque*¹; Anagh Bhaumik¹; Jagdish Narayan¹; ¹NCSU

10:00 AM Break

10:15 AM Invited

Catalyzed BNNT Growth on Metallic Substrates: Vijayesh Kumar¹; Debrupa Lahiri¹; *Indranil Lahiri*¹; ¹Indian Institute of Technology Roorkee

10:45 AM

Remarkable Conversion of p to n Type Reduced Graphene Oxide (rGO) by Laser Annealing Technique at Room Temperature and Pressure: *Anagh Bhaumik*¹; Ariful Haque¹; Jagdish Narayan¹; ¹North Carolina State University

11:05 AM Invited

Preparation and Characterization of Ceramic Scaffolds: *Joanna McKittrick*¹; Steven Naleway¹; Michael Frank¹; Jae-Young Jung¹; Frances Su¹; ¹University of California, San Diego

11:35 AM Invited

Development of Biodegradable Magnesium Alloys: *Kwang Seon Shin*¹; Ahmad Bahmani¹; ¹Seoul National University

Fundamental Aspects and Modeling Powder Metal Synthesis and Processing — Field-assisted Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: Paul Prichard, Kennametal; Eugene Olevsky, San Diego State University; Iver Anderson, Ames Laboratory

Tuesday AM Room: 16A
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Eugene Olevsky, San Diego State University

8:30 AM Invited

Mechanisms of Pore Formation in High-temperature Carbides: Case Study of TaC Prepared by Spark Plasma Sintering: *Olivia Graeve*¹; James Kelly¹; ¹University of California, San Diego

9:10 AM

A Numerical Tool to Master the SPS Densification of TiAl Complex Shapes: *Martins David*¹; Estournes Claude²; Sallot Pierre¹; Bellet Michel³; Mocellin Katia³; ¹SAFRAN; ²CIRIMAT; ³CEMEF

9:30 AM

Influence of Loading Modes in Spark Plasma Sintering: *Xialu Wei*¹; Eugene Olevsky¹; ¹San Diego State University

9:50 AM

Modeling and Optimization of Hierarchical Porous Structures during Spark Plasma Sintering: *Diletta Giuntini*¹; Eugene Olevsky¹; ¹San Diego State University

10:10 AM Break

10:30 AM Invited

Predicting (1) Activated Sintering of Refractory Metals and (2) Flash Sintering of Oxides: *Jian Luo*¹; ¹UC San Diego

11:10 AM

Optimization of Temperature Regime of Spark Plasma Sintering of AION Powder: Yingchun Shan¹; *Xialu Wei*²; Xiannian Sun¹; Geuntak Lee²; JiuJun Xu¹; Eugene A Olevsky²; ¹Dalian Maritime University; ²San Diego State University

11:30 AM

On the Role of Electric Current in Spark Plasma Sintering of Conductive Powders: *Geuntak Lee*¹; Eugene Olevsky¹; Joanna McKittrick²; ¹San Diego State University; ²University of California, San Diego

Gamma (FCC)/Gamma-Prime (L₁) Co-Based Superalloys II — Microstructural Evolution

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee

Program Organizers: Eric Lass, National Institute of Standards and Technology; Qiang Feng, University of Science and Technology Beijing; Alessandro Moturra, University of Birmingham; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Wei Xiong, Northwestern University

Tuesday AM
February 28, 2017

Room: Pacific 14
Location: Marriott Marquis Hotel

Session Chairs: Eric Lass, NIST; TBD TBD, TBD

8:30 AM Introductory Comments

8:35 AM Keynote

Coarsening Kinetics and Elemental Partitioning of (f.c.c.) Gamma Plus (L₁) Gamma-prime-strengthened Co-base Superalloys: Daniel Sauza¹; Peter Bocchini¹; James Coakley¹; Eric Lass²; David Dunand¹; David Seidman³; ¹Northwestern University; ²National Institute of Standards and Technology (NIST); ³Northwestern University Center for Atom Probe Tomography (NUCAPT)

9:15 AM Invited

On the Role of the Base Elements Co and Ni in γ' -hardened Superalloys: Steffen Neumeier¹; Christopher Zenk²; Nicklas Volz²; Timur Halvacı²; Mathias Göken²; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg; ²Friedrich-Alexander-Universität Erlangen-Nürnberg

9:45 AM

Properties of γ' -phase in L₁-precipitation Hardened Co-base Alloys with Different W-content: Yuzhi Li¹; Uwe Lorenz¹; Steffen Neumeier²; Andreas Schreyer³; Andreas Stark¹; Li Wang¹; Florian Pyczak¹; ¹Helmholtz-Zentrum-Geesthacht; ²Friedrich-Alexander Universität Erlangen-Nürnberg; ³European Spallation Source ERIC

10:05 AM Break

10:25 AM Invited

Structural Stability of L₁ and TCP Phases in Co-based Superalloys: Thomas Hammerschmidt¹; Arthur Bialon¹; Jörg Koßmann¹; Ralf Drautz¹; ¹ICAMS, Ruhr-Universität Bochum

10:55 AM

Elemental Partitioning Behaviour in Ni-Co-Al-Ti-Cr Alloys
: Sioned Llewelyn¹; Katerina Christofidou¹; Vicente Araullo-Peters²; Nick Jones¹; Emmanuelle Marquis²; Mark Hardy³; Howard Stone¹; ¹University of Cambridge; ²University of Michigan; ³Rolls-Royce plc

11:15 AM

Modeling Precipitate Coarsening in Cobalt-based Superalloys: Andrea Jokisaari¹; Shahab Naghavi¹; Peisheng Wang²; Wei Xiong¹; Kil-Won Moon²; Christopher Wolverton¹; Ursula Kattner²; Carey Campbell²; Peter Voorhees¹; Olle Heinonen³; ¹Northwestern University; ²National Institute of Standards and Technology; ³Argonne National Laboratory

11:35 AM

Gammaprime Precipitation in Model CoAlW Alloys: Ahmad Azzam¹; Frederic Danoix¹; Annie Hauet¹; Didier Locq²; Pierre Caron²; Didier Blavette¹; ¹Normandy Université - CNRS; ²Onera

GAT-2017 (Gamma Alloys Technology - 2017) — Other Applications and Materials-Processes Development Efforts

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Tuesday AM
February 28, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Yuyong Chen, Harbin Institute of Technology; Marc Thomas, ONERA

8:30 AM Invited

IC Engine Valves, an Application for Gamma Ti-Al Alloy Technology: Al Sommer¹; ¹Del West Engineering, Inc

8:55 AM

CAE-based Analysis of Structural Integrity for an Industrial Gas Turbine Blade Made from TiAl Alloy: Omid Sedaghat¹; Siavash Zamani¹; Saeed Asadi¹; Fatemeh Heydari¹; Ali Bakhshi¹; ¹MAPNA Turbine Blade Eng. & Mfg. Co. - PARTO

9:15 AM

O-phase in a Lamellar TiAlNb Alloy Produced by Powder Metallurgy: Heike Gabrisch¹; Uwe Lorenz¹; Florian Pyczak¹; Marcus Rackel¹; Andreas Stark¹; ¹Helmholtz-Zentrum Geesthacht

9:35 AM

Preparation and Electron Beam Welding of Hot Packed Rolled Powder Metallurgy γ -TiAl Sheets: Zhengguan Lu¹; Lei Xu¹; Jie Wu¹; Ruipeng Guo¹; Rui Yang¹; ¹Institute of Metal Research, CAS

9:55 AM

Why Grinding of Gamma Titanium Aluminide Makes Sense?: K. Philip Varghese¹; ¹Saint-Gobain Abrasives

10:15 AM Break

10:30 AM Invited

Development of Cost-effective Processes for Gamma-TiAl Application: Rui Yang¹; ¹Institute of Metal Research CAS

10:55 AM

Multi-direction Forging and Superplastic Deformation Characteristic of High Nb Containing TiAl Alloys: Bin Tang¹; ¹Northwestern Polytechnical University

11:15 AM

Titanium Aluminides under High-pressure, High Temperature and during Plastic Deformation: In-situ Studies by Neutron and Synchrotron Quantum Beams: Klaus-Dieter Liss¹; ¹Australian Nuclear Science and Technology Organisation

11:35 AM

Hot Forming of Titanium Aluminide Alloys Studied In Situ with Synchrotron Radiation: Andreas Stark¹; Marcus Rackel¹; Michael Oehring¹; Norbert Schell¹; Lars Lottermoser¹; Florian Pyczak¹; ¹Helmholtz-Zentrum Geesthacht

11:55 AM

Fracture Behavior during Hot Tension Testing of High Nb Containing TiAl Alloys: Bin Zhu¹; Xiangyi Xue¹; Hongchao Kou¹; Lin Song¹; Jinshan Li¹; ¹Northwestern Polytechnical University

High Entropy Alloys V — Alloy Development and Applications I

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Tuesday AM
February 28, 2017

Room: 32B
Location: San Diego Convention Ctr

Session Chairs: Peter Liaw, The University of Tennessee, Knoxville; Michael Gao, National Energy Technology Laboratory

8:30 AM Invited

A Critical Review of High Entropy Alloys and Related Concepts: *Dan Miracle*¹; Oleg Senkov²; ¹AF Research Laboratory; ²UES, Inc.

8:50 AM Invited

Formations, Thermodynamics and Elasticity of High-entropy Alloys: *Michael Gao*¹; Jeffrey Hawk¹; David Alman¹; ¹National Energy Technology Lab

9:10 AM Invited

On the Damage Tolerance of the High-entropy Alloy CrMnFeCoNi in the Range Room Temperature to Liquid Nitrogen Temperatures: *Bernd Gludovatz*¹; Keli Thurston¹; Anton Hohenwarter²; Guillaume Laplanche²; Easo George³; Robert Ritchie¹; ¹Lawrence Berkeley National Laboratory; ²University of Leoben; ³Ruhr-University Bochum

9:30 AM Invited

Phase Stability of the CrMnFeCoNi High-entropy Alloy: F. Fox¹; G. Laplanche¹; A. Hohenwarter²; A. Kostka¹; F. Otto¹; *E. P. George*¹; ¹Ruhr University Bochum; ²Montanuniversität Leoben

9:50 AM Invited

A Highly Fracture and Fatigue Resistant Al_{0.3}CoCrFeNi High Entropy Alloy: Mohsen Seifi¹; Yunzhu Shi²; Peter Liaw²; Mingwei Chen³; *John Lewandowski*¹; ¹Case Western Reserve University; ²The University of Tennessee; ³Tohoku University

10:10 AM Break

10:30 AM Invited

Novel Precious Metal High Entropy Alloys – Design, Structure and Mechanical Performance: *Caitlin Healy*¹; Jörg Löffler²; Michael Ferry¹; Kevin Laws¹; ¹University of New South Wales; ²ETH Zürich

10:50 AM Invited

Hexagonal Close-Packed High-entropy Alloys: The Effect of Entropy: *Junwei Qiao*¹; Michael Gao²; Huijun Yang¹; ¹Taiyuan University of Technology; ²National Energy Technology Laboratory

11:10 AM

Design of Light-weight High-Entropy Alloys: *Rui Feng*¹; Michael C. Gao²; Chanhoo Lee¹; Michael Mathes¹; Tingting Zuo³; Shuying Chen¹; Jeffrey A. Hawk²; Yong Zhang³; Peter K. Liaw¹; ¹The University of Tennessee; ²National Energy Technology Laboratory/AECOM; ³University of Science and Technology, Beijing

11:30 AM

The Design of Creep-resistant High Entropy Alloys for Elevated-temperature Applications: *Haoyan Diao*¹; Chuan Zhang²; Fan Zhang²; Karin Dahmen³; Peter Liaw⁴; ¹The University of Tennessee; ²CompuTherm, LLC; ³University of Illinois at Urbana-Champaign; ⁴The University of Tennessee

11:50 AM

Local Texture in a Swaged CrMnFeCoNi High-entropy Alloy: Aurimas Pukenas¹; Guillaume Laplanche²; Easo George²; *Werner Skrotzki*¹; ¹TU Dresden; ²Ruhr-Universität Bochum

Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges — Session III

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Shuanglin Chen, CompuTherm LLC; Frederic Danoix, Université de Rouen; Indrajit Charit, University of Idaho

Tuesday AM
February 28, 2017

Room: 31C
Location: San Diego Convention Ctr

Session Chairs: Amy Clarke, Colorado School of Mines; Peter Wells, University of California - Santa Barbara

8:30 AM Invited

Advanced FIM and APT Techniques at the University of Oxford: *Michael Moody*¹; Paul Bagot¹; ¹University of Oxford

9:00 AM Invited

Advanced Microstructural and Chemical Characterization of Nano-scale NiMnSi Precipitates Formed in Irradiated Reactor Pressure Vessel Steels Using Atom Probe Tomography and Scanning Transmission Electron Microscopy: *Philip Edmondson*¹; Chad Parish¹; Randy Nanstad¹; ¹Oak Ridge National Laboratory

9:30 AM Invited

Design of Nd-Fe-B Permanent Magnets with Maximum Coercivity by Controlling Grain Boundary Chemistry at the Atomic Level: *Kazuhiro Hono*¹; Taisuke Sasaki¹; Hossein Sepehri-Amin¹; Tadakatsu Ohkubo¹; ¹National Institute for Materials Science

10:00 AM Break

10:20 AM Invited

Determination of Interfacial Free Energies in Two-phase Metallic Alloys: Atom-probe Tomographic Experiments and First-principles Calculations: *David Seidman*¹; Zugang Mao Mao¹; Chris Booth-Morrison¹; ¹Northwestern University

10:50 AM Invited

First-principles Modeling of Anomalous Precipitation in W-Re Alloys under Neutron Irradiation: *Duc Nguyen-Manh*¹; Jan Wrobel²; Michael Klimenkov³; Sergei Dudarev¹; ¹Culham Centre for Fusion Energy; ²Warsaw University of Technology; ³Karlsruhe Institute of Technology

11:20 AM

Design and Development of Novel High-temperature Creep Resistant 9% Cr Steels: *Dieter Isheim*¹; Yao Du¹; Cameron Gross¹; Semyon Vaynman¹; Yip-Wah Chung¹; ¹Northwestern University

11:40 AM

Diffusivity Determination of Slow Diffusion Systems using Diffusion Couples and Multiples: *Zhangqi Chen*¹; Ji-Cheng Zhao¹; ¹The Ohio State University

In-situ Methods for Unraveling Structure-Property Relationships in Light Metals — Imaging and Acoustic Emission

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee

Program Organizers: Dmytro Orlov, Lund University; Wim Sillekens, European Space Agency

Tuesday AM
February 28, 2017

Room: 5B
Location: San Diego Convention Ctr

Session Chairs: Dmytro Orlov, Lund University; Wim Sillekens, European Space Agency

8:30 AM Introductory Comments

8:40 AM Keynote

Overview of In-Situ X-ray Studies of Light Alloy Solidification in Microgravity: David Browne¹; F. Garcia-Moreno²; H. Nguyen-Thi³; G. Zimmermann⁴; F. Kargl⁵; Ragnvald Mathiesen⁶; Axel Griesche⁷; O. Minster⁸; ¹University College Dublin; ²Institute of Applied Materials, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH; Technische Universität Berlin; ³IM2NP & Université d'Aix-Marseille; ⁴Access e.V., Intzestrasse; ⁵Deutsches Zentrum für Luft- und Raumfahrt (DLR), Institut für Materialphysik im Weltraum; ⁶Institut for Fysikk, Norsk Teknisk-Naturvitenskapelige Universitet (NTNU); ⁷Bundesanstalt für Materialforschung und -prüfung (BAM); ⁸Human Spaceflight and Robotic Exploration Directorate, ESTEC, European Space Agency

9:10 AM

Morphological Transition of a-Mg Dendrites during Near-isothermal Solidification of a Mg-Nd-Gd-Zn-Zr Casting Alloy: Daniele Casari¹; Wajira Mirihanage¹; Ken Falch¹; Inga Ringdalen²; Jesper Friis²; Rainer Schmid-Fetzer³; Dongdong Zhao¹; Yanjun Li¹; Wim Sillekens⁴; Ragnvald Mathiesen⁵; ¹NTNU; ²SINTEF Materials and Chemistry; ³Clausthal University of Technology; ⁴European Space Agency

9:30 AM

Real-time Observation of AZ91 Solidification by Synchrotron Radiography: Guang Zeng¹; Kazuhiro Nogita²; Sergey Belyakov¹; Jingwei Xian¹; Stuart McDonald²; Hideyuki Yasuda³; Christopher Gourlay¹; ¹Imperial College London; ²University of Queensland; ³Kyoto University

9:50 AM

3D Microstructural Evolution on Solidifying Mg-5Nd-5Zn Alloy Observed via In Situ Synchrotron Tomography: Tungky Subroto¹; Chamini Mendis²; Francesco D'Elia¹; Gábor Szakács¹; Julie Fife³; Norbert Hort¹; Karl Kainer¹; Domonkos Tolnai¹; ¹Helmholtz-Zentrum Geesthacht; ²Brunel Centre for Advanced Solidification Technology (BCAST), Brunel University; ³Previously with: Swiss Light Source, Paul Scherrer Institut (PSI)

10:10 AM Break

10:30 AM Invited

The Use of In-situ X-ray Imaging Methods in the Research and Development of Magnesium-based Grain-refined and Nanocomposite Materials: Wim Sillekens¹; Daniele Casari²; Wajira Mirihanage³; Sofiane Terzi⁴; Ragnvald Mathiesen²; Luc Salvo⁵; Rémi Daudin⁵; Pierre Lhuissier⁵; Enyu Guo³; Peter Lee³; ¹European Space Agency; ²NTNU Norwegian University of Science and Technology; ³University of Manchester; ⁴European Synchrotron Radiation Facility – Institut Laue-Langevin; ⁵Université Grenoble Alpes

10:55 AM

Acoustic Emission Study of Deformation Behavior of Wrought Mg Alloys: Patrik Dobron¹; Daria Drozdenko¹; Sangbong Yi²; Jan Bohlen²; ¹Charles University; ²Helmholtz-Zentrum Geesthacht

11:15 AM

Effect of Thermo-mechanical Treatment of Extruded Z1 Mg Alloy on Resulting Mechanical Properties: Daria Drozdenko¹; Jan Bohlen²; Sangbong Yi²; Patrik Dobron¹; ¹Charles University in Prague; ²Helmholtz-Zentrum Geesthacht

11:35 AM Invited

In-situ Investigation of Deformation Mechanisms in Mg-Zn-Y Magnesium Alloy with LPSO Phase by Diffraction Methods and Acoustic Emission: Kristian Máthi¹; Gerardo Garces²; Klaudia Horváth¹; Daria Drozdenko¹; Patrik Dobron¹; ¹Faculty of Mathematics and Physics, Charles University; ²CENIM-CSIC

Interface-Mediated Properties of Nanostructured Materials — Hierarchical Nanostructured Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Caizhi Zhou, Missouri University of Science and Technology; Nan Li, Los Alamos National Laboratory; Peter Anderson, The Ohio State University; Michael Demkowicz, Texas A&M University

Tuesday AM
February 28, 2017

Room: Pacific 23
Location: Marriott Marquis Hotel

Session Chairs: Nan Li, Los Alamos National Laboratory; Peter Anderson, The Ohio State University

8:30 AM

Deformation Mechanisms in bcc Mg/Nb: Youxing Chen¹; Satyesh Yadav¹; Nan Li¹; Xiang-Yang Liu¹; Kevin Baldwin¹; Irene Beyerlein¹; Richard Hoagland¹; Jian Wang²; Nathan Mara¹; ¹Los Alamos National Laboratory; ²University of Nebraska – Lincoln

8:50 AM Invited

Fracture Toughness of Al/SiC Nanolaminates: Experiments and Simulation: Carl Mayer¹; Ling Yang²; V. Carollo²; J. Kevin Baldwin³; Nathan Mara³; Jon Molina-Aldareguia²; Nikhilesh Chawla¹; ¹Arizona State University; ²IMDEA; ³Los Alamos National Laboratory

9:20 AM Invited

The Role of Interfaces on Plasticity in Dislocation Nucleation-mediated Nanostructures: Jungho Shin¹; Lisa Chen¹; Gunther Richter²; Thomas Cornelius³; Olivier Thomas³; Daniel Gianola⁴; ¹University of Pennsylvania; ²Max-Planck-Institut für Intelligente Systeme; ³Aix-Marseille Université; ⁴University of California, Santa Barbara

9:50 AM

In-situ TEM Observations of Grain Growth during High-cycle Fatigue and Notch Fatigue: Khalid Hattar¹; Daniel Bufford¹; William Mook¹; Christopher O'Brien¹; Fadi Abdeljawad¹; Tim Furnish¹; Brad Boyce¹; Stephen Foiles¹; ¹Sandia National Laboratories

10:10 AM Break

10:25 AM Invited

Competing Interfaces within Hierarchical Nanostructured Metallic Alloys: Daniel Foley¹; Garritt Tucker¹; ¹Drexel University

10:55 AM

Twinning Paths and Twin Boundaries in Hexagonal Close-packed Titanium: Hao Wang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

11:15 AM Invited

Role of Twinning, Dynamic Recrystallization, and Shear Banding in the Microstructural Evolution of Magnesium Alloys: Ibrahim Karaman¹; Ebubekir Dogan¹; Matthew Vaughan¹; S.J. Wang¹; ¹Texas A&M University

11:45 AM

The Twinning Genome: A Systematic Framework for Predicting Twinning in Materials: Dingyi Sun¹; Mauricio Ponga²; Kaushik Bhattacharya¹; Michael Ortiz¹; ¹California Institute of Technology; ²University of British Columbia

Magnesium Technology 2017 — Alloy Development

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Tuesday AM

Room: 5A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Michele Manuel, University of Florida; Vineet Joshi, Pacific Northwest National Laboratory

8:30 AM Keynote

Using the Crystal Plasticity Approach to Parse the Effects of Alloying and Aging on the Mechanical Behavior of Wrought Mg Alloys: *S.R. Agnew¹; J.J. Bhattacharyya¹; Fulin Wang¹; ¹Department of Materials Science and Engineering, University of Virginia*

9:10 AM

Development of High-strength High-speed-extrudable Mg-Al-Ca-Mn Alloy: *Taiki Nakata¹; Chao Xu¹; Taisuke Sasaki²; Yasunobu Matsumoto²; Kazunori Shimizu³; Kazuhiro Hono²; Shigeharu Kamado¹; ¹Nagaoka University of Technology; ²National Institute for Materials Science; ³Sankyo Tateyama, Inc. Sankyo Material-Company*

9:30 AM

Development of Ultra-high Strength and Ductile Mg-Gd-Y-Zn-Zr Alloys by Extrusion with Forced-air Cooling: *Chao Xu¹; Taiki Nakata¹; Mingyi Zheng²; Shigeharu Kamado¹; ¹Nagaoka University of Technology; ²Harbin Institute of Technology*

9:50 AM

Effect of Extrusion Ratio on Microstructure and Resulting Mechanical Properties of Mg Alloys with LPSO Phase: *Klaudia Horváth¹; Daria Drozdenko¹; Gerardo Garcés²; Kristián Máthi¹; Patrik Dobron¹; ¹Charles University in Prague; ²CENIM-CSIC*

10:10 AM Break**10:30 AM**

Mechanically Alloyed Magnesium Based Nanostructured Alloy Powders for Biomedical Applications: *Peter Morcos¹; Khalil ElKhodary²; Hanadi Salem²; ¹Nanotechnology Program, The American University in Cairo, Egypt; ²Mechanical Engineering Department, The American University in Cairo, Egypt*

10:50 AM

Combined Effects of Grain Size Refinement and Dynamic Precipitation on Mechanical Properties of a New Magnesium Alloy: *Matthew Vaughan¹; Jan Seitz²; Rainer Eifler²; Hans Maier²; Ibrahim Karaman¹; ¹Texas A&M University; ²Leibniz Universität Hannover*

11:10 AM

Zn Segregation at Precipitate/Matrix Interface in Mg-Sn-Zn Alloys: *Chaoqiang Liu¹; Houwen Chen¹; Jian-Feng Nie¹; ¹Chongqing University*

11:30 AM

Machinability Investigation in Micro-milling of Mg based MMCs with Nano-sized Particles: *Xiangyu Teng¹; Dehong Huo¹; Eugene Wong¹; Manoj Gupta²; ¹Newcastle University; ²National University of Singapore*

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Fuels III

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Tuesday AM

Room: Cardiff

February 28, 2017

Location: Marriott Marquis Hotel

Session Chairs: Kurt Terrani, Oak Ridge National Laboratory; Isabella van Rooyen, Idaho National Laboratory

8:30 AM

Production of Fully Ceramic Microencapsulated Fuel for Test Reactor Irradiation: *Kurt Terrani¹; James Kiggans¹; Michael Trammell¹; Wilson Cowherd²; Gregory Core³; ¹Oak Ridge National Laboratory; ²Idaho National Laboratory; ³Idaho National Laboratory*

8:50 AM

Microstructural Characterization and Thermal Properties of Metallic Pu-Zr Systems: *Assel Aitkaliyeva¹; Cynthia Papesch¹; ¹Idaho National Laboratory*

9:10 AM

Post Irradiation Electron Microscopy Examination of UCO Fuel Kernels from TRISO Coated Particles: *Terry Holesinger¹; Isabella van Rooyen²; Weicheng Zhong²; ¹Los Alamos National Laboratory; ²Idaho National Laboratory*

9:30 AM

Preliminary Post Irradiation Examination SEM Analysis of AGR 2 UO₂ and UCO TRISO Fuel Particles: *Tyler Gerczak¹; John Hunn¹; Charles Baldwin¹; Robert Morris¹; Fred Montgomery¹; ¹Oak Ridge National Laboratory*

9:50 AM

Grain Boundary Complexions in SiC and Their Relevance in Silver Diffusion in TRISO Particles: *Felix Cancino Trejo¹; Eddie Lopez²; ¹CINVESTAV*

10:10 AM Break**10:30 AM**

On Silver Transport in 3C-SiC: *Johannes Neethling¹; Jacques O'Connell¹; ¹Nelson Mandela Metropolitan University*

10:50 AM

High Temperature Fuel Cladding Chemical Interactions between Unirradiated TRIGA Fuels and 304 Stainless Steel: *Emmanuel Perez¹; Dennis Keiser¹; Bryan Forsmann²; Dawn Janney¹; Jody Henley¹; Eric Woolstenhulme¹; ¹Idaho National Laboratory; ²Boise State University*

11:10 AM

Small Scale Mechanical Testing of UO₂ at Elevated Temperatures: *David Frazer¹; Benjamin Shaffer²; Kitt Roney²; Harn Lim²; Perdo Peralta²; Peter Hosemann¹; ¹University of California, Berkeley; ²Arizona State University*

11:30 AM

Model of Thermal Conductivity Reduction Due to Point Defect Accumulation in Ion Irradiated UO₂: *M Faisal Riyad¹; Vinay Chauhan¹; Yuzhou Wang¹; Marat Khafizov¹; ¹The Ohio State University*

Materials by Design: An MPMD Symposium Honoring Greg Olson on the Occasion of His 70th Birthday — Materials Design I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Functional Materials Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Michele Manuel, University of Florida; Wei Xiong, University of Pittsburgh; Jason Sebastian, QuesTek Innovations

Tuesday AM Room: 10
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Carelyn Campbell, National Institute of Standards and Technology; Jason Sebastian, Questek Innovations, LLC

8:30 AM Introductory Comments

8:50 AM Keynote

A History of Materials by Design, and a Very Bright Future: *Charles Kuehmann*¹; ¹Space Exploration Technologies

9:30 AM Keynote

Computational Thermodynamics and Materials Design: *Zi-Kui Liu*¹; ¹The Pennsylvania State University

10:10 AM Break

10:40 AM Keynote

Exploring the Dark Continent of Structure-Property Relationships: *Mark Eberhart*¹; ¹Colorado School of Mines

11:20 AM Keynote

The Redistribution of Carbon Atoms during Tempering of Martensite: *George Smith*¹; ¹University of Oxford

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Emerging Materials and Refractory Metals

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmair, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Tuesday AM Room: Pacific 16
February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Pierre Sallot, Safran; Don Lipkin, GE Global Research

8:30 AM Keynote

Advanced Aerospace Engine Requirements and Materials Development: *Francis Preli*¹; ¹Pratt & Whitney

9:00 AM Invited

Ceramic Matrix Composites for Jet Engine Applications: Damage Mechanisms and Design: *Gregory Morscher*¹; ¹University of Akron

9:30 AM Invited

Creep and Oxidation Resistance of Select MAX Phases: A Critical Review: *Michel Barsoum*¹; *Sankalp Kota*¹; ¹Drexel University

10:00 AM Break

10:20 AM Invited

Oxidation of Alumina-forming MAX Phases in Turbine Environments: *James Smialek*¹; *Anita Garg*¹; *Bryan Harder*¹; *James Nesbitt*¹; *Timothy Gabb*¹; ¹NASA Glenn Research Center

10:50 AM Invited

Toughness and High Temperature Strength of Nb-Si and MoSiB/TiC Alloys: *Nobuaki Sekido*¹; *Junya Nakamura*¹; *Kyosuke Yoshimi*¹; ¹Tohoku University

11:20 AM

Scalable Processing, Microstructure, and Mechanical Properties in Mo-matrix Mo-Si-B: *Peter Marshall*¹; *Oliver Strbik*²; ¹Imaging Systems Technology; ²Deep Springs Technology

Materials Science for High-Performance Permanent Magnets — Coercivity Mechanism

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirose, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Tuesday AM Room: 24C
February 28, 2017 Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Akimasa Sakuma, Tohoku University; Gino Hrkač, University of Exeter

8:30 AM Invited

Tailoring the Coercive Field of Grain Boundary Engineered Magnets: A Nanoanalytical TEM and Micromagnetic Simulation Study: *Josef Fidler*¹; *Gregor Alexander Zickler*¹; *Ahmad Asali*¹; ¹TU Wien

9:00 AM Invited

Demagnetizing Fields and Magnetization Reversal in Permanent Magnets: *Johann Fischbacher*¹; *Lukas Exl*²; *Thomas Schrefl*¹; ¹Danube University Krems; ²Vienna University

9:30 AM Invited

Analyses on Magnetization Reversal Process of Nd-Fe-B Hot-deformed Magnets: *Satoshi Okamoto*¹; *Takahiro Yomogita*¹; *Luran Zhang*¹; *Nobuaki Kikuchi*¹; *Osamu Kitakami*¹; *Hossein Sepehri-Amin*²; *Tadakatsu Ohkubo*²; *Kazuhiro Hono*²; *Takahiro Akiya*³; *Keiko Hioki*⁴; *Atsushi Hattori*⁴; ¹Tohoku University; ²ESICMM-NIMS; ³Daido Steel Co., LTD; ⁴Daido Steel Co., LTD

10:00 AM Break

10:20 AM Invited

Theoretical Study on Atomic Structures and Coercivity in Nd-Fe-B Magnets: *Hiroki Tsuchiura*¹; ¹Tohoku University

10:50 AM

Grain Boundary Diffusion of Different Rare Earth Elements in Nd-Fe-B Sintered Magnets by Experiment and FEM Simulation: *Konrad Löwe*¹; *Dimitri Benke*¹; *Tim Lienig*¹; *Michael Duerrschnebel*¹; *Leopoldo Molina-Luna*¹; *Konstantin Skokov*¹; *Oliver Gutfleisch*¹; ¹Technische Universität Darmstadt

11:10 AM

Temperature Dependence of Threshold of Magnetic Fields for Nucleation and Domain Wall Propagation: *Seiji Miyashita*¹; *Masamichi Nishino*²; ¹The University of Tokyo; ²National Institute for Material Science

11:30 AM Invited

Theoretical Study on the Temperature Dependence of Magnetic Anisotropy Constants of Rare Earth Permanent Magnets: *Akimasa Sakuma*¹; *Daisuke Miura*¹; *Yuta Toga*²; ¹Tohoku University; ²National Institute for Materials Science

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Crystal Defects: Experiments and Modeling/Simulation

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Tuesday AM Room: 24A
 February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Anter El-Azab, Purdue University; Ram Devanathan, Pacific Northwest National Laboratory

8:30 AM Keynote

Helium Hardening in Interface-dominated Metallic Composites: *Amit Misra*¹; Nan Li²; ¹University of Michigan; ²LANL

9:00 AM Invited

On Dislocation Patterning in Deformed Crystals: *Anter El-Azab*¹; ¹Purdue University

9:20 AM Invited

Role of Structural Defects on the Magnetostriction of a-phase of Fe-based Alloys: *Sivaraman Guruswamy*¹; Kanagasundar Appusamy¹; Travis Willhard¹; Richard Laroche¹; ¹University of Utah

9:40 AM

Non-basal Dislocations in HCP Mg: *Yizhe Tang*¹; ¹Shanghai University

10:00 AM Break

10:15 AM Keynote

Precipitate-dislocation Interaction Mediated Portevin-Le Chatelier-like Effect in a Beta-stabilized Ti-Mo-Nb-Al Alloy: Deep Choudhuri¹; Srinivas Mantri¹; Talukder Alam¹; Rajarshi Banerjee¹; *Srikumar Banerjee*²; ¹University of North Texas; ²Bhabha Atomic Research Centre

10:45 AM Invited

Molecular Dynamics Simulations of Dislocation – Obstacle Interactions: *Brian Wirth*¹; ¹University of Tennessee

11:05 AM Invited

Atomistic Simulation of Radiation Effects in FeCr-based Cladding: *Ram Devanathan*¹; ¹Pacific Northwest National Laboratory

11:25 AM Invited

On the Origin of the Sink Efficiency of Grain Boundaries under Irradiation: *Blas Ueberuaga*¹; Enrique Martinez¹; Laurent Capolungo¹; ¹Los Alamos National Laboratory

11:45 AM Invited

Application of Phase-field Approach in Deformation-induced Microstructure Evolution: *Yulan Li*¹; Shenyang Hu¹; Scott Whalen¹; Suveen Mathaudhu¹; ¹Pacific Northwest National Laboratory

Mechanical Behavior of Nanostructured Materials — Mechanical Behavior of Bulk Nanostructured Materials II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Tuesday AM Room: 30D
 February 28, 2017 Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Enrique Lavernia, University of California; Xiaoxu Huang, Technical University of Denmark; Kaiyuan Yu, China University of Petroleum

8:30 AM Invited

Mechanical Behaviors of Gradient Nanostructured Materials: *Ke Lu*¹; ¹Institute of Metal Research, Chinese Academy of Sciences

8:55 AM

Microstructure and Mechanical Behavior of ECAP and HPT Processed Austenitic and Ferritic-martensitic Steels: *Haiming Wen*¹; Rinat Islamgaliev²; Marina Nikitina²; ¹Idaho State University; ²Ufa State Aviation Technical University

9:15 AM Invited

Mechanical Properties and Microstructure Stability in Fe-Cr base Alloys for Nuclear Energy Applications: *Ronald Scattergood*¹; Carl Koch¹; ¹NC State University

9:40 AM

Hierarchical Structure and Strengthening Mechanisms in Pearlitic Steel Wire: *Xiaodan Zhang*¹; Niels Hansen¹; Xiaoxu Huang¹; Andrew Godfrey²; ¹Technical University of Denmark; ²Tsinghua University

10:00 AM

Back-stress Strengthening and Strain Hardening in Heterogeneous Materials: Muxin Yang¹; Fuping Yuan¹; Xiaolei Wu¹; *Yuntian Zhu*²; ¹Institute of Mechanics, Chinese Academy of Sciences; ²North Carolina State University

10:20 AM Break

10:40 AM Invited

Correlation between Nanostructuring and Precipitation in Age-hardened Aluminum Alloys: Kaka Ma¹; Tao Hu²; Ryan Cohn³; Troy Topping⁴; Enrique Lavernia⁵; *Julie Schoenung*⁵; ¹Colorado State University; ²University of California San Diego; ³University of California Davis; ⁴California State University Sacramento; ⁵University of California Irvine

11:00 AM

In Situ Synchrotron X-ray Studies on the Deformation Mechanism of Carbon-steel/Copper Nanocomposites: *Kaiyuan Yu*¹; Yadong Ru¹; Yang Ren²; Lishan Cui¹; ¹China University of Petroleum-Beijing; ²APS, Argonne National Laboratory, USA

11:20 AM

Study of Dynamic Recovery in Nanocrystalline Metals Using In-situ X-ray Diffraction and MD Simulations: zhen Sun¹; *Steven Van Petegem*¹; Christian Brandl²; Maxime Dupraz¹; Karsten Durst³; Wolfgang Blum⁴; ¹Paul Scherrer Institut; ²Karlsruhe Institut of Technology; ³Technische Universität Darmstadt; ⁴University Erlangen-Nürnberg

11:40 AM

Gradient Nanostructure and Mechanical Behavior of Ultrasonic Shot Peened Ti-6Al-4V: *Fei Yin*¹; Hannah Han²; Qingyou Han¹; ¹Purdue University; ²West Lafayette High and Junior School

Microstructural Processes in Irradiated Materials — Ferritic and Ferritic-Martensitic Alloys I

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Tuesday AM
February 28, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Meimei Li, Argonne National Laboratory; Kevin Field, Oak Ridge National Laboratory

8:30 AM Invited

Microstructures in Irradiated and Deformed FeCrAl Alloys: *Kevin Field*¹; Samuel Briggs²; Jack Haley³; Maxim Gussev¹; Kenneth Littrell¹; Philip Edmondson¹; Yukinori Yamamoto¹; Xunxiang Hu¹; Richard Howard¹; Zhijie Jiao⁴; Gary Was⁴; Kumar Sridharan²; Lance Snead⁵; Kurt Terrani¹; ¹Oak Ridge National Laboratory; ²University of Wisconsin; ³University of Oxford; ⁴University of Michigan; ⁵Massachusetts Institute of Technology

9:00 AM

Ballistic Mixing Effect on a' Precipitation in Irradiated Fe-Cr Alloys: *Jia-Hong Ke*¹; Mukesh Bachhav²; Elaina Anderson²; Emmanuelle A. Marquis²; G. Robert Odette³; Dane Morgan¹; ¹University of Wisconsin-Madison; ²University of Michigan, Ann Arbor; ³University of California, Santa Barbara

9:20 AM

Kinetics of Cr Precipitation in Iron under Irradiation: *Frederic Soisson*¹; Estelle Meslin¹; Olivier Tissot¹; Jean Henry¹; Chu-Chun Fu¹; Brigitte Descamps²; Cristelle Pareige³; ¹CEA Saclay; ²CSNSM; ³GPM

9:40 AM

Atomistic Modeling of Hardening in Thermally-aged Fe-Cr Binary Alloys: *Tomoaki Suzuki*¹; Yasuyoshi Nagai²; Alfredo Caro³; ¹Japan Atomic Energy Agency; ²Tohoku University; ³Los Alamos National Laboratory

10:00 AM

Influence of Secondary Phase Formation on Microstructure Evolution in Self-Ion Irradiated HT9 up to 650 dpa: *Elizabeth Getto*¹; Kai Sun¹; Gerrit Vancoevering¹; Zhijie Jiao¹; Gary Was¹; ¹University of Michigan

10:20 AM Break

10:35 AM

Ion Irradiation Induced Segregation and Precipitation in F/M Steel HT9: *Ce Zheng*¹; Maria Auger²; Djamel Kaoumi¹; ¹North Carolina State University; ²University of Oxford

10:55 AM

Microstructural Studies of Irradiated and Deformed FeCr Model Alloys: *Mercedes Hernández-Mayoral*¹; Elvira Oñorbe¹; Marta Serrano¹; ¹CIEMAT

11:15 AM

Emulation of Reactor-irradiated Microstructural Features with Dual Ion-irradiation in T91 Steel: *Stephen Teller*¹; Zhijie Jiao¹; Kevin Field²; Gary Was¹; ¹University of Michigan; ²Oak Ridge National Laboratory

11:35 AM

He Implantation of Fe-Y2Ti2O7 Bilayers: Furthering NFA Understating: *Tiberiu Stan*¹; Yuan Wu¹; Robert Odette¹; Yongqiang Wang²; Richard Cox³; ¹University of California Santa Barbara; ²Los Alamos National Laboratory; ³Pacific Northwest National Laboratory

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Heterogeneous and Gradient Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Tuesday AM
February 28, 2017

Room: 24B
Location: San Diego Convention Ctr

Session Chairs: Huajian Gao, Brown University; Irene Beyerlein, University of California

8:30 AM Invited

The Austenite/Martensite Interface: Francesco Maresca¹; *W Curtin*¹; ¹EPFL

8:55 AM

A Deformation Mechanism by Correlated Necklace Dislocations in Nanotwinned Materials: Haofei Zhou¹; *Huajian Gao*¹; ¹Brown University

9:15 AM Invited

Simultaneous High Strength and Ductility in Nickel Induced by Nanodomains with Size Effects: *Fuping Yuan*¹; Xiaolei Wu¹; Evan Ma²; ¹Institute of Mechanics, Chinese Academy of Science; ²The Johns Hopkins University

9:40 AM

Interfacial Incompatibilities and Crystalline Deformation and Failure: *Matt Bond*¹; Mohammed Zikry¹; ¹North Carolina State University

10:00 AM

Mechanical Behavior and Deformation Mechanism of Gradient Structured Cu Alloys with Varying Stacking Fault Energy: *Xinkun Zhu*¹; ¹Kunming University of Science and Technology

10:20 AM Break

10:35 AM Invited

Gradient Nanostructure and Residual Stresses Induced by Ultrasonic Nano-crystal Surface Modification for Improved Mechanical Properties: *Chang Ye*¹; Yalin Dong¹; Vijay Vasudevan²; ¹University of Akron; ²University of Cincinnati

11:00 AM Invited

Homogeneous Plastic Deformation in Heterogeneous Lamella Structures: *Caizhi Zhou*¹; Rui Yuan¹; Irene Beyerlein²; ¹Missouri University of Science and Technology; ²University of California at Santa Barbara

11:25 AM

Gradient Nanostructured Silicon through High Power Pulsed Laser-driven Shock Compression: *Shiteng Zhao*¹; Eric Hahn¹; Bimal Kad¹; Bruce Remington²; Christopher Wehrenberg²; Karren More³; Eduardo Bringa⁴; Marc Meyers¹; ¹University of California, San Diego; ²Lawrence Livermore National Laboratory; ³Oak Ridge National Laboratory; ⁴Universidad Nacional de Cuyo

Nanostructured Materials for Nuclear Applications II — Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee
Program Organizers: Cheng Sun, Idaho National Laboratory; Khalid Hattar, Sandia National Laboratories; Celine Hin, Virginia Tech; Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Mitra Taheri, Drexel University; Haiming Wen, Idaho State University

Tuesday AM
 February 28, 2017
 Room: Pacific 24
 Location: Marriott Marquis Hotel

Session Chairs: Fei Gao, University of Michigan; Eda Aydogan, Los Alamos National Laboratory

8:30 AM Invited

Nano-particles Control for High Performance ODS Steels: *Akihiko Kimura*¹; ¹Kyoto University

9:00 AM

Varying Responses of Nanocrystalline Structures to Assorted Irradiation Conditions: *Brittany Muntifer*¹; Daniel Bufford¹; Khalid Hattar¹; ¹Sandia National Laboratories

9:20 AM

Microstructural Characterization of ATR Irradiated Cu/Nb Nanolayered Composites: *Osman Anderoglu*¹; Peter Hosemann²; Amit Misra³; George Odette⁴; Michael Nastasi⁵; Stuart Maloy¹; ¹Los Alamos National Laboratory; ²University of California-Berkeley; ³University of Michigan; ⁴University of California-Santa Barbara; ⁵University of Nebraska

9:40 AM

Kinetics of Initial Phase Separation and Coarsening of Nanoscale Phase in Fe-Cr Alloys: *Zhilong Yan*¹; *Yongsheng Li*¹; *Xiaorong Zhou*¹; ¹Nanjing University of Science and Technology

10:00 AM Break

10:20 AM Invited

Using Atom Probe Tomography and Neutron Inventory Simulation to Investigate Neutron-Irradiation-Induced Nano-Scale Second Phase Precipitation Chemistry in Pure Tungsten Irradiated at HFIR: *Phillip Edmondson*¹; Mark Gilbert²; ¹Oak Ridge National Laboratory; ²EURATOM/CCFE Fusion Association

10:50 AM

Design of Radiation-resistant Alloys: *Thomas Schuler*¹; Dallas Trinkle¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois at Urbana-Champaign

11:10 AM

Exploring the In-plane Distribution of Helium Bubbles at Cu/V Interfaces: *Di Chen*¹; Nan Li¹; Kevin Baldwin¹; Dina Yuryev²; Michael Demkowicz³; Yongqiang Wang¹; ¹Los Alamos National Laboratory; ²Massachusetts Institute of Technology; ³Texas A&M University

11:30 AM

Atom Probe Tomography Study of Neutron Irradiated U-Mo Fuel: *Haiming Wen*¹; Assel Aitkaliyeva²; Yaqiao Wu³; Bandon Miller²; Dennis Keiser²; Jian Gan²; ¹Idaho State University; ²Idaho National Laboratory; ³Boise State University

Pan American Materials Congress Plenary — Session I

Sponsored by: Third Pan American Materials Congress Organizing Committee
Program Organizer: Marc Meyers, UCSD

Tuesday AM
 February 28, 2017
 Room: Marina G
 Location: Marriott Marquis Hotel

8:30 AM Introductory Comments

8:40 AM Plenary

Designing Infrastructure Materials for 100-plus Year Service Lives: *Carolyn Hansson*¹; ¹University of Waterloo

9:20 AM Plenary

Production, Properties, and Applications of Titanium Dioxide Films: *Carlos Schvezov*¹; ¹Institute of Materials of Misiones

10:00 AM Break

Pan American Materials Congress: Advanced Manufacturing — Materials Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Sonia Brühl, UTN - National University of Technology; Ricardo Castro, University of California, Davis; Dachamir Hotza, UFSC

Tuesday AM
 February 28, 2017
 Room: Marina D
 Location: Marriott Marquis Hotel

Session Chair: To Be Announced

10:20 AM Invited

Carbon Based Coatings Deposited on Nitrided Stainless Steel: Study of Thermal Degradation: *Sonia Brühl*¹; Eugenia Dalibon Bähler¹; Vladimir Trava-Airoldi²; Naureen Ghafoor³; Lina Rogström³; Magnus Oden³; ¹National University of Technology; ²Instituto Nacional de Pesquisas Espaciais (INPE); ³Linköping University

10:50 AM

Conceptual-Functional Model of Drilling Electrochemical Discharge Machining: *Gerardo Hernandez*¹; Alejandra Hernandez¹; ¹COMIMSA

11:10 AM

Deep Drilling in Soda-lime Glass Using Air Jet Assisted Electrochemical Discharge Machining (ECDM): *Rajendra Arya*¹; *Akshay Divedi*¹; Pradeep Kumar¹; ¹Indian Institute of Technology, Roorkee

11:30 AM

Mechanisms and Influence of In-situ Pre-heating during Friction Welding: *Daniel Adams*¹; Jerry Gould²; Michael Skinner¹; Tom Budd¹; ¹Manufacturing Technology, Inc. (MTI); ²EWI

11:50 AM Invited

Microstructure-processing-property Relationships in Nanocrystalline Ceramics Produced Using Current-activated, Pressure-assisted Densification (CAPAD): *Javier Garay*¹; ¹University of California San Diego

12:10 PM Invited

Sintering of Anisotropic Porous Microstructures: *Eugene Olevsky*¹; Andrey Maximenko¹; Diletta Giuntini¹; Rajendra Bordia²; ¹San Diego State University; ²Clemson University

12:30 PM

Finite Element Modelling of Current-activated, Pressure-assisted Densification (CAPAD): The Role of Materials Properties and Geometry on Thermal Gradients: *Meir Shachar*¹; Alexander Dupuy²; Yasuhiro Kodera²; Javier Garay¹; ¹University of California, San Diego; ²University of California, Riverside

Pan American Materials Congress: Materials for Green Energy — Materials for Green Energy

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Ramalinga Viswanathan Mangalaraja, University of Concepcion; Hector Calderon, ESFM-IPN; Julie Schoenung, University of California, Irvine; Roberto Arce, SAM - Soc. Argentina de Materiales

Tuesday AM
February 28, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chair: Ramalinga Viswanathan Mangalaraja, University of Concepcion

10:20 AM

Defect Engineering for Strong Photocatalysis of TiO₂ Nanoparticles with Dopants: DFT Calculations and Experimental Verifications: *Heechae Choi*¹; Sovann Khan²; So Hye Cho²; Taeseup Song³; ¹Virtual Lab Inc.; ²KIST; ³Yeungnam University

10:40 AM

Emission and Photocatalytic Properties of Graphene:ZnO Hybrid Nanostructures: *Pandiyarajan Thangaraj*¹; Mangalaraja Ramalinga Viswanathan¹; Udayabhaskar Rednam¹; Naveenraj Selvaraj¹; Karthikeyan Balasubramanian¹; Mansilla Héctor D.¹; David Contreras¹; M.A. Gracia Pinilla¹; ¹University of Concepcion

11:00 AM

Thermal and Electrical Conductivities of Mesoporous Nanofluids and Applications for Enzyme Catalysis: *Shuang Qiao*¹; Ekaterina Novitskaya¹; Flor Sanchez²; Rafael Vazquez-Duhalt²; Olivia Graeve¹; ¹University of California, San Diego; ²Universidad Nacional Autónoma de México

11:20 AM

Simulation of Bonded Magnet Performance for Renewable Energy Applications: *H. Khazdozian*¹; H. Ucar²; C. Hatter²; M. Kramer¹; M. Paranthaman¹; I. Nlebedim¹; ¹Ames Laboratory; ²Oak Ridge National Laboratory

Pan American Materials Congress: Materials for Transportation and Lightweighting — Processing-Structure-Property Relationships I

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autónoma de Nuevo León

Tuesday AM
February 28, 2017

Room: Mission Hills
Location: Marriott Marquis Hotel

Session Chair: Patricia del Carmen Zambrano Robledo, Universidad Autónoma de Nuevo León/Investigación

10:20 AM

Mechanical and Microstructural Evaluation of New Superalloys, an Actual Review: *Octavio Covarrubias*¹; ¹Exova

11:00 AM

Phase Transformations in Continuous Heating and Aging Heat Treatments in Ti-Nb-Fe Alloys: Fernando da Costa¹; Mariana de Mello¹; Camilo Salvador¹; *Rubens Caram*¹; ¹University of Campinas

11:20 AM

Study of Phase Transformations and Decomposition of Martensite in FV535 High Cr Martensitic Steel: *Lizangela Guerra*¹; Patricia Zambrano¹; Armando Salinas²; Edgar Garcia¹; ¹Universidad Autónoma de Nuevo León, Facultad de Ingeniería Mecánica y Eléctrica; ²Centro de Investigación y de Estudios Avanzados del IPN Unidad Saltillo

11:40 AM

Fatigue Behavior of Plasma Scribed HSLA Steels: *Jeffrey Rossin*¹; Michael Kesler¹; Edward George²; Steve Duke³; Michele Manuel¹; ¹University of Florida; ²E&S Consulting, Inc.; ³Florida Department of Transportation

12:00 PM

FeCrAl-steels as Candidates for Structural Material in CSP Systems with Lead-bismuth Eutectic as a Heat Transport Fluid: *Miroslav Popovic*¹; Alan Bolind¹; Peter Hosemann¹; ¹University of California, Berkeley

12:20 PM

Observations and Analyses of Tribochemical Reactions in Lightweight Boron Carbide (B₄C) Impacted at High-Velocity: *Jerry LaSalvia*¹; Scott Walck¹; Kristopher Behler¹; Brady Aydelotte¹; Brian Schuster¹; ¹U.S. Army Research Laboratory

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — SPD Processing, Mechanical Properties of Nanocrystalline Materials, BMG

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politécnica de Catalunya

Tuesday AM
February 28, 2017

Room: Marina F
Location: Marriott Marquis Hotel

Session Chairs: Terence Langdon, University of Southern California; Hans Roven, Norwegian University of Science and Technology

10:20 AM

A Novel Method for SPD – Continuous Metal Screw Extrusion (CMSE): *Hans Roven*¹; Kristian Skorpen¹; Oddvin Reiso²; ¹Norwegian University of Science and Technology; ²Hydro Aluminium

10:40 AM

Rate Sensitivity and Deformation Mechanisms of Ultrafine-Grained Single Phase and Composite Metals: *Daniel Kiener*¹; Alexander Leitner¹; Verena Maier-Kiener¹; ¹University of Leoben

11:00 AM

Comparisons of Mechanical Property Development during HPT Processing and Subsequent Room Temperature Storage in High Purity Cu and a Pb-62%Sn Alloy: *Yi Huang*¹; Shima Sabbaghianrad²; Abdulla Almazroue³; Khaled Al-Fadhalah⁴; Saleh Alhajeri³; Nian Xian Zhang¹; Terence Langdon¹; ¹University of Southampton; ²University of Southern California; ³P.A.A.E.T.; ⁴Kuwait University

11:20 AM

Micro-scale Mechanical Response of Ultrafine-grained Materials Processed by High-pressure Torsion: *Megumi Kawasaki*¹; Jae-il Jang¹; Byungmin Ahn²; Terence Langdon³; ¹Hanyang University; ²Ajou University; ³University of Southern California

11:40 AM

History-independent Fatigue Response of Polycrystalline Cu with Highly Oriented Nanoscale Twins: Qingsong Pan¹; Haofei Zhou²; Qihong Lu¹; Huajian Gao²; *Lei Lu*¹; ¹Institute of Metal Research, CAS; ²Brown University

12:00 PM

On the Strength Effects in Hydrogenated Palladium Subjected to HPT Processing: *Daria Setman*¹; Wolfgang Rössl¹; Andreas Grill¹; Erhard Schafner¹; Wolfgang Sprengel²; Yuzeng Chen³; Michael Zehetbauer¹; ¹University Vienna; ²TU Graz; ³Northwestern Polytechnical University, State Key Lab of Solidification Processing, Republic of China

Pan American Materials Congress: Steels — Properties and Performance

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Omar Garcia-Rincon, TERNIUM Mexico SA de CV; Andre Costa E Silva, EEMVR - Universidade Federal Fluminense

Tuesday AM
February 28, 2017

Room: Marina E
Location: Marriott Marquis Hotel

Session Chair: Kester Clarke, Colorado School of Mines

10:20 AM Invited

Developing Sustainable Pipeline Steels: *Hani Henein*¹; ¹University of Alberta

10:50 AM

The Effect of Particle Speed and Impact Angle on the Erosion of Newly Developed API X120 Pipeline Steel: *Paul Okonkwo*¹; R. Shakoor¹; A.M Mohamed²; ¹Qatar University; ²Department of Metallurgical and Materials Engineering, Faculty of Petroleum and Mining Engineering, Suez University

11:10 AM

The Development of NbC Reinforced Martensitic Stainless Steel Composites for High Wear and Corrosive Environments: Wen Hao Kan¹; Qaiser Ihsan Gondal¹; Xin Zhou¹; Jiahui Li¹; Zi Jie Ye¹; Yue Zhu¹; *Vijay Bhatia*¹; Kevin Dolman²; Timothy Lucey²; Xinhua Tang²; Chang Li¹; Gwénaëlle Proust¹; Julie Cairney¹; ¹The University of Sydney; ²Weir Minerals Australia

11:30 AM

Hot-stamping Response of Laser Welds in Low-carbon Steels: *Martha Guerrero-Mata*¹; Michael Andreassen²; S Liu³; O Garcia⁴; J. Speer³; ¹Universidad Autonoma de Nuevo Leon; ²Technical University of Denmark; ³Colorado School of Mines; ⁴Ternium Mexico

11:50 AM

The Influence of Hydrogen on Tensile Properties of TRIP-aided Bainitic Ferrite Steels with Carbon/Manganese Variations: *Andrea Bollinger*¹; John Speer¹; Kip Findley¹; Emmanuel De Moor¹; Toshio Murakami²; ¹Colorado School of Mines; ²Kobe Steel LTD

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Electromigration

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Tuesday AM
February 28, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chairs: Shih-kang Lin, National Cheng Kung University; Ming-Tzer Lin, National Chung Hsing University; Chao-hong Wang, National Chung Cheng University

8:30 AM Invited

Electromigration Enhanced Intermetallic Growth and Damage Formation in Pb-free Solder Joints: *Paul Ho*¹; Brook Huang-Lin Chao¹; Seung-Hyun Chae¹; Xuefeng Zhang¹; ¹The University of Texas at Austin

9:00 AM

Investigation of the Influence of Ni Content on Electromigration Resistance of (Pd,Ni)Sn₄: *Chao-hong Wang*¹; Kuan-ting Li¹; ¹National Chung Cheng University

9:20 AM

Ab Initio Critical Product of Blech Distance and Current Density: *Yu-chen Liu*¹; Shih-kang Lin¹; ¹National Cheng Kung University

9:40 AM

Phase-field Modeling of Grain-boundary Grooving and Surface Drift under Homogeneous Electromigration: *Arnab Mukherjee*¹; Kumar Ankit²; Britta Nestler²; ¹Karlsruhe University of Applied Sciences; ²Karlsruhe Institute of Technology

10:00 AM Break

10:20 AM Invited

An Industry Perspective on Electromigration in Microelectronics: *Ping-Chuan Wang*¹; ¹GlobalFoundries

10:50 AM

Electromigration Effects upon Interfacial Reactions in Electronic Solder Joints of Different Bump Heights and Different Electric Current Densities: *Jing-wei Chen*¹; Sinn-wen Chen¹; Yi-cheng Lin¹; Tao-chih Chang²; ¹National Tsing Hua University; ²Industrial Technology Research Institute

11:10 AM

The Investigation of Electromigration Defects due to Currents Stress Effects between the Flip-chip Solder and Copper Substrate: *Wei-Jhen Chen*¹; Yue-Lin Lee¹; Ti-Yuan Wu¹; Ang-Tin Tsai¹; Ming-Tzer Lin¹; ¹National Chung Hsing University

Phase Transformations and Microstructural Evolution — Shape Memory Alloys, and Lightweight Metals Al & Mg

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Tuesday AM
February 28, 2017

Room: 16B
Location: San Diego Convention Ctr

Session Chair: Raju Ramanujan, Nanyang Technological University

8:30 AM

Phase Field Modeling of Functional Fatigue in Shape Memory Alloys: *Yipeng Gao*¹; *Yunzhi Wang*¹; ¹The Ohio State University

8:50 AM

In Situ X-ray Diffraction Investigation of Thermally Induced Martensitic Transformations in High Temperature Shape Memory Alloys: *Mohammed Azeem*¹; *Vassili Vorontsov*²; *Nicholas Jones*³; *Seema Raghunathan*²; *David Dye*²; ¹Manchester University; ²Imperial College London; ³University of Cambridge

9:10 AM

Martensitic Transformation near Grain Boundaries and Phase Boundaries in Dual-phase Shape Memory Alloys: *Ying Chen*¹; *Rebecca Dar*¹; ¹Rensselaer Polytechnic Institute

9:30 AM

Origin of the {332}<113> Twinning System in β Titanium Shape Memory Alloys: *Emmanuel Bertrand*¹; *Philippe Castany*²; *Yang Yang*²; *Thierry Gloriant*²; ¹Institut de Matériaux Jean Rouxel (IMN); ²INSA de Rennes

9:50 AM

Modeling the Superelastic Behavior in Small-scale ThCr₂Si₂-type Crystals: *Ian Baks*¹; *John Sypek*²; *Hang Yu*³; *Paul Canfield*⁴; *Seok-Woo Lee*²; *Christopher Weinberger*¹; ¹Colorado State University; ²University of Connecticut; ³Drexel University; ⁴Iowa State University

10:10 AM Break

10:30 AM

Strengthening Model to Optimize Coarsening Resistant Q and θ' -Phase Precipitates in Al-Si-Mg-Cu Cast Alloys: *Andrew Bobel*¹; *Mike Walker*²; *Greg Olson*¹; ¹Northwestern University; ²General Motors

10:50 AM

Structure, Mechanical Properties and Corrosion Behavior in a Powder-processed Icosahedral-phase-strengthened Aluminum Matrix Nanocomposite: *Mark Aindow*¹; *Benjamin Bedard*¹; *Iuliana Cernatescu*²; *Alexis Ernst*¹; *Mauricio Gordillo*³; *Aaron Nardi*⁴; *Thomas Watson*²; ¹University of Connecticut; ²Pratt and Whitney; ³FEI Corporation; ⁴United Technologies Research Center

11:10 AM

The Effect of Aluminum Content on Recrystallization and Grain-growth of Magnesium Alloys: *Aeriel Murphy*¹; *John Allison*¹; ¹University of Michigan

11:30 AM

Mg-Sc-based Alloy and Its Functionality: *Daisuke Ando*¹; *Yukiko Ogawa*; *Yuta Takeuchi*¹; *Yuji Sutou*; *Junichi Koike*¹; ¹Tohoku University

Pioneers in Additive Manufacturing — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: James Foley, Los Alamos National Laboratory; Paul Prichard, Kennametal Inc; Iver Anderson, Iowa State University/ Ames Laboratory; David Bourell, University of Texas

Tuesday AM
February 28, 2017

Room: 7A
Location: San Diego Convention Ctr

Session Chair: James Foley, Los Alamos National Laboratory

8:30 AM Invited

A History of Additive Manufacturing: *David Bourell*¹; ¹University of Texas

9:00 AM Invited

3DP Retrospective: Do Inventors Know What They Are Doing?: *Michael Cima*¹; ¹MIT

9:30 AM Invited

Assent and Decline of LOM Technology: *Michael Feygin*¹; ¹Cubic Technologies, Inc.

10:00 AM Break

10:20 AM Invited

Laser Deposition of Metallic Powders: *Brian Welk*¹; *Peter Collins*²; *Rajarshi Banerjee*³; *Hamish Fraser*¹; ¹The Ohio State University; ²Iowa State University; ³University of North Texas

10:50 AM Invited

Directed Light Fabrication: A Near-Net Shape Process using Laser Assisted Metal Deposition: *Dan Thoma*¹; ¹University of Wisconsin-Madison

11:20 AM Invited

Development of Laser-powder Metal Additive Manufacturing for Industry: Historical Perspective, Current and Future Applications: *James Sears*¹; ¹GE GRC

Rare Metal Extraction & Processing — Rare Earth Elements II and Platinum Group Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Hojong Kim, The Pennsylvania State University; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Neale Neelameggham, Ind LLC; Takanari Ouchi, Massachusetts Institute of Technology

Tuesday AM
February 28, 2017

Room: 17B
Location: San Diego Convention Ctr

Session Chairs: Takanari Ouchi, MIT; Harald Oosterhof, Umicore

8:30 AM

Electrochemical Behavior of Neodymium in Molten Chloride Salts: *Laure Diaz*¹; *Jérôme Serp*¹; *Pierre Chamelot*²; *Mathieu Gibilaro*²; *Laurent Massot*²; ¹CEA Marcoule; ²Laboratoire de Génie Chimique

8:55 AM

Novel Reactive Anode for Electrochemical Extraction of Rare Earth Metals from Rare Earth Oxides: *Aida Abbasalizadeh*¹; *Seshadri Seetharaman*²; *Prakash Venkatesan*¹; *Jilt Sietsma*²; *Yongxiang Yang*¹; ¹Delft University of Technology; ²Royal Institute of Technology

9:20 AM

Electrochemical Formation of Nd Alloys Using Liquid Metal Electrodes in Molten LiCl-KCl Systems: *Hirokazu Konishi*¹; *Hideki Ono*¹; *Eiichi Takeuchi*¹; *Toshiyuki Nohira*²; *Tetsuo Oishi*³; ¹Osaka University; ²Kyoto University; ³National Institute of Advanced Industrial Science and Technology (AIST)

9:45 AM

Challenges in the Electrolytic Refining of Silver – Influencing the Co-deposition through Parameter Control: *Ann-Kathrin Maurell-Lopez*¹; Bernd Friedrich¹; Wolfgang Koch²; ¹RWTH Aachen; ²Agosi Allgemeine Gold- und Silberscheideanstalt AG

10:10 AM Break**10:30 AM**

Vapor Treatment for Alloying and Magnetizing Platinum Group Metals: *Yu-ki Taninouchi*¹; Toru Okabe¹; ¹The University of Tokyo

10:55 AM

Biotechnological Recovery of Platinum Group Metals from Leachates of Spent Automotive Catalysts: Norizo Saito¹; Toshiyuki Nomura¹; *Yasuhiro Konishi*¹; ¹Osaka Prefecture University

11:20 AM

Recovering Palladium from Chloridizing Leaching Solution of Spent Pd/Al₂O₃Catalyst by Sulfide Precipitation: *Li Qian*¹; Zou qiang¹; Xu bin¹; Yang yong-bin¹; Rao xuefei¹; Hu long¹; Jiang tao¹; ¹Central South University

11:45 AM

Mechanism of Intensifying Cyanide Leaching of Gold from a Calcine by the Pretreatment of Acid or Alkali Washing: *Zhang Yan*¹; Li Qian¹; Liu Xiaoliang¹; Yang Yong-bin¹; Xu Bin¹; Li Hong-wei¹; Jiang Tao¹; ¹Central South University

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Functional Surfaces and Thin Films I

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, UTEP; Heinz Palkowski, Clausthal Univ of Technology; Vikas Tomar, Purdue Univ; Nugehalli Ravindra, NJIT

Tuesday AM
February 28, 2017

Room: Pacific 18
Location: Marriott Marquis Hotel

Session Chairs: Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas at El Paso, UTEP

8:30 AM Invited

Silicon Doped Nanoparticles Embedded in Transparent Oxide Thin Films for Micro-optoelectronic Devices: *Gerald Ferblantier*¹; Fabien Ehrhardt¹; Corine Ulhaq-Bouillet²; Dominique Muller¹; Daniel Mathiot¹; ¹ICube Laboratory; ²IPCMS

8:50 AM Invited

Nanoscale Structure-property Relationship Studies of Metallic and Oxide Thin Films Using Correlative Electron Microscopy and Atom Probe Tomography: *Arun Devaraj*¹; Steven Spurgeon¹; Rama Vemuri¹; Richard Oleksak²; Greg Herman²; Scott Chambers¹; Charles Henager¹; Aashish Rohatgi¹; Thevuthasan Suntharampillai¹; ¹Pacific Northwest National Laboratory; ²Oregon State University

9:15 AM

Influence of MgF₂ Protective Coating on Plasmonic Response of Mg Thin Films: *Richard Laroche*¹; Kanagasundar Appusamy¹; Steve Blair¹; Ajay Nahata¹; Sivaraman Guruswamy¹; ¹University of Utah

9:35 AM

Advanced Characterization of Metal Nitride Thin Films Using Spherical Aberration Corrected TEM: *Zaoli Zhang*¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

9:55 AM Break**10:15 AM Invited**

Moth Eye-based, Graded Index Surface Treatments to Control Reflection: Lesley Chan¹; Chris Pynn¹; Dan Morse¹; *Michael Gordon*¹; ¹UCSB

10:40 AM

Nitrogen Incorporation Induced Tuning of the Optical Properties of Niobium Oxide Thin Films: Oscar Nunez¹; Neil Murphy²; *Chintalapalle Ramana*¹; ¹The University of Texas at El Paso; ²Air Force Research Laboratory

11:00 AM

High Stacking-Fault Energy Nanotwinned Materials: *Joel Bahena*¹; Leonardo Velasco¹; Andrea Hodge¹; ¹University of Southern California

11:20 AM

Synthesis of Self-cleaning, Multi-functional Metal Oxide Coatings by the Atmospheric Pressure Plasma Technique: *Wei-Chen Hung*¹; Ching-Yu Yang²; Po-Yu Chen²; ¹National Tsing Hua University; ²National Tsing Hua University

11:40 AM

Ultra-Fast Boronizing of Low Carbon Steel Compared With Chromium Carbide Hard Facing Steel Grades: *Bakr Rabeeh*¹; Yasser Fouad¹; Zeyad Abd El Azim¹; ¹German University in Cairo, GUC

The Science of Melt Refining: An LMD Symposium in Honor of Christian Simensen and Thorvald Abel Engh — TAE/CJS Honorary Symposium I: Inclusion Removal

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Anne Kvithyld, SINTEF

Tuesday AM
February 28, 2017

Room: 3
Location: San Diego Convention Ctr

Session Chair: Mark Badowski, Hydro

8:30 AM Introductory Comments**8:35 AM**

The Contributions of Thorvald Engh and Christian Simensen to the Science of Melt Refining: John Grandfield¹; *Anne Kvithyld*²; ¹Grandfield Technology Pty Ltd; ²SINTEF

9:10 AM

The Fundamentals of Forming Microbubbles in Liquid Metal Systems: *Roderick Guthrie*¹; Mihaiela Isac¹; ¹McGill University

9:45 AM

A Holistic Approach to Molten Metal Cleanliness: *D. Corleen Chesonis*¹; ¹Metal Quality Solutions, LLC

10:15 AM Break**10:30 AM**

Results of Trials with a Multi Stage Filtration System Employing a Cyclone: *John Courtenay*¹; Marcel Rosefort²; ¹MQP Limited; ²Trimet Aluminium SE

11:00 AM

Developments in Inclusion Removal Technology: *John Grandfield*¹; ¹Grandfield Technology Pty Ltd

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Nanomaterials for Nanoelectronics

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Tuesday PM
February 28, 2017

Room: Pacific 26
Location: Marriott Marquis Hotel

Session Chairs: Nitin Chopra, University of Alabama; JangSik Lee, Pohang Institute of Sci. & Tech.

2:00 PM Invited

Recent Advancement in Graphene-based Layer Transfer: *Jeehwan Kim*¹; ¹Massachusetts Institute of Technology

2:30 PM Invited

Van Der Waals Epitaxy of TMDs and Topological Insulators: R. Yue¹; L. A. Walsh¹; A. T. Barton¹; Y. Nie¹; H. Zhu¹; D. Barrera¹; S. McDonnell²; R. Addou¹; Q. Wang¹; N. Liu¹; M. J. Kim¹; J. Hsu¹; K. Cho¹; Y. J. Chabal¹; J. Kim¹; R. M. Wallace³; L. Colombo³; *Christopher Hinkle*¹; ¹University of Texas at Dallas; ²University of Virginia; ³Texas Instruments

3:00 PM

Design of 2-D Vertical Heterostructures for Steep-slope Devices: *Phillip Campbell*¹; Jake Smith¹; Jud Ready²; Eric Vogel¹; ¹Georgia Institute of Technology; ²Georgia Tech Research Institute

3:20 PM Invited

Silicate Thin Films with Aligned Nanochannels by Surfactant Mediated Sol-gel Approach: Mechanism and Limitations: *Choong-un Kim*¹; ¹University of Texas at Arlington

3:50 PM Break

4:10 PM Invited

Redefining Energy-efficient Systems via a Unified Memory Subsystem in STT-MRAM: *Seung Kang*¹; ¹Qualcomm Technologies, Inc.

4:40 PM

Protein-based Resistive Switching Memory with Configurable Switching Properties: *Sungjo Kim*¹; Jang-Sik Lee¹; ¹Postech

5:00 PM

Enhancement-mode ALD DEZ-H₂O-treated InGaAs MOSFETs with High-k Gate Dielectric: *Jae-Gil Lee*¹; Young-Chul Byun¹; Dushyant Narayan¹; Jiyoung Kim¹; ¹The University of Texas at Dallas

5:20 PM

Improvement of Interface Properties on High Mobility Substrates by Low Temperature (100 °C) Deposited-ZrO₂: *Young-Chul Byun*¹; Jae-Gil Lee¹; Joy Lee¹; Jiyoung Kim¹; ¹The University of Texas at Dallas

8th International Symposium on High Temperature Metallurgical Processing — Alloys and Materials Preparation

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Tuesday PM
February 28, 2017

Room: 18
Location: San Diego Convention Ctr

Session Chairs: Onuralp Yücel, ITU; James Cox, UTRS Inc.

2:00 PM Introductory Comments

2:05 PM

Development of a Novel, Low-cost Titanium Extraction Process for Bulk or Powder Applications: *James Cox*¹; Chanaka De Alwis¹; Benjamin Kohler¹; Mike Lewis¹; Matthew Call¹; Julia Kluck¹; Amelinda Olson¹; Marc Snyderman¹; ¹UTRS Inc.

2:25 PM

Evolution of Non-metallic Inclusions in Solid Fe-Al-Ti-N Alloy during Heating: *Hiroyuki Matsuura*¹; Wonjin Chio¹; Gen Kamimura¹; ¹The University of Tokyo

2:45 PM

Preparation of Low-carbon Ti₂O₃ by Carbonthermal Reduction of the Mixture of Titanium Dioxide and Activated Carbon under Vacuum Condition: *Kejia Liu*¹; Yaowu Wang¹; Yuezhong Di¹; Jianping Peng¹; Xinzhong Deng¹; Naixiang Feng¹; Yi Zhang²; ¹Northeastern University; ²Institute of Process Engineering, Chinese Academy of Sciences

3:05 PM

Pyrometallurgical Studies for Manganese Extraction Using Turkish Ore Reserves: *Ender Keskinilic*¹; ¹Atilim University

3:25 PM Break

3:45 PM

A Recommendation of a New Method of Ti and Ti-Al Alloy Production by Aluminum Reduction Na₂TiF₆: Feng Naixiang¹; *KUN ZHAO*¹; Jianping Peng¹; ¹Northeastern University

4:05 PM

Trace Elements Behavior during the Oxidation of Liquid SiMn Alloy: *Yan Ma*¹; Ida Kero²; Sarel Gates³; Gabriella Tranelli¹; ¹Norwegian University of Science and Technology; ²SINTEF Materials and Chemistry; ³University of Pretoria

4:25 PM

Effect of Microalloy Elements V And Mg on Organization at High Heat Input Welding Shipbuilding Structure Steel: *Wang Yan*¹; Han Yihua¹; Zhu Liguang¹; Zhang Qingjun¹; Wang Shuoming¹; Zhang Caijun¹; ¹North China University of Science and Technology

4:45 PM

Sintering Performance of Blends Containing High Proportion of Limonite Iron Ore Fines: *Feng Zhang*¹; Deqing Zhu¹; Jian Pan¹; ¹Central South University

Acta Materialia Symposium — Award Session*Sponsored by:*No Sponsors Found!*Program Organizer:* Carolyn Hansson, University of Waterloo

Tuesday PM Room: 22
 February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Carolyn Hansson, University of Waterloo**3:15 PM Introductory Comments****3:25 PM Invited**

Acta Materialia Gold Medal Lecture: Dynamic Transformation of Austenite at Temperatures Well Above the Ae3: *John Jonas*¹; ¹McGill University

3:45 PM Question and Answer Period**3:55 PM Invited**

Acta Materialia Silver Medal Lecture: Advanced Ceramics for Environmental Protection Materials in Extreme Conditions: *Jingyang Wang*¹; ¹Institute of Metal Research, Chinese Academy of Sciences

4:15 PM Question and Answer Period**4:25 PM Invited**

Acta Materialia Hollomon Award for Materials and Society Lecture: Advanced Materials Manufacturing for Global Mobility: *Warren Poole*¹; ¹University of British Columbia

4:45 PM Question and Answer Period

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Advances in Methods, Characterization, and Modeling Tools

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Tuesday PM Room: 7B
 February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Lee Semiatin, AFRL; Ayman Salem, Materials Resources LLC**2:00 PM Invited**

Cloud-based Integrated Computational Microstructure-informed Response for Titanium Additive Manufacturing: *Ayman Salem*¹; Daniel Satko¹; Joshua Shaffer¹; Richard Kublik¹; Mohsen Seifi²; John Lewandowski²; S.L. Semiatin³; ¹Materials Resources LLC; ²Case Western Reserve University; ³Air Force Research Laboratory

2:30 PM Invited

Understanding Structure Property Relationships in Electron Beam Melting through Data Analytics and Visualization: *Ryan Dehoff*¹; Vincent Paquit¹; Michael Kirka¹; Ralph Dinwiddie¹; Kinga Unocic¹; Peeyush Nandwana¹; Sean Yoder¹; Naren Ragav²; William Halsey¹; Chad Steed¹; Suresh Babu¹; ¹Oak Ridge National Laboratory; ²University of Tennessee

3:00 PM

Three-dimensional Tomography of EBM-manufactured IN718: *Andrew Polonsky*¹; McLean Echlin¹; William Lenthe¹; Ryan Dehoff²; Michael Kirka²; Tresa Pollock¹; ¹University of California, Santa Barbara; ²Oak Ridge National Laboratory

3:20 PM

High Strain Rate Mechanical Behavior of Stainless Steel 316L Processed by Selective Laser Melting: Travis Kneen¹; *Christopher Barrett*¹; Brett Conner¹; Guha Manogharan¹; ¹Youngstown State University

3:40 PM Break**4:00 PM Invited**

Recent Progress in Low-cost Open-source Metal 3-D Printing: Joshua Pearce¹; *Paul Sanders*¹; ¹Michigan Tech

4:30 PM

The Effect Process Parameters have on Residual Stress and Texture of Additively Manufactured Ti-6Al-4V Components: *Nathan Levkulich*¹; Gregory Loughnane¹; Nathan Klingbeil¹; ¹Wright State University

4:50 PM

Synchrotron X-ray and Neutron Diffraction Measurements of Multi-scale Full Tensor Residual Stresses in Nickel-based Super Alloy Built through Direct Metal Laser Sintering Technique of Additive Manufacturing: *Thien Phan*¹; Lyle Levine¹; Thomas Gnaeupel-Herold¹; Yaakov Idell¹; ¹National Institute of Standards and Technology

5:10 PM

Study on the Effects of Microsegregation, Temperature, and Stress on IN625 Microstructures by Phase Field Simulations: *Trevor Keller*¹; Jonathan Guyer¹; ¹National Institute of Standards and Technology

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Process Qualification Part I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Tuesday PM Room: 8
 February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Dan Thoma, University of Wisconsin; Deepankar Pal, 3DSIM**2:00 PM Invited**

Challenges and Opportunities for Metal Additive Manufacturing: *Dan Thoma*¹; ¹University of Wisconsin-Madison

2:30 PM

Microstructure Variation and Process Model Developments For LENS: *Josh Sugar*¹; Lauren Beghini¹; Michael Stender¹; Michael Veilleux¹; David Keicher²; Daryl Dagle²; Michael Maguire²; Chris San Marchi¹; ¹Sandia National Labs, Livermore, CA; ²Sandia National Labs, Albuquerque, NM

2:50 PM

Machine Learning Applications for Microstructure and Process Qualification in Additive Manufacturing: *Brian DeCost*¹; Barnabas Poczos¹; Elizabeth Holm¹; ¹Carnegie Mellon University

3:10 PM

Development of an Integrated Laser-aided Metal Additive Manufacturing System with Real-time Process, Dimensions, and Property Monitoring, Measurements and Control: Navin Sakhivel¹; Joseph Fiordilino²; Deede Banh³; Subrata Sanyal³; *Hitesh Vora*¹; ¹Oklahoma State University; ²University of Pittsburgh; ³Naval Surface Warfare Center

3:30 PM Break

3:50 PM Invited

Identifying Critical Variables for Laser Powder Bed Fusion: *Li Ma*¹; Brandon Lane¹; Shawn Moylan¹; Jeffrey Fong¹; James Filliben¹; Carelyn Campbell¹; Lyle Levine¹; ¹National Institute of Standards and Technology

4:20 PM

Simulation and Experimental Validation of Thermal Cycling Motivated Distortion on Parts Produced Using Alloy IN 625 via Selective Laser Melting: *Deepankar Pal*¹; Samuel Dilip Jangam²; Nachiket Patil¹; Sally Xu¹; Pradeep Chalavadi¹; Kevin Briggs¹; Brent Stucker¹; ¹3DSIM LLC; ²University of Louisville

4:40 PM

Modeling the Effects of Microstructure on the Strength of Additively Manufactured Ti-6Al-4V: *Jeffrey Florando*¹; Darren Pagan¹; Jonathan Lind¹; Rupalee Mulay¹; Joseph McKeown¹; John Moore¹; Nathan Barton¹; Mukul Kumar¹; ¹Lawrence Livermore National Laboratory

5:00 PM

Effect of Process Time Interval on Mechanical Behavior of Metallic Parts Fabricated via Directed Energy Deposition: *Aref Yadollahi*¹; MJ Mahtabi¹; Shuai Shao¹; Nima Shamsaei¹; Scott Thompson¹; ¹Mississippi State University

5:20 PM

Cellular Automata based Microstructural Modeling for Additive Manufacturing Processes: *Deepankar Pal*¹; *Javed Akram*¹; Pradeep Chalavadi¹; Brent Stucker¹; ¹3DSIM

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session IV

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Tuesday PM
February 28, 2017

Room: 33C
Location: San Diego Convention Ctr

Session Chairs: Aaron Stebner, Colorado School of Mines; David Fullwood, Brigham Young University

2:00 PM Invited

Digital Image Correlation Using Forescatter Detector Images for the Study of Transformation in TRIP Steel: *David Fullwood*¹; Shamoon Irfan²; Jeff Cramer¹; Tyler Mathis¹; Derrik Adams¹; Michael Miles¹; Eric Homer¹; Tyson Brown³; Robert Kubic³; ¹Brigham Young University; ²The Northcap University; ³General Motors

2:20 PM

In-situ Experiments to Capture Rapid Microstructural Evolution and Phase Transformation of Titanium during Dynamic Loading: *Benjamin Morrow*¹; David Jones¹; Paulo Rigg²; Ellen Cerreta¹; ¹Los Alamos National Laboratory; ²Washington State University

2:40 PM

In-situ Structural and Mechanical Characterization of ThCr₂Si₂-structured Superelastic Intermetallic Compounds: Keith Dusoe¹; Ian Bakst²; John Sypek¹; Gil Drachuck³; Paul Canfield³; Christopher Weinberger²; *Seok-Woo Lee*¹; ¹University of Connecticut; ²Drexel University; ³Iowa State University

3:00 PM

In-situ EBSD Analysis and Crystal Plasticity FE Simulations in a CP Titanium Sheet: *Joo-Hee Kang*¹; Ji Hoon Kim²; Chan Hee Park¹; Chang-Seok Oh¹; ¹Korea Institute of Materials Science; ²Pusan National University

3:20 PM Break

3:40 PM Invited

Mechanics of Phase Transformation in Shape Memory Alloys: A Coupled High-energy X-ray Diffraction and Forward Modeling Approach: *Aaron Stebner*¹; Harshad Paranjape¹; Ashley Bucsek¹; ¹Colorado School of Mines

4:00 PM

Characterizing the Boundary Lateral to the Shear Direction of Deformation Twins in Magnesium: *Yue Liu*¹; Jian Wang²; Rodney McCabe¹; Carlos Tomé¹; ¹Los Alamos National Lab; ²University of Nebraska, Lincoln

4:20 PM

Explicit Modeling of Twin Lamellae in AZ31 Using a Crystal Plasticity Finite Element Approach: *Milan Ardeljan*¹; Irene Beyerlein²; Marko Knezevic¹; ¹University of New Hampshire; ²Los Alamos National Laboratory

4:40 PM

Twinning Kinetics and Its Sensitivity to the Strain Rate: *Kavan Hazel*¹; Owen Kingstedt²; Vignesh Kannan³; Guruswami Ravichandran⁴; KT Ramesh³; ¹University of Alabama in Huntsville; ²University of Utah; ³Johns Hopkins University; ⁴California Institute of Technology

5:00 PM

Role of Adjoining Twin Pairs on Detwinning under Stress Reversal in HCP Metals: *M. Arul Kumar*¹; Yue Liu¹; Irene J Beyerlein¹; Rodney McCabe¹; Carlos N Tome¹; ¹Los Alamos National Lab

Advanced High-Strength Steels — Impact of Solutes

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Tuesday PM
February 28, 2017

Room: 17A
Location: San Diego Convention Ctr

Session Chairs: Matthias Militzer, The University of British Columbia; Mohamed Goune, ICMCB-Bordeaux1

2:00 PM Invited

New Insights into H Trapping and Diffusion in Steel Microstructures Obtained from Atomistic Simulations: *Matous Mrovec*¹; Davide Di Stefano²; Christian Elsässer²; Roman Nazarov³; Tilmann Hickel⁴; Jörg Neugebauer⁴; ¹ICAMS, Ruhr University Bochum, Germany; ²Fraunhofer IWM; ³Lawrence Livermore National Laboratory; ⁴Max Planck Institute for Iron Research

2:20 PM

Hydrogen Solubility near Surfaces and Interfaces: *Robert Spatschek*¹; Giorgia Gobbi²; Claas Hueter¹; Aurab Chakrabarty³; Ugur Aydin¹; Steffen Brinckmann⁴; Joerg Neugebauer⁴; ¹Forschungszentrum Juelich; ²Politecnico di Milano; ³Texas A&M University at Qatar; ⁴Max-Planck-Institut fuer Eisenforschung GmbH

2:40 PM

Ab Initio Calculations of Solute Effects on the Lattice Parameters and Elastic Constants of Fe Phases: *Michael Fellinger*¹; Louis Hector Jr.²; Dallas Trinkle¹; ¹University of Illinois at Urbana-Champaign; ²General Motors

3:00 PM

Tempering Reactions in Martensitic Stainless Steels Studied by Dilatometry and Correlative Magnetic Saturation Measurements: *Qiuliang Huang*¹; Olena Volkova¹; Horst Biermann¹; Javad Mola¹; ¹Technische Universität Bergakademie Freiberg

3:20 PM

Atomic Scale Study of Boron Non-equilibrium Segregation and Precipitation at Prior Austenite Grain Boundary in High Strength Steels: *Gregory da Rosa*¹; Philippe Maugis¹; Josée Drillet²; Veronique Hebert²; Nathalie Valle³; Khalid Hoummada¹; ¹Aix-Marseille Université, CNRS, IM2NP; ²ArcelorMittal Maizières Research SA; ³ Luxembourg Institute of Science and Technology

3:40 PM Break

4:00 PM

Influence of Microalloying Elements Ti and Nb in Solid Solution and as Precipitates during Annealing of Advanced High-strength Steels: *Marion Bellavoine*¹; Myriam Dumont¹; Josée Drillet²; Veronique Hebert²; Philippe Maugis¹; ¹IM2NP; ²ArcelorMittal Research SA

4:20 PM

Low Alloy High Strength Martensitic Nitrogen Steel: *John Chinella*¹; ¹U.S. Army Research Laboratory

4:40 PM

Effects of Aluminum Addition on Warm Ductility and Microstructure in Mn-rich Steels: *Guan-Ju Cheng*¹; Chun-Te Wu¹; Delphic Chen²; Ching-Yuan Huang²; Hung-Wei Yen¹; ¹National Taiwan University; ²China Steel Corporation

5:00 PM

The Role of Copper in Microstructures and Mechanical Properties of Laser-welded Fe-19Ni-3Mo-1.5Ti Maraging Steel Joint: *Kun Li*¹; Jiguo Shan¹; Peng Wen¹; Aiping Wu¹; Chunxu Wang²; Zhiling Tian²; ¹Tsinghua University; ²Central Iron & Steel Research Institute

Advanced Materials for Energy Conversion and Storage — Energy Storage I

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee

Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Tuesday PM

February 28, 2017

Room: 15A

Location: San Diego Convention Ctr

Session Chairs: Partha Mukherjee, TAMU; Leela Arava, Wayne

2:00 PM Keynote

Direct Electrodeposition of High Performance Solid and Mesostructured Li-ion Cathodes and Anodes: *Paul Braun*¹; Hailong Ning²; Huigang Zhang³; ¹University of Illinois at Urbana-Champaign; ²Xerion Advanced Battery Company; ³Nanjing University

2:30 PM Invited

A Multi-Scale Approach to Li-Ion Battery Analysis Using 2D, 3D, and 4D Microscopy: *Jeff Gelb*¹; Stefanie Freitag²; Will Harris¹; Arno Merkle¹; ¹Carl Zeiss X-ray Microscopy; ²Carl Zeiss Microscopy

2:55 PM

First Principles Simulations of Lithium Ion Transport through Graphite/Electrolyte Interfaces: *Vincenzo Lordi*¹; Mitchell Ong¹; Tuan Pham¹; Kyoung Kweon¹; John Pask¹; ¹Lawrence Livermore National Lab

3:15 PM Invited

Operando Structural and Chemical Characterization during Li-ion Battery Cycling: *Shen Dillon*¹; Ching-Yen Tang¹; ¹University of Illinois at Urbana-Champaign

3:40 PM Break

4:00 PM

Nanoscale Characterization of Li-ion Battery Cathodes Using Atom Probe Tomography and Correlative Microscopy: *Arun Devaraj*¹; Ethan Vo¹; Pengfei Yan¹; Chongmin Wang¹; Vijaya Murugesan¹; ¹Pacific Northwest National Laboratory

4:20 PM Invited

Atomistic Simulations of Ionic Liquid and Polymer Electrolytes: From Bulk Phases to Interfacial Behavior: *John Lawson*¹; Justin Haskins¹; ¹NASA Ames Research Center

4:45 PM Invited

Chemomechanics in Li-ion batteries: *Kejie Zhao*¹; ¹Purdue University

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In Situ Techniques IV

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Tuesday PM

February 28, 2017

Room: 32A

Location: San Diego Convention Ctr

Session Chairs: Bob Wheeler, Microtesting Solutions; Jeff Wheeler, ETH Zürich

2:00 PM Invited

Optimum Layer Thickness for High Temperature Mechanical Properties of ARB Cu/Nb Nanoscale Multilayers: *Jon Molina-Aldareguia*¹; Jeromy Snel¹; Miguel Monclus¹; Nathan Mara²; Irene Beyerlein²; Javier Llorca¹; ¹IMDEA Materials Institute; ²Los Alamos National Laboratory

2:30 PM

Influence of Dislocation Density and Grain Boundaries on the Scaling Behaviour of Ultrafine-grained BCC Micropillars: *Reinhard Fritz*¹; Alexander Leitner¹; Verena Maier-Kiener¹; Daniel Kiener¹; ¹Montanuniversität Leoben

2:50 PM

Micro-Mechanical Characterization of Micro-Architected Tungsten Coating at Elevated Temperatures: *Quan Jiao*¹; Gidong Sim¹; Jaafar El-Awady¹; ¹Johns Hopkins University

3:10 PM

Multiscale 3D Imaging of Damage in an Angle-Interlocked Ceramic Matrix Composite under In-Situ Mechanical Loading Using Lab X-Ray Microscopy: *Hrishikesh Bale*¹; Robert Ritchie²; David Marshall³; ¹Carl Zeiss X-ray Microscopy; ²Department of Materials Science and Engineering, University of California, Berkeley; ³Teledyne Scientific Co.

3:30 PM Break

3:50 PM Invited

In Situ Thermo-mechanical Characterization of Materials: *Xiaodong Li*¹; ¹University of Virginia

4:20 PM

Probing the Dynamic Response of Ordered Lattice Materials: *J. Lind*¹; J. Hawreliak²; B. Maddox¹; M. Barham¹; M. Messner¹; B. Jensen³; N. Barton¹; M. Kumar¹; ¹Lawrence Livermore National Laboratory; ²Washington State University; ³Los Alamos National Laboratory

4:40 PM

Pushing the Envelope in Variable Temperature Nanoindentation: High and Cryogenic Temperature Measurements: Nicholas Randall¹; *Marcello Conte*¹; Gaurav Mohanty²; Jakob Schwiedrzik²; Jeffrey Wheeler³; Bertrand Bellanton¹; ¹Anton Paar TriTec; ²EMPA; ³ETH Zurich

5:00 PM

Effect of Ausforming on Isothermal Transformation Below Ms in NiCrMoV Steel Studied by In-situ Neutron Diffraction: *Wu Gong*¹; Stefanus Harjo²; Akinobu Shibata¹; Takuro Kawasaki²; Yo Tomota³; Tomoya Shinozaki⁴; Nobuhiro Tsuji¹; ¹Kyoto University; ²Japan Atomic Energy Agency; ³National Institute for Materials Science; ⁴Kobe Steel, Ltd.

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Session IV

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday PM Room: 21
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Hsin-jay Wu, National Sun Yat-sen University; Teruyuki Ikeda, Ibaraki University

2:00 PM Invited

Engineering (ZT)eng and Efficiency, High Power Factor in Half-Heusler, and New Zintl Materials: *Zhifeng Ren*¹; ¹University of Houston

2:20 PM Invited

Microstructural Size and Morphology Control of Si Base Thermoelectric Composites: *Teruyuki Ikeda*¹; ¹Ibaraki University

2:40 PM Invited

Microstructure and Performance of Mg₂(Si,Sn,Ge) Materials Prepared by Different Processing Methods: *Theodora Kyratsi*¹; ¹University of Cyprus

3:00 PM

Synthesis, Processing and Transport Properties of Metastable Phases in the Mg-Si-Sn System: *Pathikumar Sellappan*¹; Anthony Fong¹; Masayuki Murata²; Yasuhiro Kodaera¹; Javier Garay¹; ¹University of California San Diego; ²National Institute of Advanced Industrial Science and Technology (AIST)

3:20 PM

Phase Equilibria of Ternary Sn-Sb-Co Systems and Ge-Co-Sb and Thermoelectric Properties of Sn/Ge Doped Skutterudite CoSb₃: *Ping-Yuan Deng*¹; Hsin-Jay Wu¹; ¹Department of Materials and Optoelectronic science, National Sun Yat-sen University

3:40 PM Break

4:00 PM Invited

Phase Stability and Vacancy-site Occupation of Half-Heusler Compounds in Multi-component System M(Ni, X)Sn (M: Ti, Zr, Hf and X: Co, Ir): *Yoshisato Kimura*¹; Yaw Wang Chai¹; ¹Tokyo Institute of Technology

4:20 PM Invited

Thermoelectric Enhancement of Cu₂Se by CuInSe₂ Incorporation: *Pierre Ferdinand P. Poudeu*¹; ¹University of Michigan

4:40 PM Invited

Phase Diagram of Ternary Cu-Ga-Te System and Thermoelectric Properties of Chalcopyrite CuGaTe₂ Materials: *Hsin-jay Wu*¹; Zong-jin Dong²; ¹ National Sun Yat-sen University; ²National Sun Yat-sen University

5:00 PM

Understanding the Role of Secondary Phases in Enhancing the Figure-of-Merit in Ge-Sb-Te Alloys: *Jared Williams*¹; Donald Morelli¹; ¹Michigan State University

5:20 PM

Transient Liquid Phase Bonding of Cu/Ga/Ni and Cu/Ga/Co and Phase Equilibria of Cu-Ga-Ni and Co-Cu-Ga Ternary Systems: *Ji-min Lin*¹; Sinn-wen Chen¹; Tsu-ching Yang¹; ¹National Tsing Hua University

Aluminum Alloys, Processing and Characterization — Plasticity and Mechanical Behavior

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Yanjun Li, Norwegian University of Science and Technology

Tuesday PM Room: 4
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Pizhi Zhao, Chinalco

2:00 PM Introductory Comments

2:05 PM

New Yield Criterion for Description of Plastic Deformation of Face-Centered Cubic Single Crystals: *Nitin Chandola*¹; Crystal Pasilio²; Oana Cazacu¹; B. Revil-Baudard¹; ¹University of Florida/REEF; ²Air Force Research Laboratory

2:30 PM

Quantifying As-cast and Homogenized AA7050 Mechanical Properties through Compression Testing: *Yunbo Wang*¹; Matthew Krane¹; Kevin Trumble¹; ¹Purdue University

2:55 PM

Determining a Stable Texture Condition Under Complex Strain Path Deformations in Face Centered Cubic Metals: *Usman Ali*¹; Abhijit Brahme¹; Raja Mishra²; Kaan Inal¹; ¹University of Waterloo; ²General Motors Research and Development Center

3:20 PM

Microstructural Transition and Elevated Temperature Tensile Properties of Modified Al-Si-Cu-Mg Alloys: *Mehdi Rahimian*¹; Shouxun Ji¹; Paul Blake²; Douglas Watson²; Zhongyun Fan¹; ¹BCAST, Brunel University London; ²Jaguar Land Rover Limited

3:45 PM Break

4:00 PM

Effects of Alloying Elements on Anneal-hardening Behavior of Aluminum Alloy Foils: *Takashi Suzuki*¹; Shigeru Kuramoto²; Masaya Endo¹; Qi Cui¹; ¹Mitsubishi Aluminum Co., Ltd.; ²Ibaraki University

4:25 PM

Increasing Strength and Corrosion Resistance of AlMgSi Alloys by Tailor-made Thermomechanical Processing: *Alexander Wimmer*¹; ¹Neuman Aluminium

4:50 PM

Microstructural Optimization of a High Mechanical Properties (HMP) Aluminum Alloy by Using CobaPress™ Process: *Mamadou Balde*¹; Christophe Desrayaud¹; Véronique Bouvier²; Frédéric Perrier²; ¹Mines Saint-Etienne; ²Saint-Jean Industries

5:15 PM

Cyclic Stress-strain Behavior and Low Cycle Fatigue Life of AA6061 Aluminum Alloy: *Mirza Faisal Ahmed*¹; K. Liu¹; X. Grant Chen¹; ¹University of Québec at Chicoutimi

TUESDAY PM

TECHNICAL PROGRAM

Aluminum Reduction Technology — Cell Voltage and Pot Control

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Tuesday PM Room: 2
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Daniel Whitfield, Emirates Global Aluminium

2:00 PM Introductory Comments

2:05 PM

Application of Multivariate Statistical Process Control with STARprobe™ Measurements in Aluminium Electrolysis Cells: Jean-Pierre Gagné¹; Pascal Lavoie²; Albert Mulder²; Rémi St-Pierre¹; Pascal Côté¹; ¹STAS; ²Consultant

2:30 PM

Predicting Instability and Current Efficiency of Industrial Cells: Patrice Côté¹; Olivier Martin¹; Bertrand Allano¹; Véronique Dassylva-Raymond²; ¹Rio Tinto Alcan; ²Consultant, Reso-Lean Conseil

2:55 PM

Detecting, Identifying and Managing Systematic Potline Issues with Generation 3 Process Control: Nursiani Tjahyono¹; Yashuang Gao¹; David Wong¹; Ron Etzion¹; Albert Mulder²; ¹University of Auckland, Light Metals Research Centre; ²IT Consultant

3:20 PM

Integrating a New Smelter Supervision HMI in Existing Control Systems at ALBRAS: Vanderlei Fernandes¹; Geir Sandnes²; Leonel Mota Ivo³; Rogério Labanca³; ¹ALBRAS Alumínio Brasileiro S.A.; ²Norsk Hydro ASA; ³Accenture

3:45 PM Break

4:00 PM

Clustering Aluminium Reduction Cells: Flavia Lima¹; Alan Souza¹; Fabio Soares¹; Diego Lisboa¹; Roberto Oliveira¹; ¹UFPA

4:25 PM

Study of Impact of the Anode Slots on the Voltage Fluctuations of Aluminium Electrolysis Cell Using Bubble Layer Simulator: Sandor Poncsak¹; László Kiss¹; Sébastien Guérard²; Jean François Bilodeau²; ¹Univeristy of Quebec at Chicoutimi; ²Rio Tinto Aluminium

4:50 PM

Minimizing Cathode Voltage Drop by Optimizing Cathode Slot Design: Ralph Friedrich¹; Frank Hiltmann¹; Andreas Lützerath²; Richard Meier²; Markus Pfeffer¹; Till Reek²; Oscar Vera Garcia¹; ¹SGL CFL CE GmbH; ²TRIMET Aluminium SE

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Pyrometallurgy I

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Tuesday PM Room: 15B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Patrick Taylor, Colorado School of Mines

2:00 PM

Market Dynamics, Recycling and Recovery of Magnesium from Aluminum Alloy Scrap: Adam Gesing¹; Subodh Das²; ¹Gesing Consultants Inc.; ²Phinix, LLC

2:20 PM

Alternative Ways of Using Nonferrous Slags as Feed Material in the Ferrous Production Industry: Mario Sanchez¹; Fernando Parada²; Jose Palacios³; ¹Universidad Andrés Bello; ²Universidad de Concepcion; ³Universidad de Playa Ancha

2:40 PM

Insulating or Conductive Lining Designs for Electric Furnace Smelting?: Joalet Steenkamp¹; Glen Denton¹; Derek Hayman¹; ¹MINTEK

3:00 PM

The Influence of Phosphorous Additions on Phase Evolution in Molten Coal Slag: Hani Abu El Hawa¹; Jinichiro Nakano²; Anna Nakano²; James Bennett¹; ¹National Energy Technology Laboratory; ²AECOM

3:20 PM

Reaction Mechanisms in the Silicothermic Production of Magnesium: Mao Chen¹; Yuhong Chen²; Fenglan Han²; Laner Wu²; Baojun Zhao¹; ¹The University of Queensland; ²Beifang University of Nationalities

3:40 PM Break

4:00 PM

Influences of CaO/SiO₂/MgO/Al₂O₃ on the Formation Behavior of FeO-bearing Primary-slugs in Blast Furnace: Dongdong Wang¹; Kaihui Ma¹; Yang Xu¹; Jian Xu¹; Liangying Wen¹; ¹Chongqing University

4:20 PM

Desulfurization of High Sulfur Coal Leached with H₂O₂ and NaOH by Microwave Irradiation: Pengqi Zhang¹; Shengfu Zhang¹; Lixiong Shao¹; Mingcheng Bing¹; Shuxing Qiu¹; Qingyun Zhang¹; ¹Chongqing University

4:40 PM

The Recovery of Copper from Smelting Slag by Flotation Process: Jiaqi Fan¹; Hongxu Li¹; Liangtian Wei¹; Chao Li¹; Shi Sun¹; Zhaobo Liu²; ¹University of Science and Technology Beijing; ²University of Science & Technology Beijing

Applications of Solidification Fundamentals — Simulation and Modeling of Solidification Behavior

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, McMaster University; Amber Genau, University of Alabama at Birmingham; Lifeng Zhang, University of Science and Technology Beijing

Tuesday PM Room: 19
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Andre Phillion, McMaster University

2:00 PM

Investigating Homogenous Nucleation in Solidification of Aluminum and Iron by Molecular Dynamics Simulations: Avik Mahata¹; Mohsen Asle Zaeem¹; Michael Baskes²; ¹Missouri University of Science and Technology; ²University of California, San Diego

2:20 PM

Inoculant Undercooling Induced Nucleation and Growth during Equiaxed Solidification: Effect of Location and Separation Distance of the Inoculants and Time: Arvind Prasad¹; Lang Yuan²; Peter Lee³; Mark Easton⁴; David StJohn¹; ¹University of Queensland; ²GE; ³University of Manchester; ⁴RMIT

2:40 PM

Nucleation of Solidification in Confined High Aspect Ratio Films: James Mastandrea¹; Joel Ager¹; Daryl Chrzan¹; ¹Lawrence Berkeley National Laboratory

3:00 PM

Thermomechanical Properties of Metals during Solidification by Molecular Dynamics Simulations: Seyed Alireza Etesami¹; Ebrahim Asadi¹; ¹University of Memphis

3:20 PM Break

3:40 PM

On the Transition from Equiaxed Sedimentation to Viscoplastic Packed Bed Dynamics: Andreas Ludwig¹; Menghuai Wu²; Christian Rodrigues²; Tobias Holzmann²; Alexander Vakhrushev²; ¹Montanuniversität Leoben; ²Montanuniversität Leoben

4:00 PM

Lattice Boltzmann GPU Solutions for Alloy Microstructure Development and Solute Transport: Ivars Krastins¹; Andrew Kao¹; Koulis Pericleous¹; ¹University of Greenwich

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Engineering Applications

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Tuesday PM Room: Pacific 21
February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Po-Yu Chen, National Tsing Hua University; Mohan Edirisinghe, University College London

2:00 PM Keynote

Novel Gyrotory Processes to Manufacture Bionanointerfaces: Mohan Edirisinghe¹; ¹University College London

2:40 PM

Bio-inspired Syntheses of Self-cleaning Coatings and Oil-water Separation Interfaces by Atmospheric Pressure Plasma and Freeze Casting Techniques: Po-Yu Chen¹; Ching-Yu Yang¹; Yu-Hsiang Lo¹; ¹National Tsing Hua University

3:00 PM Invited

Biomimetic Lipid Bilayers in Biosensing Applications: Abdulhalim Kilic¹; Majid Jadidi¹; Hakan Ozgur Ozer¹; Fatma Nese Kok¹; ¹Istanbul Technical University

3:30 PM

Peptide Enabled Addressable Immobilization of Kinetically Matched Fusion Enzymes in Membrane Flow Bioreactors: Deniz Yuceoy¹; Susrut Akkineni¹; Bruce Hinds¹; Candan Tamerler¹; Mehmet Sarikaya¹; ¹University of Washington

3:50 PM Break

4:10 PM Keynote

Solution Plasma Materials Processing from Natural Products: Nagahiro Saito¹; ¹Nagoya University

4:50 PM

Engineering Lactate Oxidases with Metal Binding Peptides towards Lactate Monitoring: Erkan Mozioglu¹; Dwight O'Dell¹; Thomas Brandon Richard¹; Mark L. Richter¹; Candan Tamerler¹; ¹The University of Kansas

Biological Materials Science — Structural Biological Materials I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Tuesday PM Room: Pacific 15
February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Steven Naleway, University of Utah; Dwayne Arola, University of Washington

2:00 PM Invited

Biological Materials Science: Challenges and Opportunities: Marc Meyers¹; ¹UCSD

2:30 PM

Biological and Bio-inspired Flexible Armor Based on Chiton's Girdle Scales: Ling Li¹; Matthew Connors²; Ahmed Hosny¹; Douglass Earnisse³; Mason Dean⁴; James Weaver¹; Christine Ortiz²; ¹Harvard University; ²Massachusetts Institute of Technology; ³California State University; ⁴Max Planck Institute of Colloids and Interfaces

2:50 PM

On the Stress Relaxation and Tear Resistance of Skin: Wen Yang¹; Andrei Pissarenko²; Vincent Sherman²; Eric Schaible³; Katherine Brown⁴; William Proud⁵; Alun Williams⁴; Robert Ritchie³; Marc Meyers²; ¹Swiss Federal Institute of Technology in Zurich (ETHZ); ²University of California, San Diego; ³Lawrence Berkeley National Laboratory; ⁴University of Cambridge; ⁵Imperial College London

3:10 PM

On the Impact Resistance of Horn and Hoof in Different Loading Orientations: Wei Huang¹; Alireza Zaheri²; Horacio Espinosa²; David Restrepo³; Pablo Zavattieri³; Joanna McKittrick¹; ¹University of California, San Diego; ²Northwestern University; ³Purdue University

3:30 PM Break

3:40 PM Keynote

Bio-inspired Design of Hierarchical Materials: Horacio Espinosa¹; ¹Northwestern University

4:20 PM

Nacre's Strategy to Enhance Its Mechanical and Fracture Properties: *Sina Askarinejad*¹; Nima Rahbar¹; ¹Worcester Polytechnic Institute

4:40 PM

The Hierarchical Structure of Atractosteus Spatula (Alligator Gar Fish) Boney Scales: XRM and Finite Element Modeling Characterization of Structural Porosity: *Kenneth Livi*¹; Matt Nelms²; Alyssa Browning³; Wayne Hodo⁴; A.M. Rajendran²; ¹Johns Hopkins University; ²University of Mississippi; ³Carl Zeiss X-ray Microscopy, Inc.; ⁴US Army ERDC-GSL

5:00 PM

Structure and Mechanical Behavior of Coelacanth Scales: *Haocheng Quan*¹; Wen Yang²; Robert Ritchie³; Marc Meyers¹; ¹UCSD; ²ETH-Zurich; ³Lawrence Berkeley National Laboratory

5:20 PM

The First Barrier to Penetration of Fish Scales: Structure and Properties of the Limiting Layer: *Sandra Murcia*¹; Melicent Stossel¹; Rishi Pahuja¹; Timothy Linley²; Alex Ossa³; Junlan Wang¹; Dwayne Arola¹; ¹University of Washington; ²Pacific Northwest National Laboratory; ³Universidad EAFIT

Bulk Metallic Glasses XIV — Structures and Mechanical Properties II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Tuesday PM Room: 33A
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Lindsay Greer, University of Cambridge; Shigenobu Ogata, Osaka University

2:00 PM Keynote

Rejuvenation of Metallic Glasses: *A. Greer*¹; ¹University of Cambridge

2:30 PM Invited

Plasticity--toughness Connections in Ductile Metallic Glasses: *Upadrasta Ramamurty*¹; ¹Indian Institute of Science

2:50 PM Invited

Atomistic Study on Pressure-promoted Thermal Rejuvenation of Metallic Glass: *Shigenobu Ogata*¹; Narumasa Miyazaki¹; Masato Wakeda¹; ¹Osaka University

3:10 PM

Exploring the Spectrum of Mechanical Properties and Structural States in Metallic Glasses via Physical Vapor Deposition: *Daniel Magagnoli*¹; Gang Feng²; Le Ye³; Xuemei Cheng³; Daniel Gianola⁴; ¹University of Pennsylvania; ²Villanova University; ³Bryn Mawr College; ⁴UC Santa Barbara

3:30 PM Break

3:50 PM Invited

Inverse Notch Effect in Bulk Metallic Glasses: *Jie Pan*¹; Haofei Zhou²; Yi Li³; Huajian Gao²; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Brown University; ³Institute of Metal Research, Chinese Academy of Sciences

4:10 PM

Dynamics of Inherent Structure Energy Evolution in Metallic Glasses: *Yue Fan*¹; Takuya Iwashita²; Takeshi Egami²; ¹University of Michigan, Ann Arbor; ²University of Tennessee, Knoxville

4:30 PM Invited

New Soft Magnetic FeCoNi(P, C, B) High-entropy Bulk Metallic Glasses with Large Supercooled Liquid Region: *Yanhui Li*¹; Wei Zhang¹; Tianlong Qi¹; ¹Dalian University of Technology

4:50 PM Invited

Quasi-Elastic Neutron Scattering and Machine Learning Studies of the Arrhenius Crossover Phenomenon and Its Correlation with the Kinetic Fragility in Glass-Forming Metallic Liquids: *Abshishek Jaiswal*¹; *Yang Zhang*¹; ¹University of Illinois at Urbana-Champaign

5:10 PM

A High-Throughput Approach to Identifying Metallic Glasses and Characterizing Their Mechanical Properties: *Juan Wang*¹; Peter Tsai²; Katharine Flores²; ¹Department of Mechanical Engineering and Materials Science, Washington University in Saint Louis; ²Institute of Materials Science and Engineering, Washington University in Saint Louis

Cast Shop Technology: Recycling and Sustainability Joint Session — Cast Shop/ Recycling Joint Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Aluminum Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: David Gildemeister, Alcoa Technical Center; Anne Kvithyld, SINTEF; Elsa Olivetti, Massachusetts Institute of Technology

Tuesday PM Room: 1A
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Elsa Olivetti, MIT

2:00 PM

Tramp Element Accumulation and Its Effects on Secondary Phase Particles: *Robert Wagstaff*¹; Samuel Wagstaff²; Antoine Allanore²; ¹Novelis Inc.; ²Massachusetts Institute of Technology

2:20 PM

Dross Formation Mechanisms of Thermally Pre-treated Used Beverage Can Scrap Bales with Different Density: *Jan Steglich*¹; Regina Dittrich²; Georg Rombach³; Marcel Rosefort¹; Bernd Friedrich²; Anne Pichat⁴; ¹TRIMET Aluminium SE; ²RWTH Aachen University; ³Hydro Aluminium Rolled Products GmbH; ⁴Constellium Technology Center

2:40 PM

Influence of Coating and De-coating on the Coalescence of Aluminium Drops in Salt: *Stefano Capuzzi*¹; *Anne Kvithyld*²; Giulio Timelli¹; Arne Nordmark²; Thorvald Abel Engh³; ¹University of Padua; ²SINTEF; ³NTNU

3:00 PM

The Scale-up of High Shear Processing for the Purification of Recycled Molten Scrap Aluminium Alloy: Key Features of Fluid Flow: *Mingming Tong*¹; Jayesh Patel²; Ian Stone²; Zhongyun Fan²; David Browne³; ¹University College Dublin; ²NUI Galway; ³Brunel University London; ³University College Dublin

3:20 PM Break

3:40 PM

Centrifugal Casting of Al-Si Scrap: *Aya Abdelrahman*¹; Shima El-Hadad²; *Iman El Mahallawi*³; ¹British University in Egypt; ²Centre for Metallurgical Research and Development; ³Cairo University

4:00 PM

Improved Recyclability of Cast Al-alloys by Engineering β -Al₂Fe₂Si₂ Phase: *C. B. Basak*¹; N. Hari Babu²; ¹BCAST, Brunel University London; ²BCAST, Brunel University London

Ceramic Materials for Nuclear Energy Research and Applications — Advanced Sintering, Characterization, and Measurement

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee
Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Tuesday PM
February 28, 2017
Room: Palomar
Location: Marriott Marquis Hotel

Session Chairs: Maria Okuniewski, Purdue University; Larry Agesen, Idaho National Laboratory

2:00 PM Invited

Thermal-Mechanical Properties of Sintered UO_2 : Tiankai Yao¹; Jie Lian¹;
¹Rensselaer Polytechnic Institute

2:30 PM

Correlation Between Particle Size and Grain Size Distributions in Single/Multiphase Ceramic Oxide Surrogate Materials: Keyur Karandikar¹; Austin Travis²; Kenta Ohtaki²; Martha Mecartney²; Olivia Graeve¹;
¹University of California, San Diego; ²University of California, Irvine

2:50 PM

Phase Field Modeling of Uranium Dioxide Sintering and Densification: Ian Greenquist¹; Michael Tonks¹; Yongfeng Zhang²; ¹Penn State University; ²Idaho National Laboratory

3:10 PM

Study of Oxide Dispersion Strengthened 316L Austenitic Steel by Mechanical Milling: Supriya Koul¹; Joysurya Basu¹; Kausik Chattopadhyay¹; Krishanu Biswas²; Nilay Mukhopadhyay¹; ¹Indian Institute of Technology (BHU) Varanasi; ²Indian Institute of Technology Kanpur

3:30 PM Break

4:00 PM Invited

In Situ Synchrotron Characterization of the Field Assisted Sintering of UO_2 : David Sprouster¹; E. Dooryhee¹; L. Ecker¹; R. Pokharel²; A Raftery²; D Byler²; K.J. McClellan²; ¹Brookhaven National Laboratory; ²Los Alamos National Laboratory

4:30 PM

Thermoelectric Properties of Doped and Pure UO_2 at High Temperatures: Ali Massih¹; Lars Jernkvist¹; ¹Quantum Technologies

4:50 PM

Evaluation of Creep Behavior of UO_2 at Sub-grain Length Scales: Benjamin Shaffer¹; Bowen Gong¹; Harn Chyi-Lim¹; Robert McDonald¹; Pedro Peralta¹; ¹Arizona State University

5:10 PM

Irradiation Dependent Deformation and Thermal Properties of SiC and SiO₂ Measured by Using Nanomechanical Raman Spectroscopy: Debapriya Mohanty¹; Vignesh Vivekanandan¹; Vikas Tomar¹; ¹Purdue University

Characterization of Materials through High Resolution Coherent Imaging — Phase Contrast Imaging II

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Ross Harder, Argonne National Lab; Xianghui Xiao, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Saryu Fensin, Los Alamos National Laboratory; Brian Abbey, LaTrobe University; Ana Diaz, Paul Scherrer Institut

Tuesday PM
February 28, 2017
Room: 25B
Location: San Diego Convention Ctr

Session Chair: Ross Harder, Argonne National Lab

2:00 PM

Anisotropic Growth Patterns in Four Dimensions: Ashwin Shahani¹; Xianghui Xiao²; Peter Voorhees¹; ¹Northwestern University; ²Argonne National Laboratory

2:30 PM

In-situ Phase Contrast Nano-tomography at ID16B: Julie Villanova¹; Richi Kumar¹; Rémi Daudin²; Pierre Lhuissier²; Luc Salvo²; David Jauffrès²; Christophe L. Martin²; Rémi Tucoulou¹; ¹ESRF - The European synchrotron; ²SIMAP-Univ. Grenoble Alpes

2:50 PM

High Speed Tomographic Imaging of Materials during Uniaxial Loading: Brian Patterson¹; Nikhilesh Chawla²; Sudhanshu Singh²; Angel Ovejero²; Jason Williams²; Xianghui Xiao³; Kevin Henderson¹; Robin Pacheco¹; Nikolaus Cordes¹; James Mertens¹; ¹Los Alamos National Laboratory; ²Arizona State University; ³Argonne National Laboratory

3:20 PM Break

3:40 PM

In-situ Deformation and Damage Assessment in Materials under Dynamic Loading Using High Speed Synchrotron X-ray Phase Contrast Imaging: Niranjana Parab¹; Zherui Guo¹; Matthew Hudspeth¹; Benjamin Claus¹; Jou-Mei Chu¹; Tao Sun²; Kamel Fezzaa²; Weinong Chen¹; ¹Purdue University; ²Argonne National Laboratory

4:10 PM

In-Situ and In-Operando Examination of Structure-Functional Relations in Porous Materials for Energy Conversion and Storage with Nano- and Micro- Synchrotron X-ray Computed Tomography: Andrew Shum¹; Vincent De Andrade²; Xianghui Xiao²; Dilworth Parkinson³; Adam Weber⁴; Iryna Zenyuk¹; ¹Tufts University; ²Advanced Photon Source, Argonne National Laboratory; ³Advanced Light Source, Lawrence Berkeley National Laboratory; ⁴Lawrence Berkeley National Laboratory

4:40 PM

Zernike Phase Contrast for Hard X-ray Microscopy: Ken Vidar Falch¹; Ragnvald Mathiesen¹; Anatoly Snigirev²; Irina Snigireva³; Mikhail Lyubomirskiy³; Daniele Casari¹; ¹NTNU; ²Immanuel Kant Baltic Federal University; ³ESRF

5:10 PM

Phase Contrast Tomography to Document Gypsum Dehydration in Single Crystals and Polycrystalline Materials: Florian Füsseis¹; Xianghui Xiao²; John Bedford³; Henri Leclere³; ¹University of Edinburgh; ²Argonne National Laboratory; ³Liverpool University

Characterization of Minerals, Metals, and Materials — Powders and Foams

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Tuesday PM Room: 31B
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Juan Escobedo-Diaz, UNSW Australia; Brahim Akdim, Air force Research Lab

2:00 PM

Microstructural Evaluation of Ti-6Al-4V Powder Compacts Sintered by Microwave Energy: *Kenneth Grabowski*¹; Evan Groopman²; Benjamin Rock³; M Imam³; Albert Fahey¹; ¹Naval Research Laboratory; ²National Research Council; ³George Washington University

2:20 PM

Residual Stress Analysis within Steel Encapsulated Metal Matrix Composites Via Neutron Diffraction: *Sean Fudger*¹; Dimitry Sediako²; Prashant Karandikar³; Chaoying Ni¹; ¹University of Delaware; ²Canadian Neutron Beam Centre; ³M Cubed Technologies, Inc.

2:40 PM

Microstructure and Phase Evolution during the Synthesis of Manganese Germanides: Vamsi Meka¹; *Tanjore Jayaraman*¹; ¹University of Michigan

3:00 PM

Application of AFM in Morphology Determination of Powder Material: *Jian Wu*¹; Ping Long¹; Yaochun Yao¹; ¹Kunming University of Science and Technology

3:20 PM

Fracture Toughness Characterization of Spark Plasma Sintered Boron Carbide with Different Additives: *Burcu Apak*¹; Meral Cengiz¹; Onuralp Yucel¹; Gultekin Goller¹; Filiz Sahin¹; ¹Istanbul Technical University

3:40 PM Break

3:55 PM

Effects of Thermal Processing on Closed-Cell Aluminium Foams: *Andrew Brown*¹; Wayne Hutchison¹; Md Ashrafur Islam¹; Md Abdul Kader¹; Juan Pablo Escobedo-Diaz²; Paul Hazell¹; ¹UNSW Australia

4:15 PM

Experimental Investigation of Mechanical Behaviour of Closed-Cell Aluminium Foams under Drop Weight Impact: *Md Ashrafur Islam*¹; Md Abdul Kader¹; Andrew Brown¹; Paul Hazell¹; Juan Pablo Escobedo - Diaz²; Mohammad Saadatfar¹; ¹UNSW Canberra

4:35 PM

Deformation Mechanisms of Closed Cell-Aluminium Foams during Drop Weight Impact: *M.A. Kader*¹; M.A. Islam¹; M. Saadatfar²; Juan P. Escobedo-Diaz²; P.J. Hazell¹; A.D. Brown¹; ¹School of Engineering and Information Technology, UNSW Australia; ²Department of Applied Mathematics, Australian National University

4:55 PM

Optical Characterization of a-Ti Grain Orientation: Insight from First-principles Calculations: *Brahim Akdim*¹; Chris Woodward¹; Micheal Uchic¹; ¹Air Force Research Lab

5:15 PM

Tracking 3D Microstructure Evolution during Sintering of Copper Particles by Laboratory Diffraction Contrast Tomography (LabDCT): *Samuel McDonald*¹; Christian Holzner²; Erik Lauridsen³; Peter Reischig³; Arno Merkle²; Michael Feser²; Philip Withers¹; ¹University of Manchester; ²Carl Zeiss X-ray Microscopy; ³Xnovo Technology

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Electronic, Magnetic, and Optical Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Tuesday PM Room: 11A
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

Bridging Semi-classical and Ab Initio Descriptions of Electronic Transport in Semiconductors: Alireza Faghaninia¹; Michael Sullivan¹; Derreko Becker-Ricketts¹; *Cynthia Lo*¹; ¹Washington University

2:30 PM Invited

Using First Principle Approaches to Optimize Materials for Next Generation Non-volatile Memory: *Derek Stewart*¹; ¹Western Digital

3:00 PM

Neural Networks Assisted Vector Tomography for the Reconstruction of the Magnetic Vector Potential: *KC Prabhat*¹; Marc De Graef¹; ¹Carnegie Mellon University

3:20 PM

First-Principles Computation Design of CoPt and FePt Nanoparticles with Desired Magnetic Properties through Tailoring Surface Segregation: *Guofeng Wang*¹; Zhenyu Liu¹; ¹University of Pittsburgh

3:40 PM Break

3:55 PM Invited

Magnetic-Field Tunability of Thermal Conduction in Non-Magnetic Materials: *Wolfgang Windl*¹; Nikolas Antolin¹; Oscar Restrepo¹; Roberto Myers¹; Joseph Heremans¹; ¹Ohio State Univ.

4:25 PM

Data-driven Magnetic Materials Selection, Design, and Optimization: Shruithi Badam¹; *Tanjore Jayaraman*¹; ¹University of Michigan

4:45 PM

Optimization of Buffer Layer Alloy Materials for CIGS Thin-Film Solar Cells: *Vincenzo Lordi*¹; Joel Varley¹; Xiaoqing He²; Angus Rockett²; Jeff Bailey³; Geordie Zapalac³; Dmitry Poplavskyy³; Neil Mackie³; Atiye Bayman³; ¹Lawrence Livermore National Lab; ²University of Illinois at Urbana-Champaign; ³MiaSole Hi-Tech Corp.

5:05 PM

Restraining Electron-hole Recombination in W-N Codoped Titania: First-principles Study: *Heechae Choi*¹; ¹Virtual Lab Inc.

Computational Thermodynamics and Kinetics — Diffusion and Kinetics I

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Tuesday PM
February 28, 2017

Room: 11B
Location: San Diego Convention Ctr

Session Chairs: Christine Geers, Chalmers University of Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign

2:00 PM Invited

Surface Reaction and Transport in Oxides Formed on FeCrAl Alloys in High Temperature Nitridation Environments: *Christine Geers*¹; Vedad Babic¹; Itai Panas¹; Lars-Gunnar Johansson¹; ¹Chalmers Technical University

2:30 PM

Accelerated Analysis of Beta Phase Ti-Nb-Al Ternary Diffusion via Optimization Fitting of Interdiffusion Coefficients in Three-Alloy Diffusion Multiples: *James Haley*¹; Kaka Ma²; Aparna Tripathi³; Kaustubh Kulkarni³; Anil Sachdev⁴; Enrique Lavernia¹; ¹University of California, Irvine; ²Colorado State University; ³India Institute of Technology, Kanpur; ⁴General Motors

2:50 PM

Evaluation of Silver and Tin Diffusion Mobility in Magnesium Alloys: *Ian Parker*¹; Michele Manuel¹; ¹University of Florida

3:10 PM

Modeling Alloying Effects on Hydrogen Evolution Reaction Kinetics for Decelerated Magnesium Corrosion: *Krista Limmer*¹; Joseph Labukas¹; Jan Andzelm¹; ¹U.S. Army Research Laboratory

3:30 PM Break

3:45 PM Invited

Kinetic Monte Carlo Enabled Modeling of Diffusion Assisted Plastic Deformation: *James Martino*¹; Srinath Chakravarthy¹; ¹Northeastern University

4:15 PM

Long-time Simulations of Cation Diffusion and Material Recovery in Disordered Gd₂Ti₂O₇ Pyrochlore: *Romain Perriot*¹; Blas Uberuaga¹; Richard Zamora¹; Danny Perez¹; Arthur Voter¹; ¹Los Alamos National Laboratory

4:35 PM

First-Principles Computational Study of Charged Vacancy Diffusion in Alpha-Al₂O₃ and Alpha-Cr₂O₃: *Guofeng Wang*¹; Yinkai Lei¹; Corinne Gray¹; ¹University of Pittsburgh

4:55 PM

Automated Diffusivity Theory without Kinetic Monte Carlo: Solute Diffusivity from First Principles: *Dallas Trinkle*¹; ¹University of Illinois, Urbana-Champaign

5:15 PM

The Effects of Quantum Dynamics of Atomic Motion on Dislocation Mobility: *Rodrigo Freitas*¹; Mark Asta²; Vasily Bulatov³; ¹University of California Berkeley and Lawrence Livermore National Laboratory; ²University of California Berkeley; ³Lawrence Livermore National Laboratory

Defects and Properties of Cast Metals — Porosity

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Tuesday PM
February 28, 2017

Room: 23A
Location: San Diego Convention Ctr

Session Chairs: Murat Tiryakioglu, University of North Florida; David Browne, University College Dublin

2:00 PM Introductory Comments

2:05 PM Keynote

Porosity Formation and Shrinkage Effects in Alloy Samples Solidified on Earth and in Space as Observed In-situ by X-ray Monitoring: *David Browne*¹; ¹University College Dublin

2:25 PM Invited

Influence of Fe-rich Intermetallics on the Formation of Solidification Defects: *Chedtha Puncreobutr*¹; Surada Chuaypradit¹; André Phillion²; Julie Fife³; Peter Lee⁴; ¹Chulalongkorn University; ²McMaster University; ³Paul Scherrer Institut; ⁴The University of Manchester

2:45 PM

Modelling of Defects in Aluminium Castings: Laurens Katgerman¹; *Mark Jolly*²; ¹Delft University; ²Cranfield University

3:05 PM

Quantification of Porosity in Electron Beam Welded Dissimilar Steel to Fe-Al Alloy Joints by X-ray Computed Tomography: *Soumitra Dinda*¹; Gour Gopal Roy¹; Prakash Srirangam²; ¹Indian Institute of Technology, Kharagpur, India; ²University of Warwick

3:25 PM Break

3:45 PM

Role of Grain Refiners on Porosity Formation in Directionally Solidified Al-Si Alloys: Muhammet Uludag¹; *Derya Dispinar*²; ¹Selcuk University; ²Istanbul University

4:05 PM

Self-Healing Micro-Porosity in Ductile Iron by Controlling Graphite Nodule Solidification Kinetics: *Simon Lekakh*¹; ¹MST

4:25 PM

Theoretical Calculations for Pore Formation in Aluminum during Solidification: *Pedram Yousefian*¹; Murat Tiryakioglu¹; ¹University of North Florida

4:45 PM

3D Visualisation of Porosity in Cast Al-Si Alloys Using X-ray Tomography: *Mario De Giovanni*¹; Jason Warnett¹; Mark Williams¹; Prakash Srirangam¹; ¹University of Warwick

Deformation and Transitions at Interfaces — Fracture and Decohesion

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, University of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Tuesday PM Room: 23B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

Investigations on the Origin of Crack Initiation and Propagation Susceptibility of Prior Austenite Grain Boundaries in DP and Martensitic Steels: *Fady Archie*¹; Stefan Zaefferer¹; ¹Max-Planck-Institut für Eisenforschung GmbH

2:20 PM

Hydrogen Embrittlement and Grain Boundary Fracture in Nickel: A Perspective from Atomistic Simulations: Douglas Spearot¹; *Remi Dingreville*²; Doruk Aksoy¹; ¹University of Florida; ²Sandia National Laboratories

2:40 PM

Segregation of Lead and Hydrogen Isotopes to Grain Boundaries in Nickel and Their Effect on Fracture: *Richard Karnesky*¹; Samantha Lawrence¹; Khalid Hattar¹; Stephen Foiles¹; Brian Somerday²; ¹Sandia National Laboratories; ²Southwest Research Institute

3:00 PM

Mesoscale Modeling of the Influence of Microstructural Gradients on Fracture: *Gustavo Castelluccio*¹; Hojun Lim¹; John Emery¹; Corbett Battaile¹; ¹Sandia National Laboratories

3:20 PM Invited

Multi-probe, Multi-scale Analysis of Plasticity and Crack Blunting at Lath Martensitic Boundaries: *Cem Tasan*¹; ¹MIT

3:40 PM Break

4:00 PM Invited

The Nature of Grain Boundaries and Their Response to Shock Compression and Release in Tantalum: *Marc Meyers*¹; Eric Hahn¹; Saryu Fensin²; Tim Germann²; ¹UCSD; ²LANL

4:20 PM

The Influence of Second-phase Distribution on Dynamic Damage and Spall Strength: *David Jones*¹; Saryu Fensin¹; Daniel Martinez¹; Carl Trujillo¹; George Gray¹; Ellen Cerreta¹; ¹Los Alamos National Laboratory

4:40 PM

The Role of Interfaces in Nucleation of Dynamic Damage in FCC and BCC Materials: *Saryu Fensin*¹; Eric Hahn²; Tim Germann¹; Ellen Cerreta¹; George Gray¹; ¹Los Alamos National Laboratory; ²University of California, San Diego

5:00 PM

Void Nucleation and Growth at Grain Boundaries in Flat and Surface Perturbed Copper Bicrystals: *Elizabeth Fortin*¹; Matthew Catlett¹; Jenna Lynch¹; Eric Loomis²; Pedro Peralta¹; ¹Arizona State University; ²Los Alamos National Laboratory

5:20 PM Invited

Development of Long-range Crystallographic Correlations in Microstructures: *Mukul Kumar*¹; Jonathan Lind¹; David Bober¹; ¹Lawrence Livermore National Laboratory

Electrode Technology — Electrodes: Raw Materials and Anode Quality

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Houshang Alamdari, Laval University

Tuesday PM Room: 1B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Christopher Kuhnt, Rutgers Basic Aromatics GmbH

2:00 PM Introductory Comments

2:05 PM

Influence of Calcination Temperature and Sulfur Level on Coke Properties: *Victor Buzunov*¹; John Johnson¹; ¹JCG

2:30 PM

Pilot Anode Properties of Binder Pitches Softening between 110 and 150°C: Winfried Boenigk¹; *Christopher Kuhnt*¹; Jens Stiegert¹; Joris Claes²; Les Edwards³; ¹RAIN Carbon Inc. (dba) RÜTGERS Germany GmbH; ²RAIN Carbon Inc. (dba) RÜTGERS Belgium N.V.; ³RAIN Carbon Inc. (dba) RAIN CII Carbon LLC

2:55 PM

Uniform Bulk Density for Calcined Petroleum Coke: *Ravindra Narvekar*¹; Gajanan Bhandodkar¹; Jagmohan Chhabra¹; ¹Goa Carbon Ltd.

3:20 PM

Use of Thermally Desulfurized Shaft CPC for Anode Production: *Les Edwards*¹; Kevin Harp¹; Christopher Kuhnt¹; ¹Rain Carbon Inc.

3:45 PM Break

4:00 PM

Anode Carbon Aggregate Packing Description Compared to Relevant Industrial and Engineering Practises: *Bjarte Oye*¹; Lorentz Lossius²; ¹SINTEF; ²Hydro Aluminium

4:25 PM

CPC Testing and Relationship between Coke and Anode Physical Properties: *Marvin Lubin*¹; Kevin Harp¹; Les Edwards¹; Christopher Kuhnt²; Winfried Boenigk²; ¹Rain Carbon Inc. (dba) Rain CII Carbon; ²Rain Carbon Inc. (dba) RÜTGERS Germany GmbH

4:50 PM

Effect of Coke Properties on the Bubble Formation at the Anodes during Aluminium Electrolysis in Laboratory Scale: *Wojciech Gebarowski*¹; Arne Petter Ratvik²; Stein Rørvik²; Lorentz Petter Lossius³; Hogne Linga³; Ann Mari Svensson¹; ¹Norwegian University of Science and Technology; ²SINTEF Materials and Chemistry; ³Hydro Aluminium

5:15 PM

Coke Produced from Lower-Oxygen Fast-Pyrolysis Oil, a New Approach to Produce Renewable Anode Raw Materials: *Yaseen Elkasabi*¹; *Hans Darmstadt*²; Akwasi Boateng¹; ¹Eastern Regional Research Center, Agricultural Research Service, U.S. Department of Agriculture; ²Rio Tinto Alcan

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Alloying and Doping of Pb-free Materials

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Tuesday PM Room: 30E
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Chih Chen, National Chiao Tung University; Albert T. Wu, National central University

2:00 PM

Effects of Cobalt on the Nucleation, Grain Refinement and Orientations of Sn-3Ag-0.5Cu Solder: *Christopher Gourlay*¹; *Sergey Belyakov*¹; *Zhaolong Ma*¹; ¹Imperial College London

2:20 PM

Influence of Bi on Microstructure and Properties of Sn-Cu-Ni Based BGAs on Cu Metallization: *Sergey Belyakov*¹; *Christopher Gourlay*¹; *Takatoshi Nishimura*²; *Keith Sweatman*²; ¹Imperial College London; ²Nihon Superior Co., Ltd.

2:40 PM

The Effect of Bi on the Behaviour and Properties of Sn-0.7Cu Based Alloys: *Keith Sweatman*¹; *Selena Smith*²; *Arif Salleh*³; *Stuart McDonald*²; *Takatoshi Nishimura*¹; *Kazuhiro Nogita*²; ¹Nihon Superior Co., Ltd.; ²University of Queensland; ³University of Malaysia Perlis

3:00 PM

Effect of Ni on Mechanical Properties and Microstructure of Sn-0.7Cu and SAC307 Solder Alloys: *Mehran Maalekian*¹; *Karl Seelig*¹; ¹AIM Metals & Alloys

3:20 PM Break

3:40 PM

Long Term Isothermal Aging Effect on Reliability of Doped Lead-Free Solder Joint: *Cong Zhao*¹; *John Evans*¹; *Jeffrey Suhling*¹; *Michael Bozack*¹; ¹Auburn university

4:00 PM

Physico-mechanical Properties and Microstructure of Sn3.0Ag0.5Cu Solder Ribbons Doped with Ni and Ni-Sn Nanoparticles: *Andriy Yakymovych*¹; *Peter Svec Sr.*²; *Pavel Sebo*²; *Martin Nosko*²; *Herbert Ipser*¹; ¹University of Vienna; ²Slovak Academy of Sciences

Energy Materials 2017: Energy and Environmental Issues in Materials Manufacturing and Processing — Opportunities in Aluminum Production, Waste Heat and Water Recovery

Sponsored by: Chinese Society for Metals, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Subodh Das, Phinix, LLC; Zhancheng Guo, University of Science and Technology Beijing; Minfang Han, China University of Mining and Technology, Beijing; Teruhisa Horita, AIST; Elsa Olivetti, Massachusetts Institute of Technology; Xingbo Liu, West Virginia University

Tuesday PM Room: 14B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Elsa Olivetti, MIT

2:00 PM

Numerical Approach for the Implementation of the Interaction of Pyrolysis Gases and Combustion Products in an Aluminium Melting Furnace: *Rukiye Gültekin*¹; *Antje Rückert*¹; *Herbert Pfeifer*¹; ¹IOB RWTH University

2:20 PM

Approach for Pyrolysis Gas Release Modelling and its Potential for Enhanced Energy Efficiency of Aluminium Remelting Furnaces: *Henning Bruns*¹; *Antje Rückert*¹; *Herbert Pfeifer*¹; ¹RWTH Aachen University

2:40 PM

Nitrate and Other Anion Removal from Waste Water Using the Hydroflex Technology: *David Dreisinger*¹; *Gary Kordosky*²; *Mike Schrock*²; *Todd Beers*²; *Jianming Lu*¹; *Buming Chen*¹; ¹University of British Columbia; ²Winner Water Services

3:00 PM Invited

Sustainability and Applicability of Light Metals Producing Processes: *Subodh Das*¹; *Adam Gesing*²; ¹Phinix, LLC; ²Gesing Consultants Inc.

3:30 PM Break

3:50 PM

The Influence of Water Vapour on the Fuming Rate in a Ferromanganese System: *Sarel Gates*¹; *Gabriella Tranell*²; *Gerrit Kornelius*¹; *Ida Kero*³; ¹University of Pretoria; ²Norwegian University of Science and Technology (NTNU); ³SINTEF Materials and Chemistry

4:10 PM

Fluoropolymer Coated Condensing Heat Exchangers for Low-grade Waste Heat Recovery: *Youliang He*¹; *Afsaneh Edrissy*²; *Robert Triebe*³; ¹Natural Resources Canada; ²University of Windsor; ³Thermal Energy International Inc.

4:30 PM

Study on Treatment of Chromium Slag by Metallurgical Sintering Process: *Qingcai Liu*¹; *Fei Meng*¹; *Lijun Jiang*¹; *Ming Kong*¹; *Shan Ren*¹; *Guang Hu*¹; *Qi Zhao*¹; ¹Chongqing University

Energy Materials 2017: Materials for Coal-Based Power — Session I

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dryepondt, Oak Ridge National Laboratory

Tuesday PM Room: 12
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory

2:00 PM Keynote

Advances in Materials Technology to Enable Advanced Ultrasupercritical (A-USC) and Supercritical CO₂ (sCO₂) Power Cycles: *John Shingledecker*¹; ¹Electric Power Research Institute

2:40 PM Invited

Corrosion Issues in Advanced Supercritical and Ultra Supercritical Coal Fired Boilers: *Bruce Pint*¹; ¹Oak Ridge National Laboratory

3:10 PM Invited

Materials for Advanced Ultra Supercritical Steam Turbines: *Philip Maziasz*¹; ¹Oak Ridge National Laboratory

3:40 PM Break

4:00 PM Invited

Heat Resistant Alloy Design: Process Considerations for Microstructural Stability and Long-term Creep Strength in Scaled-Up, Thick Wall Nickel Castings: Paul Jablonski¹; *Jeffrey Hawk*¹; ¹U.S. Department of Energy, National Energy Technology Laboratory

4:30 PM Invited

Ni-Fe Based Alloy GH984G Used for 700°C Coal-fired Power Plants: Changshuai Wang¹; Tingting Wang¹; Jianting Guo¹; *Lanzhang Zhou*¹; Haiping Zhao²; Songqian Xu²; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Research Institute, Baoshan Iron&Steel Co., Ltd.

Energy Materials 2017: Materials for Gas Turbines — Microstructure and Processing

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Fergus, Auburn University; Ji Zhang, China Iron and Steel Research Institute Group

Tuesday PM Room: 13
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Jeffrey Fergus, Auburn University

2:00 PM Invited

Modeling the Diffusion of Minor Elements in Different MCrAlY – Superalloy Substrates at High Temperature: Krishna Jonnalagadda¹; Kang Yuan²; Xin-Hai Li³; *Ru Peng*¹; Yueguang Yu²; ¹Linkoping University; ²Beijing General Research Institute of Mining and Metallurgy; ³Siemens Industrial Turbomachinery

2:30 PM

On Healing Mechanism of Cast Porosities in Cast Ni-Based Superalloy by Hot Isostatic Pressing: *Yuan Chao*¹; Li Jie¹; Kai-Xin Dong¹; Guo Jianting¹; ¹Institute of Metal Research, Chinese Academy of Sciences

2:50 PM

Simulation of Precipitation Behavior of Nickel-based Superalloys: *Fan Zhang*¹; Weisheng Cao¹; Shuanglin Chen¹; Chuan Zhang¹; Jun Zhu¹; ¹CompuTherm, LLC

3:10 PM

Microstructures and Mechanical Properties of Ultrafine Grained Ni Based Superalloy Matrix Nanocomposites Fabricated by Powder Metallurgy Route: Tian Xia¹; *Deliang Zhang*²; Jiantao Liu³; Yiwen Zhang³; ¹Shanghai Jiao Tong University, China; ²Northeastern University, China; ³Central Iron and Steel Research Institute

3:30 PM Break

3:50 PM

Rejuvenation of a Co Based Superalloy to Prevent the Quickest Microstructural Degradation during the Following Operating Cycle: *Erica Vacchieri*¹; Giacomo Roncallo²; Gabriele Cacciamani²; Alessio Costa²; ¹Ansaldo Sviluppo Energia S.p.A.; ²Chemistry Department, University of Genoa

4:10 PM

Rejuvenation Process Definition for IN792SX Gas Turbine Blades Aimed to Extend Their Expected Life: *Erica Vacchieri*¹; Paola Guarnone¹; Elena Bergaglio¹; ¹Ansaldo Sviluppo Energia S.p.A.

4:30 PM

Tensile Behavior of Inconel X-750: Effect of Heat Treatment: *Christopher Marsh*¹; Djamel Kaoum²; ¹University of South Carolina; ²North Carolina State University

4:50 PM

The Influence of Dendritic Segregation Degree to the Recrystallization Nucleation in U4720LI: *Jiayu Chen*¹; Jianxin Dong¹; ¹University of Science and Technology Beijing

5:10 PM

Grain Refinement of Cast FeAl-Alloys for Gas Turbine Blades: *Heiner Michels*¹; Thomas Brenker²; Laura Klinkenberg³; Matthias Buenck¹; ¹Access e.V.; ²Other; ³RWTH Aachen University

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Hydrogen Effects on Materials in Energy

Sponsored by: Chinese Society for Metals

Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Tuesday PM Room: 14A
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Hani Elshahawi, Shell Exploration & Production, Co.; Partha Ganguly, Baker Hughes

2:00 PM Keynote

Hydrogen-assisted Failure in Ni-base Superalloy 718 Studied under In-situ Hydrogen Charging: The Role of Localized Deformation in Crack Propagation: Z. Tarzimaghadam¹; *Dirk Ponge*¹; J. Klöwer²; Dierk Raabe¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²VDM Metals GmbH

2:30 PM Invited

Failure Conditions for Individual Grain Boundaries in a Ni-base Alloy Embrittled by H: *Michael Demkowicz*¹; ¹Texas A&M University

3:00 PM

A Combined Micromechanics/Materials Science Approach to Understanding High Temperature Hydrogen Attack: *Mohsen Dadfarnia*¹; May Martin¹; Petros Sofronis¹; David Moore²; Steve Orwig²; ¹University of Illinois Urbana-Champaign; ²BP

3:30 PM Break

3:50 PM

Hydrogen Embrittlement of High Strength Nickel-based Alloys in HP HT Applications: Ramgopal Thodla¹; *Brandon Rollins*¹; ¹DNV USA

4:15 PM

High Strength Nickel-based Alloys for HPHT Applications: *Ramgopal Thodla*¹; Brandon Rollins¹; Jeff Hawk²; Colum Holtam¹; ¹DNV USA; ²NETL

4:40 PM

High Strength Alloys for Oil and Gas Drilling Applications: *Robert Badrak*¹; Sergey Kolesov¹; William Howie¹; ¹Weatherford

5:05 PM

Research on the Pinpoint Controlling of CRA N08028 OCTG Microstructure and Properties: *Pan Dong*¹; Zhiqiang Yu²; Guangwei Fan¹; Genshu Zhou²; Pengsheng Yao³; Zhifang Zhang⁴; ¹Technology Center, Shanxi Taigang Stainless Steel Co., Ltd.; ²State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University; ³Shanxi Taigang Stainless Steel Tubes & Pipes Co., Ltd.; ⁴Shanxi Taigang Stainless Steel Co., Ltd.

Environmentally Assisted Cracking: Theory and Practice — Stress Corrosion Cracking II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska—Lincoln; Raul Rebak, GE Global Research; Sebastien Dreypondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

Tuesday PM

Room: 31A

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Sebastien Teyssyre, Idaho National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

2:00 PM Invited

Challenges and Recent Progress in High Fluence Irradiation Assisted Stress Corrosion Cracking: *Sebastien Teyssyre*¹; ¹Idaho National Laboratory

2:40 PM

3D Microstructural and Electrochemical Characterization of Galvanic Corrosion in Al7075-T651/316 Stainless Steel Couples: *Sridhar Niverty*¹; Jason Williams¹; Ilaksh Adlakha¹; Scott Turnage¹; Kiran Solanki¹; Nikhilesh Chawla¹; ¹Arizona State University

3:00 PM

Direct Observations of Corrosion Cracking in a TEM: *Claire Chisholm*¹; William Mook¹; Steven Hayden²; Daniel Bufford¹; Khalid Hattar¹; Timothy Kucharski²; Michele Ostraat²; Katherine Jungjohann¹; ¹Sandia National Laboratories; ²Aramco Services Company

3:20 PM

Environmentally Assisted Cracking of Commercial Carbon Steels and Corrosion Resistant Alloys: *Yugo Ashida*¹; *Yuzo Daigo*²; *Katsuo Sugahara*²; ¹NHK International Corporation; ²Hitachi Metals MMC Superalloy, Ltd.

3:40 PM Break

4:00 PM

Assessing the Fracture Strength of Geological and Related Materials via an Atomistically Based J-integral: *Reese Jones*¹; Louise Criscenti¹; Jessica Rimsza¹; ¹Sandia National Laboratories

4:20 PM

Sensitization Effects on Environmentally Assisted Cracking of Al-Mg Alloys: *Mohsen Seifi*¹; Henry Holroyd¹; Timothy Burnett²; John Lewandowski¹; ¹Case Western Reserve University; ²University of Manchester

4:40 PM

Structural and Mechanical Characterization of Corroded Region in 7075 Aluminum (Al) Alloy: *Venkata Sathya Sai Renuka Vallabhaneni*¹; Tyler Stannard¹; Ziguang Chen²; Shumin Li²; Florin Bobaru²; Nikhilesh Chawla¹; ¹Arizona State University; ²University of Nebraska-Lincoln

5:00 PM

Environmentally Assisted Stress Corrosion Cracking of 5xxx Al Alloys in Atmospheric Environments: *Patrick Steiner*¹; James Burns¹; ¹University of Virginia

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday PM

Room: 23C

February 28, 2017

Location: San Diego Convention Ctr

Session Chair: Antonios Kotsos, Drexel University

2:00 PM

Miniaturised Ultrasonic Fatigue Testing: *Jicheng Gong*¹; Arutyun Arutyunyan¹; Isaac Cabrera¹; *Angus Wilkinson*¹; ¹University of Oxford

2:20 PM Invited

Crack Initiation and Propagation in Nickel-based Superalloy Microcrystals during In Situ Scanning Electron Microscopy High Cycle Fatigue Testing: *Steven Lavenstein*¹; *Gi-Dong Sim*¹; *Bryan Crawford*¹; *Paul Shade*²; *Michael Uchic*²; *Christopher Woodward*²; *Jaafar El-Awady*¹; ¹Johns Hopkins University; ²AFRL

2:40 PM Invited

Investigating Very High Cycle Fatigue Behavior of Ti-6242S Using In-situ Ultrasonic Fatigue in an E-SEM: *Jason Geathers*¹; *Christopher Torbet*²; *J Wayne Jones*¹; *Samantha Daly*²; ¹University of Michigan; ²University of California, Santa Barbara

3:00 PM

Novel High-throughput Experiments for Early Damage Evolution in FCC Materials in the High and Very Cycle Fatigue Regime: *Thomas Straub*¹; *Michael Buck*¹; *Chris Eberl*²; ¹University of Freiburg; ²Fraunhofer Institute for Mechanics of Materials IWM

3:20 PM

Characterization of Crack Propagation in Ni-based Superalloys Using High Energy X-ray Techniques: *Diwakar Naragani*¹; *Michael Sangid*¹; *Paul Shade*²; *Peter Kenesei*³; *Hemant Sharma*³; ¹Purdue University; ²Air Force Research Laboratory; ³Advanced Photon Source

3:40 PM Break

4:00 PM

CPFE Simulations and In-situ Laue Micro-diffraction to Reveal the Geometry of a Forming Vein during Fatigue: *Ainara Irastorza-Landa*¹; *Nicolo Grilli*¹; *Helena Van Swygenhoven*²; ¹Paul Scherrer Institute & EPFL; ²Paul Scherrer Institut

4:20 PM Invited

Fatigue Crack Growth and Fracture of Flexible Metallic Sheets: *Wade Lanning*¹; *Syed Javid*¹; *James Collins*¹; *Christopher Muhlstein*¹; ¹Georgia Institute of Technology

4:40 PM

Short Crack Growth in Ni-base Superalloys during Micro-bending Fatigue: *Gi-Dong Sim*¹; *Zafir Alam*¹; *Gyuseok Kim*²; *Paul Shade*³; *Chris Woodward*³; *Kevin Hemker*¹; ¹Johns Hopkins University; ²University of Pennsylvania; ³Air Force Research Laboratory

5:00 PM

The Role of Particle Fracture in Early Fatigue of Aluminum Alloys: *Brian Wisner*¹; Konstantinos Baxevanakis¹; Antonios Kotsos¹; ¹Drexel University

5:20 PM

In Situ Microstructural Fatigue Investigation of Magnesium Alloys: *Chengyang Mo*¹; Brian Wisner¹; Antonios Kotsos¹; ¹Drexel University

Friction Stir Welding and Processing IX — Derivative Technologies

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Tuesday PM

Room: 9

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Glenn Grant, Pacific Northwest National Laboratory; Jorge Dos Santos, Helmholtz-Zentrum Geesthacht GmbH

2:00 PM Invited

Solid-State Joining of Thick-Section Dissimilar Materials Using a New Friction Stir Dovetailing (FSD) Process: Scott Whalen¹; *Md. Reza-E-Rabby*²; Ken Ross²; Yuri Hovanski²; Martin McDonnell³; ¹Pacific Northwest National Laboratory ; ²Pacific Northwest National Laboratory; ³U.S. Army Tank, Automotive, Research, Development, and Engineering Center (TARDEC)

2:20 PM Invited

Solid State Additive Manufacturing Using FSW and Low-cost Precursors: *Anthony Reynolds*¹; Ilana Lu¹; ¹University of South Carolina

2:40 PM

Joining Aerospace Aluminum 2024-T4 to Titanium by Friction Stir Extrusion: *William Evans*¹; Alvin Strauss¹; George Cook¹; ¹Vanderbilt University

3:00 PM

Microscopic Evaluation of Friction Plug Welds— Correlation to a Processing Analysis: *Ellen Rabenberg*¹; Poshou Chen²; Sridhar Gorti¹; ¹National Aeronautics and Space Administration; ²Jacobs, NASA/MSFC

3:20 PM Invited

Friction Stir Welding – A Closer Examination: *Tracy Nelson*¹; Bryan Stringham¹; ¹Brigham Young University

3:50 PM Break

4:10 PM

Micro-mechanical Testing of Magnesium Based Composites Reinforced by Carbon Fibers Manufactured by Friction Stir Processing: *Aude Simar*¹; Anne Mertens²; Laurence Brassart³; Jacqueline Lecomte-Beckers²; Francis Delannay¹; ¹Universite Catholique de Louvain; ²University of Liège; ³Monash University, Australia

4:30 PM

Predicting Friction Pull Plug Welding Results: *Justin Littell*¹; ¹NASA

4:50 PM

Microstructural Analysis and Mechanical Properties of Friction Stir Back Extruded/Aged 7075 Aluminum Alloy: *Zeren Xu*¹; Fadi Abu-Farha¹; ¹Clemson University

5:10 PM

Dissimilar Metal T-Joint Formed by Friction Stir Extrusion: *Adam Jarrell*¹; Alvin Strauss¹; George Cook¹; ¹Vanderbilt University

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Process-Property-Performance Correlations: Titanates, Transition Metal Oxides, Chalcogenides & Beyond

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Tuesday PM

Room: 33B

February 28, 2017

Location: San Diego Convention Ctr

Session Chairs: Tae-Kyu Lee, Portland State University; Yuntian Zhu, North Carolina State University

2:00 PM Introductory Comments

2:10 PM Invited

What are in a Phase with Property Anomaly?: *Zi-Kui Liu*¹; ¹The Pennsylvania State University

2:40 PM Invited

Interface Magnetism in La_{0.7}Sr_{0.3}MnO₃/SrRuO₃ Bilayers Integrated on Silicon: *Srinivasa Rao Singamaneni*¹; John Prater²; Jay Narayan²; ¹University of Texas, El Paso; ²North Carolina State University

3:10 PM Invited

Interfacial Reactions at the Joints in the Bi₂Te₃-based Thermoelectric Modules: *Sinn-wen Chen*¹; Tz-wen Liou¹; Hsu-shen Chu¹; ¹National Tsing Hua University

3:40 PM Break

3:55 PM

Microstructure and Mechanism Studies of Epitaxial TiN Oxidation in Different Growth Orientations: *Adele Moatti*¹; Jagdish Narayan¹; ¹NCSU

4:15 PM Invited

Novel Iron-lanthanide Based High-mobility, Ferromagnetic and Transparent Amorphous Semiconducting Oxides: Humaira Taz¹; Abhinav Malasi¹; Tamil Sakthivel²; N Yamoah³; Connor Carr¹; Annette Farah¹; Benjamin Lawrie⁴; Raphael Pooser⁴; Maulik Patel¹; Arthur Baddorf⁵; Dhananjay Kumar³; Sudipta Seal²; Hernando Garcia³; Gerd Duscher¹; *Ramki Kalyanaraman*¹; ¹University of Tennessee; ²University of Central Florida; ³North Carolina A&T; ⁴Oak Ridge National Laboratory; ⁵Southern Illinois University

4:45 PM

Tuning of Semiconductor-to-metal Transition in Epitaxial VO₂ through Strain Engineering in the Heterostructures: *Adele Moatti*¹; Jagdish Narayan¹; ¹NCSU

5:05 PM Invited

Synchrotron X-ray Structure-resolved Study of Photovoltaic Titanium Oxide Phthalocyan: *E-wen Huang*¹; Wei-Chieh Huang¹; Yu-Hsiang Hsu²; Tsun-Hsu Chen²; ¹National Chiao Tung University; ²National Taiwan University

Fundamental Aspects and Modeling Powder Metal Synthesis and Processing — Fundamentals of Powder Consolidation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: Paul Prichard, Kennametal; Eugene Olevsky, San Diego State University; Iver Anderson, Ames Laboratory

Tuesday PM
February 28, 2017

Room: 16A
Location: San Diego Convention Ctr

Session Chair: Eugene Olevsky, San Diego State University

2:00 PM Invited

Anisotropy of Mass Transfer during Sintering of Powder Materials with Pore-Grain Structure Orientation: *Diletta Giuntini*¹; Elisa Torresani²; Chaoyi Zhu³; Tyler Harrington³; Kenneth Vecchio³; Alberto Molinari²; Eugene Olevsky¹; ¹San Diego State University and University of California, San Diego; ²University of Trento; ³University of California, San Diego

2:40 PM

Dislocation Density Approach to Understanding Sintering Mechanics: *Chaoyi Zhu*¹; *Diletta Giuntini*²; Tyler Harrington¹; Eugene Olevsky²; Kenneth Vecchio¹; ¹UC San Diego; ²San Diego State University

3:00 PM

Effect of Additives on the Densification Kinetics and Microstructure of Hot-Pressed Boron Suboxide: *Kristopher Behler*¹; Cooper Voigt²; Eugene Shanholtz²; Jerry LaSalvia⁴; Scott Walck¹; ¹U.S. Army Research Laboratory (SURVICE Engineering); ²U.S. Army Research Laboratory (SEAP); ³U.S. Army Research Laboratory (ORISE); ⁴U.S. Army Research Laboratory

3:20 PM

Microstructural Evolution during Early Stages of Hot Isostatic Pressing of 316L Austenitic Stainless Steel: *Sandeep Irukuvarghula*¹; Hany Hassanin²; Moataz Attallah³; Michael Preuss¹; ¹University of Manchester; ²Kingston University; ³University of Birmingham

3:40 PM Break

4:00 PM Invited

Thermodynamics versus Kinetics of Grain Growth Control to Enable Stable Nanocrystalline Materials: *Ricardo Castro*¹; Nazia Nafsin¹; ¹University of California, Davis

4:40 PM

Grain Growth and Densification of Tungsten Nanopowders: *Brady Butler*¹; James Paramore¹; Anthony Roberts¹; Jonathan Ligda¹; Micah Gallagher¹; ¹U.S. Army Research Laboratory

5:00 PM

Development of Novel Multi-compaction Technique for Fabrication of Hybrid P/M Steels: *Minchul Oh*¹; Hyunjoo Seok¹; Byungmin Ahn¹; ¹Ajou University

5:20 PM

Microwave vs Conventional Sintering of Ti Powders: Comparative Analysis: *Charles Maniere*¹; Tony Zahrah²; Eugene Olevsky¹; ¹San Diego State University; ²MATSYS Inc

Gamma (FCC)/Gamma-Prime (L1₂) Co-Based Superalloys II — Alloy Development

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee

Program Organizers: Eric Lass, National Institute of Standards and Technology; Qiang Feng, University of Science and Technology Beijing; Alessandro Moturra, University of Birmingham; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Wei Xiong, Northwestern University

Tuesday PM
February 28, 2017

Room: Pacific 14
Location: Marriott Marquis Hotel

Session Chairs: Alessandro Mottura, University of Birmingham; Wei Xiong, University of Pittsburgh

2:00 PM Invited

γ' -strengthened Co-Base Alloys – Development and Challenges: *Akane Suzuki*¹; ¹GE Global Research

2:30 PM Invited

An Update on Cobalt Based Co-Mo-Al-X Alloys with γ - γ' Microstructure: Effect of Alloying Additions, Mechanical Properties and Interaction with Different Environments: *Kamario Chattopadhyay*¹; Dipankar Banerjee¹; Abhshek Singh¹; Rajarshri Banerjee²; Surendra Makineni¹; Nitin Bellari²; Abhishek Sharma²; Praful Pandey²; Saurabh Das²; ¹Indian Institute of Science; ²University of North Texas

3:00 PM

Integrated Computational Materials Engineering of Co Bushing Alloy: *Ida Berglund*¹; James Saal¹; Jason Sebastian¹; David Snyder¹; Clay Houser¹; Dana Frankel¹; Nicholas Hatcher¹; Gregory Olson¹; ¹QuesTek Innovations

3:20 PM

The Microstructure and Hardness of Ni-Co-Al-Ti-Cr Quinary Alloys: *Katerina Christofidou*¹; Nicholas Jones¹; Roxana Flacau²; Mark Hardy³; Howard Stone¹; ¹University of Cambridge; ²Canadian Neutron Beam Center; ³Rolls-Royce plc

3:40 PM Break

4:00 PM

Thermodynamics and Kinetics of L1₂-containing Co-base Superalloys from First-Principles: *Robert Rhein*¹; Tresa Pollock¹; Anton Van der Ven¹; ¹University of California Santa Barbara

4:20 PM

Thermodynamic Database for the Co-Al-W-Ni-Ti-Ta-Cr Superalloy System: Peisheng Wang¹; *Wei Xiong*²; Oleg Kontsevoi¹; Ursula Kattner³; Carelyn Campbell³; Eric Lass³; Gregory Olson¹; ¹Northwestern University; ²University of Pittsburgh; ³National Institute of Standards and Technology

4:40 PM

Calphad Design of Co-based Gamma-prime-strengthened Superalloys: *Eric Lass*¹; ¹National Institute of Standards and Technology

GAT-2017 (Gamma Alloys Technology - 2017) — Microstructure Evolution, Simulation and Prediction

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Tuesday PM
February 28, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Florian Pyczak, Helmholtz-Zentrum Geesthacht; Thomas Broderick, GE Aviation

2:00 PM Invited

Grain Refinement and Texture Evolution in Boron Containing TiAl Alloys: *Ulrike Hecht*¹; Silja-Katharina Rittinghaus²; ¹Access e.V.; ²Fraunhofer ILT (Institute for Laser Technique)

2:25 PM

Fine-grained FL Microstructure Evolution/Control and their Tensile Properties in a Cast Beta Gamma Alloy Material: *Joon Sik Park*¹; Kwang Soo Choi¹; Sang Lan Kim²; Young-Won Kim²; ¹Hanbat National University; ²Gamteck LLC

2:45 PM Invited

Processing, Microstructure and Mechanical Properties of Beta-gamma TiAl Alloy: *Yuyong Chen*¹; Fantao Kong¹; Jing Tian¹; Shulong Xiao¹; Xiaopeng Wang¹; Ping Sun¹; ¹Harbin Institute of Technology

3:10 PM

Effect of Borides on the Beta/Alpha Phase Transformation Kinetics in Gamma Titanium Aluminide Alloys: *Michael Oehring*¹; Andreas Stark¹; Marcus Rackel¹; Norbert Schell¹; Florian Pyczak¹; ¹Helmholtz-Zentrum Geesthacht

3:30 PM

Ordered ω Phase Transformations in High Nb-TiAl Alloys: *Lin Song*¹; Junpin Lin²; Jinshan Li¹; Hongchao Kou¹; ¹Northwestern Polytechnical University; ²University of Science and Technology Beijing

3:50 PM Break

4:05 PM Invited

3D Materials Science and Engineering: Emerging Capabilities for Gamma Alloys: *Dennis Dimiduk*¹; Michael Uchic²; Michael Groeber²; ¹BlueQuartz Software, LLC; ²Air Force Research Laboratory

4:30 PM

Three Dimensional Reconstruction of TiAl Microstructures: *Henry Proudhon*¹; Anouk Briane²; Nicolas Gueninichault²; Wolfgang Ludwig³; Jerome Crepin²; Lionel Marcin⁴; Jean-Charles Stinville⁵; McLean Echlin³; Tresa Pollock⁵; ¹MINES ParisTech / UCSB; ²MINES ParisTech; ³ESRF / INSA Lyon; ⁴SafranTech; ⁵UCSB

4:50 PM Invited

Thermodynamic Modeling of the Ti-Al-Cr-Mo-Nb-B System for Aiding Gamma-TiAl Alloy Design: *Fan Zhang*¹; Jun Zhu¹; Chuan Zhang¹; John Foltz²; Nick Sonnentag²; Thomas Broderick³; ¹CompuTherm, LLC; ²ATI; ³GE Aviation

5:15 PM Invited

Phase Field Simulation of Microstructure Evolution in TiAl: *Dongsheng Xu*¹; Chunyu Teng¹; Jinhu Zhang¹; Yunzhi Wang²; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Ohio State University

High Entropy Alloys V — Alloy Development and Applications II

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Tuesday PM
February 28, 2017

Room: 32B
Location: San Diego Convention Ctr

Session Chairs: Suveen Nigel Mathaudhu, University of California, Riverside; Yong Liu, Central South University

2:00 PM Invited

Precipitation Strengthening Effects in Powder Metallurgical High Entropy Alloys: *Yong Liu*¹; Bin Liu¹; Qihong Fang²; C.T. Liu³; ¹Central South University; ²Hunan University; ³City University of Hong Kong

2:20 PM Invited

Synthesis and Characterization of Nanostructured Magnetic High Entropy Alloys: Trevor Clark¹; Christian Roach¹; *Suveen Mathaudhu*¹; ¹University of California Riverside

2:40 PM

Adaption of Metal Injection Molding to Quinary High Entropy Alloys: *Arnaud Grimonprez*¹; Julia Wagner²; Volker Piotter¹; Alexander Kauffmann¹; Yizhou Chen¹; Martin Heilmair¹; ¹Karlsruhe Institute of Technology (KIT); ²University of Stuttgart

3:00 PM

Design of Novel Precipitate Strengthened Al-Co-Cr-Fe-Nb-Ni High-entropy Alloys: *Martin Dettois*¹; Stoichko Antonov¹; Sammy Tin¹; ¹Illinois Institute of Technology

3:20 PM Invited

Design of High Entropy Alloys for Turbine Applications: *Ida Berglund*¹; James Saal¹; Jason Sebastian¹; Gregory Olson¹; ¹QuesTek Innovations

3:40 PM Break

4:00 PM Invited

Combinatorial Design of High Entropy Alloys: Discovery of a Novel Single BCC Solid Solution: *Pradeep Konda Gokuldoss*¹; ¹Max Planck Institute for Iron Research GmbH

4:20 PM

Design of “High Entropy Alloys” (HEA) with Optimal Combinations of Stability, Density, Strength and Ductility: Edern Menou¹; Isaac Toda-Caraballo²; Emmanuel Bertrand¹; Gérard Ramstein¹; Pedro Rivera-Díaz-del-Castillo²; *Franck Tancret*¹; ¹Université de Nantes; ²University of Cambridge

4:40 PM

Fabrication of High-entropy Refractory Metal Carbides: *Tyler Harrington*¹; Joshua Gild²; Jian Luo³; Cormac Toher⁴; Pranab Sarker⁴; Stefano Curtarolo⁵; Kenneth Vecchio³; ¹University of California San Diego; ²Materials Science and Engineering Program, UC San Diego; ³Department of NanoEngineering and Materials Science and Engineering Program, UC San Diego; ⁴Department of Mechanical Engineering and Materials Science, Duke University; ⁵Materials Science, Electrical Engineering, Physics, and Chemistry, Duke University

5:00 PM Invited

The Oxidation of an Equimolar FeCoNiCrMn High-entropy Alloy in CO/CO₂ Mixed Gases at 973K (700°C): *Wu Kai*¹; Fu-Pen Cheng¹; Rong-Tan Huang¹; Leu-Wen Tsay¹; Ji-Jung Kai¹; ¹National Taiwan Ocean University

5:20 PM

Carbides-induced Hardening of CoCrFeMnNi Family of HEAs: *Adrianna Lozinko*¹; Michal Mroz¹; Fares Haddad¹; *Anna Fraczkiewicz*¹; ¹MINES St-Etienne

Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges — Session IV

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Shuanglin Chen, CompuTherm LLC; Frederic Danoix, Université de Rouen; Indrajit Charit, University of Idaho

Tuesday PM
February 28, 2017

Room: 31C
Location: San Diego Convention Ctr

Session Chairs: Hatem Zurob, McMaster University; Indrajit Charit, University of Idaho

2:00 PM Invited

Interaction of Solutes with Interfaces in Iron: *Matthias Militzer*¹; Hatem Zurob²; ¹The University of British Columbia; ²McMaster University

2:30 PM Invited

A New Look at Steel Martensite Tempering with Advanced Characterization Tools: *Amy Clarke*¹; Michael Miller²; Daniel Coughlin³; Dean Pierce²; Jon Poplawsky²; Paul Gibbs⁴; Kester Clarke¹; Virginia Judge¹; Bjorn Clausen³; Jon Almer⁵; Robert Field¹; Don Williamson¹; David Alexander³; John Speer¹; George Krauss¹; ¹Colorado School of Mines; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory; ⁴Sandia National Laboratories - Livermore; ⁵Argonne National Laboratory

3:00 PM

Atomistic Modelling of Carbon Redistribution in Martensite Phase: *Helena Zapolsky*¹; Mykola Lavrskyi¹; Armen Khachatryan²; Frederic Danoix¹; Renaud Patte²; Sophie Cazottes³; Mohamed Gouné⁴; Philippe Maugis⁵; ¹University of Rouen; ²University of California and Rutgers University; ³INSA Lyon - MATEIS - SGM; ⁴University of Bordeaux; ⁵Aix-Marseille University Saint-Jerome

3:20 PM Break

3:40 PM Invited

Precipitation Kinetics: Quantitative In-situ Characterization Using Small-angle Scattering Helps Establish Models Validity: *Alexis Deschamps*¹; Frederic De Geuser¹; Mark Styles²; Christopher Hutchinson³; ¹Grenoble Institute of Technology; ²CSIRO; ³Monash University

4:10 PM

Thermally Induced Phase Transformations in Beta-titanium Alloys and Corresponding Effects on Mechanical Properties: *James Coakley*¹; Anna Radecka²; Paul Bagot³; David Dye⁴; Howard Stone¹; Dieter Isheim⁵; David Seidman²; ¹University of Cambridge; ²Rolls-Royce plc.; ³Oxford University; ⁴Imperial College London; ⁵Northwestern University

4:30 PM

Method for Correcting Atom Probe Tomography Trajectory Aberration Artifacts in Multiphase Materials: Samuel Briggs¹; Nathan Almirall²; Philip Edmondson³; Peter Wells²; G. Robert Odette²; Kumar Sridharan¹; Kevin Field³; ¹University of Wisconsin-Madison; ²University of California - Santa Barbara; ³Oak Ridge National Laboratory

4:50 PM

Solute Distribution Analysis of Early Stages of Aging in Al-Mg-Si Alloys via Atom Probe Tomography: *Phillip Dumitraschkewitz*¹; Gunther Rank²; Stephanie Sackl³; Stephan S.A. Gerstl⁴; Stefan Pogatscher¹; ¹Chair of Nonferrous Metallurgy, Montanuniversitaet Leoben; ²AMGA rolling GmbH; ³Chair of Physical Metallurgy and Metallic Materials, Montanuniversitaet Leoben; ⁴Scientific Center of Optical and Electron Microscopy, ETH Zurich

In-situ Methods for Unraveling Structure-Property Relationships in Light Metals — Diffraction and Other Novel Methods

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Wim Sillekens, European Space Agency

Tuesday PM
February 28, 2017

Room: 5B
Location: San Diego Convention Ctr

Session Chairs: Wim Sillekens, European Space Agency; Dmytro Orlov, Lund University

2:00 PM

Structural Evolution of Metals at High Temperature: Complementary Investigations with Neutron and Synchrotron Quantum Beams: *Klaus-Dieter Liss*¹; ¹Australian Nuclear Science and Technology Organisation

2:20 PM

Advanced Aluminum Alloys Development and In-Situ Fitness-for-Service Testing in Automotive Lightweighting: *Dimitry Sediako*¹; David Weiss²; Ahmed Nabawy¹; ¹Canadian Nuclear Laboratories; ²ECK Industries Inc.

2:40 PM

In-situ X-ray Synchrotron Profile Analysis during High Pressure Torsion of Ti: *Erhard Schafner*¹; Michael Kerber¹; Florian Spieckermann²; Torben Fischer³; Roman Schuster⁴; Cornelia von Baeckmann⁵; ¹University of Vienna, Faculty of Physics; ²University of Leoben; ³Deutsches Elektronen-Synchrotron DESY; ⁴University of Vienna, Faculty of Earth Sciences; ⁵University of Vienna, Faculty of Chemistry

3:00 PM

The Effect of Grain Refinement on Hot Tearing in AZ91D Magnesium Alloys: *Tyler Davis*¹; Lukas Bichler¹; Francesco D'Elia²; Norbert Hort²; ¹University of British Columbia; ²Helmholtz-Zentrum Geesthacht

3:20 PM

Formability of Magnesium Alloy AZ31B from Room Temperature to 125C under Biaxial Tension: *Isaac Chelladurai*¹; Andrew Orme¹; Michael Miles¹; David Fullwood¹; John Carsley²; Raj Mishra²; Irene Beyerlein³; Marko Knezevic⁴; ¹Brigham Young University; ²General Motors; ³Sandia National Laboratory; ⁴University of New Hampshire

3:40 PM Break

4:00 PM Keynote

Ambient Pressure X-ray Photoelectron Spectroscopy in Light Element Materials Investigations: *Joachim Schnadt*¹; Ashley Head²; ¹Lund University; ²Lawrence Berkeley National Laboratory

4:30 PM

In-situ Real-time Monitoring of Aging Processes in an Aluminum Alloy by High-precision Dilatometry: Martin Luckabauer¹; Elisabeth Hengge¹; Gregor Klinser¹; *Wolfgang Sprengel*¹; Roland Würschum¹; ¹Graz University of Technology

4:50 PM

Analysis of Microstructure and Damage Evolution in Ultra-thin Wires of the Magnesium Alloy MgCa0.8 at Multipass Drawing: *Andrij Milenin*¹; Piotr Kustral¹; Dorota Byrska-Wójcik¹; Olexandr Grydin²; Mirko Schaper²; Thorben Mentlein³; Gregory Gerstein³; Florian Nürnberger³; ¹AGH University of Science and Technology; ²Paderborn University; ³Leibniz Universität Hannover

5:10 PM

Effect of the Zn Content on the Compression Behaviour of Mg5Nd(Zn): An In Situ Synchrotron Radiation Diffraction Study: *Domonkos Tolnai*¹; Tim Kärcher¹; Ricardo Buzolin¹; Tungky Subroto¹; Francesco D'Elia¹; Serge Gavras¹; Andreas Stark¹; Norbert Schell¹; Norbert Hort¹; Karl Kainer¹; ¹Helmholtz Zentrum Geesthacht

Interface-Mediated Properties of Nanostructured Materials — Measurement and Modeling of Nanoscale Deformation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Caizhi Zhou, Missouri University of Science and Technology; Nan Li, Los Alamos National Laboratory; Peter Anderson, The Ohio State University; Michael Demkowicz, Texas A&M University

Tuesday PM Room: Pacific 23
 February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Peter Anderson, The Ohio State University; Michal Demkowicz, Texas A&M University

2:00 PM Invited

Slip Transmission in fcc/fcc Bilayers Using Phase Field Dislocation Dynamics: Yifei Zeng¹; Abigail Hunter²; Irene Beyerlein²; Marisol Koslowski¹; ¹Purdue University; ²Los Alamos National Laboratory

2:30 PM Invited

Strengthening Mechanisms of Nanoporous Metallic Materials
 : Niaz Abdolrahim¹; Bin Ding¹; ¹University of Rochester

3:00 PM

Deformation and Fracture in Stressed Multi-layer Thin Films: Ruth Konetschnik¹; Darjan Kozic²; Ronald Schönggrundner²; Hans-Peter Gänser²; Roland Brunner²; Daniel Kiener¹; ¹University of Leoben; ²Materials Center Leoben

3:20 PM

Green's Function Formulation for Vacancy-assisted Dislocation Climb and Applications to Low Angle Grain Boundaries: Yang Xiang¹; Yejun Gu¹; Jian Han²; David J Srolovitz²; ¹Hong Kong University of Science and Technology; ²University of Pennsylvania

3:40 PM Break

3:55 PM Invited

Ab Initio Determination of the Energetics of Atomically Sharp Interfaces: Liang Qi¹; ¹University of Michigan

4:25 PM

Molecular Dynamics Simulations of Mg/Nb Interfaces: Shear Strength and Interaction with Lattice Glide Dislocations: Xiang-Yang Liu¹; Satyesh Yadav¹; Shuai Shao¹; Jian Wang²; Youxing Chen¹; Richard Hoagland¹; ¹Los Alamos National Laboratory; ²University of Nebraska-Lincoln

4:45 PM

On the Impact of Capillarity for Strength at the Nanoscale: Nadiia Mameka¹; Jürgen Markmann¹; Jörg Weissmüller²; ¹Helmholtz-Zentrum Geesthacht; ²Hamburg University of Technology

5:05 PM

Mitigation of Atomic Oxygen Attack to Spacecraft Composite Structures: A Fundamental Investigation Using Reactive Molecular Dynamics Simulation: Sasan Nouranian¹; Farzin Rahmani¹; Mina Mahdavi¹; Ahmed Al-Ostaz²; ¹Department of Chemical Engineering, University of Mississippi; ²Department of Civil Engineering, University of Mississippi

5:25 PM

Joining of Copper by Ag Nanopaste: Microstructure and Strength Behavior Depending on Different Process Parameters: Susann Hausner¹; Bernhard Wielage¹; Guntram Wagner¹; ¹Technische Universität Chemnitz

Magnesium Technology 2017 — Solidification and Processing I

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Tuesday PM Room: 5A
 February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Neale Neelameggham, Ind LLC; Tracy Berman, University of Michigan

2:00 PM

Microsegregation in High Pressure Die Cast Mg Alloys: Tracy Berman¹; Mei Li²; John Allison¹; ¹University of Michigan; ²Ford Motor Company

2:30 PM

Numerical Simulations of TRC Equipped with a Core: Jong-Jin Park¹; ¹Hongik University

2:50 PM

Growth of Al8Mn5 Intermetallic in AZ91: Christopher Gourlay¹; Guang Zeng¹; Jingwei Xian¹; ¹Imperial College London

3:10 PM

Influence of CaO Grain Refiner Addition on the Microstructure and Mechanical Properties of As-cast Mg Alloys: Yahia Ali¹; Dong Qiu¹; Ming-Xing Zhang¹; ¹University of Queensland

3:30 PM Break

3:50 PM

Grain Refinement of Mg and Its Alloy by Inoculation of In-situ MgO Particles: Yun Wang¹; Guosheng Peng¹; Zhongyun Fan¹; ¹Brunel University London

4:10 PM

Numerical Study of Magnesium Production by Pidgeon Process and Pre-prepared Pellets Silicothermic Process: Comparison of Heat Transfer: Daxue Fu¹; Zhang Ting'an¹; Zhihe Dou¹; Lukui Guan¹; ¹Northeastern University

4:30 PM

On the Age Hardening Response of Aluminum Containing Magnesium Sheets with Zinc or Manganese (AZ- and AM Series Alloys): Jan Bohlen¹; Ander Telleria Iparragirre²; Gurutze Arruebarrena²; Dietmar Letzig¹; ¹Helmholtz-Zentrum Geesthacht; ²Mondragon University

4:50 PM

Performance Evaluation of High-pressure Die-cast Magnesium Alloys: Mark Easton¹; Suming Zhu¹; Mark Gibson²; Trevor Abbott³; Hua Qian Ang¹; Xiaobo Chen⁴; Nick Birbilis⁴; Gary Savage²; ¹RMIT University; ²CSIRO; ³Magontec; ⁴Monash University

5:10 PM

Simulation Study on Direct Desulfurization of Molten Iron by Magnesium Vapor: Yan Liu¹; Yongkun Yang¹; Dongxing Wang¹; Xiaolong Li¹; Zhang Ting'an¹; ¹Northeastern University

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Structural Materials I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Tuesday PM
February 28, 2017

Room: Cardiff
Location: Marriott Marquis Hotel

Session Chairs: Brian Cockeram, Bechtel-Bettis; Stuart Maloy, Los Alamos National Laboratory

2:00 PM

The Increase in Fatigue Crack Growth Rates Observed for Zircaloy-4 in a PWR Environment: *Brian Cockeram*¹; B.F. Kammenzind¹; ¹Bechtel-Bettis

2:20 PM

Wear Results for Zirconium Alloys and Their Oxides: *William Howland*¹; Paolo Zafred¹; Gene Lucadamo¹; Natalia Tymiak-Carlson¹; Richard Smith¹; ¹Bechtel Marine Propulsion Company

2:40 PM

Characterization and Simulation of Wear-tested Zirconium Alloy Surfaces: *Gene Lucadamo*¹; Natalia Tymiak-Carlson¹; William Howland¹; Richard Smith¹; Clinique Brundige¹; ¹Bettis Laboratory, Bechtel Marine Propulsion Corporation

3:00 PM

Determination of Material Properties of Ion-irradiated and Corroded Zircaloy-4 by Using Nanomechanical Raman Spectroscopy: *Debapriya Mohanty*¹; Yang Zhang¹; Vikas Tomar¹; ¹Purdue University

3:20 PM

Evolution of Stress and Fracture During Oxidation of Zirconium Alloys: *Natalia Tymiak Carlson*¹; Jason Gruber¹; John Seidensticker¹; Ram Bajaj¹; Douglas Rishel¹; William Howland¹; Richard Smith¹; ¹Bettis Atomic Power Laboratory

3:40 PM Break

4:00 PM

Damage Rate Dependence of Oxide Evolution on Zircaloy-4 under Simultaneous Irradiation-corrosion Experiment: *Peng Wang*¹; Gary Was¹; ¹University of Michigan

4:20 PM

Modeling Activation and Radionuclide Decay in Proton Irradiated Zirconium Alloys: *Jesse Carter*¹; Diane Moran¹; Richard Smith¹; ¹Bettis Laboratory, BMPC

4:40 PM

Study on Texture Evolution of As-hydrated Zircaloy-4 Cladding under Low Temperature Biaxial Creep Test: *Kuan-Che Lan*¹; Xiang Liu¹; Huan Yan¹; Hoon Lee¹; Hsiao-Ming Tung²; Chih-Pin Chuang³; Kun Mo³; Yinbin Miao³; James Stubbins¹; ¹University of Illinois at Urbana-Champaign; ²Institute of Nuclear Energy Research; ³Argonne National Laboratory

5:00 PM

The Recovery of Irradiation Damage for Zircaloy-2 and Zircaloy-4 Following Irradiation at Higher Temperatures of 377-410C: *Brian Cockeram*¹; T.S. Byun²; K.J. Leonard³; J.L. Hollenbeck¹; B.F. Kammenzind¹; ¹Bechtel-Bettis; ²PNNL; ³Oak Ridge National Laboratory

Materials by Design: An MPMD Symposium Honoring Greg Olson on the Occasion of His 70th Birthday — Materials Design II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Functional Materials Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Michele Manuel, University of Florida; Wei Xiong, University of Pittsburgh; Jason Sebastian, QuesTek Innovations

Tuesday PM
February 28, 2017

Room: 10
Location: San Diego Convention Ctr

Session Chairs: Michele Manuel, University of Florida ; Wei Xiong, University of Pittsburgh

2:00 PM Keynote

Creating Materials Databases Using X-Ray Tomography: J. Zhang¹; S.O. Poulsen²; J.W. Gibbs³; *Peter Voorhees*²; H.F. Poulsen¹; ¹Danish Technical University; ²Northwestern University; ³Los Alamos National Laboratory

2:40 PM Keynote

The Use of 3D Microstructural Characterization for the Validation of Models: *David Rowenhorst*¹; ¹U.S. Naval Research Laboratory

3:20 PM Break

3:50 PM Keynote

Formalizing the Process-Structure-Property-Performance Approach to Materials Design and Development: *David Furrer*¹; Vasisht Venkatesh¹; Max Kaplan¹; ¹Pratt & Whitney

4:30 PM Keynote

GBO, SRG, ICME and MGI - Towards the General Materials Design System: *John Agren*¹; ¹Royal Institute of Technology

5:10 PM Concluding Comments

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Refractory Metals

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmaier, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Tuesday PM
February 28, 2017

Room: Pacific 16
Location: Marriott Marquis Hotel

Session Chairs: Martin Heilmaier, KIT Karlsruhe; Nobuaki Sekido, Tohoku University

2:00 PM Invited

High Temperature Oxidation Behavior of Mo-Si-B-Ti-Based Alloys: *Bronislava Gorr*¹; ¹University Siegen

2:30 PM

Design and Production of bcc Titanium-molybdenum-based Alloys Strengthened by Ordered Intermetallic Precipitates: *Alexander Knowles*¹; Nick Jones²; Neil Jones³; Howard Stone²; David Dye¹; ¹Imperial College London; ²University of Cambridge; ³Rolls-Royce plc

2:50 PM

The Influence of Titanium on the Phase Equilibria in Mo-Si-B Alloys: *Daniel Schliephake*¹; Martin Heilmaier¹; ¹Karlsruhe Institute of Technology

3:10 PM

Microstructure and Mechanical Behavior of Nb-based Nb-Al-Fe Alloys: *Frank Stein*¹; Noah Philips²; ¹Max-Planck-Institut für Eisenforschung; ²ATI Specialty Alloys and Components

3:30 PM Break**3:50 PM**

Phase Evolution and Creep Properties of Nb-rich Nb-Si-Cr Eutectics: *Florian Gang*¹; Alexander Kauffmann¹; Martin Heilmaier¹; ¹Karlsruhe Institute of Technology

4:10 PM

On the Design of Nb Silicide Based Alloys with a Balance of Properties: *Panayiotis Tsakiroopoulos*¹; ¹University of Sheffield

4:30 PM

Powder Route Processing of Nb Silicide Based Alloys: Claire Utton¹; Panayiotis Tsakiroopoulos¹; *Edward Gallagher*¹; ¹University of Sheffield

4:50 PM

Solidification Processing of Nb-silicide Based Alloys: *Nicola Tankov*¹; Claire Utton¹; Panayiotis Tsakiroopoulos¹; ¹University of Sheffield

5:10 PM

Accelerated Discovery and Development of Intermetallic-containing Refractory-based Multi-principal-component Alloys: *Michael Titus*¹; Hauke Springer²; Fritz Körmann²; Blazej Grabowski²; Dierk Raabe²; ¹Purdue University; ²Max-Planck-Institut für Eisenforschung

5:30 PM

Deformation Behavior and Solid Solution Hardening of Al-containing Refractory High-entropy Alloys: *Hans Chen*¹; Alexander Kauffmann¹; Bronislava Gorr²; Daniel Schliephake³; Christoph Seemüller; Julia Wagner⁴; Hans-Juergen Christ²; Martin Heilmaier³; ¹Karlsruhe Institute of Technology; ²University of Siegen; ³Karlsruhe Institute of Technology; ⁴University of Stuttgart

Materials Science for High-Performance Permanent Magnets — Magnetization Process / Microstructural Stability

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirosawa, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Tuesday PM
February 28, 2017

Room: 24C
Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Kazuhiro Hono, National Institute for Materials Science; Scott McCall, Lawrence Livermore National Laboratory

2:00 PM Invited

Imaging the Changes in Magnetic Domain Structure in Nd-Fe-B Sintered Magnets throughout the Demagnetisation Process by Soft X-ray Magnetic Circular Dichroism Microscopy: *David Billington*¹; Kentaro Toyoki¹; Yoshinori Kotani¹; Hiroyuki Okazaki¹; Akira Yasui¹; Wakana Ueno¹; Satoshi Hirosawa¹; Tetsuya Nakamura¹; ¹Japan Synchrotron Radiation Research Institute (JASRI), SPring-8

2:20 PM

Large-scale Micromagnetics Simulation for Initial Magnetization Process in Nd-Fe-B Hot-deformed Nanocrystalline Magnet: *Hiroshi Tsukahara*¹; Kaoru Iwano¹; Chiharu Mitsumata²; Tadashi Ishikawa¹; Kanta Ono¹; ¹High Energy Accelerator Research Organization; ²National Institute for Materials Science

2:40 PM

Electronic States of Rare Earth Elements in Permanent Magnet Materials Probed by X-ray Magnetic Circular Dichroism Nano-Spectroscopy: *Tetsuro Ueno*¹; Ai Hashimoto²; Yasuo Takeichi²; Kanta Ono²; ¹National Institute for Materials Science; ²High Energy Accelerator Research Organization

3:00 PM

Fabrication of Nd-Fe-B Thin Films as a Model Material: *Toshiyuki Shima*¹; Ryosuke Nakagawa¹; Aya Sugawara¹; Risa Kurosu¹; Masaaki Doi¹; ¹Tohoku Gakuin University

3:20 PM

Data-driven Approach for Magnetic Neutron Scattering Data Analysis of Permanent Magnets Using Statistical Learning and Artificial Intelligence: *Kanta Ono*¹; Akinori Asahara²; Hidekazu Morita²; Chiharu Mitsumata³; Masao Yano⁴; Tetsuya Shoji⁴; ¹High Energy Accelerator Research Organization (KEK); ²Hitachi Ltd.; ³National Institute for Materials Science; ⁴Toyota Motor Corporation

3:40 PM Break**4:00 PM Invited**

Phase Equilibria in the Nd-based Permanent Magnets: *Taichi Abe*¹; Ikuro Ohnuma¹; Yoshinao Kobayashi²; Ying Chen³; Osamu Takeda³; ¹NIMS; ²Tokyo Institute of Technology; ³Tohoku University

4:25 PM

Stability Origin of Binary Systems Relevant to Multi-component Phase in Nd-Fe-B: *Ying Chen*¹; Arkapol Saengdeeing¹; ¹Tohoku University

4:45 PM

Ab-initio Study of Transition-metal-doping Effects on the Magnetic Anisotropy in Nd-Fe-B Sintered Magnets: *Yasutomi Tatetsu*¹; Shinji Tsuneyuki²; Yoshihiro Gohda³; ¹The University of Tokyo; ²The University of Tokyo, ISSP; ³The University of Tokyo, Tokyo Institute of Technology

5:05 PM Invited

Grain Boundary Diffusion of Co, Cu and Nb as Function of Temperature in NdFeB: *Gino Hrkac*¹; Thomas Schrefl²; Johann Fischbacher²; Thomas Ostler¹; Richard Evans³; Sam Westmoreland³; Michael Winklhofer⁴; Roy Chantrell³; Gergely Zimanyi⁵; ¹University of Exeter; ²Danube University Krems; ³University of York; ⁴University of Duisburg; ⁵University of California Davis

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Advanced Materials and Processing

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Tuesday PM
February 28, 2017

Room: 24A
Location: San Diego Convention Ctr

Session Chairs: Peter Liaw, University of Tennessee; Somayeh Pasebani, Oregon State University

2:00 PM Keynote

Microstructure, Texture and Mechanical Properties of the 14YWT Nanostructured Ferritic Alloy NFA-1: *G. Robert Odette*¹; Md Ershadul Alam¹; Soupitak Pal¹; Takuya Yamamoto¹; ¹University of California Santa Barbara

2:30 PM Invited

Dynamic Behavior of a Nanocrystalline Cu-Ta Alloy: Scott Turnage¹; *Kris Darling*²; Mansa Rajagopalan¹; Chad Hornbuckle²; Kiran Solanki¹; ¹ASU; ²ARL

2:50 PM

The Creep-resistant High Entropy Alloys (HEAs): Haoyan Diao¹; Dong Ma²; Wei Guo²; Jonathan Poplawsky²; Chuan Zhang³; Fan Zhang³; Karin Dahmen⁴; *Peter Liaw*⁵; ¹The University of Tennessee ; ²Oak Ridge National Laboratory; ³CompuTherm, LLC; ⁴University of Illinois at Urbana-Champaign; ⁵The University of Tennessee

3:10 PM Invited

Structure-property Correlations in Metallic Components Synthesized Using Selective Laser Melting: *Upadrasta Ramamurthy*¹; ¹Indian Institute of Science

3:30 PM Break

3:45 PM Keynote

Design of Creep-resistant Copper Alloys: *Steven Zinkle*¹; Ying Yang²; Lance Snead³; ¹University of Tennessee; ²Oak Ridge National Laboratory; ³Massachusetts Institute of Technology

4:15 PM Invited

Compatibility of a Complex Concentrated Alloy with Non-aqueous Coolants: Justin Lee¹; Timothy White¹; Rajiv Mishra²; *James Earthman*¹; ¹University of California, Irvine; ²University of North Texas

4:35 PM Invited

Radiation Response of Nanotwinned Metals: *Xinghang Zhang*¹; Jin Li²; Cuncai Fan¹; Kaiyuan Yu³; Youxing Chen⁴; Haiyan Wang¹; ¹Purdue University; ²Texas A&M University; ³China University of Petroleum; ⁴Los Alamos National Laboratory

4:55 PM Invited

Influence of Fine Scale Alpha Precipitation on the Mechanical Properties of the Beta Titanium Alloy Beta-21S: Srinivas Mantri¹; Deep Choudhuri¹; *Rajarshi Banerjee*¹; ¹University of North Texas

5:15 PM Invited

Emulating Neutron Damage in Nanocrystalline Copper via In-situ Ion Irradiation: *Walid Mohamed*¹; Sumit Bhattacharya²; Laura Jamison¹; Marquis A. Kirk¹; Korukonda Murty³; Abdellatif Yacout¹; ¹Argonne National Laboratory; ²Northwestern University; ³NC State University

Mechanical Behavior of Nanostructured Materials — Metallic Glass and High Entropy Alloys

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Tuesday PM
February 28, 2017

Room: 30D
Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Joseph Poon, University of Virginia; Jürgen Eckert, Erich Schmid Institute of Materials Science; Peter Liaw, University of Tennessee

2:00 PM Invited

Interfaces in Colloidal Crystals: *Frans Spaepen*¹; ¹Harvard School of Engrg & Appl Sciences

2:25 PM Invited

Comparing Amorphous Alloy Synthesis Employing Melt Spinning & Mechanical Alloying: Andrew Cheung¹; *Gary Shiflet*¹; ¹University of Virginia

2:50 PM Invited

Tailoring the Mechanical Behavior of Metallic Glasses: *Juergen Eckert*¹; ¹Montanuniversität Leoben

3:15 PM Invited

Deviations from High-Entropy Configurations in the Al_xCoCrCuFeNi Alloys: Louis Santodonato¹; Yang Zhang²; Mikhail Feygenson³; Chad Parish¹; Michael Gao⁴; Richard Weber⁵; Joerg Neufeind¹; Zhi Tang⁶; James Morris¹; *Peter Liaw*⁷; ¹Oak Ridge National Laboratory; ²The University of Illinois at Urbana-Champaign; ³Juelich Centre for Neutron Science; ⁴National Energy Technology Laboratory; ⁵Materials Development, Inc.; ⁶Alcoa Technical Center; ⁷The University of Tennessee

3:40 PM Break

4:00 PM Invited

Universal Parameter to Quantitatively Predict Metallic Glass Properties: *Evan Ma*¹; ¹Johns Hopkins University

4:25 PM

Brittle-to-ductile Transition in Metallic Glass Nanowires: *Daniel Soppa*¹; Mihai Stoica¹; Jürgen Eckert²; ¹IFW Dresden; ²Erick Schmid Institute of Materials Science

4:45 PM

Strain Delocalization and “Ductile” Fracture Behaviors of Metallic Glass: *Zhe Fan*¹; Jin Li¹; Yingchao Yang²; Qiang Li¹; Sichuang Xue¹; Haiyan Wang³; Jun Lou²; Jian Wang⁴; Xinghang Zhang³; ¹Texas A&M University; ²Rice University; ³Purdue University; ⁴University of Nebraska-Lincoln

5:05 PM

Structural Evolution and Deformation Characteristics of Nanocrystalline Equiatomic AlCrCuCoFeNi High-entropy Alloy: Ramya Sree Ganji¹; *Koteswararao Rajulapati*¹; ¹University of Hyderabad

Microstructural Processes in Irradiated Materials — Ferritic and Ferritic-Martensitic Alloys II

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Tuesday PM
February 28, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Frederic Soisson, CEA Saclay; Maylise Nastar, CEA Saclay

2:00 PM Invited

Understanding the Multiple Functions of Point Defects in Fe-based Alloys under Irradiation: *Maylise Nastar*¹; Thomas Schuler²; Luca Messina¹; Chu Chun Fu¹; Frédéric Soisson¹; Pär Olsson³; ¹CEA; ²University of Illinois; ³KTH

2:30 PM

Effect of Neutron Irradiation on the Microstructure of a Series of Fe-Cr Alloys: *Dhriti Bhattacharyya*¹; Peter Wells²; Mukesh Bachhav³; Alan Xu¹; Emmanuelle Marquis³; G. Robert Odette²; ¹ANSTO; ²UCSB; ³University of Michigan

2:50 PM

Diffusion Mechanisms of Solutes in Ferritic Steels: Effects of Irradiation: Caroline Barouh¹; *Chu-Chun Fu*¹; Thomas Jourdan¹; ¹SRMP, CEA-Saclay

3:10 PM

Understanding the Formation and Growth Behavior of Alpha-prime Precipitates in Neutron-Irradiated FeCrAl Alloys Using SANS and APT: *Philip Edmondson*¹; Samuel Briggs²; Yukinori Yamamoto¹; Ken Littrell¹; Richard Howard¹; Charles Daily¹; Kurt Terrani¹; Kumar Sridharan²; Kevin Field¹; ¹Oak Ridge National Laboratory; ²University of Wisconsin

3:30 PM

Strain and Self-ion Irradiation Changes in Cr Atoms Distribution in Fe-Cr Alloys: *Stanislaw Dubiel*¹; Jan Zukrowski¹; ¹AGH University of Science and Technology

3:50 PM Break

4:05 PM

Deformation Microstructure of Ferritic/Martensitic Steels Irradiated in Spallation Environment: *Kun Wang*¹; Yong Dai¹; Philippe Spatig¹; Maximo Victoria¹; ¹Paul Scherrer Institute

4:25 PM

APT Characterization of Post-irradiation Microstructural Changes in T91 Steel: Guma Yeli¹; Maria Auger¹; Steve Roberts¹; Paul Bagot¹; *Michael Moody*¹; ¹University of Oxford

4:45 PM

Understanding Deformation Dynamics in Neutron-irradiated Fe-based Alloys with High-Energy X-rays: *Meimei Li*¹; Xuan Zhang¹; Yiren Chen¹; Jonathan Almer¹; Jun-Sang Park¹; Peter Kenesei¹; Hemant Sharma¹; Yong Yang²; Chi Xu²; Lizhen Tan³; ¹Argonne National Laboratory; ²University of Florida; ³Oak Ridge National Laboratory

5:05 PM

Investigation of Elevated Temperature Tensile Deformation of Neutron-irradiated Fe using High-Energy X-ray Techniques: *Xuan Zhang*¹; Chi Xu²; Meimei Li¹; Jun-Sang Park¹; Jonathan Almer¹; ¹Argonne National Laboratory; ²University of Florida; Argonne National Laboratory

5:25 PM

Radiation Effects in RAFM Steels: *Ermile Gaganidze*¹; Christian Dethloff²; Benjamin Kaiser²; Jarir Aktaa²; Daniel Brimbal³; Mickaël Payet³; Lucile Beck³; ¹Karlsruhe Institute of Technology, Institute for Applied Materials; ²Karlsruhe Institute of Technology, Institute for Applied Materials; ³CEA, DEN, Service de Recherches de Metallurgie Physique, Laboratoire JANNUS

5:45 PM

A Predictive Model for Irradiation-induced Nanocluster Evolution in b.c.c. Fe-based Alloys: *Matthew Swenson*¹; Janelle Wharry²; ¹Boise State University; ²Purdue University

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Laminated Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Tuesday PM
February 28, 2017

Room: 24B
Location: San Diego Convention Ctr

Session Chairs: Mathias Göken, Universität Erlangen-Nürnberg; Christopher Schuh, MIT

2:00 PM Invited

Multilayered and Functionally Graded Materials for Optimized Galvanic Corrosion Protection: *Christopher Schuh*¹; Samuel Cross¹; ¹MIT

2:25 PM

High Temperature Plasticity of Cu-Cr Nanolayered and Chemically Nanostructured Cu-Cr Films: *Gerhard Dehm*¹; T. Harzer¹; C. Liebscher¹; R. Raghavan¹; ¹Max-Planck-Institut für Eisenforschung

2:45 PM Invited

Designing High Fracture Toughness Nanocomposites via In Situ TEM Approach: *Nan Li*¹; Satyesh Yadav¹; Xiang-Yang Liu¹; Jian Wang²; Amit Misra³; Nathan Mara¹; ¹Los Alamos National Laboratory; ²University of Nebraska-Lincoln; ³University of Michigan, Ann Arbor

3:10 PM

Laminar Bulk Metallic Glass/Metal Composites Via Accumulative Roll Bonding: *Sina Shahrezadei*¹; Irene Beyerlein²; Stephanie O'Keeffe³; Suveen Mathaudhu¹; ¹University of California, Riverside; ²University of California, Santa Barbara; ³Liquidmetal Technologies

3:30 PM Break

3:50 PM

Effect of Initial Oxide Layer on the Growth and Morphology of Intermetallic Layer in Fe-based MIL Composites: *Yu Wang*¹; Kenneth Vecchio²; ¹North University of China; ²University of California San Diego

4:10 PM Invited

Nanolaminated Structures in Metals Induced by Plastic Deformation with High Strain Rates and Strain Gradients: *Xiaochun Liu*¹; Wei Xu¹; Ke Lu¹; ¹Institute of Metal Research, Chinese Academy of Sciences

4:30 PM

Tailoring the Mechanical Properties of Nanolaminates Processed by Accumulative Roll Bonding: *Mathias Göken*¹; Heinz Werner Höppel¹; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

4:50 PM Invited

The Development of Deformation Heterogeneity in Cu/Nb Lamellar Composites Predicted by Nonlocal Single Crystal Plasticity: *Jason Meyeur*¹; Irene Beyerlein²; ¹Los Alamos National Laboratory; ²University of California, Santa Barbara

5:15 PM

Iron-aluminum Metallic-intermetallic Laminate (MIL) Composites: *Haoren Wang*¹; Yu Wang²; Kenneth Vecchio¹; ¹University of California, San Diego; ²Dalian University of Technology

Nanostructured Materials for Nuclear Applications II — Session IV

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Idaho National Laboratory; Khalid Hattar, Sandia National Laboratories; Celine Hin, Virginia Tech; Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Mitra Taheri, Drexel University; Haiming Wen, Idaho State University

Tuesday PM
February 28, 2017

Room: Pacific 24
Location: Marriott Marquis Hotel

Session Chairs: Haiming Wen, Idaho State University; Celine Hin, Virginia Tech

2:00 PM Invited

Stability and Self-ion Irradiation Damage in Nanocrystalline Tungsten and Solute-stabilized Tungsten Alloys: *Jason Trelewicz*¹; ¹Stony Brook University

2:30 PM Invited

The Two-step Nucleation of G-phase in Ferrite: The Critical Size and Composition for the Structural Change of Solute Clusters: *Yoshitaka Matsukawa*¹; Tomoaki Takeuchi²; Yuta Kakubo¹; Tomoaki Suzudo²; Hideo Watanabe³; Hiroaki Abe⁴; Takeshi Toyama¹; Yasuyoshi Nagai¹; ¹Tohoku University; ²Japan Atomic Energy Agency; ³Kyushu University; ⁴The University of Tokyo

3:00 PM

Period-thickness Dependent Responses of Cu/W Multilayered Nanofilms to Ions Irradiation under Different Ion Energy: *Feng Ren*¹; ¹Wuhan University

3:20 PM

Advanced Manufacturing of Nanostructured Ferritic Steels with Enhanced Irradiation Performance for Nuclear Applications: *Somayeh Pasebani*¹; Indrajit Charit¹; ¹University of Idaho

3:40 PM Break

4:00 PM

Computational Simulation of Threshold Displacement Energy of GaAs: *Nanjun Chen*¹; Sean Gray¹; Fei Gao¹; Danhong Huang²; David A Cardimona²; ¹University of Michigan; ²US Air force Research Laboratory

4:20 PM

Thermal Conductivity of Uranium: Eric Tea¹; *Celine Hin*¹; ¹Virginia Tech

4:40 PM

First-principles Study of Nano-layered Ceramic Coatings for U-Mo/Al Dispersion Fuel: *Zhi-Gang Mei*¹; Sumit Bhattacharya²; Abdellatif Yacout¹; Argonne National Laboratory; ²Northwestern University

Pan American Materials Congress Plenary — Session II

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizer: Marc Meyers, UCSD

Tuesday PM
February 28, 2017

Room: Marina G
Location: Marriott Marquis Hotel

2:00 PM Plenary

Circular Economy- A Pathway to Resource Recovery and Recycling: *Diran Apelian*¹; ¹Worcester Polytechnic Institute

2:40 PM Plenary

Nano-sized Internal Precipitation during Oxidation of an Fe-Cr Alloy in Wet Environment: *Fernando Rizzo*¹; Leonardo Agudo²; Gert Nolze²; Maria Mosqueda²; Axel Kranzmann²; Andre Costa e Silva³; ¹INT/MCTI, Brazil; ²BAM; ³UFF

3:20 PM Break

Pan American Materials Congress: Advanced Manufacturing — Metals and Alloys

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Sonia Brühl, UTN - National University of Technology; Ricardo Castro, University of California, Davis; Dachamir Hotza, UFSC

Tuesday PM
February 28, 2017

Room: Marina D
Location: Marriott Marquis Hotel

Session Chair: Sonia Brühl, UTN

3:40 PM Keynote

Overview - The Use of Plasma Nitriding for Surface Hardening Stainless Steels: *Carlos Pinedo*¹; Andre Tschiptschin²; ¹TMS; ²University of Sao Paulo

4:20 PM

Combining CALPHAD-informed Phase-field Modeling with Rapid Solidification Experiments for Prediction of Microstructure Evolution during Laser-based Additive Manufacturing: *Aurelien Perron*¹; John Roehling¹; Patrice Turchi¹; Jean-Luc Fattebert¹; Joseph McKeown¹; ¹Lawrence Livermore National Laboratory

4:40 PM

Tailoring the Mechanical Properties of Additively Manufactured Ti-6Al-4V Alloys by Post Processing: *Guney Mert Bilgin*¹; Ziya Esen²; Seniz Kushan Akin²; Arcan Dericioglu¹; ¹Middle East Technical University; ²Cankaya University

5:00 PM

Effect of Tool Rotation on Tool Wear Phenomenon in Rotary Tool micro-USM: Sandeep Kumar¹; Akshay Dvivedi¹; *Pradeep Kumar*¹; ¹Indian Institute of Technology, Roorkee

5:20 PM

Green Machining Process: Near-dry Electric Discharge Machining: Krishnakant Dhakar¹; Kuldeep Chaudhary¹; *Akshay Dvivedi*¹; Pradeep Kumar¹; ¹Indian Institute of Technology Roorkee

Pan American Materials Congress: Materials for Green Energy — Environmental Assessment of Green Energy

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Ramalinga Viswanathan Mangalaraja, University of Concepcion; Hector Calderon, ESFM-IPN; Julie Schoenung, University of California, Irvine; Roberto Arce, SAM - Soc. Argentina de Materiales

Tuesday PM
February 28, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chair: Julie Schoenung, University of California, Irvine

3:40 PM

A Comparison between Recycled Spent Zeolite and Calcite Limestone for Manganese Removal: Adarlene Silva¹; Rodrigo Figueiredo¹; *Versiane Leao*¹; ¹Universidade Federal de Ouro Preto

4:00 PM

Environmental Impact of the Synthesis of Calcium Silicates (C2S AND C3S) by Combustion Processes: *Juan Restrepo*¹; Oscar Restrepo¹; Jorge Tobón¹; ¹Universidad Nacional de Colombia

4:20 PM

Environmentally Responsible Polymer Selection for Organic Photovoltaic Solar Cells: *Haoyang He*¹; Yadira Gutierrez²; Thomas Young²; Julie Schoenung¹; ¹University of California Irvine; ²University of California, Davis

4:40 PM

Electromagnetic Levitation Refining Of Silicon-iron Alloys for Generation of Solar Grade Silicon: *Yindong Yang*¹; Katherine Le¹; Mansoor Barati¹; Alex McLean¹; ¹University of Toronto

5:00 PM

Novel Metrics for Assessing Criticality of Byproduct Metals: Gabrielle Gaustad¹; Michele Bustamante²; Berlyn Hubler¹; Callie Babbitt¹; *Alexandra Leader*¹; ¹Rochester Institute of Technology; ²MIT

5:20 PM

Technical and Environmental Assessment of an Alternative Binder for Low Traffic Roads with LCA Methodology: Alejandra Balaguera Quintero¹; Diana Gómez Cano¹; Gloria Carvajal Peláez¹; *Yhan Arias*¹; ¹Universidad de Medellín; ²Universidad Nacional de Colombia

Pan American Materials Congress: Materials for Transportation and Lightweighting — Structure-Property Relationships II

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

Tuesday PM Room: Mission Hills
February 28, 2017 Location: Marriott Marquis Hotel

Session Chair: To Be Announced

3:40 PM

Cyclic Deformation Characteristics of AM30 Mg Alloy Extrusion along Two Orthogonal Directions: *Ali A. Roostaei*¹; Hamid Jahed¹; ¹University of Waterloo

4:00 PM

Understanding of Twin-twin Junctions in Connection with the Local Stresses in HCP Magnesium: *M. Arul Kumar*¹; Irene J Beyerlein¹; Carlos Tome¹; ¹Los Alamos National Laboratory

4:20 PM

Effect of Forging on Microstructure, Texture and Compression Behaviour of Extruded AZ31B: *Dwayne Toscano*¹; Sugrib Shaha¹; Hamid Jahed¹; Mary Wells¹; Bruce Williams²; Jonathan McKinley²; ¹University of Waterloo; ²CanmetMATERIALS

4:40 PM

Effects of Hypoeutectic Sc Additions to Al-4.5 wt% Cu under Different Cooling Rates: *Abdoul-Aziz Bogno*¹; Jonas Valloton¹; Hani Henein¹; Mark Gallerneault²; Dieter Herlach³; ¹University of Alberta; ²ALCERECO INC.; ³DLR, Institute of Materials Physics in Space

5:00 PM

Microstructure and Hardness of Subzero Quenched and Heat Treated Ti-6Al-4V Alloy: *Abdelrahman Abbas*¹; Andrew Seif¹; Iman El Mahallawi¹; Waleed Khalefa²; ¹British University in Egypt; ²Cairo University

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Mechanical Properties of Structural Materials Processed by SPD

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

Tuesday PM Room: Marina F
February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Megumi Kawasaki, Hanyang University; Malgorzata Lewandowska, Warsaw University of Technology

3:40 PM

Effects on Hardness and Microstructure of AISI 1020 Low Carbon Steel Subjected to High-Pressure Torsion Process: *Diana Marulanda*¹; *Hernando Jimenez*¹; Jitraporn Wonsa-Ngam²; Terence Langdon³; ¹Universidad Antonio Nariño; ²King Mongkut's Institute of Technology Ladkrabang; ³University of Southampton

4:00 PM

Static and Cyclic Mechanical Properties of High Strength Pearlitic Steels: *Marlene Kapp*¹; Anton Hohenwarter²; Bo Yang¹; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science; ²Montanuniversität Leoben

4:20 PM

The Influence of Testing Temperature on the Fracture Behavior of SPD-processed Iron and Tantalum: *Anton Hohenwarter*¹; ¹Department of Materials Physics, Montanuniversität Leoben, Austria

4:40 PM

Precipitation Processes and Related Strengthening Mechanisms in a Nanostructured 6082 Aluminium Alloy: *Malgorzata Lewandowska*¹; Witold Chrominski¹; ¹Warsaw University of Technology

5:00 PM

Strengthening Contributions on a Commercially Al-Mg-Si Alloy Processed by ECAP: *Tarek Khelfa*¹; Mohamed Ali Rekik¹; Jairo-Alberto Muñoz-Bolaños²; Mohamed Khitouni¹; *Jose-Maria Cabrera*²; ¹University of Sfax; ²Universidad Politecnica de Catalunya

5:20 PM

Effect of Grain Size on Strain Rate Dependence of Mechanical Properties in CP Ti: *Ying Chun Wang*¹; Alexander Zhilyaev²; Shukui Li¹; Terence Langdon³; ¹School of Materials Science and Engineering, Beijing Institute of Technology; ²National Key Laboratory of Science and Technology on Materials under Shock and Impact; ³Institute for Problems of Metals Superplasticity, Russian Academy of Sciences; ⁴Research Laboratory for Mechanics of New Nanomaterials, St. Petersburg State Polytechnical University; ⁵Materials Research Group, Faculty of Engineering and the Environment, University of Southampton

Pan American Materials Congress: Steels — Steelmaking & Solidification

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Omar Garcia-Rincon, TERNIUM Mexico SA de CV; Andre Costa E Silva, EEMVR - Universidade Federal Fluminense

Tuesday PM Room: Marina E
February 28, 2017 Location: Marriott Marquis Hotel

Session Chair: Martha Guerrero-Mata, Universidad Autonoma de Nuevo Leon

3:40 PM Invited

Jansto: New Generation Niobium Bearing Structural Steels for Future Infrastructure Demands: *Steven Jansto*¹; ¹CBMM-North America, Inc.

4:10 PM

Controlling Mold Heat Transfer by Dispersed Metallic Particles in Slag Film during Continuous Casting of Steels: *Jungwook Cho*¹; ¹Pohang University of Science and Technology

4:30 PM

Modeling of Metal-Slag Mass and Momentum Exchanges in Gas-Stirred Ladles: *Marco Ramirez-Argáez*¹; *Carlos González-Rivera*¹; ¹UNAM

4:50 PM

Dissolution of MgO Containing Additions in Steelmaking Slag and Its Impact on the Formation of Magnesiowüstite: *Antonio Augusto Martins*¹; *Rafaela Batista*¹; *Roberto Avillez*²; *Andre Costa E Silva*³; ¹CSN; ²PUC-RIO; ³EEMVR

5:10 PM

Study on Adjustment and Optimization of LF Refining Slag of Spring Steel 55SiCrA: *Chao Gu*¹; *Yanping Bao*¹; *Lu Lin*¹; *Min Wang*¹; *Lihua Zhao*¹; *Zixuan Wu*¹; ¹University of Science and Technology Beijing

5:30 PM

The Effect of Deoxidation Practice on Quality Characteristics of Converter Refined AISI 1006 Steel: Antonio Augusto Martins¹; Rafaela Batista¹; *Andre Costa E Silva*²; ¹CSN; ²EEIMVR - Universidade Federal Fluminense

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Electronic Interconnection

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Tuesday PM Room: 25A
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Hiroshi Nishikawa, Osaka University; Jenn-Ming Song, National Chung Hsing University

2:00 PM **Invited**

Sintering of Nanoparticle-based Interconnections through Chemical and Photonic Means: *Jenn-Ming Song*¹; Tsung-Yun Pai¹; Guo-Lung Huang¹; Sin-Yong Liang¹; ¹National Chung Hsing University

2:20 PM

Ultra Thermal Stable Cu-to-Cu Interconnection: *Shih-kang Lin*¹; Che-yu Yeh¹; Mei-jun Wang¹; Hao-miao Chang¹; ¹National Cheng Kung University

2:40 PM

Ductile and Strong Cu-to-Cu Interconnection Using Ga-based Pastes for Applications on 3D IC and WBG Devices: *Che-yu Yeh*¹; Yi-Kai Kuo¹; Shih-kang Lin¹; ¹National Cheng Kung University

3:00 PM

Transient Liquid Phase Bonding of Cu/In/Ni and Cu/In/Co and Phase Equilibria of Cu-In-Ni and Co-Cu-In Ternary Systems: Sinn-Wen Chen¹; *Tsu-Ching Yang*¹; Ji-Min Lin¹; ¹National Tsing Hua University

3:20 PM

Oxide Growth Mechanism of (111), (100) and Random Copper Films at Low Temperatures for the Application of Cu-to-Cu Direct Bonding: *Chih Han Tseng*¹; Chih Chen¹; ¹National Chiao Tung University

3:40 PM **Break**

4:00 PM **Invited**

Formation and Growth of Intermetallic Compound Layer at the Lead-free Solder/Cu Interface Using Laser Soldering Process: *Hiroshi Nishikawa*¹; Noriya Iwata¹; Shinya Kubota¹; ¹Osaka University

4:20 PM

Effects of Cu Concentration on the Mechanical Reliability of the Sn-Ag-Cu/Ni Solder Joints—Solid-state Reaction: *Cheng-En Ho*¹; Ming-Kai Lu¹; Pei-Tzu Lee¹; Wan-Zhen Hsieh¹; ¹Yuan Ze University

4:40 PM

Kinetics of Isothermal Reactive Diffusion between Solid Cu and Liquid Sn-base Alloys: *Minho O*¹; Masanori Kajihara¹; ¹Tokyo Institute of Technology

5:00 PM

Low Temperature Cu - Cu Direct Bonding for Hermetic Sealing: *Po-Fan Lin*¹; Chih Chen¹; ¹National Chiao Tung University

Phase Transformations and Microstructural Evolution — Ti & Zr, and Steels

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Tuesday PM Room: 16B
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Monica Kapoor, National Energy Technology Lab

2:00 PM

Determination of Phase Transformations and Microstructure Evolution of Zr-based Alloys During Thermal Processing: *Clinique L. Brundidge*¹; John Seidensticker¹; Tyler Tenkku¹; Linda Rishel¹; Richard Smith¹; ¹Bechtel Marine Propulsion Corporation

2:20 PM

Development of Various Scale Alpha Microstructures in Titanium Alloys: *Yufeng Zheng*¹; Robert Williams¹; Rongpei Shi¹; Deep Choudhuri²; Talukder Alam²; Rajarshi Banerjee²; Yunzhi Wang¹; Hamish Fraser¹; ¹The Ohio State University; ²University of North Texas

2:40 PM

Hydrostatic Compression Behavior and High-pressure Stabilized b-phase in g-based Titanium Aluminide Intermetallics: *Klaus-Dieter Liss*¹; Xi Li²; Ken-Ichi Funakoshi³; Rian Dippenaar²; Yuji Higo⁴; Ayumi Shiro⁵; Mark Reid¹; Hiroshi Suzuki⁶; Takahisa Shobu⁶; Koichi Akit⁶; ¹Australian Nuclear Science and Technology Organisation; ²University of Wollongong; ³Comprehensive Research Organization for Science and Society (CROSS-Tokai); ⁴SPRING-8, Japan Synchrotron Radiation Research Institute; ⁵National Institute for Quantum and Radiological Science and Technology; ⁶Japan Atomic Energy Agency

3:00 PM

Kinetics of Low-temperature Spinodal Decomposition in a Fe-Ni-C Martensite: A Discrete Mean-field Model: *Philippe Maugis*¹; Mohamed Gouné²; Frédéric Danoix³; Sophie Cazottes⁴; Sergiu Curelea⁴; Myriam Dumont¹; ¹Aix-Marseille Univ, CNRS, IM2NP; ²CNRS, ICMCB; ³Université de Rouen, CNRS, GPM; ⁴MATEIS, INSA de Lyon

3:20 PM **Break**

3:40 PM

Phase-field Simulation of Solidification of High and Medium Manganese Steels: Incorporating the Effects of Convection and of Transformation Strains: *Joao Rezende*¹; Christian Schankies¹; Celso Alves¹; Dieter Senk¹; ¹RWTH Aachen

4:00 PM

Phase Transformation Kinetics of Pressure-vessel Steel Welds: *Gideon Obasi*¹; Dinesh Rathod²; Anastasia Vasileiou²; Ed Pickering²; John Francis²; Mike Smith²; Michael Preuss²; ¹The University of Manchester; ²The University of Manchester

4:20 PM

Phase Transformation, Microstructural Evolution and Property Modification in Rapidly Solidified Grey Cast Iron: *Olamilekan Oloyede*¹; Robert F. Cochrane¹; Andrew M. Mullis¹; ¹University of Leeds

Pioneers in Additive Manufacturing — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: James Foley, Los Alamos National Laboratory; Paul Prichard, Kennametal Inc; Iver Anderson, Iowa State University/ Ames Laboratory; David Bourell, University of Texas

Tuesday PM Room: 7A
February 28, 2017 Location: San Diego Convention Ctr

Session Chair: Paul Prichard, Kennametal Inc.

2:00 PM Invited

Pioneering International Consensus: *Brent Stucker*¹; ¹3DSIM

2:30 PM Invited

Making Things Bit-by-byte: Opportunity in a Fortuitous Convergence of Technologies: *Khershed Cooper*¹; Ralph Wachter¹; ¹National Science Foundation

3:00 PM Invited

Early Developments of AM within the UK: *Phill Dickens*¹; ¹University of Nottingham

3:30 PM Break

3:50 PM Invited

Laser Engineered Net Shaping - AM Metal Parts with Exceptional Material Properties: *John Smugeresky*¹; David Keicher²; ¹Additive Manufacturing Materials Consultants; ²Sandia National Laboratories

4:20 PM Invited

AFRL Contributions to Additive Manufacturing of Titanium, ca 2000: *Pamela Kobryn*¹; Lee Semiatin¹; ¹US Air Force Research Laboratory

4:50 PM Invited

Process Fundamentals for Selective Laser Melting: Power Ratio, Melting, Porosity, and Build Properties: *Ralph Napolitano*¹; ¹Iowa State University

Rare Metal Extraction & Processing — Base and Rare Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Hojong Kim, The Pennsylvania State University; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Neale Neelameggham, Ind LLC; Takanari Ouchi, Massachusetts Institute of Technology

Tuesday PM Room: 17B
February 28, 2017 Location: San Diego Convention Ctr

Session Chairs: Neale Neelameggham, Ind LLC; Xiaofei Guan, Harvard University

2:00 PM

Disclosure of the Kinetic Relations of Semidirect Cemented Carbide Leaching in Acid Media: *Gregor Kücher*¹; Stefan Luidold¹; Christoph Czettel²; Christian Storf²; ¹CDL-TM; ²CERATIZIT Austria GmbH

2:25 PM

A New Two-stage Process for Preparation of Ti/Ti-Al Alloys: Kun Zhao¹; Naixiang Feng¹; ¹Northeastern University

2:50 PM

Study on Pre-reduction Mechanisms of Chromium Ore Pellets in SRC Process: *Peixiao Liu*¹; Yanxiang Li¹; Hanjie Guo¹; ¹University of Science and Technology Beijing

3:15 PM Break

3:35 PM

Sulfuric Acid Leaching of Mechanically Activated Vanadium-bearing Converter Slag: *Junyi Xiang*¹; Qingyun Huang²; Xuewei Lv¹; Chenguang Bai¹; ¹School of Materials Science and Engineering, Chongqing University; ²School of Materials and Metallurgical Engineering, Chongqing University of Science and Technology

4:00 PM

Present Status and Development of Comprehensive Utilization of Vanadium-Titanium Magnetite: Shiju Zhang¹; Shiju Zhang²; Songli Liu²; Wenhui Ma¹; Kuisong Zhu²; Li Cao³; Yongnian Dai¹; ¹Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; ²Resources and Environmental Engineering College of Panzhihua University; ³Materials Science and Engineering College, Xihua University

4:25 PM

Review of TiO₂-rich Materials Preparation for the Chlorination Process: *Songli Liu*¹; Songli Liu²; Li Cao²; Li Cao¹; Kuisong Zhu¹; Shiju Zhang³; Shiju Zhang¹; Pan Huang²; Pan Huang¹; ¹Resources and Environmental Engineering College, Panzhihua University; ²Materials Science and Engineering College, Xihua University; ³Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Functional Surfaces and Thin Films II

Sponsored by: TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradó, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, UTEP; Heinz Palkowski, Clausthal Univ of Technology; Vikas Tomar, Purdue Univ; Nuggehalli Ravindra, NJIT

Tuesday PM Room: Pacific 18
February 28, 2017 Location: Marriott Marquis Hotel

Session Chairs: Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradó, Université de Strasbourg IPCMS

2:00 PM Keynote

Conducting Polymer/Nanocarbons Composites: New Opportunities And Scientific Challenges For Material Science: *Emanuela Tamburri*¹; ¹University of Rome "Tor Vergata"

2:40 PM Invited

Quantification of SiC Nano Particles in Mg-SiC Composites Using USAXS Technique: *Prakash Srirangam*¹; ¹University of Warwick

3:10 PM

Electrodeposition of Conductive Polymers on Diamond-coated Titanium Substrates: *Melania Reggente*¹; Emanuela Tamburri²; Sara Politi²; Marco Natali¹; Daniele Passeri¹; Marco Rossi¹; Maria Letizia Terranova²; ¹Sapienza University of Rome; ²University of Rome "Tor Vergata"

3:30 PM Break

3:50 PM Invited

Printed Nanoparticle Films for Electronic Applications: Md Taibur Rahman¹; Sadeq Saleh¹; Arya Rahimi¹; Subhanshu Gupta¹; C. V. Ramana¹; *Rahul Panat*¹; ¹Washington State University

4:20 PM

Effect of Processing Parameters on Microstructure and Mechanical Properties of DC Magnetron Sputtered Ni-Zr Alloy Thin Films: *Bibhu Sahu*¹; RAHUL MITRA¹; ¹Indian Institute of Technology, Kharagpur

4:40 PM

Epitaxial Integration of Ba_{0.4}Sr_{0.6}TiO₃/La_{0.7}Sr_{0.3}MnO₃ Thin Film Heterostructures on Silicon: *Srinivasa Rao Singamaneni*¹; John Prater²; Jay Narayan²; ¹University of Texas; ²North Carolina State University

5:00 PM

Effect of Increase in the Zr Content on the Microstructural and Corrosion Properties of Nano-crystalline Cu-Zr Thin Films: *Vignesh Nallasivam*¹; Madhuri Varadharajan¹; Sivakumar Bose²; Geetha Priyadharsini B³; Angelo P C¹; ¹PSG college of Technology; ²CSIR-NML; ³PSG Institute of Advanced Studies

The Science of Melt Refining: An LMD Symposium in Honor of Christian Simensen and Thorvald Abel Engh — TAE/CJS II Degassing and Oxidation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Anne Kvithyld, SINTEF

Tuesday PM
February 28, 2017

Room: 3
Location: San Diego Convention Ctr

Session Chair: Geoffrey Sigworth, retired

2:00 PM **Invited**

Overview of Ultrasonic Degassing Development: *Dmitry Eskin*¹; Brunel University

2:35 PM

Modelling of Hydrogen Removal in Gas Fluxing of Molten Aluminium: *Dag Mortensen*¹; Jinsong Hua¹; Arild Håkonsen²; Terje Haugen²; John Olav Fagerlie²; ¹Institute for Energy Technology; ²Hycast AS

3:00 PM

The Use of Nitrogen to Degas Molten Aluminium - Comparison of Metallurgical Results with Argon and Nitrogen Used in an ACD[8482: *Florent Gougeon*¹; Bruno Maltais¹; Etienne Tremblay¹; ¹STAS Inc.

3:25 PM **Break**

3:40 PM

Oxide Skin Strength on Molten AA5XXX Aluminum Alloy – Effect of Beryllium and Alternatives: *Martin Syvertsen*¹; ¹SINTEF Materials and Chemistry

4:05 PM

Understanding of Interactions between Pyrolysis Gases and Liquid Aluminum and Their Impact on Dross Formation: *Regina Dittrich*¹; Bernd Friedrich¹; Georg Rombach²; Jan Steglich³; Anne Pichat⁴; ¹IME Process Metallurgy and Metal Recycling, RWTH Aachen University; ²Hydro Aluminium Rolled Products GmbH; ³TRIMET Aluminium SE; ⁴Constellium Technology Center

4:30 PM

Effects of 2 ppm Beryllium on the Oxidation of a 5XXX Aluminum Alloy at Temperatures between 500 °C and 750 °C: *Nicholas Smith*¹; Gabriella Tranell¹; Anne Kvithyld²; Brian Gleeson³; ¹NTNU; ²SINTEF Materials and Chemistry; ³University of Pittsburgh

4:55 PM **Concluding Comments**

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Nanomaterials for BT Applications

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Wednesday AM
March 1, 2017

Room: Pacific 24
Location: Marriott Marquis Hotel

Session Chairs: Stephen McDonnell, University of Virginia; Lanxia Cheng, The University of Texas at Dallas

8:30 AM

Probing Osteogenic Cell Functionality on Architected Nanolattices with Stiffness Spanning the Low Megapascal Region: *Alessandro Maggi*¹; ¹California Institute of Technology

8:50 AM

Antimicrobial Clay-based Ceramic with Copper Nanoparticles Embedded in 3-D Porosity: Adam Drelich¹; *Jaroslav Drelich*¹; ¹Michigan Technological University

9:10 AM

Engineered Bio-functional Silver Nanoparticle Interface Offers Antimicrobial Efficacy with Reduced Cellular Cytotoxicity: *Sarah VanOosten*¹; Esra Yuca¹; Banu Taktak Karaca¹; Kyle Boone¹; Malcolm Snead²; Paulette Spencer¹; Candan Tamerler¹; ¹University of Kansas; ²University of Southern California

9:30 AM

Potential of Magnetotactic Bacteria for the Fabrication of Iron Nanoparticles: *T. Thuy Minh Nguyen*¹; Manish Baviskar¹; Paul Bernazzani¹; ¹Lamar University

9:50 AM

Facile Green Synthesis and Characterization of Water-soluble Superparamagnetic Iron Oxide Nanoparticles-gold Porphyrin Conjugate for Improved Photodynamic Therapy: *Olayemi Fakayode*¹; Oluwafemi Oluwatobi¹; Sandile Songca²; ¹University of Johannesburg; ²Walter Sisulu University

10:10 AM **Break**

10:30 AM

Silver Nanowire Heaters on Glass and Textiles: Sahin Coskun¹; Orcun Ergun¹; Doga Doganay¹; Sevim Polat¹; Yusuf Yusufoglu²; *Husnu Unalan*¹; ¹Middle East Technical University; ²Material Technologies Department, R&D Center, Arcelik A.S.

10:50 AM

A Novel Strategy for Synthesis of Ultrathin Au Nanowires inside Carbon Nanotubes and Their Atomic Structure Study: *Wenbo Xin*¹; Igor De Rosa¹; Jenn-Ming Yang¹; Larry Carlson¹; ¹UCLA

11:10 AM

Wetting Kinetics and Self-pinning of Nanosuspension Droplets: *Baiou Shi*¹; Edmund Webb¹; ¹Lehigh University

11:30 AM

Acoustic Focusing for Bulk Assembly of Colloidal Solids from Nanoscale Building Blocks: Tyler Ray¹; Rachel Collino¹; Leanne Friedrich¹; *Matthew Begley*¹; ¹University of California, Santa Barbara

11:50 AM

Synthesis and Characterization of Polycaprolactone Nanofibers by Electrospinning Method with Hormone: *Cynthia Matos*¹; Marivalda Pereira²; Rodrigo Orfice¹; ¹Federal University of Minas Gerais; ²Federal University of Minas Gerais

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Nanomaterials for ET Applications

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Wednesday AM
March 1, 2017

Room: Pacific 26
Location: Marriott Marquis Hotel

Session Chairs: Jung-Kun Lee, Univ. of Pittsburgh; Seungbum Hong, Argonne National Lab

8:30 AM

Synthesis and Characterization of Ag/CFO@PANI Core-shell Nanocomposite for Photocatalytic Application: Venkata Sai Sriram Mosali¹; Mohd Qasim¹; Bhanu Mullahuri²; Basavaiah Chandu³; *Dibakar Das*¹; ¹University of Hyderabad; ²Acharya Nagarjuna University; ³Acharya Nagarjuna University

8:50 AM

Anodic Synthesis, Functionalization, and Applications of Metal Oxide Nanotube Arrays: *York Smith*¹; ¹University of Utah

9:10 AM

Diffusion Kinetics of Gold in TiO₂ Nanotube Arrays for Formation of Au@TiO₂ Nanotube Arrays: Wanggang Zhang¹; Wei Liang¹; *Fuqian Yang*²; ¹Taiyuan University of Technology; ²University of Kentucky

9:30 AM

Graphene Oxide Added Encapsulation Coating for Highly Stable Perovskite Solar Cells: *Gill Sang Han*¹; Jin Sun Yoo²; Fangda Yu¹; Matthew Lawrence Duff¹; Hyun Suk Jung²; Jung-Kun Lee¹; ¹University of Pittsburgh; ²Sungkyunkwan University

9:50 AM

Embedded Chip-scale Electrochemical Double Layer Capacitors with Novel Functionalized Architecture and Tailored Ionic Liquid-based Electrolyte: Jud Ready¹; Stephan Turano¹; *Tyler Colling*¹; Valerie Scott²; ¹Georgia Institute of Technology; ²NASA-JPL

10:10 AM Break

10:30 AM Invited

Visualization of Polarization and Screening Charges Using Charge Gradient Microscopy: *Seungbum Hong*¹; Andreas Roelofs²; ¹Argonne National Laboratory; KAIST; ²Argonne National Laboratory

11:00 AM

Multilayer Graphene-coated Silicon Photoanodes: Keren Freedy¹; Yin Xu¹; Giovanni Zangari¹; *Stephen McDonnell*¹; ¹University of Virginia

11:20 AM

High-performance Supercapacitors Based on Hierarchical VOX Microspheres Forming from Hyperbranched Nanoribbons: *Chuang Wei*¹; Hong-Yi Li¹; Zhao Yang¹; Bing Xie¹; ¹Chongqing University

11:40 AM

Highly Porous Interconnected Carbon Nanosheets Derived from Jute Fibres for Supercapacitors and Li-ion Batteries: Arghya Patra¹; *Srijan Sengupta*¹; Arijit Mitra¹; Karabi Das¹; Siddhartha Das¹; ¹Indian Institute of Technology, Kharagpur

8th International Symposium on High Temperature Metallurgical Processing — Extraction and Recovery of Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Wednesday AM
March 1, 2017

Room: 18
Location: San Diego Convention Ctr

Session Chairs: P. Chris Pistorius, Carnegie Mellon University; Ender Keskinilic, Atilim University

8:30 AM Introductory Comments

8:35 AM

Effect of Carbon Reductant On The Formation of Copper Doped Titanium Oxycarbonitride by Carbothermal Reduction and Nitridation: Yong Jing Hui¹; *Sheikh Abdul Rezan*¹; Noor Izah Shoparwe¹; Norlia Baharu¹; Srimala Sreekantan¹; Ahmad Fauzi Mohd Noor¹; ¹Universiti Sains Malaysia

8:55 AM

Cohering Behavior of Scrap Powder in Kiln by a Novel Natural Stacking Method: *Xiao-liang Liu*¹; Yong-bin Yang¹; Yan Zhang¹; Qian Li¹; Bin Xu¹; Tao Jiang¹; ¹Central South University

9:15 AM

Direct-to-blister Copper Smelting with the ISASMELT™ Process: *Paul Voigt*¹; Alistair Burrows¹; Michael Somerville²; Chunlin Chen²; ¹Glencore Technology; ²CSIRO Mineral Resources

9:35 AM

Microwave-intensified Reduction of Biochar-containing Briquettes: *Zhiwei Peng*¹; Xiaolong Lin¹; Tiancheng Nie¹; Zhizhong Li¹; Yuanbo Zhang¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University

9:55 AM

Improving Separation of Cu-Fe from Copper Slag by Mineral Phase Reconstruction: *Zhengqi Guo*¹; Deqing Zhu¹; Jian Pan¹; Feng Zhang¹; ¹Central South University

10:15 AM Break

10:35 AM

Evaluation of Molybdenum Concentrates: Kagan Benzesik¹; Seref Sonmez¹; *Onuralp Yucel*¹; ¹Istanbul Technical University

10:55 AM

Sensitivity of Contactless Ultrasound Processing to Variations of the Free Surface of the Melt with Induction Heating: Georgi Djambazov¹; Valdis Bojarevics¹; Dmytro Shevchenko²; David Burnard²; William Griffiths²; *Koulis Pericleous*¹; ¹University of Greenwich; ²University of Birmingham

11:15 AM

Extraction of Zinc from Willemite by Sodium Salt Roasting and Ammonia-leaching Process: *Xu Dong Liu*¹; Gang hua Fu¹; Yu Feng Guo¹; Tao Jiang¹; Wei Chen¹; Yu jia Tan¹; ¹Central South University

11:35 AM

Effect of Shrouding Gas on Nozzle Exit Pressure and Temperature of Supersonic Coherent Jet: *Fei Zhao*¹; Lingzhi Yang²; ¹University of Science and Technology Beijing; ²Central South University

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Processing-Microstructure Relationships

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Wednesday AM Room: 7B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Judy Schneider, University of Alabama-Huntsville

8:30 AM Invited

Accelerated Certification of Additively Manufactured Metals: *Wayne King*¹; Andrew Anderson²; Robert Ferencz²; Neil Hodge²; Chandrika Kamath²; Saad Khairallah²; Manyalibo Matthews²; Alexander Rubenchik²; Otis Walton²; Morris Wang²; ¹Lawrence Livermore National Laboratories; ²Lawrence Livermore National Laboratory

9:00 AM

Multiscale Modeling of Coupled Melt Pool Evolution and Solidification Morphology in the LENS Process: *Matthew Rolchigo*¹; Peter Collins¹; Micheal Mendoza¹; Richard LeSar¹; ¹Iowa State University

9:20 AM

Process Window Optimization for Powder Bed Additively Manufactured Molybdenum: *Mustafa Megahed*¹; Wolfgang Ottow¹; Amanda Field²; Luke Carter²; Moataz Attallah²; Michael Gorley²; Michael Porton²; ¹ESI Group; ²University of Birmingham

9:40 AM

In Situ Time and Location Resolved Measurements of Residual Stresses in Additively Manufactured 308L Stainless Steel: *John Carpenter*¹; Donald Brown¹; Bjorn Clausen¹; Jason Cooley¹; Adrian Losko¹; Mark Bourke¹; ¹Los Alamos National Laboratory

10:00 AM Break

10:20 AM

Real Time Composition Control of Weld-based Additive Manufacturing: *Rachel Clark*¹; Gerald Anzalone¹; Paul Sanders¹; ¹Michigan Technological University

10:40 AM

Effect of Laser Scan Strategy on Microstructure-property Relations in Additively Manufactured Stainless Steel: *Brandon McWilliams*¹; Jian Yu¹; Andrew Gaynor¹; Tomoko Sano¹; Andelle Kudzal²; ¹US Army Research Laboratory; ²Worcester Polytechnic Institute

11:00 AM

Microstructure Control in Additive Manufacturing of Aluminum Alloys: *Hunter Martin*¹; Brennan Yahata²; Eric Clough²; Jacob Hundley²; Tobias Schaedler²; Tresa Pollock³; ¹HRL Laboratories; ²HRL Laboratories; ³University of California, Santa Barbara

11:20 AM

Numerical and Experimental Investigation of Residual Stress Evolution in Additively Manufactured 17-4 PH Stainless Steel by Selective Laser Melting: *Md Shamsujjoha*¹; Sean Agnew¹; James Fitz-Gerald¹; ¹University of Virginia

11:40 AM

In Situ Structure and Microstructure Investigation of Heat Treatment's Effect on AM Inconel 625: *Fan Zhang*¹; Lyle Levine¹; Andrew Allen¹; Eric Lass¹; Sudha Cheruvathur¹; Mark Stoudt¹; Maureen Williams¹; Yaakov Idell¹; Greta Lindwall¹; Carelyn Campbell¹; ¹National Institute of Standards and Technology

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Process Qualification Part II

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Wednesday AM Room: 8
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Richard Otis, Penn State; Jonathan Madison, Sandia National Laboratory

8:30 AM Invited

Identification of Defect Signatures in an Additively Manufactured Precipitation Hardened Stainless Steel: *Jonathan Madison*¹; Laura Swiler¹; Olivia Underwood¹; Brad Boyce¹; Bradley Jared¹; Jeff Rodelas¹; Brad Salzbrenner¹; ¹Sandia National Laboratories

9:00 AM

ALE3D's High-Order Fully-Implicit All-Speed Navier-Stokes Solver for Additive Manufacturing Applications: Brian Weston¹; *Jean-Pierre Delplanque*¹; Robert Nourgaliev²; Andy Anderson²; ¹University of California, Davis; ²Lawrence Livermore National Laboratory

9:20 AM

Optimization Framework for Designing of Scanning Strategies for Microstructure Control in Additive Manufacturing Using Numerical Modeling Aided by High Performance Computing: *Narendran Raghavan*¹; Suresh Babu¹; Damien Lebrun-Grandie²; Srdjan Simunovic²; Michael Kirka²; John Turner²; Neil Carlson³; Ryan Dehoff²; ¹University of Tennessee Knoxville; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory

9:40 AM

Residual Stress Control in Additive Manufacturing through Integration of Physics-based and Data-driven Modeling: Jingran Li¹; Ran Jin¹; *Hang Yu*¹; ¹Virginia Tech

10:00 AM Break

10:20 AM Invited

Surface Topography and the Relationship to Surface and Near-surface Structures in Laser Powder Bed Fusion Additive Manufacturing: *Jason Fox*¹; Mark Stoudt¹; Thien Phan¹; Zach Reese¹; Shawn Moylan¹; Brandon Lane¹; Lyle Levine¹; ¹National Institute of Standards and Technology

10:50 AM Invited

Toward a New Generation of Thermodynamic Models for Alloy Additive Manufacturing: *Richard Otis*¹; Lourdes Bobbio¹; Allison Beese¹; Zi-Kui Liu¹; ¹Pennsylvania State University

11:20 AM

SLM Process Variables and Part Geometry Optimization Based on Numerical Prediction of Process Induced Distortions: *Maria San Sebastian*¹; Iñaki Setien¹; Ane Miren Mancidor¹; Alberto Echeverria¹; ¹LORTEK

11:40 AM

Optimizing, Fabricating and Characterizing Additively Manufactured Process Tubing: *Paul Korinko*¹; Haley McKee²; John Bobbitt¹; Frederick List³; Sudarsanam Babu⁴; ¹Savannah River National Laboratory; ²Honeywell Federal Manufacturing and Technology; ³Oak Ridge National Laboratory; ⁴University of Tennessee -- Knoxville

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session V

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Wednesday AM Room: 33C
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Yue Liu, Los Alamos National Lab; Marc Legros, CEMES-CNRS

8:30 AM Invited

Tracking Shear-migration Coupling of Grain Boundaries Using In Situ TEM: *Marc Legros*¹; *Nicolas Combe*¹; *Frédéric Mompou*¹; ¹CEMES-CNRS

8:50 AM

Characterization of Dislocation Pile-ups at Special Angle Tilt Boundaries in Pure Nickel by Electron Channeling Contrast Imaging (ECCI) and Molecular Dynamics Simulations: *Shanoob Balachandran*¹; *James Seal*¹; *Jialin Liu*¹; *Yue Qi*¹; *Martin Crimp*¹; ¹Michigan State University

9:10 AM

Dislocation Characterization in a Scanning Electron Microscope Equipped with an Annular STEM Detector: *Patrick Callahan*¹; *Jean-Charles Stinville*¹; *McLean Echlin*¹; *Eric Yao*¹; *Mike Titus*¹; *Dan Gianola*¹; *Samantha Daly*¹; *Tresa Pollock*¹; ¹University of California Santa Barbara

9:30 AM

Detection of the Onset of Plasticity in Micro-crystals: In-situ Deformation of InSb Micro-pillars under Synchrotron Coherent X-ray Nanobeam: *Ludovic Thilly*¹; *Vincent Jacques*²; *Christoph Kirchlechner*³; ¹Prime Institute - University of Poitiers; ²LPS; ³Max-Planck-Institut für Eisenforschung

9:50 AM Break

10:10 AM

Comparison of Dislocation Characterization in Tantalum using Electron Channeling Contrast Imaging and Cross-Correlation Electron Backscattered Diffraction: *Bret Dunlap*¹; *David Fullwood*²; *Timothy Ruggles*³; *Brian Jackson*²; *Martin Crimp*¹; ¹Michigan State University; ²Brigham Young University; ³National Institute of Aerospace

10:30 AM

Analysis of Dislocation Structures in Ferritic and Dual Phase Steels Regarding Continuous and Discontinuous Loading Paths: *Gregory Gerstein*¹; *Till Clausmeyer*²; *Florian Gutknecht*²; *A. Erman Tekkaya*²; *Florian Nürnberger*¹; ¹Leibniz Universität Hannover; ²TU Dortmund University

10:50 AM

Modeling Dislocation Arrays in Orientation Gradient Microstructures in Ta Thin Films: *Elizabeth Ellis*¹; *Ari Kestenbaum*¹; *Shefford Baker*¹; ¹Cornell University

11:10 AM

Quantifying Strain-path Dependent Dislocation Densities Using Time of Flight Neutron Diffraction and High Resolution Electron Backscatter Diffraction Techniques: *David Collins*¹; *Richard Todd*¹; *Angus Wilkinson*¹; ¹University of Oxford

Advanced High-Strength Steels — Nanostructures and Precipitates

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Wednesday AM Room: 17A
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Amy Clarke, Colorado School of Mines

8:30 AM Invited

Extraordinary Crack Resistance in Metastable Multi-phase Nanolaminated Steels: *Cem Tasan*¹; ¹MIT

9:00 AM

Advanced High Strength Steel Based on Vanadium Carbide Precipitation: *William Rainforth*¹; *Arjan Rijkenberg*²; *David Hanlon*²; *Peng Gong*¹; *Alfonce Chamisa*²; *Andrew Patterson*¹; *Francis Sweeney*¹; ¹The University of Sheffield; ²Tata Steel Europe

9:20 AM

Application of Nano-sized Precipitation in Strengthening Low Alloy Dual Phase Steel: *Tadashi Furuhashi*¹; *Elango Chandiran*¹; *Naoya Kamikawa*²; ¹Tohoku University; ²Hirosaki University

9:40 AM

Design of a Core-Shell Structure Carbide for Enhancing Toughness of UHS Steels: *Wei Xiong*¹; *Ye Tian*²; *Oleg Kontsevoi*²; *Gregory Olson*²; ¹University of Pittsburgh; ²Northwestern University

10:00 AM

Influences of Thermomechanical Treatments on the Microstructure Evolution and Mechanical Properties of Nano-precipitates Strengthened Steels: *Yu Zhao*¹; *Songsong Xu*¹; *Hao Guo*¹; *Junpeng Li*¹; *Z.W. Zhang*¹; ¹Harbin Engineering University

10:20 AM Break

10:40 AM

Ab-initio Investigation of the Interaction of Hydrogen with Carbides in Advanced High-strength Steels: *Poulumi Dey*¹; *Tobias Timmerscheidt*²; *Jörg von Appen*²; *Tilmann Hickel*¹; *Richard Dronskowski*²; *Jörg Neugebauer*¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²Institute of Inorganic Chemistry, Chair of Solid-State and Quantum Chemistry, RWTH Aachen University

11:00 AM

Effect of B2 Morphology on the Mechanical Properties of Dispersion Strengthened Lightweight Steels: *A. Zargaran*¹; *C. Nam*¹; *S.-H. Kim*¹; *Nack J. Kim*¹; ¹Graduate Institute of Ferrous Technology (GIFT) and CAAM, Pohang University of Science and Technology (POSTECH)

11:20 AM

Interaction of VC-Precipitation and Phase Transformation Kinetics in Mo-containing Nano-steels: *Chrysoula Ioannidou*¹; *Zaloa Arechabaleta*¹; *Arjan Rijkenberg*²; *Ad van Well*³; *Erik Offerman*¹; ¹Delft University of Technology; ²Tata Steel Research, Development and Technology; ³Reactor Institute Delft

11:40 AM

Effects of Solid Solution Treatment on the Microstructure and Mechanical Properties in the Ultra-high Strength Steel Strengthened by Nanoscale Particles: *Songsong Xu*¹; *Yu Zhao*¹; *Hao Guo*¹; *Mingxing Qiu*¹; *Jing Zhang*¹; *Junpeng Li*¹; *Zhongwu Zhang*¹; ¹Harbin Engineering University

Advanced Materials for Energy Conversion and Storage — Energy Storage II

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Wednesday AM
March 1, 2017

Room: 15A
Location: San Diego Convention Ctr

Session Chairs: Partha Mukherjee, TAMU; Leela Arava, Wayne

8:30 AM Invited

In-situ X-Ray Diffraction Analysis of Li-ion Battery Materials: *Scott Speakman*¹; ¹PANalytical

8:55 AM Invited

Mesoscale Probing of Transport-Interface Interaction in Lithium-Ion Battery Electrodes: *Partha Mukherjee*¹; Aashutosh Mistry¹; ¹Texas A&M University

9:20 AM

Novel Three Dimensional Porous Sn-Sb-Ni Anode on Ni Foam: Electrodeposition Synthesis and Lithium Storage Performance: *Srijan Sengupta*¹; Arghya Patra¹; Arijit Mitra¹; Mainul Akhtar¹; Karabi Das¹; Subhasish Basu Majumder¹; Siddhartha Das¹; ¹IIT Kharagpur

9:40 AM Invited

Phase Field Studies of Mechanical and Electrochemical Behavior of Li-ion Battery Electrode Materials: *Bai-Xiang Xu*¹; Ying Zhao¹; Peter Stein¹; ¹TU Darmstadt

10:05 AM Break

10:25 AM

Stable Li-Sn Electrode: *Jonathan Phillips*¹; Tongli Lim¹; Pol Vilas²; ¹Naval Postgraduate School; ²Purdue University

10:45 AM Invited

Towards The Development of Solid-State Batteries: Addressing the Challenges in Replacing Liquid with Solid Electrolytes and Enabling Li Metal Anodes: *Jeff Sakamoto*¹; ¹University of Michigan

11:10 AM

Studying Transport Mechanisms of Li in Graphite Polycrystals via Atomistic Simulations: *Christopher Shumeyko*¹; Ed Webb²; ¹Lafayette College; ²Lehigh University

11:30 AM

Inelastic Shape Changes of Silicon Particles and Stress Evolution at Binder/Particle Interface in a Composite Electrode during Lithiation/Delithiation Cycling: *Siva Nadimpalli*¹; Vivek Shenoy²; Hailong Wang²; ¹New Jersey Institute of Technology; ²UPenn

11:50 AM Invited

Electrocatalysis Approach to Lithium Sulfur Batteries: *Leela Mohana Reddy Arava*¹; ¹Wayne State University

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In Situ Techniques V

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Wednesday AM

March 1, 2017

Room: 32A

Location: San Diego Convention Ctr

Session Chairs: Vikas Tomar, Purdue; Jagannathan Rajagopalan, Arizona State University

8:30 AM

Site-Specific Mechanical Evaluation Using Microscale Samples Tested In Situ within SEM and XCT: *Jack Donoghue*¹; Robert Wheeler²; Bartlomiej Winiarski¹; Albert Smith¹; Alistair Garner¹; Ziang Li Zhong¹; M. G. Burke¹; Timothy Burnett¹; Philip Withers¹; ¹University of Manchester; ²MicroTesting Solutions LLC

8:50 AM

Understanding the Local Ligament-level Deformation Response in Unit Cell Lattices: *H. Carlton*¹; J. Lind¹; N. Volkoff-Shoemaker¹; M. Messner¹; H. Barnard²; N. Barton¹; M. Kumar¹; ¹Lawrence Livermore National Laboratory; ²Lawrence Berkeley National Laboratory

9:10 AM

Extraction of Crystal Plasticity Parameters of IN718 Using High Temperature Microcompression: *Bin Gan*¹; Aitor Cruzado²; Marcos Jiménez²; Koldo Ostolaza³; Arantza Linaza³; Javier Segurado²; Javier Lloca²; Jon Molina²; ¹Northwestern Polytechnical University; ²IMDEA Materials Institute; ³Industria de TurboPropulsores

9:30 AM

In-Situ Thermo-mechanical Characterization of Serrated Flow in Nanostructured Binary Mg-Al Alloys: *Marta Pozuelo*¹; Yuan-Wei Chang¹; Sanjit Bhowmick²; Jaime Marian¹; Jenn-Ming Yang¹; ¹UCLA; ²Hysitron, Inc.

9:50 AM Break

10:10 AM

In-SEM Microscale Mechanical Testing of Thin Film Plastic Flow and Interfacial Integrity: *Yang Mu*¹; Xiaoman Zhang¹; Wen Meng¹; ¹Louisiana State University

10:30 AM

In-situ Analysis of the Tensile Deformation Modes and Anisotropy of Extruded Mg-10Gd-3Y-0.5Zr (wt.%) at Elevated Temperatures: Huan Wang¹; *Carl Boehlert*²; Qudong Wang¹; Dongdi Yin³; W Ding¹; ¹Shanghai Jiao Tong University; ²Michigan State University; ³Southwest Jiaotong University

10:50 AM

Dislocation Shielding as a Function of Temperature in Microscale Silicon Bending Beams: *Eric Hintsala*¹; Sanjit Bhowmick¹; S. A. Syed Asif¹; William Gerberich²; ¹Hysitron, Inc.; ²University of Minnesota

Alumina & Bauxite — Non-traditional Resources

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Zhang Ting'an, Northeastern University

Wednesday AM Room: 3
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Guozhi Lv, Northeastern University; Lesley Ironside, WorleyParsons

8:30 AM Introductory Comments**8:35 AM**

New Process Research on Aluminium Production from Non-traditional Aluminum Resource by Microwave Chlorination: Zhang Ting'an¹; Guozhi Lv¹; Long Wang¹; Zhihe Dou¹; Weiguang Zhang¹; Yukun Huang¹; Yanxiu Wang¹; ¹Northeastern University

9:00 AM

Chemical Alumina Preparation by Using High Alumina Content Fly Ash: Guozhi Lv¹; Zhang Ting'an¹; Weiguang Zhang¹; Xiaofeng Zhu¹; Yan Liu¹; Long Wang¹; Zhihe Dou¹; Qiuyue Zhao¹; ¹Northeastern University

9:25 AM

Iron Separation from Bauxite through Smelting-reduction Process: Hanne Sellæg¹; Leiv Kolbeinsen¹; Jafar Safarian¹; ¹NTNU

9:50 AM Break**10:05 AM**

Thermodynamic Behavior of Lime Desulfurization in Sodium Aluminate Solution: Wu Xianxi¹; Zhu Weidong¹; Jiang Hongshi¹; Wu Song¹; ¹Guizhou University

10:30 AM

A Novel Process of Alumina Production from Low-grade Bauxite Containing Sulfur: Bo Wang¹; Kai Zhao¹; Huilan Sun¹; Xuezheng Zhang¹; Zepeng Li¹; Hongyou Ma¹; ¹Hebei University of Science and Technology

Aluminum Alloys, Processing and Characterization — Solidification and Casting

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Yanjun Li, Norwegian University of Science and Technology

Wednesday AM Room: 4
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Shouxun Ji, Brunel University

8:30 AM Introductory Comments**8:35 AM**

A Model for a-Al(Mn,Fe)Si Crystals: Christian Simensen¹; Are Bjørneklett¹; ¹SINTEF

9:00 AM

Casting Characteristics of High Cerium Content Aluminum Alloys: David Weiss¹; Orlando Rios²; Zachary Sims²; Scott McCall³; Ryan Ott⁴; ¹Eck Industries, Inc.; ²Oak Ridge National Laboratory; ³Lawrence Livermore National Laboratory; ⁴Ames Laboratory

9:25 AM

In-situ Observation of Fragmentation of Primary Crystals by Ultrasonic Cavitation in Water: Feng Wang¹; Iakovos Tzanakis²; Dmitry Eskin¹; Jiawei Mi³; Thomas Connolly⁴; ¹Brunel University London; ²Oxford Brookes University; ³University of Hull; ⁴Diamond Light Source

9:50 AM

The Enhancement of Mechanical Properties of A356 Alloy Solidified at Lower Cooling Rate via Effectively Grain Refinement: Yijie Zhang¹; Shouxun Ji¹; Zhongyun Fan¹; ¹Brunel University

10:15 AM Break**10:30 AM**

Secondary Aluminum Alloys Processed by Semisolid Process for Automotive Application: Fabrizio D'Errico¹; Davide Mattavelli¹; ¹Politecnico di Milano

10:55 AM

Integrated Casting-extrusion of an AA6082 Aluminum Alloy: Shohreh Khorsand¹; Yan Huang¹; ¹Brunel University London

11:20 AM

On Porosity Formation in Al-Si-Cu Cast Alloys: Fawzy Samuel¹; Agnes Samuel¹; Herbert Doty¹; Salvador Valtierra²; ¹UQAC; ²Nemak, S.A.

11:45 AM

Influence of Trace Element Additions on Fe Bearing Intermetallic Solidification of a 6063 Al Alloy: Sundaram Kumar¹; Julian Malisano¹; Yuri Ito²; Keyna O'Reilly¹; ¹University of Oxford; ²Tokyo Institute of Technology

Aluminum Reduction Technology — Dry Scrubbing, Alumina Transport and Dissolution

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Wednesday AM Room: 2
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Nancy Holt, Hydro Aluminium AS

8:30 AM Introductory Comments**8:35 AM**

Influence of Handling Parameter on Powder Properties: Peter Hilgraf¹; Jan Paepcke²; Arne Hilck²; ¹HAW University of Applied Science; ²Claudius Peters Projects

9:00 AM

Spreading of Alumina and Raft Formation on the Surface of Molten Cryolite: Csilla Kaszás¹; Laszlo Kiss¹; Sandor Poncsak¹; Jean-Francois Bilodeau²; Sebastien Guerard²; ¹Univeristé du Québec à Chicoutimi; ²ARDC Rio Tinto Aluminium

9:25 AM

Fluoride Capture Capacity of SGA: The Interplay between Particle and Pore Size Distribution: Gordon Agbenyegah¹; Grant McIntosh¹; Margaret Hyland²; James Metson³; ¹Light Metals Research Center; ²School of Engineering, University of Auckland; ³School of Chemical Sciences, University of Auckland

9:50 AM

Predictive Formulae for the Competitive Adsorption of HF and SO₂ on Smeltergrade Alumina Used in Dry Scrubbing Applications: Stephan Broek¹; Neal Dando²; Stephen Lindsay³; ¹Hatch Ltd; ²Alcoa Technical Center (retired); ³Alcoa Primary Metals

10:15 AM Break**10:30 AM**

Pot Gas Treatment at High Gas Temperatures: Anders Sorhuus¹; Sivert Ose¹; ¹GE Power Norway

10:55 AM

Potroom HF Emission Reduction by Anode Inert Tray Technology Performances of ALRO Industrial 1st of Class: Vincent Verin¹; El Hani Bouhabila¹; Jérémy Neveu¹; Serge Despinasse²; Gheorghe Dobra³; Marian Cilianu³; Fabienne Virieux⁴; ¹Fives Solios; ²Fives ECL; ³VIMETCO ALRO; ⁴Fives Aluminium Division

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Pyrometallurgy II

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Wednesday AM Room: 15B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Subhadra Gupta, The University of Alabama

8:30 AM

Chloridizing Roasting of Bismuthinite with Sodium Chloride-oxygen: *Rafael Padilla*¹; Luis Salinas¹; Maria Ruiz¹; ¹University of Concepcion

8:50 AM

Natural Gas Utilization in Blast Furnace Ironmaking: Tuyère Injection, Shaft Injection and Prereduction: *P. Chris Pistorius*¹; Jorge Gibson¹; Megha Jampani¹; ¹Carnegie Mellon University

9:10 AM

Selective Sulfation Roasting of Rare Earths from NdFeB Magnet Scrap: *Brett Carlson*¹; Patrick Taylor¹; ¹Colorado School of Mines

9:30 AM

Gold Solubility in Smelting Slags for the Recycling of Industrial and Mining Wastes: Jun-Gil Yang¹; Hyun-Sik Park²; *Joohyun Park*¹; ¹Hanyang University; ²Korea Institute of Geoscience and Mineral Resources (KIGAM)

9:50 AM Break

10:10 AM

Solid State Reduction of Iron, Manganese and Chromium Oxide Ores with Methane: *Rauf Eric*¹; Petteri Halli²; Pekka Taskinen²; Amit Bhalla¹; ¹University of the Witwatersrand; ²Aalto University

10:30 AM

Stibnite Chloridizing with Calcium Chloride-oxygen at Roasting Temperatures: *Rafael Padilla*¹; Ilitch Moscoso¹; Maria Ruiz¹; ¹University of Concepcion

10:50 AM

Investigations on Rotary Tool Near-dry Electric Discharge Machining: Vineet Yadav¹; *Pradeep Kumar*¹; Akshay Divedi¹; ¹Indian Institute of Technology, Roorkee

Applications of Solidification Fundamentals — Solidification of Iron and Steel

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, McMaster University; Amber Genau, University of Alabama at Birmingham; Lifeng Zhang, University of Science and Technology Beijing

Wednesday AM Room: 19
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Andrew Kao, University of Greenwich; Mahdi Torabi Rad, University of Iowa

8:30 AM

Spheroidal Graphite Growth Studied by Synchrotron X-ray Tomography: *Mathias Bjerre*¹; Mohammed Azeem²; Niels Tiedje¹; Jesper Hattel¹; Peter Lee²; ¹Technical University of Denmark; ²University of Manchester

8:50 AM

Effect of Solidification Parameters and Alloying Elements on Graphite Morphology in Ni-C Alloys: *Amir Ardalan Rezaie*¹; Haamun Kalaantari²; Reza Abbaschian¹; ¹University of California, Riverside; ²California State Polytechnic University, Pomona

9:10 AM

Effects of Rare Earth Oxides on the Precipitation of Graphite in Fe-C-Si Alloy: *Kok Long Ng*¹; Hideaki Sasaki²; Hisao Kimura³; Takeshi Yoshikawa³; Masafumi Maeda³; ¹University of Tokyo; ²Ehime University; ³University of Tokyo

9:30 AM

Evolution of Microstructure in Directionally Solidified Compacted Graphite Iron: *Subhojit Chaktaborty*¹; Amber Genau¹; Charles Monroe¹; ¹University of Alabama at Birmingham

9:50 AM

An Electron Microscopy Study of Graphite Growth in Nodular Cast Irons: *Rawen Jday*¹; Lydia Laffont¹; Jacques Lacaze¹; ¹CIRIMAT

10:10 AM Break

10:30 AM

Discovery of New Grain Refiners Utilizing Crystallographic Data: *Hunter Martin*¹; Brennan Yahata²; Tresa Pollock¹; ¹University of California, Santa Barbara; ²HRL Laboratories

10:50 AM

Mechanisms of Surface Stability in Al-Zn Coated Steel: *Matthew Gear*¹; Kazuhiro Nogita¹; Stuart McDonald¹; Dongdong Qu¹; David StJohn¹; ¹University of Queensland

Bio-Nano Interfaces and Engineering Applications — Functional Bionano Interfaces

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Wednesday AM Room: Pacific 21
March 1, 2017 Location: Marriott Marquis Hotel

Session Chairs: Hendrik Heinz, University of Colorado Boulder; Sermin Utku, Yeditepe University

8:30 AM

Engineering Hydrogels with Bioactive Nanomaterials for Bone Regeneration Applications: Settimio Pacelli¹; Ryan Maloney¹; *Arghya Paul*¹; ¹University of Kansas

9:00 AM Invited

Toughness-Enhancing Linear Metastructure in the Recluse Spider's Nanoribbon Silk: *Hannes Schniepp*¹; ¹The College of William & Mary

9:40 AM Keynote

Interfacing Freeze-Cast Biopolymer Scaffolds with Tissue In Vivo: Effects of Composition and Structure on Integration and Degradation: Prajan Divakar¹; Karen Moodie¹; P. Jack Hoopes¹; *Ulrike Wegst*¹; ¹Dartmouth College; ²Dartmouth College

10:20 AM Break

10:40 AM

Bio-Nano-Technology toward Smart Interfaces and Functional Hybrid Materials: *Candan Tamerler*¹; ¹University of Kansas

11:00 AM

Characteristics of von Willebrand Factor Adhesion on Collagen Surface under Flow: *Wei Wei*¹; Chuqiao Dong¹; Michael Morabito¹; Xiaohui Zhang¹; Wei Zhang¹; Yan Xu¹; Wenli Ouyang¹; xuanhong cheng¹; Edmund Webb¹; Alparslan Oztekin¹; ¹Lehigh University

11:20 AM

Characterization of Solid-supported Thin Films and Molecular Interactions Using Multi-parametric Surface Plasmon Resonance: Annika Jokinen¹; Niko Granqvist¹; Janusz Sadowski¹; ¹BioNavis Ltd.

Biological Materials Science — Structural Biological Materials II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Wednesday AM
March 1, 2017

Room: Pacific 15
Location: Marriott Marquis Hotel

Session Chairs: Francois Barthelat, McGill University; Wen Yang, ETH Zurich

8:30 AM Invited

Bioinspired Design Strategies: Joanna McKittrick¹; Steven Naleway²; Michael Frank¹; Jay-Young Jung¹; Frances Su¹; Michael Porter³; ¹University of California, San Diego; ²University of Utah; ³Clemson University

9:00 AM

Revisiting Laminated Glass Using Bio-inspired Architectures: Zhen Yin¹; Francois Barthelat¹; ¹McGill University

9:20 AM Invited

Impact and Wear Resistant Biological Composites: Insight to Next Generation Multifunctional Materials: Nicholas Yaraghi¹; Steven Herrera¹; Lessa Grunenfelder¹; Nobphadon Suksangpanya²; David Restrepo²; Enrique Escobar de Obaldia²; C. Jeong²; Richard Wuhrer³; Pablo Zavattieri²; David Kisailus¹; ¹University of California Riverside; ²Purdue University; ³University of Western Sydney

9:50 AM Break

10:10 AM

Stretch-and-release Fabrication, Testing and Optimization of a Bioinspired Flexible Ceramic Armor: Roberto Martini¹; Francois Barthelat¹; ¹McGill University

10:30 AM

The Effect Moisture Content on Mechanical Properties of Lignin and Hemicellulose: Sina Youssefian¹; Nima Rahbar¹; ¹Worcester Polytechnic Institute

10:50 AM

The Effect of Freezing, Thawing, and Drying on the Tensile Strength of *Galleria mellonella* Silk: Mary Gasper¹; Jane Batcheller¹; Andrew Keddie¹; John Nychka¹; ¹University of Alberta

11:10 AM Invited

Lessons Learned from the Mighty Dactyl Club of the Mantis Shrimp: Nobphadon Suksangpanya¹; Nicolas Guarin-Zapata¹; Nick Yaraghi²; David Kisailus²; Pablo Zavattieri¹; ¹Purdue University; ²University of California Riverside

Bulk Metallic Glasses XIV — Structures and Mechanical Properties III

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Wednesday AM
March 1, 2017

Room: 33A
Location: San Diego Convention Ctr

Session Chairs: John Lewandowski, Case Western Reserve University; Wojciech Dmowski, University of Tennessee

8:30 AM Invited

Early Plasticity in Metallic Glasses: Dominik Tönnies¹; Cynthia Volkert¹; Lin Tian²; ¹University of Göttingen; ²Universität Göttingen

8:50 AM

A Comparative Analysis of Metal-Ni-P Metallic Glasses Synthesized via Electroless Plating: Phil Meagher¹; Manuel Abad¹; David Browne¹; ¹University College Dublin

9:10 AM

Thermal Structural Evolution of Zr-based Metallic Glasses and Liquids Investigated by High Energy X-ray Diffraction and Inelastic Neutron Scattering: Zengquan Wang¹; Wojciech Dmowski¹; Yang Tong¹; Takeshi Egami¹; Adam Vogt²; Kenneth Kelton³; ¹University of Tennessee, Knoxville; ²Oak Ridge National Laboratory; ³Washington University in St. Louis

9:30 AM Invited

Pressure Dependence in Mechanical Properties of Metallic Glasses near the Glass Transition: Zachary Aitken¹; Mehdi Zadeh¹; John Lewandowski²; Yong Wei Zhang¹; ¹Institute of High Performance Computing, A*STAR; ²Case Western Reserve University

9:50 AM Invited

Pressure-induced Structural Change in Liquid Eutectic Ga85.8In14.2 Alloy: Qing Yu¹; Xiaodong Wang¹; Yu Su¹; Azkar Saeed Ahmad¹; Qingping Cao¹; Dongxian Zhang¹; Jianzhong Jiang¹; ¹Zhejiang University

10:10 AM Break

10:30 AM

Revealing Homogeneous Plastic Deformation in Ti-based Metallic Glass Composites with Dendrites under Tension: Fufa Wu¹; ¹Liaoning University of Technology, China

10:50 AM Invited

Plasticity of In-situ Ti-based Metallic Glass Matrix Composites: Jean-Marc Pelletier¹; S. Cardinal¹; Jichao Qiao²; ¹INSA-Lyon; ²Northwestern Polytechnical University

11:10 AM Invited

Homogeneous Plastic Deformation of Metallic Glasses at Room Temperature: Yi Li¹; ¹Institute of Metal Research

11:30 AM

Investigation of the Stability of Newtonian Viscous Flow in Various Metallic Glass Systems: Hyun Seok Oh¹; Chae Woo Ryu¹; Eun Soo Park¹; ¹Seoul National University

11:50 AM

Production of Zirconium Based Bulk Metallic Glass Sheet: Daniel East¹; Nicholas Hutchinson²; Jim Yurko²; Robert Haun³; ¹CSIRO; ²Materion; ³Retech Systems

12:10 PM

Structure-property Relationships in Nanoporous Metallic Glasses: Daniel Sopa¹; Celal Soyarslan²; Mihai Stoica¹; Jürgen Eckert³; ¹IFW Dresden; ²Hamburg University Technology; ³Erick Schmid Institute of Materials Science

Cast Shop Technology — DC Casting and Macrosegregation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Wednesday AM Room: 1A
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Samuel Wagstaff, MIT

8:30 AM Introductory Comments

8:35 AM

A Study on DC Casting Trough/ Launder Design and Material Selection:
*Bin Zhang*¹; ¹Wagstaff Inc

9:00 AM

Critical Role of Thermal Management during Cast Start-up of DC Casting Process: *André Larouche*¹; *Sabrina Guy*¹; *Josée Colbert*¹; ¹Rio Tinto Aluminium

9:25 AM

Modelling and Analysis of a Horizontal Direct Chill Casting Process:
*Garðar Garðarsson*¹; *Þröstur Guðmundsson*²; *Magnus Jonsson*³; *Halldor Pálsson*³; ¹Alcoa Fjarðaál; ²Reykjavik University; ³University of Iceland

9:50 AM

Casting of Sound, Large Diameter 7050 Billets: *Kjerstin Ellingsen*¹; *Mohammed M'Hamdi*¹; ¹SINTEF

10:15 AM Break

10:30 AM

Circulation of Grains during Ingot Casting: *Carolyn Joseph*¹; *Samuel Wagstaff*¹; *Antoine Allanore*¹; ¹Massachusetts Institute of Technology

10:55 AM

Minimization of Macrosegregation through Jet Erosion of a Continuously Cast Ingot: *Samuel Wagstaff*¹; *Antoine Allanore*¹; ¹Massachusetts Institute of Technology

11:20 AM

Full Size Measurement and Simple Prediction on Macro Segregation of Aluminum Alloys Elements in Industrial DC Casting Slab: *Tatsuya Yamada*¹; *Nobuhito Ishikawa*¹; *Takashi Kubo*¹; *Koichi Takahashi*¹; ¹UACJ Corporation

11:45 AM

Ultrasonic Assisted Reduction of Hot-tearing during High-speed DC Casting of 6000 Series Aluminum Alloys: *Sergey Komarov*¹; *Yasuo Ishiwata*²; *Yoshihiro Takeda*²; ¹Tohoku University; ²Nippon Light Metal Co.ltd

Ceramic Materials for Nuclear Energy Research and Applications — Non-oxide Ceramics for Nuclear Applications I

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee
Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Wednesday AM Room: Palomar
March 1, 2017 Location: Marriott Marquis Hotel

Session Chairs: Xianming Bai, Virginia Tech; Yong Yang, University of Florida

8:30 AM Invited

Progress in Development of Non-Oxide Ceramic Nuclear Fuels: *Andrew Nelson*¹; ¹Los Alamos National Laboratory

9:00 AM Invited

Radiation-Stability of Zirconium Carbide and Nitride Ceramics for Advanced Fuel Cycles: *Yong Yang*¹; ¹University of Florida

9:30 AM

Spark Plasma Sintering of Boron Carbide Ceramics for Nuclear Applications: *Meral Cengiz*¹; *Onuralp Yucel*¹; *Gultekin Goller*¹; *Bulent Buyuk*¹; *Asiye Tugrul*¹; *Filiz Sahin*¹; ¹Istanbul Technical University

9:50 AM Break

10:10 AM Invited

Ionization-Induced Damage Annihilation in Silicon Carbide: *Yanwen Zhang*¹; *Haizhou Xue*²; *Ritesh Sachan*¹; *Olli Pakarinen*¹; *Matthew Chisholm*¹; *Peng Liu*³; *William Weber*²; ¹Oak Ridge National Laboratory; ²University of Tennessee; ³Shandong University

10:40 AM

Multi-scale Modeling of Fracture Behavior in SiC with a Phase Field Fracture Model: *Shuaifang Zhang*¹; *Michael Tonks*¹; ¹Pennsylvania State University

11:00 AM

A TEM Study of Microstructure of Hi-Nicalon Type S SiC Composite beyond Ultimate Shear Strength: *Yun Yang*¹; *Mehdi Balooch*¹; *Joseph Kabel*¹; *Cameron Howard*¹; *David Frazer*¹; *Peter Hosemann*¹; ¹University of California, Berkeley

11:20 AM

Micro-Mechanical Interphase Property Evaluation for SiC-SiC Composites: *Joseph Kabel*¹; *Mehdi Balooch*¹; *Yun Yang*¹; *Kurt Terrani*²; *Takaaki Koyanagi*²; *Peter Hosemann*¹; ¹University of California Berkeley; ²Oak Ridge National Laboratory

Characterization of Minerals, Metals, and Materials — Minerals

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhamyies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Wednesday AM
March 1, 2017

Room: 31B
Location: San Diego Convention Ctr

Session Chairs: Bowen Li, Michigan Technological University; Fernanda Silva, IQ/UFRJ

8:30 AM

The Precious Metals Resource Potentials of Nigerian Benue Trough and Schist Belts - A Review: Abraham Adeleke¹; Kayode Oluwabunmi²; Daniel Okanigbe³; ¹Obafemi Awolowo University; ²Prototype Engineering Development Institute (PEDI) Nigeria; ³Tshwane University of Technology (TUT)

8:50 AM

Chemical and Mineralogical Characterization of Pyrite Ore Deposit in Umuobom Ideato, Imo State, Nigeria: Gerald Onyedika¹; Amauche Achusim¹; Martin Ogwuegbu¹; Christogonus Akalezi¹; Goddy Onuoha¹; ¹Federal University of Technology, Owerri

9:10 AM

Industrial Use of Brazilian Bentonite Modified by Mild Acid Attack: Christiano Gianesi Bastos Andrade¹; Danilo Marin Fermino¹; Marcos Gonzales Fernandes¹; Francisco Rolando Valenzuela Diaz¹; ¹University of São Paulo

9:30 AM

Mullitization Characteristics and Sinterability of Kyanite in Ceramic Preparation: Huaguang Wang¹; Bowen Li¹; Mengsheng He²; Jiann-Yang Hwang¹; ¹Michigan Technological University; ²R&D Center of Wuhan Iron and Steel Corp. Group

9:50 AM

Ore Dressing and Technological Characterization of Palygorskite from Piauí/Brazil for Applications as Adsorbent of Heavy Metals: Fernanda Silva¹; Karla Simões²; Luiz Carlos Bertolino³; Bruna Novo²; Julio Afonso⁴; Adriana Felix⁴; ¹IQ/UFRJ; ²IQ-UFRJ/CETEM; ³CETEM; ⁴CMAR-IFRJ

10:10 AM Break

10:25 AM

Temperature Dependence of the Dielectric Properties of Kaolin: Csaki Stefan¹; Patrik Dobron¹; Igor Stubna²; Libor Vozar²; Viera Trnovcova²; Jan Ondruska²; ¹Charles University in Prague; ²Constantine the Philosopher University in Nitra

10:45 AM

Synthesis and Characterization of Sodalite and Cancrinita from Kaolin: Fernanda Silva¹; Fabiano Passos²; Karoline Ferreira²; Adriana Felix³; Carla Barbato⁴; Karla Simões⁵; Francisco Garrido⁶; Luiz Bertolino⁷; Danielle Castro⁶; ¹IQ/UFRJ; ²EQ-UFRJ/CETEM; ³IFRJ-CMAR; ⁴EQ-UFRJ; ⁵IQ-UFRJ/CETEM; ⁶IQ/UFRJ; ⁷CETEM

11:05 AM

Characterization of a Sienite Rock from Tanguá/Brazil as a Source of Potassium to the Agriculture: Adriana Felix¹; Thuanny Soares¹; Fernanda da Silva²; Fernanda Pontes²; Carla Barbato³; Adão da Luz⁴; ¹IFRJ; ²IQ-UFRJ; ³EQ-UFRJ; ⁴CETEM

11:25 AM

Characterization of High Performance Toothpaste Abrasive Derived from Perlite: Bo Wang¹; ¹Imerys

11:45 AM

Effect of Mechanical Activation on the Structural Properties of Vanadium Slag: Qingyun Huang¹; Shengde Dong¹; ¹Chongqing University of Science and Technology

12:05 PM

Technological Characterization of Waste from Gold Mining Dam: Fernanda Silva¹; Vanessa Silva²; Zuleica Castilhos³; Fabiano Passos⁴; Roberto Faria¹; Lillian Domingos³; ¹IQ/UFRJ; ²IQ-UFRJ/CETEM; ³CETEM; ⁴EQ-UFRJ/CETEM

Computational Approaches to Materials for Energy Applications — Session I

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee

Program Organizer: Laurent Chaput, LEMTA

Wednesday AM
March 1, 2017

Room: 7A
Location: San Diego Convention Ctr

Session Chair: Laurent Chaput, Lorraine University

8:30 AM Invited

Visual Search Strategies for Thermoelectrics: David Singh¹; ¹University of Missouri

9:00 AM Invited

First Principles Calculations of the Stability and Physical Properties of Thermoelectric Materials: Philippe Jund¹; Kinga Niedziolka¹; Alexandre Berche¹; Patrick Hermet¹; Jean-Claude Tedenac¹; ¹ICGM-Montpellier University

9:30 AM Invited

Accelerated Discovery of Novel Low-thermal-conductivity Crystals by First-principles Data-driven Approach: Isao Tanaka¹; ¹Kyoto University

10:00 AM Break

10:20 AM Invited

Monte Carlo Modeling of Phonon Transport in Nanostructures: David Lacroix¹; ¹University of Lorraine

10:50 AM

Tuning Thermal Conductivity of Metal-Organic-Frameworks: Luping Han¹; Wenxi Huang¹; Agnieszka Truskowska¹; P. Greaney²; ¹OSU; ²UCR

11:10 AM

Atomistic Study of the Synergistic Effects of Helium and Hydrogen Bubbles in Nickel: Edmanuel Torres¹; Colin Judge¹; Jeremy Pencer¹; Lori Walters¹; ¹Canadian Nuclear Laboratories

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Mechanical Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Wednesday AM
March 1, 2017

Room: 11A
Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM

A Minimal Continuum Dislocation Dynamics Model for Slip in bcc Metals: *Roman Groger*¹; ¹Academy of Sciences of the Czech Republic

8:50 AM

Dislocation Core Structures in FCC Ni and L₁₂ Ni₃Al Computed Using Density Functional Theory Based Flexible Boundary Condition Approach: *Anne Marie Tan*¹; Christopher Woodward²; Dallas Trinkle¹; ¹Univ. Illinois, Urbana-Champaign; ²Air Force Research Laboratory

9:10 AM

Efficient Multi-step Optimization for Materials Design and Discovery: *Thien Duong*¹; Anjana Talapatra¹; Raymundo Arroyave¹; ¹Texas A&M University

9:30 AM

A New Class of Hyperuniform Heterogeneous Material with Superior Mechanical Properties via Stochastic Optimization: *Yaopengxiao Xu*¹; ¹Arizona State University

9:50 AM

Efficient Screening for High Strength, Superelastic Alloys: *Ian Winter*¹; Daryl Chrzan¹; ¹University of California, Berkeley

10:10 AM Break

10:25 AM

Modeling Deformation and Recrystallization Textures Using Viscoplastic Self-consistent Polycrystal Plasticity: *Miroslav Zecevic*¹; Ricardo Lebensohn²; Rodney McCabe²; Marko Knezevic¹; ¹University of New Hampshire; ²Los Alamos National Laboratory

10:45 AM

Microstructure Evolution in Ni materials: Annealing-Detwinning due to Thermal Fluctuation of Incoherent Twin Boundary: *Hao Sun*¹; Chandra Singh¹; ¹University of Toronto

11:05 AM

First Principle Investigation of Electrical Conductivity and Phase Stability of Al-Zn-Ni Alloy for Precipitation Hardening: *Oladeji Fadayomi*¹; Gregory Odegard¹; Paul Sanders¹; ¹Michigan Tech University

11:25 AM

Graph Spectra and Grain Boundary Network Design: *Oliver Johnson*¹; ¹Brigham Young University

11:45 AM

Topology Optimization for Composite Wear: *Natasha Vermaak*¹; ¹Lehigh University

Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions — Mathematical Tools for Uncertainty Quantification and Propagation

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Li Ma, NIST; Shawn Coleman, ARL; Jeff Doak, QuesTek Innovations, LLC; Fadi Abdeljawad, Sandia National Laboratory

Wednesday AM
March 1, 2017

Room: 10
Location: San Diego Convention Ctr

Session Chairs: Jeff Doak, QuesTek Innovations; Fadi Abdeljawad, Sandia National Laboratories

8:30 AM Invited

Information-theoretic Tools for Uncertainty Quantification of High Dimensional Stochastic Models: Petr Plechac¹; Ting Wang¹; ¹University of Delaware

9:00 AM

Numerical Simulation of Electromagnetic Field, Flow Field, and Temperature Field in Secondary Cooling Zone of Round Billet under the Impact of Pulsed Magneto-oscillation: *Junli Hao*¹; Yunhu Zhang¹; Honggang Zhong¹; Zhishuai Xu¹; Renxing Li¹; Qijie Zhai¹; ¹Shanghai University

9:20 AM Invited

Uncertainty Quantification in Density Functional Theory: Non-intrusive vs. Intrusive Methodologies: *David Mebane*¹; Wilfredo Ibarra-Hernandez¹; Aldo Romero¹; ¹West Virginia University

9:50 AM Break

10:10 AM Invited

Uncertainty Quantification, Molecular Dynamics, and the Glass-Transition Temperature of Aerospace Polymers: *Andrew Dienstfrey*¹; Paul Patrone¹; ¹National Institute of Standards and Technology

10:40 AM Invited

Using Information Geometry to Relate Parametric Uncertainty and Model Predictivity: *Mark Transtrum*¹; ¹Brigham Young University

11:10 AM

Using Metropolis-Hasting Algorithm to Calibrate NiTi Precipitation Model Implemented in MatCalc® Code: *Pejman Honarmandi*¹; Raymundo Arroyave¹; Luke Johnson¹; ¹Texas A&M University

Computational Thermodynamics and Kinetics — Materials Physics

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Wednesday AM Room: 11B
 March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Michael Manley, Oak Ridge National Laboratory; Brent Fultz, California Institute of Technology

8:30 AM Invited

Piezoelectric Gold - Exploiting Mechano-Chemical Coupling at Interfaces for Designing Novel Functional Materials: Charlotte Stenner¹; Anja Michl¹; Jörg Weissmüller¹; ¹Hamburg University of Technology

9:00 AM

Phonon Thermodynamics of Silicon: Dennis Kim¹; Olle Hellman¹; Hillary Smith¹; Jiao Lin²; Jane Herriman¹; Jennifer Niedziela²; Douglas Abernathy²; Brent Fultz¹; ¹Caltech; ²Oak Ridge National Laboratory

9:20 AM

Vibrational Entropy from Thermally-Driven Electronic Topological Transitions: Fred (Chae-Reem) Yang¹; Jorge Muñoz²; Olle Hellman¹; Lisa Mauger¹; Matthew Lucas³; Sally Tracy¹; Brent Fultz¹; ¹California Institute of Technology; ²The Datum Institute; ³Air Force Research Laboratory

9:40 AM Invited

Anharmonic Phonon Effects in Wurtzite and Zincblende GaN: Jane Herriman¹; Olle Hellman¹; Brent Fultz¹; ¹California Institute of Technology

10:10 AM Break

10:25 AM

Single and Poly- Crystal Elastic Constants of Nickel and Ni-H_x Alloys at Finite Temperature from Experiments and First Principles Calculations: Guillaume Hachet¹; Arnaud Metsue¹; Abdelali Oudriss¹; Marc Huger²; Xavier Feaugas¹; ¹University of La Rochelle; ²University of Limoges

10:45 AM

Thermotransport in Binary Liquid Alloys: Graeme Murch¹; Tanvir Ahmed¹; Ujjal Sarder¹; Elena Levchenko¹; Alexander Evteev¹; Irina Belova¹; ¹The University of Newcastle

11:05 AM

A One-Mode Phase-Field Crystal Model Quantified for Solid-Liquid Coexistence of FCC and HCP Metals: Ahmad Nourian Avval¹; Ebrahim Asadi¹; ¹University of Memphis

11:25 AM

Effects of Magnetism on the Vibrational Entropy of Iron and Cementite: Brent Fultz¹; Lisa Mauger²; Jane Herriman¹; Olle Hellman¹; Matthew Lucas¹; Sally Tracy³; ¹California Institute of Technology; ²Arete Associates; ³Princeton Univ.

11:45 AM

Heat Transport at Interface in the Metal-Organic-Frameworks MOF-5: Wenxi Huang¹; Peter Greaney¹; ¹University of California-Riverside

Defects and Properties of Cast Metals — Cast Iron & Steel

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Wednesday AM Room: 23A
 March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Lifeng Zhang, University of Science and Technology Beijing; Peter D. Lee, The University of Manchester

8:30 AM Introductory Comments

8:35 AM Invited

In-situ Observation of Spheroidal Graphite Formation and Measurement of Apparent Volume Expansion in Ductile Cast Iron: Hideyuki Yasuda¹; Akira Sugiyama²; Kohei Morishita¹; Tomoya Nagira³; Masato Yoshiya³; Kentaro Uesugi⁴; Akihisa Takeuchi⁴; ¹Kyoto University; ²Osaka Sangyo University; ³Osaka University; ⁴JASRI / Spring-8

8:55 AM

X-ray Synchrotron Tomographic Investigation of Graphite Evolution in Near Eutectic Cast Irons: Mohammed Azeem¹; Mathias Bjerre²; Niels Tiedje²; Robert Atwood³; Peter Lee¹; ¹Manchester University; ²Technical University of Denmark; ³Diamond Light Source

9:15 AM

Microstructural Characterization of Graphite Nodules in Fatigue-tested Ductile Cast Iron: Søren Faester¹; Yubin Zhang¹; Niels Hansen¹; Dorte Juul Jensen¹; ¹Technical University of Denmark

9:35 AM

Effect of Molybdenum Content, Pouring Temperature and Cooling Rate on the Casting Defects of High Chromium White Cast Iron: Izudin Dugic¹; ¹Linnaeus University

9:55 AM

Numerical Predictions of Local Residual Stresses around Individual Graphite Nodules in Ductile Iron and Experimental Validation: Tito Andriollo¹; Niels Tiedje¹; Jesper Thorborg²; Jesper Hattel¹; ¹Technical University of Denmark; ²Magma GmbH

10:15 AM Break

10:35 AM Invited

Nucleation and Growth of Graphite in Ductile Cast Iron - Coupling between Experiments and Modelling: Niels Tiedje¹; Mathias Bjerre¹; Mohammed Azeem²; Jesper Hattel¹; Peter Lee²; ¹Technical University of Denmark; ²The University of Manchester

10:55 AM

Effect of Various Aluminum Content on the Formation of Inclusion: Yan Luo¹; Lifeng Zhang¹; Yang Wen¹; Ping Shen¹; ¹University of Science and Technology Beijing

11:15 AM

Effect of Segregated Alloying Elements on the High Strength Steel Properties: Application to the Large Size Ingot Casting Simulation: Chunping Zhang¹; Davood Shariari¹; Abdelhalim Loucif¹; Mohammad Jahazi¹; Louis-Philippe Lapierre-Boire²; Rami Tremblay²; ¹L'École de Technologie Supérieure de Montréal; ²Finkl Steel - Sorel

11:35 AM Keynote

Non-metallic Inclusions and Precipitates in High Quality Steels: Lifeng Zhang¹; Seetharaman Sridhar²; ¹University of Science and Technology Beijing; ²University of Warwick

Deformation and Transitions at Interfaces — Meso/ Microstructural Scale Mechanical Behavior of Polycrystals II

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Wednesday AM Room: 23B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Accounting for the Micromechanical Effect of Grain Boundaries Using a New FFT-based Strain-gradient Polycrystal Plasticity Formulation: *Ricardo Lebensohn*¹; Alan Needleman²; ¹Los Alamos National Laboratory; ²Texas A&M University

8:50 AM

Investigating Deformation at Grain Boundaries by SEM-DIC: *Zhe Chen*¹; Samantha Daly¹; ¹University of Michigan

9:10 AM Invited

Residual Stress and Dislocation Density Distributions near Grain Boundaries in Deformed Materials: *Angus Wilkinson*¹; Jun Jiang²; T Ben Britton²; David Wallis¹; Lars Hansen¹; ¹University of Oxford; ²Imperial College London

9:30 AM

Role of Grain Boundary Sliding in Deformation of Polycrystalline Materials: *Ajeven Venkataraman*¹; Marissa Linne²; Samantha Daly³; Michael Sangid¹; ¹Purdue University; ²University of Michigan; ³University of California, Santa Barbara

9:50 AM Invited

Crystallographic Rotation, Deformation, and Damage: *Jay Carroll*¹; Hojun Lim¹; Brad Boyce¹; Corbett Battaile¹; Blythe Clark¹; ¹Sandia National Laboratories

10:10 AM Break

10:30 AM Invited

Statistical Analysis of Grain Boundary Structure-Property Relationships: *Srikanth Patala*¹; ¹North Carolina State University

10:50 AM Invited

A Non-local Continuum Mechanics Treatment of the Dynamics of Interfaces: *Laurent Capolungo*¹; ¹Los Alamos National Laboratory

11:10 AM Invited

Nanoscale Strain Mapping at Interfaces Using Scanning Nanobeam Electron Diffraction: *Andrew Minor*¹; ¹University of California Berkeley & Lawrence Berkeley Laboratory

11:30 AM

Polycrystalline Plasticity Simulations with Anisotropic Discrete Dislocation Dynamics: *John Graham*¹; Anthony Rollett²; Richard LeSar¹; ¹Iowa State University; ²Carnegie Mellon University

11:50 AM Invited

Quantification of Dislocation Behavior and Deformation Twinning at High Strain Rates: *Mitra Taheri*¹; Shang-Hao Huang¹; Evan Kahl¹; Asher Leff¹; Christopher Barr¹; Logan Shanahan¹; JP Liu²; Yong Zhang²; Leslie Lamberson¹; ¹Drexel University; ²University of Science & Technology Beijing,

12:10 PM Invited

The Effect of Microstructure on Strain Localisation in Two-phase Ti-alloys: *Michael Preuss*¹; David Lunt¹; Joao Quinta da Fonseca¹; ¹University of Manchester

Electrode Technology — Baking Furnace/Electrode Design

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Houshang Alamdari, Laval University

Wednesday AM Room: 1B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Donald Ziegler, Alcoa

8:30 AM Introductory Comments

8:35 AM

Flow Detection Module – A New Model to Predict the Flow in Open Pit Anode Baking Furnaces: *Detlef Maiwald*¹; Domenico Di Lisa¹; Frank Heinke¹; Florian Krummrich¹; ¹Innovatherm

9:00 AM

Formation of Carbon Build-Up on the Flue Wall of Anode Baking Furnace: *Zhaohui Wang*¹; Arne Petter Ratvik¹; Tor Grande²; Stein Rørvik¹; ¹SINTEF Materials and Chemistry; ²Norwegian University of Science and Technology

9:25 AM

Investigation of Spent Refractory Lining in an Anode Baking Furnace: *Trond Brandvik*¹; Zhaohui Wang²; Arne Petter Ratvik²; Tor Grande¹; ¹Norwegian University of Science and Technology, NTNU; ²SINTEF Materials and Chemistry

9:50 AM

25 Years of Naural Gas Purged Infrared Pyrometer Temperature Measurement for the Operation of Open-Top Anodes Baking Furnaces: *Yvon Menard*¹; ¹Retired Process Specialist

10:15 AM Break

10:30 AM

Impact of Cast Iron Degradation and Cathode Block Erosion on the Current Path in the Cathodic Assembly of Aluminum Production Cells: *Martin Brassard*¹; Marc LeBreux¹; Martin Desilets¹; Gervais Soucy¹; Martin Forté²; Jean-François Bilodeau²; ¹Université de Sherbrooke; ²Rio Tinto

10:55 AM

Reducing Cathode Voltage Drop and Reducing Peak Current Density by Use of Cathode Nails across the Carbon to Cast Iron Interface: *Will Berends*¹; Stephen Haley¹; ¹Hatch

11:20 AM

Production of NiFe₂O₄ Nanocermet for Aluminium Inert Anode: *Wu Xianxi*¹; Zhu Weidong¹; Luo Kunlin¹; Jia Hefeng¹; ¹Guizhou University

11:45 AM

Gas Anodes Made of Porous Graphite for Aluminium Electrowinning: *Babak Khalaghi*¹; Henrik Gudbrandsen²; Ole Kjos²; Karen Osen²; Ove Paulsen²; Tommy Mokkalbost²; Geir Martin Haarberg¹; ¹Norwegian University of Science and Technology (NTNU); ²SINTEF

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Intermetallic Compound and Microstructural Evolution of Pb-free Materials

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Wednesday AM Room: 30E
 March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Kazuhiro Nogita, The University of Queensland; Sergey A Belyakov, Imperial College London

8:30 AM Invited

Nucleation and Growth of Primary Cu₆Sn₅ in Solder Joints: *Christopher Gourlay*¹; J.W. Xian¹; M.A.A. Salleh²; Sergey Belyakov¹; Kazuhiro Nogita²; ¹Imperial College London; ²University of Queensland

8:50 AM

Growth Behavior of Interfacial Intermetallic Compound at ENIG and Sn-Ag-Cu Solder Joint with Plating Temperature of Ni(P): *Wonil Seo*¹; Young-Ho Kim²; Sehoon Yoo¹; ¹Korea Institute of Industrial Technology; ²Hanyang University

9:10 AM

Study of Al-Cu Compounds as Soldering Bond Pad for High-power Device Packaging: *Yan-Hao Chen*¹; Cheng-Yi Liu¹; ¹National Central University

9:30 AM

Thermodynamic and Microstructural Evaluation of the Sn-Si-Ge Ternary System for Advanced Pb-Free Solder Design: *Kathlene Reeve*¹; Carol Handwerker¹; ¹Purdue University

9:50 AM

Microstructure Formation in Reinforced Sn-Cu Lead-free Solder Alloys: *M. A. A. Mohd Salleh*¹; Stuart McDonald²; Christopher Gourlay³; Kazuhiro Nogita²; ¹Universiti Malaysia Perlis; ²University of Queensland; ³Imperial College London

10:10 AM Break

10:30 AM

The Grain Orientation Evolution of Mixed Solder Joints with Single-crystal Grain at the Same Position of BGA Packages during Thermal Shock: *Jing Han*¹; Fu Guo¹; Shihai Tan¹; ¹Beijing University of Technology

10:50 AM

Subgrain Rotation Behavior of SnAgCu-SnPb Mixed Solder Joints in BGA Components during Thermal Shock: Fu Guo¹; *Shihai Tan*¹; Jing Han¹; ¹Beijing University of Technology

11:10 AM

Advances in High Temperature Pb-Free Composite Solder Paste Research: *Stephanie Choquette*¹; Iver Anderson¹; ¹Ames Laboratory

Energy Materials 2017: Energy and Environmental Issues in Materials Manufacturing and Processing — Energy and Environmental Issues in Materials Manufacturing and Processing III

Sponsored by: Chinese Society for Metals, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Subodh Das, Phinix, LLC; Zhancheng Guo, University of Science and Technology Beijing; Minfang Han, China University of Mining and Technology, Beijing; Teruhisa Horita, AIST; Elsa Olivetti, Massachusetts Institute of Technology; Xingbo Liu, West Virginia University

Wednesday AM Room: 14B
 March 1, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM

Enhanced Thermoelectric ZT Constantan Alloy by Cryorolling: *Huijun Kang*¹; Daquan Liu¹; Jinling Li¹; Tongmin Wang¹; ¹Dalian University of Technology

8:50 AM

Thermoelectric Properties of La-doped SrTiO₃ Materials Prepared by Mechanical Alloying: *Daquan Liu*¹; Huijun Kang¹; Jinling Li¹; Tongmin Wang¹; ¹Dalian University of Technology

9:10 AM

Mechanical Analysis of Raceway Formation in Bulk Bed of Blast Furnace: Qiuming Wang¹; Yuanxiang Lu¹; *Zeyi Jiang*¹; ¹University of Science and Technology Beijing

9:30 AM

Energy Savings in Aluminium Sand Casting Foundries: *Hamid Ahmad Mehrabi*¹; ¹Cranfield University

Energy Materials 2017: Materials for Coal-Based Power — Session II

Sponsored by: Chinese Society for Metals
Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dryepondt, Oak Ridge National Laboratory

Wednesday AM Room: 12
 March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Omer Dogan, NETL, U.S. Department of Energy

8:30 AM Keynote

Creep Strength and Oxidation Resistance of Industrially Made G115 Steel Pipe: *Zhengdong Liu*¹; HanSheng Bao¹; Zhengzong Chen¹; Songqian Xu²; Hanping Zhao²; Qijiang Wang²; ¹China Iron & Steel Research Institute Group; ²BaoSteel

9:10 AM Invited

Evolution of Precipitates of 25Cr-20Ni-3Cu3WNbN Austenitic Heat Resistant Steel during 973K Aging: *Hansheng Bao*¹; Zhengdong Liu¹; Zhengzong Chen¹; Zhaobo Tian¹; ¹Central Iron & Steel Research Institute

9:40 AM Invited

Heat Resistant Advanced 9% Cr Steel for Fossil Energy Power Generation: *Jeffrey Hawk*¹; Paul Jablonski¹; Kyle Rozman²; ¹U.S. Department of Energy, National Energy Technology Laboratory; ²ORISE

10:10 AM Break

10:30 AM

Creep of Alumina-forming Austenitic Stainless Steels: *I. Baker*¹; Natalie Afonina¹; Bin Hu¹; Geneva Trotter¹; S.J. Kernion²; ¹Dartmouth College; ²Carpenter Technology

10:50 AM

Accelerated Creep Test for New Steels and Welds: *Stan Mandziej*¹;
¹Advanced Materials Analysis

11:10 AM

The Reliability Analysis of 12Cr1MoVG and T23 Used for USC Boilers
Water Wall: *Xiaoli Lu*¹; Yu Wang¹; Jianyong Wang¹; Kaiying Yang¹;
Chongbin Wang¹; Jiongxiang Wang¹; ¹Shanghai Boiler Works.Ltd

Energy Materials 2017: Materials for Nuclear Energy — Materials for Nuclear Applications I

Sponsored by: Chinese Society for Metals
Program Organizers: Raul Rebak, GE Global Research; Zhengdong Liu, China Iron & Steel Research Institute Group; Peter Hosemann, University of California Berkeley; Jian Li, CanmetMATERIALS

Wednesday AM Room: Miramar
March 1, 2017 Location: Marriott Marquis Hotel

Session Chair: Raul Rebak, GE Global Research

8:30 AM Keynote

Is There a Role for Advanced Materials in Light Water Reactors?: *Kurt Terrani*¹; Steven Zinkle²; L.L. Snead³; ¹Oak Ridge National Laboratory; ²University of Tennessee, Knoxville; ³Massachusetts Institute of Technology

9:10 AM Keynote

Development of a Novel Structural Material (SIMP steel) for Nuclear Equipment with Balanced Resistances to High Temperature, Radiation and LBE Corrosion: *Yiyin Shan*¹; Wei Yan¹; Wei Wang¹; Quanqiang Shi¹; Ke Yang¹; Zhiguang Wang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

9:50 AM

Enhancing the High-Cycle Fatigue Property of 316 Austenitic Stainless Steels through Introduction of Mechanical Twins by Cold-Drawing: *Xingfei Xie*¹; ¹Shanghai Jiao Tong University

10:10 AM Break

10:25 AM Invited

Research and Development of Pressure Vessel Steels for Advanced Pressurized Water Reactors in China: *Xikou He*¹; Zhengdong Liu¹; Wenhui Zhang²; Deli Zhao³; Ying Luo⁴; Xiaobin Wang⁵; ¹China Iron & Steel Research Institute Group; ²China First Heavy Industries; ³China First Heavy Industries; ⁴Nuclear Power Institute of China; ⁵Nuclear Power Institute of China

11:05 AM

Bonding Characteristics and Site Occupancies of Si Atoms in M6C Carbides from First Principles and Experimental Study: *Li Jiang*¹;
¹Shanghai Institute of Applied Physics, Chinese Academy of Sciences

11:25 AM

Ductile Phase Toughening of 90-97W-NiFe Heavy Alloys: *Md Ershadul Alam*¹; G. R. Odette¹; ¹University of California, Santa Barbara

11:45 AM

Investigation of Oxidation/Carburisation Mechanisms of 9Cr Ferritic Steel Heat Exchanger Tubes: *Sabrina Yan*¹; Scott Doak¹; Aya Shin²; Jonathan Pearson²; Rebecca Higginson¹; ¹Loughborough University; ²EDF Energy Generation

12:05 PM Invited

Comparison of Corrosion Properties of Alloy 800 and Alloy 690 by In-situ Scratching Repassivation Behavior in High-temperature Pressurized Water: *En-Hou Han*¹; Jiazhen Wang¹; Jianqiu Wang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Materials, Interfaces and Innovations for Hostile Oil and Gas / Energy I

Sponsored by: Chinese Society for Metals
Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Wednesday AM Room: 14A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Chengjia Shang, University of Science and Technology Beijing; Samantha McBride, Massachusetts Institute of Technology

8:30 AM Keynote

Microstructure and Properties of High Performance Pipeline Steels: *Lei Zheng*¹; ¹Baoshan Iron & Steel Co. Ltd.

9:00 AM

Advanced Duplex Stainless Steels for Extreme Oil-Gas Environments: *Pasi Kangas*¹; Guocai Chai¹; ¹Sandvik Materials Technology

9:30 AM

Development of High-strength and High Corrosion-resistant Ni-Cr-Al Alloy for Drilling Tools: *Yoshihiko Koyanagi*¹; Hiroyuki Takabayashi¹; Shigeki Ueta¹; ¹Daido Steel Co., Ltd./R&D center

10:00 AM Break

10:20 AM Invited

Investigation on the Weldability of High-strength Steels Used for Low Temperature Environment: *Chengjia Shang*¹; Xuelin Wang¹; ¹University of Science and Technology Beijing

10:50 AM

Novel Cu-bearing Antibacterial Pipeline Steels for Microbiologically Induced Corrosion Control: *Xianbo Shi*¹; Yiyin Shan¹; Wei Yan¹; Wei Wang¹; Zhenguang Yang¹; Ke Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

11:20 AM

Development of Cr-based Duplex Alloy for Corrosive Environments I: Evaluation of Mechanical Properties and Pitting Potential: *Masafumi Nojima*¹; Tomonori Kimura¹; Makoto Ogata¹; Naoya Toko¹; Kosuke Kuwabara¹; ¹Hitachi, Ltd. Research & Development Group

11:45 AM

Development of Cr-based Duplex Alloy for Corrosive Environments II: Evaluation of Corrosion Resistance in Boiling Sulfuric Acid: *Tomonori Kimura*¹; Masahumi Nojima¹; Makoto Ogata¹; Naoya Toko¹; Kosuke Kuwabara¹; ¹HITACHI, Ltd

12:10 PM

Effect of Residual Stress on Aging Precipitation Behavior of Oil-grade Alloy 718: *Zhongnan Bi*¹; Hailong Qin¹; Jinhui Du¹; Ji Zhang¹; ¹Central Iron and Steel Research Institute, China

WEDNESDAY AM

TECHNICAL PROGRAM

Energy Technologies — Energy Technologies

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Lei Zhang, University of Alaska Fairbanks; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Laboratory; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University; Ziqi Sun, Queensland University of Technology; Tao Wang, Nucor Steel; John Howarter, Purdue University; Fiseha Tesfaye, Abo Akademi University

Wednesday AM Room: 13
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Lei Zhang, University of Alaska Fairbanks; Jaroslaw Drelich, Michigan Technological University

8:30 AM Introductory Comments**8:35 AM**

Continuous Optimization of the Energy Input – The Success Story of AOS: *Felix Wolters*¹; Michael Schütt¹; ¹Aluminium Oxid Stade GmbH

8:55 AM

Energy Savings through Thermally-efficient Crucible Technology: Fundamentals, Process Modeling, and Applications: *Wenwu Shi*¹; Brian Pinto¹; ¹Vesuvius/Foseco

9:15 AM Invited

Applications of Engineered Materials for Geothermal Resource Utilization: *Jefferson Tester*¹; ¹Cornell University

9:35 AM Invited

National Laboratory-led Collaborations for Accelerating Hydrogen Storage Materials Development: *Ned Stetson*¹; Zeric Hulvey²; Jesse Adams¹; ¹U.S. Department of Energy; ²Oak Ridge Affiliated Universities

10:05 AM Break**10:20 AM Invited**

Interrogating Nanoscale Defects to Enable Cost-Effective Solar Energy Conversion: *David Fenning*¹; ¹UC San Diego

10:40 AM Invited

Graphene-like Ultrathin 2D Metal Oxide Nanosheets for Sustainable Applications: *Ziqi Sun*¹; ¹Queensland University of Technology

11:00 AM

Advanced Composite Materials for Passive Thermal Management of Electronics: *John Howarter*¹; Yash Ganatra¹; Alexandra Bruce¹; Amy Marconnet¹; ¹Purdue University

Environmentally Assisted Cracking: Theory and Practice — Environmentally Assisted Embrittlement and Cracking I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rakkam, Advanced Cooling Technologies

Wednesday AM Room: 31A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Reiner Kirchheim, University of Göttingen; Bai Cui, University of Nebraska-Lincoln

8:30 AM Invited

Hydrogen Embrittlement and Stress Corrosion Cracking as Examples of the Chemomechanics of Solids: *Reiner Kirchheim*¹; ¹University of Göttingen

9:10 AM

The Role of Hydrogen-enhanced Strain-induced Lattice Defects on Hydrogen Embrittlement Susceptibility of X80 Pipeline Steel: *Moeko Hattori*¹; Hiroshi Suzuki¹; Kenichi Takai¹; Yusuke Seko²; ¹Sophia University; ²Tokyo Gas

9:30 AM

Consequence of Hydrogen Desorption on Local Mechanical Properties and the Fracture Mechanisms of a Martensitic Steel: *Abdelali Oudriss*¹; Hélène Morillot²; Rémy Milet¹; Cyril Berziou¹; Stephane Cohendoz¹; Jean-Michel Sobrino³; Juan Creus¹; Xavier Feaugas¹; ¹University of La Rochelle; ²CETIM-Matériaux Métalliques et Surfaces; ³CETIM-Matériaux Métalliques et Ingénierie de Surface

9:50 AM

Design of Nickel Alloys and Superalloys with a High Resistance to Hydrogen Embrittlement: *Franck Tancret*¹; Miles Stopher²; Edern Menou¹; Gérard Ramstein¹; Pedro Rivera-Diaz-del-Castillo²; ¹Université de Nantes; ²University of Cambridge

10:10 AM Break**10:30 AM**

Corrosion of Nickel-Titanium, C110, and Al6061 in Gallium-based Liquid Metal Alloys: *Jacob Mingear*¹; Darren Hartl¹; ¹Texas A&M University

10:50 AM

Sensitization Effects on Tensile Behavior in 5XXX Series Aluminum Alloys: Macro- and Mesoscale Observations: *Benjamin Palmer*¹; John Lewandowski¹; ¹Case Western Reserve University

11:10 AM

Strain Rate Effects on the Stress Corrosion Cracking Behavior of Ni and Co Based Superalloys for Marine Applications: *Allison Popernack*¹; James Burns¹; ¹University of Virginia Center for Electrochemical Science and Engineering

11:30 AM

Stress-corrosion Cracking in Ti-8Al-1Mo-1V: *Sheng Cao*¹; Chao Voon Samuel Lim¹; Su-Ming Zhu¹; Xinhua Wu¹; ¹Monash University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Creep, Fatigue, and Environmental Interactions

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Wednesday AM
March 1, 2017

Room: 23C
Location: San Diego Convention Ctr

Session Chair: Jean-Briac le Graverend, Texas A&M University

8:30 AM

Fatigue Deformation Mode in a Polycrystalline Nickel Base Superalloy at Intermediate Temperature: Oxidation Assisted Process: *J.C. Stinville*¹; M.P. Echlin¹; P.G. Callahan¹; W.C. Lenthe¹; J. Miao²; T.M. Pollock¹; ¹University of California Santa Barbara; ²University of Michigan

8:50 AM

Fatigue Crack Initiation and Fatigue Crack Growth Behavior of AA7050-T7451 with Different Corrosion Morphologies: *Noelle Easter Co*¹; James Burns¹; ¹University of Virginia

9:10 AM

The Influence of Operating Slip Systems on the Dwell Sensitivity of Titanium Alloys: *Samuel Hemery*¹; Patrick Villechaise²; ¹ENSMA; ²CNRS

9:30 AM

Creep-fatigue Damage Mechanism in Cyclically-Softened Mod.9Cr-1Mo Ferritic-Martensitic Steel: *Meimei Li*¹; Weiyang Chen¹; Ken Natesan¹; ¹Argonne National Lab

9:50 AM

Damage Evolution in Thin Tin Sheets During Creep Fatigue Loading: *Syed Javid*¹; Wade Lanning¹; James Collins¹; Christopher Muhlstein¹; ¹Georgia Institute of Technology

10:10 AM Break**10:30 AM Invited**

Micromechanics of Biaxial Cold Dwell Fatigue Mechanisms in Ti-7Al Elucidated Using Far-field High-energy Diffraction Microscopy: *Aaron Stebner*¹; Garrison Hommer¹; Adam Pilchak²; ¹Colorado School of Mines; ²Air Force Research Laboratory

10:50 AM

On the Effects of Multiaxial Stress on Facet Nucleation in Cold Dwell Fatigue: Mitch Cuddihy¹; Adam Stapleton²; Steve Williams²; David Rugg²; *Fionn Dunne*¹; ¹Imperial College London; ²Rolls-Royce plc

11:10 AM

A Continuum Damage Model for Creep-Fatigue Interactions: *Jean-Briac le Graverend*¹; ¹Texas A&M University

11:30 AM Invited

Creep, Fatigue and Environmental Interactions and Their Effect on Crack Growth in Superalloys: *Jack Telesman*¹; Tim Gabb¹; Louis Ghosn¹; ¹NASA GRC

Fracture Properties and Residual Stresses in Small Dimensions — Fracture Mechanisms and Modeling

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Daniel Kiener, University of Leoben; Marco Sebastiani, Roma TRE university; Nagamani Jaya Balila, Max Planck Institut fuer Eisenforschung GmbH; William Gerberich, University of Minnesota; Siddhartha (Sid) Pathak, University of Nevada, Reno

Wednesday AM
March 1, 2017

Room: 21
Location: San Diego Convention Ctr

Session Chairs: Erik Bitzek, Friedrich-Alexander Universität Erlangen Nurnberg; Karsten Durst, Technical University Darmstadt

8:30 AM Introductory Comments**8:35 AM Invited**

Atomistic Simulations of Crack Nucleation and Propagation along Grain Boundaries: *Erik Bitzek*¹; Johannes Möller¹; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

9:05 AM

Directional Dependency of the Fracture Behavior of High Strength Pearlitic Steel Wires: *Bernhard Völker*¹; Marlene Kapp²; Reinhard Pippan²; Anton Hohenwarter¹; ¹Montanuniversität Leoben; ²Erich Schmid Institute, Austrian Academy of Sciences

9:25 AM

Brittle-to-ductile Transition of Quasicrystals at Small Scales: Cracking, Serrated flows, Diffusion and Phase Transformation: *Yu Zou*¹; Jeffrey Wheeler¹; Alla Sologubenko¹; Pawel Kuczera¹; Walter Steurer¹; Johann Michler²; Ralph Spolenak¹; ¹ETH Zurich; ²Empa Thun

9:45 AM

Coupling Discrete Dislocation Plasticity and Cohesive Zone Models: *Edmund Tarleton*¹; Angus Wilkinson¹; ¹Oxford University

10:05 AM Break**10:30 AM Invited**

Constitutive Modeling of Indentation Cracking in Fused Silica: *Karsten Durst*¹; ¹Technical University Darmstadt

11:00 AM

Critical Stresses in Intermittent Plasticity: Peter Derlet¹; *Robert Maass*²; ¹Paul Scherrer Institut; ²University of Illinois at Urbana-Champaign

11:20 AM Invited

Tensile Deformation Behaviour of Notched Nano-scale Metallic Glass Specimens: *Narasimhan Ramarathinam*¹; Indrasen Singh¹; ¹Indian Institute of Science

Friction Stir Welding and Processing IX — Lightweight Applications

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Wednesday AM Room: 9
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Christian Widener, South Dakota School of Mines and Technology

8:30 AM Introductory Comments

8:35 AM Invited

Friction Stir Welding of Thick Section Aluminium Alloys - New Techniques: *Jonathan Martin*¹; ¹TWI Technology Centre (Yorkshire)

8:55 AM

Effect of Friction Stir Processing on the Damage Resistance of 6xxx Series Aluminium Alloys: *Florent Hannard*¹; Aude Simar¹; Thomas Pardoen¹; Eric Maire²; ¹UCL; ²INSA-Lyon

9:15 AM

Effect of Process Parameters on the Residual Stress Distribution in Stationary Shoulder T-Joints: *Tianzhu Sun*¹; Matt Roy¹; Phil Withers¹; Phil Prangnell¹; ¹The University of Manchester

9:35 AM Invited

Friction Stir Weld Lap Joint Properties in Aeronautic Aluminum Alloys: *Gegoitz Aldanondo*¹; Ekaitz Arruti¹; Alberto Echeverria¹; ¹IK4-LORTEK

9:55 AM

Flow Features in Shoulder Zone during Scroll Tool Friction Stir Welding Thick 6061 Aluminum Plates: *David Yan*¹; Xiaoming Wang²; Guy Littlefair³; ¹University of Wisconsin-Green Bay; ²Purdue University; ³Deakin University

10:15 AM Break

10:30 AM

Corrosion Fatigue Performance of Friction Stir Processed Magnesium Alloy AZ31B-H24: A Comparative Evaluation: Daniel Tapp¹; *Joseph McDermid*¹; Joseph Kish¹; ¹McMaster University

10:50 AM

High-speed FSW Aluminum Alloy 7075 Microstructure and Corrosion Properties: *Jingyi Zhang*¹; Piyush Upadhyay²; Yuri Hovanski²; David Field¹; ¹Washington State University; ²Pacific Northwest National Laboratory

11:10 AM

Round Material Flow in Friction Stir Welding of Aluminum Alloy: *Xiaochao Liu*¹; Yufeng Sun¹; Yoshiaki Morisada¹; Hidetoshi Fujii¹; ¹Osaka University

11:30 AM

Friction Stir Welding of Thick Aluminium Welds – Challenges and Perspectives: *Murshid Imam*¹; Yufeng Sun¹; Hidetoshi Fujii¹; Yasuhiro Aoki¹; Nishu Ma²; Seiichiro Tsutsumi¹; Hidekazu Murakawa¹; ¹Joining and Welding Research Institute, Osaka University; ²JSOL Corporation, Engineering Technology Division

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Process-Property-Performance Correlations: Ferrites, Alloys, Devices & Systems

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Wednesday AM Room: 33B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Fay Hua, Intel; Seong Koh, University of Texas - Arlington

8:30 AM Introductory Comments

8:40 AM Invited

Enhanced Magnetic Properties and Spin-Seebeck Effect in Epitaxial Spinel Ferrite Thin Films Grown on Lattice-Matched Substrates: *Arunava Gupta*¹; ¹University of Alabama

9:10 AM

Domain Mechanisms for Magnetization and Deformation Behaviors of Fe-Ga Alloys: *Matt Tianen*¹; Yongmei Jin¹; ¹Michigan Tech

9:30 AM Invited

Spintronic Integrated Circuits: Scalable Magnetic Nano Devices for Energy-Efficient and Secure Systems: *Seung Kang*¹; ¹Qualcomm Technologies, Inc.

10:00 AM Break

10:20 AM Invited

Ohmic Contacts for High-efficiency GaN-based Light-emitting Diodes: How to Enhance Current Injection Efficiency: *Tae-Yeon Seong*¹; ¹Korea University

10:50 AM Invited

State of the Art in Materials Enabled Optical Fiber Based Sensing for Harsh Environment Applications: *Paul Ohodnicki*¹; ¹National Energy Technology Laboratory

11:20 AM

Mobile Ions in Dielectrics and Their Impacts to Integrity of Interconnects in Microelectronic Devices: *Choong-un Kim*¹; ¹University of Texas at Arlington

Gamma (FCC)/Gamma-Prime (L1₂) Co-Based Superalloys II — Processing and Environmental Resistance

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee

Program Organizers: Eric Lass, National Institute of Standards and Technology; Qiang Feng, University of Science and Technology Beijing; Alessandro Moturra, University of Birmingham; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Wei Xiong, Northwestern University

Wednesday AM
March 1, 2017

Room: Pacific 14
Location: Marriott Marquis Hotel

Session Chairs: Chantal Sudbrack, NASA Glenn Research Center; David Dye, Imperial College

8:30 AM Keynote

Developing Polycrystalline Ni-Co Rich Alloys, Strengthened by Co₃AlW L1₂ Gamma Prime Precipitates for High Temperature Applications: *David Dye*¹; Farah Ismail¹; Trevor Lindley¹; Paul Mulvey¹; Richard Chater¹; Ioannis Bantounas¹; Barbara Shollock²; Mark Hardy³; ¹Imperial College; ²The University of Warwick; ³Rolls-Royce plc

9:10 AM Invited

Novel Cast and Wrought γ/γ' Cobalt Base Superalloys - Creep Properties, Deformation Mechanisms, and Oxidation: *Mathias Göken*¹; Lisa Freund¹; Steffen Neumeier¹; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

9:40 AM

Supersolvus Thermomechanical Processing of Cast Co-Base Superalloys: Donald Weaver¹; *Katelin Wertz*¹; S. Lee Semiatin¹; Rajiv Shivpuri²; Stephen Niezgodza²; Michael Mills²; ¹Air Force Research Laboratory; ²The Ohio State University

10:00 AM Break

10:20 AM Invited

Coating Systems for New Cobalt Base Single Crystals: Wesley Jackson¹; Mike Titus¹; *Tresa Pollock*¹; Matt Begley¹; ¹University of California Santa Barbara

10:50 AM

Role of Two Phase Microstructure during Early Stages of High Temperature Oxidation of Co-base Superalloys: *Martin Weiser*¹; Sannakaisa Virtanen¹; ¹University of Erlangen-Nuernberg (FAU)

11:10 AM

Influence of Alloy Composition on Oxide Scale Formation in Novel Co-Based $\gamma-\gamma'$ Superalloys: *Colin Stewart*¹; Akane Suzuki²; Tresa Pollock¹; Carlos Levi¹; ¹University of California Santa Barbara; ²GE Global Research

11:30 AM

A High-throughput Search for New Ternary Superalloys: *Chandramouli Nyshadham*¹; Corey Oses²; Jacob Hansen¹; Ichiro Takeuchi³; Stefano Curtarolo²; Gus Hart¹; ¹Brigham Young University Provo Utah; ²Duke University; ³University of Maryland, College Park

11:50 AM

Phase Stability, Element Partitioning and Atomic Site Location in Co-9Al-9W-2X Alloys: Li Wang¹; Michael Oehring¹; Uwe Lorenz¹; Andreas Stark¹; *Florian Pyczak*¹; ¹Helmholtz-Zentrum Geesthacht

GAT-2017 (Gamma Alloys Technology - 2017) — Processing-Microstructure-Property Relationships

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Wednesday AM
March 1, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Fritz Appel, Helmholtz-Zentrum Geesthacht; Juraj Lapin, IMMM, Slova Academy of Science

8:30 AM Invited

Control of Microstructure and Mechanical Property and Superplasticity for High Nb-TiAl Alloy Sheet: *Junpin Lin*¹; Yongfeng Liang¹; Laiqi Zhang¹; Guojian Hao¹; Xiangjun Xu²; ¹University of Science and Technology Beijing; ²Zhongyuan University of Technology

8:55 AM Invited

Methodological Discussion on Enhancing the Temperature Tolerance of TiAl Alloys: *Ji Zhang*¹; Xiwen Zhang¹; Jing Zhu²; ¹China Iron and Steel Research Institute Group; ²Tsinghua University

9:20 AM Invited

Microstructure and Mechanical Properties of In-situ TiAl Matrix Composites Reinforced with Ti₂AlC Particles: *Juraj Lapin*¹; ¹Institute of Materials and Machine Mechanics, Slovak Academy of Sciences

9:45 AM

Gamma Alloy Process-Microstructure Combinations vs. Deformation and Fracture at Ambient as well as Elevated Temperatures: *Young-Won Kim*¹; Sang-Lan Kim¹; ¹Gamteck LLC

10:05 AM Break

10:20 AM Invited

Research Progress on Gamma TiAl Alloy Technology in NPU: *Hongchao Kou*¹; Bin Tang¹; Liang Cheng¹; Zhigang Sun²; Jinshan Li¹; ¹State Key Laboratory of Solidification Processing, Northwestern Polytechnical University; ²Shaanxi Engineering Research Center for Advanced Materials and Solidification Processing

10:45 AM

Microstructure-sensitive Computational Scheme for Fatigue Resistance of Gamma-TiAl TNM Alloys: *Adrienne Muth*¹; Paul Kern¹; Aaron Tallman¹; Thomas Payne¹; Don Shih²; Ben Smith²; David McDowell¹; ¹Georgia Institute of Technology; ²Boeing Research and Technology

11:05 AM Invited

R-curve Behaviour of Different Nearly Lamellar Microstructures in an Intermetallic Ti-43.5Al-4Nb-1Mo-0.1B Alloy: *Martin Schloffer*¹; Thomas Leitner²; Svea Mayer³; Helmut Clemens³; Jörg Esslinger¹; Wilfried Smarsly¹; Reinhard Pippan²; ¹MTU Aero Engines AG; ²Erich Schmid Institute of Material Science, Austrian Academy of Sciences; ³Montanuniversität Leoben

11:30 AM

Mechanical Behavior and Microstructure Evolution of Fine-grained High Nb Containing TiAl Alloy under Isothermal Compression: *Yudong Chu*¹; Jinshan Li¹; Bin Tang¹; Hongchao Kou¹; ¹Northwestern Polytechnical University

11:50 AM

Fracture and Fatigue Crack Growth Behavior of Wrought Gamma Titanium Aluminide Ti-43Al-4Nb-1Mo in Different Microstructure Conditions: *Matthew Dahar*¹; Thomas Podbesek²; Sesh Tamirisakandala²; John Lewandowski¹; ¹Case Western Reserve University; ²Alcoa Titanium & Engineered Products

High Entropy Alloys V — Structures and Mechanical Properties I

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Wednesday AM Room: 32B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Takeshi Egami, University of Tennessee; Jeffrey Hawk, National Energy Technology Laboratory

8:30 AM Invited

Electronic and Lattice Heterogeneity in High-entropy Alloys: *Takeshi Egami*¹; ¹University of Tennessee

8:50 AM Invited

Creep Strength, Deformation, and Fracture in Single Phase High Entropy Alloy: *Jeffrey Hawk*¹; Kyle Rozman²; John Sears³; Paul Jablonski¹; Michael Gao³; ¹U.S. Department of Energy, National Energy Technology Laboratory; ²ORISE; ³AECOM

9:10 AM Invited

Hardening Mechanisms in High-entropy Alloys: *Z. P. Lu*¹; ¹University of Science and Technology Beijing

9:30 AM Invited

Mechanical and Corrosion Properties of CoCrFeNiTi-based High-entropy Alloy Additive Manufactured Using Selective Electron Beam Melting: *Tadashi Fujieda*¹; Hiroshi Shiratori²; Kosuke Kuwabara³; Mamoru Hirota⁴; Takahiko Kato⁴; Kenta Yamanaka²; Yuichiro Koizumi²; Akihiko Chiba²; Seiichi Watanabe⁵; ¹Hitachi, Ltd.; ²Tohoku University; ³Hitachi Ltd.; ⁴Hitachi, Ltd.; Hokkaido University; ⁵Hokkaido University

9:50 AM

Nanomechanical Behavior and Nano-indentation Size Effects in High Entropy Alloys: Sanghita Mridha¹; Hunter Oltman¹; *Sundeep Mukherjee*¹; ¹University of North Texas

10:10 AM Break

10:30 AM Invited

Short Range Order in a BCC V-Nb-Mo-Ta-W High Entropy Alloy: Hongru Du¹; Jian Han¹; Edwin Antillon²; Christopher Woodward²; *David Srolovitz*¹; ¹University of Pennsylvania; ²Air Force Research Laboratory

10:50 AM

The Study of Fatigue Behavior in Refractory High Entropy Alloys: *Shuying Chen*¹; Chien-Chang Juan²; Jien-Wei Yeh²; Karin Dahmen³; Peter Liaw¹; ¹University of Tennessee, Knoxville; ²National Tsing Hua University; ³University of Illinois at Urbana Champaign

11:10 AM Invited

Microstructural Evolution and Mechanical Behavior of a Non-equiatomc High-entropy Alloy Reinforced by Nanoprecipitates: Zhiqiang Fu¹; Benjamin MacDonal¹; Baolong Zheng¹; Weiping Chen²; Yaojun Lin³; Fei Chen³; Yizhang Zhou¹; Lianmeng Zhang³; *Enrique Lavermia*¹; ¹University of California, Irvine; ²South China University of Technology; ³Wuhan University of Technology

11:30 AM Invited

Atomic-level Disorder and Defect Dynamics in Concentrated Solid-solution Alloys: *Yanwen Zhang*¹; Shijun Zhao²; Fredric Granberg³; Kai Nordlund³; Flyura Djurabekova³; William Weber⁴; ¹Oak Ridge National Laboratory; University of Tennessee; ²Oak Ridge National Laboratory; ³University of Helsinki; ⁴University of Tennessee; Oak Ridge National Laboratory

11:50 AM

Stability of Ordered Precipitates in Face Centered Cubic based High Entropy Alloys-Al 0.3 CoFeCrNi and Al 0.3 CuFeCrNi 2 and their Effect on Mechanical Properties: *Bharat Gwalani*²; Vishal Soni¹; J.Y. Hwang²; Deep Choudhuri¹; Rajarshi Banerjee¹; ¹University of North Texas Denton; ²Institute of Advanced Composite Materials, Korea Institute of Science and Technology

High Temperature Electrochemistry III — Nuclear Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab; Boyd Davis, Kingston Process Metallurgy Inc.

Wednesday AM Room: 16A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Jerome Downey, Montana Tech of the Univ of Montana; Michael Simpson, University of Utah

8:30 AM

Optimized Voltammetry Methods for Measuring Concentration of Multiple Rare Earths and Actinides in Molten LiCl-KCl: *Michael Simpson*¹; Devin Rappleye¹; Chao Zhang¹; ¹University of Utah

9:00 AM

Zirconium Management in the Mk-IV Electrorefiner: *Guy Fredrickson*¹; ¹Idaho National Laboratory

9:30 AM

Initial Operation of Kg-Scale Electrolytic Reduction and Salt Distillation Equipment for the Pyroprocessing of Uranium Oxide in a Hot Cell: *Steven Herrmann*¹; ¹Idaho National Laboratory

10:00 AM Break

10:20 AM

Thorium and Uranium Electrodeposition from Molten LiCl-KCl onto Alpha Spectroscopy Semiconductor Detector Surface: *Milan Stika*¹; Joshua Jarrell²; Thomas Blue²; Lei Cao²; Michael Simpson¹; ¹University of Utah; ²The Ohio State University

10:50 AM

Electrochemical Techniques for Nuclear Safeguards in Molten Salt: *Vickram Singh*¹; Dev Chidambaram¹; ¹University of Nevada, Reno

11:20 AM

Electrochemistry in Molten 2LiF-BeF₂ Salt for the Fluoride Salt-Cooled High Temperature Reactor Applications: *William Doniger*¹; Thomas Chrobak¹; Brian Kelleher¹; Kieran Dolan¹; Guoping Cao¹; Mark Anderson¹; Kumar Sridharan¹; ¹University of Wisconsin-Madison

Hume-Rothery Award Symposium: Alloy Phase Chemistry at the Atomic Level - Opportunities and Challenges — Session V

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Shuanglin Chen, CompuTherm LLC; Frederic Danoix, Université de Rouen; Indrajit Charit, University of Idaho

Wednesday AM Room: 31C
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Frederic Danoix, CNRS - Université de Rouen; Michael Moody, University of Oxford

8:30 AM Invited

Outlooks for Atom Probe Microscopy: *Simon Ringer*¹; ¹The University of Sydney

9:00 AM Invited

Combining Small Angle Scattering, Atom Probe Tomography and Differential Calorimetry for a Better Characterization of Solid Solution Decomposition: *Frederic De Geuser*¹; Rosen Ivanov¹; Laurent Couturier¹; Alexis Deschamps¹; Baptiste Gault²; ¹SIMAP - CNRS - Univ. Grenoble Alpes; ²Max-Planck Institut für Eisenforschung

9:30 AM Invited

Kinetic Pathways in Phase Separation Processes: Atom-Probe Tomography versus Modeling: *Didier Blavette*¹; Isabelle Mouton²; Thomas Philippe³; Manon Bonvallet⁴; ¹Normandie University; ²CEA; ³CNRS; ⁴KTH

10:00 AM Break

10:20 AM Invited

Atomic Scale Modeling of Phase Separation in Fe-Cr Alloys: *Frederic Soisson*¹; ¹CEA Saclay

10:50 AM Invited

Spinodal Decomposition in FeCr Alloys: From Fundamental to Applications: *Frederic Danoix*¹; Alexander Dahlstrom¹; Didier Blavette¹; Helena Zapolsky¹; ¹CNRS - Université de Rouen

11:20 AM Invited

Phase Decomposition in Fe-Cr Alloys under Irradiation: Mukesh Bachhav¹; Elaina Anderson¹; G. Robert Odette²; *Emmanuelle Marquis*¹; ¹University of Michigan; ²University of California - Santa Barbara

11:50 AM Concluding Comments

Magnesium Technology 2017 — Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue I

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday AM Room: 5B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Bin Li, University of Nevada, Reno; Christopher Barrett, Mississippi State University

8:30 AM Keynote

Twinning Super Dislocations to Help Understand Strength: *Matthew Barnett*¹; ¹Deakin University

9:10 AM

Basal Dislocation Transmutation through {1012} Twin Boundaries: *Christopher Barrett*¹; Haitham El Kadiri¹; ¹Mississippi State University

9:30 AM

Contraction Twinning Dominated Tensile Deformation and Subsequent Fracture in Extruded Mg-1Mn (wt%) at Ambient Temperature: Ajith Chakkedath¹; Philip Eisenlohr¹; Tias Maiti¹; *Carl Boehlert*¹; Jan Bohlen²; Sangborg Yi²; Dietmar Letzig²; ¹Michigan State University; ²Magnesium Innovation Centre MagIC, Helmholtz Centre

9:50 AM

Ductility Enhancement in Mg Alloys by Anisotropy Engineering: Shamik Basu¹; Ebubekir Dogan¹; Babak Kondori¹; Ibrahim Karaman¹; *Amine Benzerga*¹; ¹Texas A&M University

10:10 AM Break

10:30 AM

Modeling the Effect of Alloying Elements in Magnesium on Deformation Twin Characteristics: *M. Arul Kumar*¹; Irene J Beyerlein¹; Ricardo Lebensohn¹; Carlos Tome¹; ¹Los Alamos National Laboratory

10:50 AM

Simulating Discrete Twin Evolution in Magnesium Using a Novel Crystal Plasticity Finite Element Model: *Jiahao Cheng*¹; Somnath Ghosh¹; ¹Johns Hopkins University

11:10 AM

The Effect of {10-12} Twin Boundary on the Evolution of Defect Substructure: *Fulin Wang*¹; C.D. Barrett²; K. Hazeli³; K. Molodov⁴; T. Al-Samman⁴; A. Oppedal⁵; D. Molodov⁴; A. Kontsos⁶; K.T. Ramesh³; H. El Kadiri⁵; S.R. Agnew¹; ¹Department of Materials Science and Engineering, University of Virginia; ²Center for Advanced Vehicular Systems, Mississippi State University; ³Hopkins Extreme Materials Institute, The Johns Hopkins University; ⁴Institute of Physical Metallurgy and Metal Physics, RWTH Aachen University; ⁵Department of Mechanical Engineering, Mississippi State University; ⁶Department of Mechanical Engineering and Mechanics, Drexel University

11:30 AM

Zinc Segregation on Interfaces Induced by Severe Plastic Deformation of an Mg-Zn-Y Alloy at Room Temperature: D. Althaf Basha¹; Ryoji Sahara¹; Hidetoshi Somekawa¹; Julian Rosalie²; *Alok Singh*¹; Koichi Tsuchiya¹; ¹National Institute for Materials Science; ²Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria

Magnesium Technology 2017 — Solidification and Processing II

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday AM Room: 5A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Tracy Berman, University of Michigan

8:30 AM

Processing of Mg-sheet via Twin Roll Casting: *Dietmar Letzig*¹; Roland Hoppe¹; Jonas Isakovic¹; Gerrit Kurz¹; ¹MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht

8:50 AM

Effects of Mn and Zn Solutes on Grain Refinement of Commercial Pure Magnesium: Jian Gu¹; Yuanding Huang¹; Mingxing Zhang²; Karl Ulrich Kainer¹; *Norbert Hort*¹; ¹Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht; ²School of Mechanical and Mining Engineering, The University of Queensland

9:10 AM

Experimental Investigation of Continuous Magnesium Production by Carbothermal Reduction: *Boris Chubukov*¹; Scott Rowe¹; Aaron Palumbo¹; Ilias Hischier¹; Alan Weimer¹; ¹CU-Boulder

9:30 AM

Grain Refinement of Mg-Gd-Y(Zr) Alloys through Squeeze Casting: *Cunlong Wang*¹; *Kaka Ma*²; *Enrique J. Lavernia*²; *Guohua Wu*¹; *Wencai Liu*¹; *Wenjiang Ding*¹; ¹Shanghai Jiao Tong University; ²University of California, Irvine

9:50 AM

Precipitation Behavior of Mg-Al-Sn-Zn(-Na) Alloys: *Sumi Jo*¹; *Yohan Go*¹; *Kwang Seon Shin*²; *Bong Sun You*³; *Young Min Kim*³; ¹Korea University of Science and Technology; ²Seoul National University; ³Korea Institute of Materials Science

10:10 AM Break**10:30 AM**

Study on the Direct Oxidation Thermal Decomposition of Magnesium Chloride Byproduct in the Sponge Titanium Production Process to Prepare Magnesium Oxide: *Liping Niu*¹; *Zhang Ting'an*¹; *Guozhi Lv*¹; *Aiping Zhou*¹; ¹Northeastern University

10:50 AM

Thermal Decomposition Kinetics of Pre-prepared Pellets for the Novel Silicothermic Process: *Lukui Guan*¹; *Zhang Ting'an*¹; *Zhihe Dou*¹; *Daxue Fu*¹; *Ming Wen*¹; ¹Northeastern University

11:10 AM

Thermal Stability of Cryomilled Mg Alloy Powder: *Dikai Guan*¹; *Mark Rainforth*¹; *Joanne Sharp*¹; *Junheng Gao*¹; ¹University of Sheffield

11:30 AM

Thermomechanical Processing of Thixomolded Alloys: *Raymond Decker*¹; *Stephen LeBeau*¹; *Tracy Berman*²; *Tori Miller*³; *Wayne Jones*²; *Tresa Pollock*⁴; *Nir Moskovich*⁵; *Boris Bronfin*⁵; ¹Thixomat, Inc/nanoMAG LLC; ²Univ of Michigan; ³North Carolina State University; ⁴Univ of California Santa Barbara; ⁵ICL Magnesium

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Structural Materials II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Wednesday AM
March 1, 2017

Room: Cardiff
Location: Marriott Marquis Hotel

Session Chairs: Clarissa Yablinsky, Los Alamos National Laboratory; Indrajit Charit, University of Idaho

8:30 AM

Irradiation-Induced Microstructure of Proton Irradiated Commercial Austenitic Alloys: *Miao Song*¹; *Gary Was*¹; ¹University of Michigan

8:50 AM

Neutron Irradiation-induced Creep of IG-110 Nuclear Graphite: *Anne Campbell*¹; *Eiji Kunimoto*²; *Yutai Katoh*¹; ¹Oak Ridge National Laboratory; ²Toyo Tanso Co. Ltd.

9:10 AM

Investigation of Property-Property Correlations for Irradiated Steels: *Peter Wells*¹; *Takuya Yamamoto*¹; *Nathan Almirall*¹; *Randy Nanstad*²; *Timothy Milot*¹; *G. Odette*¹; ¹UC Santa Barbara; ²Oak Ridge National Laboratory

9:30 AM

Mitigation of IASCC Susceptibility in a BWR-irradiated 304L Stainless Steel Utilizing Post-irradiation Annealing: *Justin Hesterberg*¹; *Zhijie Jiao*¹; *Gary Was*¹; ¹University of Michigan

9:50 AM

Role of Localized Deformation and Grain Boundary Plane Orientation on Crack Initiation in Irradiated Stainless Steels: *Drew Johnson*¹; *Bryan Kühr*²; *Diana Farkas*²; *Gary Was*¹; ¹University of Michigan; ²Virginia Tech

10:10 AM Break**10:30 AM**

The Effect of Low-fluence Neutron Irradiation on Cast Austenitic Stainless Steels: *Siwei Chen*¹; *Yuichi Miyahara*¹; *Akiyoshi Nomoto*¹; *Kenji Nishida*¹; ¹Central Research Institute of Electric Power Industry

10:50 AM

Effects of Thermal Aging and Neutron Irradiation on Cast Austenitic Stainless Steels: *Wei-Ying Chen*¹; *Yiren Chen*¹; *Chi Xu*²; *Zhangbo Li*²; *Yong Yang*²; *Nicholaos Demas*¹; ¹Argonne National Laboratory; ²University of Florida

11:10 AM

Utilizing In-situ Microtensile Testing to Evaluate Mechanical Property Changes Due to Ion-beam Irradiation: *Hi Vo*¹; *Stuart Maloy*²; *Peter Hosemann*¹; ¹University of California, Berkeley; ²Los Alamos National Laboratory

11:30 AM

In-situ High Energy X-ray Characterization of Neutron Irradiated HT-UPS Stainless Steel under Tensile Deformation: *Chi Xu*¹; *Xuan Zhang*²; *Meimei Li*²; *Jun-Sang Park*²; *Peter Kenesei*²; *Jonathan Almer*²; *Yong Yang*³; ¹Argonne National Laboratory / University of Florida; ²Argonne National Laboratory; ³University of Florida

Materials Engineering of Soft Magnets for Power and Energy Applications — Nanocomposite Soft Magnetic Alloys for Power Electronics, Transformers, and Inductors

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Francis Johnson, GE Global Research; Alex Leary, Carnegie Mellon University; Tanjore Jayaraman, University of Michigan; Lajos Varga, Wigner Research Center for Physics

Wednesday AM
March 1, 2017

Room: 25B
Location: San Diego Convention Ctr

Session Chair: Paul Ohodnicki, NETL

8:30 AM Invited

Challenges to the Commercial Acceptance of Amorphous and Nanocrystalline Soft Magnetic Materials: *Eric Theisen*¹; *Jerry Allen*¹; *Naoki Ito*¹; ¹Metglas Inc.

9:00 AM Invited

Magnetic Material Excited by Power Electronics in Electrical Engineering: *Keisuke Fujisaki*¹; ¹Toyota Technological Institute

9:30 AM

Nanocomposite Soft Magnetic Materials for High Frequency and High Power Conversion Applications: *Paul Ohodnicki*¹; *Vladimir Keylin*²; *Alex Leary*²; *Michael McHenry*²; *Subhashish Bhattacharya*³; ¹National Energy Technology Laboratory; ²Carnegie Mellon University; ³North Carolina State University

9:50 AM Break**10:05 AM Invited**

Structure-Processing-Property Relationships in High Temperature Nanocomposite Soft Magnets: *Matthew Willard*¹; *Song Lan*¹; *Bowen Dong*¹; *Anthony Martone*¹; ¹Case Western Reserve University

10:35 AM

Crystallization Products and Strain Annealing Effects in (FeNi-x)80Nb4Si2B14 Metal Amorphous Nanocomposites (MANCs): *Natan Aronhime*¹; Vladimir Keylin¹; Paul Ohodnicki²; Michael McHenry¹; ¹Carnegie Mellon University; ²National Energy Technology Laboratory

10:55 AM

Straighten the Hysteresis Loop of Finemet Type Nanocrystalline Ribbon: *Lajos Varga*¹; ¹Wigner Research Center for Physics of Hung. Acad. Sciences

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Intermetallics and Additive Manufacturing of Superalloys

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmaier, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Wednesday AM
March 1, 2017

Room: Pacific 16
Location: Marriott Marquis Hotel

Session Chairs: Helmut Clemens, Montanuniversitaet Leoben; Haruyuki Inui, Kyoto University

8:30 AM Invited

Iron Aluminides: Recent Alloy Developments and Industrial Processing: *Martin Palm*¹; ¹Max-Planck-Institut für Eisenforschung GmbH

9:00 AM Invited

Directionally Solidified Ni-Al-X Ternary Eutectics for High-Temperature Applications: G. Liu¹; P. Hallensleben¹; J. Frenzel¹; X. Liu¹; J. Pfitzing-Micklich¹; E. P. George¹; ¹Ruhr University Bochum

9:30 AM

Novel High Strength Eutectic Intermetallics: Chandrasekhar Tiwary¹; Vilas Gunjal¹; Abhishek Sharma¹; Kamanio Chattopadhyay¹; *Dipankar Banerjee*¹; ¹Indian Institute of Science

9:50 AM Break

10:10 AM Invited

Plasticity of Hard and Brittle Materials at Micron-meter Size Scales: *Haruyuki Inui*¹; Kyosuke Kishida¹; Norihiko Okamoto¹; ¹Kyoto University

10:40 AM Invited

Advanced γ -TiAl Based Alloys: *Helmut Clemens*¹; Svea Mayer¹; ¹Montanuniversität Leoben

11:10 AM

Microstructure–property Relationship in Next Generation TiAl Alloys: *Soumya Nag*¹; Akane Suzuki¹; Manuel Acosta²; Michael Weimer²; Bernard Bewlay¹; ¹GE Global Research; ²GE Aviation

11:30 AM

Additive Manufacturing of High Temperature Alloys: An Emphasis on the Current State and Future Direction of Ni-base Superalloy Processability in AM: *Michael Kirka*¹; Ryan Dehoff¹; ¹Oak Ridge National Laboratory

11:50 AM

Microstructure Characterization of Single-crystal René N5 Fabricated through Scanning Laser Epitaxy: *Amrita Basak*¹; Suman Das¹; ¹Georgia Institute of Technology

Materials Processing Fundamentals — Steelmaking

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee

Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts; Guillaume Lambotte, Boston Electromet

Wednesday AM
March 1, 2017

Room: 17B
Location: San Diego Convention Ctr

Session Chairs: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology

8:30 AM

A Systems Approach for Modeling the Dynamic Thermomechanical Response of Carbon Steels: *Shengyuan Li*¹; Steven Mates¹; Mark Stoudt¹; Carelyn Campbell¹; Greta Lindwall¹; Sindhura Gangireddy¹; ¹National Institute of Standards and Technology

8:50 AM

Development of Ultra High-basicity Mold Fluxes for Peritectic Steel Continuous Casting: *Xiao Long*¹; Shengping He¹; Qian Wang¹; Petrus Pistorius²; ¹Chongqing University; ²Carnegie Mellon University

9:10 AM

Evolution and Formation of CaS-bearing Inclusion in Low-Carbon Al-killed Steel: Yanhui Sun¹; *Xuefeng Bai*¹; ¹University of Science and Technology Beijing

9:30 AM

Influence of MgO Saturation on the ConSteel EAF Foaming Slag Practice: *Esmail Ahmad*¹; Magnus Krokstad²; Reza Beheshti¹; Ragnhild Aune¹; ¹NTNU; ²Celsa Nordic Amerinsstål

Materials Science for High-Performance Permanent Magnets — Nd-Fe-B Processing / New RE-lean Hard Magnets

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirose, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Wednesday AM
March 1, 2017

Room: 24C
Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Oliver Gutfleisch, Technical University Darmstadt; Konstantin Skokov, Technical University Darmstadt

8:30 AM Invited

Prospects for Advanced Manufacturing of Magnets: *Scott McCall*¹; ¹LLNL

8:55 AM

Microstructure Formation of Strip-cast R-Fe-B Alloys for Magnets: *Kazuhiko Yamamoto*¹; Masashi Matsuura²; Satoshi Sugimoto²; ¹Santoku Corporation; ²Tohoku University

9:15 AM

Texture Development Mechanism in HDDR Processed Nd-Fe-B Magnet: *Tae-Hoon Kim*¹; Jung-Goo Lee²; Hae-Woong Kwon³; Cheol-Woong Yang¹; ¹Sungkyunkwan University; ²Korea Institute of Materials Science; ³Pukyong National University

9:35 AM

Magnetic Anisotropy and Crystallographic Alignment in *d*-HDDR Process of Nd-Fe-B-Ga-Nb Powders: *Takashi Horikawa*¹; Masashi Matsuura¹; Satoshi Sugimoto¹; Masao Yamazaki²; Chisato Mishima²; ¹Tohoku University; ²Aichi Steel Corporation

9:55 AM Break**10:10 AM Invited**

Recent Developments in RFe₁₂-type Compounds for Permanent Magnets: A.M. Gabay¹; *George Hadjipanayis*¹; ¹University of Delaware

10:35 AM

Temperature Dependence of the Magnetization and Magnetic Anisotropy Measured on the Epitaxial RFe₁₂(-N₂) (R = Sm and Nd) Thin Films with ThMn₁₂ Structure: *Yusuke Hirayama*¹; Yukiko Takahshi¹; Satoshi Hirose¹; Kazuhiro Hono¹; ¹National Institute for Materials Science

10:55 AM

New Hard Magnetic ThMn₁₂-type phases with Low Rare Earth Contents for Permanent Magnet Applications: Andrés Martín-Cid¹; *Daniel Salazar*¹; Aleksander Gabay²; Ana María Schönhöbel¹; Jose Garitaonandia³; Jose Manuel Barandiaran³; George Hadjipanayis²; ¹BCMaterials; ²University of Delaware; ³University of the Basque Country (UPV/EHU)

11:15 AM Invited

First-principles Study of ThMn₁₂-type Iron-based Rare-earth Intermetallics: *Takashi Miyake*¹; ¹AIST

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Materials for Nuclear Environments

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Wednesday AM
March 1, 2017

Room: 24A
Location: San Diego Convention Ctr

Session Chairs: Jacob Eapen, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory

8:30 AM Keynote

Enhanced Radiation Tolerance of Single Phase Solid Solution Alloys: Shi Shi¹; Mo Rigen¹; Shuai Wang¹; *Ian Robertson*¹; ¹University of Wisconsin-Madison

9:00 AM Invited

Deformation and Fracture Behavior of Irradiated and Nonirradiated Austenitic Stainless Steels: *Thak Sang Byun*¹; Maxim Gussev²; Timothy Lach¹; ¹Pacific Northwest National Laboratory; ²Oak Ridge National Laboratory

9:20 AM Invited

A Rate Theoretic Approach to Modeling Irradiation Creep: *Jacob Eapen*¹; ¹NC State University

9:40 AM Invited

Anisotropic Biaxial Creep of Textured Nb-modified Zircaloy-4 Tubing: *Nilesh Kumar*¹; Kaitlin Grundy¹; Boopathy Kombaiah²; Baifeng Luan³; K Murty¹; ¹NC State University; ²Carnegie Mellon University; ³Chongqing University

10:00 AM Break**10:20 AM Keynote**

The Enhanced Radiation-resistance of Ultrafine-grained Metals Produced by SPD Processing: *Ruslan Valiev*¹; Nariman Enikeev¹; Marina Abramova²; Bertrand Radigue³; Auriane Etienne³; Xavier Sauvage²; ¹Laboratory for Mechanics of Bulk Nanomaterials, Saint Petersburg State University; ²Ufa State Aviation Technical University; ³Université et INSA de Rouen

10:50 AM Keynote

High Temperature Behavior of Zirconium Alloys in Air: *Brian Jaques*¹; Jordan Vandegrift²; Patrick Price¹; Jatuporn Burns¹; Isabella van Rooyen³; Darryl Butt⁴; ¹Micron School of Materials Science and Engineering, Boise State University; Center for Advanced Energy Studies; ²Micron School of Materials Science and Engineering, Boise State University; ³Idaho National Laboratory; ⁴Micron School of Materials Science and Engineering, Boise State University; Center for Advanced Energy Studies; University of Utah

11:20 AM Invited

Synergistic Effects of Neutron Irradiation and Interstitial Nitrogen on Strain Aging in Ferritic Steels: *Nilesh Kumar*¹; Ahmad Alsabbagh¹; C. Seok²; K Murty¹; ¹NC State University; ²SungKyunKwan University

11:40 AM

Study of High Temperature Deformation Behavior of Graded Transition Joints (GTJs) (Relevance to Nuclear Power Plant Components): *Mohan Subramanian*¹; Sudarsanam Babu¹; Jonathan Galler²; John DuPont²; Xinghua Yu³; Zhili Feng³; ¹University of Tennessee; ²Lehigh University; ³Oak Ridge National Laboratory

Mechanical Behavior of Nanostructured Materials — Mechanical Properties of Thin Films, Low Dimensional Material

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Wednesday AM
March 1, 2017

Room: 30D
Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Yuntian Zhu, North Carolina State University; Cynthia Volkert, Universität Göttingen; Marc Legros, CEMES-CNRS

8:30 AM Invited

Experimental Observations of the Mechanical Behavior of Nanocrystalline Thin Films: *Kevin Hemker*¹; Suman Dasgupta¹; Paul Rottmann¹; ¹Johns Hopkins University

8:55 AM

Exploring Nanoindentation Induced Stress Field Propagation in Nanoporous Thin Films: *Tyler Vanover*¹; Nicolas Briot¹; Thomas Balk¹; ¹University of Kentucky

9:15 AM Invited

In-Situ Electron Microscopy of Fracture and Flow: Bahne Kapelle¹; Andreas Kelling¹; Florian Süß¹; *Cynthia Volkert*¹; ¹University of Göttingen

9:40 AM

Grain Boundaries Shear-migration Coupling and Its Impact on Plastic Deformation in Nanocrystalline Metals: *Marc Legros*¹; Frédéric Mompou¹; Nicolas Combe¹; Ehsan Hosseini²; Olivier Pierron²; ¹CEMES-CNRS; ²Georgia Institute of Technology

10:00 AM Break**10:20 AM Invited**

Strength and Deformation of Far-from-Equilibrium Metallic Systems at the Nano-scale: High-Entropy Alloys and Metallic Glasses: *Julia Greer*¹; Rachel Liontas¹; Adenike Giwa¹; H. Diao²; Peter Liaw¹; ¹California Institute of Technology; ²U Tennessee

10:45 AM

Grain Size or Film Thickness? Influence of the Two Main Length Scale Parameters on the Mechanical Reliability of Polymer-supported Metal Films: *Oleksandr Glushko*¹; Megan Cordill¹; ¹Erich Schmid Institute

11:05 AM Invited

The Mechanical Behavior of Highly Oriented, Nano-layered HCP/BCC Composites: *Irene Beyerlein*¹; Milan Ardeljan²; Marko Knezevic²; Nathan Mara¹; Daniel Savage²; Sven Vogel¹; Rodney McCabe¹; John Carpenter¹; ¹Los Alamos National Laboratory; ²University of New Hampshire

11:30 AM

Structure Dependent Creep Behavior of CuNb Nanolaminates: *Jaclyn Avallone*¹; Thomas Nizolek¹; Irene Beyerlein¹; Nathan Mara²; Tresa Pollock¹; ¹University of California Santa Barbara; ²Los Alamos National Laboratory

11:50 AM

Influence of Severe Plastic Deformation on the Local Deformation Behavior of Nanostructured Metals under Extreme Conditions: *Verena Maier-Kiener*¹; Alexander Leitner²; Reinhard Pippan³; Daniel Kiener²; ¹Montanuniversität Leoben - Physical Metallurgy & Materials Testing; ²Montanuniversität Leoben - Materials Physics; ³Austrian Academy of Sciences - Erich-Schmid-Institute for Materials Science

Microstructural Processes in Irradiated Materials — Austenitic Alloys

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Wednesday AM
March 1, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Djamel Kaoumi, North Carolina State University; Zhijie Jiao, University of Michigan

8:30 AM Invited

The Role of Deformation in Irradiation Assisted Stress Corrosion Cracking: *Gary Was*¹; Drew Johnson¹; Ian Robertson²; Diana Farkas³; ¹University of Michigan; ²University of Wisconsin; ³Virginia Tech

9:00 AM

Plastic Deformation Mechanisms Accompanying Stress Corrosion Cracking in Highly Irradiated Austenitic Steels: *Maxim Gussev*¹; Kevin Field¹; Donovan Leonard¹; Gary Was²; Keith Leonard¹; ¹Oak Ridge National Laboratory; ²University of Michigan

9:20 AM

Study of Microstructural Evolution of 304 Stainless Steels by Atom Probe Tomography: *Bertrand Radiguel*¹; Bertrand Michaut²; Brigitte Décamps³; Faiza Sefit⁴; Joël Malaplate²; ¹GPM UMR CNRS 6634 - Université et INSA de Rouen; ²CEA Saclay, DEN/DANS/DMN/SRMA; ³CSNSM Orsay; ⁴EDF R&D, département MMC, Groupe Métallurgie

9:40 AM

Post-irradiation Annealing Effect on the Irradiated Microstructure of a BWR-irradiated 304L Stainless Steel: *Zhijie Jiao*¹; Justin Hesterberg¹; Gary Was¹; ¹University of Michigan

10:00 AM Break

10:15 AM Invited

Role of Grain Boundary Phenomena on Stress Corrosion Cracking in LWR Environments: *Daniel Schreiber*¹; Matthew Olszta¹; Stephen Brueemmer¹; ¹Pacific Northwest National Laboratory

10:45 AM

Mechanical Characterization of In Service Inconel X-750 Annulus Spacers: *Cameron Howard*¹; Peter Hosemann¹; Scott Parker¹; Malcolm Griffiths²; Colin Judge²; David Poff²; ¹UC Berkeley; ²Canadian Nuclear Laboratories

11:05 AM

Microstructural Evolution and Mechanical and Fracture Behavior of CASS under Accelerated Thermal Aging: *Timothy Lach*¹; Thak Byun¹; ¹Pacific Northwest National Laboratory

11:25 AM

Irradiation-induced Nanoclusters in Cu-Nb and Cu-Nb-Si: *Jae Yel Lee*¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois at Urbana-Champaign

11:45 AM **Introductory Comments DOE-BES Program/Mechanical Behavior & Radiation Effects**

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Materials with Architected Structures

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Wednesday AM
March 1, 2017

Room: 24B
Location: San Diego Convention Ctr

Session Chairs: Yves Brechet, Grenoble Institute of Technology; Ruth Schwaiger, Karlsruhe Institute of Technology

8:30 AM Invited

Materials by Design: 3-Dimensional Nano-Architected Meta-Materials: *Julia Greer*¹; Lucas Meza¹; Alessandro Maggi¹; Victoria Chernow¹; Xiaoxing Xia¹; ¹California Institute of Technology

8:55 AM

Mechanics of Single-wire Entangled Architected Materials: *David Rodney*¹; Sabine Rolland du Roscoat²; Laurent Orgéas²; ¹Université de Lyon; ²Université Grenoble Alpes - CNRS

9:15 AM

Designing Lightweight Composite Cellular Architectures: *Glenn Hibbard*¹; ¹University of Toronto

9:35 AM

Development and Compressive Deformation of Polymer-metallic Microcellular Structures: *Theresa Juarez*¹; Almut Schroer²; Ruth Schwaiger²; Andrea Hodge¹; ¹University of Southern California; ²Karlsruhe Institute of Technology

9:55 AM Break

10:15 AM Invited

High-strength, Light-weight Hierarchical Materials Based on 3D Direct Laser Writing: *Ruth Schwaiger*¹; ¹Karlsruhe Institute of Technology (KIT)

10:40 AM

Toughening of Meso-structured Materials in Additive Manufacturing: *Hang Yu*¹; ¹Virginia Tech

11:00 AM

Chemical Etching of Ti Lattice Structures Manufactured by Electron Beam Melting: Influence on the Stiffness of the Octet-Truss Structures and Modeling of the Dissolution Kinetics at the Scale of Individual Struts: Pierre Lhuissier¹; Charlotte De Formanoir²; Guilhem Martin¹; Rémy Dendievel¹; *Stephane Godet*²; ¹Université Grenoble Alpes; ²Université Libre de Bruxelles

11:20 AM

Surface Gradient Architected Materials Processed by Severe Plastic Deformation via Surface Abrasion Torsion: *Ji Hyun Moon*¹; Ho Yong Um¹; See Am Lee¹; Jae Ik Yoon¹; Jaimyun Jung¹; Hyoung Seop Kim¹; ¹POSTECH

Nanostructured Surfaces for Improved Functional Properties — Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Homnero Casaneda, Texas A&M University; Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University; Bobby Mathan, James Cook University

Wednesday AM
March 1, 2017

Room: Pacific 23
Location: Marriott Marquis Hotel

Session Chairs: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University

8:30 AM Invited

Surface Alloying, Grain Refinement and Corrosion Response in Grain Size Gradient Microstructures: *Heather Murdoch*¹; Joseph Labukas¹; Jim Catalano¹; Kristopher Darling¹; ¹Army Research Laboratory

8:50 AM

Advanced Laser Surface Processing of Thermally-Stable Nanocrystalline Alloys: *Kendrick Mensink*¹; Guillermo Aguilar¹; Suveen Mathaudhu¹; ¹University of California Riverside

9:10 AM Invited

Temporary Implants for Bone Fracture Healing: Nanosurface Engineering: *Bobby Kannan Mathan*¹; ¹James Cook University

9:30 AM

Corrosion Resistance and Chemical Stability of Super-hydrophobic Electrodeposited Nickel-cobalt Film: *Shohreh Khorsand*¹; Keyvan Raeissi²; Fakhreddin Ashrafzadeh²; Maria Arenas³; ¹Brunel University London; ²Isfahan University of Technology; ³National Center for Metallurgical Research

9:50 AM Break

10:05 AM Invited

Nanostructured Coatings for Wear and Corrosion Resistance: *Gary Doll*¹; ¹The University of Akron

10:25 AM

The Effects of Mn Addition on the Tribocorrosion Behavior of Al-Mn Coatings: Hesham Mraied¹; *Wenjun Cai*¹; ¹University of South Florida

10:45 AM

Plasma Spray Deposition of Aluminum-Boron Nitride Nanotube Composite: *Pranjal Nautiyal*¹; Cheng Zhang¹; Arvind Agarwal¹; ¹Plasma Forming Laboratory, Florida International University

11:05 AM

Corrosion Behavior of Boron Nitride Nanosheet Reinforced Copper Matrix Composite Coatings: *Shei Sia Su*¹; Cengiz Yegin¹; Winson Kuo¹; Mustafa Akbulut¹; Homero Castaneda¹; ¹Texas A&M University

Pan American Materials Congress Plenary — Session III

*Sponsored by:*Third Pan American Materials Congress Organizing Committee

Program Organizer: Marc Meyers, UCSD

Wednesday AM
March 1, 2017

Room: Marina G
Location: Marriott Marquis Hotel

8:30 AM Plenary

Recent Progress in High Entropy Alloy Research: Zhiqiang Fu¹; Benjamin MacDonald¹; Baolong Zheng¹; Weiping Chen²; Yaojun Lin³; Fei Chen³; Lian Zhang³; Yulia Ivanisenko⁴; Yizhang Zhou¹; Horst Hahn⁵; *Enrique J. Lavernia*¹; ¹University of California, Irvine; ²South China University of Technology; ³Wuhan University of Technology; ⁴Karlsruhe Institut of Technology; ⁵Karlsruhe Institute of Technology

9:10 AM Plenary

High Temperature Solutions through Materials and Processes for Engines under Heavy Thermal Fatigue Conditions: *Salvador Valtierra*¹; ¹Nemak

9:50 AM Break

Pan American Materials Congress: Advanced Biomaterials — Bioinspired, Drug Delivery and Biomimetic Materials

*Sponsored by:*Third Pan American Materials Congress Organizing Committee

Program Organizers: Carlos Elias, Instituto Militar de Engenharia; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Wednesday AM
March 1, 2017

Room: Mission Hills
Location: Marriott Marquis Hotel

Session Chairs: Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ); Po-Yu Chen, National Tsing Hua University

10:10 AM Invited

Bioinspired Phase Transforming Cellular Materials: *Pablo Zavattieri*¹; David Restrepo¹; Yunlan Zhang¹; Nilesh Mankame²; ¹Purdue University; ²General Motors Research & Development

10:40 AM

An Approach to Study Materials-structure Relationships in Bio-inspired Microstructures: Alejandro Gutierrez¹; *Lilian Davila*¹; ¹University of California, Merced

11:00 AM

Heparin-based Self-assemblies for Controllable Drug Delivery Application: *Lin Ye*¹; ¹Beijing Institute of Technology

11:20 AM

Synthesis and Characterization of Bioinspired Freeze-Cast Alumina With A Zr-Based Bulk Metallic Glass Matrix: *Amy Wat*¹; Jin Lee²; Bernd Gludovatz³; Eun Soo Park²; Robert Ritchie¹; ¹University of California, Berkeley; ²Seoul National University; ³Lawrence Berkeley National Laboratory

11:40 AM

Analysis of Biomimetic Surgical Clip Using Finite Element Modeling for Geometry Improvement and Biomaterials Selection: Thays Brito¹; *Bianca dos Santos*¹; Leonardo Araújo¹; Luiz de Almeida¹; Marysylvia da Costa¹; ¹Universidade Federal do Rio de Janeiro

12:00 PM Invited

Multiscale Bio-inspired Design of Nanocomposites: *Horacio Espinosa*¹; ¹Northwestern University

12:20 PM

Pangolin Armor: Overlapping, Structure, and Mechanical Properties of the Keratinous Scales: *Wen Yang*¹; Bin Wang²; Vincent Sherman²; Marc Meyers²; ¹Swiss Federal Institute of Technology in Zurich (ETHZ); ²University of California, San Diego

12:40 PM

On the Strain Rate Sensitivity of Keratin Hair Fibers: *Yang Yu*¹; Wen Yang¹; Marc Meyers¹; ¹University of California, San Diego

Pan American Materials Congress: Advanced Manufacturing — Polymer, Composites, and Metals

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Sonia Brühl, UTN - National University of Technology; Ricardo Castro, University of California, Davis; Dachamir Hotza, UFSC

Wednesday AM
March 1, 2017

Room: Marina D
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

10:10 AM

Comparative Mechanical Analysis between Epoxy Composite Reinforced with Random Short Curaua Fibers and Aligned Long Curaua Fibers: *Natália Maciel*¹; Carolina Ribeiro¹; Jordana Ferreira¹; Janaina Vieira¹; Frederico Margem¹; Carlos Mauricio Vieira¹; Sérgio Monteiro¹; ¹UENF

10:30 AM

Damage Evaluation of Impact by Low-speed on Fiberglass Composite with Laminates Aluminum 2024-T3: *Eduardo Jose Trujillo*¹; ¹Centro de Ingeniería y Desarrollo Industrial

10:50 AM

Numerical Modeling of High-Velocity Impact Welding: *Ali Nassiri*¹; Shunyi Zhang²; Tim Abke³; Brad Kinsey²; Glenn Daehn¹; ¹The Ohio State University; ²University of New Hampshire; ³Honda R&D, North America

11:10 AM

Reducing Radiation Exposure to the Rectum during Prostate Cancer Radiation Therapy using NiTi Shape Memory Alloy: *Hossein Lavvafi*¹; Ayush Tiwari²; Ahmadreza Jahadakar²; Mahbod Pourriahi²; Mohammad Elahinia²; Vijaya Devabhaktuni²; E. Ishmael Parsai³; ¹University of Toledo Medical Center; ²University of Toledo; ³University of Toledo Medical Center

11:30 AM Invited

Selective Laser Sintering of Polyamide/Hydroxyapatite Scaffolds: *Frederic Dabbas*¹; Steferson Stares¹; Jose Mascheroni²; *Dachamir Hotza*¹; Gean Salmoria¹; ¹UFSC; ²Alkimat

Pan American Materials Congress: Materials for Green Energy — Battery Technologies for Green Energy

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Ramalinga Viswanathan Mangalaraja, University of Concepcion; Hector Calderon, ESFM-IPN; Julie Schoenung, University of California, Irvine; Roberto Arce, SAM - Soc. Argentina de Materiales

Wednesday AM
March 1, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chair: Hector Calderon, ESFM-IPN

10:10 AM

A Novel Air Electrode Using Core-Shell Particles for Metal Hydride/Air Rechargeable Battery: *Hideyuki Sano*¹; Masatsugu Morimitsu¹; ¹Doshisha University

10:30 AM

Effect of Mo6+ Substitution on Microstructure and Lithium Ionic Conductivity of Garnet-Type Li7La3Zr2O12 Solid Electrolytes by Field Assisted Sintering Technology: *Fei Chen*¹; Junyang Li¹; Yanhua Zhang¹; Dunjie Yang¹; Qiang Shen¹; Lianmeng Zhang¹; ¹Wuhan University of Technology

10:50 AM

Development of Air Electrodes Using Different Types of Carbon Materials for Metal Hydride/Air Secondary Battery: *Yusuke Ujino*¹; Masatsugu Morimitsu¹; ¹Doshisha University

11:10 AM

Study of the Influence on the Thermodynamic Properties of Replacing V by Zr in Alloys for Hydrogen Storage: *Daniela Bellon Monsalve*¹; ¹Universidad de Santander

11:30 AM

Cycle Performance of Air Electrode and Metal Hydride/Air Secondary Battery: *Tsukasa Gejo*¹; *Kenji Kawaguchi*¹; Masatsugu Morimitsu¹; ¹Doshisha University

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Microstructure Evolution

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

Wednesday AM
March 1, 2017

Room: Marina F
Location: Marriott Marquis Hotel

Session Chairs: Shima Sabbaghianrad, University of Southern California; Laszlo Toth, Université de Lorraine

10:10 AM

Quantitative Modeling of Grain Fragmentation during Severe Plastic Deformation Featuring Grain Size Distribution, Texture, Strain Hardening, and Disorientation Distribution: *Laszlo Toth*¹; ¹Université de Lorraine

10:30 AM

Continuous Dynamic Recovery in Pure Aluminum Deformed to High Strain by Accumulative Press Bonding: *Sajjad Amirkhanlou*¹; Mostafa Ketabchi²; Nader Parvin³; Fernando Carreño⁴; ¹Brunel University London; ²Amirkabir University of Technology; ³Amirkabir University of Technology; ⁴CENIM-CSIC

10:50 AM

Static Recrystallization and Grain Growth of Accumulative Roll Bonded Aluminium Laminates: *Laura Lienshoeft*¹; Paul Chekhonin¹; Juliane Scharnweber¹; Tom Marr²; Tina Hausöl³; Heinz Werner Hoepfel³; *Werner Skrotzki*¹; ¹TU Dresden; ²IFW Dresden; ³Universität Erlangen-Nürnberg

11:10 AM

Evaluation of the Hardening and Softening Effects in Zn-21Al-2Cu with As Cast and Homogenized Microstructure Processed by Equal Channel Angular Pressing: *Esperanza Elizabeth Martinez Flores*¹; Jose Luis Hernandez Rivera¹; Jorge Garcia Rocha¹; Jose de Jesus Cruz Rivera¹; *Gabriel Torres Villaseñor*²; ¹Instituto de Metalurgia-Universidad Autonoma de San Luis Potosi; ²Instituto de Investigaciones en Materiales-Universidad Nacional Autonoma de México

11:30 AM

Microstructure Evolution of Ti-6Al-7Nb with Different Initial Microstructures Processed by High-Pressure Torsion: *Jorge Cubero-Sesin*¹; Joaquin González-Hernández²; Elena Ulate-Kolitsky¹; Stephen Petretti¹; Luis Rojas-Morales¹; José Vega-Baudrit²; Zenji Horita³; ¹Instituto Tecnológico de Costa Rica; ²Laboratorio Nacional de Nanotecnología (LANOTEC-CeNAT); ³Kyushu University / I2CNER

11:50 AM

Limit of Grain Refinement after Processing by a Combination of Severe Plastic Deformation Techniques: *Shima Sabbaghianrad*¹; Seyed Alireza Torbati-Sarraf¹; Terence Langdon¹; ¹University of Southern California

12:10 PM

Influence of SPD in Phase Transformation of Duplex Steels: *Núria Llorca-Isern*¹; Isabel Lopez²; Jose Maria Cabrera²; Mohan Chand²; Irene Calliari³; Antoni Roca¹; ¹Universitat de Barcelona; ²Universitat Politècnica de Catalunya; ³Universita degli Studi di Padova

Pan American Materials Congress: Steels — Thermomechanical Processing and Properties

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Omar Garcia-Rincon, TERNIUM Mexico SA de CV; Andre Costa E Silva, EEIMVR - Universidade Federal Fluminense

Wednesday AM
March 1, 2017

Room: Marina E
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

10:10 AM Invited

New Challenges in Thermomechanical Processing: Applications in the Cold Mill: Yu Gong¹; M. Hua¹; J. Uusitalo²; *Anthony DeArdo*¹; ¹University of Pittsburgh; ²University of Oulu

10:40 AM

Microstructural Evolution in Microalloyed Steels during Thermomechanical Rod Rolling: *Lijia Zhao*¹; Robert Cryderman¹; John Speer¹; ¹Colorado School of Mines

11:00 AM

Modeling Precipitation and Dissolution of Microalloying Carbonitrides in Steels Using Computational Thermodynamics- techniques, Possibilities and Present Challenges: *Andre Costa E Silva*¹; ¹EEIMVR - Universidade Federal Fluminense

11:20 AM

Evolution of Austenite Dislocation Density during Hot Deformation using a Physical Dynamic Recrystallization Model: *Peng Zhou*¹; Qingxian Ma¹; ¹Tsinghua University

11:40 AM

The Research on the Relationship between Gas Movement Behaviors and Circulating Flow of the Molten Steel in RH: *Jialiang Xu*¹; Yanping Bao¹; Lihua Zhao¹; Min Wang¹; Lu Lin¹; Yadi Li¹; Xingle Fan¹; ¹University of Science and Technology Beijing

12:00 PM

Influence of a Rapid Heating on the Microstructure and Properties of Press-hardening Steel Sheets: *Anatolii Andreiev*¹; Mirko Schaper¹; Olexandr Grydin¹; ¹Paderborn University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Electrochemistry & Pb-free Soldering

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Wednesday AM
March 1, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chairs: Shien Ping Tony Feng, The University of Hong Kong; Jae-Ho Lee, Hongik University

8:30 AM

Effects of Pretreatments on the Adhesion of Cu/Non-conductive Substrates in Electroless Copper Plating: Ju-Seok Kang¹; Jinuk Lee²; Hyun-Woo Kwon²; *Jae-Ho Lee*¹; ¹Hongik University; ²Samsung Electro-Mechanics

8:50 AM

Etching Behaviors of Copper and Invar in via Hole of Copper-Invar-Copper Clad Substrate: Jong-Chan Choi¹; Jinuk Lee²; Hyun-Woo Kwon²; *Jae-Ho Lee*¹; ¹Hongik University; ²Samsung Electro-Mechanics

9:10 AM

Sulfurization Effect on the Ag and Ag-Pd Reflectors: *Erh-Ju Lin*¹; Yan-Hao Chen¹; Cheng-Yi Liu¹; ¹National Central University

9:30 AM

Interfacial Characterizations of an Electroless Nickel Layer on a Polyimide Film: *Pei-Yu Wu*¹; Chih-Ming Chen¹; ¹National Chung Hsing University

9:50 AM

Strong Effect of Cu Electroplating Formulas on the Electroplated-Cu/Sn Interfacial Reactions: Hsuan Lee¹; *Chih-Ming Chen*¹; ¹National Chung Hsing University

10:10 AM Break

10:25 AM

Electrochemical Fabrication of Functional Ag Nanocrystals with Highly Electrocatalytic Activity: *Shien Ping Feng*¹; Ya-Heui Chang¹; Chang Liu¹; ¹The University of Hong Kong

10:45 AM

Controlling Interfacial IMC Phase via Modifying Bi Composition in Low Temperature Bi-33In/Cu Solder Joint: *Rui-Wen Song*¹; Jenq-Gong Duh¹; ¹National Tsing Hua University

11:05 AM

High-speed Cu Electrodeposition and Its Solid-state Reaction with Sn-3Ag-0.5Cu: *Pei-Tzu Lee*¹; Ying-Syuan Wu¹; Cheng-Hsien Yang¹; Hung-Cheng Liu²; Cheng-En Ho¹; ¹Yuan Ze University; ²Kinsus Interconnect Technology Corp.

11:25 AM

Crystallization Kinetics of Amorphous Chalcogenide-based Phase Change Materials and Elemental Semiconductors and Studied with Multi-frame, Nanosecond-scale Dynamic TEM: Mark Winseck¹; Huai-Yu Cheng²; Geoffrey Campbell³; *Melissa Santala*¹; ¹Oregon State University; ²Macronix International Co., Ltd.; ³Lawrence Livermore National Laboratory

Phase Transformations and Microstructural Evolution — Shape Memory Alloys, and General

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Wednesday AM
March 1, 2017

Room: 16B
Location: San Diego Convention Ctr

Session Chair: Deep Choudhuri, University of North Texas

8:30 AM

Phase Transformations in NiTi Alloys under Biaxial Stress: Efthymios Polatidis¹; Wei-Neng Hsu²; Steven Van Petegem¹; *Helena Van Swygenhoven*²; Paul Scherrer Institute; ²Paul Scherrer Institute & EPFL

8:50 AM

The Effect of the Heat Treatment Temperature on the Thermodynamic Properties of the 55.89wt%Ni-Ti Shape Memory Alloy: *Ben Fraj Boutheina*¹; Zoubair Tourki¹; ¹Mechanical Laboratory of Sousse

9:10 AM

Revealing Transformation and Deformation Mechanisms in Niti-based High Temperature Shape Memory Alloys through Microstructural Investigations: *Lee Casalena*¹; Fan Yang¹; Daniel Coughlin²; Glen Bigelow³; Darrell Gaydos³; Santo Padula³; Othmane Benafan³; Ronald Noebe³; Peter Anderson¹; Yunzhi Wang¹; Michael Mills¹; ¹The Ohio State University; ²Los Alamos National Laboratory; ³NASA Glenn Research Center

9:30 AM

Microstructural Effects on Stress-Induced Martensite in NCAXB Alloys: *Cheng Zhang*¹; Kenneth Vecchio¹; ¹Department of NanoEngineering and Materials Science and Engineering Program, University of California, San Diego

9:50 AM

Role of Granular Constraint and Surface Effects on the Phase Transformation Mechanics in Shape Memory Alloys: *Harshad Paranjape*¹; Partha Paul²; Hemant Sharma²; Jun-sang Park³; Peter Kenesei³; Catherine Brinson²; Aaron Stebner¹; ¹Colorado School of Mines; ²Northwestern University; ³Argonne National Laboratory

10:10 AM Break

10:30 AM Invited

Characterization of Microstructural Evolution in a High Entropy Alloy with a Complex Nanoscale Microstructure: *Jacob Jensen*¹; John Sosa¹; Dan Huber¹; Gopal Viswanathan¹; Robert Williams¹; Hamish Fraser¹; ¹The Ohio State University

10:50 AM

Tailoring the Microstructure of Intermetallic Films by Seed Layer Mediated Crystallization from an Amorphous Phase: *Rohit Sarkar*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

11:10 AM

Unraveling the Growth Process of an Irregular Eutectic: *Ashwin Shahani*¹; Xianghui Xiao²; Peter Voorhees¹; ¹Northwestern University; ²Argonne National Laboratory

11:30 AM

A Combinatorial Assessment of Al_xCrCuFeNi₂ (0<x<1.5) High Entropy Alloys: Microstructure, Microhardness, and Magnetic Properties: *Tushar Borkar*¹; Bharat Gwalani²; Deep Choudhuri²; Calvin Mikler²; Chris Yannetta²; Xi Chen³; Raju Ramanujan³; Mark Styles⁴; Mark Gibson⁴; Rajarshi Banerjee²; ¹Cleveland State University; ²University of North Texas; ³Nanyang Technological University; ⁴CSIRO Manufacturing

The John Cahn Memorial Symposium — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division
Program Organizers: James Warren, National Institute of Standards and Technology; W. Craig Carter, MIT; Carol Handwerker, Purdue University; Y. Mishin, George Mason University

Wednesday AM
March 1, 2017

Room: 22
Location: San Diego Convention Ctr

Session Chairs: James Warren, National Institute of Standards and Technology; W. Craig Carter, MIT

8:30 AM Introductory Comments: James A. Warren, chair

8:40 AM Invited

Dislocations, Trijunctions and Grain Rotation: Kevin McReynolds¹; Akinori Yamanaka²; *Peter Voorhees*¹; ¹Northwestern University; ²Tokyo University of Agriculture and Technology

9:10 AM Invited

A DSC Model for Grain Boundary Migration and Properties: *David Srolovitz*¹; Jian Han¹; Spencer Thomas¹; Vaclav Vitek¹; ¹University of Pennsylvania

9:40 AM Invited

Thin Film Grain Growth for Twin Related Orientations of Grains: *John Blendell*¹; Jean Taylor²; John Cahn³; R. Edwin Garcia¹; Daniel Lewis¹; ¹Purdue University; ²Professor Emerita at Rutgers University and Visiting Faculty at Courant Institute, NYU; ³NIST and University of Washington

10:10 AM Break

10:30 AM Invited

Experimental Measures of Stress-coupled Boundary Migration and the Attendant Mechanical Behavior of Nanocrystalline Films: Paul Rottmann¹; Suman Dasgupta¹; *Kevin Hemker*¹; ¹Johns Hopkins University

11:00 AM Invited

Energetic Trends for Twin Boundaries in HCP Metals: Maarten de Jong¹; Liang Qi²; Axel van de Walle³; *Mark Asta*¹; ¹University of California, Berkeley; ²University of Michigan; ³Brown University

11:30 AM Invited

Molecular Dynamics Simulations of Faceted, Incoherent Twin Boundaries: *Elizabeth Holm*¹; Jonathan Humberson¹; ¹Carnegie Mellon University

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Low Dimensional Nanomaterials

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Wednesday PM
March 1, 2017

Room: Pacific 26
Location: Marriott Marquis Hotel

Session Chairs: Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas

2:00 PM Invited

Ultrathin Organic-inorganic Hybrid Dielectric Engineering on 2D MoS₂ Using Molecular Atomic Layer Deposition: *Lanxia Cheng*¹; Jaebeom Lee¹; Hui Zhu¹; Arul Vigneswar Ravichandran¹; Qiaoxiao Wang¹; Zifan Che¹; Antonio Lucero¹; Moon Kim¹; Robert Wallace¹; Luigi Colombo²; Jiyoung Kim¹; ¹University of Texas Dallas; ²Texas Instruments

2:30 PM

Effect of Substrate-film Interface in Mid-IR Photothermal Response of PLD Grown MoS₂: *Ankur Goswami*¹; Soupitak Pal¹; ¹University of California Santa Barbara

2:50 PM

Scanning Photocurrent Microscopy of Epitaxial Graphene Heterostructures: Bobby Barker¹; Venkata Surya Chava¹; MVS Chandrashekhar¹; *Andrew Greytak*¹; ¹University of South Carolina

3:10 PM

Microwave Imaging of Plasma Etched CVD Graphene Using Scanning Microwave Microscope: Kathleen Brockdorf¹; Joshua Myers¹; Zhonghang Ji¹; Hong Huang¹; Nick Engel¹; *Yan Zhuang*¹; ¹Wright State University

3:30 PM

Carbon Nanotube Coated Conductors: *Terry Holesinger*¹; ¹Los Alamos National Laboratory

3:50 PM Break

4:10 PM

Highly Aligned Electronic-type Purified Semiconducting Carbon Nanotube Array Field Effect Transistors with Current Density That Exceeds Silicon and Gallium Arsenide: Gerald Brady¹; Austin Way¹; Yongho Joo¹; Katherine Jinkins¹; Harold Evensen²; Padma Gopalan¹; *Michael Arnold*¹; ¹University of Wisconsin-Madison; ²University of Wisconsin-Platteville

4:30 PM

Synthesis of Pd Nanoparticles on Graphene Oxide Supports by X-ray Irradiation: *Dustin Clifford*¹; Jessika Rojas¹; Carlos Castano¹; ¹Virginia Commonwealth University

4:50 PM

Synthesis and Interface Boundary Characteristics of Gold/Cobalt Janus Nanoparticles: *Kyungah Seo*¹; Olivia Graeve¹; ¹University of California, San Diego

5:10 PM

On Effects of Geometric Nonlinearity and Mechanical Anisotropy in Strain-engineered Helical Nanoribbons: *Zi Chen*¹; Shicheng Huang¹; Ian Trase¹; Lina Zhang¹; Nan Hu¹; ¹Dartmouth College

5:30 PM

Electrochemical Actuation of Dealloyed Bulk Nanoporous Nickel: *Chuan Cheng*¹; Jörg Weissmüller²; ¹Technische Universität Hamburg-Harburg; ²Technische Universität Hamburg-Harburg

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Nanomaterials Generals

Sponsored by: TMS Functional Materials Division, TMS; Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

Wednesday PM
March 1, 2017

Room: Pacific 24
Location: Marriott Marquis Hotel

Session Chairs: Chang-Yong Nam, Brookhaven National Lab; Lanxia Cheng, University of Texas at Dallas

2:00 PM

In Situ Heating Experiments in the TEM on Silver Nanocrystals: *Sriram Vijayan*¹; Sravan Thota¹; Jing Zhao¹; Mark Aindow¹; ¹University of Connecticut

2:20 PM

FT-IR Investigation of H Content in SiN_x Thin Film Grown by PEALD Using HCDS as Precursor; Achieving Low WER: *Harrison Kim*¹; Young-Chul Byun¹; Xin Meng¹; Jiyoung Kim¹; B. K. Hwang²; ¹The University of Texas at Dallas; ²Dow Corning Corporation

2:40 PM

Effects of Surface Treatments on the Electrical Characteristics of AlGaN/GaN MOS Capacitors Using ALD Grown Epitaxial ZnO as Interfacial Gate Dielectric: *Xin Meng*¹; Young-chul Byun²; Jaegil Lee²; Jiyoung Kim²; ¹University of Texas Dallas; ²University of Texas Dallas

3:00 PM

The Effect of H₂O vs. O₃ as the ALD Oxidant on the Ferroelectric Phase Transition of Hafnium – Zirconium Oxide: Dushyant Narayan¹; *Si Joon Kim*¹; Jae-Gil Lee¹; Young-Chul Byun¹; Joy Lee¹; Antonio Lucero¹; Scott Summerfelt²; Jiyoung Kim¹; ¹The University of Texas at Dallas; ²Texas Instruments

3:20 PM Break

3:40 PM

Gas Condensation of Fe₆₅Co₃₅-Ag/Au Core-Shell Nanoparticles for Biomedical Applications: *Mark Koten*¹; Marlann Patterson²; Jeffrey Shield¹; ¹University of Nebraska - Lincoln; ²University of Wisconsin - Stout

4:00 PM

Thermal and Electrical Transport in Glassy Carbon Nanowires: *Laia Ferrer-Argemi*¹; Arnoldo Salazar¹; Marc Madou¹; Jaeho Lee¹; ¹University of California Irvine

4:20 PM

Synthesis and Consolidation of Nanocrystalline Bulk Aluminum Nitride: *Matthew Duarte*¹; Yasuhiro Kodera¹; Javier Garay¹; ¹University of California San Diego

4:40 PM

Plasmon Induced Interfacial Engineering of Nanowires Heterojunctions for Nanoelectronics with Femtosecond Laser Radiation: *Luchan Lin*¹; Lei Liu¹; Guisheng Zou¹; Walt Duley²; Y.Norman Zhou¹; ¹Tsinghua University; ²University of Waterloo

8th International Symposium on High Temperature Metallurgical Processing — Ironmaking and Steelmaking

Sponsored by: TMS Extraction and Processing Division, TMS; Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Wednesday PM
March 1, 2017

Room: 18
Location: San Diego Convention Ctr

Session Chairs: Dean Gregurek, RHI AG; Guanghui Li, Central South University

2:00 PM Introductory Comments

2:05 PM

Evolution of Oxide and Sulfide Inclusions in the Ladle Furnace during Calcium Injection: *Seyed Yousef Tabatabaei Majd*¹; Kenneth Coley¹; Gordon Irons¹; Stanley Sun²; ¹McMaster University; ²ArcelorMittal Dofasco

2:25 PM

Formation Mechanisms of Inclusions in Spring Steels: Sha Lv¹; Zongze Huang²; Zan Yao²; Xiaodong Ma¹; Geoff Wang¹; Zhouhua Jiang³; Jin Zou¹; *Baojun Zhao*¹; ¹The University of Queensland; ²Baosteel; ³Northeastern University

2:45 PM

Investigation on Coal Combustion Behaviors under the Oxygen Blast Furnace: *Zhenfeng Zhou*¹; Yuanyuan Zhang¹; Guang Wang¹; Jingsong Wang¹; Qingguo Xue¹; ¹University of Science and Technology Beijing

3:05 PM

Inclusion Control with Ca Treatment to Improve Castability of a Low Carbon Al Killed Steel: *Stanley Sun*¹; Steve Waterfall¹; Norbert Strobl¹; Dongsheng Liao¹; Don Holdridge¹; ¹ArcelorMittal Hamilton

3:25 PM Break

3:45 PM

High Temperature Mineralization Mechanism of Granules during Iron Ore Sintering Process: *Wei Lv*¹; Xiaohui Fan¹; Min Gan¹; Xuling Chen¹; Zhiyun Ji¹; Yang Zhou¹; Guojing Wang¹; Qiang Li¹; ¹Central South University

4:05 PM

Investigation of High Chromium Steel on the Different Salt-bath Heat Treatment Conditions: *Cheng-Yi Chen*¹; Fei-Yi Hung¹; Truan-Sheng Lui¹; Li-Hui Chen¹; ¹National Cheng Kung University

4:25 PM

Reduction Behaviors of Sinter Made from Magnetite Concentrates in Reducing Process Simulated COREX Shaft Furnace: *Benjing Shi*¹; Deqing Zhu¹; Jian Pan¹; Xuxiao Xue¹; ¹Central South University

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Defects and Fatigue

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Wednesday PM

Room: 7B

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Kinga Unocic, Oak Ridge National Laboratory; Michael Kirka, Oak Ridge National Laboratory

2:00 PM Invited

An Integrated Platform for Predicting the Mechanical Behavior of Additive Manufactured Metal Parts: *Jian Cao*¹; Wing Liu¹; Sarah Wolff²; Steven Lin¹; Wei Xiong¹; Puikui Cheng¹; Gregory Wagner¹; Eric Faierson²; Federico Sciammarella³; Kornel Ehmann¹; Greg Olson¹; ¹Northwestern University; ²Quad City Manufacturing Laboratory & Western Illinois University; ³Northern Illinois University

2:30 PM

Microstructural Evolution and Fatigue Behavior of SLM Processed Alloy IN625: *John Samuel Dilip Jangam*¹; Md Anam¹; Deepankar Pal¹; Brent Stucker²; ¹University of Louisville; ²3D SIM LLC

2:50 PM

Investigating the Role of Porosity in DMLS IN718 by Crystal Plasticity Modeling with Experimental Validation: *Veerappan Prithivirajan*¹; Todd Book¹; Diwakar Naragani¹; Michael Sangid¹; ¹Purdue University

3:10 PM

Anisotropic Mechanical Behavior of AlSi10Mg Parts Produced by Selective Laser Melting: *Ming Tang*¹; Petrus Pistorius¹; ¹Carnegie Mellon University

3:30 PM Break

3:50 PM

Microstructure Evolution, Tensile and Dynamic Properties, and Computational Modeling in Ti-6Al-4V and Inconel 718 Alloys Manufactured by Laser Engineered Net Shaping: *Yuwei Zhai*¹; Diana Lados²; Eric Brown²; Greg Vigilante²; Robert Warren¹; ¹Worcester Polytechnic Institute; ²Benet Labs

4:10 PM

Fracture and Fatigue Behavior of Additively Manufactured Austenitic Stainless Steel: *Chris San Marchi*¹; Josh Sugar¹; Michael Maguire¹; Dorian Balch¹; ¹Sandia National Laboratories

4:30 PM

Classification, Effects, and Prevention of Build Defects in Powder-bed Fusion Printed Inconel 718: *Arthur Brown*¹; Zachary Jones¹; William Tilson²; ¹NASA-Marshall Space Flight Center; ²Jacobs-ESSA Group

4:50 PM

Investigating Strain Localization in DMLS Ti-6Al-4V Using CPFE Modeling and DIC: *Kartik Kapoor*¹; Todd Book¹; Michael Sangid¹; ¹Purdue University

5:10 PM

Mechanical Properties of SS316L Manufactured by Laser Powder Bed Additive Manufacturing: *Håkan Brodin*¹; ¹Siemens Industrial Turbomachinery AB

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Novel Techniques

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Wednesday PM

Room: 8

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Andrew Shapiro, Jet Propulsion Laboratory; Carolyn Seepersad, University of Texas - Austin

2:00 PM

Aerospace Applications for Additive Manufacturing: *Andrew Shapiro*¹; John Paul Borgonia¹; Nataly Chen¹; R. Peter Dillon¹; Bryan McEnerney¹; Raul Polit-Casillas¹; Lewis Soloway¹; ¹Jet Propulsion Laboratory, California Institute of Technology

2:20 PM

Additive Friction Stir: A New Additive Manufacturing Technology for Metallic Structural Materials Including Ti64: *Jianqing Su*¹; *Nanci Hardwick*¹; ¹Aeroprobe Corporation

2:40 PM

Nanomechanical and EBSD Characterization of Additive Manufactured Mg Alloys: *Paul Allison*¹; Oscar Rivera¹; Wilburn Whittington²; Brian Jordon¹; Jianqing Su³; Nanci Hardwick³; ¹University of Alabama; ²Mississippi State University - Center for Advanced Vehicular Systems; ³Aeroprobe Corporation

3:00 PM

Scaling Relationships for Direct Ink Writing with Acoustic Focusing: *Leanne Friedrich*¹; Rachel Collino¹; Tyler Ray¹; Matthew Begley¹; ¹University of California Santa Barbara

3:20 PM Break**3:40 PM Invited**

Statistical Design Guidelines for Powder Bed Fusion: *Carolyn Seepersad*¹; Jared Allison¹; Conner Sharpe¹; Steven Kubiak²; ¹University of Texas at Austin; ²Stratays Direct Manufacturing

4:10 PM

Characterization of Additive Manufactured IN718 Using Ultrasonic Measurements: *Paul Panetta*¹; Hualong Du¹; Waled Hassan²; ¹Applied Research Associates, Inc.; ²Rolls-Royce Corporation

4:30 PM

Control of Deposition Interface Quality in Additive Manufacturing: *Cameron Knapp*¹; John Carpenter¹; Desiderio Kovar²; ¹Los Alamos National Laboratory; ²University of Texas at Austin

4:50 PM

Matrix Grain Refinement in Functionally Graded Ti-6Al-4V/TiB Composite Fabricated by LENS Additive Manufacture: *Denver Seely*¹; Hongjoo Rhee¹; Mark Horstemeyer¹; ¹Mississippi State University/Center for Advanced Vehicular Systems

5:10 PM

A Highly Fracture and Fatigue Resistant Optimized As-deposited EBM Ti-6Al-4V: *Mohsen Seif*¹; Jesse Boyer²; William Brindley²; John Lewandowski¹; ¹Case Western Reserve University; ²Pratt & Whitney

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session VI

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Wednesday PM Room: 33C
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: M. Arul Kumar, Los Alamos National Lab; Kelvin Xie, Johns Hopkins University

2:00 PM Invited

Atomic-scale Characterization of Boron Carbide with Advanced TEM and Atom Probe Techniques: *Kelvin Xie*¹; Paul Rottmann²; Luoning Ma²; Kevin Hemker²; ¹ Johns Hopkins University; ²Johns Hopkins University

2:20 PM

Characterization of the Mechanistic Responses of Three Silicon Carbide Variants to Knoop Indentation by TEM: *Scott Walck*¹; Samuel Hirsch¹; Kristopher Behler¹; Jerry LaSalvia¹; ¹U.S. Army Research Laboratory

2:40 PM

Measuring Residual Stresses in Boron Carbide in TEM: *Luoning Ma*¹; Paul Rottmann¹; Kelvin Xie¹; Kevin Hemker¹; ¹Johns Hopkins University

3:00 PM

Investigating the On-set of Amorphization in Single Crystal Boron Carbide: *Jonathan Ligda*¹; Jeffrey Lloyd¹; Brian Schuster¹; ¹Army Research Laboratory

3:20 PM Break**3:40 PM**

3D Dislocation Structure Evolution Underneath Indentations in Single Crystalline: *Karsten Durst*¹; ¹Technical University Darmstadt

4:00 PM

Effect of Indentation Load on Deformation Mechanisms in Boron Carbide: *Jerry LaSalvia*¹; Scott Walck¹; Kristopher Behler¹; ¹U.S. Army Research Laboratory

4:20 PM

From Micro-Cantilever Testing to Deformation Patterning in Hexagonal Polycrystals: *Jicheng Gong*¹; Rajesh Korla²; Mitchell Cuddihy³; T Ben Britton³; Fionn Dunne³; Angus Wilkinson¹; ¹University of Oxford; ²Indian Institute of Technology - Hyderabad; ³Imperial College London

4:40 PM

Influence of Elastic Anisotropy and Local Texture on the Onset of Plastic Slip in Ti-6Al-4V: *Samuel Hemery*¹; Patrick Villechaise²; Loïc Signor¹; ¹ENSMA; ²CNRS

5:00 PM

Modeling the Evolution of Slip System Strength in a-Phase Ti-7Al Using High-Energy Diffraction Microscopy Data: *Darren Pagan*¹; Nathan Barton¹; Paul Shade²; Joel Bernier¹; ¹Lawrence Livermore National Laboratory; ²Air Force Research Laboratory

Advanced High-Strength Steels — Microstructure Property Relationship

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Wednesday PM Room: 17A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Cem Tasan, MIT; Matous Mrovec, ICAMS - Ruhr University Bochum

2:00 PM Invited

Influence of the Initial Microstructure on the Reverse Transformation Kinetics and Microstructural Evolution in TRIP-assisted Steel: Jeong In Kim¹; Joo Hyun Ryu²; Sea Woong Lee²; Kyooyoung Lee²; *Dong Woo Suh*¹; ¹Pohang University of Science and Technology; ²POSCO

2:30 PM

Observation of Low Cycle Fatigue Dislocation Structures in a TWIP, TRIP and MBIB Steel, Using Electron Channelling Contrast Imaging (ECCI): *Dayong An*¹; Stefan Zaeferrer¹; ¹Max-Planck-Institut für Eisenforschung GMBH

2:50 PM

Microstructural Evolution and Mechanical Behavior of Medium Mn Steels Intercritical Annealed from Different Starting Structure: *Binhan Sun*¹; Fateh Fazeli²; Colin Scott²; Stephen Yue¹; ¹McGill University; ²CanmetMATERIALS, Natural Resources Canada

3:10 PM

In-situ Synchrotron X-ray Diffraction Investigation on Strain Hardening Behavior of Fe-17Mn-1.5Al-0.3C Steel: *Yan Ma*¹; Wenwen Song¹; Wolfgang Bleck¹; ¹RWTH Aachen University

3:30 PM Break**3:50 PM**

Effect of Microstructure on Formability and Micro Fracture Mechanism in DP Steel for Automotive Outer Panel: Yeon-sang Ahn¹; *Chang-hyo Seo*¹; Sang-Ho Han¹; In-Shik Suh¹; John Speer²; ¹POSCO Technical Research Laboratories; ²Colorado School of Mines

4:10 PM

High Speed Tensile Test with Infrared Thermography and Microstructure Analysis on a High Mn TWIP Steel: *Sebastian Wesselmecking*¹; Harald Hofmann²; Thorsten Beier²; Thorsten Rösler³; Maximilian Nagel³; Klaus Unruh⁴; Wolfgang Bleck¹; ¹RWTH Aachen; ²ThyssenKrupp Steel Europe; ³Hoesch Hohenlimburg GmbH; ⁴Faurecia Autositze GmbH

4:30 PM

Microstructure and Mechanical Properties of a 0.2C-5Mn TRIP Steel after Continuous Intercritical Annealing: *Wei Ding*¹; Yan Li¹; ¹Inner Mongolia University of Science and Technology

Advanced Materials for Energy Conversion and Storage — Functional Materials I

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Wednesday PM Room: 15A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Corinne E Packard, CSM; Ritesh Sachan, ORNL

2:00 PM Invited

Pressure-induced Phase Transformation in Xenotime Rare-earth Orthophosphates: *Corinne Packard*¹; ¹Colorado School of Mines

2:25 PM

Starch Mediated Syntheses of Zinc Oxide and Hydrogenated Zinc Oxide (ZnO:H) Phases: *Joshua Konne*¹; Bright Christopher¹; ¹Rivers State University of Sci. & Tech.

2:45 PM

Synthesis and Characterization of Spinel Copper Cobalt Oxide Catalyst for Oxygen Evolution Reaction(OER) in Anion Exchange Membrane Electrolyzer: *Kyu Hwan Lee*¹; Sung Mook Choi¹; Myung Je Jang¹; Andreas Bund²; ¹Korea Institute of Materials Science; ²Technische Universität Ilmenau

3:05 PM

Synthesis and Processing of NaSICON/Polymer Membranes: *Shan-Ju Chiang*¹; Caihong Liu¹; Leon Shaw¹; ¹Wanger Institute for Sustainable Energy Research / Illinois Institute of Technology

3:25 PM Break**3:45 PM Invited**

Understanding the Disordered Structure in Energetic Ion Radiation Induced Fast Ion Conducting Nanofibers: *Ritesh Sachan*¹; Yanwen Zhang¹; Matthew Chisholm¹; William Weber²; ¹Oak Ridge National Laboratory; ²University of Tennessee

4:10 PM

Utilization of Silver Nanowires in Supercapacitors: Recep Yuksel¹; Sahin Coskun¹; *Husnu Unalan*¹; ¹Middle East Technical University

4:30 PM Invited

Mapping the Kinetic Modes of Phase Transformation in Intercalation Compounds: *Ming Tang*¹; Liang Hong¹; Linsen Li²; Song Jin³; ¹Rice University; ²MIT; ³University of Wisconsin-Madison

Aluminum Alloys, Processing and Characterization — Characterization

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Yanjun Li, Norwegian University of Science and Technology

Wednesday PM Room: 4
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM Introductory Comments**2:05 PM**

Algorithm for Finding the Correlation between the Properties of Wrought Aluminum Alloys, the Chemical Composition and the Processing Parameters: *Varužan Kevorkijan*¹; Branko Hmelak²; Peter Cvahte³; Sara Hmelak²; Vukašin Dragojevic⁴; Uroš Kovacec⁵; Marina Jelen⁵; Darja Volšak⁶; ¹Impol R in R d.o.o.; ²Alcad d.o.o.; ³Impol 2000 d.d.; ⁴Impol PCP d.o.o.; ⁵Impol LLT d.o.o.; ⁶Impol FT d.o.o.

2:30 PM

Analysis of an Aluminium Alloy Containing Trace Elements: *Christian Simensen*¹; Stephan Kubowicz¹; Borge Holme¹; Joachim Greff¹; ¹SINTEF

2:55 PM

Determination of Aluminum Oxide Thickness on the Annealed Surface of 8000 Series Aluminum Foil by Fourier Transform Infrared Spectroscopy: *Onur Birbasar*¹; Özlem Uçar¹; Aytan Mese²; Durmus Özdemir²; Murat Dündar¹; ¹Assan Alüminyum; ²Izmir Institute Of Technology

3:20 PM

Using Guard Bands to Accommodate Uncertainty in the Spark AES Analysis of Aluminum or Aluminum Alloys When Determining Compliance with Specified Composition Limits: John Weritz¹; Denis Choquette²; Thomas Belliveau³; Rebecca Wyss⁴; *Michael Ruschak*⁴; Albert Wills⁵; Olivier Gabis⁶; John Sieber⁷; ¹The Aluminum Association; ²Rio Tinto; ³Novelis; ⁴Alcoa, Inc.; ⁵Sapa Industrial Extrusions; ⁶Wagstaff Inc.; ⁷National Institute of Standards and Technology

3:45 PM Break**4:00 PM**

Laser Marking and 3D Imaging of Aluminum Products: *Alex Fraser*¹; Michaël Dallaire¹; Martin Hartlieb²; ¹Laserax Inc.; ²Viami International Inc.

4:25 PM

Production and Certification of Arconic Certified Reference Materials: *Jenee Jacobs*¹; Michael Ruschak¹; John Genna²; Keith Trichan²; Louis Bono¹; Samantha Stephens¹; ¹Arconic Spectrochemical Reference Materials; ²Alcoa Spectrochemical Standards

4:50 PM

Characterization of Large Strain Extrusion Machining (LSEM) of AA7050: *Daniel Klenosky*¹; David Johnson¹; Srinivasan Chandrasekar¹; Kevin Trumble¹; ¹Purdue University

5:15 PM

Rare-earth Modified Aluminum Alloys for High-temperature Applications: *Zachary Sims*¹; David Weiss²; Orlando Rios¹; Scott McCall³; Ryan Ott⁴; Michael McGuire¹; Tony Van-Burren³; Ke An¹; Yan Chen¹; ¹Oak Ridge National Laboratory; ²Eck Industries; ³Lawrence Livermore National Laboratory; ⁴Ames National Laboratory

Aluminum Reduction Technology — Modelling and Cell Design, Potroom Operations

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Wednesday PM Room: 2
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Marc Dupuis, GeniSim; Olivier Martin, Rio Tinto

2:00 PM Introductory Comments

2:05 PM

Improving the Understanding of Busbar Design and Cell MHD Performance: Alexander Arkhipov¹; Abdalla Zarouni¹; Amal Al Jasmi¹; Vinko Potocnik¹; Emirates Global Aluminium (EGA)

2:30 PM

MHD of Large Scale Liquid Metal Batteries: Valdis Bojarevics¹; Andrejs Tucs¹; University of Greenwich

2:55 PM

Low Energy Consumption Cell Designs Involving Copper Inserts and an Innovative Busbar Network Layout: Marc Dupuis¹; GeniSim Inc

3:20 PM

LES Turbulence Modeling Approach for Molten Aluminium and Electrolyte Flow in Aluminum Electrolysis Cell: Mounir Baiteche¹; Seyed Mohammad Taghavi¹; Donald Ziegler²; Mario Fafard¹; ¹Aluminium Research Center REGAL, University Laval; ²Alcoa Primary Metals, Alcoa Technical Center

3:45 PM Break

4:00 PM

Surviving an Extended Power Outage after a Break Down in the Sub Station: Till Reek¹; Roman Düssel¹; TRIMET Aluminium SE

4:25 PM

Retrofit of Damaged Corner Risers by Means of Bolted Connections: Andre Felipe Schneider¹; Donald Ziegler²; Maxime Pouliot²; Daniel Richard¹; Jason Robillard¹; Jeremie Blais¹; Olivier Charette¹; Pouya Zangeneh¹; ¹HATCH Ltd.; ²Alcoa Primary Metals

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Materials Processing and Plasma Processing

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Wednesday PM Room: 15B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Rauf Eric, University of the Witwatersrand

2:00 PM

Plasma Processing of Thin Films for Data Storage and Future Non-Volatile Memory: Subhadra Gupta¹; University of Alabama

2:20 PM

DuraStell PTA Cladding for Wear Application: Jack Zheng¹; Robert Vasinko¹; Kennametal

2:40 PM

Plasma Processing of Neodymium Oxide: Hunter Sceats¹; Patrick Taylor¹; ¹Colorado School of Mines

3:00 PM

Characterization and Feasibility Study of Thermoelectric CoSi₂: Jacob Young¹; Ramana Reddy¹; ¹University of Alabama

3:20 PM Break

3:40 PM

Production of SiMn-alloys by Natural Gas and Carbon Black: Xiang Li¹; Merete Tangstad¹; ¹Norwegian University of Science and Technology (NTNU)

4:00 PM

Effect of Flux Ratio on the Products of Self Propagating High Temperature Synthesis-Casting in WO₃-Si-Al System: Suthan Niyomwas¹; Tawat Chanadee¹; ¹Prince of Songkla University

4:20 PM

Effects of Mg on the Microstructure and Mechanical Properties of EH36 Shipbuilding Steel: Xiaodong Zou¹; Dapeng Zhao¹; Cong Wang¹; ¹Northeastern University

4:40 PM

Enhanced Reducing Sugar Yield by Combining Alkaline Solution and Ionic Liquid Pretreatment of Biomass: Samuel Kassaye¹; Kamal Pant¹; Sapna Jain²; ¹Indian Institute of Technology Delhi; ²Alabama State University

Biological Materials Science — Functional Biological Materials

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Wednesday PM Room: Pacific 15
March 1, 2017 Location: Marriott Marquis Hotel

Session Chairs: Po-Yu Chen, National Tsing Hua University; Michael Porter, Clemson University

2:00 PM Keynote

Bioinspired Adhesive Surfaces - Designs for Non-Smooth Counter Surfaces: Eduard Arzt¹; René Hensel¹; ¹INM - Leibniz Institute for New Materials; New Materials at Saarland University

2:40 PM

Exploring the Structural Diversity of Seahorse Tails: Nakul Ravikumar¹; Jack Harrison¹; Celine Neutens²; Dominique Adriaens²; Michael Porter¹; ¹Clemson University; ²Ghent University

3:00 PM

Capturing the Geometry, Microstructure and Mechanical Properties of Marine Diatom Frustules Using Nanoscale Silica Structures: Shi Luo¹; Julia Greer¹; ¹California Institute of Technology

3:20 PM

A Functional Natural Adhesive: The Feather Vane and Inspired Designs: Tarah Sullivan¹; Marc Meyers¹; ¹UC San Diego

3:40 PM Break

4:00 PM Invited

Smart Biocoatings for Tunable Bioactivity at the Bio-Material Site: Candan Tamerler¹; ¹University of Kansas

4:30 PM

Biological Martensitic Phase Transformations in Bacterial Flagella and other Helical Protein Crystals: Ricardo Komai¹; Greg Olson¹; ¹Northwestern University

4:50 PM

Mechanical Property and Humidity-triggered Reaction of the Cones of Liquidambar Formosana: *Hsin-Juei Wang*¹; Cheng-Che Tung¹; Chun-Lin Lin¹; Po-Yu Chen¹; ¹National Tsing Hua University

5:10 PM

Empirically Testing Vaterite Structural Models Using Neutron Diffraction and Thermal Analysis: *Bryan Chakoumakos*¹; Brenda Pracheil¹; Ryan Koenigs²; Ronald Bruch²; Mikhail Feygenson³; ¹Oak Ridge National Lab; ²Wisconsin Department of Natural Resources; ³Forschungszentrum Jülich

Bulk Metallic Glasses XIV — Structures and Characterization

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Wednesday PM

Room: 33A

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Paul Voyles, University of Wisconsin, Madison; Jörg Löffler, ETH Zurich

2:00 PM Invited

Nucleation and Metastable Phase Formation Studied via Calorimetry at Ultrafast Heating and Cooling Rates: *Jörg Löffler*¹; ¹ETH Zurich

2:20 PM Invited

In-situ Synchrotron High-energy X-ray Diffraction Study of an Amorphous/Nanocrystalline NiTi Alloy during Recrystallization Process: Cun Yu¹; Bachir Aoun²; Lishan Cui¹; Yinong Liu³; *Yang Ren*²; ¹China University of Petroleum; ²Argonne National Laboratory; ³The University of Western Australia

2:40 PM Invited

Medium-range Structure and Glass-forming Ability of Metallic Glasses: Jason Maldonis¹; Pei Zhang¹; *Paul Voyles*¹; ¹University of Wisconsin, Madison

3:00 PM Invited

The Early Stages of Shear Band Development: *Gerhard Wilde*¹; ¹University of Muenster

3:20 PM

Combinatorial Assessment of Metallic Glasses Using High-throughput Characterization: *Ryan Ott*¹; Fanqiang Meng²; Jie Geng²; Matthew Besser²; Matthew Kramer²; ¹Ames Laboratory (USDOE); ²Ames Laboratory (USDOE)

3:40 PM Break

4:00 PM Invited

Nanoscale Crystallization in Bulk Metallic Glasses and Its Implications on Glass-forming Ability: *Dong Ma*¹; Alexandru Stoica¹; ¹ORNL

4:20 PM Invited

Entropy Contributions in Strong and Fragile Metallic Glasses: *Hillary Smith*¹; Andrew Hoff¹; Chen Li²; Tabitha Swan-Wood³; Fred Yang¹; Dennis Kim¹; Marios Demetriou¹; Brent Fultz¹; ¹California Institute of Technology; ²University of California, Riverside; ³California State University, Channel Islands

4:40 PM

Atomic Dynamics in La-based Metallic Glasses by X-ray Photo Correlation Spectroscopy: *Xiaodong Wang*¹; Jin Zhang¹; Qing Yu¹; Qingping Cao¹; Jianzhong Jiang¹; ¹Zhejiang University

5:00 PM Invited

Real-time Studies of the Evolution of Atomic Structures of Bulk Metallic Glasses: *Wei Zhang*¹; Jiawei Mi¹; ¹University of Hull

5:20 PM Invited

Tracing the Pathway of Metallic Liquids to Vitrification: *Kostas Georgarakis*¹; ¹Cranfield University

Cast Shop Technology — Grain Refining and Solidification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Wednesday PM

Room: 1A

March 1, 2017

Location: San Diego Convention Ctr

Session Chair: Stephen Instone, Hydro Aluminium Rolled Products GmbH

2:00 PM Introductory Comments

2:05 PM

Effect of Ultrasonic Processing on a Direct Chill Cast AA6082 Aluminium Alloy: *Georges Salloum-Abou-Jaoude*¹; Dmitry Eskin¹; Carla Barbatti²; Philippe Jarry²; Martin Jarrett²; Zhongyun Fan¹; ¹Brunel University London; ²Constellium

2:30 PM

Microstructure Control in A356 Al-Si Alloy via Ultrasonic Melt Treatment: Waleed Khalifa¹; *Mahmoud Abdu*¹; Maiada Abdelrahman¹; Yoshiki Tsunekawa²; ¹Cairo University; ²Toyota Technological Institute

2:55 PM

Shear Induced Grain Refinement of a Continuously Cast Ingot: *Samuel Wagstaff*¹; Antoine Allanore¹; ¹Massachusetts Institute of Technology

3:20 PM

Grain Refiner Settlement in the Launder System of Twin Roll Casting and Application of Electromagnetic Stirring: *Onur Birbasar*¹; Vedat Topaloglu¹; Murat Can Erdemir¹; Cemil Isiksaçan¹; Onur Meydanoglu¹; Mert Günyüz¹; Hatice Mollaoglu Altuner¹; Murat Dündar¹; ¹Assan Alüminyum

3:45 PM Break

4:00 PM

Thermal Analysis of Grain Refining in A319 Alloys: *Waleed Khalifa*¹; ¹Cairo University

4:25 PM

Peritectic Coupled Growth Solidification - A Review: *Peiman Shahbeigi Roodposhti*¹; Harold Brody¹; ¹University of Connecticut

WEDNESDAY PM

TECHNICAL PROGRAM

Ceramic Materials for Nuclear Energy Research and Applications — Non-oxide Ceramics for Nuclear Applications II

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Energy Committee, TMS: Nuclear Materials Committee

Program Organizers: Xian-Ming Bai, Virginia Tech; Yongfeng Zhang, Idaho National Laboratory; Maria Okuniewski, Purdue University; Donna Guillen, Idaho National Laboratory; Marat Khafizov, Ohio State University; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements – Germany

Wednesday PM Room: Palomar
March 1, 2017 Location: Marriott Marquis Hotel

Session Chair: Andrew Nelson, Los Alamos National Laboratory

2:00 PM Invited

Multi-scale Coupled Radiation Damage and Heat Transport Modeling for Dispersed Nuclear Fuels: *Daniel Schwen*¹; Sebastian Schunert¹; ¹Idaho National Laboratory

2:30 PM Invited

Neutron Irradiated SiC Advanced Analysis to Understand Fission Product Transport: Safety Tested TRISO Coated Particles: *Isabella van Rooyen*¹; Tom Lillo¹; Karen Wright¹; Jeffery Aguiar¹; Terry Holesinger¹; ¹Idaho National Laboratory

3:00 PM

Processing Routes for Improving Purity and Theoretical Density of UN Microspheres: *Jacob McMurray*¹; Terry Lindemer¹; Rodney Hunt¹; Jack Collins¹; Chinthaka Silva¹; Jim Kiggans¹; Kurt Terrani¹; ¹Oak Ridge National Laboratory

3:20 PM

Evolution of Irradiation Defects in Ti₂AlC Ceramics During Heavy Ion Irradiation: *Bai Cui*¹; Fei Wang¹; Qing Su¹; Michael Nastasi¹; ¹University of Nebraska–Lincoln

Characterization of Minerals, Metals, and Materials — Ferrous Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Wednesday PM Room: 31A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Firrao Donato, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D

2:00 PM

Effects of Alumina and Magnesia on Microstructure and Mineralogy of Iron Ore Sinter: *Mingming Zhang*¹; Marcelo Andrade¹; ¹ArcelorMittal Global R&D

2:20 PM

Isothermal Reduction Kinetics of CaO·2Fe₂O₃ by Thermogravimetric Analysis: *Cheng Yi Ding*¹; Xuewei Lv¹; Senwei Xuan¹; Kai Tang¹; Yun Chen¹; Jie Qiu¹; ¹Chongqing University

2:40 PM

Phase Transformation of MnO₂ and Fe₂O₃ Briquettes Roasted under CO-CO₂ Atmospheres: *Bingbing Liu*¹; Yuanbo Zhang¹; Zijian Su¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University

3:00 PM

Application of X-ray Computed Tomography for the Characterization of Graphite Morphology in Compact-graphite Iron: *Dileep Singh*¹; Chih-pin Chuang¹; John Hryn¹; Jonathan Almer¹; Peter Kenesei¹; Richard Huff²; ¹Argonne National Laboratory; ²Caterpillar, Inc.

3:20 PM

Nitrogen Quantification in Steels by Atom Probe Tomography: *Raphael Danoix*¹; Mohamed Gouné²; Andrius Martinavicius¹; Hugo Van Landeghem³; Frederic Danoix¹; ¹CNRS - Université de Rouen; ²ICMC Bordeaux; ³SIMAP Grenoble

3:40 PM Break

3:55 PM

Effect of Grain Boundary Plane on the Sensitization of Austenitic Stainless Steel: *Matthew Hartshorne*¹; Christopher Barr¹; Mitra Taheri¹; ¹Drexel University

4:15 PM

Effect of Binder Phase on Reduction Swelling Property of Iron Ore Pellet: *Xiaozhe Wang*¹; Jian Liang Zhang²; Zhengjian Liu²; Xingle Liu²; ¹University of Science and Technology Beijing; ²University of Science and Technology Beijing

4:35 PM

Important Factors to Consider in FIB Milling of Crystalline Materials: *Jian Li*¹; Pei Liu¹; ¹CanmetMATERIALS

4:55 PM

Estimation of Dislocation Density in Metals from Microhardness Test: *Ali Ameri*¹; Nancy Elewa¹; Juan Escobedo-Diaz¹; Mahmud Ashraf¹; Paul Hazell¹; ¹University of New South Wales-Canberra

5:15 PM

Contact Angle of Iron Ore Particles with Water: Measurements and Influencing Factors: *Kai Tang*¹; Senwei Xuan¹; Wei Lv¹; Xuewei Lv¹; Chenguang Bai¹; ¹Chongqing University

Characterization of Minerals, Metals, and Materials — Material Processing and Corrosion

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Wednesday PM Room: 31B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Jian Li, CanmetMATERIALS; Brett Sanborn, Sandia National Laboratories

2:00 PM

Optimizing Polishing Parameters of Chemical Mechanical Planarization for C-plane (0001) GaN Using Taguchi-based Grey Relational Analysis: *Khushnuma Asghar*¹; *Tanjore Jayaraman*²; Dibakar Das¹; ¹University of Hyderabad, India; ²University of Michigan - Dearborn

2:20 PM

Corrosion Behavior of Super-Ferritic Stainless Steels in NaCl Media: *Natalia Zadorozne*¹; Alicia Ares²; *Raúl Rebak*³; ¹IMAM (CONICET-UNaM); ²CONICET/FCEQyN-UNaM; ³GE Global Research

2:40 PM

Influence of Corrosion on Dynamic Tensile Properties of 304 and 304L Stainless Steel: *Brett Sanborn*¹; Eric Hicks¹; Bo Song¹; Miguel Atencio¹; ¹Sandia National Laboratories

3:00 PM

Characterization of Recrystallization and Twin Evolution Mechanisms Using In Situ TEM: *Asher Leff*¹; Austin Nye¹; Ryan Demott¹; Mitra Taheri¹; ¹Drexel University

3:20 PM

Effect of Bromide Ions on the Pitting Corrosion of Hafnium in Anhydrous T-butanol and Acetonitrile: *Chang Hong Wang*¹; Shenghai Yang¹; Yongming Chen¹; Xiyun Yang¹; Yanzeng Wu¹; Jing He¹; Chaobo Tang¹; ¹Central South University

3:40 PM Break

3:55 PM

Compression Behavior of Semi-Closed Die Forged AZ80 Extrusion: *Andrew Gryguc*¹; Sugrib Shaha¹; Hamid Jahed¹; Mary Wells¹; Bruce Williams²; Jonathan McKinley²; ¹University of Waterloo; ²CanmetMATERIALS

4:15 PM

Dislocation Densities Evolution and Similitude Behavior from Severe Plastic Deformation in Machining: *Sepideh Abolghasem*¹; Saurabh Basu²; M. Ravi Shankar³; ¹Universidad de los Andes; ²Georgia Institute of Technology; ³University of Pittsburgh

4:35 PM

Fatigue Fracture Surface Morphologies in Controlled Crack Growth Rail Steel Specimens: *Donato Firrao*¹; Roberto Doglione¹; Paolo Matteis¹; Stefano Rossi²; Raffaella Sesana³; ¹Politecnico di Torino - DISAT; ²Rete Ferroviaria Italiana SpA; ³Politecnico di Torino - DMEAS

4:55 PM

Nondestructive Characterization of Microstructures of Heat-Treated Steels by Magnetic Barkhausen Noise Technique: *C. Hakan Gur*¹; ¹Ankara

5:15 PM

Automated Optical Characterization of Inconel 100 Using Computational Microstructural Toolsets: *Sundar Veeraraghavan*¹; Satya Ganti¹; Bryan Turner¹; Brian Hayes¹; John Porter¹; Dennis Dimiduk²; Michael Jackson²; Michael Uchic³; ¹UES, Inc; ²BlueQuartz Software, LLC; ³Air Force Research Laboratory

Computational Approaches to Materials for Energy Applications — Session II

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizer: Laurent Chaput, LEMTA

Wednesday PM
March 1, 2017

Room: 7A
Location: San Diego Convention Ctr

Session Chair: Laurent Chaput, Lorraine University

2:00 PM Invited

Optimizing Materials for Solar Energy Conversion: In Search for Descriptors: *Giulia Galli*¹; ¹The University of Chicago

2:30 PM Invited

Different Aspects of Disorder in Materials for Energy Conversion Studied by the KKR-CPA Calculation: *Janusz Tobola*¹; Bartłomiej Wiendlocha¹; Janina Molenda¹; Jakub Cieslak¹; Stanislaw Kaprzyk¹; ¹AGH University of Science and Technology

3:00 PM

Ab Initio Calculations of Carrier Radiative Lifetimes: *Marco Bernardi*¹; ¹Caltech

3:20 PM

Design of Heteroepitaxially Grown Quantum Dots Under External Force Fields: *Nur Seda Aydin*¹; Ersin Emre Oren¹; ¹Bionanodesign Laboratory, Department of Biomedical Engineering, TOBB University of Economics and Technology, Ankara, Turkey

3:40 PM Break

4:00 PM Invited

Structure Prediction in Novel Energy Materials Design: *Maximilian Amsler*¹; Chris Wolverton¹; ¹Northwestern University

4:30 PM

Energy Landscape of Point Defects in Body-centered-cubic Metals: *Mihai-Cosmin Marinica*¹; ¹DEN-Service de Recherches de Métallurgie Physique, CEA, Université Paris-Saclay

4:50 PM

Systematic Search for Lithium Ion Conducting Compounds by Screening of Compositions Combined with

Atomistic Simulation: Daniel Mutter¹; Daniel Urban²; *Christian Elsaesser*³; ¹FMF, University of Freiburg; ²Fraunhofer IWM Freiburg; ³Fraunhofer IWM, and FMF, University of Freiburg

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Bulk Material Structures and Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Wednesday PM
March 1, 2017

Room: 11A
Location: San Diego Convention Ctr

Session Chair: Elif Ertekin, University of Illinois

2:00 PM

Cluster Expansion Statistical Models to Resolve the Thermochemistry of Ti Alloys: *Naga Sri Harsha Gunda*¹; Anton Van der Ven¹; ¹University of California Santa Barbara

2:20 PM

Predicting Novel Spinel Structures Using Density Functional Theory Assisted Machine Learning: *Joshua Schiller*¹; Elif Ertekin¹; ¹University of Illinois at Urbana-Champaign

2:40 PM

Efficient Ab initio Modeling of Random Multicomponent Alloys: *Chao Jiang*¹; Blas Uberuaga²; ¹Idaho National Laboratory; ²Los Alamos National Laboratory

3:00 PM

Predicting Raman Spectrum of Boron Carbide Polymorphs Using Density Functional Theory: *Ghatu Subhash*¹; Cody Kunka¹; Amnaya Awasti¹; ¹University of Florida

3:20 PM

First-principles Statistical Mechanics as Applied to High Temperature Ni-super alloys: *John Goiri*¹; Anton Van der Ven¹; ¹UCSB

3:40 PM Break

3:55 PM

Free Energy Calculation of Austenite Phase in PtTi and NiTi: *Sara Kadkhodaei*¹; Axel van de Walle¹; ¹Brown University

4:15 PM

Automation and Database of First Principles Phonon Calculations: *Atsushi Togo*¹; Isao Tanaka¹; ¹Kyoto University

4:35 PM

Study of Aluminum-Silicon in the Liquid State: *Tara Power*¹; Sumanth Shankar¹; Jeffrey Hoyt¹; ¹McMaster University

4:55 PM

ICME-tailored Sensitivity Analysis of a Prescriptive Precipitation Framework: *Luke Johnson*¹; Raymundo Arroyave¹; ¹Department of Materials Science and Engineering, Texas A&M University

5:15 PM

Development of Numerical Methods for the Thermal Characterization of Materials: *Jonathan Séverin*¹; Philippe Jund¹; ¹ICGM-Montpellier University

Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions — Uncertainty Quantification in Density Functional Theory (DFT)

*Sponsored by:*TMS: Computational Materials Science and Engineering Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Li Ma, NIST; Shawn Coleman, ARL; Jeff Doak, QuesTek Innovations, LLC; Fadi Abdeljawad, Sandia National Laboratory

Wednesday PM

Room: 10

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida

2:00 PM

Automated Convergence and Error Analyses for High Precision Density Functional Theory Calculations: *Jan Janßen*¹; Tilmann Hinkel¹; Joerg Neugebauer¹; ¹Max-Planck-Institut für Eisenforschung GmbH

2:20 PM Invited

Peierls Barrier in Ta-W Alloys: Estimating Aleatory Variability: *Stephen Foiles*¹; ¹Sandia National Laboratories

2:55 PM Invited

Density Functionals and the Finite Temperature Properties of Ferroelectric Oxides: *Valentino Cooper*¹; ¹Oak Ridge National Laboratory

3:30 PM Break

3:50 PM Invited

Quantifying Uncertainty from (Pseudo)potentials for First Principles and Classical Atomistic Simulations: *Mark Tschoopp*¹; Efrain Hernandez¹; Shawn Coleman¹; Decarlos Taylor¹; Jennifer Synowczynski-Dunn¹; ¹Army Research Laboratory

4:25 PM

Validation and Uncertainty Assessment of Bond-order Potentials for Transition Metals: *Matous Mrovec*¹; Thomas Hammerschmidt¹; Yi-Shen Lin²; Vaclav Vitek²; Ralf Drautz¹; ¹ICAMS, Ruhr University Bochum, Germany; ²Department of Materials Science and Engineering, University of Pennsylvania

Computational Thermodynamics and Kinetics — Microstructure Evolution II, Thermodynamics and Alloys II

*Sponsored by:*TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdollahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Wednesday PM

March 1, 2017

Room: 11B

Location: San Diego Convention Ctr

Session Chairs: Thien Duong, Texas A&M University; Mark Asta, UC Berkeley

2:00 PM Invited

First-Principles Calculations of Coherent Phase Equilibria and Short-Range-Order Hardening in the Alpha-Ti-O System: David Olmsted¹; Maarten de Jong¹; *Mark Asta*¹; ¹University of California, Berkeley

2:30 PM

Microstructural Pattern Formation during Eutectoid Transformation in Fe-Mn-C Steels: Phase-field Simulations: *Leslie Mushongera*¹; Kumar Ankit²; Britta Nestler²; ¹Karlsruhe University of Applied Sciences; ²Karlsruhe Institute of Technology

2:50 PM

Joint Formation and Microstructural Evolution in the Microbumps of Three Dimensional Integrated Circuits (3DICs): *Vahid Attari*¹; Raymundo Arroyave¹; ¹Texas A&M University

3:10 PM Invited

First-Principles Evaluation of Ti₂AlC-Cr₂AlC Pseudo-binary Phase Diagram: *Thien Duong*¹; Anjana Talapatra¹; Woongrak Son¹; Huili Gao¹; Miladin Radovic¹; Raymundo Arroyave¹; ¹Texas A&M University

3:40 PM Break

4:00 PM

Atomic Scale Modeling of Fe-Al-Mn-C Alloy Using Pair Models and Monte-Carlo Calculations: *Jérôme Dequeker*¹; Alexandre Legris¹; Rémy Besson¹; Ludovic Thuiné¹; ¹Université Lille 1

4:20 PM

Microstructure Evolution and Deformation Behavior of Powder Materials during Sintering: *Sudipta Biswas*¹; Vikas Tomar¹; ¹Purdue University

4:40 PM

Kinetics of Phase Transformations Using Quasi-Coarse-Grained Dynamics Simulations: Sumit Suresh¹; Terrance O'Ragan²; *Avinash Dongare*¹; ¹University of Connecticut; ²US Army Research Laboratory

5:00 PM

Kinetics Study of Thin Film Phase Transformation via Level-Set Method Simulation: *Mahyar M. Moghadam*¹; Peter Voorhees¹; ¹Northwestern University

Defects and Properties of Cast Metals — Continuous and DC Casting

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

Wednesday PM
March 1, 2017

Room: 23A
Location: San Diego Convention Ctr

Session Chairs: Brian Thomas, Colorado School of Mines; Laurens Katgerman, Delft University

2:00 PM Introductory Comments

2:05 PM Keynote

Progress and Developments in DC Casting of Aluminium Alloys: *Laurens Katgerman*¹; ¹Delft University

2:25 PM Invited

The Influence of Mould Lubrication Index on Defect Formation during Continuous Casting of Steel: *Pavel Ramirez Lopez*¹; ¹Swerea MEFOS AB

2:45 PM

Thermal-Mechanical Model of Depression Formation in Steel Continuous Casting: *Matthew Zappulla*¹; Brian Thomas¹; ¹University of Illinois at Urbana-Champaign

3:05 PM

Effect of Continuous Casting Processing Parameters on the Hot Ductility of Micro-alloyed Steels: Hossam Ibrahim¹; Mohamed Soliman¹; *Heinz Palkowski*¹; ¹Clausthal University of Technology

3:25 PM Break

3:45 PM

Evaluation of Hot Cracking Sensitivity Using Multiphase Field and FE Methods during Continuous Casting of Nb Microalloyed Gear Steels: *Viktor Kripak*¹; Ulrich Prah¹; Wolfgang Bleck¹; ¹RWTH Aachen

4:05 PM

Study for the Initiation Locations of Longitudinal Surface Cracks on Beam Blank in the Mold of Continuous Casting: *Wei Chen*¹; ¹North China University of Science and Technology

4:25 PM

The Influence of SEN and Upper Nozzle Design on the Flow Character for the Slab Quality: *Yu Yanwen*¹; ¹Baoshan Iron & Steel Co. Ltd.

4:45 PM Concluding Comments

Deformation and Transitions at Interfaces — Interfaces in Materials

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Wednesday PM
March 1, 2017

Room: 23B
Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

Plastic Recovery Driven by Interfaces: Ben Eftink¹; Owen Kingstedt²; Ao Li³; Izabela Szlufarska³; John Lambros¹; *Ian Robertson*²; ¹University of Illinois; ²University of Utah; ³University of Wisconsin-Madison

2:20 PM Invited

Microstructure and Mechanical Behavior of HCP/BCC Bulk Nanolaminate Composites produced by Accumulative Roll Bonding: *Nathan Mara*¹; Daniel Savage²; John Carpenter¹; Rodney McCabe¹; Thomas Nizolek³; Nan Li¹; Sven Vogel¹; Marko Knezevic²; Irene Beyerlein¹; ¹Los Alamos National Laboratory; ²University of New Hampshire; ³University of California, Santa Barbara

2:40 PM Invited

A Computational Study of the Deformation Response of Cu/Nb Multilayer Composites: *Jason Mayeur*¹; Irene Beyerlein²; ¹Los Alamos National Lab; ²University of California, Santa Barbara

3:00 PM Invited

Atomic-Scale Studies of Defect Interactions with Homo- and Heterophase Interfaces: *Enrique Martinez Saez*¹; Blas Uberuaga¹; Irene Beyerlein¹; ¹LANL

3:20 PM Invited

Structure and Dynamics at the Cathode/Electrolyte Interfaces in Li-S Batteries: *Ying Ma*¹; ¹University of Wisconsin-Eau Claire

3:40 PM Break

4:00 PM Invited

Structure of Semicohherent U-Zr Interfaces: Elton Chen¹; *Remi Dingreville*²; Chaitanya Deo¹; ¹Georgia Institute of Technology; ²Sandia National Laboratories

4:20 PM Invited

The Atomic Level Structure and Chemistry of Interfaces Between Iron and Cementite: *Christopher Weinberger*¹; Matthew Guziewski¹; Shawn Coleman²; ¹Drexel University; ²Army Research Laboratory

4:40 PM

Influence of Grain Boundary Transport on Transient Oxidation: Pralav Shetty¹; *Jessica Krogstad*¹; ¹University of Illinois, Urbana-Champaign

5:00 PM

Strong Nonlinear Increase in the Yield Strength Due to Solute Segregation at Grain Boundaries in FCC Nano-crystalline Metals: *Valery Borovikov*¹; Mikhail Mendeleev¹; ¹The Ames Laboratory

5:20 PM Invited

Atomistic Study of Fundamental Character and Motion of Dislocations in Intermetallic Al₂Cu: *Jian Wang*¹; Amit Misra¹; ¹University of Nebraska-Lincoln

Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session — Deriving Value from Challenging Waste I

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Energy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Elsa Olivetti, Massachusetts Institute of Technology; Mingming Zhang, ArcelorMittal Global R&D; Randolph Kirchain, Massachusetts Institute of Technology; Henry Colorado, Universidad de Antioquia

Wednesday PM Room: 14B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Elsa Olivetti, MIT; Mingming Zhang, Arcelor Mittal Global R&D

2:00 PM

Maximizing the Values of Steelmaking Slags: *Naiyang Ma*¹; ¹ArcelorMittal

2:20 PM

Direct Preparation of Metal Doping Ni-Zn Ferrite from Zn-containing Electric Arc Furnace Dust by Calcination Method: *Hui-gang Wang*¹; Min Guo¹; Mei Zhang¹; ¹University of Science and Technology Beijing

2:40 PM

Separation and Comprehensive Utilization of Valuable Elements in Ti-bearing Electric Arc Furnace Molten Slag: *Yang Li*¹; ¹Wuhan University of Science and Technology

3:00 PM Invited

Recycling in the Real World -- Challenges and Functional Approaches for the Recycling of Complex Products and Hazardous Materials: *Mark Kennedy*¹; C. Landaas²; P. Hellinckx²; ¹Proval Partners, NTNU; ²Proval Partners

3:30 PM Break

3:50 PM

Recovery of Iron From Red Mud By Magnetic Roasting and Direct Reduction: *Zhenhong Liao*¹; ¹Changsha Research Institute of Mining and Metallurgy Co.,Ltd

4:10 PM

Recycling of Spent Pot Lining by Vacuum Distillation Process: *Wang Yaowu*¹; ¹Northeastern University of China

Electrode Technology — Operation/Practice

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Houshang Alamdari, Laval University

Wednesday PM Room: 1B
March 1, 2017 Location: San Diego Convention Ctr

Session Chair: Mario Fafard, Laval University

2:00 PM Introductory Comments

2:05 PM

Xelios 2.0: Return on Experience for the Advanced Eco-designed Vibrocompactor: *Vincent Philippaux*¹; Bastien Aymard¹; ¹Fives Solios

2:30 PM

Hexapod Fleet Migration in Order to Upgrade to AP40LE Technology: *Jonathan Reichelson*¹; Marc Gagnon²; ¹Hatch Ltd; ²Aluminerie Alouette inc.

2:55 PM

The Impact of Increased Anode Size and Amperage Creep on Anode Management: *James Anson*¹; René Trudel²; Bertrand Vincent²; ¹Hatch; ²Alcoa, Deschambault Smelter

3:20 PM

Anode Quality Improvement at INALUM Smelter: Edi Mugiono¹; Firman Ashad¹; Ade Buandra¹; *Sahala Sijabar*¹; ¹PT Inalum (Persero)

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Tin Whisker and Wettability

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Wednesday PM Room: 30E
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Babak Arfaei, Binghamton University; Eric Cotts, Binghamton University

2:00 PM

Influences of Wettability and Volume of Sn-based Solder Alloys on Self-Alignment Accuracy: *Hwan-Pil Park*¹; Gwancheol Seo¹; Young-Ho Kim¹; ¹Hanyang University

2:20 PM

Role of Indium Doping on Whisker Mitigation in Electroplated Sn: Bhaskar Majumdar¹; *Sherin Bhassyyasantha*¹; ¹New Mexico Tech

2:40 PM

Impact of In Addition to Electroplated Sn in Mitigating Whisker Growth: *Susmiti Das Mahapatra*¹; Bhaskar Majumdar²; Indranath Dutta¹; ¹Washington State University; ²New Mexico Tech

3:00 PM

Quantifying the Role of Stress in Whisker Nucleation and Growth: *Eric Chason*¹; Fei Pei¹; Justin Vasquez²; Andrew Hitt¹; ¹Brown University

3:20 PM Break

3:40 PM

Sn Whisker Growth in Air HAST: *Chulmin Oh*¹; Wonsik Hong¹; ¹KETI

4:00 PM

Sn Film Microstructure on the Kinetics of Spontaneous Whisker Growth: *Albert T. Wu*¹; Hao Chen¹; Wen-Chih Lin¹; ¹National Central University

Energy Materials 2017: Materials for Coal-Based Power — Session III

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dryepondt, Oak Ridge National Laboratory

Wednesday PM Room: 12
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Kyle Rozman, NETL; Richard Oleksak, National Energy Technology Laboratory

2:00 PM Invited

Developing a Crystal Plasticity Model for Nickel Based Turbine Alloys Based on the Discrete Element Method: *Jamie Kruzic*¹; Agnieszka Truszkowska²; Qin Yu²; Alex Greaney³; Matthew Evans²; ¹UNSW Australia; ²Oregon State University; ³University of California, Riverside

2:30 PM Invited

Predicting Microstructure-Creep Resistance Correlation in High Temperature Alloys Over Multiple Time Scales: *Vikas Tomar*¹; ¹Purdue University

3:00 PM Invited

The SMARTER Project – Science of Multicomponent Alloys: Roadmap for Theoretical and Experimental Research: *M. Kramer*¹; Pratik Ray¹; Duane Johnson¹; ¹Iowa State University

3:30 PM Break**3:50 PM Invited**

Modeling Long-term Creep Performance for Welded Nickel-base Superalloy Structures for Power Generation Systems: *Chen Shen*¹; Monica Soare¹; Pengyang Zhao¹; Vipul Gupta¹; Shenyang Huang¹; Suzuki Akane¹; Yunzhi Wang¹; ¹GE Global Research

4:20 PM Invited

Solid State Joining of Creep Strength Enhanced Ferritic Steels: *Glenn Grant*¹; Jens Darsell¹; Arun Devaraj¹; ¹Pacific Northwest National Laboratory

Energy Materials 2017: Materials for Nuclear Energy — Materials for Nuclear Applications II

Sponsored by: Chinese Society for Metals

Program Organizers: Raul Rebak, GE Global Research; Zhengdong Liu, China Iron & Steel Research Institute Group; Peter Hosemann, University of California Berkeley; Jian Li, CanmetMATERIALS

Wednesday PM
March 1, 2017

Room: Miramar
Location: Marriott Marquis Hotel

Session Chair: Jian Li, CanmetMATERIALS

2:00 PM Invited

Fuel Cladding Materials for Supercritical Water Cooled Reactor: *Wenyue Zheng*¹; ¹Canmet Materials

2:40 PM

Development of the 12Cr2Mo1R Steel Plate for Metal Internal Equipment for Demonstration Project of High Temperature Gas-cooled Reactor: *Hanqian Zhang*¹; Huibin Liu¹; ¹Baoshan Iron & Steel Company

3:00 PM

EBSD and TEM Assessment of Deformation Localization in 718 Alloy: *Aida Amroussia*¹; Keith Leonard²; Maxim Gussev²; Jacqueline Stevens³; ¹Michigan State University; ²Oak Ridge National Laboratory; ³AREVA Inc.

3:20 PM

Microstructure Evolution of a Reactor Pressure Vessel Steel during High-temperature Tempering: *Chuanwei Li*¹; Jianfeng Gu¹; Lizhan Han¹; Qingdong Liu¹; ¹Shanghai Jiao Tong University

3:40 PM Break**3:55 PM**

Thermal Conductivity Reduction of Tungsten Plasma Facing Material Due to Helium Plasma and Cu²⁺ Ion Irradiation: *Shuang Cui*¹; Michael Simmonds¹; Joseph Barton¹; Yongqiang Wang²; Russ Doerner¹; George Tynan¹; Renkun Chen¹; ¹UCSD; ²LANL

4:15 PM

Effects of Fe Concentration on Ion-irradiation Induced Defect Evolution and Hardening in Ni-Fe Binary Alloys: *Ke Jin*¹; Wei Guo²; Mohammad Ullah¹; Yanwen Zhang¹; William Weber³; Jonathan Poplawsky²; Hongbin Bei¹; ¹Materials Science & Technology Division, Oak Ridge National Laboratory; ²Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; ³University of Tennessee

4:35 PM

Impact of Neutron Irradiation on Helium Desorption Behavior in Iron: *Xunxiang Hu*¹; Kevin Field¹; David Woodley²; Yutai Katoh¹; ¹ORNL; ²University of Michigan

4:55 PM

Size Effects in Ion-irradiated 800H Steel at High Temperatures Utilizing Nanoindentation and Microcompression Testing: *Anya Prasitthipayong*¹; Shraddha Vachhani²; Scott Tumey³; Andrew Minor⁴; Peter Hosemann²; ¹Department of Materials Science and Engineering, University of California, Berkeley; ²Hysitron, Inc.; ³Center of Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory; ⁴Department of Materials Science and Engineering, University of California, Berkeley; National Center for Electron Microscopy, The Molecular Foundry, Lawrence Berkeley National Laboratory; ⁵Department of Nuclear Engineering, University of California, Berkeley

5:15 PM

Understanding Transuranic Binding Mechanisms and Speciation on Stainless Steel: *Tim Kerry*¹; Clint Sharrad¹; Andreas Geist²; Dieter Schild²; ¹University of Manchester; ²Institute for Nuclear Waste Disposal

Energy Materials 2017: Materials for Oil and Gas and AMREE Oil & Gas III — Materials, Interfaces and Innovations for Hostile Oil and Gas / Energy II

Sponsored by: Chinese Society for Metals

Program Organizers: Indranil Roy, Schlumberger; Chengjia Shang, University of Science and Technology Beijing

Wednesday PM
March 1, 2017

Room: 14A
Location: San Diego Convention Ctr

Session Chairs: Ramatou Ly, University Texas A&M; Leonid Rapoport, MIT

2:00 PM Invited

Development of Polymer-based Composite Coatings for the Gas Exploration Industry: *Brajendra Mishra*¹; Ali Chaudhry¹; ¹Worcester Polytechnic Institute

2:30 PM

Where the Polymer Meets the Oilfield: *Huilin Tu*¹; ¹Schlumberger

2:55 PM

Mineral Scale Fouling Under Boiling: Fundamentals to Mitigation: *Susmita Dash*¹; Leonid Rapoport¹; Navdeep Dhillon¹; Kripa Varanasi¹; ¹Massachusetts Institute of Technology

3:20 PM

Interfacial Engineering for Suppressing Mineral Scale Fouling: *Samantha McBride*¹; Susmita Dash¹; Sami Khan¹; Kripa Varanasi¹; ¹Massachusetts Institute of Technology

3:45 PM Break**4:00 PM**

Co-relation of Microstructural Features with Tensile and Toughness Characteristics of X70 Grade Steel: Tushal Kyada¹; *Raghu Shant Jonnalagadda*¹; Rajesh K Goyal¹; Tribhuwan Singh Kathayat¹; ¹Welspun Corp. Ltd

4:25 PM Invited

Development and Applications of New Generation Ni-containing Cryogenic Steels in China: *Zhen-yu Liu*¹; Meng Wang¹; Jun Chen¹; Guodong Wang¹; ¹Northeastern University

4:50 PM

Anisotropic Behaviors for X100 High Grade Pipeline Steel under Stress Constraints: *Kun Yang*¹; Ting Sha²; Ming Yang³; Chen Shang³; Qiang Chi¹; ¹Tube Goods Research Institute; ²The No.771 Institute of Ninth Academy of China Aerospace Science and Technology Corporation; ³Petrochina West Pipeline Company

5:15 PM

Material Selection-Evaluation Testing and Challenge of the Aluminum Alloy Drill Pipe in China: *Chun Feng*¹; Caihong Lu¹; ¹China National Petroleum Corporation

5:40 PM Invited

The Research and Development of Low Cost 21.4mm/22mm X80 Hot Rolled Strip Based on Austenite Grain Condition Optimizing: *Chengliang Miao*¹; Chengjia Shang²; Zheng Chen³; Fei Li⁴; Yang Cui⁴; Xiaohe Yang³; ¹Shougang Research Institute of Technology; ²University of Science and Technology; ³Shougang Jingtang United Iron & Steel Co. Ltd.; ⁴Shougang Research Institute of Technology

Energy Technologies — Novel Technologies

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Lei Zhang, University of Alaska Fairbanks; Jaroslav Drellich, Michigan Technological University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Laboratory; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University; Ziqi Sun, Queensland University of Technology; Tao Wang, Nucor Steel; John Howarter, Purdue University; Fiseha Tesfaye, Abo Akademi University

Wednesday PM Room: 13
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Neale Neelameggham, Ind LLC; Jingxi Zhu, Sun Yat-Sen University; Tao Wang, Nucor Steel

2:00 PM Invited

Modeling Anthropogenic Heat Flux in Climate Models: *Ganesan Subramanian*¹; Neale Neelameggham²; ¹Independent Consultant; ²Ind LLC

2:30 PM Invited

Development of a Fluidized-Bed Ash Agglomeration Modeling Methodology to Include Particle-Level Heterogeneities in Ash Chemistry and Granular Physics: Aditi Khadilkar¹; Peter Rozelle²; *Sarma Pisupati*¹; ¹Penn State University; ²US Department of Energy

2:50 PM Invited

In-situ Microscopic Study of Morphology Changes in Natural Hematite and Cu-spinel Particles during Cyclic Redox Gas Exposures for Chemical Looping Applications: *Anna Nakano*¹; Jinichiro Nakano¹; James Bennett²; ¹US Department of Energy National Energy Technology Laboratory/AECOM; ²US Department of Energy National Energy Technology Laboratory

3:10 PM

Thermodynamic Stability of Condensed Phases in the Ternary System CaO-Cu-O by the EMF Method: *Joseph Hamuyuni*¹; Pekka Taskinen¹; Dmitry Sukhomlinov¹; Mari Lundström¹; ¹Aalto University School of Chemical Technology

3:30 PM Break

3:45 PM

{Ti,Zr}NiSn - based High ZT Spinodal Thermoelectrics: *Peter Rogl*¹; Andrij Grytsiv¹; Matthias Gürth¹; Philip Sauerschnig¹; Jan Vrestal²; Vitalij Romaka³; Gerda Rogl¹; Kunio Yubuta⁴; Ernst Bauer⁵; ¹University of Vienna; ²Masaryk University; ³Lviv Polytechnic National University; ⁴Tohoku University; ⁵Vienna University of Technology

4:05 PM

Experimental Study on Electro-spraying of Ethanol Based on PDA Measurement: Haige Li¹; *Yunhua Gan*¹; Xiaowen Chen¹; Yang Tong¹; Meilong Hu²; ¹South China University of Technology; ²Chongqing University

Environmentally Assisted Cracking: Theory and Practice — Environmentally Assisted Embrittlement and Cracking II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska-Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

Wednesday PM Room: 31C
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: James Burns, University of Virginia; Ilaksh Adlakha, Arizona State University

2:00 PM Invited

The Effect of Composition, Temper, and Crack Orientation on the Stress Corrosion Cracking Behavior of Al-Mg Alloys: *James Burns*¹; Amber Lass¹; Michael McMurtrey¹; Matthew McMahon¹; Patrick Steiner¹; Sarah Fakler¹; ¹University of Virginia

2:40 PM

Effect of Mechanical Stresses on the Pitting Corrosion Behavior of an Al7075 Alloy: *Scott Turnage*¹; Ilaksh Adlakha¹; Amm Hasib¹; Sridhar Niverty¹; Nikhilesh Chawla¹; Kiran Solanki¹; ¹Arizona State University

3:00 PM

Relationships between the Galvanic Driving Force and Strain Energy Density Accumulation: *Andrea Nicolas*¹; Alberto Da Silva Mello Junior¹; Michael Sangid¹; ¹Purdue University

3:20 PM

The Effects of Alloy Chemistry on Localized Corrosion of Austenitic Stainless Steels: *David Sapiro*¹; Bryan Webler¹; ¹Carnegie Mellon University

3:40 PM Break

4:00 PM

Intergranular Hydrogen Embrittlement: Hydrogen Diffusion in Nickel Singles Crystals and Bi-crystals: *Jiaqi Li*¹; ¹University of La Rochelle

4:20 PM

Diffusion, Trapping Mechanisms and Some Implications on Local Approach of Fracture in Martensitic Steel: Stéphane Cohendoz¹; Cyril Berziou¹; Christelle Reber¹; Remy Milet¹; Catherine Savall¹; Abdelali Oudriss¹; Jamaa Bouhattate¹; Juan Creus¹; *Xavier Feaugas*¹; ¹Université de La Rochelle

4:40 PM

Effect of Chemical Composition on Embrittlement of High Manganese TWIP Steel: *Young-Ha Kim*¹; Tae Jin Song¹; Sung Kyu Kim¹; Il Jeong Park¹; Yon-Kyun Song¹; ¹POSCO

5:00 PM Concluding Comments - Speakers: Prof. Ian Robertson / Bai Cui

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Fatigue Behaviors of Engineering Alloys

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kotsos, Drexel University; Tongguang Zhai, University of Kentucky

Wednesday PM
March 1, 2017

Room: 23C
Location: San Diego Convention Ctr

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM Invited

Non-local Stored Energy and J-integral Methods for Microstructure-sensitive Crack Growth: Fionn Dunne¹; David Wilson¹; ¹Imperial College

2:20 PM Invited

A Physically Based Law for S-N Fatigue Behavior of Metals: K. S. Ravi Chandran¹; ¹University of Utah

2:40 PM

Fatigue Mediated Lattice Rotation in Al Alloys at Room Temperature: Ramasis Goswami¹; Syed Qadri¹; Chandra Pande¹; ¹Naval Research Laboratory

3:00 PM Invited

Effects of Induced Surface Defects on Crack Initiation and Fatigue Strength for HCF and VHCF of a Structural Steel: Youshi Hong¹; Qingqing Jiang¹; Chengqi Sun¹; ¹LNM, Institute of Mechanics, Chinese Academy of Sciences

3:20 PM

Strain Mapping and Mining to Quantify the Extent of Cyclic Damage and Transverse Necking in Thin Metallic Sheets: James Collins¹; Wade Lanning¹; Yoon Joo Na¹; Syed Javaid¹; Christopher Muhlstein¹; ¹Georgia Institute of Technology

3:40 PM Break

4:00 PM

A Microstructure-Sensitive Fatigue Crack Growth Study Based on Experimental Measurements and Computational Modeling in Al-Si Cast Alloys: Tiantian Zhang¹; Anthony Spangenberg¹; Diana Lados¹; ¹Worcester Polytechnic Institute

4:20 PM

Identifying Failure Locations in Nickel Based Superalloy R88DT under Cyclic Loadings, via Crystal Plasticity Simulations: Monica Soare¹; Shenyan Huang¹; Shakhrukh Ismonov¹; Andrew Detor¹; ¹GE Global Research

4:40 PM

Grain Size Effects on Fatigue Crack Growth in Nanocrystalline NiTi: William LePage¹; Aslan Ahadi²; Q.P. Sun³; John Shaw¹; Samantha Daly⁴; ¹University of Michigan; ²National Institute for Materials Science; ³The Hong Kong University of Science and Technology; ⁴University of California, Santa Barbara

5:00 PM

Slip Transmission between Primary Alpha Grains during the Low Cycle Fatigue of Ti 6242Si: Sudha Joseph¹; Ioannis Bantounas¹; Trevor Lindley¹; Hamidreza Abdolvand²; Angus Wilkinson²; David Dye¹; ¹Imperial College London; ²University of Oxford

5:20 PM

Fatigue Assessment of a Railway Wheel Steel in the VHCF-regime: Dietmar Eifler¹; Michael Koster²; ¹University of Kaiserslautern; ²European Patent Office

Fracture Properties and Residual Stresses in Small Dimensions — In Situ Fracture Testing Methodologies

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Daniel Kiener, University of Leoben; Marco Sebastiani, Roma TRE university; Nagamani Jaya Balila, Max Planck Institut fuer Eisenforschung GmbH; William Gerberich, University of Minnesota; Siddhartha (Sid) Pathak, University of Nevada, Reno

Wednesday PM
March 1, 2017

Room: 21
Location: San Diego Convention Ctr

Session Chairs: Andrew Minor, UC Berkeley; Jeffrey Wheeler, ETH Zurich

2:00 PM Introductory Comments

2:05 PM Invited

Nanoscale Strain Mapping of Individual Defects during In Situ Deformation: Thomas Pekin¹; Colin Ophus²; Christoph Gammmer³; Jim Ciston²; Andrew Minor¹; ¹UC Berkeley & LBNL; ²LBNL; ³Erich Schmid Institute

2:35 PM

Studying Plasticity during Fracture at the Micron Scale by Means of Cantilever Experiments in Single-crystalline NiAl and W – HR-EBSD Analyses and Elevated Temperature Measurements: Johannes Ast¹; Juri Wehrs¹; Johann Michler¹; Xavier Maeder¹; ¹EMPA

2:55 PM

In Situ Stable Crack Growth at the Micron Scale: Giorgio Sernicola¹; Tommaso Giovannini²; Punit Patel³; James Kermode³; Daniel Balint²; T Ben Britton¹; Finn Giuliani¹; ¹Department of Materials, Imperial College; ²Department of Mechanical Engineering, Imperial College London; ³Warwick Centre for Predictive Modelling, University of Warwick

3:15 PM Invited

In Situ Micron Scale Fracture Toughness Testing and Modeling of a Chevron Notched Bowtie-shaped Beam: Fiona Yuwei Cui¹; Richard Vinci¹; ¹Lehigh University

3:45 PM Break

4:05 PM Invited

Liquid Metal Embrittlement at the Micro-scale: Gallium FIB vs. Xenon FIB: Yuan Xiao¹; Jeffrey Wheeler¹; ¹ETH Zurich

4:35 PM

Micro-Compression Testing of Mg-Nb Multilayered Nano-Composites for Ultra-High Strength, Formability and Ductility: Manish Jain¹; Marko Knezevic²; Nathan Mara³; Irene Beyerlein³; Siddhartha Pathak¹; ¹University of Nevada Reno; ²University of New Hampshire; ³Los Alamos National Laboratory

4:55 PM

High Temperature Mechanical Properties of Materials Synthesized from Graphene and Carbon Nanotubes: Sanjit Bhowmick¹; Chandra Tiwary²; Syed Asif²; Pulickel Ajayan²; ¹Hysitron Inc.; ²Rice University

Friction Stir Welding and Processing IX — Dissimilar Applications

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Wednesday PM Room: 9
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Yuri Hovanski, Brigham Young University; Guntram Wagner, University of Chemnitz, Germany

2:00 PM Invited

Joining Aluminum Alloys to High Strength Steels by Friction Spot Welding: Uceu Suhuddin¹; Vanessa Fischer²; *Jorge dos Santos*¹; ¹Helmholtz-Zentrum Geesthacht; ²Federal University Rio Grande do Sul

2:20 PM Invited

Joining Dissimilar Material Using Friction Stir Scribe Technique: *Piyush Upadhyay*¹; Yuri Hovanski¹; Leo Fifield¹; Blair Carlson²; Eric Boettcher³; Robert Ruokolainen⁴; Peter Busuttill⁵; ¹Pacific Northwest National Laboratory; ²General Motors; ³Honda R & D Americas; ⁴FCA; ⁵Kuka Systems North America, LLC.

2:40 PM

Influence of Stir Flow on Joint Quality during Friction Stir Lap Al-to-Cu Welding: *Doddy Parningotan*¹; M. Tarrant²; Z.W. Chen¹; A. Hilton¹; T. Pasang¹; ¹Auckland University of Technology; ²National Aluminium Ltd

3:00 PM

Process Force Reduction during Robotic Friction Stir Welding of Aluminum Alloys with Reduced Tool Aspect Ratios: *Anna Regensburg*¹; René Schürer¹; Michael Grätzel¹; Michael Hasieber¹; Jean Pierre Bergmann¹; ¹Technische Universität Ilmenau

3:20 PM

Intermetallic Phase Formation at Al-steel Solid-state Joints – A Comparison between FSW and VFAW Processes: *Genevieve Lee*¹; Kaleb Ponder¹; Ali Nassiri¹; Bert Liu¹; Glenn Daehn¹; Antonio Ramirez²; ¹The Ohio State University

3:40 PM Break

4:00 PM Invited

Avoiding Melting in Friction Stir Welds of Highly Dissimilar Melting Temperature Materials: *Christian Widener*¹; Bharat Jasthi¹; Todd Curtis¹; MD. Shamsujjoha²; ¹South Dakota School of Mines and Technology; ²University of Massachusetts, Amherst

4:20 PM

Automated Optical Visualization of Materials Flow in Dissimilar Metal Friction Stir Welds: *John Sosa*¹; Hamish Fraser¹; Rajiv Mishra²; Satya Ganti³; Bryan Turner³; Brian Hayes³; Veeraraghavan Sundar³; ¹The Ohio State University; ²University of North Texas; ³UES Inc.

4:40 PM

Realization of Ultrasound Enhanced Friction Stir Welded (USE-FSW) Al/Mg- and Al/Steel-Joints: Process and Robustness, Mechanical and Corrosive Properties: *Marco Thoma*¹; Guntram Wagner¹; Benjamin Strass²; Bernd Wolter²; Sigrid Benfer³; Wolfram Fuerbeth³; ¹University of Chemnitz; ²Fraunhofer Institute for Nondestructive Testing IZFP Saarbrücken; ³DECHEMA-Forschungsinstitut

5:00 PM

A Numerical Simulation for Dissimilar Aluminum Alloys Joined by Friction Stir Welding: *Carter Hamilton*¹; Mateusz Kopyscianski²; Aleksandra Weglowska³; Stanislaw Dymek²; Adam Pietras³; ¹Miami University; ²AGH University of Science and Technology; ³Institute of Welding

Frontiers in Materials Science, Engineering, and Technology: An FMD Symposium in Honor of Sungho Jin — Process-Property-Performance Correlations: Devices, Circuits, Lead Free Solder & Packaging

Sponsored by: TMS Functional Materials Division, TMS: Biomaterials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Fay Hua, Intel Corporation; Tae-Kyu Lee, Portland State University; Young-Ho Kim, Hanyang University; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-un Kim, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

Wednesday PM Room: 33B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Young-Ho Kim, Hanyang University; Sufian Abedrabbo, The Petroleum Institute

2:00 PM Introductory Comments

2:10 PM Invited

Harvesting Light from Silicon via Colloid-induced Stressed Interface Processed by Deposition of Sol-Gel-based Silica: *Sufian Abedrabbo*¹; Anthony Fiory²; Nuggehalli Ravindra²; ¹The Petroleum Institute; ²New Jersey Institute of Technology

2:40 PM Invited

Cold-Electron Transport at Room Temperature for Beyond CMOS Electronics: *Seong Jin Koh*¹; ¹University of Texas at Arlington

3:10 PM Invited

Reliability Issues of Lead (Pb)-free Solder Technology in Microelectronic Applications: *Sung Kang*¹; ¹IBM Corporation

3:40 PM Break

3:55 PM Invited

An Integrated Computational Materials Engineering Approach to Electronic Packaging in Pb-free Interconnects: *Raymundo Arroyave*¹; ¹Texas A & M University

4:25 PM Invited

Synthesis of Nanocomposites Consisting of High Density Nanoparticles in the Polyimide Films and Their Applications: *Young-Ho Kim*¹; ¹Hanyang University

Gamma (FCC)/Gamma-Prime (L1₂) Co-Based Superalloys II — Mechanical Behavior I

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee

Program Organizers: Eric Lass, National Institute of Standards and Technology; Qiang Feng, University of Science and Technology Beijing; Alessandro Moturra, University of Birmingham; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Wei Xiong, Northwestern University

Wednesday PM
March 1, 2017

Room: Pacific 14
Location: Marriott Marquis Hotel

Session Chairs: Michael Titus, Purdue University; David Dunand, Northwestern University

2:00 PM Invited

Mechanical Properties of Co-based Superalloys with FCC+L1₂ Two-phase Microstructures: Haruyuki Inui¹; Norihiko Okamoto¹; ¹Kyoto University

2:30 PM Invited

Mechanical Behavior of Polycrystalline (L1₂)gamma-prime-strengthened Co-base Superalloys: Peter Bocchini¹; Daniel Sauza¹; James Coakley¹; Qinyuan Liu¹; David Seidman²; David Dunand¹; ¹Northwestern University; ²Northwestern University Center for Atom Probe Tomography (NUCAPT)

3:00 PM

Planar Defect Formation in the γ' Phase during High Temperature Creep in Single Crystal CoNi-base Superalloys: Yolita Eggele¹; Julian Müller¹; Mike Titus²; Akane Suzuki³; Tresa Pollock⁴; Erdmann Spiecker¹; ¹Friedrich Alexander Universität Erlangen-Nürnberg; ²Purdue University; ³GE Global Research Center; ⁴University of California Santa Barbara

3:20 PM

Load Transfer between Phases during Deformation of Superalloys: James Coakley¹; Eric Lass²; David Seidman³; Howard Stone¹; David Dunand³; ¹University of Cambridge; ²National Institute of Standards and Technology; ³Northwestern University

3:40 PM Break

4:00 PM Invited

Deformation Microstructures of L1₂ Ordered Intermetallic Phases in Ni-, Co- and Co-Ni-base Superalloys: Duchao Lv¹; Robert Rhein²; Michael Titus²; Tresa Pollock²; Yunzhi Wang¹; ¹The Ohio State University; ²University of California, Santa Barbara

4:30 PM

Superlattice Intrinsic Stacking Fault Energies and Solute Segregation to Planar Defects in Co-based Superalloys: Michael Titus¹; Robert Rhein²; Alessandro Mottura³; Min-Hua Chen²; Anton Van der Ven²; Tresa Pollock²; ¹Purdue University; ²University of California Santa Barbara; ³University of Birmingham

4:50 PM

Solid Solution Strengthening of Co₃(Al, TM) L1₂ Phase: An Integrated First-principles Calculations and Experimental Study: William Yi Wang¹; Bin Gan¹; Fei Xue²; Shun-Li Shang³; Yi Wang³; HongChao Kou¹; JinShan Li¹; Xi-Dong Hui²; Qiang Feng²; Zi-Kui Liu³; ¹Northwestern Polytechnical University; ²University of Science and Technology Beijing; ³The Pennsylvania State University

5:10 PM

Multi-scale Modelling of High-temperature Deformation Mechanisms in Co-Al-W-based Superalloys: Hikmatyar Hasan¹; David Dye¹; Peter Haynes¹; Vassili Vorontsov¹; ¹Imperial College London

GAT-2017 (Gamma Alloys Technology - 2017) — Microstructure Development and Directional Solidification

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Wednesday PM
March 1, 2017

Room: Pacific 17
Location: Marriott Marquis Hotel

Session Chairs: Pierre Sallot, Safran Tech; Ulrike Hecht, ACCESS

2:00 PM Invited

Gamma Alloy Materials-Process-Microstructure Combinations for Greater Service Temperatures: Young-Won Kim¹; Sang-Lan Kim²; ¹Gamteck LLC; ²Gamtech LLC

2:25 PM

Solidification of TiAl Alloys with Low Contents of Si: Antoine Paris¹; Mikael Perrut¹; Dominique Daloz²; Anne Denquin¹; ¹Onera; ²Université de Lorraine

2:45 PM

Microstructure Evolution of Ti-45Al-8.5Nb-(W, B, Y) Alloy during Continuous Cooling and Thermal Aging: Jieren Yang¹; Bei Cao¹; Xuyang Wang¹; Rui Hu¹; Lin Song¹; Jinshan Li¹; ¹Northwestern Polytechnical University

3:05 PM

High-energy Synchrotron Radiation Investigation of the Massive Transformation in a Ti-Al-Nb-Ta Alloy: Marcus Willi Rackel¹; Andreas Stark¹; Gleb Dovzhenko¹; Florian Pyczak¹; ¹Helmholtz-Zentrum Geesthacht

3:25 PM Invited

Study on Preparation of Larger Size TiAl Ingot with Oriented Lamellar Microstructure: Jun Shen¹; ¹Northwestern Polytechnical University

3:50 PM Break

4:05 PM Invited

High Temperature Mechanical Properties of Polysynthetic Twinned TiAl-Nb Alloys: Zhixiang Qi¹; Guang Chen¹; Yingbo Peng¹; Gong Zheng¹; ¹Nanjing University of Science and Technology

4:30 PM Invited

Microstructure and Mechanical Properties of TiAl Alloys Prepared by Cold Crucible Directional Solidification: Ruirun Chen¹; Jingjie Guo¹; Hongsheng Ding¹; Hengzhi Fu¹; ¹Harbin Institute of Technology

4:55 PM

Seeded Growth of Ti-46Al-(3-10)Nb PST Crystals: Hao Jin¹; Ronghua Liu¹; Yuyou Cui¹; Quangang Xian¹; Dongsheng Xu¹; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

High Entropy Alloys V — Mechanical and Other Properties

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Wednesday PM Room: 32A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Sundeep Mukherjee, University of North Texas; Qingfeng Xing, Ames Laboratory

2:00 PM Invited

Weldability and Welding Solidification of an HEA Alloy: Joshua Burgess¹; Carl Lundin²; Zhi Tang³; Peter Liaw²; ¹GE Power; ²The University of Tennessee; ³Alcoa

2:20 PM Invited

Bringing High-entropy Alloys Close to High-temperature Applications: Single Crystal Growth, Microstructure Characterization, and Mechanical Tests: Qingfeng Xing¹; Haoyan Diao²; Deborah Schlagel¹; Trevor Riedemann¹; Peter Liaw²; Thomas Lograsso¹; ¹Ames Laboratory; ²University of Tennessee - Knoxville

2:40 PM

Degradation Behavior of High Entropy Alloys – Corrosion, Erosion, and Wear: Ayyagari Aditya¹; Sundeep Mukherjee¹; ¹University of North Texas

3:00 PM

Investigation of Equiatomic AlNbTiMoV and AlNbTaTiV Alloys for High Temperature Applications: Anne Denquin¹; Arnaud Grimonprez¹; Agnès Bachelier-Locq¹; ¹Onera

3:20 PM

Irradiation Resistance of Low Activation High Entropy Alloys: David Armstrong¹; John Waite¹; Angus Wilkinson¹; ¹University of Oxford

3:40 PM Break

4:00 PM

Weldability of Single-phase and Multi-phase High Entropy Alloys: Zhenggang Wu¹; Stan David¹; Zhili Feng¹; Hongbin Bei¹; ¹Oak Ridge National Laboratory

4:20 PM

Radiation-induced Segregation in Ni-based Concentrated Solid Solution Alloys: Mo-Rigen He¹; Shuai Wang¹; Shi Shi¹; Ke Jin²; Hongbin Bei²; Kazuhiro Yasuda³; Syo Matsumura³; Kenji Higashida³; Ian Robertson¹; ¹University of Wisconsin-Madison; ²Oak Ridge National Laboratory; ³Kyushu University

4:40 PM

Development of High Entropy Alloy Foam with Ultra-low Thermal Conductivity and High Strength: Kook Noh Yoon¹; Je In Lee¹; Eun Soo Park¹; ¹Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University

5:00 PM

On the Influence of Crystal Orientation and Testing Temperature on the Local Mechanical Properties of High Entropy Alloys: Verena Maier-Kiener¹; Benjamin Schuh²; Helmut Clemens¹; Anton Hohenwarter²; ¹Montanuniversität Leoben - Physical Metallurgy & Materials Testing; ²Montanuniversität Leoben - Materials Physics

5:20 PM Invited

Pre-osteoblastic Cell Responses to High-entropy Alloys: Jinbo Dou¹; Haoyan Diao¹; Yunzhu Shi¹; Peter K. Liaw¹; Shanfeng Wang¹; ¹University of Tennessee

High Entropy Alloys V — Structures and Mechanical Properties II

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Wednesday PM Room: 32B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Paul Jablonski, National Energy Technology Laboratory; Zhongwu Zhang, Harbin Engineering University

2:00 PM Invited

Microstructural Response of High Entropy Alloy under Extreme Environments: H.S. Oh¹; J.Y. Kim¹; E.S. Park¹; H.J. Chang²; C.C. Tasan³; D. Raabe⁴; ¹Seoul National University; ²Korea Institute of Science and Technology; ³Massachusetts Institute of Technology; ⁴Max-Planck Institut für Eisenforschung GmbH

2:20 PM Invited

Effect of Process Changes in the Manufacture and Mechanical Properties of High Entropy Alloys: Paul Jablonski¹; Michael Gao²; Jeffrey Hawk¹; ¹U.S. Department of Energy, National Energy Technology Laboratory; ²AECOM

2:40 PM

Mechanisms Underlying the Remarkable Strength and Toughness of CrCoNi-based Medium- and High-Entropy Alloys at Ambient to Cryogenic Temperatures: Bernd Gludovatz¹; Qian Yu²; Easo George³; Robert Ritchie⁴; ¹Lawrence Berkeley National Laboratory; ²Zhejiang University; ³Ruhr University; ⁴University of California Berkeley

3:00 PM Invited

Effects of Preparation Methods on the Microstructures and Properties of High Entropy Alloys: Zhongwu Zhang¹; Mingxing Qiu¹; ¹Harbin Engineering University

3:20 PM Break

3:40 PM Invited

The Strengthening Mechanisms for a Family of High-entropy and Equiatomic Solid-solution Alloys: Zhenggang Wu¹; Yanfei Gao¹; Hongbin Bei¹; ¹Oak Ridge National Laboratory

4:00 PM Invited

Size Effects and Thermal Stability of High-entropy Alloys: Single Crystalline vs. Nanocrystalline: Yu Zou¹; Jeffrey Wheeler¹; Huan Ma¹; Roksolana Kozak¹; Soumyadipta Maiti¹; Walter Steurer¹; Ralph Spolenak¹; ¹ETH Zurich

4:20 PM

Irradiation Responses of High-entropy Alloys at Elevated Temperatures: Songqin Xia¹; Michael Gao²; Tengfei Yang³; Peter Liaw⁴; Yong Zhang¹; ¹University of Science and Technology Beijing; ²National Energy Technology Laboratory; ³Peking University; ⁴The University of Tennessee

4:40 PM Invited

Strong Grain-size Effect on Deformation Twinning of an Al_{0.1}CoCrFeNi High-entropy Alloy: Shiwei Wu¹; G. Wang¹; J. Yi¹; Q. J. Zhai¹; P. K. Liaw²; ¹Shanghai University; ²The University of Tennessee

5:00 PM Invited

Interatomic Potential Function Development for the FeNiCoCr High Entropy Alloy: J. Wei¹; Y. Zhuang¹; PJ Yu¹; Alice Hu¹; ¹City University of Hong Kong

High Temperature Electrochemistry III — Materials Electrochemistry I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab; Boyd Davis, Kingston Process Metallurgy Inc.

Wednesday PM Room: 16A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Uday Pal, Boston University; Steven Herrmann, Idaho National Laboratory

2:00 PM

Molten Flux Design for Solid Oxide Membrane Based Electrolysis of Si from Silica: Thomas Villalon¹; Uday Pal¹; Soumendra Basu¹; ¹Boston University

2:30 PM

Electrochemical Deposition of Barium into Liquid Bismuth from BaCl₂-LiCl-CaCl₂-NaCl Electrolyte: Hojong Kim¹; Nathan Smith¹; Timothy Lichtenstein¹; Kuldeep Kumar¹; ¹The Pennsylvania State University

3:00 PM

Electrochemical Behavior of Sn/SnCl₂ Cathode in Na | NaCl-AlCl₃-SnCl₂ | Sn Cell: Takanari Ouchi¹; Raku Watari²; Donald Sadoway²; ¹Massachusetts Institute of Technology; ²Massachusetts Institute of Technology

3:30 PM Break

3:50 PM

Impurity Removal from Titanium Oxycarbide: Farzin Fatollahi-Fard¹; Petrus Pistorius¹; ¹Carnegie Mellon University

4:20 PM

Thermal Imaging Furnace Technique for Ultra-high Temperature Electrochemical Measurements: Bradley Nakanishi¹; Erick Hernandez¹; Antoine Allanore¹; ¹Massachusetts Institute of Technology

Magnesium Technology 2017 — Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue II

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday PM Room: 5B
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: JB Jordon, The University of Alabama; Alec Davis, University of Manchester

2:00 PM

Dynamic Behavior of an AZ31 Alloy under Varying Strain Rates and Stress Triaxialities: Chaitanya Kale¹; Mansa Rajagopalan¹; Scott Turnage¹; Billy Hornbuckle²; Kris Darling²; Suveen Mathaudhu³; Kiran Solanki²; ¹Arizona State University; ²Army Research Laboratory; ³University of California, Riverside

2:20 PM

Enhancing the Tensile Response of Magnesium through Simultaneous Addition of Aluminium and Alumina Nanoparticulates: Eugene Wong¹; Manoj Gupta²; ¹Newcastle University International Singapore; ²National University of Singapore

2:40 PM

Effect of Solutes Additions on the Microstructure and Mechanical Properties of Cast Mg-Al Based Alloys: Yahia Ali¹; Ming-Xing Zhang¹; ¹University of Queensland

3:00 PM

Enhanced Mechanical Properties of Extruded Mg-9mass%Al-1mass%Zn-2mass%Ca Alloy: Xinsheng Huang¹; Yasumasa Chino¹; Hironori Ueda²; Masashi Inoue²; Futoshi Kido³; Toshiharu Matsumoto³; ¹National Institute of Advanced Industrial Science and Technology; ²Fuji Light Metal Co. Ltd.; ³Tobata Seisakusho Co., Ltd.

3:20 PM Break

3:40 PM

Influence of Strain Path Change on the Microstructure and Mechanical Properties of Duplex Mg-Li Alloy: Yun Zou¹; Yang Li²; Hao Guo¹; Songsong Xu¹; Yu Zhao¹; Milin Zhang¹; Zhongwu Zhang¹; ¹Harbin Engineering University; ²Zhengzhou University

4:00 PM

Mechanical Properties and Deformation Mechanism of Mg-Y Alloy with Various Grain Sizes: Ichiro Kawarada¹; Ruixiao Zheng¹; Akinobu Shibata¹; Hidetoshi Somekawa²; Shigenobu Ogata³; Nobuhiro Tsuji¹; ¹Kyoto University; ²National Institute for Material Science; ³Osaka University

4:20 PM

Microstructure and Mechanical Properties of High Pressure Die Cast Mg-Al-Sn-Si Alloys: Andrew Klarnet¹; Weihua Sun¹; Jiashi Miao¹; Alan Luo¹; ¹The Ohio State University

4:40 PM

Microstructure and Mechanical Properties of an Extruded Mg-1.58Zn-0.52Gd Alloy: M.G. Jiang¹; J.C. Chen²; H. Yan¹; C. Xu³; T. Nakata³; S. Kamado³; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Xi'an Jiaotong University; ³Nagaoka University of Technology

5:00 PM

Modelling Magnesium Alloys for Improved Isotropic and Symmetric Yield Behaviour: Alec Davis¹; Joseph Robson¹; ¹University of Manchester

Magnesium Technology 2017 — Solidification and Processing III and Magnesium-Rare Earth Alloys I

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday PM Room: 5A
March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: Mark Easton, Royal Melbourne Institute of Technology University; Vineet Joshi, Pacific Northwest National Laboratory

2:00 PM

Scaled-Up Fabrication of Thin-Walled ZK60 Tubing using Shear Assisted Processing and Extrusion (ShAPE): Scott Whalen¹; Vineet Joshi²; David Catalini²; Curt Lavender²; David Field³; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory; ³Washington State University

2:20 PM

Biocompatible Magnesium Alloy ZNdK100 – Adaptation of Extrusion Parameters to Tailor the Mechanical Properties to Different Implant Applications: Rainer Eifler¹; Florian Schäfer¹; Hans Jürgen Maier¹; Christian Klose¹; ¹Leibniz Universität Hannover

2:40 PM

Characterization of Semi-closed Die-forged ZK60 Mg Alloy Extrusion: *Seyyedmohamadhasan Karparvarfar*¹; Sugrib Shaha¹; Amir Hadadzadeh¹; Hamid Jahed¹; Mary Wells¹; Bruce Williams²; ¹University of Waterloo; ²CanmetMATERIALS, Natural Resources Canada

3:00 PM

Optimization of Nitrogen Bubbling Conditions for Extruded Mg Alloy with Balanced Mechanical Properties: *Wonseok Yang*¹; Youngkyun Kim¹; Taeyang Kwak¹; Shae K. Kim¹; Hyunkyu Lim¹; Do Hyang Kim²; ¹KITECH; ²Yonsei University

3:20 PM

Effects of Gadolinium and Neodymium Addition on Young's Modulus of Magnesium-based Binary Alloys: *Yuling Xu*¹; Jie Li²; Zhengye Zhong¹; Karl Kainer¹; Norbert Hort¹; ¹Helmholtz Zentrum Geesthacht; ²Shanghai University

3:40 PM Break

4:00 PM

Aging Behavior of Mg Alloys Containing Nd and Y: *Ellen Solomon*¹; Timothy Chan¹; Andrew Chen¹; Benjamin Uttal-Veroff¹; Emmanuelle Marquis¹; ¹University of Michigan

4:20 PM

Variation of Rare Earth Elements in the Magnesium Alloy ME21 for the Sheet Production: *Gerrit Kurz*¹; Tom Petersen¹; Dietmar Letzig¹; ¹Helmholtz-Zentrum Geesthacht

4:40 PM

Phase Stability and Formation in Mg-Gd-Zn Alloys – Key Data for ICME of Mg Alloys: *Rainer Schmid-Fetzer*¹; Joachim Gröbner¹; Suming Zhu²; Jian-Feng Nie³; Mark Gibson⁴; ¹Clausthal University of Technology; ²RMIT University; ³Monash University; ⁴CSIRO

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Structural Materials III

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Wednesday PM
March 1, 2017

Room: Cardiff
Location: Marriott Marquis Hotel

Session Chairs: Kumar Sridharan, University of Wisconsin; Walter Luscher, Pacific Northwest National Laboratory

2:00 PM

Seamless Thin-wall Tube Production of ATF Wrought FeCrAl Alloys: *Yukinori Yamamoto*¹; Sun Zhiqian¹; Maxim Gussev¹; Kevin Field¹; Bruce Pint¹; Lance Snead²; Stuart Maloy³; Kurt Terrani¹; ¹Oak Ridge National Laboratory; ²Massachusetts Institute of Technology; ³Los Alamos National Laboratory

2:20 PM

Charged Particle Irradiation Studies of High Dose Precipitation in Reactor Pressure Vessel Steels: *Nathan Almirall*¹; Takuya Yamamoto¹; Peter Wells¹; G. R. Odette¹; Nicholas Cunningham¹; Soupitak Pal¹; Scott Tumey²; Keith Williams³; Tim Williams³; ¹University of California Santa Barbara; ²Lawrence Livermore National Laboratory; ³Rolls Royce

2:40 PM

Effect of Different Processing Routes on the Microstructure and Texture of 14YWT Alloy: *Soupitak Pal*¹; Ershadul Alam¹; G Odette¹; Stuart Maloy¹; David Hoelzar¹; John Lewandowski¹; ¹University of California Santa Barbara

3:00 PM

Impact of the Neutron Irradiation on the Structure and Properties of the 6061 Al Alloy Produced by Ultrasonic Additive Manufacturing: *Maxim Gussev*¹; Kurt Terrani¹; Chad Parish¹; Aaron Selby¹; Niyanth Sridharan¹; Dana McClurg¹; Zachary Thompson¹; Mark Norfolk²; Sudarsanam Babu³; ¹Oak Ridge National Laboratory; ²Fabriconic LLC; ³University of Tennessee

3:20 PM

Creep Fatigue Crack Growth of T91: Test Design and Data Analysis: *Marta Serrano*¹; Rebeca Hernandez Pascual¹; ¹CIEMAT

3:40 PM Break

4:00 PM

Property Evolution Due to Thermal Aging of Cast Duplex Stainless Steels As Measured by Multi-Scale Mechanical Methods: *Samuel Schwarm*¹; Sarah Mburu¹; R. Prakash Kollu¹; Carl Cady²; Stuart Maloy²; Sreeramamurthy Ankem¹; ¹University of Maryland, College Park; ²Los Alamos National Laboratory

4:20 PM

Microstructural Heterogeneity of Deformed and Annealed FeCrAl Alloys with Nb Addition: *Zhiqian Sun*¹; Philip Edmondson¹; Yukinori Yamamoto¹; ¹Oak Ridge National Laboratory

4:40 PM

Complex SiC-SiC Composite Structures for Nuclear Applications: *Ekaterina Novitskaya*¹; Hesham Khalifa²; Alexander Kritsuk¹; Olivia Graeve¹; ¹University of California, San Diego; ²General Atomics, Corp.

5:00 PM

Effects of Ion-irradiation Damage on Mechanical Behavior in Silicon Carbide: *David Armstrong*¹; Helen Pratt¹; Steve Roberts¹; Yevhen Zayachuk¹; ¹University of Oxford

5:20 PM

Study on the Microstructure and Mechanical Behavior of the New Type SA508-IV Reactor Pressure Vessel (RPV) Steel by Different Methods: *Xue Bai*¹; Sujun Wu¹; Peter K. Liaw²; Lin Shao³; ¹Beihang University; ²The University of Tennessee, Knoxville; ³Texas A&M University

Materials Engineering of Soft Magnets for Power and Energy Applications — Ferrites, Soft Magnetic Composites, and Bulk Soft Magnet Materials

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Francis Johnson, GE Global Research; Alex Leary, Carnegie Mellon University; Tanjore Jayaraman, University of Michigan; Lajos Varga, Wigner Research Center for Physics

Wednesday PM
March 1, 2017

Room: 25B
Location: San Diego Convention Ctr

Session Chair: Francis Johnson, General Electric

2:00 PM Invited

Advanced Magnetic Polymer Nanocomposites for High Frequency Device Applications: *Hariharan Srikanth*¹; ¹University of South Florida

2:30 PM

Development of Mold Inductor for Power Conversion System: *Hyungsuk Kim*¹; ¹Hyundai Motors

2:50 PM

Development of Fe-based Bulk Metallic Glasses with Both High Saturation Flux Density and High Glass Forming Ability: *Shuangqin Chen*¹; Kefu Yao¹; ¹Tsinghua University

3:10 PM

Ferrite-coated Fe Soft Magnetic Composites: Balance of Magnetic Permeability and Electrical Resistivity: *Katie Jo Sunday*¹; Mitra Taheri¹; ¹Drexel University

3:30 PM Break

3:45 PM Invited

Candidate Coatings for Soft Magnet Composites: Insights Gained from Multiscale Electron Microscopy: *Mitra Taheri*¹; Katie Sunday¹; ¹Drexel University

4:15 PM

Study of Temperature Dependent Magnetic Properties of Zr+4 and Ti+4 Substituted Cobalt Ferrites: Monaji Vinita Reddy¹; Sudhindra Rayaprol²; Shara Sowmya³; A. Srinivas³; *Dibakar Das*¹; ¹University of Hyderabad; ²UGC-DAE-Consortium for Scientific Research ; ³Defence Metallurgical Research Laboratory

4:35 PM

Consolidation and Behavior of Bulk Iron Nitride Soft Magnets via Spark Plasma Sintering: *Baolong Zheng*¹; Todd Monson²; Yizhang Zhou¹; Jean-Pierre Delplanque³; Stanley Atcity²; Enrique Lavernia¹; ¹University of California at Irvine; ²Sandia National Laboratories; ³University of California at Davis

4:55 PM

Consolidation of Bulk Ferrimagnetic Rare Earth Iron Garnets: *Chad Warren*¹; Pathikumar Sellappan¹; Yasuhiro Kodera²; Javier Garay¹; ¹University of California, San Diego; ²University of California, Riverside

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Coatings and Environmental Resistance

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmair, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Wednesday PM
March 1, 2017

Room: Pacific 16
Location: Marriott Marquis Hotel

Session Chairs: Carlos Levi, University of California, Santa Barbara; Daniel Monceau, CNRS, CIRIMAT laboratory

2:00 PM Invited

Design of Next Generation Intermetallic Bond Coatings: David Jorgensen¹; Wesley Jackson¹; Akane Suzuki²; *Tresa Pollock*¹; ¹University of California, Santa Barbara; ²General Electric Global Research

2:30 PM Invited

Modelling of Kirkendall Pores Formation during the Fabrication and the Ageing of Pt-based Diffusion Coatings on Nickel Base Superalloys: *Daniel Monceau*¹; Pauline Audigié²; Clara Desgranges³; Aurélie Rouaix Vande-Put²; ¹CNRS, CIRIMAT Laboratory; ²CIRIMAT Laboratory; ³CEA

3:00 PM

The Influence of Bond Coats on Crack Progression during Sustained Peak Low-Cycle Fatigue: *Marissa Lafata*¹; Tresa Pollock¹; ¹University of California, Santa Barbara

3:20 PM

Design of Nickel-base Superalloys with High Creep and Oxidation Resistance: *Franck Tancret*¹; Edern Menou¹; Daniel Monceau²; Gérard Ramstein¹; Pedro Rivera-Díaz-del-Castillo³; ¹Université de Nantes; ²CNRS; ³University of Cambridge

3:40 PM Break

4:00 PM

Kinetic and Structural Processes Affecting Alumina-scale Establishment during Early-stage Oxidation of Ni-base Alloys: Yihong Kang¹; Juan Alvarado-Orozco²; Judith Yang¹; *Brian Gleeson*¹; ¹University of Pittsburgh; ²CiDESi

4:20 PM Invited

A Perspective on the Challenges to Thermal Barrier Coatings: *Carlos Levi*¹; ¹University of California, Santa Barbara

4:50 PM Invited

The Effect of Borosilica Pack-Cementation Coatings on the Oxidation Resistance of Mo-Si-B Based Alloys: *John Perepezko*¹; Daniel Schliephake²; Camelia Gombola²; Martin Heilmair²; ¹University of Wisconsin-Madison; ²Karlsruhe Institute of Technology

5:20 PM

Oxidation Behavior of Silicide Coatings Produced by Molten Salt Technique on the Nb-1Zr-0.1C Alloy: *Megha Tyagi*¹; Vishwanadh B¹; S. K. Ghosh¹; Raghvendra Tewari¹; ¹Bhabha Atomic Research Centre

5:40 PM

Functionally Graded Tungsten/EUROFER Coating for Plasma Facing Components of Fusion Power Plants: *Jarir Aktaa*¹; Dandan Qu¹; Robert Vaßen²; Marius Wirtz²; Jochen Linke²; ¹Karlsruhe Institute of Technology (KIT); ²Forschungszentrum Jülich (FZJ)

Materials Processing Fundamentals — Metal Extraction

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee

Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts; Guillaume Lambotte, Boston Electromet

Wednesday PM
March 1, 2017

Room: 17B
Location: San Diego Convention Ctr

Session Chairs: Antoine Allanore, Massachusetts Institute of Technology; Guillaume Lambotte, Boston Electromet

2:00 PM

Applied Statistical Analysis on the Calcination Process in the Ferronickel Production: *Fabio Soares*¹; Denis Shevchenko¹; Alexey Levchenko¹; Alexey Avdeev¹; Alexander Vodin¹; Vitaly Rudik¹; Stanislav Kovalchuk¹; ¹Pronico

2:20 PM

Kinetics of Manganese Reductive Alloying with Carbon and Silicon: *Brian Jamieson*¹; Kenneth Coley¹; ¹McMaster University

2:40 PM

Study for Leaching Process of Low Grade Copper Ore: *Dong Ju Shin*¹; Sung Ho Joo¹; Chang Hyun Oh¹; Shun Myung Shin¹; ¹Korea Institute of Geoscience and Mineral Resources

3:00 PM

Predominant Areas on a Partial Pressure Diagram for Multi-Component Systems: I. Comparison Equilibrium-Line and Mass-Balanced Point Methods: *H.H. Huang*¹; Courtney Young¹; ¹Montana Tech

3:20 PM Break

3:35 PM

Predominant Areas on a Partial Pressure Diagram for Multi-Component Systems: II. Applications, Gibbs Phase Rule and 3D Visualization: *H.H. Huang*¹; Courtney Young¹; ¹Montana Tech

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Creep, Creep-Fatigue and Related High Temperature Mechanical Behavior

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Wednesday PM Room: 24A
 March 1, 2017 Location: San Diego Convention Ctr

Session Chairs: M. Mathew, Saintgits College of Engineering; Nilesh Kumar, North Carolina State University

2:00 PM Keynote

Applying Conventional Creep Mechanisms to Ultrafine-grained Materials: Megumi Kawasaki¹; Terence Langdon²; ¹Hanyang University; ²University of Southern California

2:30 PM Invited

Multiaxial Creep and Creep-fatigue: James Stubbins¹; Kuan-Che Lan¹; John Sanders¹; Mohsen Dadfarnia¹; Petros Sofronis¹; Hsiao-Ming Tung¹; Xiang Liu¹; Calogero Sollima¹; Kun Mo¹; Guiseppa Brunetti¹; ¹University of Illinois

2:50 PM Invited

Creep and Creep Fatigue of Alloy 709 Using In situ Heating during SEM and EBSD Observation: Afsaneh Rabiei¹; Hangyue Li²; Paul Bowen²; ¹North Carolina State University; ²Birmingham University

3:10 PM Invited

Cyclic Deformation Behavior of Modified 9Cr-1Mo Steel at Elevated Temperatures: Vakil Singh¹; Preeti Verma¹; ¹Indian Institute of Technology (Banaras Hindu University)

3:30 PM Break

3:45 PM Keynote

Environmentally-benign Pb-free Solder Alloys: Complex Load Bearing Materials in Electronic Packaging: Nikhilesh Chawla¹; ¹Arizona State University

4:15 PM Invited

Effect of Thermo-mechanical History on the Creep Behavior of Sn-Ag-Cu Solders: Babak Talebanpour¹; Indranath Dutta¹; ¹Washington State University

4:35 PM

Modelling of the Fracture of Precipitate and Austenitic Matrix Interfaces During Creep: Liang Huang¹; Maxime Sauzay¹; ¹French Alternative Energies and Atomic Energy Commission

4:55 PM Invited

Characterisation of Mechanical Properties Using Ball Indentation, Small Punch Creep and Impression Creep Methods: MD Mathew¹; ¹Saintgits College of Engineering (formerly at Indira Gandhi Center for Atomic Research)

Mechanical Behavior of Nanostructured Materials — Modeling and Thermal Stability, Radiation, Corrosion of Nanocrystals

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

Wednesday PM Room: 30D
 March 1, 2017 Location: San Diego Convention Ctr

Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Xinghang Zhang, Purdue University; John Balk, University of Kentucky; Aashish Rohatgi, Pacific Northwest National Laboratory

2:00 PM Invited

Computational Studies of Materials Properties at the Nanometer Scale: Donald Brenner¹; ¹North Carolina State University

2:25 PM Invited

Toward Quantitative 3D Microstructure-property Relations in Nano- and Poly-crystalline Materials: Mo Li¹; ¹Georgia Institute of Technology

2:50 PM

Understanding, Controlling, and Creating Martensitic Phase Transformations in Nanostructured Polycrystals and Metamaterials: Sam Reeve¹; Yang Wang¹; Karthik Guda Vishnu¹; Alejandro Strachan¹; ¹Purdue University

3:10 PM

Electromechanical Coupling Enhanced by Polar Nanoregion Vibrations: Michael Manley¹; Douglas Abernathy¹; Raffi Sahul²; Jeff Lynn³; Andy Christianson¹; Paul Stonaha¹; John Budai¹; ¹Oak Ridge National Laboratory; ²Meggitt Sensing Systems; ³National Institute of Standards and Technology

3:30 PM Break

3:50 PM Invited

Development of Age-hardenable Nanolaminate Thin Films: David Bahr¹; Chang-Eun Kim¹; Nicolas Briot²; T. Balk²; ¹Purdue University; ²University of Kentucky

4:15 PM Invited

Mechanical Properties and Thermal Stabilization of Nanocrystalline Aluminum and Aluminum Alloys: Khaled Youssef¹; Ronald Scattergood²; Carl Koch²; ¹Qatar University; ²North Carolina State University

4:40 PM

Thermal Stability and Grain-boundary Segregation in Al-Alloy Thin Films: Aashish Rohatgi¹; Arun Devaraj¹; Rama Vemuri¹; Libor Kovarik¹; Xiujuan Jiang¹; Giridhar Nandipati¹; Suveen Mathaudhu¹; Wenbo Wang²; Jason Trelewicz²; ¹Pacific Northwest National Laboratory; ²Stony Brook University

5:00 PM

Enhanced Thermal Stability of Ultrafine-grained Aluminum Fabricated by Applying a Fast Cooling Rate after Hot Rolling: Pei-Ling Sun¹; ¹National Sun Yat-Sen University

5:20 PM

Effects of Ultrafine Grain Structure on Al Alloy Response to Corrosive Environments: Troy Topping¹; ¹California State University, Sacramento

5:40 PM

Evidence that Abnormal Grain Growth Precedes Fatigue-crack Initiation in Nanocrystalline Metals: *Timothy Furnish*¹; Daniel Bufford¹; Khalid Hattar¹; Christopher O'Brien¹; Stephen Foiles¹; Apurva Mehta²; Douglas Van Campen²; Brad Boyce¹; ¹Sandia National Laboratories; ²SLAC National Accelerator Laboratory

Microstructural Processes in Irradiated Materials — Fusion Materials and High-Temperature Alloys

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Wednesday PM

Room: Del Mar

March 1, 2017

Location: Marriott Marquis Hotel

Session Chairs: Gary Was, University of Michigan; Chad Parish, Oak Ridge National Laboratory

2:00 PM Invited

IOM/Mehl Award Lecture: Microstructure of Irradiated Materials: *Steven Zinkle*¹; ¹University of Tennessee; Oak Ridge National Laboratory

2:50 PM

Microstructural Processes in Neutron-irradiated Tungsten: *Chad Parish*¹; Xunxiang Hu¹; Lauren Garrison¹; Philip Edmondson¹; Kun Wang¹; Lance Snead²; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²Massachusetts Institute of Technology

3:10 PM

Evolution of Microstructure of Tungsten under Irradiation with Tungsten Ions: Emmanuel Autissier¹; Marie-France Barthe¹; Pierre Desagrdin¹; Cécile Genevois¹; Brigitte Decamps¹; Robin Schaublin²; Yves Serruys³; ¹CNRS; ²ETH Zurich; ³CEA

3:30 PM

Understanding the Effects of Helium Implantation Damage in Tungsten: Combining Multi-technique Experiments and Atomistic Modeling: *Felix Hofmann*¹; Duc Nguyen-Manh²; Daniel Mason²; Mark Gilbert²; Sergei Dudarev²; Isaure deBroglie³; Jeffrey Eliason⁴; Ryan Duncan⁵; Alexei Maznev⁵; Keith Nelson⁵; Christian Beck¹; Wenjun Liu⁶; ¹University of Oxford; ²Culham Centre for Fusion Energy; ³École Polytechnique; ⁴University of Minnesota; ⁵Massachusetts Institute of Technology; ⁶Argonne National Laboratory

3:50 PM Break

4:05 PM

Microstructure and Mechanical Properties of Neutron-irradiated Tungsten Foil for Laminate Composites: *Lauren Garrison*¹; Chad Parish¹; Xunxiang Hu¹; Taehyun Hwang¹; Takaaki Koyanagi¹; Jens Reiser²; Lance Snead³; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²Karlsruhe Institute of Technology; ³Massachusetts Institute of Technology

4:25 PM Invited

Mechanism of Reduced Radiation Damage Identified in Equiatomic Multicomponent Single Phase Alloys: *Flyura Djurabekova*¹; Fredric Granberg¹; Kai Nordlund¹; William J. Weber²; Yanwen Zhang²; ¹University of Helsinki; ²Oak Ridge National Laboratory

4:55 PM

Comparison of Neutron and Ion Irradiation Effects on Microstructure of MA957: *Jing Wang*¹; Nathan Bailey²; Mychailo Toloczko¹; Daniel Schreiber¹; Frank Garner³; Y. Kupriianova⁴; A. Kalchenko⁴; V. Voyevodin⁴; Lin Shao⁵; ¹Pacific Northwest National Laboratory; ²University of California at Berkeley; ³Radiation Effects Consulting; ⁴Kharkov Institute of Physics and Technology; ⁵Texas A&M University

5:15 PM

Neutron Irradiation Damage in Ferritic ODS Steel MA957: *Xiang Liu*¹; Yinbin Miao²; Wei-Ying Chen²; Yaqiao Wu³; James Stubbins¹; ¹University of Illinois at Urbana Champaign; ²Argonne National Laboratory; ³Center for Advanced Energy Studies

5:35 PM

Impact of He Concentration on the Microstructure of W Using TEM with In Situ Ion Irradiation: *Robert Harrison*¹; Matheus Tunes¹; Graeme Greaves¹; Jonathan Hinks¹; Stephen Donnelly¹; ¹University of Huddersfield

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Novel and Complex Materials I

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Wednesday PM

Room: 24B

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Xavier Sauvage, Normandy University; Mingxin Huang, The University of Hong Kong

2:00 PM

Engineering the Ductile Crack Path by Controlling the Microstructure: *Ankit Srivastava*¹; Shmuel Osovski²; Alan Needleman¹; ¹Texas A&M University; ²Technion-Israel Institute of Technology

2:20 PM

Improved Balance of Mechanical Properties in Cryomilled Al-Mg Alloy Through Thermomechanical Processing: *Holden Hyer*¹; Clara Hofmeister²; Yongho Sohn²; Bhaskar Majumdar¹; ¹New Mexico Tech; ²University of Central Florida

2:40 PM

Stabilization of Nanocrystalline Fe-Zr Alloys by Nanoscale Zr-rich Clusters: *Yuzeng Chen*¹; ¹Northwestern Polytechnical University

3:00 PM

Improving Composite Ductility through Corrugated Reinforcement Architecture: *Mark Fraser*¹; Hatem Zurob¹; Peidong Wu¹; ¹McMaster University

3:20 PM Break

3:35 PM Invited

Ultra-strong and Ductile Nanotwinned Steel: Peng Zhou¹; Rendong Liu²; Xu Wang²; *Mingxin Huang*¹; ¹The University of Hong Kong; ²Ansteel Group

4:00 PM

Multi Scale Modeling of Mechanical Behavior of Covalently Cross-linked SWCNT Aerogels: *Ankit Gupta*¹; Andy Jiang¹; Elizabeth Holm¹; ¹Carnegie Mellon University

4:20 PM Invited

Multiscale and Multiphase Structures Obtained by Large Deformation Processes to Achieve Unique Properties Combinations: *Xavier Sauvage*¹; ¹Normandy University

4:45 PM

Designing Optimal Bimodality in Harmonic Architected Materials Using Statistical Synthetic Model: *Hyung Keun Park*¹; Jaimyun Jung¹; Hyoung Seop Kim¹; ¹Pohang University of Science and Technology

Nanostructured Surfaces for Improved Functional Properties — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Homnero Casaneda, Texas A&M University; Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University; Bobby Mathan, James Cook University

Wednesday PM
March 1, 2017
Room: Pacific 23
Location: Marriott Marquis Hotel

Session Chairs: Debrupa Lahiri, Indian Institute of Technology Roorkee; Rajeev Gupta, The University of Akron

2:00 PM

Fabrication of Mesoporous Gold-coated Polystyrene Particles for Enzyme Immobilization: *Seongcheol Choi*¹; Rafael Vazquez-Duhalt²; Olivia Graeve¹; ¹University of California, San Diego; ²Universidad Nacional Autonoma de Mexico

2:20 PM

Directional Wetting at the Nano Scale: *Mohammad Khalkhali*¹; Hao Zhang¹; Qingxia (Chad) Liu¹; ¹University of Alberta

2:40 PM

Fabrication of Au-coated Ag Nanowires for OLED Applications: *Sunho Kim*¹; Hoo-Jeong Lee¹; ¹Sungkyunkwan University

3:00 PM

Thermally Reduced Graphene Oxide Film on Soda Lime Glass and Its Temperature-time Dependence of de-bonding Energy: Raj Kumar¹; R. Manoj Kumar¹; Debrupa Lahiri¹; *Indranil Lahiri*¹; ¹Indian Institute of Technology Roorkee

3:20 PM Break

3:35 PM

Effect of Slurry Flow Rate on Planarization of c-plane (0001) GaN Surface by Chemical Mechanical Planarization (CMP) Method: *P Parthiban*¹; Dibakar Das¹; ¹University of Hyderabad

3:55 PM

Development of Nano-sized Intra-precipitates in Nanostructured Materials Using the Pre-existing Embryo and Desired Texture: Hongyun Luo¹; *Pingwei Xu*¹; ¹Beihang University

4:15 PM

Effect of Surface Nanostructuring on the Liquid Aluminizing Behavior of Ti6Al4V: *Qingsong Mei*¹; Ye Ma¹; Juying Li²; Feng Chen¹; ¹Wuhan University; ²Wuhan Polytechnic University

Pan American Materials Congress Plenary — Session IV

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizer: Marc Meyers, UCSD

Wednesday PM
March 1, 2017
Room: Marina G
Location: Marriott Marquis Hotel

2:00 PM Plenary

What Do Snakes Have to Say About Tribology? Biomimetics Applied to Friction and Wear Studies: *Alejandro Toro*¹; ¹National University of Colombia

2:40 PM Plenary

Toward a Federation of American Materials Societies: The European Experience: *Pedro D. Portella*¹; ¹Federal Institute of Testing and Materials BAM

3:20 PM Break

Pan American Materials Congress: Advanced Biomaterials — Scaffolds and Nanobiomaterials

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Carlos Elias, Instituto Militar de Engenharia; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Wednesday PM
March 1, 2017
Room: Mission Hills
Location: Marriott Marquis Hotel

Session Chairs: Carlos Schvezov, Instituto de Materiales de Misiones - IMAM; Horacio Espinosa, Northwestern University

3:40 PM Invited

Synthesis of Fish Scale Extracted Hydroxyapatite and Chitosan Composite Scaffolds by Freeze Casting for Biomedical and Environmental Applications: Wen-Kuang Liu¹; Bor-Shuang Liaw¹; Haw-Kai Chang¹; *Po-Yu Chen*¹; ¹National Tsing Hua University

4:10 PM

Chemical Composition Effect of Sol-gel Derived Bioactive Glass Over Bioactivity Behavior: *Lindsey Quintero*¹; Diana Escobar¹; ¹Universidad de Antioquia

4:30 PM

Injectability Evaluation of Bone-graft Substitutes Based on Carrageenan and Hydroxyapatite Nanorods: *Jazmín González Ocampo*¹; Claudia Ossa Orozco¹; ¹University of Antioquia

4:50 PM

Comparative Analysis of Neural Cell Behaviour on Carbon Nanofiller Reinforced Polymeric Substrates: *Pallavi Gupta*¹; Murali Kumaraswamy¹; Partha Roy¹; Debrupa Lahiri¹; ¹IIT Roorkee

5:10 PM

Comparative Spectroscopic Studies on the Interaction of Nickel Selenide Quantum Dots with Serum Albumins: *Selvaraj Naveenraj*¹; Ramalinga Mangalaraja¹; Thangaraj Pandiyarajan¹; Sambandam Anandan²; ¹University of Concepcion; ²National Institute of Technology Trichy

Pan American Materials Congress: Materials for Infrastructure — Session I

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Henry Colorado, Universidad de Antioquia; Oliverio Rodriguez, Centro de Investigacion en Química Aplicada

Wednesday PM
March 1, 2017
Room: Pacific 21
Location: Marriott Marquis Hotel

Session Chair: Oliverio Rodriguez, Centro de Investigacion en Química Aplicada

3:40 PM Invited

Porous Asphalt Mixtures With 100% Siderurgic Aggregates: *Marta Skaf*¹; Vanesa Ortega-López¹; Angel Aragón¹; José San-José²; Javier González²; ¹University of Burgos; ²UPV/EHU

4:10 PM

Physical and Mechanical Properties of Bricks with Added Industrial Waste: *Alejandro Martínez*¹; ¹Universidad de Santander

4:30 PM

Portland Cement Paste Blended With Pulverized Coconut Fibers: *Yailuth Loaiza Lopera*¹; Henry Colorado Lopera¹; ¹Universidad de Antioquia

4:50 PM

Fiber Reinforced Concrete Manufactured with Electric Arc Furnace Slag: *Vanesa Ortega-López*¹; José Fuente-Alonso¹; Amaia Santamaría²; Marta Skaf¹; Juan Manso¹; ¹University of Burgos; ²UPV/EHU

5:10 PM

Performance of Hydraulic Mixes Manufactured with Electric Arc Furnace Slag Aggregates: *Amaia Santamaría*¹; Vanesa Ortega-Lopez²; Marta Skaf²; Ignacio Marcos¹; José-Tomás San José¹; Javier González¹; ¹University of Basque Country; ²University of Burgos

Pan American Materials Congress: Materials for Oil and Gas Industry — Next Generation of Metallic and Non-metallic Materials Design, Manufacture and Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Lorenzo Martinez Gomez, Instituto de Ciencias Fisicas UNAM; Adriana Rocha, Federal University of Rio de Janeiro

Wednesday PM
March 1, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chairs: Lorenzo Martinez Gomez, UNAM; Adriana Rocha, UFRJ

3:40 PM **Introductory Comments Invited 1**

3:45 PM

Design and Thermo-mechanical Processing of Steel Grade APIX70 PSL2 for Use in Line-pipe at Oil&Gas Industry: *Adriana Berlanga*¹; ¹Ternium

4:05 PM

Materials for Facilities Liquefied Petroleum Gas as NFPA: *Diego Venegas*¹; ¹Universidad de Concepción

4:25 PM

Dynamic Transformation and Retransformation during the Simulated Plate Rolling of an X70 Pipeline Steel: *Samuel Rodrigues*¹; Clodualdo Aranas Jr.²; Fulvio Siciliano³; John Jonas²; ¹McGill University and Federal Institute of Education, Science and Technology of Maranhão-IFMA; ²McGill University; ³Dynamic Systems Inc.

4:45 PM

High Temperature In-Situ X-ray Analysis of a Lean Duplex Stainless Steel: *Adriana Rocha*¹; Andrea Pedroza¹; Gabriela Pereira¹; ¹LNDC/COPPE/UFRJ

Pan American Materials Congress: Materials for Transportation and Lightweighting — Aluminum Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

Wednesday PM
March 1, 2017

Room: Marina D
Location: Marriott Marquis Hotel

Session Chair: Mary Wells, University of Waterloo

3:40 PM **Introductory Comments**

3:45 PM

The Role of Light Weight Materials in Energy Efficiency in the Transportation Industry: *Fernand Marquis*¹; ¹San Diego State University

4:05 PM

Current Lightweight Design Trends in Mobile IT Products: *Mesut Varlioglu*¹; Chalam Kashyap¹; Jack Hui He¹; ¹HP Inc.

4:25 PM

Effect of the Thermal Processing History on the Age Hardening Behaviour of 7000 Series Aluminum Alloys: *Atekeh Abolhasani*¹; Tirdad Niknejad¹; Kaab Omer¹; Shahrzad Esmaeili¹; Mary Wells¹; Michael Worswick¹; ¹University of Waterloo

4:45 PM

Microstructures, Precipitation Sequence, and Hardening of Al-Mg-Zn Alloys with High Mg:Zn Ratio: *Yangyang Fan*¹; Diran Apelian¹; ¹Worcester Polytechnic Institute

5:05 PM

Metallurgical Bond Formation During Multimaterial Metal Casting: *Carl Soderhjelm*¹; Diran Apelian¹; ¹Worcester Polytechnic Institute

5:25 PM

Synthesis of Energetic Composites in Ti-Al-B-C System by Adiabatic Explosive Compaction: *Mikheil Chikhradze*¹; Fernand Marquis²; ¹G.Tsulukidze Mining Institute/ F.Tavadze Institute of Metallurgy and Materials Science/Georgian Technical University; ²San Diego State University

Pan American Materials Congress: Minerals Extraction and Processing — Waste Treatment and Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mery Gómez Marroquín, Asociacion Peruana de Metalurgia Materiales y Minerales-APMMM; Mark Schlesinger, Missouri University of Science and Technology; Alejandro Valdivieso, U.A. of San Luis Potosi; Carlos Sampaio, UFRGS

Wednesday PM
March 1, 2017

Room: Marina E
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

3:40 PM

Comparative Study of Gas Reduction of Pure Zinc Ferrite and Zinc Ferrite Contained into Electric Arc Furnace Dusts: *Mery Gómez-Marroquín*¹; Jose Carlos D'Abreu²; ¹Universidad Nacional de Ingeniería; ²Pontificia Universidade Catolica do Rio de Janeiro

WEDNESDAY PM

TECHNICAL PROGRAM

4:00 PM

Biotechnological Recycling of Precious Metals Sourced from Post-consumer Products: Norizo Saito¹; Toshiyuki Nomura¹; *Yasuhiro Konishi*¹; ¹Osaka Prefecture University

4:20 PM

Extraction of Gold from Sands and Slimes Tailings Dump from Mazowe Mine, Zimbabwe: *Alain Bantshi*¹; ¹Baldmin Projects

4:40 PM

Reduction Kinetics and Characterization Study of Synthetic Magnetite Micro Fines: Saikat Kuila¹; *Ritayan Chatterjee*¹; Dinabandhu Ghosh¹; ¹Jadavpur University

5:00 PM

Novel Adsorbent from Iron Ore Concentration Tailings for Toxic Cationic Dye Removal from Water: Yongmei Wang¹; *Alejandro Lopez-Valdivieso*²; Teng Zhang³; Teza Mwamulima³; Changsheng Peng³; ¹College of Environmental Science and Engineering, Ocean University of China; Instituto de Metalurgia, Universidad Autónoma de San Luis Potosí; ²Instituto de Metalurgia, Universidad Autónoma de San Luis Potosí; ³College of Environmental Science and Engineering, Ocean University of China

5:20 PM

Removal of Heavy Metals from Water with Nano-Sheet Molybdenite as Adsorbent: Feifei Jia¹; *Shaoxian Song*¹; ¹Wuhan University of Technology

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Superplasticity, Wear, Corrosion, Magnetic, Electric and Functional Properties

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politécnica de Catalunya

Wednesday PM
March 1, 2017

Room: Marina F
Location: Marriott Marquis Hotel

Session Chairs: Roberto Figueiredo, Universidade Federal de Minas Gerais; Kaveh Edalati, Kyushu University

3:40 PM

Achieving Superplasticity in a Bi-Sn Alloy Processed by Equal-channel Angular Pressing: Fariba Naghdi¹; Roberto Figueiredo²; *Terence Langdon*³; ¹University of Southampton; ²Universidade Federal de Minas Gerais; ³University of Southern California

4:00 PM

Formation of Ultrafine-Grained Structure in NiTi alloys by ECAP-“Conform”: *Egor Prokofiev*¹; Ivan Lomakin¹; Dmitry Gunderov²; Ruslan Valiev¹; ¹Saint Petersburg State University; ²Ufa State Aviation Technical University

4:20 PM

Evaluation of the Effect of Grain Refinement by Severe Plastic Deformation on Biocompatibility and Corrosion Rate of Pure Magnesium: Claudio Silva¹; Ana Celeste Oliveira¹; Cíntia Costa¹; *Roberto Figueiredo*¹; Maria de Fátima Leite¹; Marivalda Magalhães¹; Vanessa Lins¹; Terence Langdon²; ¹Federal University of Minas Gerais; ²University of Southampton

4:40 PM

Wear Resistance of an Ultrafine-grained Cu-Zr Alloy Processed by High-pressure Torsion: *Jitraporn Wongsangam*¹; Jianwei Li²; Jie Xu²; Terence Langdon³; ¹King Mongkut's Institute of Technology Ladkrabang; ²Harbin Institute of Technology; ³University of Southern California

5:00 PM

Wear Resistance and Electroconductivity of Copper and CuCrZr Alloy Subjected to Severe Plastic Deformation: *Alexander Zhilyaev*¹; Anna Morozova²; Jose Maria Cabrera³; Rustam Kaibyshev²; ¹Fundació CTM Centre Tecnològic; ²Belgorod State University; ³Universitat Politècnica de Catalunya

5:20 PM

High-Pressure Torsion of Ceramics with Functional Properties: *Kaveh Edalati*¹; Hadi Razavi-Khosroshahi²; Masayoshi Fuji²; Zenji Horita¹; ¹Kyushu University; ²Nagoya Institute of Technology

5:40 PM

Nanostructured Al-Mg-Si Alloys for Electrical Conductors: *Ilchat Sabirov*¹; Ruslan Valiev²; Georgiy Raab²; Alexandr Arutyunyan³; Maxim Murashkin²; ¹IMDEA Materials Institute; ²Ufa State Aviation Technical University; ³Saint Petersburg State University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Pb-free Soldering & UBM

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Wednesday PM
March 1, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chairs: Yee-wen Yen, National Taiwan University of Science and Technology; Cheng-En Ho, Yuan Ze University

2:00 PM

One-step Electrodeposition of Gold Dendrites in Aminosilane-contained Electrolyte and Their Applications: *Hau Nga Yu*¹; Shien Ping Feng¹; ¹The University of Hong Kong

2:20 PM

Development of Sn-free and Sn-containing Low Melting Solder Alloys: *Chih-Hao Chen*¹; Albert T. Wu¹; BoonHo Lee²; HsiangChuan Chen²; ChangMeng Wang²; ¹National Central University; ²SHENMAO Technology Inc.

2:40 PM

A Colorful Titanium Foil as a Photoanode Substrate for Dye-sensitized Solar Cells under Back-side Illumination: *Chih-Hsiang Huang*¹; Chih-Ming Chen¹; ¹National Chung Hsing University

3:00 PM

Solderability of Ultrathin-Ni(P)-type Au/Pd(P)/Ni(P)/Cu Pad: P Content Effect of the Pd(P) Film: Ying-Syuan Wu¹; *Pei-Tzu Lee*¹; Ming-Kai Lu¹; Tsai-Tung Kuo²; Cheng-En Ho¹; ¹Yuan Ze University; ²Uyemura Limited Company

3:20 PM

Niobium Pentoxide Hole-blocking Layer for Perovskite Solar Cell: *Rui Cheng*¹; Yu Ting Huang¹; Shien Ping Feng¹; ¹The University of Hong Kong

3:40 PM Break

3:55 PM

Thermal Capacitive Electrochemical Cycle on Supercapacitor: *Xun Wang*¹; Shien Ping Feng¹; ¹The University of Hong Kong

4:15 PM

Analysis of Electrochemical Impedance Spectroscopy of Dye-sensitized Solar Cells with a Blocking Layer: *Yen-Chiao Chen*¹; Chih-Ming Chen¹; ¹National Chung Hsing University

4:35 PM

Pulse Pb-UPD to Achieve a High Gap-filling of Cu Film Deposited on Trenched Ru/p-SiOCH/Si Substrate: *Jihh-Yan Wong*¹; Jai-Lin Wu¹; Jau-Shiung Fang¹; ¹National Formosa University

4:55 PM

Thermomigration of Cu-Sn and Ni-Sn Intermetallic Compounds during Reliability Test in SnAg Solder Joints: *Po-Ning Hsu*¹; ¹National Chiao Tung University

5:15 PM

Using Sn-Bi-Zn Solder Layer as the LED Die-attach Material by Controlling Position of Zn in the Solder Layer: *Yue Kai Tang*¹; Chengyi Liu¹; ¹National Central University

Phase Transformations and Microstructural Evolution — Ti & Zr

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Wednesday PM

Room: 16B

March 1, 2017

Location: San Diego Convention Ctr

Session Chair: Deep Choudhuri, University of North Texas

2:00 PM

Investigation of Alpha/Beta Interface Structure in a Titanium Alloy Using Aberration-Corrected Scanning Transmission Electron Microscope: *Yufeng Zheng*¹; Robert Williams¹; William Clark¹; Hamish Fraser¹; ¹The Ohio State University

2:20 PM

Influences of Pre-existing Defects on the Morphology and Variant Selection of Precipitates in Alpha/Beta Ti-alloys: *Di Qiu*¹; Rongpei Shi²; Pengyang Zhao²; Weijie Lyu¹; Yunzhi Wang²; ¹Shanghai Jiao Tong University; ²The Ohio State University

2:40 PM

Microstructure Evolution and Recrystallization in Linear Friction Welded Titanium Alloys: *Riddhiman Bhattacharya*¹; Thomas Broderick²; John Allison¹; ¹University of Michigan, Ann Arbor; ²GE Aviation

3:00 PM

Primary Alpha Plate Growth in Ti6246: *Abigail Ackerman*¹; David Rugg²; David Dye¹; ¹Imperial College, London; ²Rolls-Royce plc.

3:20 PM Break

3:40 PM

Study on Phase Stability, Correlated Deformation Microstructure and Mechanical Properties in a Metastable β -type Ti-Nb-Zr-Ta-O Alloy: *Sumin Shin*¹; Kenneth Vecchio¹; ¹University of California, San Diego

4:00 PM

Phase Formation in Cu - Zn Powder Mixtures Subjected to Ultrasonic Powder Consolidation: *Azin Houshmand*¹; Teiichi Ando¹; ¹Northeastern University

4:20 PM

The Effect of Aluminum Content on Recrystallization and Grain Growth in Binary Alpha Titanium Alloys: *Anna Trump*¹; John Allison¹; ¹University of Michigan

Solar Cell Silicon — Silicon Production, Crystallization, and Properties

Sponsored by: TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC

Wednesday PM

Room: 19

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Shadia Ikhmayies, Al Isra University; Huayi Yin, MIT

2:00 PM

Electrodeposition of Solar Grade Silicon on Graphite in Molten CaCl₂: *Huayi Yin*¹; Allen Bard²; Donald Sadoway¹; ¹MIT; ²University of Texas at Austin

2:20 PM

Solar Silicon by Direct Carbothermic Reduction - Review and Outlook: *Jan-Philipp Mai*¹; ¹JPM Silicon GmbH

2:40 PM

Study on Producing Solar Grade Silicon by Carbothermal Reduction of Andalusite Ore: Shilai Yuan¹; *Huimin Lu*¹; Panpan Wang¹; ¹Beihang University

3:00 PM

Phase Analysis of the Si-O₂ System: *Shadia Ikhmayies*¹; ¹Al Isra University

3:20 PM

Characterization of Composition, Morphology, and Structure of Disi Raw Sandstones in Jordan: *Shadia Ikhmayies*¹; Bothina Hamad²; Abulkader Abed²; Belal Amireh²; Yulia Meteleva²; ¹Al Isra University; ²University of Jordan

Solid State Precipitation — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Seth Imhoff, Los Alamos National Laboratory; Robert Hackenberg, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Wednesday PM

Room: 24C

March 1, 2017

Location: San Diego Convention Ctr

Session Chair: Seth Imhoff, Los Alamos National Laboratory

2:00 PM Invited

Understanding the Precipitation and Orientation Relationships in Transition Metal Carbides and Nitrides: *Christopher Weinberger*¹; Hang Yu¹; Bradford Schulz²; Robert Morris²; Xiao-Xiang Yu²; Gregory Thompson²; ¹Drexel University; ²University of Alabama

2:30 PM

An Experimental and Modelling Study on Precipitation during Tempering of Martensitic Alloys: *Tao Zhou*¹; Joakim Odqvist¹; Peter Hedström¹; ¹KTH Royal Institute of Technology

2:50 PM

Carbide Precipitation during Heating in Martensitic Steels: Xiaoping Cai¹; *Richard Sisson*¹; ¹Worcester Polytechnic Institute, Center for Heat Treating Excellence

3:10 PM

Precipitation Behavior in Ni-Ti-Zr Shape Memory Alloys: Suzanne Kornegay¹; Monica Kapoor²; B. Chad Hornbuckle³; Othmane Benafan⁴; Ronald Noebe⁴; Mark Weaver¹; *Gregory Thompson*¹; ¹University of Alabama; ²National Energy Technology Laboratory; ³Army Research Laboratory; ⁴NASA Glenn Research Center

3:30 PM Break

3:50 PM

Kinetics of Discontinuous Precipitation upon Age-hardening of Deformed and Recrystallized Invar-Sn Alloys: *Maryam Akhlaghi*¹; Olena Volkova¹; ¹Institute of Iron and Steel Technology, Technische Universität Bergakademie Freiberg

4:10 PM Invited

Prediction of Size, Temperature and Composition-dependent Precipitate/Matrix Interfacial Energies: *Ernst Kozeschnik*¹; Bernhard Sonderegger²; ¹TU Wien; ²TU Graz

4:40 PM

Predicting Orientation Relationships: A Simple Algorithm for Generating Near-coincidence Site Lattices in General Bravais Lattice Systems: *Srikanth Patala*¹; Arash Banadaki¹; ¹North Carolina State University

5:00 PM

Investigating the Formation Path of Delta Hydrides in Zirconium Fuel Rod Claddings by Multi-Phase Field Modeling: Jacob Bair¹; *Mohsen Asle Zaeem*¹; ¹Missouri University of Science and Technology

5:20 PM

Morphology and Phase Stability of Pt Nanostructures in Dense Transition Alumina Formed by Solid-state Precipitation: *Arielle Clauser*¹; Zachary McClure¹; Raquel Giulian²; Andreas Glaeser³; *Melissa Santala*¹; ¹Oregon State University; ² Universidade Federal do Rio Grande do Sul; ³University of California, Berkeley

The John Cahn Memorial Symposium — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division
Program Organizers: James Warren, National Institute of Standards and Technology; W. Craig Carter, MIT; Carol Handwerker, Purdue University; Y. Mishin, George Mason University

Wednesday PM

Room: 22

March 1, 2017

Location: San Diego Convention Ctr

Session Chairs: Carol Handwerker, Purdue University; Y. Mishin, George Mason University

2:00 PM Invited

Beyond the Gorsky Effect – Exploring Larché-Cahn Open System Elasticity in Experiment: Shan Shi¹; *Jörg Weissmüller*²; ¹Helmholtz-Zentrum Geesthacht; ²Hamburg University of Technology

2:30 PM Invited

Phase Transition and Anomalous Diffusion in Metastable β Ti-Mo: *Srinivasan Srivilliputhur*¹; Niraj Gupta¹; Srikumar Banerjee¹; ¹University of North Texas

3:00 PM Invited

How Some Quasicrystals Might Grow: *Jean Taylor*¹; ¹Rutgers University and Courant Institute, NYU

3:30 PM Break

3:50 PM Invited

John Cahn and Aesthetics of Materials: *Leonid Bendersky*¹; ¹NIST

4:20 PM Invited

Quasi-history of Quasi-crystallinity: *Olivier Hardouin Duparc*¹; ¹Ecole Polytechnique

4:50 PM Invited

John Cahn's Boss, Really?: *Lyle Schwartz*¹; ¹Courtesy Professor at the University of South Florida

5:20 PM Concluding Comments

8th International Symposium on High Temperature Metallurgical Processing — Treatment and Recycling of Slag/Wastes

Sponsored by: TMS Extraction and Processing Division, TMS; Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atılım University

Thursday AM

Room: 18

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Baojun Zhao, The University of Queensland; Matthew Andriese, Michigan Technological University

8:30 AM Introductory Comments

8:35 AM

Introduction of Matte Droplets in Copper Smelting Slag: Xiangfeng Cheng¹; Zhixiang Cui²; Leonel Leonel Contreras³; Mao Chen¹; Anh Nguyen¹; *Baojun Zhao*¹; ¹The University of Queensland; ²Dongying Fangyuan Nonferrous Metals; ³Codelco

8:55 AM

Dissolution Behavior of Fe from Glassy Oxide Phase in Steelmaking Slag: *Shohei Koizumi*¹; Xu Gao²; Shigeru Ueda²; Shin-ya Kitamura²; ¹Tohoku University; ²Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

9:15 AM

Penetration Depth of Microwave in Tire Rubber: *Yuzhe Zhang*¹; Jiann-Yang Hwang¹; Zhiwei Peng²; Matthew Andriese¹; Bowen Li³; Xiaodi Huang³; Xinli Wang¹; Xin Yan¹; ¹Michigan Technological University; ²Michigan Technological University; Central South University; ³Michigan Technological University; Advanced Materials R&D Center of WISCO

9:35 AM

Effect of FeO and CaO/SiO₂ on the Degree of Metallization during Carbothermic Reduction of EAF Slags: *Jongbae Kim*¹; Il Sohn¹; ¹Yonsei University

9:55 AM

Effect of TiO₂ on Thermophysical Properties and Structure of P-bearing Steelmaking Slags: *Zhanjun Wang*¹; Zuotai Zhang²; Mei Zhang¹; Min Guo¹; ¹University of Science and Technology Beijing; ²South University of Science and Technology of China

10:15 AM Break

10:35 AM

Analysis for Optimum Conditions for Recovery of Valuable Metals from E-Waste through Black Copper Smelting: Mohammad Al Hossaini Shuva¹; M Akbar Rhamdhani¹; Geoffrey A Brooks¹; Syed Masood¹; Markus A Reuter²; *Muhamad Firdaus*¹; ¹Swinburne University of Technology; ²Helmholtz Institute Freiberg for Resource Technology

10:55 AM

The Reduction of Chromite or Chromium Slag with Silicon Wafer Kerfloss: *Jong Ho Kim*¹; ¹Research Institute of Industrial Science and Technology

11:15 AM

Precipitation Behavior of MxTi₃-xO₅ in the Titanium-Bearing Electric Furnace Slag: *Fuqiang Zheng*¹; Xiaoming Qu¹; Guanzhou Qiu¹; Yufeng Guo¹; Tao Jiang¹; ¹Central South University

11:35 AM

Research on the Slag Type of Laterite Ores Smelting Reduction: *Liu Chang*¹; ¹Shanghai University

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Aerospace and Aluminum Alloys

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Thursday AM Room: 7B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Behrang Poorganji, YTC America Inc.; Kenta Yamanaka, Tohoku University

8:30 AM Invited

Alcoa Additive Manufacturing: A Revolution in the Making: *John Barnes*¹; Chris Aldridge¹; ¹Alcoa

9:00 AM

Evolution of Aluminum Alloys Structure at Production Phases of 3D Products by Methods of Additive Technologies: *Ivan Redkin*¹; Victor Mann¹; Aleksandr Krokhn¹; Aleksandr Alabin¹; Sergey Zmanovskiy¹; Valentin Konkevich¹; ¹RUSAL Global Management B. V.

9:20 AM

Characterization of Multiperforated Plates Manufactured by SLM and EBM for Aeroengine Applications: *Marc Thomas*¹; Océane Lambert¹; Cécile Davoine¹; Fabienne Popoff²; Corinne Dupuy²; Patrice Peyre²; Rémy Dendievel³; ¹ONERA; ²ENSAM ParisTech; ³SIMaP

9:40 AM

The Effect of Heat Treatments and Micro-mechanism Investigation on Anisotropic Creep and Low Cycle Fatigue properties of IN718 Processed by Selective Laser Melting: *Changpeng Li*¹; Guofeng Chen¹; Zhiqi Yao¹; *Zhongjiao Zhou*²; ¹Corporate Technology, Siemens; ²Tsinghua University

10:00 AM Break**10:20 AM**

Emerging High-strength Aluminum Alloys for Selective Laser Melting: *Todd Mower*¹; Jason Jones²; ¹MIT Lincoln Laboratory; ²Moog Inc.

10:40 AM

AlSi10Mg Lattice Structures Processed by Selective Laser Melting: Influence of the Geometry and the Heat Treatments on the Microstructure: *Pauline Delroisse*¹; Olivier Rigo²; Pascal Jacques¹; Aude Simar¹; ¹Université Catholique de Louvain; ²Sirris

11:00 AM

Porosity Determination in Powder Bed Aluminum Alloy: *Lisa Deibler*¹; Jay Carroll¹; Jeff Rodelas¹; ¹Sandia National Laboratories

11:20 AM

Understanding the Columnar-to-Equiaxed Transition in Additive Manufacturing: *Mark Easton*¹; Dong Qiu¹; Mitesh Patel¹; Gui Wang²; Milan Brandt¹; David StJohn²; ¹Royal Melbourne Institute of Technology University; ²University of Queensland

11:40 AM

Direct Laser Metal Deposition of Eutectic Al-Si Alloy for Automotive Applications: *Amrinder Singh*¹; Abhishek Ramakrishnan¹; Guru Dinda¹; ¹Wayne State University

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Feedstock

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Thursday AM Room: 8
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Chantal Sudbrack, NASA Glenn Research Center; Bryan McEnerney, Jet Propulsion Laboratory

8:30 AM Invited

Investigation of Powder Feedstock Variability for SLM Alloy 718: *Chantal Sudbrack*¹; David Ellis¹; ¹NASA Glenn Research Center

9:00 AM

The Influence of Gas Cooling in Context of Wire Arc Additive Manufacturing: A Novel Strategy of Affecting Grain Structure and Size: *Philipp Henckell*¹; ¹Technische Universität Ilmenau

9:20 AM

Tomography and 3D Grain Mapping for Additive Manufacturing Qualification: *Leah Lavery*¹; Hrishikesh Bale¹; Jeff Gelb¹; Arno Merkle¹; ¹Carl Zeiss X-ray Microscopy, Inc.

9:40 AM Invited

Qualification Development for AlSi10Mg for Robotic Spaceflight: *Bryan McEnerney*¹; R. Dillon¹; John Paul Borgonia¹; Daniel Weinstock¹; Andrew Shapiro-Scharlotta¹; ¹Jet Propulsion Laboratory

10:10 AM Break**10:30 AM**

Numerical Investigations of the Coating Process during Powder Bed Additive Manufacturing: *Mustafa Megahed*¹; Wolfgang Ottow¹; ¹ESI Group

10:50 AM

In-process Monitoring of Cross Contamination in Laser Powder Bed Fusion Additive Manufacturing: *Mahdi Jamshidinia*¹; Paul Boulware¹; Jacob Marchal¹; Heimdall Mendoza¹; Lance Cronley¹; Scott Newhouse¹; ¹EWI

11:10 AM

Microstructure and Mechanical Properties of Laser Deposited Ni/WC Metal Matrix Composite Coatings: *Abhishek Ramakrishnan*¹; Amrinder Singh¹; Guru Dinda¹; ¹Wayne State University

11:30 AM Invited

Phase-field Modeling of Microstructure Evolution during Additive Manufacturing of Ti-6Al-4V Alloys: *Yanzhou Ji*¹; Lei Chen²; *Long Qing Chen*¹; ¹Penn State University; ²Mississippi State University

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session VII

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Thursday AM Room: 33C
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Asher Leff, Drexel University; Veronica Livescu, Los Alamos National Laboratory

8:30 AM

Representation of Materials Microstructure for Modeling: *Veronica Livescu*¹; Curt Bronkhorst¹; George Gray¹; Carl Trujillo¹; Daniel Martinez¹; James Valdez¹; Bineh Ndefru¹; Olivia Dippo¹; Roberta Beal¹; ¹Los Alamos National Laboratory

8:50 AM

Determination for Dynamic Fracture Toughness of Linear Elastic Materials Using the Large Dimensional Hopkinson Tube: *Chunhuan Guo*¹; Ding Yuan¹; Peijun Zhou¹; Kenneth S. Vecchio²; Fengchun Jiang¹; ¹Harbin Engineering University; ²University of California, San Diego La Jolla

9:10 AM

Determination of Geometrically Necessary Dislocations in Large Shear Strain Localization in Metals: *Chaoyi Zhu*¹; Veronica Livescu²; Tyler Harrington¹; Olivia Dippo²; George T. Gray III²; Kenneth Vecchio¹; ¹UC San Diego; ²Los Alamos National Laboratory

9:30 AM

High Temperature Dynamic Mechanical Behavior Characterization of Ti-6Al-4V Using a NEW Compression Kolsky Bar Technique: *Sindhura Gangireddy*¹; Steven Mates¹; ¹NIST

9:50 AM Break

10:10 AM

Dissecting Dislocation Dynamics Simulations : The Search for the Origins of Dislocation Microstructure Evolution: *Ahmed Hussein*¹; Brahim Akdim²; Edwin Antillon²; Christopher Woodward¹; Satish Rao³; Triplicane Parthasarathy²; ¹Air Force Research Laboratory; ²UES Inc.; ³EPFL

10:30 AM

Toward a Description of Disinclination Densities Using Orientation Imaging Data: *Asher Leff*¹; Christopher Weinberger¹; Mitra Taheri¹; ¹Drexel University

10:50 AM

Effects of Crystal Orientation on Shock Induced Dislocation Dynamics of Single Crystalline Copper: *Anupam Neogi*¹; Nilanjan Mitra¹; ¹IIT Kharagpur

11:10 AM

Dislocation Interaction and Fatigue Damage Evolution at Grain Boundaries Studied by In-situ Cyclic Loading of Bi-crystalline Micro Samples: *Christian Motz*¹; Jorge Rafael Velazquez¹; ¹Saarland University

11:30 AM

On the Optimization of a Biaxial Tensile Test Specimen Design: *Dilip Banerjee*¹; Mark Iadicola¹; Adam Creuziger¹; ¹NIST

11:50 AM

Microstructure Characterisation of Drilled Chips of 316L Stainless Steel: Guocai Chai¹; *Raveendra Siriki*¹; Fritz Yah²; ¹Sandvik Materials Technology; ²Sandvik Coromant

Advanced High-Strength Steels — Processing of Advanced Steels

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Thursday AM Room: 17A
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Dirk Ponge, Max-Planck-Institut für Eisenforschung; Mingxin Huang, The University of Hong Kong

8:30 AM

Properties and Applications of Industrially Processed Hot Rolled High-manganese TWIP Steels: *Thorsten Roesler*¹; Maximilian Nagel¹; Johan Driessen¹; Andreas Tomitz¹; Jens Overrath¹; Harald Hofmann²; Helmut Richter²; Hans Ferkel²; ¹Thyssenkrupp Hohenlimburg; ²Thyssenkrupp Steel Europe

8:50 AM

Hot Stamping Process for Steel Parts with Higher Ductility: Ersoy Erisir¹; *Oguz Bilir*¹; ¹Kocaeli University

9:10 AM

Process Window for Heavy Plastic Deformation of a Ferritic-austenitic Steel: *Katharina Schwarz*¹; Timo Müller¹; Anton Hohenwarter²; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; ²Department of Materials Physics, University of Leoben, Austria

9:30 AM

Microstructure and Mechanical Properties of Nano/ultra-fine Structured High Strength Steels for High Temperature Structural Applications: Hasan Kotan¹; *Kris Darling*²; ¹Konya NEU; ²U.S. Army Research Laboratory

9:50 AM

Quantitative Analysis of the Precipitate Coarsening in HSLA Steels: *Yiqiang Wang*¹; Clark Samuel²; Janik Vit²; Richard Heenan³; Kun Yan¹; Sridhar Seetharaman²; Peter Lee¹; ¹University of Manchester; ²University of Warwick; ³ISIS Facility, Science and Technology Facilities Council

10:10 AM Break

10:30 AM

Related Mechanisms in Athermal and Deformation-induced Martensitic Transformation in Austenitic Fe-Cr-Ni Alloys: *Ye Tian*¹; Annika Borgenstam¹; Peter Hedström¹; ¹KTH Royal Institute of Technology

10:50 AM

Thermodynamic-mechanical Modeling of Deformation-induced Martensitic Transformation Aided by In-situ Magnetic Measurements during Tensile Tests: *Michael Hauser*¹; Marco Wendler¹; Olena Volkova¹; Javad Mola¹; ¹TU Bergakademie Freiberg

11:10 AM

Computational Design of Metastable Retained Austenite in Advanced High Strength Steels: *Hao Chen*¹; Zhigang Yang¹; Chi Zhang¹; Zongbiao Dai¹; ¹Tsinghua University

11:30 AM Concluding Comments

Advanced Materials for Energy Conversion and Storage — Functional Materials II

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
 Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Thursday AM Room: 15A
 March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Reza Shahbazian-Yassar, University of Illinois at Chicago; Paul Ohodnicki, NETL

8:30 AM Invited

Free the Electron: Mitigating Polaronic Bottlenecks in Cathode Materials: *Sarbajit Banerjee*¹; ¹Texas A&M University

8:55 AM

Increasing Ionic Conductivity with Highly Ionizing Radiation: *Jacob Shamblin*¹; Cameron Tracy²; Rodney Ewing²; Joshua Sangoro¹; Caitlin Taylor¹; Maulik Patel¹; William Weber¹; Raul Palomares¹; Eric O'Quinn¹; Maik Lang¹; ¹The University of Tennessee; ²Stanford University

9:15 AM Invited

Mechanical Degradation and Optimization of Solid Electrolyte Interphases in Li Ion Batteries: *Brian Sheldon*¹; Ravi Kumar¹; Anton Tokranov¹; Xingcheng Xiao²; ¹Brown University; ²General Motors

9:35 AM Invited

Multifunctional Graphene-based Hybrid Nanomaterials for Renewable Energy: *Sanju Gupta*¹; ¹Western Kentucky University

9:55 AM Break

10:15 AM Invited

Nanoscale Electrochemistry with In Situ Transmission Electron Microscopy: *Reza Shahbazian-Yassar*¹; ¹University of Illinois at Chicago

10:40 AM

Preparation and Characterization of Eupatorium Adenophorum-derived Activated Carbon by Microwave-heating KOH and K₂CO₃ Activation: *Li Chunyang*¹; Zhang Libo¹; Xia Hongying¹; Cheng Song¹; Shu Jianhua¹; ¹Kunming University of Technology and Science

11:00 AM Invited

High Energy Density Lithium Ion Battery Based on Li₂O Activation: *Ali Abouimrane*¹; Yanjie Cui²; Zonghai Chen²; Ilias Belharouak¹; Hamdi Yahia¹; Huiming Wu²; Rajeev Assary²; Larry Curtiss²; Khalil Amine²; ¹Hamad Bin Khalifa University; ²Argonne National Laboratory

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Session V

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

Thursday AM Room: 22
 March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Franck Gascoin, Laboratoire CRISMAT; Yang-yuan Chen, Academia Sinica

8:30 AM Invited

Diamond-Like and "Diamond-Unlike" Ternary Copper Based Semiconductors for Thermoelectrics: *Donald Morelli*¹; ¹Michigan State University

8:50 AM Invited

Intrinsic Thermoelectric Properties of SnSe Single Crystals and Its Associates: *Yang-Yuan Chen*¹; P.C. Wei¹; ¹Institute of Physics, Academia Sinica

9:10 AM

Engineering High-zT In-doped GeTe: The Phase Equilibria and Thermoelectric Properties: *Jie-Ru Deng*¹; Hsin-jay Wu¹; ¹Department of Materials and Optoelectronic science, National Sun Yat-sen University

9:30 AM

Thermoelectric Properties of PbTe-based Materials Fabricated by a Melt Spinning Method: *Preeyakarn Eaksuwanchai*¹; Ken Kurosaki¹; Michihiro Ohta²; Priyanka Jood²; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University; ²AIST

9:50 AM

Thermoelectric Properties of Amorphous Half-Heusler Thin Films Synthesized by Magnetron Sputtering: *Liangliang Li*¹; ¹Tsinghua University

10:10 AM Break

10:30 AM Invited

Exploratory Research of New Polar Chalcogenides: Robin Lefèvre¹; Stefan Maier¹; David Berthebaud¹; *Franck Gascoin*¹; ¹CRISMAT Laboratory

10:50 AM Invited

Theoretical and Experimental Investigation of the Electronic Structure and Thermoelectric Properties of the Fe₂VAl Heusler Compound: *Subrahmanyam Bandaru*¹; Florence Rouessac¹; Philippe Jund¹; ¹ICGM-Montpellier University

11:10 AM

Thermoelectric Properties of MnTe- and MnTe₂- based Materials: *Quansheng Guo*¹; Takao Mori¹; ¹NIMS

11:30 AM

Thermoelectric Performance of Undoped and Ag Doped Mg₂Sn Alloys: *Rameshkumar Varma*¹; Sitarama Kada¹; Matthew Barnett¹; ¹Deakin University

11:50 AM

The Impact of Various Wafer Cleans on Surface Recombination in Crystalline Silicon: *Haider Ali*¹; Kristopher Davis¹; Winston Schoenfeld¹; ¹University of Central Florida

12:10 PM Concluding Comments

Aluminum Reduction Technology — Technology Development

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
 Program Organizer: Mark Dorreen, Light Metals Research Centre, The University of Auckland

Thursday AM Room: 2
 March 2, 2017 Location: San Diego Convention Ctr

Session Chair: Till Reek, Trimet Aluminium SE

8:30 AM Introductory Comments

8:35 AM

Implementation of D18+ Cell Technology at EGA Jebel Ali Smelter: Daniel Whitfield¹; *Sergey Akhmetov*¹; Jose Blasques¹; Harishchandra Devadiga¹; ¹Emirates Global Aluminium (EGA)

9:00 AM

Enabling Efficient Heat Recovery from Aluminium Pot Gas: *Daniel Clos*¹; Trond Andresen¹; Petter Nekså¹; Sverre Johnsen²; Ragnhild Aune³; ¹SINTEF Energy research; ²SINTEF Materials and Chemistry; ³Norwegian University of Science and Technology

9:25 AM

DX+ Ultra – EGA High Productivity, Low Energy Cell Technology: *Nadia Ahli*¹; Abdalla Zarouni¹; Michel Reverdy¹; ¹Emirates Global Aluminium (EGA)

9:50 AM Break

10:05 AM

Crane Electrical Isulation Monitoring in Potlines: New CANDI 4.0 Development: *Serge Despinasse*¹; Eric Norel¹; Fabienne Virieux²; ¹Fives ECL; ²Fives Solios

10:30 AM

The Successful Implementation of AP40 Technology at Kitimat: *Patrice Desrosiers*¹; Martin Robitaille¹; Pierre Luc Voyer¹; Silvino Caetano¹; René Gariépy¹; Olivier Martin²; Pascal Robert¹; ¹Rio Tinto; ²Rio Tinto Alcan

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Energy Storage and Engineering Issues

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Thursday AM
March 2, 2017

Room: 15B
Location: San Diego Convention Ctr

Session Chair: Maurits Van Camp, Umicore Group Research & Development

8:30 AM

Corrosion Mitigation Approaches for High Temperature Energy Production: *Judith Vidal*¹; ¹National Renewable E

8:50 AM

High-Temperature High-Efficiency Latent Heat Based Thermal Energy Storage System: Development and Performance Testing: *Dileep Singh*¹; ¹Argonne National Laboratory

9:10 AM

Thermal Energy Storage in Orientationally Disordered “Plastic Crystals”: *Dhanesh Chandra*¹; Renhai Shi¹; Murli Tirumala¹; Daryl Nelson¹; ¹Uni. of Nevada, Reno

9:30 AM

Corrosion Mechanism of Haynes 230 with Ni Crucible in MgCl₂-KCl: *Yuxiang Peng*¹; Ramana Reddy¹; ¹The University of Alabama

9:50 AM Break

10:10 AM

Functional Syntactic Foams: Titania Coated Glass Microballoons for Environmental Cleanup: *Krishan Chawla*¹; ¹University of Alabama at Birmingham

10:30 AM

Conceptualization of Doped Black P Thin Films for Potential Use in Photovoltaics with Validation from First Principle Calculations: Sayan Sarkar¹; Weizhi Zeng¹; *Michael Free*¹; ¹University of Utah

10:50 AM

Energy Efficiency and Sustainability in Steel Production: *Lauri Holappa*¹; ¹Aalto University

11:10 AM

Application of Surface Effect on Metallurgical Processes: *Kuo-Chih Chou*¹; ¹University of Science & Technology Beijing

Bulk Metallic Glasses XIV — Mechanical and Other Properties I

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Thursday AM
March 2, 2017

Room: 33B
Location: San Diego Convention Ctr

Session Chairs: Koichi Tsuchiya, NIMS; Upadrasta Ramamurty, Indian Institute of Science

8:30 AM Invited

Thermal and Mechanical Properties of Deformation-Induced Amorphous Phase in Zr-Cu-Al Alloys: *Koichi Tsuchiya*¹; Jian Qiang²; Fanqiang Meng³; ¹NIMS; ²NIMS; University of Tsukuba; ³Ames Laboratory, University of Iowa

8:50 AM Invited

Crystallization Behavior and Soft Magnetic Properties of (Fe₃₆Co₃₆B_{19.2}Si_{4.8}Nb₄)_{99.5}Cu_{0.5} Bulk Metallic Glass: *Mihai Stoica*¹; Parthiban R.¹; Ivan Kaban¹; Sergio Scudino¹; Jürgen Eckert²; ¹IFW Dresden, Germany; ²ESI Leoben, Austria

9:10 AM

Structural Rejuvenation in Bulk Metallic Glasses with Varying Fictive Temperature: *Hui Wang*¹; Wojciech Dmowski¹; Jittisa Ketkaew²; Jan Schroers²; Zengquan Wang¹; Takeshi Egami¹; ¹University of Tennessee, Knoxville; ²Yale University

9:30 AM

Controllable Thermal Stress and Micro-cracking in Processing Metallic Glasses by Selective Laser Melting: *Ning Li*¹; Di Ouyang¹; Jianji Zhang¹; Lin Liu; ¹Huazhong University of Science and Technology

9:50 AM Invited

On the Fracture Toughness and Fatigue Strength of Ni-based Glasses: *Bernd Gludovatz*¹; Edwin Chang¹; Mingxi Zheng¹; Jong Na²; Maximilien Launey²; Marios Demetriou³; William Johnson³; Robert Ritchie¹; ¹Lawrence Berkeley National Laboratory; ²Glassmetal Technology Inc; ³Caltech

10:10 AM Break

10:30 AM

Bulk Metallic Glasses Composites Produced via Severe Plastic Deformation – Microstructure and Mechanical Properties: *Lisa Kraemer*¹; Verena Maier-Kiener²; Karoline Kormout¹; Yannick Champion³; Reinhard Pippan¹; ¹Erich Schmid-Institute of Materials Sciences, Austrian Academy of Sciences; ²Department Physical Metallurgy and Materials Testing; ³Grenoble INP

10:50 AM

The Origins of Excellent Soft Magnetism in Fe_{65.5}Cr₄Mo₄Ga₄P₁₂B_{5.5}C₅ Bulk Metallic Glasses: *T. D. Shen*¹; B. R. Sun¹; S. W. Xin¹; ¹Yanshan University

11:10 AM

Rapid Degradation of Azo Dye by Co-Si-B Metallic Glass Powder: *XinDong Qin*¹; ZhengKun Li¹; ZhengWang Zhu¹; HuaMeng Fu¹; Hong Li¹; AiMin Wang¹; HongWei Zhang¹; HaiFeng Zhang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

11:30 AM Invited

Crack Propagation of Metallic Glasses: *Gang Wang*¹; J. Li¹; J. Yi¹; I. Hussain¹; W. Y. Wang¹; ¹Shanghai University

Bulk Metallic Glasses XIV — Structures and Modeling I

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Thursday AM
March 2, 2017

Room: 33A
Location: San Diego Convention Ctr

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Xie Xie, The University of Tennessee, Knoxville

8:30 AM Invited

Modeling Slips in Solids and Comparison to Experiments: *Karin Dahmen*¹; Michael LeBlanc²; Peter Liaw³; Robert Maass²; Jonathan Uhl⁴; Wendelin Wright⁵; Xie Xie³; ¹University of Illinois at Urbana Champaign; ²University of Illinois at Urbana Champaign; ³The University of Tennessee, Knoxville; ⁴Retired; ⁵Bucknell University

8:50 AM Invited

On the Proper Determination of Power Law Exponents for Slip Statistics Using Experimental Data from Bulk Metallic Glasses: *Wendelin Wright*¹; Michael LeBlanc²; Aya Nawano²; Xiaojun Gu¹; J.T. Uhl³; Karin Dahmen²; ¹Bucknell University; ²University of Illinois at Urbana-Champaign; ³Retired

9:10 AM Invited

The Statistics of Thermally Activated Structural Excitations in a Model Amorphous Solid: Peter Derlet¹; Robert Maass²; ¹Paul Scherrer Institut; ²University of Illinois at Urbana-Champaign

9:30 AM Invited

'Crystal Genes' in Metallic Liquids and Glasses: *M. Kramer*¹; Y. Sun¹; F. Zhang¹; Z. Ye¹; Y. Zhang¹; X. Fang¹; Z. Ding²; C. Z. Wang¹; M.I. Mendeleev¹; R.T. Ott¹; K.M. Ho¹; R.E. Napolitano¹; ¹Iowa State University; ²University of Science and Technology of China

9:50 AM Break

10:10 AM Invited

A Comprehensive Study of the Deformation Mechanism of Amorphous CuZr/Nanocrystalline Cu Nanolaminates via Integrated Experiments and Computations: *Bin Gan*¹; William Yi Wang¹; Bin Tang¹; Jun Wang¹; Hongchao Kou¹; Maosen Fu¹; Jinshan Li¹; ¹Northwestern Polytechnical University

10:30 AM Invited

Modelling and Experimental Assessment of Residual Stress Distribution in Zr-based Bulk Metallic Glass: *Marco Sebastiani*¹; Alexander Korsunsky²; Enrico Salvati²; Tan Sui²; Easo George³; ¹Roma TRE University; ²University of Oxford; ³Ruhr-Universität Bochum

10:50 AM Invited

Universality of Slip Avalanches in a Ductile Bulk Metallic Glass: *Junwei Qiao*¹; Jiaojiao Li¹; Huijun Yang¹; ¹Taiyuan University of Technology

11:10 AM

Structural Stabilities and Mechanical Responses of Ni-transition Metal Binary Glass-forming Alloys: *Hehsang Ahn*¹; Jinwoo Kim¹; Soyeon Kim¹; Eun Soo Park¹; ¹Seoul National University

Cast Shop Technology — Casthouse Management and Automation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: David Gildemeister, Alcoa Technical Center

Thursday AM
March 2, 2017

Room: 1A
Location: San Diego Convention Ctr

Session Chair: Jean Francois Desmeules, Dynamic Concept

8:30 AM Introductory Comments

8:40 AM

Overpressure Due to a Molten Aluminum and Water Explosion in a Casthouse: Jennifer Woloshyn¹; Andrew Gerber²; Tom Plikas¹; Duane Baker¹; Adam Blackmore¹; ¹Hatch Ltd.; ²Envenio Inc.

9:05 AM

Automation and Optimization of Sow Casting in Alouette: Jean-Francois Desmeules¹; Jean-Benoît Néron¹; Jean-Pierre Bérubé²; ¹Dynamic Concept; ²Aluminerie Alouette Inc.

9:30 AM

Radio Frequency Identification (RFID) Technology for the Aluminum Industry: *Valerie Langelier*¹; ¹Hatch

9:55 AM Break

10:10 AM

Semi Finished Products Traceability Improvement with Laser Marking: *Jean-Francois Desmeules*¹; Benoît Côté¹; Jean-Daniel Dufour¹; ¹Dynamic Concept

10:35 AM

Structural Integrity Assessment of Pressurized Ladles for Aluminum Smelting: *Maher Al-Dojayli*¹; Pouya Zangeneh¹; Alexandre Lamoureux¹; Daniel Richard¹; Pierre-Louis Allaire¹; Hamid Ghorbani¹; ¹Hatch

11:00 AM

Have Recent Advances in Direct Chill Casting Made Us Less Safe?: *Alex Lowery*¹; ¹WISE CHEM LLC

11:25 AM Concluding Comments

Characterization of Minerals, Metals, and Materials — Composites

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Thursday AM
March 2, 2017

Room: 31A
Location: San Diego Convention Ctr

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Marcos Fernandes, USP

8:30 AM

Study on Mechanical Property of Porous Titanium by Adding Powder TiB₂: *Lu TengFei*¹; ¹College of Materials Science and Engineering, Chongqing University

8:50 AM

Portland Cement-Fique Fibers Composites: *Henry Colorado*¹; Frederico Muylaert Margem²; Sergio Monteiro³; ¹Universidad de Antioquia; ²Universidade Estadual do Norte Fluminense Darcy Ribeiro; ³Military Institute of Engineering, IME

9:10 AM

High Thermal Conducting Composites Using Percolation Theory: *Kenji Monden*¹; ¹Denka Co., Ltd.

9:30 AM

Sorption Characteristics of Low Density Polyethylene/Kola Nut Composite: *Genevive Onuegbu*¹; Gerald Onyedika¹; Martin Obidiegwu¹; ¹Federal University of Technology, Owerri

9:50 AM Break

10:05 AM

Tensile Behavior of Epoxy Matrix Composites Reinforced with Pure Ramie Fabric: *Caroline Gomes de Oliveira*¹; Janine Feitosa de Deus¹; Ygor Macabu de Moraes¹; Marcos Vinicius Fonseca Ferreira¹; Frederico Margem Muylaert²; Sérgio Neves Monteiro³; Luiz Gustavo Xavier Borges²; ¹UNF - Universidade Estadual do Norte Fluminense; ²Faculdade Redentor; ³IME - Instituto Militar de Engenharia

10:25 AM

Hemp Fiber Density Using the Pycnometry Technique: *Lázaro Rohen*¹; *Frederico Margem*¹; Sérgio Monteiro²; Anna Neves¹; Carlos Vieira¹; Janaina Vieira¹; Dhyemila Mantovani¹; Jean Margem³; ¹State University of Northern of Rio de Janeiro; ²Military Institute of Engineering; ³ISECENSA

10:45 AM

Bending Tests in Polyester Composites Reinforced with Palf Fibers: *Maria Carolina Teles*¹; *Frederico Margem*²; Sergio Neves³; ¹State University of the Northern Rio de Janeiro; ²Faculdade Redentor; ³Instituto Militar de Engenharia

11:05 AM

Influence of EB Radiation on the Mechanical Properties of Organic Bentonites-HIPS Nanocomposites: *Francisco Mondelo Garcia*¹; Amanda Roban¹; Giselle Colls¹; Jesus Eduardo Ruiz²; Esperidiana Moura³; Maria das Graças Valenzuela⁴; Tania Moliner¹; Jose Luis Valin Rivera⁵; *Francisco Valenzuela-Diaz*⁵; ¹Instituto Superior Politecnico Jose Antonio Echeverria; ²Centro de Biomateriales Universidad de la Habana; ³Instituto de Pesquisas Energeticas e Nucleares; ⁴Universidade Federal do ABC; ⁵Universidade de Sao Paulo

11:25 AM

Preparation and Characterization of Clay Exfoliation and Vegetal Fibre on Properties of Recycled Low Density Polyethylene (rLDPE): *Amauche Achusim-Udenko*¹; Coida Renata²; Francisco Valenzuela-Diaz²; Gerald Onyedika¹; Moura Esperidiana³; Martin Ogwuegbu¹; Graca Valenzuela³; ¹Federal University of Technology, Owerri; ²Universidade de São Paulo Escola Politenica; ³Instituto de Pesquisas Energetics e Nucleares _IPEN-CNEN/SP

Characterization of Minerals, Metals, and Materials — Method Development

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Thursday AM
March 2, 2017

Room: 30D
Location: San Diego Convention Ctr

Session Chairs: Jeongguk Kim, Korea Railroad Research Institute; Tomoko Sano, US Army Research Laboratory

8:30 AM

Characterizing Ballistic Resistance: Legacy Methods Versus Novel Statistical Tools: *Frederik Coghe*¹; ¹Royal Military Academy (BE MoD)

8:50 AM

A Forward Modeling Approach to Defect Characterization in a Scanning Electron Microscope: *Saransh Singh*¹; Marc De Graef¹; ¹Carnegie Mellon University

9:10 AM

In-Situ Femtosecond Laser Milling Technique for Microstructural Characterization: *Tomoko Sano*¹; Jonathan Ligda¹; ¹US Army Research Laboratory

9:30 AM

Development of A New Recycling Process of PGM from Metal-supported Catalyst Using Complex Oxide: *Takashi Nagai*¹; Hiroki Kumakura¹; Kenji Abe¹; Rentaro Seki¹; Daiki Noguchi¹; ¹Chiba Institute of Technology

9:50 AM

In Situ Mechanical and Thermal Damage Mechanisms Investigation in Asteoridal Rocks: *Jefferson Cuadra*¹; *Kavan Hazel*²; Harry Martz¹; KT Ramesh³; ¹Lawrence Livermore Nation Laboratory; ²University of Alabama in Huntsville; ³Johns Hopkins University

10:10 AM Break

10:25 AM

Nondestructive Characterization of Railway Materials and Components with Infrared Thermography Technique: *Jeongguk Kim*¹; ¹Korea Railroad Research Institute

10:45 AM

Nondestructive Materials Characterization in 3D by Laboratory Diffraction Contrast Tomography: *Erik Lauridsen*¹; Christian Holzner²; Florian Bachmann¹; Allan Lyckegaard¹; Hrishikesh Bale²; Leah Lavery²; ¹Xnovo Technology ApS; ²Carl Zeiss X-ray Microscopy Inc.

11:05 AM

Five Dimensional Microanalysis of In-situ Reactions in Solution: *Tyler Ley*¹; Qintang Hu¹; Mohammed Aboustait¹; Masoud Moradian¹; Taehwan Kim; Taehwan Kim²; Jay Hanan¹; Jeff Bullard³; George Scherer⁴; Robert Winarski⁵; Volker Rose⁶; Jeff Gelb⁶; ¹Oklahoma State University; ²University of New South Wales; ³NIST; ⁴Princeton; ⁵Argonne National Laboratory; ⁶Zeiss Xradia Inc

11:25 AM

Improvements in High Speed Simultaneous EDS-EBSD Mapping: *Matt Nowell*¹; ¹EDAX-TSL

11:45 AM

Measuring Bauschinger Effects in Rolled Sheet Metal: *Christopher Chalhoun*¹; Evan Rust¹; Dilip Banerjee¹; Tim Foecke¹; ¹NIST

12:05 PM

Micromanipulation Techniques for Site Specific Materials Characterization: *Lucille Giannuzzi¹*; ¹EXpressLO LLC

Characterization of Minerals, Metals, and Materials — Welding and Solidification

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Thursday AM Room: 31B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Chenguang Bai, Chongqing University; Pasquale Spena, Free University of Bozen-Bolzano

8:30 AM

Characterization of Explosively Bonded Interfaces for High Contaminant Sensitivity Environments: *Olivia Underwood¹*; Jonathan Madison¹; Lisa Deibler¹; Jeffrey Rodelas¹; ¹Sandia National Laboratories

8:50 AM

Investigation on the Local Mechanical Behavior of Laser Weldments in AHSS TWBs: *Pasquale Russo Spena¹*; Luca Cortese²; Filippo Nalli¹; Daniel Reiterer³; ¹Free University of Bozen-Bolzano; ²Sapienza - Università di Roma; ³IDM Südtirol-Alto Adige

9:10 AM

Microstructural Evolution of Porous Materials by Magnetic Freeze Casting: *Pooya Niksiar¹*; Michael Frank²; Joanna McKittrick²; Michael Porter¹; ¹Department of Mechanical Engineering, Clemson University, Clemson; ²Materials Science and Engineering Program, University of California, San Diego

9:30 AM

Mechanical Characterization of Weldment Zones of Selected Oil and Gas Pipeline Steel: *Bodude Adebayo¹*; ¹University of Lagos

9:50 AM Break

10:05 AM

Reconstruction of Solidification History from the Cast Microstructure of a Vacuum Arc Remelted Nickel Alloy 718 Ingot: *Thomas Ivanoff¹*; Trevor Watt²; Eric Taleff¹; ¹University of Texas at Austin; ²Stratasys

10:25 AM

The Effects of Refractory Element Addition on the Long Term Stability and Microstructural Characteristics of Nickel-Based Superalloys: *Rasim Eris¹*; M. Vedat Akdeniz¹; Amdulla O. Mekhrabov¹; ¹Novel Alloys Design and Development Laboratory (NOVALAB), Department of Metallurgical and Materials Engineering, Middle East Technical University

10:45 AM

Interfacial Strength Characterization in a High-modulus Low-density Steel-based Fe-TiB₂ Composite: *Yizhuang Li¹*; Mingxin Huang¹; ¹The University of Hong Kong

Computational Materials Discovery and Optimization – From Bulk to Materials Interfaces and 2D Materials — Kinetics and Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Arunima Singh, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Thursday AM Room: 11A
March 2, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM

Solute Transport in Mg: Beyond the 8-frequency Model: *Ravi Agarwal¹*; Dallas Trinkle¹; ¹University of Illinois, Urbana-Champaign

8:50 AM

Elucidating Ordering and Decomposition Processes in Alloys from First-principles: *Anirudh Raju Natarajan¹*; John Thomas¹; Brian Puchala²; Anton Van der Ven¹; ¹University of California; ²University of Michigan

9:10 AM

Exploration of Amorphous Silica Glass Using Molecular Dynamics: *William Schill¹*; Michael Ortiz¹; ¹California Institute of Technology

9:30 AM

The Evolution of θ' Precipitates in an Al-Cu Alloy Investigated with Phase Field Theory: *Patrick Shower¹*; Balasubramaniam Radhakrishnan¹; James Morris¹; Amit Shyam¹; ¹Oak Ridge National Laboratory

9:50 AM

Phase Field Crystal Modeling of Grain Boundaries in Two-dimensional Binary Materials: *Doaa Taha¹*; Simiso Mkhonta²; Ken Elder³; Zhi-Feng Huang¹; ¹Wayne State University; ²University of Swaziland; ³Oakland University

10:10 AM Break

10:25 AM

Compliant Substrate Epitaxy: Au on MoS₂: *Yuzhi Zhou¹*; Daisuke Kiriya¹; Eugene Haller¹; Joel Ager¹; Ali Javey¹; *Daryl Chrzan¹*; ¹University of California, Berkeley and Lawrence Berkeley National Laboratory

10:45 AM

Effects of Rarefied Atmospheres on Freezing and Sublimation: *Rahul Basu¹*; ¹VTU

11:05 AM

Modelling of Ni Nanohoneycomb Actuation in Water: *Yuqi Zhang¹*; Alfonso Hing Wan Ngan¹; ¹The University of Hong Kong

11:25 AM

Modeling the Hydroforming of Large Grain Niobium Tube: *Aboozar Mapar¹*; Thomas Bieler¹; Farhang Pourboghra²; ¹Michigan State University; ²The Ohio State University

11:45 AM

Band Gap Opening in 2D Bi-layered Silicon Film: *Zhonghang Ji¹*; *Yan Zhuang¹*; ¹Wright State University

Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions — Uncertainty Quantification and Model Validation for Classical Force Fields

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Li Ma, NIST; Shawn Coleman, ARL; Jeff Doak, QuesTek Innovations, LLC; Fadi Abdeljawad, Sandia National Laboratory

Thursday AM Room: 10
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Shawn Coleman, U.S. Army Research Laboratory; Lucas Hale, National Institute of Standards and Technology

8:30 AM Invited

Advancements in Parameterization and Validation of Empirical Potentials: *Tao Liang*¹; Kamal Choudhary²; Susan Sinnott¹; ¹Pennsylvania State University; ²NIST

9:00 AM

Development of Semi-Empirical Potentials Suitable for Simulation of Phase Transformations in Titanium: *Mikhail Mendeleev*¹; Tom Underwood²; Graeme Ackland³; ¹Ames Laboratory; ²University of Bath; ³University of Edinburgh

9:20 AM

Evaluation and Comparison of Classical Interatomic Potentials through a User-friendly Interactive Web-interface: *Kamal Choudhary*¹; Faical Congo¹; Francesca Tavazza¹; ¹National Institute of Standards and Technology

9:40 AM Invited

Evaluation of Atomistic Potentials for Silicon: Ganga P. Purja Pun¹; *Y. Mishin*¹; ¹George Mason University

10:10 AM Break

10:30 AM Invited

Uncertainty Quantification of Classical Interatomic Potentials: Eugene Ragasa¹; Christopher O'Brien²; Richard Hennig¹; Stephen Foiles²; *Simon Phillpot*¹; ¹University of Florida; ²Sandia National Laboratories

11:00 AM Invited

Molecular Dynamics, Dislocation Interactions and Uncertainty: *Lucas Hale*¹; Zachary Trautt¹; Chandler Becker¹; ¹National Institute of Standards and Technology

Computational Thermodynamics and Kinetics — Grain Boundaries and Defects II

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Thursday AM Room: 11B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Timofey Frolov, Lawrence Livermore National Laboratory; Bilge Yildiz, Massachusetts Institute of Technology

8:30 AM Invited

Defect Equilibria in Semiconducting Oxides under Thermodynamic Forces: Bulk and Interfaces: Mostafa Youssef¹; Jing Yang¹; Krystyn Van Vliet¹; *Bilge Yildiz*¹; ¹Massachusetts Institute of Technology

9:00 AM

Design of Interfaces between Transition Metal Carbide and Nitride Precipitates and Matrix in Austenitic Steels: *Oleg Kontsevoi*¹; Gregory Olson¹; ¹Northwestern University

9:20 AM

Thermodynamic Stabilization of High Concentrations of Planar Faults in Near-stoichiometric NiTi Shape Memory Alloys: *Sascha Maisel*¹; Blazej Grabowski¹; Jörg Neugebauer¹; ¹MPIE

9:40 AM Invited

Predicting Phase Behavior of Interfaces with Evolutionary Algorithms: Qiang Zhu¹; Robert Rudd²; *Timofey Frolov*²; ¹University of Nevada Las Vegas; ²Lawrence Livermore National Laboratory

10:10 AM Break

10:30 AM Invited

Effect of Bicrystallography on Thermal Resistance of Grain Boundaries: J. Hickman¹; *Y. Mishin*¹; ¹George Mason University

11:00 AM

Ab Initio Study of Point Defects in Heusler Alloys: Consequences for Magnetocaloric Properties: *Biswanath Dutta*¹; Vijaya Begum¹; Tilmann Hickel¹; Jörg Neugebauer¹; ¹Max-Planck-Institut für Eisenforschung GmbH

11:20 AM

A Non-Schmid Crystal Plasticity Finite Element Approach to Multi-scale Modeling of Nickel-based Superalloys: *Shahriyar Keshavarz*¹; Andrew Reid¹; Stephan Langer¹; Somnath Ghosh²; ¹NIST; ²JHU

Deformation and Transitions at Interfaces — Grain Boundary Interactions with Dislocation and Twins in Hexagonal Metals

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Thursday AM Room: 23B
March 2, 2017 Location: San Diego Convention Ctr

Session Chair: To Be Announced

8:30 AM Invited

Influence of Twin-grain Boundary Interactions on Further Twin Growth and Twin Transmission in HCP Metals: *Carlos Tome*¹; M. Arul Kumar¹; Irene J Beyerlein¹; ¹Los Alamos National Lab

8:50 AM

Investigation of Dislocation Activities during Slip Transmission across Alpha/Beta Interface in Ti-alloy Using Microscopic Phase-Field: *Pengyang Zhao*¹; Chen Shen²; Ju Li³; Michael Mills¹; Yunzhi Wang¹; ¹The Ohio State University; ²GE Global Research, US; ³Massachusetts Institute of Technology

9:10 AM Invited

Slip-induced Twinning in Ti: *Maryam Ghazisaeidi*¹; ¹Ohio State University

9:30 AM

{1012} Twin Faceting on Non-tilt Interfaces: *Christopher Barrett*¹; Haitham El Kadiri¹; ¹Mississippi State University

9:50 AM Invited

Intergranular and Transgranular Fracture Modes in H.C.P. Alloys: *Ismail Mohamed*¹; S. Ziaei¹; Mohammed Zikry¹; ¹North Carolina State University

10:10 AM Break**10:30 AM Invited**

Dislocation/Boundary Interaction in Titanium: Molecular Dynamics Study: *Mohammad Shahriar Hooshmand*¹; *Maryam Ghazisaeidi*¹; ¹The Ohio State University

10:50 AM Invited

Imaging and Analyzing Slip in Three Dimensions: *Rulin Chen*¹; *Jonathan Lind*²; *Reeju Pokharel*³; *David Menasche*¹; *Anthony Rollett*¹; *Robert Suter*¹; ¹Carnegie Mellon University; ²Lawrence Livermore National Laboratory; ³Los Alamos National Laboratory

11:10 AM Invited

Early Stages of Microstructure and Texture Evolution during Beta Annealing of Ti-6Al-4V: *Adam Pilchak*¹; *Gordon Sargent*²; *Lee Semiatin*¹; ¹Air Force Research Laboratory; ²UES, Inc.

11:30 AM

In-situ Probe of Twinning Dynamics at a Tensile Twin Tip in Mg: *Lin Jiang*¹; *M. Arul Kumar*²; *Irene Beyerlein*²; *Dalong Zhang*¹; *Xin Wang*¹; *Subhash Mahajan*³; *Enrique Lavernia*¹; *Julie Schoenung*¹; ¹University of California Irvine; ²Los Alamos National Laboratory; ³University of California-Davis

11:50 AM Invited

Mesoscale Response of Titanium Alloy Tensile Samples Measured through High Energy X-ray Experiments: *Joel Bernier*¹; *Paul Shade*²; *Todd Turner*²; *Darren Pagan*¹; *David Menasche*³; *Robert Suter*³; *Peter Kenesei*⁴; *Jun-Sang Park*⁴; *Jonathan Almer*⁴; ¹Lawrence Livermore National Laboratory; ²Air Force Research Laboratory; ³Carnegie Mellon University; ⁴Argonne National Laboratory

12:10 PM Invited

Heterogeneous Deformation in Polycrystalline Mg-Y by In Situ 3D-XRD: *Leyun Wang*¹; *Zhonghe Huang*¹; *Xiaoqin Zeng*¹; *Sangbong Yi*²; *Erica Lilleodden*²; *Peter Kenesei*³; *Jun-Sang Park*³; ¹Shanghai Jiao Tong University; ²Helmholtz-Zentrum Geesthacht; ³Argonne National Laboratory

Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session — Deriving Value from Challenging Waste II

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Energy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Elsa Olivetti, Massachusetts Institute of Technology; Mingming Zhang, ArcelorMittal Global R&D; Randolph Kirchain, Massachusetts Institute of Technology; Henry Colorado, Universidad de Antioquia

Thursday AM Room: 14B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Randolph Kirchain, MIT; Henry Colorado, Universidad de Antioquia

8:30 AM

Evaluation Of Battery Waste As Pigment: *Henry Colorado*¹; *German Ricaurte*¹; ¹Universidad de Antioquia

8:50 AM

Understanding Variability in Industrial Boiler Ash Waste for Use in Alkali Aluminosilicate Systems: *Hugo Uvegi*¹; *Piyush Chaunsali*¹; *Rachel Osmundsen*¹; *John Ochsendorf*¹; *Elsa Olivetti*¹; ¹Massachusetts Institute of Technology

9:10 AM

Value-Added Processing of Tannic Acid and Related Waste Materials for Halogen-Free Flame Retardants: *John Howarter*¹; *Matthew Korey*¹; *Gamini Mendis*¹; ¹Purdue University

9:30 AM

Synthesis of New Arsenic Adsorbents from Waste Water of Steel Processing Plant: *H Sheng*¹; *J. Shang*¹; ¹University of Illinois

9:50 AM Break**10:10 AM**

Recycling of Glass Polishing Sludge into Heavy Clay Ceramic: *Carlos Mauricio Vieira*¹; *Pâmela Busch*¹; *Juliana Licurgo*¹; *Sergio Monteiro*¹; ¹State University of the North Fluminense

10:30 AM

Synthesis and Characterization of Ferrochromium Slag Based Glass-ceramics: *Zhitao Bai*¹; *Mei Zhang*¹; *Min Guo*¹; ¹University of Science and Technology Beijing

10:50 AM

Reducing the Silica Content of Copper Slag by Flocculation and Reverse Flotation: *Zhenya Xu*¹; ¹Shanghai University

11:10 AM

Hydrometallurgical Processing of Copper Smelter Dust for Copper Recovery as Nanoparticles: A Review: *Daniel Okanigbe*¹; ¹Tshwane University of Technology (TUT)

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Transient Liquid Phase Bonding and Nanosolder

Sponsored by: TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

Thursday AM Room: 30E
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Fan-Yi Ouyang, National Tsing Hua University; Tae-Kyu Lee, Portland State University

8:30 AM

Transient Liquid Phase Processing of Sn-Cu Alloys for Soldering Applications: *Stuart McDonald*¹; *Syeda Mehreen*¹; *Flora Somidin*¹; *Arif Mohd Salleh*¹; *Kazuhiro Nogita*¹; ¹Nihon Superior Centre for the Manufacture of Electronic Materials

8:50 AM

Low Thickness Au-In TLP Hermetic Encapsulation: *Eyup Can Demir*¹; *Oguzhan Temel*²; *Tayfun Akin*²; *Eren Kalay*¹; ¹METU; ²METU MEMS

9:10 AM

Microstructural Evolution and Mechanical Performance of High-Bi, Sn-Bi Transient Liquid Phase Bonds: *John Holaday*¹; *Carol Handwerker*¹; ¹Purdue University

9:30 AM

Microstructure and Thermomechanical Properties of Nanoparticle-added Sn-Ag-Cu Solder Paste: *Kyoung-Ho Kim*¹; *Jung-Hwan Bang*¹; *Junichi Koike*²; *Jonghyuk Yoon*³; *Songhee Yim*³; *Bum-Gyu Baek*³; *Jae-Pil Jung*⁴; *Sehoon Yoo*¹; ¹Korea Institute of Industrial Technology; ²Tohoku University; ³KD One; ⁴University of Seoul

9:50 AM Break**10:10 AM**

Effect of Lead-free Nanosolder Additions on the IMC Formation and Growth of Solder Paste on Cu Substrate: *Evan Wernicki*¹; *Zhiyong Gu*¹; ¹University of Massachusetts Lowell

10:30 AM

Nano Solder Interconnections by Low Temperature Soldering of Cu₆Sn₅: *Ying Zhong*¹; Sungho Jin²; Chunqing Wang³; ¹University of California, San Diego, and Harbin Institute of Technology, China; ²University of California, San Diego; ³Harbin Institute of Technology, China

Energy Materials 2017: Materials for Coal-Based Power — Session IV

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dryepondt, Oak Ridge National Laboratory

Thursday AM
March 2, 2017

Room: 12
Location: San Diego Convention Ctr

Session Chair: Gordon Holcomb, National Energy Technology Laboratory

8:30 AM Invited

A New Austenitic Heat-Resisting Steel SP2215 for 620-630°C USC Boiler Tubing Application: *Xishan Xie*¹; ¹University of Science and Technology Beijing

9:10 AM

Development of Wrought Ni-Cr-Al Alloy with High Temperature Corrosion Resistance: *Yoshihiko Koyanagi*¹; Hiroyuki Takabayashi¹; Shigeki Ueta¹; ¹Daido Steel Co., Ltd.

9:30 AM Invited

Materials Performance in Supercritical CO₂ in Comparison with Atmospheric Pressure CO₂ and Supercritical Steam: *Gordon Holcomb*¹; Joseph Tylczak¹; Casey Carney²; Ömer Dogan¹; ¹National Energy Technology Laboratory; ²National Energy Technology Laboratory, AECOM

10:10 AM Break

10:30 AM

Study of Localized Under-coal Ash Deposit Corrosion of Inconel 740 Alloy Using High Temperature Electrochemical Sensor: Naing Naing Aung¹; *Xingbo Liu*¹; ¹West Virginia University

10:50 AM Invited

Towards Predicting Reactive-element Tolerances in the Compositional Design of Al₂O₃-scale Forming Alloys and Coatings: B. C. Zhou¹; A Ross¹; T. Gheno²; X. L. Liu¹; G. Lindwall¹; B. Gleeson²; *Zi-Kui Liu*¹; ¹The Pennsylvania State University; ²University of Pittsburgh

Energy Materials 2017: Materials for Nuclear Energy — Environmental Effects

Sponsored by: Chinese Society for Metals

Program Organizers: Raul Rebak, GE Global Research; Zhengdong Liu, China Iron & Steel Research Institute Group; Peter Hosemann, University of California Berkeley; Jian Li, CanmetMATERIALS

Thursday AM
March 2, 2017

Room: Miramar
Location: Marriott Marquis Hotel

Session Chairs: Zhengdong Liu, China Iron & Steel Research Institute Group; Yiyin Shan, Institute of Metal Research, Chinese Academy of Sciences

8:30 AM Invited

Environmental Assisted Cracking of the Additively Manufactured Austenitic Stainless Steel in High Temperature Water: *Xiaoyuan Lou*¹; Paul Emigh¹; Michelle Othon¹; ¹GE Global Research

9:10 AM Invited

Effect of Steam Pressure on the Oxidation Behaviour of Alloy 625: *Shengli Jiang*¹; Xiao Huang²; Wenjing Li³; Pei Liu⁴; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Carleton University; ³Canadian Nuclear Laboratories; ⁴CANMET

9:50 AM

First Principles Investigations of Alternative Nuclear Fuels: *Barbara Szpunar*¹; Linu Malakkal¹; Eric Moore Jossou¹; J.A. Szpunar¹; ¹University of Saskatchewan

10:10 AM Break

10:25 AM

Calculation of Phase Equilibria and Properties in Multi-Component Molten Salt Systems: *Shuanglin Chen*¹; Weisheng Cao¹; Fan Zhang¹; Chuan Zhang¹; Jun Zhu¹; ¹CompuTherm LLC

10:45 AM

IASCC Behavior of Nickel-based Alloys in Light Water Reactors (LWRs): *Mi Wang*¹; Miao Song¹; Gary Was¹; ¹University of Michigan

11:05 AM

Oxidation of Alloy 690 in Simulated Pressurized Water Reactor Primary Environment: *Wenjun Kuang*¹; Miao Song¹; Peng Wang¹; Gary Was¹; ¹University of Michigan

11:25 AM

Compatibility Research of Fission Product Tellurium and Alloy N in Molten Salt Reactor: *Z.J. Li*¹; ¹Shanghai Institute of Applied Physics CAS

11:45 AM

Friction Stir Processing of Degraded Austenitic Stainless Steel Nuclear Fuel Dry Cask Storage System Canisters: *Ben Sutton*¹; Kenneth Ross²; Glenn Grant²; Gary Cannell³; Greg Frederick¹; Robert Couch¹; ¹Electric Power Research Institute; ²Pacific Northwest National Laboratory; ³Fluor Enterprises, Inc.

Energy Technologies — CO₂ Management and Sustainable Metallurgical Processes

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Lei Zhang, University of Alaska Fairbanks; Jaroslav Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Laboratory; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University; Ziqi Sun, Queensland University of Technology; Tao Wang, Nucor Steel; John Howarter, Purdue University; Fiseha Tesfaye, Åbo Akademi University

Thursday AM
March 2, 2017

Room: 13
Location: San Diego Convention Ctr

Session Chairs: Donna Guillen, Idaho National Laboratory; Cong Wang, Northeastern University; Fiseha Tesfaye, Åbo Akademi University

8:30 AM Invited

Large Scale Energy Storage through Heat Balance Shifts at Aluminium Smelters: *Mark Taylor*¹; ¹University of Auckland

9:00 AM Invited

Transforming the Way Electricity is Consumed during the Aluminium Smelting Process: *Mark Dorreen*¹; Linda Wright²; Geoff Matthews³; Pretesh Patel⁴; David Wong¹; ¹Light Metals Research Centre, The University of Auckland; ²One World Consulting Limited; ³Energia Potior Limited; ⁴Auckland Uniservices Limited

9:20 AM Invited

Disordered 3D Multi-layer Graphene Anode Material from CO₂ for Sodium-Ion Batteries: *Hui (Claire) Xiong*¹; Kassiopia Smith¹; Wei Wei²; Yun Hang Hu²; ¹Boise State University; ²Michigan Technological University

9:40 AM

Power Generation Using Combined In-situ Combustion with CO₂ Separation and Sequestration: *Subodh Das*¹; Jeff Saey²; ¹Phinix,LLC; ²University of Kentucky

10:00 AM Break

10:15 AM Invited

The Thermodynamics of Slag Forming Inorganic Phases in Biomass Combustion Processes: *Daniel Lindberg*¹; Fiseha Tesfaye¹; ¹Åbo Akademi University

10:35 AM

Leaching of Sb from TROF Furnace Doré Slag: *Petteri Halli*¹; Simon Jolivet²; Andreas Klöfverskjöld¹; Petri Latostenmaa³; Benjamin Wilson¹; Mari Lundström¹; ¹Aalto University; ²Polytech Grenoble; ³Boliden Harjavalta

10:55 AM Invited

Potential CO₂ Emission Reduction and H₂ Production Using Industrial Slag Wastes Originating from Different Industrial Sectors: *Jinichiro Nakano*¹; James Bennett¹; Anna Nakano¹; ¹US Department of Energy National Energy Technology Laboratory

11:15 AM

Absorption of Atmospheric CO₂ Using Banana Peel Waste: Ajit Gaikwad¹; Krishna Vootla¹; Likhith Nalluri¹; A.K.M. Monayem Mazumder¹; *Ramesh Guduru*¹; ¹Lamar University

Fracture Properties and Residual Stresses in Small Dimensions — Fracture Testing Methodologies

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Daniel Kiener, University of Leoben; Marco Sebastiani, Roma TRE university; Nagamani Jaya Balila, Max Planck Institut fuer Eisenforschung GmbH; William Gerberich, University of Minnesota; Siddhartha (Sid) Pathak, University of Nevada, Reno

Thursday AM

Room: 21

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Nathan Mara, Los Alamos National Laboratory; Richard Vinci, Lehigh University

8:30 AM Invited

SEM-based In-situ Fracture Measurements of Ceramics and Metals: *Richard Vinci*¹; ¹Lehigh University

9:00 AM

In Situ Stable Fracture of Sapphire-Niobium Interfaces: Rui Hao¹; Giorgio Sernicola²; Eduardo Saiz²; *Finn Giuliani*²; ¹University of Illinois at Urbana-Champaign; ²Imperial College London

9:20 AM

Measurement of the Fracture Toughness of Thin Films by Pillar Splitting: Effect of Materials Structure and Indenter Geometry: *Matteo Ghidelli*¹; *Marco Sebastiani*¹; ¹University of Roma Tre

9:40 AM Invited

Enhancing Ductility of Metal-Metal (BCC-HCP) and Metal-Ceramic Multilayered Nanocomposites: *Nathan Mara*¹; Siddhartha Pathak²; William Mook³; Youxing Chen¹; Nan Li¹; Jon Baldwin¹; Jian Wang⁴; Irene Beyerlein¹; ¹Los Alamos National Laboratory; ²University of Nevada, Reno; ³Sandia National Laboratories; ⁴University of Nebraska, Lincoln

10:10 AM Break

10:30 AM

Indentation Fracture Experiments on Single Crystal Olivine from 300K to 1100K: *David Armstrong*¹; Katie Kumamoto²; David Wallis¹; Steve Roberts¹; Angus Wilkinson¹; Jessica Warren³; Lars Hansen¹; ¹University of Oxford; ²Stanford University; ³University of Delaware

10:50 AM

Small-scale Testing Methodology to Study Fracture Toughness of Interfaces in Multilayered Systems: *Adnan Ozekcin*¹; Richard Vinci²; Srinivasan Rajagopalan¹; ¹ExxonMobil Research and Engineering Company; ²Lehigh University

11:10 AM

Orientation Dependent Fracture Behaviour of LiTaO₃ and LiNbO₃ Single Crystals: *Manuel Gruber*¹; Raul Bermejo¹; Jeroen Bielen²; Peter Supancic¹; Robert Danzer¹; Daniel Kiener¹; ¹Montanuniversität Leoben; ²Epcos Netherlands B.V., A TDK Group company

11:30 AM

Extraordinary Stability of Clamped Beam Fracture Toughness Specimen: Stress Intensity Factor Solutions and New Insights on Possibilities at Small Dimensions: *Nagamani Jaya Balila*¹; Vikram Jayaram²; ¹MPIE GmbH; ²Indian Institute of Science, Bangalore

Friction Stir Welding and Processing IX — Industrial Applications

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Thursday AM

Room: 9

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Anthony Reynolds, University of South Carolina; Lars Cederqvist, SKB

8:30 AM Keynote

Growth of Friction Stir Welding and Processing: Contributions of Murray W. Mahoney: *Rajiv Mishra*¹; ¹University of North Texas

9:10 AM Invited

Industrial Application of FSW at HFW: *Bryan Tweedy*¹; ¹HFW

9:30 AM Invited

Friction Stir Welding Parameter Development of AA7075 for Hot Stamping Applications: *Francois Nadeau*¹; Nia Harrison²; ¹National Research Council of Canada (NRC); ²Ford Motor Company

9:50 AM Invited

Friction Stir Welding, Development Approach and Feedback for Aerospace Applications: *Amarilys Ben Attar*¹; Jean-Pierre Bonnafé²; ¹Institut de Soudure; ²Airbus Safran Launchers

10:10 AM Break

10:30 AM

A Novel Approach for Joining EN AW 1070 Stranded Wire and EN CW 004A Contact Elements by Friction Stir Spot Bonding: Anna Regensburg¹; René Schürer¹; Jean Pierre Bergmann¹; Helmut Steinberg²; *Jan Ansgar Gerken*¹; ¹Technische Universität Ilmenau; ²Nexans Autoelectric GmbH

10:50 AM

Joining Al 6061 to ZE41A Mg Alloy by Friction Stir Welding Using a Cold Spray Transition Joint: *Todd Curtis*¹; Victor Kenneth Champagne, III²; Michael West¹; Christian Widener¹; ¹South Dakota School of Mines and Technology; ²University of Massachusetts

11:10 AM Invited

Refill Friction Stir Spot Welding Aerospace Aluminum Alloys: *Enkhsaikhan Boldsaikhan*¹; Shintaro Fukada²; Mitsuo Fujimoto²; Kenichi Kamimuki²; Hideki Okada²; Brent Duncan¹; Brian Brown¹; ¹Wichita State University; ²Kawasaki Heavy Industries

11:30 AM

Effect of Tool Runout in Friction Stir Welding of Aluminum Alloy for Structural Applications: *Lugman Hakim Ahmad Shah*¹; Shi Hui Guo¹; Scott Walbridge¹; Adrian Gerlich¹; ¹University of Waterloo

Gamma (FCC)/Gamma-Prime (L1₂) Co-Based Superalloys II — Mechanical Behavior II

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee

Program Organizers: Eric Lass, National Institute of Standards and Technology; Qiang Feng, University of Science and Technology Beijing; Alessandro Moturra, University of Birmingham; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Wei Xiong, Northwestern University

Thursday AM
March 2, 2017

Room: Palomar
Location: Marriott Marquis Hotel

Session Chairs: Qiang Feng, University of Science and Technology Beijing; Eric Lass, NIST

8:30 AM Invited

Creep Behavior in a γ' Strengthened Co-Al-W-base Single Crystal Superalloys: Song Lu¹; Haijing Zhou¹; Fei Xue¹; Wendao Li¹; William Yi Wang²; Zi-Kui Liu³; *Qiang Feng*¹; ¹University of Science & Technology Beijing; ²Northwestern Polytechnical University; ³The Pennsylvania State University

9:00 AM

Dislocation Interactions during High-temperature Creep and Yield of Polycrystalline Co-Ni-Al-W-based Superalloys and L1₂ γ' Phases: *Vassili Vorontsov*¹; Caroline Taylor¹; Henry Chan¹; Paul Mulvey¹; Mark Hardy²; David Dye¹; ¹Imperial College London; ²Rolls-Royce plc

9:20 AM

Double Minimum Creep of a Ta-containing Single Crystal Co-base Superalloy: *Fei Xue*¹; Christopher Zenk¹; Steffen Neumeier¹; Mathias Göken¹; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg

9:40 AM

The Influence of Cr in γ' Strengthened Co-base Superalloys: *Christopher Zenk*¹; Ivan Povstugar²; Steffen Neumeier¹; Mathias Göken¹; ¹FAU Erlangen-Nürnberg; ²MPIE Düsseldorf

10:00 AM Break

10:20 AM

Analyzing the Tension/Compression Asymmetry in Creep Deformed Single Crystal Co-base Superalloys: *Malte Lenz*¹; Yolita Eggeler¹; Christopher Zenk¹; Steffen Neumeier¹; Mathias Göken¹; Philip Wollgramm¹; Gunther Eggeler²; Erdmann Spiecker¹; ¹FAU Erlangen-Nürnberg; ²Ruhr-Uni Bochum

10:40 AM

The Grain Boundary Pinning Effect of the μ -phase in Polycrystalline L1₂ Hardened Co-base Superalloys: *Lisa Freund*¹; Steffen Neumeier¹; Mathias Göken¹; ¹Friedrich-Alexander-Universität Erlangen-Nürnberg

11:00 AM

Solute-vacancy Binding Energies and Diffusion Rates in fcc Cobalt: A First-principles Database: *Shahab Naghavi*¹; Vinay Hegde¹; Chris Wolverton¹; ¹Northwestern University

11:20 AM

Influence of Replacement of Ta by Nb in a γ/γ' -structure Co Base Superalloys: *Alex Costa*¹; Marcus Salgado²; Eder Lopes³; Carlos Nunes²; Andre Tschiptschin⁴; ¹LNNano-CNPEM; ²The Engineering School of Lorena (EEL-USP); ³Faculty of Mechanical Engineering of University of Campinas; ⁴Metallurgical and Materials Department of University of Sao Paulo

11:40 AM Concluding Comments

GAT-2017 (Gamma Alloys Technology - 2017) — Novel Processing - Additive Manufacturing and SPS

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Thursday AM
March 2, 2017

Room: Solana
Location: Marriott Marquis Hotel

Session Chairs: Rui Yang, Institute of Metal Research; Rob Haun, Retech Systems

8:30 AM Invited

Advantages of PM Processing for Gamma Titanium Aluminides: *Andrzej Wojcieszynski*¹; Joseph Muha¹; ¹ATI Powder Metals

8:55 AM Invited

Fatigue Thresholds in γ -TiAl Alloys Produced by Additive Manufacturing: *Mauro Filippini*¹; Stefano Beretta¹; Luca Patriarca¹; ¹Politecnico di Milano

9:20 AM

Effect of Homogenization on Microstructure and Mechanical Properties of

EBM Ti-48Al-2Cr-2Nb: *Mohsen Seifi*¹; Ayman Salem²; Daniel Satko²; John Lewandowski¹; ¹Case Western Reserve University; ²Materials Resources LLC

9:40 AM

Characterization of a High Nb-TiAl Alloy Components Fabricated by Additive Manufacturing Using Electron Beam Melting: *Wenbin Kan*¹; Junpin Lin¹; Yongfeng Liang¹; Hui Peng²; Hongbo Guy²; ¹University of Science and Technology Beijing; ²Beihang University of Aeronautics and Astronautics

10:00 AM

Repair of γ -TiAl Turbine Blades by Use of Laser Additive Manufacturing: *Siĭja-Katharina Rittinghaus*¹; Andreas Weisheit¹; Michael Mathes²; ¹Fraunhofer ILT (Institute for Laser Technique); ²Access e.V.

10:20 AM Break

10:35 AM Invited

Spark Plasma Sintering of a TiAl Alloy and of Near-net Shape Blades: *Alain Couret*¹; Jean-Philippe Monchoux¹; Thomas Voisin¹; Marc Thomas²; ¹CEMES/CNRS; ²DMMP/ONERA

11:00 AM

In-situ Experiments to Determine the Creep Law Describing the SPS Densification of a TiAl Powder: *Martins David*¹; Grumbach Fanny²; Maniere Charles²; Sallot Pierre¹; Bellet Michel³; Mocellin Katia³; Estournes Claude⁴; ¹SAFRAN; ²CIRIMAT; ³CEMEF; ⁴CNRS CIRIMAT

11:20 AM Invited

Manufacturing Issues in Rapid Thermal Processing of γ -TiAl Alloys: *Marc Thomas*¹; Alain Couret²; Jean-Philippe Monchoux²; ¹ONERA; ²CEMES

11:45 AM

Properties at High Temperatures of the IRIS Alloy Densified by Spark Plasma Sintering: *Soumaya Naanani*¹; Jean-Philippe Monchoux¹; Catherine Mabru²; Alain Couret¹; ¹Cemes; ²ICA (Institut Clément Ader), ISAE, Université de Toulouse

High Entropy Alloys V — Structures and Characterization

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Thursday AM
March 2, 2017

Room: 32A
Location: San Diego Convention Ctr

Session Chairs: Mitra Taheri, Drexel University; E-Wen Huang, National Chiao Tung University

8:30 AM Invited

In Situ TEM Investigation of the Thermal, Mechanical, and Corrosion Stability of High Entropy Alloys: *Mitra Taheri*¹; *Elaf Anber*¹; *Daniel Scotto-D'Antuono*¹; *Wayne Harlow*¹; *Haoyan Diao*²; *Peter Liaw*²; ¹Drexel University; ²University of Tennessee

8:50 AM Invited

Uncovering the Dislocation Dynamics Leading to Planar Slips in High-entropy Alloy Nanopillars: *Yang Hu*¹; *Li Shu*; *Peter Liaw*²; *Karin Dahmen*³; *Jian Min Zuo*⁴; ¹University of Illinois at Urbana-Champaign; ²University of Tennessee; ³ University of Illinois at Urbana Champaign; ⁴University of Illinois

9:10 AM Invited

Nanoscale Phase Separation in Al_{0.5}CoCrFeNiCu High Entropy Alloys, as Studied by Atom Probe Tomography: *Keith Knipling*¹; *Joshue Tharpe*²; *Peter Liaw*²; ¹U.S. Naval Research Laboratory; ²University of Tennessee

9:30 AM

Plastic Deformation Mechanisms in A3S and Cantor's HEA Alloys Investigated by In Situ TEM Straining Experiments: *Marc Legros*¹; *Michal Mroz*²; *Anna Fraczkiewicz*²; ¹CEMES-CNRS; ²Ecole des Mines de St-Etienne

9:50 AM Invited

Small Angle Neutron Scattering Study of HEA Microstructure Evolution with Temperature and Applied Magnetic Field: *Louis Santodonato*¹; *Lisa DeBeer-Schmitt*¹; *Kenneth Littrell*¹; *Peter Liaw*²; ¹Oak Ridge National Laboratory; ²The University of Tennessee

10:10 AM Break

10:30 AM Invited

Structural Transition in High Entropy Alloy CoCrFeMnNi under High Pressure: *E-Wen Huang*¹; *Yi-Hung Chen*¹; *Chin-Ming Lin*²; *Chia-En Hsu*²; *Jien-Wei Yeh*³; *Ke An*⁴; ¹National Chiao Tung University; ²National Hsinchu University of Education; ³National Tsing Hua University; ⁴Oak Ridge National Laboratory

10:50 AM Invited

Complex Structural Factors Governing Unique Properties of FCC High Entropy Alloys Studied by Theory and Experiment: *Hyun Seok Oh*¹; *Eun Soo Park*¹; *Fritz Körmann*²; *Gerard Leyson*³; *Duancheng Ma*³; *Sang Jun Kim*¹; *Blazej Grabowski*³; *Cemal Cem Tasan*⁴; *Dierk Raabe*³; ¹Seoul National University; ²Delft University of Technology; ³Max-Planck Institut für Eisenforschung GmbH; ⁴Massachusetts Institute of Technology

11:10 AM Invited

Composition, Temperature, and Crystal Size Effects on the Mechanical Response of AlCoCrFeNi High Entropy Alloy: *Gi-Dong Sim*¹; *Quan Jiao*¹; *Peter K. Liaw*²; *Rajiv Mishra*³; *Jaafar El-Awady*¹; ¹Johns Hopkins University; ²University of Tennessee; ³University of North Texas

11:30 AM

An In Situ TEM Observation on Thermal Stability of High Entropy Alloys: *Elaf Anber*¹; *Dan Scotto D'Antuono*¹; *Andrew Lang*¹; *Haoyan Diao*²; *Peter Liaw*²; *Mitra Taheri*¹; ¹Drexel University; ²The University of Tennessee Knoxville,

11:50 AM

Corrosion-resistant Nobility of AlxCoCrFeNi High-entropy Alloys: *Yunzhu Shi*¹; *Liam Collins*²; *Rui Feng*³; *Bin Yang*¹; *Peter Liaw*³; ¹University of Science and Technology Beijing; ²Oak Ridge National Laboratory; ³The University of Tennessee

High Entropy Alloys V — Structures and Modeling I

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Thursday AM
March 2, 2017

Room: 32B
Location: San Diego Convention Ctr

Session Chairs: Michael Widom, Carnegie Mellon University; Wei Chen, Illinois Institute of Technology

8:30 AM Invited

Partial Chemical Ordering of Body Centered Cubic High Entropy Alloys: *Michael Widom*¹; ¹Carnegie Mellon University

8:50 AM

Theoretical Investigation of Structural and Electronic Properties of Entropy-stabilized Oxides: *Zsolt Rak*¹; *C. M. Rost*¹; *J. P. Maria*¹; *D. W. Brenner*¹; ¹NCSU

9:10 AM Invited

Unusually Low and Spatially Varying Stacking Fault Energy in Equimolar Multicomponent Alloys: *Qingjie Li*¹; *Evan Ma*¹; ¹Johns Hopkins University

9:30 AM Invited

Elastic Properties of High-entropy Alloys from First-principles: *Wei Chen*¹; *Haoyan Diao*²; *Peter Liaw*²; ¹Illinois Institute of Technology; ²University of Tennessee

9:50 AM Invited

Predicting Structural and Chemical Properties of Mo-based Refractory High-entropy Alloys: *Aayush Sharma*¹; *Prashant Singh*²; *D. D. Johnson*¹; *Peter Liaw*³; *Ganesh Balasubramanian*¹; ¹Iowa State University; ²Ames Laboratory; ³University of Tennessee

10:10 AM Break

10:30 AM

Constitutive Modeling of CrMnFeCoNi High Entropy Alloys: *Hyung Seop Kim*¹; ¹POSTECH

10:50 AM

Atomistic Simulations in a Model FCC High Entropy Alloy: Effects of Annealing: *Edwin Antillon*¹; *Christopher Woodward*²; *Satish Rao*³; *Ahmed Hussein*²; *Triplicane Parthasarathy*¹; ¹UES; ²AFRL; ³EPFL

11:10 AM

Phase Prediction via Ab-initio Monte Carlo Simulation for High-entropy Alloys: *Changning Niu*¹; *Wolfgang Windl*¹; *Maryam Ghazisaeidi*¹; ¹Ohio State University

11:30 AM

Investigation of High Entropy Alloys based on Continuum Dislocation Dynamics: Navid Kermanshahimofared¹; Hesam Askari²; Ioannis Mastorakos¹; ¹Clarkson University; ²University of Rochester

11:50 AM

Ordering Effects and Dislocation Structures in High Entropy Alloys: A Computational Approach: Leonie Koch¹; Alexander Stukowski¹; Karsten Albe¹; ¹TU Darmstadt

High Temperature Electrochemistry III — Materials Electrochemistry II

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab; Boyd Davis, Kingston Process Metallurgy Inc.

Thursday AM

Room: 16A

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Guy Fredrickson, Idaho National Lab; Prabhat Tripathy, Idaho National Laboratory

8:30 AM

Electrochemical and Thermodynamic Properties of Gadolinium Chloride in LiCl-KCl Eutectic Salt: Prashant Bagri¹; Michael Simpson¹; ¹University of Utah

9:00 AM

Electrochemical Synthesis of TaC in Molten Salt: Xin Li¹; Xingli Zou¹; Shangshu Li¹; Kai Zheng¹; Yinshuai Wang¹; Qian Xu¹; Xionggang Lu¹; ¹Shanghai University

9:30 AM

Thermochemical Properties of Barium-Bismuth Alloys Determined by Emf Measurements: Timothy Lichtenstein¹; Nathan Smith¹; Hojong Kim¹; ¹Penn State University

10:00 AM Break

10:20 AM

Next-generation Molten Oxide Energy Materials R&D: Valery Belousov¹; ¹Baikov IMET RAS

10:50 AM

Effects of Oxide Precursor Preparation Parameters on the Electrochemical Reduction of Tantalum Pentoxide in Calcium Chloride Melt: Maureen Chorney¹; Bridger Hurley¹; Prabhat Tripathy²; Jerome Downey¹; ¹Montana Tech of the University of Montana; ²Idaho National Laboratory

Magnesium Technology 2017 — Corrosion

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelamegham, Ind LLC

Thursday AM

Room: 5B

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Kiran Solanki, Arizona State University; Ilaksh Adlakha, Arizona State University

8:30 AM

Role of Mechanical Loads on the Corrosion Behavior of Mild-Steel and AE-44 Structural Joint: Ilaksh Adlakha¹; Benyamin Gholami¹; Nitin Muthewowda²; Kiran Solanki¹; ¹Arizona State University; ²COMSOL

8:50 AM

Corrosion and Creep Resistance of Thixomolded® Magnesium Alloys: Ricardo Buzolin¹; Hajo Dieringa¹; Carsten Blawert¹; Hagen Frank¹; Chamini Mendis¹; Andreas Lohmüller²; Karl Kainer¹; Norbert Hort¹; ¹Helmholtz-Zentrum Geesthacht; ²Neue Materialien Fürth GmbH (NMF)

9:10 AM

Corrosion Properties of Mg-6Al-0.3Mn-aSn-bZn Alloys: Chang Dong Yim¹; Sang Kyu Woo²; Nam Ryong Kim²; Ha Sik Kim¹; Bong Sun You¹; ¹Korea Institute of Materials Science; ²University of Science and Technology

9:30 AM

Corrosion of Magnesium-aluminum (Mg-Al) Alloys – An Interplay between Al Content and CO₂: Mohsen Esmaily¹; Jan-Erik Svensson¹; Lars-Gunnar Johansson¹; ¹Chalmers University of Technology

9:50 AM

Excimer Laser Processing of Al Containing Mg Alloys for Improved Corrosion Resistance: Michael Melia¹; John Scully¹; James Fitz-Gerald¹; ¹University of Virginia

10:10 AM Break

10:30 AM

Effect of Al and Sn on Discharge Behavior of Mg Alloy as Anode for Mg-Air Battery: Kim Sang-hyun¹; Park Jun-ho¹; Kim Hee-san²; Kim Jae-joong¹; Kwon Oh-duck¹; ¹POSCO; ²Hongik university

10:50 AM

Utilization of a Partially Non-aqueous Electrolyte for the Spatial Mapping of Mg Corrosion Using a Model Mg-Al Electrode: Leslie Bland¹; Rebecca Schaller²; John Scully¹; ¹University of Virginia; ²Sandia National Laboratory

11:10 AM

Voltammetric Studies of Extruded Pure Magnesium in Different Electrolytes and Its Corrosion Morphology: Petra Maier¹; Leon Gentsch¹; Norbert Hort²; ¹University of Applied Sciences Stralsund; ²Helmholtz-Zentrum Geesthacht

Magnesium Technology 2017 — Magnesium-Rare Earth Alloys II

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelamegham, Ind LLC

Thursday AM

Room: 5A

March 2, 2017

Location: San Diego Convention Ctr

Session Chairs: Wim Sillekens, European Space Agency; Dmytro Orlov, Lund University

8:30 AM

Microstructure and Mechanical Properties of Mg-Zn-Gd Alloys after Rolling or Extrusion Processes: Rongshi Chen¹; M.G. Jiang¹; J. Luo¹; H. Yan¹; C. Xu²; S. Kamado²; ¹Institute of Metal Research Chinese Academy of Sciences; ²Nagaoka University of Technology

8:50 AM

A Comparative Study on the Microstructure, Mechanical Properties, and Hot Deformation of Magnesium Alloys Containing Zinc, Calcium and Yttrium: K.P. Rao¹; K. Suresh²; Hajo Dieringa³; Norbert Hort³; ¹City University of Hong Kong; ²Bharathiar University; ³Helmholtz-Zentrum Geesthacht

9:10 AM

Addition of Holmium & Erbium and Hot-rolling effects on the Microstructure and Mechanical Properties of Mg-Li based Alloys: Charles Muga¹; Zhang Zhongwu (Z.W.)¹; Zhao Yu¹; Hao Guo¹; Songsong Xu¹; ¹Harbin Engineering University

9:30 AM

Bonding Environments in a Creep-resistant Mg-RE-Zn Alloy: *Deep Choudhuri*¹; S. Srinivasan¹; Mark Gibson²; Rajarshi Banerjee¹; ¹University of North Texas; ²CSIRO

9:50 AM

Microstructural and Numerical Investigation on the Shear Response of a Rare-earth Magnesium Alloy Sheet: *Michael Nemcko*¹; Armin Abedini¹; Clifford Butcher¹; Peidong Wu²; Michael Worswick¹; ¹University of Waterloo; ²McMaster University

10:10 AM Break

10:30 AM

Solute Effect on Strength and Formability of Mg: A First-principle Study: *Pulkit Garg*¹; Mehul Bhatia¹; Suveen Mathaudhu²; Kiran Solanki¹; ¹SEMTE; ²University of California - Riverside

10:50 AM

Understanding on the Role of Rare earth Elements in Activation of <c+a> Slip in Magnesium: An Atomistic Approach: *Hyo-Sun Jang*¹; Ki-Hyun Kim¹; Nack Joon Kim¹; *Byeong-Joo Lee*¹; ¹Pohang University of Science and Technology

11:10 AM

Stabilisation of Disordered BCC Phases in Magnesium-rare Earth Alloys: *Patrick Conway*¹; Adam Shaw²; Kevin Laws¹; Michael Ferry¹; ¹The University of New South Wales; ²Harvey Mudd College

11:30 AM

The Effects of Ca Addition on Microstructures and Mechanical Properties of Gravity Cast Mg-Zn-Y Alloy: *Young-Gil Jung*¹; Youngkyun Kim¹; Shae K. Kim¹; Hyunyu Lim¹; Do Hyang Kim¹; ¹KITECH

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Structural Materials IV

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday AM
March 2, 2017

Room: Point Loma
Location: Marriott Marquis Hotel

Session Chairs: Raul Rebak, GE Global Research; Thak Sang Byun, Pacific Northwest National Laboratory

8:30 AM

Grain Boundary Damage Precursors Leading to Intergranular SCC Initiation of Cold-Worked Alloy 600 and Alloy 690 in PWR Primary Water: *Ziqing Zhai*¹; Mychailo Toloczko¹; Stephen Bruemmer¹; ¹Pacific Northwest National Laboratory

8:50 AM

Mechanical Property Measurements of a New Metal Matrix Material for Nuclear Reactor Applications: *Donna Guillen*¹; Mychailo Toloczko²; Anthony Guzman²; Ramprashad Prabhakaran²; Jesse Willett²; ¹Idaho National Laboratory; ²Pacific Northwest National Laboratory

9:10 AM

Microstructural Evolution of Thermal Recovery in Ti₃AlC₂-Ti₅Al₂C₃ and Ti₃SiC₂: *Caen Ang*¹; Chad Parish¹; Chunghao Shih²; Steven Zinkle³; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²Oak Ridge National Laboratory; General Atomics; ³University of Tennessee

9:30 AM

Microstructural Characterization of AA6061-AA6061 HIP Bonded Cladding Interface: *Abhishek Mehta*¹; Le Zhou¹; Dennis Keiser²; James Cole²; Yongho Sohn¹; ¹University of Central Florida; ²Idaho National Laboratory

9:50 AM

Wear Study Comparison of Accident Tolerant FeCrAl Cladding, Zircaloy-2 and SS304 against X750: *Raghunath Kanakala*¹; Christian Williams¹; Sobhan Patnaik¹; Raul Rebak²; ¹University of Idaho; ²GE Global Research

10:10 AM Break

10:30 AM

Creep-Fatigue Deformation of 9Cr-1MoV Steel and Weldments: *Harrison Whitt*¹; Tyler Payton¹; Wei Zhang¹; Michael Mills¹; ¹The Ohio State University

10:50 AM

Atomic Scale Behavior of Beryllium in Zirconium: *Abhinav Jain*¹; Dallas Trinkle¹; ¹University of Illinois

11:10 AM

The Role of Stoichiometry on Ordering Phase Transformations in Ni-Cr Alloys for Nuclear Applications: *Fei Teng*¹; Julie Tucker¹; Benjamin Spencer²; Larry Aagesen²; Yongfeng Zhang²; Pritam Chakraborty²; Octav Ciuca³; Grace Bruke³; Emmanuelle Marquis⁴; Mukesh Bachhav⁴; ¹Oregon State University; ²Idaho National Laboratory; ³University of Manchester; ⁴University of Michigan – Ann Arbor

11:30 AM

Peuget: How Ion Beam Irradiations Simulate the Radiation Aging of Nuclear Glass: *Sylvain Peuget*¹; ¹CEA

Materials Engineering of Soft Magnets for Power and Energy Applications — Advanced Soft Magnetic Material Characterization and Development Techniques

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Francis Johnson, GE Global Research; Alex Leary, Carnegie Mellon University; Tanjore Jayaraman, University of Michigan; Lajos Varga, Wigner Research Center for Physics

Thursday AM
March 2, 2017

Room: 25B
Location: San Diego Convention Ctr

Session Chairs: Lajos Varga, Wigner Research Centre for Physics; Tanjore Jayaraman, University of Michigan

8:30 AM Invited

Advanced Magneto-Optical Domain Analysis in Soft Magnetic Materials: *Rudolf Schaefer*¹; ¹Leibniz Institute for Solid State and Materials Research (IFW) Dresden

9:00 AM

Multi-parameter Magnetic Material Characterization for High Power Medium Frequency Converters: *Richard Beddingfield*¹; Subhashish Bhattacharya¹; ¹North Carolina State University

9:20 AM Invited

Unique Magnetostriction of Fe₆₈.8Pd_{31.2} Attributable to De-twinning Mechanism: *Jake Steiner*¹; Abdellah Lisfi²; Tomoyoki Kakeshita³; Takashi Fukuda³; Manfred Wuttig¹; ¹University of Maryland; ²Morgan State University; ³Osaka University

9:50 AM Break

10:05 AM

Large Magnetocaloric Effect in Ga Substituted NiMnIn Metamagnetic Shape Memory Alloys: *Jaione Estalayo*¹; Christian Aguilar²; *Daniel Salazar*³; Pablo Alvarez-Alonso¹; Patricia Lazpita¹; Juan Camarillo²; Horacio Flores-Zúñiga²; Volodymyr Chernenko³; ¹Dept. Electricity & Electronics, University of the Basque Country; ²IPICYT; ³BCMaterials

10:25 AM

Direct Measurement of the Magnetocaloric Effect in NiMnIn Ribbons: *Christian Aguilar*¹; Pablo Alvarez-Alonso²; Daniel Salazar³; Horacio Flores-Zuñiga¹; Volodymyr Chernenko³; ¹IPICYT; ²Dept. Electricity & Electronics, University of the Basque Country; ³BCMaterials

10:45 AM

Combinatorial High-throughput Discovery of Magnetic Materials in Thin Films: *Abraham Anapolsky*¹; ¹Intermolecular Inc.

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Ir Alloys and Next Generation Superalloys

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmairer, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

Thursday AM
March 2, 2017

Room: Balboa
Location: Marriott Marquis Hotel

Session Chairs: Govindarajan Muralidharan, Oak Ridge National Lab; Stephen Coryell, Special Metals Corporation

8:30 AM Invited

Weldability and Weld Properties in Iridium Alloys: *Roger Miller*¹; George Ulrich¹; Govindarajan Muralidharan¹; ¹Oak Ridge National Laboratory

9:00 AM Invited

Oxidation Resistance of Aluminized Ir-based Refractory Alloys: *Hideyuki Murakami*¹; Masahide Yamashina¹; Kazuya Shimoda¹; ¹National Institute for Materials Science

9:30 AM

Effect of Trace Levels of Si on Grain Boundary Segregation in an Ir Alloy: *Dean Pierce*¹; Govindarajan Muralidharan¹; Lee Heatherly¹; Cecil Carmichael¹; George Ulrich¹; ¹Oak Ridge National Laboratory

9:50 AM Break

10:10 AM

Long Term Grain Growth Behavior of Ir-Alloy DOP-26*: *Govindarajan Muralidharan*¹; Dean Pierce¹; Ethan Fox¹; Seth Lawson¹; Cecil Carmichael¹; Easo George²; George Ulrich¹; ¹Oak Ridge National Laboratory; ²Ruhr University Bochum

10:30 AM

Atom Probe Tomography Study of Sigma Phase in Long Term-thermally Exposed High Refractory Ni-based Superalloy: *Stoichko Antonov*¹; Jijie Huo²; Qiang Feng²; Dieter Isheim³; David Seidman³; Sammy Tin¹; ¹Illinois Institute of Technology; ²State Key Laboratory for Advanced Metals and Materials; ³Northwestern University Center for Atom Probe Tomography (NUCAPT)

10:50 AM

The Effect of Molybdenum on the Microstructure and Properties of Model Quinary Nickel-based Superalloys: *Amy Goodfellow*¹; Enrique Galindo-Nava¹; Nick Jones¹; Mark Hardy²; Howard Stone¹; ¹University of Cambridge; ²Rolls Royce plc

11:10 AM

Portevin-Le Chatelier Effect in a Ni-Co Based Superalloys with Different Gamma Prime Content: *Chuanyong Cui*¹; ¹Institute of Metal Research

11:30 AM

Nanosized TaC Precipitates for Strengthening High-Temperature Co-Re Based Alloys: *Ralph Gilles*¹; Debashis Mukherji²; Pavel Strunz³; Lukas Karge¹; Premysl Beran⁴; Armin Kriele⁵; Michael Hofmann¹; Joachim Roesler²; ¹TU Muenchen; ²TU Braunschweig; ³Nuclear Physics Institute of the CAS; ⁴Nuclear Physics Institute of the CAS; ⁵Helmholtz Zentrum Geesthacht

Materials Processing Fundamentals — Solid-state Processing

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts; Guillaume Lambotte, Boston Electromet

Thursday AM
March 2, 2017

Room: 17B
Location: San Diego Convention Ctr

Session Chairs: Jonghyun Lee, University of Massachusetts; Samuel Wagstaff, Massachusetts Institute of Technology

8:30 AM

Microstructural and Mechanical Behavior Evolution of Uranium During Thermal-Mechanical Deformation Processing: *Daniel Coughlin*¹; Rodney McCabe¹; Kester Clarke²; Jeffrey Scott¹; Robert Forsyth¹; Donald Brown¹; Bjorn Clausen¹; David Alexander¹; ¹Los Alamos National Laboratory; ²Colorado School of Mines

8:50 AM

Gleeble Sintering Simulations of Cryomilled Aluminum AA5083: *Frank Kellogg*¹; Jennifer Sietins²; Brandon McWilliams²; Anit Giri³; Steven Kilczewski⁴; Kyu Cho²; ¹Bowhead Science and Technology; ²US Army Research Laboratory; ³SURVICE Engineering Company; ⁴Bennett Aerospace

9:10 AM

Phase Transformation and Precipitation Modeling of Hypereutectic Al-Mn Alloy during Solidification: *Jiwon Park*¹; Jae-Gil Jung¹; Chang-Seok Oh¹; ¹Korea Institute of Materials Science

9:30 AM

Experimental Study and Modeling of the Stress Field in Macroscopic Creep Feed Grinding Process: *Zhenguo Nie*¹; Gang Wang¹; Yiming (Kevin) Rong¹; ¹Tsinghua University

9:50 AM Break

10:10 AM

Mathematical Modelling of Residual Stresses in End Milling: *Sunday Ojolo*¹; ¹University of Lagos

10:30 AM

Study on Microstructure of Ferritic Stainless Steel Joints Using Electrically Assisted Brazing: *Viet Tien Luu*¹; Yong-Ha Jeong¹; Ju-Ri Kim¹; Gi Dong Park¹; Sung-Tae Hong¹; Hyun-Min Sung²; Heung Nam Han²; Kwang-Sun Yu³; Seok-Hyun Kim³; ¹University of Ulsan; ²Seoul National University; ³Se Jong Industrial Co. Ltd.

10:50 AM

Preliminary Investigations into the Nano/Microstructural Design of Nanocomposites for Combustion Synthesis Processing: *Mehul Chauhan*¹; Prathmesh Modi¹; Vanessa Bundy¹; K. Morsi¹; ¹San Diego State University

11:10 AM

Machining Behaviour of Biodegradable Polymer: Force, Damage and Temperature Analysis: *Mridusmita Roy Choudhury*¹; *Kishore Debnath*¹; ¹National Institute of Technology Meghalaya

11:30 AM

Evaluation Feature of Nano Grain Growth of TiO₂ Thin Film via Sol-gel Route: *Habibollah Aminirastabi*¹; Z.Z Weng¹; Z.X Xiong¹; G Ji¹; H Xue¹; ¹Xiamen University

Materials Science for High-Performance Permanent Magnets — Search for New Hard Magnets / Non-Rare Earth Magnets

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirose, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Thursday AM
March 2, 2017

Room: 24C
Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Takashi Miyake, National Institute of Advanced Industrial Science and Technology; Christian Elsässer, Fraunhofer-Institut für Werkstoffmechanik

8:30 AM Invited

Search for Substitutes of Magnetic Materials Containing Critical Elements by High-throughput Screening and Multi-scale Modeling Approaches: *Christian Elsaesser*¹; Wolfgang Körner¹; Georg Krugel¹; Daniel Urban¹; ¹Fraunhofer IWM Freiburg

8:55 AM Invited

Towards High-performance Permanent Magnets without Rare Earths: *Konstantin Skokov*¹; ¹Technische Universität Darmstadt

9:20 AM Invited

Bulk High-throughput Experimentation to Discover New Hard Magnets: *Dagmar Goll*¹; Gerhard Schneider¹; ¹Aalen University

9:45 AM

Search for New Rare-earth-free Hard Magnetic Materials Using Solution Growth: *Valentin Taufour*¹; Tej Lamichhane²; Michael Onyszcak²; Olena Palasyuk²; David Parker³; Sergey Bud'ko²; Paul Canfield²; ¹University of California-Davis, Critical Material Institute; ²Ames Laboratory, Critical Material Institute; ³Oak Ridge National Laboratory, Critical Material Institute

10:05 AM Break

10:20 AM

L10-FeNi Films with Coercivity in Excess of 1 kOe: A Combinatorial Sputtering Approach: *Georgios Giannopoulos*¹; Andreas Kaidatzis¹; Gaspare Varvaro²; Ruslan Salikhov³; Vasilis Psycharis¹; Sara Laureti²; Alberto Maria Testa²; Michael Farle³; Dimitris Niarchos¹; ¹NCSR Demokritos; ²ISM-CNR; ³Faculty of Physics and Center for Nanointegration (CENIDE)

10:40 AM

Structure and Magnetic Properties of Fe₃Sn_{1-x}M_x (M=Sb, P): *Margarit Gjoka*¹; Vasilis Psycharis¹; Charalambos Sarafidis²; Eamonn Devlin¹; Dimitris Niarchos¹; ¹NCSR Demokritos; ²Department of Physics, Aristotle University of Thessaloniki

11:00 AM

Magnetic Anisotropy of Epitaxially Grown LI₀ Mn-(Ga,Al) Alloy Thin Films: *Takao Suzuki*¹; Siqian Zhao¹; ¹University of Alabama

11:20 AM

Microstructural Characterization of Magnetic MnAl Alloys: *Merve Genç*¹; Ozgun Acar¹; Ilkay Kalay²; Eren Kalay¹; ¹METU; ²Cankaya University

11:40 AM

Magnetic Anisotropy and Microstructure Interplay in Fe₁₆N₂ Based Permanent Magnets: *Md Mehedi*¹; Yanfeng Jiang¹; Jian-Ping Wang¹; ¹University of Minnesota

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Miscellaneous Structure-property Correlations

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee

Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Thursday AM
March 2, 2017

Room: 24A
Location: San Diego Convention Ctr

Session Chairs: Koteswararao Rajulapati, University of Hyderabad; Walid Mohamed, Argonne National Laboratory

8:30 AM Keynote

Structure-property Relationships in Steel Fibers: *Krishan Chawla*¹; ¹University of Alabama at Birmingham

9:00 AM Invited

Indentation Probes for Measurements of Localized Materials Properties: *David Bahr*¹; Michael Maughan²; Raheleh Mohammad Rahimi¹; ¹Purdue University; ²University of Idaho

9:20 AM Invited

Spherical Nanoindentation Stress-strain Curves: *Surya Kalidindi*¹; ¹Georgia Institute of Technology

9:40 AM Invited

Surface Finish Effects on Fracture Behavior of Sn-4Ag-0.5Cu Solder Joints: *Jamie Krusic*¹; Dick Casali²; ¹UNSW Australia; ²Intel Corporation

10:00 AM Break

10:15 AM Invited

The Wigner Energy Spectral Fingerprints of Radiation Damage: Penghui Cao¹; Sean Lowder¹; Ki-Jana Carter¹; *Michael Short*¹; ¹Massachusetts Institute of Technology

10:35 AM Invited

Mechanical and Microstructural Effects of Thermal Aging on Cast Duplex Stainless Steels by Experiment and Finite Element Method: *Samuel Schwarm*¹; Sarah Mburu¹; R. Prakash Kolli¹; Daniel Perea²; Jia Liu²; Sreeramamurthy Ankem¹; ¹University of Maryland, College Park; ²Pacific Northwest National Laboratory

10:55 AM Invited

Digital Stress Imaging in Mesoscale Microstructure Dependent Deformation Visualized Using Nano-mechanical Raman Spectroscopy: Role of Initial Manufacturing Originated Residual Stresses: *Vikas Tomar*¹; ¹Purdue University

11:15 AM

Fracture Behavior and Grain Boundary Sliding during High-temperature Low-stress Deformation of AZ31 Magnesium Alloy: *Peiman Shahbeigi Roodposhti*¹; Korukonda Murty²; ¹University of Connecticut; ²North Carolina State University

11:35 AM Invited

On the Strain Rate Sensitive Characteristics of Nanocrystalline Aluminum Alloys: *Koteswararao Rajulapati*¹; ¹University of Hyderabad

Microstructural Processes in Irradiated Materials — Zr-Alloys and Advanced Modeling

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Thursday AM
March 2, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Enrique Martinez Saez, Los Alamos National Laboratory; Fabien Onimus, CEA-Saclay

8:30 AM Invited

Deformation Mechanisms and Radiation Induced Damage in Zirconium Alloys: A Multi-scale Approach: *Fabien Onimus*¹; L. Dupuy¹; Frederic Momprou²; M. Bono¹; ¹CEA; ²CEMES-CNRS

9:00 AM

Quantifying Irradiation-induced Defect Densities in Zr Through Changes in X-ray Diffraction Line Profiles - Insights from Atomistic Modeling: *Rory Hulse*¹; Christopher Race¹; Michael Preuss¹; ¹University of Manchester

9:20 AM

Effects of Heavy-ion (Zr⁺) Irradiation on Zr-2.5Nb Alloy Studied by X-ray Diffraction, Nanoindentation, and TEM: *Qiang Wang*¹; Levente Balogh¹; Mark Daymond¹; Zhongwen Yao¹; ¹Queen's University

9:40 AM

In-Situ TEM Triple Beam Irradiation of Zirconium Alloys at Elevated Temperature: *Brittany Muntfering*¹; Khalid Hattar¹; David Senor²; Clark Snow¹; ¹Sandia National Laboratories; ²Pacific Northwest National Laboratory

10:00 AM Break

10:15 AM Invited

Thermal Activation of Dislocations in Large Scale Obstacle Bypass: *Enrique Martinez Saez*¹; Cameron Sobie²; David MacDowell²; Laurent Capolungo¹; ¹Los Alamos National Laboratory; ²Georgia Institute of Technology

10:45 AM

Dynamics of Interaction between Point Defects and Dislocations in bcc Iron Using SEAKMC Simulations: *Haixuan Xu*¹; ¹University of Tennessee

11:05 AM

Multi-scale Modeling of Vacancy-mediated Solute Diffusion Near an Edge Dislocation under Irradiation: *Zebo Li*¹; Trinkle Dallas²; Thomas Garnier²; Venkateswara Manga³; Maylise Nastar⁴; Pascal Bellon²; Robert Averback²; ¹Department of Nuclear, Plasma, Radiological Engineering, University of Illinois, Urbana-Champaign; ²Department of Materials Science and Engineering, University of Illinois, Urbana-Champaign; ³Materials Science and Engineering, University of Arizona; ⁴CEA, DEN, Service de Recherches de Metallurgie Physique

11:25 AM

Multiscale Simulation of Fast Neutron Damage in Beryllium: *Pavel Vladimirov*¹; Vladimir Borodin²; ¹Karlsruhe Institute of Technology; ²National Research Center "Kurchatov Institute"

11:45 AM

Multiscale Modelling of Patterned Microstructures in Irradiated Materials: Application to AgCu Alloy: *Gilles Demange*¹; David Simeone²; Laurence Luneville³; Vassilis Pontikis⁴; ¹GPM/ERAFEN, Université de Rouen; ²DEN/DMN/SRMA/LA2M, CEA Saclay; ³DEN/SERMA/LLPR, CEA Saclay; ⁴DEN/DMN/LSI, CEA Saclay

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Novel and Complex Materials II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

Thursday AM
March 2, 2017

Room: 24B
Location: San Diego Convention Ctr

Session Chairs: Hyoung Seop Kim, POSTECH; X. Wendy Gu, UC Berkeley

8:30 AM Invited

Properties of Metallic Lattices Used as Hosting Structures: Guilhem Martin¹; Oleg Liashenko¹; Damien Fabrègue²; Didier Bouvard¹; Rémy Dendievel¹; *Jean-Jacques Blandin*¹; ¹Univ. Grenoble Alpes; ²Univ. Lyon

8:55 AM

Multiscale Architected Materials with Composition and Grain Size Gradients Manufactured Using High-pressure Torsion: *Hyounng Seop Kim*¹; ¹POSTECH

9:15 AM

A Design Concept for Tough, Strong and Damage-tolerant Composites by Utilizing the Yield Stress Inhomogeneity Effect: *Masoud Sistaninia*¹; Otmar Kolednik²; ¹Materials Center Leoben Forschung GmbH; ²Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

9:35 AM

Self-assembled Nanoparticle Superlattices with High Elastic Modulus: *X. Wendy Gu*¹; David Koshy¹; Xingchen Ye¹; Paul Alivisatos¹; ¹UC Berkeley

9:55 AM

Multi-scale Modelling of Mechanical Behavior and Deformation in Materials with Gradient Microstructures: *Hao Lyu*¹; Mehdi Hamid¹; Annie Ruimi²; Hussein Bibi¹; ¹Washington State University; ²Texas A&M at Qatar

10:15 AM Break

10:30 AM Invited

Multi-scale Cu/Nb Nanocomposite Wires Processed by Severe Plastic Deformation for High Pulsed Magnets: Assessing Size and Architecture Effects on the Resistance to High Stress: *Ludovic Thilly*¹; Florence Lecouturier²; Jean Rony Medy¹; Patrick Villechaise¹; Pierre-Olivier Renault¹; ¹Prime Institute - University of Poitiers; ²LNCMI

10:55 AM Invited

The Thermal-mechanical Compromise for Insulation Materials: *Bernard Yrieix*¹; ¹EDF R&D

11:20 AM

Impact Behavior of Lattice Structures Produced by Selective Laser and Electron Beam Melting: *Pauline Delroisse*¹; Nicolas Bruzy²; Olivier Rigo³; Sébastien Michotte³; Eric Maire⁴; Jérôme Adrien⁴; Pascal Jacques¹; Thierry Massart⁵; Aude Simar¹; ¹Université Catholique de Louvain; ²Ecole Centrale de Nantes; ³Sirris; ⁴Institut National des Sciences Appliquées de Lyon; ⁵Université Libre de Bruxelles

Pan American Materials Congress: Advanced Biomaterials — Antibacterial and Nanostructured Materials

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Carlos Elias, Instituto Militar de Engenharia; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Thursday AM
March 2, 2017

Room: Mission Hills
Location: Marriott Marquis Hotel

Session Chairs: Xiaodong Li, University of Virginia; Pablo Zavattieri, Purdue University

8:30 AM Invited

Carboxyl-functionalized Zinc Oxide Nanoparticles and Its Antiproliferative Effect in Cervical Cell Lines: Lisbeth Almeida-Ramón¹; Mayra Alvarez-Lemus¹; Erick De la Cruz Hernández¹; Rosendo López-González¹; Gilberto Torres-Torres¹; Socorro Oros-Ruiz²; Patricia Quintana-Owen³; ¹Juarez Autonomous University of Tabasco; ²Autonomous Metropolitan University-Iztapalapa; ³CINVESTAV-Merida

9:00 AM

Investigation on Passive Film Structure and Antibacterial Property of 316L Stainless Steel by Cu-added Nitric Acid Passivation Treatment: Jin-Long Zhao¹; Da-Ke Xu¹; Xin-Rui Zhang¹; *Chunguang Yang*¹; Ke Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

9:20 AM

An Experimental Study on 304L Cu-bearing Antibacterial Stainless Steel for Its Integrated Performance Optimization as a Versatile Biomaterial: *M. Babar Shahzad*¹; Tong Xi¹; *Chunguang Yang*¹; Ke Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

9:40 AM

Effects of Dialium Guineense Based Zinc Nanoparticle Material on the Inhibition of Microbes Inducing Microbiologically Influenced Corrosion: *Joshua Okeniyi*¹; Gbadebo John¹; Taiwo Owwoeye¹; Elizabeth Okeniyi¹; Deborah Akinlabu¹; Olugbenga Taiwo¹; Olufisayo Awotoye¹; Ojo Ige¹; Yemisi Obafemi¹; ¹Covenant University, Ota, Nigeria

10:00 AM

Evaluation of Doped SiO₂-TiO₂ Nanoparticles as Possible Agents in Photodynamic Therapy: *Rosendo López González*¹; Mayra Alvarez Lemus¹; Jose de la Rosa Vázquez²; Erick De la Cruz Hernández¹; Dora Frías Marquez¹; ¹Juarez Autonomous University of Tabasco; ²ESIME

10:20 AM Break

10:35 AM Invited

Laser Based 3d Printing of Biomaterials: *Roger Narayan*¹; ¹UNC/NCSU Joint Department of Biomedical Engineering

11:00 AM Invited

Nature's Multiscale Design and Additive Manufacturing: *Xiaodong Li*¹; ¹University of Virginia

11:25 AM

Miniaturization of Medical Implants Made from Nanostructured Metals: *Alexander Polyakov*¹; Irina Semenova²; Georgy Raab²; Evgeny Parfenov²; Ruslan Valiev¹; ¹Laboratory for Mechanics of Bulk Nanomaterials, Saint Petersburg State University; ²Ufa State Aviation Technical University

11:50 AM

Mechanical Properties and Biocompatibility of Nanostructured Titanium: *Carlos Elias*¹; Daniel Fernandes¹; Jochen Roestel²; ¹Instituto Militar de Engenharia; ²Conexao Sistemas e Protese

Pan American Materials Congress: Materials for Oil and Gas Industry — Welding Technology, Corrosion Protection, Non-Destructive Evaluation, and Structural Integrity

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Lorenzo Martinez Gomez, Instituto de Ciencias Fisicas UNAM; Adriana Rocha, Federal University of Rio de Janeiro

Thursday AM
March 2, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chairs: Lorenzo Gomez, UNAM; Adriana Rocha, UFRJ

8:30 AM

Effect of Heat Input on the Microstructure and Toughness of Welded API Pipelines: *Fernando Guzmán*¹; Moisés Hinojosa¹; Eduardo Frías²; Elisa Schaeffer¹; ¹UANL, FIME; ²Tubacero

8:50 AM

The Corrosion Behavior of Newly Developed API X120 Pipeline Steel in H₂S and Moderate Temperature Environments: *Paul Okonkwo*¹; R. Shakoor¹; A Mohamed²; ¹Qatar University; ²Department of Metallurgical and Materials Engineering, Faculty of Petroleum and Mining Engineering

9:10 AM

Adsorption of Organosulfur Compounds on Doped Boron Nitride Nanostructures: *Francisco Villanueva*¹; Jose Rivera¹; Pedro Navarro Santos¹; ¹Universidad Michoacana de San Nicolas de Hidalgo

9:30 AM

Evaluation of Non-Destructive Techniques (Thermography, Ultrasound and Eddy Current) for Detection of Failures in Metallic Substrates with Composite Anticorrosive Coatings: Marcella Grosso¹; Priscila de Almeida¹; Clara Johanna Pacheco¹; Iane Soares¹; João Marcos Rebelo¹; Sergio Soares²; Isabel Cristina Margarit-Mattos¹; *Gabriela Pereira*¹; ¹UFRJ; ²Petrobras

9:50 AM Break

10:05 AM

A Study on the Mechanisms Responsible for Dynamic Strain Aging Phenomenon in Inconel 718 Superalloy: *Monica Rezende*¹; Sinara Gabriel¹; Leonardo Araújo¹; Jean Dille¹; Luiz Henrique de Almeida¹; ¹UFRJ

10:25 AM

Structural Integrity of Pipelines: *Anibal Di Luch*¹; Nicolas Oyarzabal²; ¹Comision Nacional de Energia Atomica; ²Instituto Tecnologico de Buenos Aires

10:45 AM Panel Discussion

Pan American Materials Congress: Materials for Transportation and Lightweighting — Composite Materials I

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

Thursday AM
March 2, 2017

Room: Marina D
Location: Marriott Marquis Hotel

Session Chair: Elvi Dalgaard, Pratt and Whitney Canada

8:30 AM

Izod Impact Tests in Polyester Matrix Composites Reinforced with Fique Fabric: Artur Camposo Pereira¹; *Foluke Salgado de Assis*¹; Sergio Neves Monteiro¹; Henry Colorado²; ¹Instituto Militar de Engenharia; ²Universidad de Antioquia

8:50 AM

Nanodiamond: A Potential Reinforcement for Epoxy Composites: Ankita Bisht¹; *Pallavi Gupta*¹; Debrupa Lahiri¹; ¹Indian Institute of Technology Roorkee

9:10 AM

Tailored Carbide Powder Morphologies: Synthesis, Sintering, and Mechanisms of Formation: *Tianqi Ren*¹; Olivia Graeve¹; ¹University of California, San Diego

9:30 AM

Nano-Additive Reinforcement of Thermoplastic Microballoon Epoxy Syntactic Foams: *Kerrick Dando*¹; David Salem¹; ¹CAPE Lab, SDSM&T

9:50 AM

Advantages of Hot Compression in the Manufacture of AlB4C Composites: *Lucio Vazquez*¹; Dulce Velázquez¹; Ángel Muñoz¹; David Luna¹; Gilberto Torres¹; Elizabeth Garfias¹; Manuel Vite¹; ¹Universidad Autonoma Metropolitana

Pan American Materials Congress: Minerals Extraction and Processing — Hydrometallurgical Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mery Gómez Marroquín, Asociación Peruana de Metalurgia Materiales y Minerales-APMMM; Mark Schlesinger, Missouri University of Science and Technology; Alejandro Valdivieso, U.A. of San Luis Potosi; Carlos Sampaio, UFRGS

Thursday AM
March 2, 2017

Room: Marina E
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

8:30 AM

Investigating the Dissolution Characteristics of Strontium Sulfide: *Ibrahim Göksel Hizli*¹; Aysegül Bilen²; Rasit Sezer³; Emre Yilmaz²; Selim Ertürk²; Cüneyt Arslan²; ¹Istanbul University; ²Istanbul Technical University; ³Karadeniz Technical University

8:50 AM

Dissolution Thermodynamics of Smithsonite in Alkaline Iminodiacetate Aqueous Solution: Dou Aichun¹; *YU Lei*¹; ¹Jiangsu University, China

9:10 AM

Preparation of High Grade Industrial Copper Compound from a Nigerian Malachite Mineral by Hydrometallurgical Process: *Alafara Baba*¹; Ruth Sanni¹; Abdulrahman Abubakar¹; Rafiu Bale¹; Folahan Adekola¹; Abdulganiyu Alabi¹; ¹University of Ilorin, Nigeria.

9:30 AM

Pressure Leaching of Hemimorphite in Ammonium Chloride Solution: *Duoqiang Zhao*¹; Shenghai Yang¹; Hao Li¹; Yongming Chen¹; Jing He¹; Chaobo Tang¹; ¹Central South University

9:50 AM

Gold Recovery from Waste Solutions of PCB Gold Plating Process using Hydro Cyclone Reactor for Demonstration Study: *Mooki Bae*¹; Soo-kyung Kim²; Jae-chun Lee²; ¹Korea University of Science and Technology; ²Korea Institute of Geoscience and Mineral Resources

10:10 AM Break

10:20 AM

Leaching of Spent Ni-Mo Hydrodesulphurization (HDS) Catalyst in Oxalic Acid Solutions: *Sedat Ilhan*¹; ¹Istanbul University

10:40 AM

Working Experience with the New WOX Plant to Treat Zinc Waelzoxide at ZGH Boleslaw SA, Poland: *Angel Selke*¹; Leszek Stencel²; Miroslaw Fatyga²; Bogdan Pieczonka²; Lukasz Zieba²; ¹ingenium GmbH; ²ZGH Boleslaw SA

11:00 AM

Synthesis of AgCN Nanowire Membranes in Aqueous Solutions from Silver Dicyanide Ions: Armando López-Miranda¹; Gonzalo Viramontes-Gamboa¹; *Alejandro López Valdivieso*²; ¹Universidad Michoacana de San Nicolás de Hidalgo; ²Universidad Autónoma de San Luis Potosi

11:20 AM

Study on Leaching Valuable Elements from Bayan Obo Tailings: *Bo Zhang*¹; Xiangxin Xue¹; He Yang¹; Xiaowei Huang¹; Jianxin Han¹; ¹Northwestern University

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Additional Topics in SPD Processing and Mechanical Properties

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

Thursday AM
March 2, 2017

Room: Marina F
Location: Marriott Marquis Hotel

Session Chairs: María Teresa Pérez Prado, IMDEA Materials Institute; Andrea Bachmaier, Erich Schmid Institute of Materials Science

8:30 AM

Effect of Annealing of ZK60 Magnesium Alloy after Processing by High-pressure Torsion: *Sayed Alireza Torbati Sarraf*¹; Shima Sabbaghianrad¹; Terence G. Langdon¹; ¹University of Southern California

8:50 AM

Severe Plastic Deformation as a Tool to Tune Magnetic Properties: Carmen M. Cepeda-Jimenez¹; Juan Ignacio Beltrán¹; Antonio Hernandez²; Miguel Angel García³; Félix Ynduráin⁴; Alexander Zhilyaev⁵; *María Teresa Pérez Prado*¹; ¹IMDEA Materials Institute; ²Instituto de Magnetismo “Salvador Velayos”, UCM, ADIF, CSIC; ³Instituto de Cerámica y Vidrio, CSIC; ⁴Universidad Autónoma de Madrid; ⁵Fundació CTM Centre Tecnològic

9:10 AM

Investigation of Crystallographic Texture and Stored Energy after Cross Accumulative Roll-bonding of Fe-36Ni (Invar) Alloy: *Hiba Azzeddine*¹; Kamel Tirsatine²; Thierry Baudin³; Marie-Hélène Mathon⁴; Anne-Laure Helbert³; François Brisset³; Djamel Bradai²; ¹University of M'sila; ²USTHB; ³Université Paris-Saclay; ⁴Laboratoire Léon Brillouin

9:30 AM

Microstructure and Mechanical Behavior of UFG Mg-2Zn-2Gd: *Sunkulp Goel*¹; Y Wang¹; A Srinivasan²; R Jayaganthan³; Jing Tao Wang¹; ¹Nanjing University of Science and Technology; ²CSIR – National Institute for Interdisciplinary Science and Technology (NIIST); ³Indian Institute of Technology, Madras

9:50 AM Break

10:10 AM

Microstructural Evolution of TWIP Steels during ECAP: *Jessica Calvo*¹; Wang Lei¹; José Antonio Benito¹; José María Cabera¹; ¹Universitat Politècnica de Catalunya (UPC)

10:30 AM

Current-assisted-extrusion of Structural Amorphous Metals: Insight into Microstructure Formation and Mechanical Properties: *Ekaterina Novitskaya*¹; Sebastian Diaz de la Torre²; Tzipatly Esquivel-Castro²; Guillermo Dieguez-Trejo²; Olivia Graeve¹; ¹University of California, San Diego; ²Instituto Politecnico Nacional

10:50 AM

Effect of Annealing on Microstructure and Magnetic Properties of Nanocrystalline Metastable Cu-Co Solid Solutions: *Andrea Bachmaier*¹; Stefan Hartl¹; Jörg Schmauch²; Hisham Aboufadel³; Andreas Verch⁴; Heinz Krenn⁵; Reinhard Pippan¹; ¹Erich Schmid Institute, Austrian Academy of Sciences; ²Experimentalphysik, Saarland University; ³Chair of Functional Materials, Saarland University; ⁴INM-Leibniz Institute for New Materials; ⁵Institute of Physics, Karl-Franzens University Graz

11:10 AM

Mechanical Behavior and Adiabatic Shear Localization of Ultrafine-grained Titanium: *Ze Zhou Li*¹; Bingfeng Wang²; Shiteng Zhao¹; Ruslan Z. Valiev³; Kenneth S. Vecchio¹; Marc A. Meyers¹; ¹University of California, San Diego; ²Central South University; ³Institute of Physics of Advanced Materials

11:30 AM

Dynamic Tensile Failure of Nanocrystalline Tantalum: *Eric Hahn*¹; ¹University of California, San Diego

Phase Transformations and Microstructural Evolution — Steels and Shape Memory, and General

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

Thursday AM
March 2, 2017

Room: 16B
Location: San Diego Convention Ctr

Session Chair: Monica Kapoor, National Energy Technology Lab

8:30 AM

Thermal Stabilization of Bainite: *Sk Hasan*¹; Shiv Singh¹; ¹IIT Kharagpur

8:50 AM

A Preliminary In-situ TEM Study of Migration Properties of Interfaces between Austenite and Ferrite in a Duplex Stainless Steel: *Juan Du*¹; Frederic Mompou²; Wen-Zheng Zhang¹; ¹Tsinghua University; ²CEMES-CNRS and University of Toulouse

9:10 AM

Characterizing Ni-Ti-Ga Shape Memory Alloys: *Oscar Figueroa*¹; Michele Manuel¹; ¹University of Florida

9:30 AM

The Kinetics of Ferromagnetic Tau Phase Formation in Mn-Al Alloys: *Ozgun Acar*¹; Merve Genc¹; Ilkay Kalay²; Eren Kalay¹; ¹METU; ²Cankaya University

9:50 AM Break

10:10 AM

Oriental Dependence of Shock Induced Phase Transition of Single Crystal Copper: Anupam Neogi¹; Nilanjan Mitra¹; ¹IIT Kharagpur

10:30 AM

The Microstructure Evolution of HAVAR Co-Base Alloy during Cold Rolling: *Daniel Moreno*¹; Shlomo Haroush¹; Louisa Meshi²; S Remmenick²; Vladimir Ezersky²; Ido Silverman¹; Yaniv Gelbstein²; Roni Shneck²; ¹Soreq - nrc; ²Ben-Gurion University

Solar Cell Silicon — Silicon Impurity Removal and Refining

Sponsored by: TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC

Thursday AM
March 2, 2017

Room: 19
Location: San Diego Convention Ctr

Session Chairs: Neale Neelameggham, IND LLC; Christian Liebscher, Max-Planck-Institut für Eisenforschung GmbH

8:30 AM

Effect of Magnesium Addition on Removal of Impurities from Silicon by Hydrometallurgical Treatment: Stine Espelien¹; Gabriella Tranell¹; *Jafar Safarian*¹; ¹NTNU

8:50 AM

Evaporation Removal of Boron in Molten Silicon Using Reactive Fluxes: *Ye Wang*¹; Kazuki Morita²; ¹Sichuan University; ²The University of Tokyo

9:10 AM

Study on the Segregation Behavior of Impurities during Solvent Refining Process: *Li Jiayan*¹; Tan Yi¹; ¹Dalian University of Technology

9:30 AM

Topological Impurity Segregation at Faceted Silicon Grain Boundaries: *Christian Liebscher*¹; Andreas Stoffers²; Oana Cojocaru-Mirédin²; Baptiste Gault¹; Christina Scheu¹; Gerhard Dehm¹; Dierk Raabe¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²RWTH Aachen University

Solid State Precipitation — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Seth Imhoff, Los Alamos National Laboratory; Robert Hackenberg, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Thursday AM
March 2, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chair: Seth Imhoff, Los Alamos National Laboratory

8:30 AM Invited

Self-organization by Strain Accommodation in the Formation of Long-range Stacking Order Structure in Mg-RE-TM Alloys: *Tadashi Furuhashi*¹; Xinfu Gu¹; ¹Tohoku University

9:00 AM

Effects of Clustering and Trace Elements on Precipitation Hardening of Al-Mg-Si Alloys: *Stefan Pogatscher*¹; Marion Werinos¹; Peter Uggowitzer²; ¹Montanuniversitaet Leoben; ²ETH Zürich

9:20 AM Invited

Clustering and Precipitation in Al-Cu-Li Alloys: Influence of Minor Solute Additions on the Competition between Kinetic Paths: *Alexis Deschamps*¹; Frederic De Geuser¹; Eva Gumbmann¹; Rosen Ivanov¹; Christophe Sigli²; ¹Grenoble Institute of Technology; ²Constellium Technology Centre

9:50 AM

Effect of Ca Additions on the Ageing Behavior of Mg-15Gd-0.5Zr Alloy: *Houwen Chen*¹; Chenglong Liu¹; Jian-Feng Nie²; ¹Chongqing University; ²Monash University

10:10 AM Break

10:30 AM Invited

The Role of Electron Microscopy in the Understanding of Precipitation in Light Alloys: *Jian-Feng Nie*¹; ¹Monash University

11:00 AM

The Effects of ECAP on the Precipitation Behavior of Al 2024: *Guher Tan*¹; Eren Kalay²; Hakan Gur²; ¹Mersin University; ²METU

11:20 AM

Analysis of Crystal Structures with Icosahedral Local Order in Al-Fe-V-Si Alloys After Solidification at Intermediate Cooling Rates: *Joseph Jankowski*¹; Michael Kaufman; Amy Clarke; Stephen Midson; Krish Krishnamurthy²; ¹Colorado School of Mines; ²Honeywell

11:40 AM

Precipitate Structures in Mg Alloys Containing Nd and Y: *Ellen Solomon*¹; Emmanuelle Marquis¹; ¹University of Michigan

8th International Symposium on High Temperature Metallurgical Processing — Utilization of Complex Ores

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atilim University

Thursday PM
March 2, 2017

Room: 18
Location: San Diego Convention Ctr

Session Chairs: Tao Jiang, Central South University; Hongxu Li, University of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM

Intensification of Gold Leaching from a Multi-refractory Gold Concentrate by the Two-stage Roasting-alkaline Sulfide Washing-cyanidation Process: *Li Qian*¹; Zhang Yan¹; Li Xishan¹; Xu Bin¹; Yang Yongbin¹; Jiang Tao¹; Li Hong-wei¹; ¹Central South University

2:25 PM

Evolution of Cr and Fe Species during Carbothermic Reduction of Chromite Ores: *Dogan Paktunc*¹; Dawei Yu¹; Samira Sokhanvaran¹; Yves Thibault¹; ¹CANMET

2:45 PM

Phase Transformation of High Calcium Type Tin, Iron-bearing Tailings during Magnetizing Roasting Process: *Zijian Su*¹; Yuanbo Zhang¹; Yingming Chen¹; Bingbing Liu¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University

3:05 PM

Roasting of Celestite in Laboratory Scale Rotary Furnace: *Selim Ertürk*¹; Rasit Sezer²; Goksel Hizli¹; Aysegul Bilen¹; Cuneyt Arslan¹; ¹Istanbul Technical University; ²Karadeniz Technical University

3:25 PM Break

3:45 PM

The Experimental Study of CaCO₃ in the Vanadium Extraction Process: *Shu-Chao Wang*¹; Yu Wang¹; Wei-tong Du¹; Peng-cheng Li¹; ¹Chongqing University

4:05 PM

Effect of Reduced Flux Iron Ore Pellets on Removal of Sulfur and Phosphorous in Single Step by Plasma and Induction Melting: Raj Dishwar¹; Arup Kumar Mandal¹; Shavi Agrawal¹; *Om Prakash Sinha*¹; Girija Shankar Mahobia¹; ¹Indian Institute of Technology, BHU

4:25 PM

The Extraction of Zinc from Zinc Ferrite by Calcified Roasting and Ammonia Leaching Process: *Zeqiang Xie*¹; Yufeng Guo¹; Tao Jiang¹; Feng Chen¹; Lingzhi Yang¹; ¹Central South University, School of Minerals Processing and Bioengineering

4:45 PM

The Recovery of Cobalt from Copper Converter Slag by Reduction-sulfurization Smelting at High Temperature: Shi Sun¹; Hongxu Li¹; Jiaqi Fan¹; Chao Li¹; Qi Liu¹; *Zhaobo Liu*²; ¹University of Science and Technology Beijing; ²University of Science & Technology Beijing

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Microstructure and Microstructural Evolution

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

Thursday PM
March 2, 2017

Room: 7B
Location: San Diego Convention Ctr

Session Chairs: Eric Lass, NIST; Phil Prangnell, The University of Manchester

2:00 PM Invited

Microstructure and Mechanical Properties Evolution of Biomedical Co-Cr-Mo Alloys Produced by Electron Beam Additive Manufacturing: *Akihiko Chiba*¹; ¹Tohoku University

2:30 PM

Additively Manufactured 17-4 PH Stainless Steel: Toward Conventional Wrought Behavior: *Eric Lass*¹; Mark Stoudt¹; Sudha Cheruvathur¹; Lyle Levine¹; Yaakov Idell¹; ¹National Institute of Standards and Technology

2:50 PM

Grain Structure Engineering for Metal Additive Manufacturing: *Fuyao Yan*¹; Wei Xiong¹; Gregory Olson¹; ¹Northwestern University

3:10 PM

On the Development of a 'a+a' Dual-Phase Microstructure for Electron Beam Melted Ti-6Al-4V: Tensile Behavior and Thermal Stability: *Charlotte de Formanoir de la Cazerie*¹; Alice Brulard¹; Guilhem Martin²; Frédéric Prima³; Sébastien Michotte⁴; Edouard Rivière³; Adrien Dolimont⁵; Stéphane Godet¹; ¹Université Libre de Bruxelles; ²Université Grenoble Alpes; ³PSL Research University, Chimie ParisTech – CNRS; ⁴Sirris; ⁵Université de Mons

3:30 PM Break**3:50 PM**

In Situ Characterization of Defects Formation and Microstructure Evolution in Selective Laser Melting of Metals: *Lianyi Chen*¹; ¹Missouri University of Science and Technology

4:10 PM

Size Dependence of Deformation Response of 316 Steel Made by Additive Manufacturing: *Minh-Son (Son) Pham*¹; ¹Imperial College London

4:30 PM

Microstructure and Mechanical Behavior of Additively Manufactured Austenitic Stainless Steel: *Thale Smith*¹; Kaka Ma²; Baolong Zheng³; Joshua Sugar⁴; Chris San Marchi⁴; Julie Schoenung³; ¹University of California, Davis; ²Colorado State University; ³University of California, Irvine; ⁴Sandia National Laboratories

4:50 PM

Massive Transformation in Ti-6Al-4V Additively Manufactured by Selective Electron Beam Melting: *Ma Qian*¹; Shenglu Lu²; *Huiping Tang*²; David StJohn³; ¹Royal Melbourne Institute of Technology University; ²State Key Laboratory of Porous Metal Materials, Northwest Institute for Nonferrous Metal Research; ³The University of Queensland

5:10 PM Concluding Comments

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Defects and Mechanical Properties

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

Thursday PM Room: 8
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Brad Boyce, Sandia National Laboratory; Robert Warren, Worcester Polytechnic Institute

2:00 PM Invited

High-throughput Testing Reveals Rare, Catastrophic Defects: *Brad Boyce*¹; Brad Salzbrenner¹; Bradley Jared¹; Jeffrey Rodelas¹; Jonathan Madison¹; Jay Carroll¹; ¹Sandia National Laboratories

2:30 PM

Characterization of the Elastic Properties and Microstructure of SLM Al-10Si-Mg: *David Witkin*¹; Scott Sitzman¹; Yong Kim¹; Paul Adams¹; Robert Castaneda¹; ¹The Aerospace Corporation

2:50 PM

Normal Track Size Related and Abnormal Lack of Fusion Defects Formed during Selective Laser Melting of CoCrMo Alloy: *Kouroush Darvish*¹; *Z. Chen*¹; T. Pasang¹; ¹Auckland University of Technology

3:10 PM

Stress State, Strain Rate and Temperature Dependence of an Electron Beam Additive Manufactured Ti6Al4V: *Omar Rodriguez*²; Paul Allison¹; Wilburn Whittington²; David Francis²; Oscar Rivera¹; Y. Kevin Chao¹; Bo Cheng¹; ¹The University of Alabama; ²Mississippi State University

3:30 PM Break**3:50 PM Invited**

Positional Dependence of Pore Morphology, Size and Orientation in SEBM Ti-6Al-4V and Influence on Mechanical Properties: *Ma Qian*¹; Joe Elambasseril¹; Huiping Tang²; Shenglu Lu²; Wei Xu³; Milan Brandt¹; ¹RMIT University (Royal Melbourne Institute of Technology); ²State Key Laboratory of Porous Metal Materials, Xi'an, China; ³Macquarie University

4:20 PM

Effect of the Isotropic and Anisotropic Work Hardening on the Micromechanics Behavior in Textured Inconel 718 by Electron Beam Additive Manufacturing: *Qingge Xie*¹; Alexandru Dan Stoica¹; Sarma B. Gorti¹; Radhakrishnan Balasubramaniam¹; Gian Song¹; Hassina Z. Bilheux¹; Michael M. Kirka¹; Ryan R. Dehoff¹; Jean-Christophe Bilheux¹; Ke An¹; ¹Oak Ridge National Laboratory

4:40 PM

Multiscale Mechanical Property Measurement and Microstructural Characterization of Additively Manufactured Ti-6Al-4V Components: *Tugce Ozturk*¹; Xinyi Gong²; Soumya Mohan²; Surya Kalidindi²; Anthony Rollett¹; ¹Carnegie Mellon University; ²Georgia Institute of Technology

5:00 PM

Microstructure Evolution, Fatigue Crack Growth Mechanisms, and Effects of Heat Treatment and HIP in Ti-6Al-4V Alloys Fabricated by Electron Beam Melting: *Robert Warren*¹; Haize Galarraga¹; Diana Lados¹; Ryan Dehoff²; Michael Kirka²; ¹Worcester Polytechnic Institute; ²Oak Ridge National Laboratory

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Session VIII

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

Thursday PM Room: 33C
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Cody Miller, Los Alamos National Laboratory; Fulin Wang, Department of Materials Science and Engineering, University of Virginia

2:00 PM

Progress on Measuring the Transient Dynamic Strength of Rapidly Heated Plain Carbon Steels: *Steven P. Mates*¹; Sindhura Gangireddy¹; Mark Stoudt¹; ¹National Institute of Standards and Technology

2:20 PM

Parameter Estimation in Crystal Plasticity Based Material Models: *Aritra Chakraborty*¹; Philip Eisenlohr¹; ¹Michigan State University

2:40 PM

High Resolution Strain Mapping around Hydrides in Zirconium Alloy: *Rhys Thomas*¹; David Lunt¹; Philipp Frankel¹; Michael Preuss¹; Aidan Cole-Baker²; ¹School of Materials, University of Manchester; ²Rolls-Royce Plc

3:00 PM

Modeling of Matrix-precipitate Interactions in NiTi Using FFT-based Constitutive Modeling: *Shivram Kashyap Sridhar*¹; Anthony Rollett¹; ¹Carnegie Mellon University

3:20 PM Break**3:40 PM**

Microstructural Characterization of Inconel 600 Tubes after Tensile Tests at Various Temperatures and Strain Rates: *Cécile Davoine*¹; Vincent Marcadon¹; David Leveque¹; Fabienne Popoff¹; Nicolas Horezan¹; Denis Boivin¹; Gerald Portemont¹; ¹Onera the French Aerospace Lab

4:00 PM

Formability Enhancement and Damage Initiation Mechanisms under Static and Dynamic Loading Conditions in Bainitic Steels: *Behnam Shakerifard*¹; Jesus Galan Lopez²; Denis Jorge Badiola³; Frank Hisker⁴; Stefan Van Bohemen⁵; Kangying Zhu⁶; Viktoria Savran²; Leo Kestens⁷; ¹TU Delft; ²M2i; ³CEIT; ⁴Thyssenkrupp Steel Europe AG; ⁵TATA steel; ⁶AMMR; ⁷UGent

4:20 PM

Multi-scale Modeling of Microstructural Spin in Crystal Plasticity for Phenomenological Models: *Christopher Kohar*¹; John Bassani²; Raja Mishra³; Kaan Inal¹; ¹University of Waterloo; ²University of Pennsylvania; ³General Motors Research & Development Center

4:40 PM

Physics Based-crystal Plasticity Modeling of Single Crystal Niobium: *Tias Maiti*¹; Philip Eisenlohr¹; Di Kang¹; Thomas Bieler¹; ¹Michigan State University

5:00 PM

Effect of 3D Crystallographic Orientation on Evolution of Corrosion in Aluminum Alloys: *Hrishikesh Bale*¹; Tyler Stannard²; Jeff Gelb¹; Erik Lauridsen³; Leah Lavery¹; Arno Merkle¹; Nikhilesh Chawla²; ¹Carl Zeiss X-ray Microscopy, Inc.; ²Arizona State University; ³Xnovo Technology ApS

Advanced Materials for Energy Conversion and Storage — Energy Storage III

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee

Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Thursday PM
March 2, 2017

Room: 15A
Location: San Diego Convention Ctr

Session Chairs: Partha Mukherjee, Texas A&M University; Leela Arava, Wayne State University

2:00 PM Invited

Computational Design of the Nanostructure of CNT-encapsulated-S Cathodes: *Yuxiao Lin*¹; Jeremy Ticey²; Vladimir Oleshko²; Chunsheng Wang²; John Cumings²; Yue Qi¹; ¹Michigan State University; ²University of Maryland

2:25 PM Invited

Cotton-textile-enabled Flexible Energy Storage Devices: *Xiaodong Li*¹; ¹University of Virginia

2:50 PM

Monodisperse Titanium-based Perovskite Colloidal Nanocrystals for Application in Flexible Electronics: *Kavey Benard*¹; Gabriel Caruntu¹; Salemzadeh Saman¹; Axel Mellinger¹; ¹Central Michigan University

3:10 PM

Defect Engineering of Li4Ti5O12 Anode with Enhanced Electrochemical Properties for Li Ion Batteries by Thermal Reduction: *Ralph Nicolai Nasara*¹; Shih-kang Lin¹; Ping-chun Tsai¹; ¹National Cheng Kung University

3:30 PM Break**3:50 PM Invited**

Challenges and Opportunities for Rechargeable Magnesium Batteries: *Donald Siegel*¹; ¹University of Michigan

4:15 PM Invited

Suppressing Dendrite Growth in High Energy Density Batteries through Anisotropic Transport: *Emily Ryan*¹; Jinwang Tan¹; ¹Boston University

4:40 PM

Electrospun Separators for Structural Battery Applications: *Wisawat Keaswejjareansuk*¹; Jianyu Liang¹; ¹Worcester Polytechnic Institute

5:00 PM Invited

Stabilization of Layered Battery Electrodes through Chemical Pre-intercalation of Inorganic Ions: *Ekaterina Pomerantseva*¹; ¹Drexel University

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Modeling and Simulation

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Thursday PM
March 2, 2017

Room: 15B
Location: San Diego Convention Ctr

Session Chair: Mingming Zhang, ArcelorMittal Global R&D

2:00 PM

Phase-Field Modeling of Internal Oxidation: *Youhai Wen*¹; ¹National Energy Technology Laboratory

2:25 PM

HPC4Manufacturing Program: A National Laboratory - Industry Partnership in High Performance Computational Simulations for Energy Efficiency *Untitled:* *Robin Miles*¹; Peg Folta¹; Jeff Roberts¹; ¹Lawrence Livermore National Laboratory

2:50 PM

Metal Silicides for High-Temperature Thermoelectric Application: *Mallikharjuna Bogala*¹; Ramana Reddy¹; ¹The University of Alabama

3:15 PM

Computational Fluid Dynamic Based Process Modeling of Reverberatory Furnaces Used for Lead Recycling: *Alexandra Anderson*¹; Patrick Taylor¹; Gregory Bogin¹; ¹Colorado School of Mines

3:40 PM Break**4:00 PM**

CFD Modeling of Slag-Metal Reactions and Sulfur Refining Evolution in an Argon Gas-Stirred Ladle Furnace: *Qing Cao*¹; April Pitts¹; Laurentiu Nastac¹; ¹University of Alabama

4:25 PM

Numerical Study of the Fluid Flow and Temperature Distribution in DC Non-transferred Arc Thermal Plasma Reactor: *Yudong Li*¹; Ramana Reddy¹; ¹University of Alabama

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Thermodynamics and Kinetics

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

Thursday PM
March 2, 2017

Room: 16A
Location: San Diego Convention Ctr

Session Chair: Michael Free, University of Utah

2:00 PM

Vaporization Thermodynamics of Mg, K, and Rb Using Knudsen Torsion Effusion Thermogravimetry Method: L.-N. N. Nforbi¹; Anjali Talekar¹; *Dhanesh Chandra*¹; Wen-Ming Chien¹; Kai Lau²; Hans Hagemann³; Yaroslav Filinchuk⁴; J-C Zhao⁵; ¹Uni. of Nevada, Reno; ²SRI International (Retired); ³Uni. of Geneva; ⁴Uni. of Louvain (Belgium); ⁵Other

2:20 PM

Thermodynamic Studies on the Mg-B System using Solid State Electrochemical Cells: *Muhammad Imam*¹; Ramana Reddy¹; ¹The University of Alabama

2:40 PM

Reduction Behavior and Kinetics of Comilog-based SiMn Slags: *Trine Larssen*¹; Merete Tangstad¹; ¹Norwegian University of Science and Technology

3:00 PM

Empirical Activation Energies of MnO and SiO₂ Reduction In SiMn Slags between 1500 and 1650°C: *Pyunghwa Kim*¹; Ryosuke Kawamoto²; Trine Larssen¹; Merete Tangstad¹; ¹Norwegian University of Science and Technology; ²The University of Tokyo

3:20 PM Break

3:40 PM

Experimental Evaluation of Thermodynamic Interactions between Tellurium and Various Elements in Molten Iron: *Shun Ueda*¹; Yuichi Matsuki¹; Kazuki Morita¹; ¹The University of Tokyo

4:00 PM

Thermodynamics of Simultaneous Desulfurization and Dephosphorization of SiMn Alloy: *Jong-Min Jeong*¹; Jaehong Shin¹; Chul-Woo Nam²; Kyung-Ho Park²; Joohyun Park¹; ¹Hanyang University; ²Korea Institute of Geoscience and Mineral Resources (KIGAM)

4:20 PM

Isothermal Reduction Behavior of CaO-Fe₂O₃-8wt%SiO₂ System at 1123K, 1173K and 1223K with CO-N₂ Gas Mixtures: *Cheng Yi Ding*¹; Xuewei Lv¹; Kai Tang¹; Senwei Xuan¹; Yun Chen¹; Jie Qiu¹; ¹Chongqing University

4:40 PM

A Review of Some Studies on Impurity Capacity Predictions in Molten Melts: *Bora Derin*¹; ¹Istanbul Technical University

Bulk Metallic Glasses XIV — Mechanical and Other Properties II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Thursday PM
March 2, 2017

Room: 33B
Location: San Diego Convention Ctr

Session Chairs: Rainer Wunderlich, Ulm University; Gary Shiflet, University of Virginia

2:00 PM Invited

Thermophysical Properties of the Zr-based Bulk Metallic Glass Forming Alloy VIT106a in the Liquid Phase on the Ground and on ISS: *Rainer Wunderlich*¹; Anup Gangopadhyay²; Christopher Pueblo²; Kenneth Kelton²; Hans Fecht¹; ¹Ulm University; ²Washington University

2:20 PM Invited

Degradation Behavior of Bulk Metallic Glasses – Corrosion, Erosion, and Wear: *Ayyagari Aditya*¹; *Sundeep Mukherjee*¹; ¹University of North Texas

2:40 PM Invited

Effects of Ion Irradiation on the Mechanical and Microstructural Properties of Two Different Bulk Metallic Glass Alloys: *Jamieson Brechtl*¹; Hongbin Bei²; Steven Zinkle¹; ¹University of Tennessee; ²Oak Ridge National Laboratory

3:00 PM Invited

Electronic Mechanism of Ductile-to-Brittle Transformation in Amorphous Calcium-based Alloys: *Andrew Cheung*¹; *Gary Shiflet*¹; ¹University of Virginia

3:20 PM Break

3:40 PM

Material Behavior in Micro Milling of Zirconium based Bulk Metallic Glass: *Boyuan Xie*¹; *Maroju Kumar*¹; *David Yan*²; *Xiaoliang Jin*¹; ¹Oklahoma State University; ²University of Wisconsin-Green Bay

4:00 PM

The Corrosion and Wear Behaviors of a ZrCuNiAl Bulk Metallic Glass in Simulated Groundwater: *Yongjiang Huang*¹; Hongbo Fan¹; Jing Liu¹; Zhiliang Ning¹; Jianfei Sun¹; ¹Harbin Institute of Technology

4:20 PM

The Effect of Phase Transformation on the Magnetocaloric Effect in Co-based Heusler Alloys: *A-Young Lee*¹; SongYi Kim¹; Hye Ryeong Oh¹; Hyun-ah Kim¹; Young Do Kim²; MinHa Lee¹; ¹Korea Institute of Industrial Technology; ²Hanyang University

4:40 PM

Effect of Sm Micro-alloying on the Mechanical Behavior and Crystallization Kinetics of Cu-Zr-Al BMGs: *Fatih Sikan*¹; Ilkay Kalay²; Sezer Ozerinc¹; Eren Kalay¹; ¹METU; ²Cankaya University

Bulk Metallic Glasses XIV — Structures and Modeling II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

Thursday PM Room: 33A
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Alan Needleman, Texas A&M University; Jianzhong Jiang, Zhejiang University

2:00 PM Invited

Accurate Peak Prediction of Pair Correlation Functions in Metallic Glasses: *Jun Ding*¹; Mark Asta¹; Robert Ritchie¹; ¹Lawrence Berkeley National Laboratory

2:20 PM Invited

Modeling Deformation in Amorphous Materials via Evolution of Discrete Shear Transformation Zones: *Babak Kondori*¹; Ahmed Benzerga¹; Alan Needleman¹; ¹Texas A&M University

2:40 PM

Modeling the Mechanics Responsible for Strain Delocalization in Metallic Glass Matrix Composites: *Casey Messick*¹; Eric Homer¹; ¹Brigham Young University

3:00 PM

Shear Banding of Metallic Glass under Multi-axial Stress States by Shear Transformation Zone Dynamics Simulations: *Neng Wang*¹; Lin Li¹; ¹University of Alabama

3:20 PM Invited

The Origin of Alloy Compositions: *Chuang Dong*¹; Qing Wang¹; ¹Dalian University of Technology

3:40 PM Break

4:00 PM Invited

Deformation Behavior of Metallic Glasses with Shear Band Like Atomic Structure: A Molecular Dynamics Study: Cheng Zhong¹; Qingping Cao¹; Xiaodong Wang¹; Dongxian Zhang¹; *Jianzhong Jiang*¹; ¹Zhejiang University

4:20 PM Invited

Subtle Influence of the Factors on Mechanical Properties of Nanoscale Metallic Glasses: *Qi Zhang*¹; Mo Li²; ¹Qian Xuesen laboratory of Space Technology, China Academy of Space Technology; ²Georgia Institute of Technology

4:40 PM

Orientation Dependent Energy and Strength of Metallic Crystalline-amorphous Interface: *Ehsan Alishahi*¹; Chuang Deng²; ¹University of Manitoba; ²University of Manitoba

5:00 PM

The Multiple Shear Bands and Plasticity in Metallic Glasses: An Origin from Stress Inhomogeneity: *Guannan Yang*¹; Yang Shao¹; Kefu Yao¹; ¹Tsinghua University

Characterization of Minerals, Metals, and Materials — Materials Extraction

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Thursday PM Room: 31B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Zhiwei Peng, Central South University; Bo Lan, Imperial College London Department of Mechanical Engineering

2:00 PM

Leaching of Copper-Cobalt Tailings from the Democratic Republic of Congo: *Yotamu Hara*¹; Shadreck Chama²; Douglas Mazwi Musowoya²; Golden Kaluba¹; Jimmy Machona²; Stephen Parirenyatwa¹; Tina Chanda²; Paul Chishimba²; ¹Leeds University; ²Copperbelt University

2:20 PM

Optimum Operating Conditions for Extraction of Lignin Precursors from Palm Fruit Bunch: *Emmanuel Akpan*¹; Samson Adeosun²; M. Usman²; ¹Ambrose Alli University; ²University of Lagos

2:40 PM

Experimental Determination of Macro-texture in hcp and Cubic Materials Using Ultrasound: *Bo Lan*¹; Fionn Dunne¹; Michael Lowe¹; ¹Imperial College London

3:00 PM

Selection on the Process for Enriching Gold from Refractory Gold Ores by Smelting: Weifeng Liu¹; *Shuai Rao*¹; ¹Central South University

3:20 PM

Selection on the Process for Removing and Recovering Antimony from Antimonial Refractory Gold Ores: Weifeng Liu¹; *Shuai Rao*¹; ¹Central South University

3:40 PM Break

3:55 PM

Characterization of Spent Printed Circuit Boards from Computers: *Zhiwei Peng*¹; Jiaying Yan¹; Hongjin Zhang¹; Xiaolong Lin¹; Jiann-Yang Hwang¹; Guanghui Li¹; Yuanbo Zhang¹; Tao Jiang¹; ¹Central South University

4:15 PM

Study of the Effect of the Initial Nucleation Mechanism of Lead Anode Oxidation Film on Internal Stress in Chromic Acid Electrolyte: *Yunkai Wang*¹; Jiangzhong Li¹; ¹Northeastern University

4:35 PM

In Situ Observation of the Precipitation of Copper Sulfate Hydrate on the Copper Based Anode Surface: *Yuma Ninomiya*¹; Hideaki Sasaki²; Takeshi Yoshikawa¹; Masafumi Maeda¹; ¹The University of Tokyo; ²Ehime University

4:55 PM

Upgrading of Copper and Cobalt from the Democratic Republic of Congo Tailings: *Yotamu Hara*¹; Shadreck Chama¹; Mazwi Douglas Musowoya¹; Golden Kaluba¹; Jimmy Machona¹; Kawunga Nyirenda¹; Paul Chishimba¹; Stephen Parirenyatwa¹; ¹Copperbelt University; ²Leeds University

Characterization of Minerals, Metals, and Materials — Non-Ferrous Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Collegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Thursday PM Room: 31A
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Ramasis Goswami, Naval Research Laboratory; Farzad Foadian, Clausthal University of Technology

2:00 PM

Defect Structures in the Intermetallic Compounds Ag_3Sn and Cu_3Sn : Haibo Yu¹; Yu Sun¹; Seok-Woo Lee¹; Paul Canfield²; S. Pamir Alpay¹; Mark Aindow¹; ¹University of Connecticut; ²Ames Laboratory & Iowa State University

2:20 PM

Mechanical Behavior of Light Metal Alloys with Grain Size Distribution in a Wide Range of Strain Rates: Vladimir Skripnyak¹; Vladimir V. Skripnyak¹; Evgenia Skripnyak¹; Irina Vaganova¹; Natalia Skripnyak¹; ¹National Research Tomsk State University

2:40 PM

Microstructure Evolution during Thermo-mechanical Processing of Low-symmetry Metals: Rodney McCabe¹; Miroslav Zecevic¹; Daniel Coughlin¹; Sven Vogel¹; Bjorn Clausen¹; Donald Brown¹; ¹Los Alamos National Laboratory

3:00 PM

A Comparison of Gallium and Xenon Plasma Focused Ion Beam Techniques for the Interrogation of Aluminum Alloy Microstructures: Alexis Ernst¹; Mei Wei¹; Mark Aindow¹; ¹University of Connecticut

3:20 PM

Effect of Alloying Elements on Diffusing Bonding Parameters in Al6063 Alloy: Sila Atabay¹; Arcan Dericioglu¹; ¹Middle East Technical University

3:40 PM Break

3:55 PM

Composition Dependent Martensitic Transformation and Softening of Elastic Constants: Le Zhou¹; Abhishek Mehta¹; Anit Giri²; Kyu Cho³; Yongho Sohn¹; ¹University of Central Florida; ²SURVICE Engineering Company; ³US Army Research Laboratory

4:15 PM

Study of Texture Evolution in Copper Tubes Due to the Tilting of the Die during Drawing: Farzad Foadian¹; Mohammad Masafi¹; Adele Carradò²; Heinz-Günter Brokmeier¹; Heinz Palkowski¹; ¹Clausthal University of Technology; ²Institut de Physique et Chimie des Matériaux de Strasbourg

4:35 PM

Recrystallization Behavior of Al Added Low Density Medium Mn Steel: Arnab Sarkar¹; Tapas Bandhyopadhyay¹; ¹Indian Institute of Technology, Kharagpur

4:55 PM

Texture Patterns in Orientation Gradient Ta Thin Films: Elizabeth Ellis¹; Markus Chmielus²; Marissa Linne³; Shefford Baker¹; ¹Cornell University; ²University of Pittsburgh; ³University of Michigan

5:15 PM

Characterization of Surface Microstructure and Passive Film Formed on Nanostructured Ti-6Al-4V Alloy Produced by Cryogenic Burnishing: Jun Tang¹; Hongyun Luo¹; ¹Beijing University of Aeronautics and Astronautics

5:35 PM

Formation of Three Dimensional ZnO Micro Flowers from self Assembled ZnO Micro Discs: Shadia Ikhmayies¹; ¹Al Isra University

Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions — Uncertainty Quantification for Multiscale and Continuum Methods (FEM, Crystal Plasticity, etc.)

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Li Ma, NIST; Shawn Coleman, ARL; Jeff Doak, QuesTek Innovations, LLC; Fadi Abdeljawad, Sandia National Laboratory

Thursday PM Room: 10
March 2, 2017 Location: San Diego Convention Ctr

Session Chair: Li Ma, National Institute of Standards and Technology

2:00 PM

A Novel Method of Analyzing Constitutive Model Parameters Using Canonical Correlation Analysis: Sudipto Mandal¹; Anthony Rollett¹; ¹Carnegie Mellon University

2:20 PM

A Statistical FEA Method for Predicting Glass Fracture in Consumer Electronic Products: Marc Zampino¹; Shankar Ganapathysubramanian¹; Ben Tan¹; Guru Ramanathan¹; ¹Amazon/Lab126

2:40 PM

Finite Element Analysis of Influence of Phase Distribution and Shape Variation of Phases on Charge Transport in a Dual Phase System: Fazle Rabbi¹; Kenneth Reifsnider²; ¹University of South Carolina; ²University of Texas at Arlington

3:00 PM

An Integrated Microstructure Development and Crystal Plasticity Approach with Uncertainty Quantification for Multi-scale Constitutive Model Development: Maxwell Pinz¹; George Weber¹; Somnath Ghosh¹; ¹Johns Hopkins University

3:20 PM Break

3:40 PM Invited

Uncertainty Quantification in the Multiscale Simulation of Materials: Richard LeSar¹; ¹Iowa State University

4:10 PM

Hierarchical Multiscale Modeling and Parametric Analysis of Polyvinyl Alcohol/Montmorillonite Nanocomposites: William Lawrimore¹; Justin Hughes²; Bhasker Paliwal²; Mei Chandler¹; Kyle Johnson²; David Francis²; Mark Horstemeyer²; ¹Engineer Research and Development Center; ²Center for Advanced Vehicular System

4:30 PM

Quantifying Material Variability and Uncertainty for Welded and Additively-manufactured Structures Using Multiscale A Posteriori Error-estimation Techniques: Joseph Bishop¹; Judith Brown¹; ¹Sandia National Laboratories

4:50 PM

Community-driven Benchmark Problems for Phase Field Modeling: *Andrea Jokisaari*¹; Peter Voorhees¹; Jonathan Guyer²; James Warren²; Olle Heinonen³; ¹Northwestern University; ²National Institute of Standards and Technology; ³Argonne National Laboratory

5:10 PM

Functional Uncertainty Quantification in Materials Modeling: *Sam Reeve*¹; Alejandro Strachan¹; ¹Purdue University

Computational Thermodynamics and Kinetics — Diffusion and Kinetics II

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Thursday PM
March 2, 2017

Room: 11A
Location: San Diego Convention Ctr

Session Chairs: Ebrahim Asadi, University of Memphis; Hesam Askari, University of Rochester

2:00 PM Invited

A Molecular Simulation Study of the Effect of Composition Gradients on Intermetallic Nucleation: *Peng Yi*¹; Michael Falk¹; Timothy Weihs¹; ¹Johns Hopkins University

2:30 PM

Defect Migration Using Atomistic-continuum Coupling: *Liam Huber*¹; Raheleh Hadian¹; Blazej Grabowski¹; Jörg Neugebauer¹; ¹Max-Planck-Institut für Eisenforschung GmbH

2:50 PM

Diffusion Mechanisms of ‘Fast Diffusers’ in Ti Alloys: *Alessandro Mottura*¹; Lucia Scotti¹; ¹University of Birmingham

3:10 PM

Measurement of Diffusion Coefficients and Investigation on Precipitation in Mg-based Systems Using Diffusion Experiments: *Wei Zhong*¹; Ji-Cheng Zhao¹; ¹The Ohio State University

3:30 PM Break

3:50 PM

Quasiparticle Approach to Diffusional Atomic-scale Kinetics in Complex Structures: *Helena Zapolsky*¹; Mykola Lavrskyi¹; Gilles Demange¹; Armen Khachaturyan²; Renaud Patte¹; ¹University of Normandy, Rouen; ²University of California and Rutgers University

4:10 PM

Dissimilar Solid-Liquid Interface Free Energy and Anisotropy of Metals Using Molecular Dynamics Simulations: *Seyed Alireza Etesami*¹; *Ebrahim Asadi*¹; ¹University of Memphis

4:30 PM

Kinetic Monte Carlo Simulations of the Growth of Gold Thin Films: *Michele Fullarton*¹; Darnel Allen²; Aleksandr Chernatynskiy³; Simon Phillpot¹; ¹University of Florida; ²University of Wyoming; ³Missouri University of Science and Technology

4:50 PM

Theory and Simulation of Quantum Dot Formation in Heteroepitaxially Grown Thin Films under External Forces: *Nur Seda Aydin*¹; *Ersin Emre Oren*¹; ¹Bionanodesign Laboratory, Department of Biomedical Engineering, TOBB University of Economics and Technology, Ankara, Turkey

Deformation and Transitions at Interfaces — Deformation and Grain Growth in Polycrystalline Materials

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

Thursday PM
March 2, 2017

Room: 23B
Location: San Diego Convention Ctr

Session Chair: To Be Announced

2:00 PM Invited

The Zero-energy Grain Boundary and Consequences to Grain Growth: *Ricardo Castro*¹; Nazia Nafsin¹; ¹University of California, Davis

2:20 PM Invited

Exploring the Role of Texture, Grain Boundary Character, and Grooving on Grain Growth in Metallic Thin Films: *Khalid Hattar*¹; Daniel Bufford¹; Stephen Foiles¹; Fadi Abdeljawad¹; ¹Sandia National Laboratories

2:40 PM Invited

Electric Field Effects on Grain Boundary Formation and Grain Growth: *Klaus van Benthem*¹; ¹University of California, Davis

3:00 PM Invited

Blocky Alpha Grain Growth in Zircalloy4: *Vivian Tong*¹; *T Ben Britton*¹; ¹Department of Materials, Imperial College

3:20 PM Invited

EBSO Observations of Deformation at Grain Boundaries: *David Field*¹; ¹Washington State University

3:40 PM Break

4:00 PM

Transformation, Deformation and Special Grain Boundary Generation – Theoretical Analysis and Phase Field Simulations: *Yipeng Gao*¹; Yunzhi Wang¹; ¹The Ohio State University

4:20 PM

Deformation at Grain Boundaries and Triple Junctions in Oligocrystalline Nickel: *Ying Chen*¹; Mingjie Li¹; ¹Rensselaer Polytechnic Institute

4:40 PM

Correlating Dislocation Configurations to Deformation Behavior in Cyclically Deformed Additive Manufactured IN718: *Yung Suk Yoo*¹; Todd Book²; Michael Sangid²; *Josh Kacher*¹; ¹Georgia Tech; ²Purdue University

5:00 PM Invited

Effects of Materials and Processing Parameters on the Roughness of Recrystallization Boundaries: *Dorte Jensen*¹; YuBin Zhang¹; Jun Sun¹; ¹DTU Risø

Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session — Deriving Value from Challenging Waste III

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Energy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Elsa Olivetti, Massachusetts Institute of Technology; Mingming Zhang, ArcelorMittal Global R&D; Randolph Kirchain, Massachusetts Institute of Technology; Henry Colorado, Universidad de Antioquia

Thursday PM Room: 14B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Henry Colorado, Universidad de Antioquia; Elsa Olivetti, MIT; John Howarter, Purdue University

2:00 PM

Kinetic Studies on the Recovery of Chromium from Stainless Steel Slags: *Manuel Leuchtenmueller*¹; ¹University of Leoben

2:20 PM

Chromium Removal from Iron-rich Waste Generated during Processing Lateritic Nickel Ores: *Hong Vu*¹; Petr Dvorak¹; Tomas Frydl²; Jana Selucka¹; Petra Starkova¹; ¹University of Chemistry and Technology Prague; ²Aero Vodochody Aerospace a.s.

2:40 PM

Synthesis of Magnesium Oxide from Ferronickel Smelting Slag through Hydrochloric Acid Leaching-Precipitation and Calcination: *Mohammad Mubarak*¹; Andik Yudianto²; ¹Institut Teknologi Bandung; ²PT. Antam, Tbk.

3:00 PM

Investigating the Use of Recycled Machining Waste as an Alternative Feedstock for Metal Additive Manufacturing: *Parnian Kiani*¹; Haoyang He¹; Jessica Bui¹; Kaka Ma²; Julie Schoenung¹; ¹University of California, Irvine; ²Colorado State University

3:20 PM Break

3:40 PM

Thermodynamic Analysis of the Recycling of Aircraft Al Alloys: *Senlin Cui*¹; In-Ho Jung¹; ¹McGill University

4:00 PM

Lithium-ion Battery Recycling Through Secondary Aluminum Production: *Reza Beheshti*¹; Ali Tabeshian¹; Ragnhild Aune¹; ¹NTNU

Energy Materials 2017: Materials for Coal-Based Power — Session V

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dryepont, Oak Ridge National Laboratory

Thursday PM Room: 12
March 2, 2017 Location: San Diego Convention Ctr

Session Chair: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory

2:00 PM Invited

Alloy Design of Creep-resistant High Entropy Alloys for Elevated-Temperature Applications: *Peter Liaw*¹; Haoyan Diao²; Chuan Zhang³; Fan Zhang³; Karin Dahmen⁴; ¹The University of Tennessee; ²The University of Tennessee; ³CompuTherm, LLC.; ⁴University of Illinois at Urbana-Champaign

2:40 PM

Continued Development of a Cast Superalloy, IN740 for Advanced Power Generation Applications: *Kyle Rozman*¹; Jeff Hawk¹; Paul Jablonski¹; ¹National Energy Technology Laboratory

3:00 PM Invited

Creep Behavior and Microstructural Stability in Cast γ' Strengthened Nickel Superalloys: *Jeffrey Hawk*¹; John Sears²; Paul Jablonski¹; ¹U.S. Department of Energy, National Energy Technology Laboratory; ²AECOM

3:35 PM Break

3:55 PM

Design and Performance of Nickel-Base Alloys Strengthened by Eta Phase Precipitates: *Walter Milligan*¹; Calvin White¹; Paul Sanders¹; John Shingledecker²; Daniel Purdy²; ¹Michigan Technological University; ²Electric Power Research Institute

4:15 PM Invited

Materials and Manufacturing Challenges for Components of Supercritical CO₂ Power Systems: *Omer Dogan*¹; ¹DOE National Energy Technology Laboratory

4:50 PM Invited

Micro Creep and Fatigue Behaviors in an Advanced Austenitic Stainless Steel: *Guocai Chai*¹; ¹Sandvik Materials Technology

Energy Materials 2017: Materials for Nuclear Energy — Accident Tolerant Fuels & Irradiation Effects

Sponsored by: Chinese Society for Metals

Program Organizers: Raul Rebak, GE Global Research; Zhengdong Liu, China Iron & Steel Research Institute Group; Peter Hosemann, University of California Berkeley; Jian Li, CanmetMATERIALS

Thursday PM Room: Miramar
March 2, 2017 Location: Marriott Marquis Hotel

Session Chair: Peter Hosemann, University of California Berkeley

2:00 PM

Advanced ODS FeCrAl Alloys for Accident-tolerant Fuel Cladding: *Sebastien Dryepont*¹; Caleb Massey¹; Philip Edmondson¹; Kurt Terrani¹; ¹Oak Ridge National Laboratory

2:20 PM

Minimizing Hydrogen Diffusion through FeCrAl Alloy Accident Tolerant Fuel Cladding: *Raul Rebak*¹; Young Kim¹; ¹GE Global Research

2:40 PM

The Mechanical Response of Advanced Claddings during Proposed Reactivity Initiated Accident Conditions: *Mahmut Cinbiz*¹; Nicholas Brown¹; Kurt Terrani¹; Rick Lowden¹; Donald Erdman III¹; ¹Oak Ridge National Laboratory

3:00 PM

Systematic Studies on Dispersoid Stability and Swelling Resistance in ODS Alloys under Ion Irradiation Conditions: Hyosim Kim¹; Jonathan Gigax¹; Tianyi Chen¹; Frank Garner¹; *Lin Shao*¹; ¹Texas A&M University

3:20 PM

In-situ Observation on the Oxides Stability under Laser and/or Electron Beams Irradiations in 9Cr-ODS Steel: *Wang Hui*¹; Yang Zhanbing²; Yang Subing¹; Watanabe Seiichi³; Shibayama Tamaki³; ¹University of Science & Technology Beijing; ²School of Metallurgical and Ecological Engineering, State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; ³Centre for Advanced Research of Energy and Materials, Faculty of Engineering, Hokkaido University

3:40 PM Break**3:55 PM**

A Preliminary Investigation on the Phase Transformation Kinetics Behavior of an U-10wt%Mo Cast and Homogenized Alloy: *Saumyadeep Jana*¹; Arun Devaraj¹; Vineet Joshi¹; Curt Lavender¹; ¹PNNL

4:15 PM

First Principles Study of Electronic Structure and Thermo-mechanical Properties of the Components of Accident Tolerant Nuclear Fuel: UO₂ and UB₂: *Ericmoore Jossou*¹; Linu Malakkal¹; Dotun Oladimeji¹; Barbara Szpunar¹; Jerzy Szpunar¹; ¹University of Saskatchewan

4:35 PM

Irradiation Defects in UO₂, CeO₂ and (U, Ce)O₂ Leached in Oxidizing Water: An In-situ Raman Study: *Ritesh Mohun*¹; Lionel Desgranges¹; Christophe Jégou¹; Sandrine Miro¹; Patrick Simon²; Aurélien Canizarès²; Nicole Raimboux²; ¹CEA (French Alternative Energies and Atomic Energy Commission), France; ²CNRS(French National Centre for Scientific Research), France

4:55 PM

Comparative Study of Thermal Conductivity of SiC and BeO from Ab Initio Calculations: *Linu Malakkal*¹; Barbara Szpunar¹; Jerzy Szpunar¹; ¹University of Saskatchewan

5:15 PM

Morphology of Y-Ti Nano-oxides in ODS Alloys Irradiated with High Energy Heavy Ions: *Vladimir Skuratov*¹; Alexander Sohatsky¹; *Jacques O'Connell*²; Kateryna K. Kornieieva¹; Jan Neethling²; Alexey Volkov²; Maxim Zdorovets⁴; ¹FLNR JINR; ²CHRTEM, Nelson Mandela Metropolitan University; ³Nazarbaev University; ⁴Institute of Nuclear Physics, Astana, Kazakhstan

Energy Technologies — Heat Recovery

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Lei Zhang, University of Alaska Fairbanks; Jaroslaw Drellich, Michigan Technological University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Laboratory; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University; Ziqi Sun, Queensland University of Technology; Tao Wang, Nucor Steel; John Howarter, Purdue University; Fiseha Tesfaye, Abo Akademi University

Thursday PM
March 2, 2017

Room: 13
Location: San Diego Convention Ctr

Session Chairs: Ziqi Sun, Queensland University of Technology; Nawshad Haque, CSIRO

2:00 PM Invited

Integrated Utilization of Sewage Sludge and Coal Gangue in Clinker Manufacture: *Zhenzhou Yang*¹; Zuotai Zhang¹; ¹Peking University

2:30 PM

High Efficiency Thermoelectric Materials (Skutterudites, Half Heusler Alloys and Clathrates) and their Mechanical Properties: *Gerda Rogl*¹; Andriy Grytsiv¹; Ernst Bauer²; Michael Zehetbauer³; Peter Rogl⁴; ¹Christian Doppler Laboratory for Thermoelectricity, Univ. Vienna and Vienna Univ. of Technology; ²Institute of Solid State Physics, University of Technology; ³Faculty of Physics, University of Vienna; ⁴Institute of Materials Chemistry and Research, University of Vienna

2:50 PM

Valuable Metals and Energy Recovery from Electronic Waste Streams: *Fiseha Tesfaye*¹; Daniel Lindberg¹; Joseph Hamuyuni²; ¹Abo Akademi University; ²Aalto University School of Chemical Technology

3:10 PM

Energy Recovery of Livestock Waste in Taiwan: *Esher Hsu*¹; Chen-Ming Kuo²; ¹National Taipei University; ²I-Shou University

3:30 PM Break**3:45 PM**

Thermal Transport in High ZT Bulk Silicon Thermoelectric Materials: *Seyed Aria Hosseini*¹; Jackson Harter²; Todd Palmer²; Lorenzo Mangolini¹; P. Alex Greaney¹; ¹University of California, Riverside; ²Oregon State University

4:05 PM

High-efficiency Natural-gas Generators for Residential Combined Heat and Power: *Ji-Cheng Zhao*¹; ¹The Ohio State University

4:25 PM

Life Cycle Assessments of Incineration Treatment for Sharp Medical Waste: *Maryam Ghodrati*¹; Bijan Samali¹; Maria Rashidi¹; ¹Western Sydney University

Fracture Properties and Residual Stresses in Small Dimensions — Interface Dominated Fracture

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Daniel Kiener, University of Leoben; Marco Sebastiani, Roma TRE university; Nagamani Jaya Balila, Max Planck Institut fuer Eisenforschung GmbH; William Gerberich, University of Minnesota; Siddhartha (Sid) Pathak, University of Nevada, Reno

Thursday PM
March 2, 2017

Room: 21
Location: San Diego Convention Ctr

Session Chairs: Rafael Soler, MPIE; Nan Li, Los Alamos National Laboratory

2:00 PM Invited

Temperature-Dependent Delamination Failure of Metal-Ceramic Interfaces: *Rafael Soler*¹; Sriram Venkatesan¹; Johannes Zechner²; Michael Nelhiebel²; Roman Roth³; Josef Fugger²; Gerhard Dehm¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²KAI - Kompetenzzentrum Automobil- und Industrielektronik; ³Infineon Technologies AG

2:30 PM

Oxide-induced Substrate Cracking in Ti and Stainless Steels Driven by Pulsed Laser Irradiation: *Jesus Morales Espejo*¹; David Bahr¹; ¹Purdue University

2:50 PM

Fracture Toughness of Beryllium Using In Situ X-ray and Digital Image Correlation Techniques: *Carl Cady*¹; Cheng Liu¹; George Gray¹; Neil Bourne²; ¹Los Alamos National Laboratory; ²University of Manchester

3:10 PM

Improved Fracture Resistance of Brittle Molybdenum Thin Films on Polyimide with Stress Tailoring: *Megan Cordill*¹; Tanja Jörg²; Oleksandr Glushko¹; Robert Franz²; Jörg Winkler³; Christian Mitterer²; ¹Erich Schmid Institute of Materials Science; ²Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben; ³Business Unit Coating, PLANSEE SE

3:30 PM Break**3:50 PM Invited**

Enhanced Fracture Toughness of Mg/Nb Laminated Composites: *Nan Li*¹; Youxing Chen¹; Siddhartha Pathak²; Jian Wang³; Jon Baldwin¹; Amit Misra⁴; Nathan Mara¹; ¹Los Alamos National Laboratory; ²University of Nevada, Reno; ³University of Nebraska-Lincoln; ⁴University of Michigan, Ann Arbor

4:20 PM

The Surface Residual Stress of High-frequency Induction Brazing of Cemented Carbide to Alloy Steel: *Jia Ju*¹; Zhuang Liu¹; Shuting Lou¹; Ting Ruan¹; ¹Nanjing Institute of Technology

4:40 PM Concluding Comments

Friction Stir Welding and Processing IX — Control and Simulation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Thursday PM Room: 9
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Enkhsaikhan Boldsaikhan, Wichita State University; John Baumann, Boeing Research & Technology

2:00 PM Introductory Comments

2:10 PM Invited

Depth and Temperature Control during Friction Stir Welding of 5 cm Thick Copper Canisters: Lars Cederqvist¹; Olof Garpinger²; ¹Swedish Nuclear Fuel and Waste Management Company; ²Alten

2:30 PM

Direct Pin Tool Temperature Measurements in Friction Stir Welding: Xiaojian Ma¹; Stanley Howard¹; ¹South Dakota School of Mines and Technology

2:50 PM

Effect of Pin Tool Profile on Metal Flow, Torque and Forces during Friction Stir Welding-limiting Friction Cases: Narges Dialami¹; Miguel Cervera¹; Michele Chiumenti¹; Carlos Agelet de Saracibar¹; ¹CIMNE

3:10 PM Invited

Measuring the Advancing Side Separation Forces during Self-reacting FSW of Al: Scott Rose¹; John Baumann¹; Sean Thuston¹; Eric Thomas¹; Brian Martinek¹; ¹The Boeing Company

3:30 PM Break

3:50 PM

Predicting Lap Shear Strength for Friction Stir Scribe Joining of Dissimilar Materials: Erin Barker¹; Piyush Upadhyay¹; Yuri Hovanski¹; Xin Sun¹; ¹Pacific Northwest National Lab

4:10 PM Invited

Simultaneous Independent Control of Tool Axial Force and Temperature in Friction Stir Processing: Kenneth Ross¹; Glenn Grant¹; Jens Darsell¹; David Catalini¹; ¹Pacific Northwest National Laboratory

4:30 PM

Prediction of Mechanical Properties of Friction Stir Welds through Microstructural Data: Akbar Heidarzadeh¹; Hesam Askari²; ¹Azarbaijan Shahid Madani University; ²University of Rochester

GAT-2017 (Gamma Alloys Technology - 2017) — Technologically Critical Areas - Discussions

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pyczak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

Thursday PM Room: Solana
March 2, 2017 Location: Marriott Marquis Hotel

Session Chairs: Junpin Lin, Univ. of Science and Technology Beijing; Wilfried Smarsly, MTU Aero Engines GmbH

2:00 PM Panel Discussion Topic 2 (Additive Manufacturing Processes for Gammalloys)

Discussion Lead Team: S-K. Rittinghaus (Fraunhofer), Marc Thomas (ONERA), Dennis Dimiduk (BlueQuartz), Mohsen Selfi (Case Western), Wenbin Kan (USTB), Mauro Filippini (Polimi), Andrzej Wojcieszynski (ATI Metals), Young-Won Kim (Gamteck).

2:35 PM Panel Discussion Topic 3 (Directional Processing)

Discussion Lead Team: Ruirun Chen (HIT), Jun Shen (NWPU), Michael Oehring (HZG), Zhixiang Qi (NJUST), Hao Jin (IMR), Myunghoon Oh (KNIT), Rui Yang (IMR), Young-Won Kim (Gamteck).

3:05 PM Panel Discussion Topic 4 (Microstructure-Defects-Life)

Discussion Lead Team: Mauro Filippini (Polimi), Martin Schloffer (MTU), Ernie Crist (Alcoa), Rob Haun (Retech), Adrienne Muth (Gatech), Thomas Edwards (Cambridge), Matthew Dahar (Case Western), Dennis Dimiduk (BlueQuartz), Young-Won Kim (Gamteck).

3:35 PM Break Introduction

3:50 PM Panel Discussion Topic 5 (Industrial Turbine Blade Gammalloys and Processes)

Discussion Lead Team: Siavash Zamani (MAPNA), Fritz Appel (HZG), Jun Zhang (Siemens), Florian Pyczak (HZG), Thomas Broderick (GE), Young-Won Kim (Gamteck).

4:15 PM Panel Discussion Topic 6 (Aero and Automotive Engines Components Gammalloys)

Discussion Lead Team: Mikael Perrut (ONERA), Martin Schloffer (MTU), Wilfried Smarsly (MTU), Mark Dixon (RR), Pierre Sallot (SAFRAN), Rui Yang (IMR), Tom Broderick (GE), Matthias Buenck (ACCESS), Jan Schievenbusch (ACCESS), Langping Zhu (BIAM), Todor Stoyanov (ACCESS), Juraj Lapin (IMMM), Dennis Dimiduk (Blue Quartz), Ulrike Hecht (ACCESS), Fritz Appel (HZG), Guido Keijzers (Del West), Al Sommer (Del West), Young-Won Kim (Gamteck).

5:15 PM Panel Discussion Topic 7 (Application-specific R&D Processes)

Young-Won Kim (Gamteck).

5:45 PM Concluding Comments: Young-Won Kim, Gamteck

High Entropy Alloys V — Structures and Modeling II

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Thursday PM
March 2, 2017

Room: 32B
Location: San Diego Convention Ctr

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; James Morris, The University of Tennessee, Knoxville

2:00 PM Invited

A Computational Investigation on Diffusion in High-entropy Alloys: *Chuan Zhang¹; Fan Zhang¹; Shuanglin Chen¹; Weisheng Cao¹; Jun Zhu¹; Haoyan Diao²; Peter Liaw²; ¹CompuTherm LLC; ²University of Tennessee*

2:20 PM Invited

Modeling Slips in Slowly Deformed High Entropy Alloys and Comparison to Experiments: *Karin Dahmen¹; XJ Gu²; Li Shu¹; Aya Nawano¹; Shuying Chen³; Peter Liaw³; Jonathan Uhl⁴; Wendelin Wright²; Jien-Wei Yeh²; ¹University of Illinois at Urbana Champaign; ²Bucknell University; ³The University of Tennessee, Knoxville; ⁴Retired; ⁵National Tsing Hua University*

2:40 PM Invited

Modeling Fundamental Properties of High Entropy Alloys: *James Morris¹; ¹Oak Ridge National Laboratory*

3:00 PM

Using a Large Scale Modelling Technique for Selection of HEAs Containing Atypical Elements: *Rob Snell¹; Iain Todd¹; Russell Goodall¹; ¹University of Sheffield*

3:20 PM Invited

Atomistic Modeling of Solid-solution Structures of High Entropy Alloys: *Guofeng Wang¹; Zhenyu Liu¹; Yinkai Lei¹; ¹University of Pittsburgh*

3:40 PM Break**4:00 PM Invited**

Predicted Properties of NiFeCrCo Based HEAs from First Principles: *Douglas Irving¹; Changning Niu¹; Alex Zaddach¹; Adedapo Oni¹; James LeBeau¹; Carl Koch¹; ¹North Carolina State University*

4:20 PM Invited

The Serrations of TiZrTM1TM2 (TM=Hf, Mo, Ta, V and W) High Entropy Alloys: An Integrated First-principles Calculation and Finite-elements Method Study: *William Yi Wang¹; FengBo Han¹; Yi Dong Wu²; Deye Lin³; Bin Tang¹; Jun Wang¹; Shun-Li Shang⁴; Yi Wang⁴; HongChao Kou¹; Xi-Dong Hui²; Karin Dahmen⁵; Peter Liaw⁶; JinShan Li¹; Zi-Kui Liu⁴; ¹Northwestern Polytechnical University; ²University of Science and Technology Beijing; ³Institute of Applied Physics and Computational Mathematics; ⁴The Pennsylvania State University; ⁵University of Illinois at Urbana Champaign; ⁶The University of Tennessee*

4:40 PM Invited

Understanding and Designing High-entropy Alloys using a Cluster-plus-Glue-Atom Model: *Qing Wang¹; Xiaona Li¹; Chuang Dong¹; Peter K. Liaw²; ¹Dalian University of Technology; ²The University of Tennessee*

5:00 PM Invited

A Multifaceted Approach to Analyze the Serration Behavior in High Entropy Alloys and Other Material Systems: *Jamieson Brechtl¹; Xie Xie¹; Shuying Chen¹; Haoyan Diao¹; Yunzhu Shi¹; Tengfei Yang¹; Bilin Chen¹; Karin Dahmen²; Peter Liaw¹; Steven Zinkle¹; ¹University of Tennessee; ²University of Illinois at Urbana-Champaign*

5:20 PM

New Deformation Twinning Mechanism in Equimolar Multi-component Alloys with Low Stacking Fault Energy: *Qingjie Li¹; Evan Ma¹; ¹Johns Hopkins University*

5:40 PM

Fatigue Behavior of High-entropy Alloys: *Peiyong Chen¹; Bilin Chen¹; Michael Hemphill¹; Zhi Tang¹; Tao Yuan²; Gongyao Wang¹; Che-Wei Tsai³; Andrew Chuang¹; Carl D Lundin¹; Jien-Wei Yeh³; Mohsen Seifi⁴; Dongyue Li⁵; John J Lewandowski⁴; Karin A Dahmen⁶; Peter K Liaw¹; ¹University of Tennessee Knoxville; ²Ohio University; ³National Tsing Hua University; ⁴Case Western Reserve University; ⁵State Key Laboratory for Advanced Metals and Materials; ⁶University of Illinois at Urbana-Champaign*

High Entropy Alloys V — Thermal and Other Properties

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigel Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

Thursday PM
March 2, 2017

Room: 32A
Location: San Diego Convention Ctr

Session Chairs: Nobuhiro Tsuji, Kyoto University; Thanh Tran, NSWC Carderock

2:00 PM Invited

Recrystallization and Grain Growth in High Entropy Alloys: *Nokeun Park¹; Tilak Bhattacharjee²; Yoshihiko Nakamura²; Xian Li²; Rajeshwar Eleti²; Yu Bai²; Akinobu Shibata²; Nobuhiro Tsuji²; ¹Yeungnam University; ²Kyoto University*

2:20 PM Invited

Aluminum Diffusion in High Entropy Alloys: *K. Michael Mathes¹; Thanh Tran²; Peter Liaw¹; ¹University of Tennessee; ²Naval Surface Warfare Center - Carderock Division*

2:40 PM Invited

Deformation Characteristics and Thermomechanical Processing of Complex Concentrated Alloys: *Mageshwari Komarasamy¹; Rajiv Mishra¹; ¹University of North Texas*

3:00 PM Invited

Structural and Thermodynamic Properties of a Lightweight AlTiVCr High Entropy Alloy: *Yong-Jie Hu¹; Yong-Jie Qiu²; N Birbilis²; Zi-Kui Liu¹; ¹The Pennsylvania State University; ²Monash University*

3:20 PM Invited

High-entropy Alloys Properties and Short- and Long-range Ordering Predicted via Electronic-Structure-based Thermodynamics: *Duane Johnson¹; Prashant Singh¹; Andrei Smirnov¹; ¹Ames Laboratory/Iowa State University*

3:40 PM Break**4:00 PM Invited**

Dynamic Behavior and Grain Refinement of AlxCoCrFeNi High-entropy Alloy: *Zezhou Li¹; Shiteng Zhao¹; Haoyan Diao²; Shima Sabbaghanrad³; Terence G. Langdon³; Peter K. Liaw²; Marc A. Meyers¹; ¹University of California, San Diego; ²The University of Tennessee, Knoxville; ³University of Southern California*

4:20 PM Invited

Stress State, Strain Rate and Temperature Sensitivity of Alx(CrCoFeNi)1-x High Entropy Alloys (HEAs): *Omar Rodriguez¹; Paul Allison¹; Haoyan Diao²; Peter Liaw²; Neng Wang¹; Lin Li¹; ¹University of Alabama; ²University of Tennessee*

4:40 PM

Experimental Demonstration of Isotope-free Simultaneous Measurement of Self- and Inter-diffusion Coefficients: *Esin Schulz*¹; Irina Belova²; Graeme Murch²; Yongho Sohn¹; ¹University of Central Florida; ²The University of Newcastle

5:00 PM

Application of a High Accuracy Diffusion Kinetics Formalism to High Entropy Alloys: Alan Allnatt¹; *Irina Belova*²; Tumpa Paul²; Graeme Murch²; ¹University of Western Ontario; ²The University of Newcastle

5:20 PM

Uncovering Micro Mechanisms during Tensile Deformation for an Outstanding High Entropy Alloy via In Situ Neutron Diffraction: *Biao Cai*¹; Bin Liu²; Yiqiang Wang¹; Kun Yan¹; Saurabh Kabra³; Peter Lee¹; Yong Liu²; ¹University of Manchester; ²Central South University; ³ISIS Facility

Magnesium Technology 2017 — Mechanical Behavior: Twinning, Plasticity, Texture, and Fatigue III

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Thursday PM
March 2, 2017

Room: 5B
Location: San Diego Convention Ctr

Session Chairs: Christopher Barrett, Mississippi State University; Scott Whalen, Pacific Northwest National Laboratory

2:00 PM

Microstructure and Texture Evolution during Hot Deformation of Cast-Homogenized ZK60 Magnesium Alloy: Amir Hadadzadeh¹; *Sugrib Shaha*¹; Mary Wells¹; Hamid Jahed¹; Bruce Williams²; ¹University of Waterloo; ²CanmetMATERIALS, Natural Resources Canada

2:20 PM

Development of <10-10> Texture during Tensile Test at Room Temperature: *Zhuoran Zeng*¹; Mingzhe Bian¹; Shiwei Xu²; Chris Davies¹; Nick Birbilis²; Jian-Feng Nie¹; ¹Monash University; ²Baosteel Group Corporation

2:40 PM

Effect of Ca on the Microstructure, Texture and Mechanical Properties in Mg-Zn-Mn Based Alloy: *Byeong-Chan Suh*¹; Taisuke Sasaki¹; Taiki Nakata²; Shigeharu Kamado²; Kazuhiro Hono¹; ¹National Institute for Materials Science; ²Nagaoka University of Technology

3:00 PM

Evaluation of In Vitro Fatigue Properties of Biodegradable Mg-0.3at.%Ca Alloy: *Naoko Ikeo*¹; Akihito Taguma¹; Taichi Uemura¹; Toshiji Mukai¹; ¹Kobe University

3:20 PM

Mechanical Properties and Fatigue Strength of Extruded Cobalt-containing Magnetic Magnesium Alloys: *Christian Demminger*¹; Christian Klose¹; ¹Leibniz Universitaet Hannover

3:40 PM Break

4:00 PM

Neutron Diffraction and Acoustic Emission Measurement during Loading and Unloading of Magnesium Aluminium Binary Alloys: *Jan Capek*¹; Kristian Mathis¹; ¹Charles University in Prague

4:20 PM

Texture Weakening and Grain Refinement by High Speed Rolling and Annealing of an AZ31 Magnesium Alloy: *Jing Su*¹; Stephen Yue¹; ¹McGill University

4:40 PM

The Relative Contributions of Deformation Modes to AZ31 Rolling Textures in Different Temperature Regimes: *Matthew Steiner*¹; Jishnu Bhattacharyya¹; Sean Agnew¹; ¹University of Virginia

5:00 PM

Effects of Texture and Triaxiality on the Plasticity of Magnesium Alloys: Balaji Selvarajou¹; *Shailendra Joshi*¹; Amine Benzerga²; ¹National University of Singapore; ²Texas A & M University

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Modeling

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprasad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday PM
March 2, 2017

Room: Point Loma
Location: Marriott Marquis Hotel

Session Chairs: Shenyang Hu, Pacific Northwest National Laboratory; David Andersson, Los Alamos National Laboratory

2:00 PM

Density Functional Theory Investigation of Defect and Fission Gas Diffusion in U₃Si₂: *David Andersson*¹; ¹Los Alamos National Laboratory

2:20 PM

A Grand-Potential Phase Field Model for Bubble Formation and Growth in U-Si Fuel: *Karim Ahmed*¹; Larry Aagesen¹; Daniel Schwen¹; Yongfeng Zhang¹; ¹Idaho National Laboratory

2:40 PM

A Modified Embedded-Atom Method Interatomic Potential for U-Si: *Benjamin Beeler*¹; Michael Baskes²; David Andersson³; Yongfeng Zhang¹; ¹Idaho National Laboratory; ²University of California, San Diego; ³Los Alamos National Laboratory

3:00 PM

Cluster Dynamics Modeling of Cu Precipitation Hardening in Reactor Pressure Vessel Steels: *Xian-Ming Bai*¹; Huibin Ke²; Pritam Chakraborty³; Yongfeng Zhang³; ¹Virginia Tech; ²University of Wisconsin - Madison; ³Idaho National Laboratory

3:20 PM

Monte Carlo Modeling of Recrystallization Processes in α -Uranium: *Matthew Steiner*¹; Rod McCabe²; Elena Garlea³; Sean Agnew¹; ¹University of Virginia; ²Los Alamos National Laboratory; ³Y-12 National Security Complex

3:40 PM Break

4:00 PM

Continuum-level Modeling of Irradiation Damage Cascades with Explicit Microstructure Representation: *Jesse Carter*¹; Jared Tannenbaum¹; Richard Smith¹; ¹Bettis Laboratory, BMPC

4:20 PM

Phase Field Modeling of PWR Cladding Corrosion with the HOGNOSE Code: *Andrew Dykhuis*¹; Michael Short¹; ¹Massachusetts Institute of Technology

4:40 PM

Thermodynamic Modeling and Continuum Scale Fuel Performance Simulations: *Jacob McMurray*¹; Srdjan Simunovic¹; Theodore Besmann²; Benjamin Gaston²; Markus Piro³; ¹Oak Ridge National Laboratory; ²University of South Carolina; ³Canadian Nuclear Laboratories

5:00 PM

Exposing the Mechanisms of Pellet-Cladding Interaction Using Atomistic Simulation: *Adam Plowman*¹; C.T. Gillen¹; Alistair Garner¹; P. Wiringgalih¹; Michael Preuss¹; Philipp Frankel¹; Christopher Race¹; ¹University of Manchester

Materials Engineering of Soft Magnets for Power and Energy Applications — Advanced Silicon Steels and Soft Magnetic Alloys for Rotating Electrical Machinery

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Francis Johnson, GE Global Research; Alex Leary, Carnegie Mellon University; Tanjore Jayaraman, University of Michigan; Lajos Varga, Wigner Research Center for Physics

Thursday PM Room: 25B
March 2, 2017 Location: San Diego Convention Ctr

Session Chair: Alex Leary, Carnegie Mellon University

2:00 PM Invited

Advanced Soft Magnetic Materials for Highly-efficient Electric Motors: Josefina Silveyra¹; Vladimir Keylin²; *Michael McHenry*²; ¹INTECIN, Facultad de Ingeniería, Universidad de Buenos Aires - CONICET; ²Carnegie Mellon University

2:30 PM Invited

Opportunities and Challenges in the Additive Manufacture of Soft Magnetic Silicon Steel Parts: Processing, Material Properties and Component Design: *Michele Garibaldi*¹; Ian Ashcroft¹; Richard Hague¹; ¹The University of Nottingham

3:00 PM Invited

Effect of Annealing Time on the Texture of a 2.8% Si Non-Oriented Electrical Steel after Inclined and Skew Rolling: *Mehdi Mehdi*¹; Youaliang He²; Erik Hilinski³; Afsaneh Edrisky⁴; ¹University of Windsor/Canmet Materials; ²Canmet Materials; ³Tempel Steel; ⁴University of Windsor

3:30 PM Break

3:45 PM Invited

Effects of Cooling Rate on 6.5% Silicon Steel Ordering: Brandt Jensen¹; Chad Macziewski¹; Kevin Dennis¹; Lin Zhou¹; Wei Tang¹; Olena Palasyuk¹; Levitas Valery²; Matthew Kramer¹; *Jun Cui*²; ¹Ames Laboratory; ²Iowa State University

4:15 PM

Novel Silicon Steel Nanocomposites via Severe Shear Deformation Approaches: *Trevor Clark*¹; Hellen Jiang²; Nicole Overman²; Suveen Mathaudhu¹; ¹University of California, Riverside; ²Pacific Northwest National Laboratory

4:35 PM

Magnetic Properties of Shear-textured Fe-Si Sheet Produced by Simple Shear Deformation: *Andrew Kustas*¹; Srinivasan Chandrasekar¹; Kevin Trumble¹; ¹Purdue University

Materials Processing Fundamentals — Molten & Gas State Processing

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee

Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts; Guillaume Lamotte, Boston Electromet

Thursday PM Room: 17B
March 2, 2017 Location: San Diego Convention Ctr

Session Chairs: Samuel Wagstaff, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts

2:00 PM

Thermal Analyses of Silver-based Sulfosalts in Air: *Fiseha Tesfaye*¹; Daniel Lindberg¹; ¹Åbo Akademi University

2:20 PM

Influence of Oxygen on Surface Tension of Zr: *Jonghyun Lee*¹; Jie Zhao¹; Michael SanSoucie²; Rainer Wunderlich³; Jan Rogers²; Hans Fecht³; Robert Hyers¹; ¹University of Massachusetts; ²NASA Marshall Space Flight Center; ³Ulm University

2:40 PM

Oscillation of a Zirconium Droplet – Experiments and Numerical Simulations: *Jonghyun Lee*¹; Kaushal Sumaria¹; Robert Hyers¹; ¹University of Massachusetts

3:00 PM

Gallium Evaporation Behavior for Purification in Molecular Beam Epitaxy (MBE): *Kyungjean Min*¹; David Johnson¹; Kevin Trumble¹; ¹Purdue University

3:20 PM Break

3:40 PM

Investigation of Mixing Process in a Steel Ladle with Top Stirring Lance Using CFD: Guangwu Tang¹; Armin Silaen¹; Hoyong Hwang²; Megan Pratt³; Russell Mulligan²; *Chenn Zhou*¹; ¹Purdue University Northwest; ²ArcelorMittal; ³Toyota Motor Manufacturing Indiana

4:00 PM

Mass Transfer of Al and Ca between Silicon and Synthetic SiO₂-CaO-Al₂O₃ Slags: *Erlend Bjørnstad*¹; Gabriella Tranell¹; ¹NTNU

Materials Science for High-Performance Permanent Magnets — Synthesis and Processing

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Satoshi Hirose, National Institute for Material Science; Matthew Kramer, Iowa State University; Oliver Gutfleisch, Technische Universität Darmstadt; Hae-Woong Kwon, Pukyong National University

Thursday PM Room: 24C
March 2, 2017 Location: San Diego Convention Ctr

Funding support provided by: Elements Strategy Initiative Center for Magnetic Materials

Session Chairs: Matthew Kramer, Ames Laboratory; Hae-Woong Kwon, Pukyong National University

2:00 PM Invited

Fabrication of Submicrometer-sized Sm₂Fe₁₇N₃ Hard Magnetic Particles: Toshiharu Teranishi¹; Hsin-Lun Wu¹; *Ryota Sato*¹; ¹Kyoto University

2:30 PM

Coercivity and Strength Enhancement of a Binder Jetted NdFeB Bonded Magnet by (Pr,Nd)-Cu-Co Alloy Infiltration: *Ling Li¹*; Angelica Tirado¹; Benjamin Conner¹; Amy Elliott¹; Orlando Rios¹; Haidong Zhou²; M. Parans Paranthaman¹; ¹Oak Ridge National Laboratory; ²University of Tennessee

2:50 PM

Recent Developments in High Coercivity Nd-lean Nd-Fe-B Infiltrated Magnets: *Daniel Salazar¹*; Andrés Martín-Cid¹; Jose Garitaonandia²; Rajasekhar Madugundo¹; Jose Manuel Barandiaran²; George Hadjipanayis³; ¹BCMaterials; ²University of the Basque Country (UPV/EHU); ³University of Delaware

3:10 PM

High Magnetic Field Processing of Melt-spun Permanent Magnet Alloys: *Michael McGuire¹*; Orlando Rios¹; Ben Conner¹; William Carter¹; Lin Zhou²; Brandt Jensen²; Kewei Sun²; Mianliang Huang²; Olena Palasyuk²; Kevin Dennis²; Ikenna Nlebedim²; ¹Oak Ridge National Laboratory; ²The Ames Laboratory

3:30 PM Break**3:50 PM**

Structural Evolution in Alnico -- A Transmission Electron Microscopy and Atom Probe Tomography Study: *Lin Zhou¹*; Wei Guo²; Jon Poplawsky²; Wei Tang¹; Iver Anderson¹; Matt Kramer¹; ¹Ames Lab; ²Oak Ridge National Laboratory, Center for Nanophase Materials Sciences

4:10 PM

Powder-processed High-performance Alnico Magnets by Thermal Gradient Control: *Emma White¹*; Aaron Kassen¹; Wei Tang¹; Matthew Kramer¹; Iver Anderson¹; ¹Ames Laboratory

4:30 PM

Reduced Cobalt Energy Efficient "Green" Alnico: *Andriy Palasyuk¹*; Brandon Kiel²; Kevin Dennis¹; Wei Tang¹; Lin Zhou¹; Aaron Kassen²; Emma White²; Mathew Kramer¹; Iver Anderson¹; ¹Ames Laboratory; ²Iowa State University, DMSE

4:50 PM

Reconsidering Substitutions in Sr-Ferrite Magnets: *Waleed Khalifa¹*; Omayma El-Kady²; ¹Cairo University; ²CMRDI

5:10 PM

Synthesis and Processing of Hard Iron Oxide Nanocomposites for Rare Earth Free Permanent Magnets: *Kyle Chan¹*; Yasuhiro Kodera¹; Javier Garay¹; ¹University of California, San Diego

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Mechanical Behavior of Titanium and Zirconium Containing Alloys

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

Thursday PM
March 2, 2017

Room: 24A
Location: San Diego Convention Ctr

Session Chairs: Raj Vaidyanathan, University of Central Florida; Indrajit Charit, University of Idaho

2:00 PM Keynote

Microstructure-property Interrelationships in Metastable Beta Titanium Alloys with Refined Distributions of the Alpha Phase: *Yufeng Zheng¹*; Gopal Viswanathan¹; Rajarshi Banerjee²; *Hamish Fraser¹*; ¹The Ohio State University; ²University of North Texas

2:30 PM Invited

Increasing the Elevated-temperature Strength of a Beta Titanium Alloy through Thermomechanically-induced Phase Transformation: *Vahid Khademi¹*; *Carl Boehlert¹*; Masahiko Ikeda²; ¹Michigan State University; ²Kansai University

2:50 PM Invited

In Situ Neutron Diffraction Studies of Crystallographic Texture at Stress and Temperature with Implications for Training Shape Memory Alloys: *Raj Vaidyanathan¹*; ¹University of Central Florida

3:10 PM

Correlating Variability in Fatigue Life with Fracture Mechanisms in a Near- α Titanium Alloy: *Vikas Sinha¹*; Sushant Jha²; Adam Pilchak³; Reji John³; James Larsen³; ¹Air Force Research Laboratory/UES, Inc.; ²Air Force Research Laboratory/Universal Technology Corporation; ³Air Force Research Laboratory

3:30 PM Break**3:40 PM Invited**

Creep of Zirconium and Zirconium Alloys: *Troy Hayes¹*; Michael Kassner²; ¹Exponent; ²University of Southern California

4:00 PM

Study of Accelerated Creep Behaviour of Zr-2.5Nb Pressure Tubes: *Avinash Gopalan¹*; Harshit Khandelwal¹; Sandeep Chandanshive¹; Ram Singh¹; ¹Bhabha Atomic Research Center

4:20 PM Concluding Comments

Microstructural Processes in Irradiated Materials — Nuclear Fuels and Ceramics

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

Thursday PM
March 2, 2017

Room: Del Mar
Location: Marriott Marquis Hotel

Session Chairs: Mark Asta, University of California Berkeley; William Weber, University of Tennessee

2:00 PM Invited

Amorphization and Recrystallization in Ion-irradiated Ceramics: *William Weber¹*; Eva Zarkadoula²; Ritesh Sachan²; Haizhou Xue¹; Yanwen Zhang²; ¹University of Tennessee; ²Oak Ridge National Laboratory

2:30 PM

Insights on Dramatic Radial Fluctuations in Track Formation by Energetic Ions: *Ritesh Sachan¹*; Yanwen Zhang¹; Eva Zarkadoula¹; Matthew Chisholm¹; William Weber²; ¹Oak Ridge National Laboratory; ²University of Tennessee

2:50 PM

Characterization of Radiation Effects in Complex Oxides: New Application of Neutron Total Scattering Techniques: *Jacob Shamblin¹*; Eric O'Quinn¹; Raul Palomares¹; *Maik Lang¹*; ¹University of Tennessee

3:10 PM Invited

Energetics of Trivalent Substitutional Elements in Uranium Dioxide: Combined Computational and Experimental Investigations: *Jonathan Solomon¹*; Lei Zhang²; Alexandra Navrotsky²; *Mark Asta¹*; ¹University of California, Berkeley; ²University of California, Davis

3:40 PM Break**3:55 PM**

Raman Characterization of Electron Irradiated UO₂ to Determine U Displacement Threshold: *Lionel Desgranges*¹; Ritesh Mohun¹; Patrick Simon²; Aurélien Canizares²; Florian Duval²; Pierre Desgardin²; Marie-France Barthe²; Christophe Jegou¹; Sandrine Miro¹; ¹CEA; ²CNRS

4:15 PM

Quantification of Irradiation Defects in Silicon Carbide Using Raman Spectroscopy: *Takaaki Koyanagi*¹; Michael Lance¹; Yutai Katoh¹; ¹Oak Ridge National Laboratory

4:35 PM

Mesoscale Modelling of Radiation-induced Recrystallization and Fission Gas Bubble Formation in Metallic U-Mo Fuel: Linyun Liang¹; *Zhi-Gang Mei*¹; Abdellatif Yacout¹; ¹Argonne National Laboratory

4:55 PM Concluding Comments

Pan American Materials Congress: Advanced Biomaterials — Implants, Bone Graft and Drug Delivery

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Carlos Elias, Instituto Militar de Engenharia; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Thursday PM
March 2, 2017

Room: Mission Hills
Location: Marriott Marquis Hotel

Session Chairs: Mayara Alvarez-Lemus, Juarez Autonomous University of Tabasco; Ke Yang, Institute of Metal Research, Chinese Academy of Sciences

2:00 PM

In Vivo Study on New Coronary Stents Made of Nickel-free High-nitrogen Stainless Steel: Qingchuan Wang¹; Shanshan Chen¹; Hui Yang¹; Bingchun Zhang¹; *Ke Yang*¹; ¹Institute of Metal Research, Chinese Academy of Sciences

2:20 PM

Effect of Rapid Solidification on the Microstructure of a Biomaterial Co-Cr-Mo-C Alloy: Hugo Lopez¹; *Hamid-Reza Erfanian-Naziftoosi*¹; ¹University of Wisconsin-Milwaukee

2:40 PM

Influence of Time and Temperature of Acid Treatment in the Morphology and Roughness of Osseointegrable Implants: *Ariel do Lago*¹; Beatriz Torres¹; Carlos Elias¹; ¹Instituto Militar de Engenharia

3:00 PM

Optical Properties of CeO₂@ZnO Core@shell Nanostructures Synthesized by Solvothermal Method: *Saeed Farhang*¹; Felipe Sanhueza¹; Pandiyarajan Thangaraj¹; Mangalaraja Ramalinga Viswanathan¹; ¹Concepcion University

3:20 PM Break**3:40 PM**

Investigation of Properties in Glass-ceramics Based on Li₂O-SiO₂ System during Li₂SiO₃-Li₂Si₂O₅ Transformation: *Bruno Simba*¹; Marcos Ribeiro¹; Claudinei Santos²; Paulo Suzuki³; Luis Hein¹; Manuel Alves²; ¹Unesp-FEG - Universidade Paulista-Faculdade de Engenharia de Guaratinguetá; ²UERJ-FAT - Universidade do Estado do Rio de Janeiro-Faculdade de Tecnologia; ³USP-EEL - Universidade de São Paulo-Escola de Engenharia de Lorena

4:00 PM

Structure and Toughening Mechanism of Carp Fish Scales: *Haocheng Quan*¹; Wen Yang²; Robert Ritchie²; Marc Meyers¹; ¹UCSD; ²ETH-Zurich; ³Lawrence Berkeley National Laboratory

4:20 PM

Synthesis and Characterization of Ni_{0.5}Zn_{0.5}Fe₂O₄@mSiO₂ Core Shell Nanocarrier for Drug Delivery Applications: Mohd Qasim¹; Khushnuma Asghar¹; *Dibakar Das*¹; ¹University of Hyderabad

4:40 PM

Zirconium Alloys for Orthopaedic & Dental Implants: A Review: *Afrin Mehjabeen*¹; Ma Qian¹; ¹RMIT

Pan American Materials Congress: Materials for Infrastructure — Session II

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Henry Colorado, Universidad de Antioquia; Oliverio Rodriguez, Centro de Investigacion en Química Aplicada

Thursday PM
March 2, 2017

Room: Palomar
Location: Marriott Marquis Hotel

Session Chair: Henry Colorado, Universidad de Antioquia

2:00 PM Invited

Jigs, Hydro-cyclones and Sensor-based Sorting to Value Recycled Aggregates: *Régis Paranhos*¹; Carlos Sampaio²; Bogdan Cazacliu³; Raul Neto¹; Maria Liendo¹; ¹Unipampa; ²UFRGS; ³IFSTTAR

2:30 PM

Effect of C₅H₁₁NO₂S on Reinforcing-steel Corrosion in Concrete Immersed in Industrial/Microbial Simulating-environment: *Joshua Okeniyi*¹; Abiodun Abioye¹; Zechariah Adikpewun¹; Adeola Otesanya¹; Michael Eleshin¹; Olugbenga Omotosho¹; Olanrewaju Gabriel¹; Oluyori Adeoye¹; ¹Covenant University

2:50 PM

Development of Co-B-SiC Coatings for Use on Aeronautical and Automobile Industries: *Alma Martínez*¹; Gabriel Trejo¹; ¹CIDETEQ

3:10 PM Invited

Colombian Natural Fibers for Structural Materials: Henry Colorado¹; *Juan M Velez*²; ¹Universidad de Antioquia; ²Universidad Nacional de Colombia

3:40 PM Break**4:00 PM**

Anticorrosion and Adsorption Mechanism of Rhizophora Mangle L Leaf-extract on Steel-reinforcement in 3.5% NaCl-immersed Concrete: *Joshua Okeniyi*¹; Olugbenga Omotosho¹; Cleophas Loto¹; Abimbola Popoola²; ¹Covenant University, Ota, Nigeria; ²Tshwane University of Technology, Pretoria

4:20 PM

Cassia Fistula Leaf-extract Effect on Corrosion-inhibition of Stainless-steel in 0.5 M HCl: *Olugbenga Omotosho*¹; Joshua Okeniyi¹; Cleophas Loto¹; Abimbola Popoola²; Omokolade Ajibola¹; Adebani Ogbiye¹; ¹Covenant University, Ota; ²Tshwane University of Technology, Pretoria, South Africa

Pan American Materials Congress: Materials for Transportation and Lightweighting — Composite Materials II

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

Thursday PM
March 2, 2017

Room: Marina D
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

2:00 PM

An Improved Silicon Carbide Monofilament for the Reinforcement of Metal Matrix Composites: *Michael Rix*¹; ¹TISICS

2:20 PM

Effect of Al₂O₃ Volume Percentage on the Mechanical Properties and Strengthening Effect in Al Alloy Nano Composites Fabricated by Ultrasound Assisted Solidification Technique: *Neeraj Srivastava*¹; G.P. Chaudhari¹; ¹Indian Institute of Technology Roorkee

2:40 PM

Effect of Annealing on the Electrical Properties of PA6/MWNT/CU Composites: *Saeed Doagou Rad*¹; A Islam¹; J. Jensen¹; ¹Technical University of Denmark

3:00 PM

Experimental and Density Functional Theory Studies of SmMn₂O₅ Mullite-type Oxide as NO Oxidation Catalyst: *Sampreetha Thampy*¹; Yongping Zheng¹; Sean Dillon¹; Kui Tan¹; Ka Xiong²; Yun-Ju Lee¹; Yves Chabal¹; Kyeongjae Cho³; Julia Hsu¹; ¹University of Texas at Dallas; ²Dongguan Innovative New Materials Co. Ltd.; ³University of Texas at Dallas and Dongguan Innovative New Materials Co. Ltd

3:20 PM Break

3:40 PM

Investigation on Mechanical Properties of Sic, Al₂O₃ and B₄C Micro Particulates Reinforced in Aluminium Matrix Composite: *Gopal Kumaresan*¹; K Kalaichelvan¹; A Rajadurai¹; ¹Production Technology, MIT Campus, Anna University.

4:00 PM

Nanocomposites Mechanical and Tribological Properties using Graphene Coated Ceramic Nanoparticles for Light Weight Applications: Ahmed Ghazaly¹; Mohamed Shokeir¹; Sandy El-Moghazi¹; Ahmed Fathy¹; Mohamed Emara²; *Hanadi Salem*¹; ¹American University in Cairo; ²Canadian College

Pan American Materials Congress: Materials for Transportation and Lightweighting — Joining

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

Thursday PM
March 2, 2017

Room: Marina G
Location: Marriott Marquis Hotel

Session Chair: To Be Announced

2:00 PM

Joining of Sandwich Materials – Concepts for Local Force Transmission into Innovative Vehicle Structures: *Carmen Scholz*¹; Sebastian Wagner²; Gundolf Kopp¹; Horst Friedrich¹; ¹German Aerospace Center; ²NMI Natural and Medical Sciences Institute at the University of Tübingen

2:20 PM

Influence of Robotic GMAW Welding Parameters on the Mechanical Properties of Thick Structural Steel Plates: *Manuel Vazquez Esteban*¹; Argelia Miranda Pérez²; Rolando Praga Alejo²; Gladys Pérez Medina¹; ¹Corporación Mexicana de Investigación en Materiales; ²Universidad Autonoma de Coahuila

2:40 PM

Joining Dissimilar Materials across Varying Length Scales by Impact Welding: *Anupam Vivek*¹; Taeseon Lee¹; Glenn Daehn¹; ¹Ohio State University

3:00 PM

Evaluation of Distortion in Pulse Spray Welding Joints of Hsla A572 Steel for Heavy Agricultural Equipment: *Estuardo Raymundo Rivera Sanchez*¹; Gladys Yerania Perez Medina¹; Eduardo Hurtado Delgado¹; Leonardo Carrasco Gonzalez¹; Argelia Fabiola Miranda Perez¹; ¹COMIMSA

3:20 PM Break

3:40 PM

Comparison of the Single Pulse and the Second Pulse Current on the Fusion Zone Microstructure and Mechanical Properties of the TRIP Steel Welds: *Miguel Fernando Delgado Pamanes*¹; Sergio Rodríguez²; Victor Hugo Hernandez²; Simitrio Ignacio Ruiz²; ¹IPN - UPIIZ; ²UAZ

4:00 PM

Vaporizing Foil Actuator Welding as a Solution for Joining Automotive Steel and Aluminum Alloys: *Anupam Vivek*¹; Bert Liu¹; Glenn Daehn¹; ¹Ohio State University

4:20 PM

Study of the Discontinuities Generated by GMAW Process Applied in AISI 1018 Steel using NDT-phased Array and their Microstructural Correlation.: *Luis Aguilar-Pérez*¹; Gladys Pérez-Medina¹; Argelia Miranda-Pérez¹; Rolando Praga-Alejo²; ¹Corporación Mexicana de Investigación en Materiales; ²Universidad Autónoma de Coahuila

Pan American Materials Congress: Minerals Extraction and Processing — Ore Processing

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mery Gómez Marroquín, Asociación Peruana de Metalurgia Materiales y Minerales-APMMM; Mark Schlesinger, Missouri University of Science and Technology; Alejandro Valdivieso, U.A. of San Luis Potosi; Carlos Sampaio, UFRGS

Thursday PM Room: Marina E
March 2, 2017 Location: Marriott Marquis Hotel

Session Chair: To Be Announced

2:00 PM

Preparation Conditions and Performance of Nano/Amorphous Hybrid Oxide Coated Titanium Anode for Oxygen Evolution in Electrowinning: Masafumi Yasuno¹; Masatsugu Morimitsu¹; Doshisha University

2:20 PM

Process of Improving the Flotation Using Ultrasonic Bombardment: Rivelto Souza¹; Orimar Reis²; Denise Pereira³; Luís Borges²; Jeísa Rodrigues⁴; ¹UFSJ; ²IFMG-OP; ³QTEC; ⁴UFOP/DEMIM

2:40 PM

Preliminary Analysis of the Application of Sensor Based Sorting on a Limestone Mine in the Region Caçapava do Sul, Brazil: Régis Paranhos¹; Evandro Santos²; Carlos Petter³; Aaron Young³; Moacir Veras³; ¹Unipampa; ²Dagoberto Barcelos SA; ³UFRGS

3:00 PM

The Compact Flowsheet for Ore Comminution and Processing: George Mover¹; Volodymyr Golovan¹; ¹Black Iron Inc.

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Phase, Interface and Crystalline Defects Evolution during SPD

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

Thursday PM Room: Marina F
March 2, 2017 Location: Marriott Marquis Hotel

Session Chairs: Ruslan Valiev, Ufa State Aviation Technical University; Gerhard Wilde, University of Muenster

2:00 PM

Ultrafine Grain Structure and Thermal Stability of Al-Fe Alloys Processed by Severe Plastic Deformation: Amandine Duchaussoy¹; Xavier Sauvage¹; Kaveh Edalati²; Zenji Horita²; Gilles Renou³; Alexis Deschamps³; Frédéric De Geuser³; ¹Normandy University; ²WPI, International Institute for Carbon-Neutral Energy Research; ³Univ. Grenoble Alpes, SIMAP

2:20 PM

Grain Boundary Structure and Diffusivity of Severely Strained Metals and Alloys: Gerhard Wilde¹; ¹University of Muenster

2:40 PM

Insights into Deformation Induced Grain Boundary Migration in Ultrafine-grained Metals: Oliver Renk¹; Pradipta Ghosh¹; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science

3:00 PM

A High Resolution X-ray Diffraction Line Profile Analysis of Mg-Ce and Mg-Nd Alloys after HPT Processing: Hiba Azzeddine¹; Yousf Islem Bourezg²; Zdeneck Matej³; Yi Huang⁴; Djamel Bradat²; Terence G. Langdon⁴; ¹University of M'sila; ²USTHB; ³Max IV Laboratory; ⁴University of Southampton

3:20 PM Break

3:40 PM

Interface Phenomena in SPD-processed Nanomaterials: Ruslan Valiev¹; Maxim Murashkin²; Dmitry Gunderov²; ¹Laboratory for Mechanics of Bulk Nanomaterials, Saint Petersburg State University; ²Ufa State Aviation Technical University

4:00 PM

Outstanding Mechanical Properties of High-Pressure Torsion Processed Multiscale Clad Layer of Twinning Induced Plasticity Steel and Interstitial Free Steel: Hyoung Seop Kim¹; ¹POSTECH

4:20 PM

Bulk Nano Lamellar Materials by Severe Plastic Deformation: Fan Liu¹; Sunkul Goel¹; Yue Wang¹; Ya Ming Zhu¹; Hao Yuan¹; Jing Tao Wang¹; ¹Nanjing University of Science and Technology

4:40 PM

Thermal Stability of Defect Structure and Phase Composition in Ultrafine-grained 316L Stainless Steel Processed by High-pressure Torsion: Moustafa El-Tahawy¹; Jenő Gubicza¹; Yi Huang²; Hyelim Choi³; Heeman Choe³; János Lábár⁴; Terence Langdon²; ¹Eötvös Loránd University; ²University of Southampton; ³Kookmin University; ⁴Centre for Energy Research, Hungarian Academy of Sciences

5:00 PM

Mechanical Properties of Laminated Titanium-Aluminum-Composites Processed by Accumulative Roll Bonding: Christopher Schunk¹; Heinz Werner Höppel¹; Mathias Göken¹; ¹Friedrich-Alexander Universität Erlangen-Nürnberg

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Student Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

Thursday PM Room: Balboa
March 2, 2017 Location: Marriott Marquis Hotel

Session Chairs: Jose-Maria Cabrera, Universidad Politecnica de Catalunya; Yi Huang, University of Southampton

2:00 PM

Microstructural Changes and Mechanical Behavior of AA6061 Al Alloy Severely Deformed at Cryogenic Temperatures: Danielle Magalhães¹; Andrea Kliauga¹; Vitor Sordi¹; Maurizio Ferrante¹; ¹Federal University of São Carlos

2:20 PM

Examining the Microhardness Evolution and Thermal Stability of an Al-Mg-Sc Alloy Processed by High-pressure Torsion at a High Temperature: Pedro Henrique Pereira¹; Yi Huang¹; Terence Langdon¹; ¹Materials Research Group, Faculty of Engineering and the Environment, University of Southampton

2:40 PM

Deformation-induced Formation of Supersaturated Solid Solutions in the Cu-Ag System: *Karoline Kormout*¹; Pradipta Ghosh¹; Verena Maier-Kiener²; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; ²Department Physical Metallurgy and Materials Testing

3:00 PM

Nanomechanical Behavior of Precipitation-hardened Nanocrystalline High-entropy Alloy: *Dong-Hyun Lee*¹; Moo-Young Seok¹; Zhaoping Lu²; Jin-Yoo Suh³; Upadrasta Ramamurty⁴; Megumi Kawasaki¹; Terence Langdon⁵; Jae-il Jang¹; ¹Hanyang University; ²University of Science and Technology Beijing; ³Korea Institute of Science and Technology; ⁴Indian Institute of Science; ⁵University of Southern California

3:20 PM

Defect Structure and Hardness in Ultrafine-grained Ni-Mo Alloys Processed by High Pressure Torsion: *Garima Kapoor*¹; Yi Huang²; Terence Langdon²; V. Sarma³; Jenő Gubicza¹; ¹Eotvos Lorand University; ²University of Southampton, Southampton; ³Indian Institute of Technology Madras

3:40 PM Break

4:00 PM

Wear Properties of Various Bulk Hybrid Materials Processed by High-pressure Torsion: *Jae-Kyung Han*¹; Han-Joo Lee¹; Daekuen Han¹; Byungmin Ahn²; Megumi Kawasaki¹; Terence Langdon³; ¹Hanyang University; ²Ajau University; ³University of Southern California

4:40 PM

Fatigue Behavior of Friction Stir Processed Ultrafine Grained 5024 Al Alloy: *Shivakant Shukla*¹; Mageshwari Komarasamy¹; Rajiv Mishra¹; ¹University of North Texas

4:20 PM

Creep Deformation in Bulk Metallic Glasses: A Review: *Kamia Smith*¹; Michael Kassner¹; ¹University of Southern California

5:00 PM

Shock Compression Behavior of Ti-Based Monolithic Bulk Metallic Glass and its Composite: Rene Diaz¹; Manny Gonzales¹; Greg Kennedy¹; David Scripka¹; Ali Khosravani¹; Surya Kalidindi¹; Douglas Hofmann²; Naresh Thadhani¹; ¹Georgia Institute of Technology; ²NASA Jet Propulsion Laboratory

Solar Cell Silicon — Silicon Photovoltaics

Sponsored by: TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC

Thursday PM
March 2, 2017

Room: 19
Location: San Diego Convention Ctr

Session Chair: York Smith, University of Utah

2:00 PM

Electrodynamic Eddy Current Separation of End-of-Life PV Materials: *York Smith*¹; James Nagel¹; Raj Rajamani¹; ¹University of Utah

2:20 PM

Investigation on Quartz Crucibles for Monocrystalline Silicon Ingots for Solar Cells: Marisa Di Sabatino¹; *John Bones*²; ¹NTNU; ²SINTEF, Norway

2:40 PM

Influence of Oxygen Content on the Wettability of Silicon on Graphite: Zineb Benouahmane¹; *Lifeng Zhang*¹; Yaqiong Li¹; ¹University of Science and Technology Beijing

3:00 PM

Particle Separation in Silicon Ingot Casting Using AC Magnetic Field: *Valdis Bojarevics*¹; Georgi Djambazov¹; Koulis Pericleous¹; ¹University of Greenwich

Solid State Precipitation — Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Seth Imhoff, Los Alamos National Laboratory; Robert Hackenberg, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Thursday PM
March 2, 2017

Room: 25A
Location: San Diego Convention Ctr

Session Chair: Seth Imhoff, Los Alamos National Laboratory

2:00 PM Invited

Atomic Theory of Spinodal Decomposition: *Maylise Nastar*¹; ¹CEA

2:30 PM

Spinodal Decomposition and Ordering Transformation in U6Nb Alloy: *Luke Hsiung*¹; ¹Lawrence Livermore National Laboratory

2:50 PM

Atom Probe Characterization of Phase Separation during Age Hardening of a U-6wt.%Nb Alloy: *Clarissa Yablinsky*¹; Seth Imhoff¹; Yaqiao Wu²; Amy Clarke³; Robert Hackenberg¹; ¹Los Alamos National Laboratory; ²Center for Advanced Energy Studies / Boise State; ³Colorado School of Mines

3:10 PM

Understanding the Decomposition Process of Immiscible Fe-Cu-Ag Alloy: *B. Hornbuckle*¹; Anthony Roberts¹; Tom Luckenbaugh¹; Kris Darling¹; ¹U.S. Army Research Laboratory

3:30 PM Break

3:50 PM Invited

Hydride Precipitates in Zirconium Alloys: Evolution of Dissolution and Precipitation Temperatures during Thermal Cycling Correlated to Microstructure Features: *Egle Conforto*¹; Stephane Cohendoz¹; Patrick Girault¹; Cyril Berziou¹; Xavier Feaugas¹; ¹University of La Rochelle

4:20 PM

Effect of Metalloid Addition on Anomalous Primary Crystallization of Al-RE Metallic Glasses: *Mustafacan Kutsal*¹; Burcu Cam¹; Eren Kalay¹; ¹METU

4:40 PM

Formation of Complex Intermetallic Phases from Supersaturated Co Solid Solution in a Co-3.9Nb Alloy: *Toshiaki Horiuchi*¹; Frank Stein²; Kohei Abe¹; Shunsuke Taniguchi³; ¹Hokkaido University of Science; ²Max-Planck-Institut für Eisenforschung GmbH; ³Nippon Steel & Sumitomo Metal Corporation

2017 Technical Division Student Poster Competition — Extraction and Processing Division (EPD) Graduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPG-1: Additive Manufacturing of Clay Modified with Electric Arc Furnace Steel Dust (EAF Dust): *Edisson Ordoñez*¹; Henry Colorado¹; ¹Universidad de Antioquia

SPG-2: Application of Zr and Ti as Anode Material in Metal-Air Batteries at Elevated Temperatures: *Seyed Amirhossein Saeidi*¹; Emilio Ramirez¹; Daniel Mumm¹; ¹University of California at Irvine

SPG-3: Beneficiation of Ancyilite: *Hao Cui*¹; Corby Anderson¹; ¹Colorado School of Mines

SPG-4: Investigation Phase Transformation Route in Mn-Al Alloys: *Ozgun Acar*¹; Ayse Genç¹; Yunus Kalay¹; Ilkay Kalay²; ¹Middle East Technical University; ²Cankaya University

SPG-5: On the Microstructure of Magnesium Alloy AZ91/SiC Metal Matrix Composites: *Seyedeh Nooshin Mortazavi*¹; ¹Chalmers University of Technology

SPG-6: SiMn Reduction with Comilog Ore: *Trine Larssen*¹; ¹Norwegian University of Science and Technology

SPG-7: Single Phase Cementite Synthesizes by Mechanical Alloying: *Ahmed Al-Joubori*¹; C. Suryanarayana¹; ¹University of Central Florida

SPG-9: Trace Elements Analysis of Ultrahigh-purity Gallium by Direct and Indirect Method: *Kyungjean Min*¹; David Johnson¹; Kevin Trumble¹; ¹Purdue University

2017 Technical Division Student Poster Competition — Extraction and Processing Division (EPD) Undergraduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPU-1: Silicon Carbide (SiC) Adsorption and Carburization onto an Activated Carbon Matrix: *Alaina Mallard*¹; ¹Montana Tech of the University of Montana

SPU-2: Synthesis of Silicates on the Micro-scale: *Alec Affolter*¹; ¹University of Tennessee

2017 Technical Division Student Poster Competition — Functional Materials Division (FMD) Graduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPG-10: Effect of Different Aging Heat Treatments on Microstructural Evolution and Transformation Temperatures in a NiTiHfAl Shape Memory Alloy: *Flávia Gallo*¹; Hunter Henderson; Michael Kesler; Brittani Maskley; Brandon Saraydar; Michele Manuel; ¹Cidade Universitaria

SPG-11: Enhancing Li⁺ Interfacial Charge-transfer by Highly Oxygen-deficient Lithium Titanate Oxide with Conformal Amorphous Carbon for Lithium-ion Batteries: *Ralph Nicolai Nasara*¹; Shih-kang Lin¹; ¹National Cheng Kung University

SPG-12: Evaluation on Reliability of Ag-alloy Wire under Cl-environment: *Yan Wen Tsau*¹; Jui-Nung Wang¹; Fan Yi Ouyang¹; ¹National Tsing Hua University

SPG-13: Interfacial Reactions in Co/In/Cu Joints by Transient Liquid Phase Bonding in Thermoelectric Modules: *Tsu-Ching Yang*¹; Sinn-Wen Chen¹; ¹National Tsing Hua University

SPG-14: Interfacial Reactions in Transient Liquid Phase Bonding of Cu/Ga/Ni and Cu/Ga/Co: *Ji-min Lin*¹; Sinn-wen Chen¹; ¹National Tsing Hua University

SPG-15: The Role of Morphology in the Supercapacitance of Rare Earth Oxides: *Aadithya Jeyaranjan*¹; Tamil Selvan Sakhivel¹; Sudipta Seal¹; ¹University of Central Florida

SPG-16: The Thermal Stability of Copper Nanotwinned Thin Film with Different Interlayers: *Leh-Ping Chang*¹; Hsin-Yuan Chen¹; Fan-Yi Ouyang¹; ¹National Tsing Hua University

SPG-17: Wettability-based Mitigation of Scale Formation: *Leonid Rapoport*¹; Susmita Dash¹; Kripa Varanasi¹; ¹MIT

SPG-18: Why and How the Electromigration Effect Occurs?: *Yu-chen Liu*¹; Shih-kang Lin¹; Shang-Jui Chiu²; Yen-Ting Liu²; Hsin-Yi Lee²; ¹National Cheng Kung University; ²National Synchrotron Radiation Research Center

2017 Technical Division Student Poster Competition — Functional Materials Division (FMD) Undergraduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPU-3: Development of High Gain and Self-Deployable CubeSat Antennas Using Nickel-Titanium Shape Memory Alloys: *Brittani Maskley*¹; Hunter Henderson; Harry Shaw²; Michele Manuel; ¹University of Florida; ²NASA

SPU-4: Discovery of New Ternary Compounds and Scintillators of the A4BX6 Family: *Jesse Johnson*¹; Luis Stand¹; Bryan Chakoumakos²; Mariya Zhuravleva¹; Mary Koschan¹; Chuck Melcher¹; ¹University of Tennessee-Knoxville; ²Department of Energy-Oak Ridge National Lab

SPU-5: Single Crystal Synthesis of Multiferroic Metal-organic Frameworks: Nicholas Combs¹; Quentin Eustace¹; ¹University of Tennessee - Knoxville

SPU-18: Porous-Wall Hollow Glass Microspheres for Security Printing Applications: *Abigail McBride*¹; Forest Thompson¹; George Wicks²; Grant Crawford¹; ¹South Dakota School of Mines and Technology; ²Applied Research Center

2017 Technical Division Student Poster Competition — Light Metals Division (LMD) Graduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPG-19: Application of Computational Thermodynamics & Kinetics to Rare Earth Reduction in Magnesium Alloys: *Kyle Fitzpatrick-Schmidt*¹; Danielle Cote¹; Diran Apelian¹; ¹Worcester Polytechnic Institute

SPG-20: Effect of Strontium and Calcium Concentration on Microstructure and in vitro Degradation Rate: *David Christianson*¹; Hunter Henderson; Alex Wilson-Heid¹; Michele Manuel; ¹University of Florida

SPG-21: Feedstock Powder Analysis for Additive Manufacturing Applications: *Caitlin Walde*¹; Danielle Cote¹; Richard Sisson¹; Victor Champagne²; ¹WPI; ²US Army Research Laboratory

SPG-22: Numerical Investigation on Gas Bubble Behaviors in Aluminum Reduction Cell with Slotted Anode: *Meijia Sun*¹; Baokuan Li¹; Jian-ping Peng¹; ¹Northeastern University

SPG-23: Orientation and Length Scale Effect in Deformation Mechanism in Pure Magnesium: *Ali Khosravani*¹; Surya Kalidindi¹; ¹Georgia Institute of Technology

SPG-24: Thermodynamic & Kinetic Model Application to Strengthening Mechanisms of Aluminum Alloys for Additive Manufacturing: *Derek Tsaknopoulos*¹; Danielle Cote¹; Richard Sisson¹; Victor Champagne¹; ¹Worcester Polytechnic Institute

2017 Technical Division Student Poster Competition — Light Metals Division (LMD) Undergraduate Students

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

SPU-6: Fabrication of Novel Aluminum Welding Fillers Reinforced with NbB₂ Nanoparticles: *Lourdes Cruz*¹; Andres Calle¹; Victoria Nadal¹; ¹University of Puerto Rico at Mayaguez

SPU-7: Influence of Mn on Mechanical Properties in Aluminum Alloy 6082: *Aedan Callaghan*¹; Jasmine Majdpour¹; Lucas Alexander¹; Amir Farkoosh¹; Mihriban Pegkuleryuz¹; ¹Department of Materials Engineering, McGill University

SPU-8: Phase Stability of bcc MgSc Alloys via Cluster Expansion and Monte Carlo Methods: *Adam Shaw*¹; Gregory Pomrehn²; Aurora Pribram-Jones³; Patrick Conway⁴; Michael Ferry⁴; Kevin Laws⁴; Lori Bassman¹; ¹Harvey Mudd College; ²The Boeing Company; ³Lawrence Livermore National Lab; ⁴University of New South Wales

SPU-9: Thermodynamic Assessment and Microstructural Analysis of AA 6082 with Increased Addition of Manganese: *Lucas Alexander*¹; Jasmine Majdpour¹; Aedan Callaghan¹; Amir Farkoosh¹; Mihriban Pegkuleryuz¹; ¹McGill University

2017 Technical Division Student Poster Competition — Materials Processing and Manufacturing Division (MPMD) Graduate Students

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

SPG-25: A Study on the Development of High Efficiency Cooling Channel Fabricated by Explosive Welding Process in the High Pressure Die Casting Mold: *Sang Soo Shin*¹; Chang Yong Choi²; ¹PNU; ²Ohsung Tech

SPG-26: Bulk Metallic Glass Casting: Insights into Critical Cooling Using High-speed IR Monitoring and Fast DSC: *Fabian Haag*¹; Güven Kurtuldu¹; Jörg Löffler¹; ¹ETH Zurich

SPG-27: Design of New Ni-Based Superalloys for Electron Beam Additive Manufacturing Process: *Curtis Frederick*¹; Ryan Dehoff²; Michael Kirka²; Edwin Schwalbach³; Michael Haines¹; Austin Staub³; Suresh Babu¹; ¹University of Tennessee, Knoxville; ²Oak Ridge National Laboratory; ³Air Force Research Laboratory

SPG-28: Dynamic Transformation of Austenite to Ferrite during Rolling above the Ae₃ Temperature: *Samuel Rodrigues*¹; Clodualdo Aranas Jr.¹; John Jonas¹; ¹McGill University

SPG-29: Effect of Beam Oscillation on Electron Beam Welding of Ti-6Al-4V Alloy: *Jyotirmaya Kar*¹; Sanat Kumar Roy¹; Gour Gopal Roy¹; ¹IIT Kharagpur

SPG-30: Ex-situ and In-situ TEM Investigation of Texture Dependent Strain Rate Sensitivity of Bauschinger Effect in Ultrafine-grained Al Films: *Ehsan Izadi*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

SPG-31: Grain Size Effect on the Deformation of Nanograined Metallic Multilayers: *Sixie Huang*¹; Caizhi Zhou¹; ¹Missouri University of Science and Technology

SPG-32: In-situ Observation of Diffusion Behavior and Microstructural Evolution on Interfaces in Al/Cu Bimetal: *Fei Cao*¹; Fenfen Yang²; Huijun Kang²; Zongning Chen²; Tiqiao Xiao³; Tongmin Wang²; ¹Dalian University of Technology; ²Dalian University of Technology; ³Shanghai Institute of Applied Physics, Chinese Academy of Sciences

SPG-33: Iron's Role in the Refinement of Aluminum-silicon by Trace Amounts of Strontium: *Tara Power*¹; Sumanth Shankar¹; Jeffrey Hoyt¹; ¹McMaster University

SPG-34: Mechanical and Microstructural Evaluation of Ultra High Speed FSW of Aluminum Alloys: *Jingyi Zhang*¹; Piyush Upadhyay²; Yuri Hovanski³; David Field¹; ¹Washington State University; ²Pacific Northwest National Laboratory; ³Brigham Young University

SPG-35: Non Equilibrium Thermodynamics of Quench and Partition Steels: *Amit Behera*¹; ¹Northwestern University

SPG-36: Preparation of TiB₂ by Mechanochemical Reaction between Al, B₂O₃ and TiO₂: *Petra Hanusova*¹; ¹Brno University of Technology, Faculty of Mechanical Engineering

SPG-37: Seed Layer Mediated Crystallization of Amorphous Structural Thin Films to Yield Gradient Microstructures: *Rohit Sarkar*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

SPG-38: The Effects of Transition Metal Element Addition on the Temporal Evolution and Microstructural Characteristics of Nickel-based Superalloys: *Rasim Eris*¹; M. Vedat Akdeniz¹; Amdulla O. Mekhrabov¹; ¹Middle East Technical University

2017 Technical Division Student Poster Competition — Materials Processing and Manufacturing Division (MPMD) Undergraduate Students

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

SPU-10: A Cellular Bioactivity of Sol-Gel Derived Borate Glass-Polycaprolactone Electrospun Scaffolds: William Lepry¹; *Sophia Smith*¹; Liliana Liverani²; Aldo Boccaccini²; Showan Nazhat¹; ¹McGill University; ²University of Erlangen-Nuremberg

SPU-11: Development of Bimodal Ferrite Grain Distribution to Enhance the Ductility of Dual Phase 600 (DP 600) Steel: *Jisha Krishnan*¹; Monideepa Mukherjee²; Anish Karmakar¹; Shiv Brat Singh¹; ¹Indian Institute of Technology Kharagpur; ²Tata Steel

SPU-12: Use of Carbon Fiber Laminates for the Manufacture of Leg Prosthetics: *Javier Pascasio Chávez*¹; Benjamín González Vizcarra¹; Miriam Siqueiros Hernández¹; ¹Universidad Autónoma de Baja California

2017 Technical Division Student Poster Competition — Structural Materials Division (SMD) Graduate Students

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

SPG-39: A Novel Approach for Forming Ductile and Strong Cu-to-Cu Interconnection Using Ga-based Pastes: *Che-yu Yeh*¹; Shih-kang Lin¹; ¹National Cheng Kung University

SPG-40: A Preliminary Study on the High Energy Ball Milling and Spark Plasma Sintering of Fe-9Cr Alloy: *Arnab Kundu*¹; ¹University of Idaho

SPG-41: Corrosion Behavior of Alloy 800H in Supercritical CO₂: *Lucas Teeter*¹; Benjamin Adam¹; Jacob Mahaffey²; Mark Anderson²; Julie Tucker¹; ¹Oregon State University; ²University of Wisconsin Madison

SPG-42: Evaluation of Interfacial Layer of Friction Stir Welded Joint of AA6022-T4 and DP600 Sheets: *Tianhao Wang*¹; Harpreet Sidhar¹; Rajiv Mishra¹; Piyush Upadhyay²; Yuri Hovanski²; Glenn Grant²; Blair Carlson³; ¹University of North Texas; ²Pacific Northwest National Lab; ³General Motors

SPG-43: Evaluation on Oxidation Behavior of Nanocrystalline CrN Deposited Zr-4 Alloys at High Temperature: *Cheng-Wei Shen*¹; Fan-Yi Ouyang¹; Kai-Ping Chang¹; ¹National Tsing Hua University

SPG-44: Formation of Large-sized and Ductile CuZr-based Bulk Metallic Glass Composite: Wenli Song¹; Yuan Wu¹; Jie Zhou¹; Di Cao¹; Fei Zhang¹; Qing Du¹; Hui Wang¹; Xiongjun Liu¹; Zhaoping Lu¹; ¹University of Science and Technology Beijing

SPG-45: Frequency, Hold Time and Overload Effects on Crack Growth Rates in Alloy 617 at 800°C in Air: *Dylan Addison*¹; Jamie Kruzic²; ¹Oregon State University; ²University of New South Wales

SPG-46: High Strain Rate Deformation and Work Hardening in Ti-1Al-4V Alloy: *Zachary Kloenne*¹; Gopal Viswanathan¹; Matthew Thomas²; Michael Lorreto³; Hamish Fraser¹; ¹Center for Accelerated Maturation of Materials; ²TIMET; ³University of Birmingham

SPG-47: Medium-Range Correlations and Its Impact on Properties in Al-RE Marginal Glass Forming Alloys: *Mustafacan Kutsal*¹; Eren Kalay¹; ¹Middle East Technical University

SPG-48: Non-destructive 3D Characterization of the Microstructural Evolution of Additively Manufactured Materials: *Tugce Ozturk*¹; David Menasche²; Robert Suter¹; Anthony Rollett¹; ¹Carnegie Mellon University; ²Hamiltonian Group LLC

SPG-49: Optimization of the Diffusion Bonding Process for Al 6063 Alloy: *Sila Atabay*¹; Arcan Dericioglu¹; ¹Middle East Technical University

SPG-50: Nanocrystallization in Cu-Zr-Al-Sm Metallic Glasses: *Fatih Sikan*¹; Ilkay Kalay²; Yunus Eren Kalay¹; ¹Middle East Technical University; ²Cankaya University

SPG-51: The Activity of Pyramidal Slip Systems in a Mg-3Al-1Zn Alloy during High Cycle Fatigue: *Li Tan*¹; Xiyan Zhang¹; Guangjie Huang¹; Qing Liu¹; ¹Chongqing University

SPG-52: The Effect of Plasma Mark on Steel Structural Integrity: *Sujeily Soto*¹; Jeffrey Rossin¹; Michael Kesler¹; Edward George²; Steve Duke²; Michele Manuel¹; ¹University of Florida; ²E&S Consulting, Inc; ³Florida Department of Transportation

SPG-53: TRIP Titanium Alloy Design: *Fan Meng*¹; Jia-Yi Yan²; Wei Xiong³; Gregory Olson¹; ¹Northwestern University; ²KTH Royal Institute of Technology; ³University of Pittsburgh

2017 Technical Division Student Poster Competition — Structural Materials Division (SMD) Undergraduate Students

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

SPU-13: Austenite Stability Dependence of the Mechanical Properties in medium-Mn Steels: *Neil Krichi*¹; Binhan Sun¹; Stephen Yue¹; ¹McGill University

SPU-15: Lifetime Prediction of FeCrAl Alloys through Statistical Modeling and High-Temperature Cycling Testing: *Christina Cox*¹; Sebastien Dryepont¹; Josh Turan¹; ¹Oak Ridge National Laboratory

SPU-16: Optimizing Electron Tomography of Bone and Bone-implant Specimens: *Madelaine Perrin*¹; Xiaoyue Wang²; Kathryn Grandfield²; ¹McMaster University and McGill University; ²McMaster University

SPU-17: Stacking Fault Energies of Complex Alloys Calculated from Special Quasirandom Structures: *Jonas Kaufman*¹; Greg Pomrehn²; Aurora Pribram-Jones³; Michael Ferry⁴; Kevin Laws⁴; Lori Bassman¹; ¹Harvey Mudd College; ²The Boeing Company; ³Lawrence Livermore National Laboratory; ⁴School of Materials Science and Engineering, UNSW Australia

2017 Technical Division Young Professional Poster Competition — Functional Materials Division (FMD)

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

YP-1: Influence of Dissolved Oxygen Content on the Oxidation Behavior of Ni-based Alloys in High Temperature Water Vapor: *Yang Zhen*¹; ¹Xi an Thermal Power Research Institute

YP-2: Isothermal and Non-isothermal Studies of Pt-Rh Thermocouple Failure Caused by Two Phosphorus Diffusion Mechanisms: *Anna Nakano*¹; Jinichiro Nakano¹; James Bennett²; ¹U.S. Department of Energy, National Energy Technology Laboratory/ AECOM; ²U.S. Department of Energy, National Energy Technology Laboratory

2017 Technical Division Young Professional Poster Competition — Light Metals Division (LMD)

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

YP-3: Effect of Hot Extrusion on Mechanical and Corrosion Properties of a MgCaSr Alloy: *Hunter Henderson*¹; Alex Wilson-Heid¹; Michele Manuel¹; ¹University of Florida

YP-4: Increased Shear Deformation through Friction Stir Back Extrusion of Mg AZ31B: Textural Evolution and Its Relationship to Mechanical Properties: *Justin Milner*¹; Fadi Abu-Farha²; ¹NIST; ²Clemson University

2017 Technical Division Young Professional Poster Competition — Materials Processing and Manufacturing Division (MPMD)

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

YP-5 A Study of Brittle Fracture Mechanism of Non-quenched and Tempered N80 Tubing Used in Gas and Oil Well: *Caihong Lu*¹; Chun Feng¹; ¹Tubular Goods Research Institute of China National Petroleum Corporation

YP-6: Commercial-ready Large Scale Manufacturing of Light-weight Aluminum Metal Matrix Composite: *Yuzheng Zhang*¹; Mark Sommer¹; Marco Curreli¹; Andrew Parker¹; Miguel Verduzco¹; William Harrigan¹; Alfred Sommer¹; ¹Gamma Alloys

YP-7: Octo-Strain: A Novel Multiaxial Loading Device for In-situ Stress Measurements through Neutron Diffraction: *Justin Milner*¹; Thomas Gnäupel-Herold¹; ¹NIST

YP-8: The Materials Science behind Ice Cream Making: *Dana Zöllner*¹; ¹TU Dresden

2017 Technical Division Young Professional Poster Competition — Structural Materials Division (SMD)

Sponsored by: TMS Extraction and Processing Division, TMS Functional Materials Division, TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division

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YP-9: Body-centered Phase of Shock Loaded Single Crystal Copper: *Anupam Neogi*¹; Nilanjan Mitra¹; ¹IIT Kharagpur

YP-10: Effect of Neutron Irradiation on Friction Stir Processed ODS Alloys (MA956 and MA754): *Ramprashad Prabhakaran*¹; Yaqiao Wu²; Jatu Burns²; James Cole³; Indrajit Charit⁴; Rajiv Mishra³; KL Murty⁶; TS Byun¹; ¹Pacific Northwest National Laboratory; ²Boise State University; ³Idaho National Laboratory; ⁴University of Idaho; ⁵University of North Texas; ⁶North Carolina State University

YP-11: In Situ Ion Irradiation of Multilayer (TiN, TiAlN) Ceramic Coating for Accident Tolerant Zr-alloy Fuel Claddings: *Jing Hu*¹; Douglas Wolfe²; Arthur Motta²; Meimei Li¹; Mark Kirk¹; ¹Argonne National Laboratory; ²Pennsylvania State University

YP-12: Study of Magneto-optical Characteristics of Cerium Substituted Yttrium Iron Garnet Thin Films on Quartz Substrates: *Mohammad Gharibshahi*¹; ¹Satrap Pars.Co & Islamic Azad University of Ahvaz

8th International Symposium on High Temperature Metallurgical Processing — Poster Session I

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atılım University

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Room: Hall B1
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Session Chair: Weifeng Liu, Central South University

E-1: A Mini-pilot Plant for a Novel Flash Ironmaking Process: *Amr Abdelghany*¹; Yousef Mohassab¹; De Qiu Fan¹; Mohamed Elzohier¹; H.Y. Sohn¹; ¹University of Utah

E-4: Effect of Lance Configurations on Coal Flow and Combustion Characteristics: *Hailong Huo*¹; Zhenfeng Zhou¹; Jingsong Wang¹; Qingguo Xue¹; Yuanyuan Zhang¹; Yinli Liu¹; ¹University of Science and Technology Beijing

E-5: Feasibility of Replacing the Internal Refractory (Iranian Production) and Implementation of Pilot in Almahdi Aluminium Line Production: *Mohsen Amerisiahooei*¹; Borzu Baharvand²; ¹Islamic Azad University; ²Almahdi-hormozal Aluminum Company

E-6: Inclusion Evolution during Ladle Furnace Refining and Deformation during Rolling Process for MRT-2.5: Yanan Jia¹; Liguang Zhu²; Zengxun Liu²; Caijun Zhang²; *Yan Wang*³; ¹University of Science and Technology Beijing; ²North China University of Science and Technology; ³North China University of Science and Technology

E-7: Kinetics and Reduction Behavior of Self-reducing Briquettes Containing Blast Furnace Dust: *Shengli Wu*¹; Feng Chang¹; Jianliang Zhang¹; Hua Lu¹; ¹University of Science and Technology Beijing

E-8: Melting Separation Slag and Metal Phases of High Grade of Vanadium-bearing Titanomagnetite Metallized Pellets: Chao Lv¹; Kun Yang²; Shaojun Bai²; *Shuming Wen*²; ¹Kunming University of Science and Technology; ²Kunming University of Science and Technology

E-12: Study on Vanadium-titanium Gas-based Direct Reduction-grinding and Separation Process: *Jingkun Tang*¹; ¹Beijing Shenwu Environment & Energy Technology Co., Ltd.

E-13: Effect of Silicon on Removal of Phosphorus from High Phosphorus Si-Mn Alloy by CaO-Based Slag: Zhiqiang Zhou¹; *Zizong Zhu*¹; Yuchuan Ding¹; Shengnan Zhou¹; ¹Chongqing University

E-16: Cleanliness Control Technology of Cold Rolled Steel Sheets: *Haibo Li*¹; Peng Yuan¹; Bin Chen¹; Xinhua Wang²; Guosen Zhu³; ¹Shougang Research Institute of Technology; ²University of Science and Technology Beijing; ³Shougang Jingtang Iron and Steel Co., Ltd.

E-18: Thermodynamics Study on Phosphorus Distribution between 2CaO•SiO₂-3CaO•P₂O₅ Solid Solution and Liquid Slag: *Chao Jiang*¹; Ming-Mei Zhu¹; Rui-Rui Zhao¹; Zhang-Guang Gao¹; ¹Chongqing University

E-19: Effect of Super Gravity on the Solidification Structure and C Segregation of High Carbon Steel: *Yuhou Yang*¹; Bo Song¹; Gaoyang Song¹; Zeyun Cai¹; ¹University of Science and Technology Beijing

E-20: Burden Composition and Structure Optimization in Blast Furnace Operation Based on Multi-objective Programming: *Baoxiang Wang*¹; ¹North China University of Science and Technology

E-17: Behaviour of Silicon in Nickel Laterite by Carbothermic Reduction in Vacuum: Lei Shi¹; Tao Qu¹; Dachun Liu¹; Yang Tian¹; Bin Yang¹; Yongnian Dai¹; *Jian Wu*¹; ¹Kunming University of Science and Technology

E-26: Effect of CaO Addition on the Behavior of Vanadium and Phosphorus during Oxidation and Leaching Process: Zhang Tao¹; *Zhou Wang*²; Li Dong-Wei¹; Diao Jiang²; ¹Chongqing University of Education; ²Chongqing University

8th International Symposium on High Temperature Metallurgical Processing — Poster Session II

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Onuralp Yücel, ITU; P. Chris Pistorius, Carnegie Mellon University; Varadarajan Seshadri, Universidade Federal de Minas Gerais; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Ender Keskinilic, Atılım University

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Session Chair: Yuanbo Zhang, Central South University

E-27: Investigation on the Phase Transformation of Vanadium Slag during the Direct Reduction Process: *Wen-Feng Tan*¹; Bing Xie¹; Pan Gu¹; Hong-Yi Li¹; Jiang Diao¹; Wang Zhou¹; ¹Chongqing University

E-28: Effect of Al₂O₃ Content on the Crystallization Behavior of Blast Furnace Slag Using Single Hot Thermocouple Technique: *Qin Yuelin*¹; Yang Yanhua¹; Zhang Qianying¹; Deng Nengyun¹; ¹Chongqing University Of Science and Technology

E-29: Investigation of the Carbothermic Reduction of Chromium-containing Vanadium Extraction Residue: *Pan Gu*¹; Jiang Diao¹; Wen-Feng Tan¹; Bing Xie¹; Wang Zhou¹; Zhen Zhang¹; ¹Chongqing University

E-31: Experimental Study on the Electrical Conductivity of CaO-SiO₂-Al₂O₃-CaF₂-Na₂O-MgO Slag System: *Li Zhao*¹; Yu Wang¹; Shu-chao Wang¹; ¹Chongqing University

E-32: Decarburization of Spent Petrochemical Catalysts via Microwave Oxidation Roasting: *Bingguo Liu*¹; Peng Liu¹; Libo Zhang¹; Haigang Dong²; Jinhui Peng¹; ¹Kunming University of Science and Technology; ²State Key Laboratory of Advanced Technology for Comprehensive Utilization of Platinum Metals

E-33: Removal of Methylene Blue by Copper Ion-modified Eupatorium Adenophorum-based Activated Carbon: Kinetic, Thermodynamics, Isotherm Investigation: *Li Chunyang*¹; Zhang Libo¹; Xia Hongying¹; Cheng Song¹; Shu Jianhua¹; ¹Kunming University of Technology and Science

E-34: Effects of Blowing Conditions on the Dispersion States of Materials Charged into Bottom Blown Oxygen Smelting Furnace: *Dongxing Wang*¹; Yan Liu¹; Zhang Ting'an¹; Xiaolong Li¹; ¹Northeastern University

E-35: Characteristic of Subsurface Hooks in Slabs And Behavior of Inclusions Entrapment at High Speed Continuous Casting: *Peng Yuan*¹; Haibo Li¹; Chenxi Ji¹; Bin Chen¹; ¹Shougang Research Institute of Technology

E-36: Assessment of Crystallization Kinetic Study of Phosphate-enriched Phase in CaO-SiO₂-FeO-P₂O₅-Fe₂O₃ Steelmaking Slags: *Jin-yan Li*¹; Zhang Mei¹; Guo Min¹; ¹University of Science and Technology Beijing

E-37: Research on the Flow Behavior of Molten Slag through Pore: *Yingli Liu*¹; Qingguo Xue¹; Jingsong Wang¹; Guang Wang¹; ¹University of Science and Technology Beijing

E-38: Removal of Cd(II) Ion from Aqueous Solution by Adsorption on Wasted Low Grade Phosphorus-containing Iron Ore: *Xiaoli Yuan*¹; Wentang Xia¹; Juan An¹; Xiaoyan Xiang¹; Xuejiao Zhou¹; Jianguo Yin¹; Wenqiang Yang¹; ¹Chongqing University of Science and Technology

E-39: One-step Extraction of Lead from Spent Lead-acid Battery Paste via Reductive Sulfur-fixing Smelting: Thermodynamic Analysis: *Yun Li*¹; Chaobo Tang¹; Yongming Chen¹; Shenghai Yang¹; Lulu Guo¹; Jing He¹; Motang Tang¹; ¹Central South University

E-40: Influence of Hot Charge on Blast Furnace Performance for Iron Making: *Huiqing Tang*¹; ¹University of Science and Technology Beijing

E-43: Molecular Dynamics Study of the Structural Properties with Varying B₂O₃/SiO₂ Ratios in the System CaO-SiO₂-B₂O₃: *Xiao-Ping Liang*¹; Wei-Tong Du²; Yu Wang¹; ¹Chongqing University; ²Chongqing University

E-44: Influence of Converter Slag on Decomposition Behavior of Limestone during BOF Steelmaking Process: *Hua Lu*¹; Wen-Wen Mao¹; Chen-Xiao Li¹; Hong Li¹; ¹University of Science and Technology Beijing

E-45: Study on the Effect of Liquid Core Reduction on Mechanical Properties of 50Mn2V Hot-rolled Strip: *Ming-feng Ye*¹; Guang-liang Wu¹; Jian-hua Ren¹; ¹Central South University

E-46: Comparison of the Ringing Characteristics between Acid and Alkaline Iron Ore Pellets Powder in Kiln: *Yong-Bin Yang*¹; Xin Min¹; Qian Li¹; Bin Xu¹; Tao Jiang¹; Xiao-liang Liu¹; Yan Zhang¹; ¹Central South University

E-47: Ab-initio Molecular Dynamics Simulation of High Temperature Sulfur Evaporating Behavior in Vacuum: *Fansong Liu*¹; Yuezhen Zhou¹; Dachun Liu¹; Xiumin Chen¹; Chongfang Yang¹; Wei Li¹; ¹Kunming University of Science and Technology

E-48: Precipitation of Arsenic as Scorodite both at Atmospheric and Hydrothermal Conditions: *Zhonglin Ye*¹; ¹Yunnan Copper Smelting & Processing Complex

E-49: An Energy Consumption Theory for Coke Degradation in Blast Furnace: *Qihang Liu*¹; ¹Xi'an University of Architecture and Technology

E-50: Study on the Influence of Materials on Heat Transfer Characteristics of Blast Furnace Cooling Staves: *Fengguang Li*¹; ¹Hubei University of Automotive Technology

E-51: Microwave Assisted Regeneration of Spent Activated Carbon from Paracetamol Wastewater Plant Using Steam: *Song Cheng*¹; ¹Kunming University of Science and Technology

Additive Manufacturing of Metals: Establishing Location-Specific Processing-Microstructure-Property Relationships — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: High Temperature Alloys Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, NIST; Judy Schneider, University of Alabama-Huntsville; Mark Stoudt, National Institute of Standards and Technology; Lee Semiatin, AFRL; Kinga Unocic, Oak Ridge National Laboratory; Joseph Licavoli, Michigan Technological University; Behrang Poorganji, YTC America Inc.

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A-1: A Study of Multiple Interfaces in Stainless Steel 316L Components Fabricated by Laser Powder Injection Deposition: *Baolong Zheng*¹; Nancy Yang²; Joshua Yee²; Thale Smith³; James Haley¹; Yizhang Zhou¹; Enrique Lavernia¹; Julie Schoenung¹; ¹University of California Irvine; ²Sandia National Laboratories; ³University of California Davis

A-2: Additive Manufacturing of Ti6Al4V with GMAW: Correlation between Processing and Homogeneous Microstructural Properties: *Philipp Henckell*¹; ¹Technische Universität Ilmenau

A-4: Aiming for Modeling-assisted Tailored Designs for Additive Manufacturing: Dayalan Gunasegaram¹; Anthony Murphy¹; Sharen Cummins¹; Vincent Lemiale¹; Gary Delaney¹; Vu Nguyen¹; Yuqing Feng¹; Daniel East¹; ¹CSIRO

A-5: Alloy Design for Additive Manufacturing: Preliminary Results for Al-Ce Alloys: *Alex Plotkowski*¹; Niyanth Sridharan¹; Zachary Sims²; Ryan Ott³; Ryan Dehoff²; Sudarsanam Babu¹; Orlando Rios²; ¹University of Tennessee - Knoxville; ²Oak Ridge National Laboratory; ³Ames National Laboratory

A-6: Bonding Features and Microstructural Evolution in Cold Sprayed Metallic Coatings and Bulks: A New Materials Perspective: *Yu Zou*¹; Eric Irissou²; Jean-Gabriel Legoux²; Stephen Yue³; ¹Massachusetts Institute of Technology; ²National Research Council Canada (NRC); ³McGill University

A-7: Build Theme Modifications to Investigate Microstructural Development in Additively Manufactured 17-4PH Stainless Steel Parts: *Yu Sun*¹; Mark Aindow¹; Rainer Hebert¹; ¹University of Connecticut

A-8: Characterization of Carbide Precipitates in Nickel-Base Superalloy MAR-M247 Fabricated through Scanning Laser Epitaxy: *Amrita Basak*¹; Suman Das¹; ¹Georgia Institute of Technology

A-9: Characterization of Dissimilar Joint between Inconel 718 and Alloy Steel by Laser Engineered Net Shaping: *Hoyeol Kim*¹; Zhichao Liu¹; Yingge Zhou¹; Weilong Cong¹; Hong-Chao Zhang¹; ¹Texas Tech University

A-11: Cold Gas Dynamic Spray Deposition for Additive Repair of AA7075 and AA2024 Structures: *Luke Brewer*¹; William Story¹; Sieglind Ngai¹; Florian Vogel¹; Benjamin White¹; James Jordon¹; Gregory Thompson¹; ¹University of Alabama

A-12: Additive Manufacturing of High Performance NdFeB Bonded Permanent Magnets: *M. Parans Paranthaman*¹; Ling Li¹; Orlando Rios¹; Brian Post¹; Vlastimil Kunc¹; Cajetan Nlebedim²; ¹Oak Ridge National Laboratory; ²Ames Laboratory

A-14: Development of Diffusion Mobility Descriptions for Additive Manufactured Ti-6Al-4V: *Greta Lindwall*¹; Kil-Won Moon¹; Yaakov Idell¹; Maureen Williams¹; Fan Zhang¹; Andrew Allen¹; Nikolas Hrabel¹; Lyle Levine¹; Carelyn Campbell¹; ¹National Institute of Standards and Technology

A-15: Direct Metal Writing: Controlling the Rheology through Microstructure: *Wen Chen*¹; Luke Thornley¹; Hannah Coe¹; Eric Duoss¹; Andrew Pascall¹; Joshua Kuntz¹; Christopher Spadaccini¹; ¹Lawrence Livermore National Laboratory

A-16: Effect of Build Orientation on the Microstructure and Mechanical Properties of Selective Laser Melted Ti-6Al-4V Alloys: *Patrick Hartunian*¹; Mohsen Eshraghi¹; ¹California State University, Los Angeles

A-18: Effect of Microstructure on the High-temperature Oxidation Behavior of Inconel 718 Manufactured via Electron Beam Melting: *Alfred Okello*¹; Michael Kirka¹; Ryan Dehoff²; ¹Oak Ridge National Laboratory

A-19: Effect of Print Parameters on Microstructure of EBM Printed Ti-6Al-4V: *Colleen Hilla*¹; Sean Yoder²; Peeyush Nandwana²; Ryan Dehoff²; Kinga Unocic²; ¹University of Pittsburgh; ²Oak Ridge National Laboratory

A-20: Effects of Recycled Powder on Build Integrity in Metal Based Additive Manufacturing: *Katherine Wellmon*¹; Nancy Yang²; Julie Schoenung¹; ¹University of California, Irvine; ²Sandia National Laboratories

A-21: Electron Microscopy Study of Non-metallic Inclusions in Additively Manufactured 17-4PH Stainless Steel Parts: *Yu Sun*¹; Mark Aindow¹; Rainer Hebert¹; ¹University of Connecticut

A-22: Fatigue and Fracture in Additive Manufacturing Metals: Findings from a Recent NIST/ASTM Workshop: *Nikolas Hrabe*¹; Steve Daniewicz²; Nima Shamsaei²; Nicholas Barbosa¹; ¹National Institute of Standards and Technology; ²Mississippi State University

A-23: Finite Element Analysis of Hybrid Additive Manufacturing to Print Location Specific Mechanical Properties by Sequential Laser Shock Peening: *Michael Sealy*¹; Guru Madiredy¹; Chao Li²; Yuebin Guo²; ¹University of Nebraska-Lincoln; ²The University of Alabama

A-24: Grain Growth and Heat Flux Direction during Selective Laser Melting of CoCrMo Alloy: *Zhan Chen*¹; M.A.L. Phan¹; K. Darvish¹; ¹Auckland University of Technology

A-25: High-strength, Corrosion-resistant, Weldable Aluminum Powders for Additive Manufacturing: *Nhon Vo*¹; Amirreza Sanaty-Zadeh¹; Davaadorj Bayansan¹; Evander Rumos¹; David Seidman¹; David Dunand¹; ¹NanoAl LLC

A-27: In Operando Synchrotron X-ray Imaging of Selective Laser Melting: *Chu Lun Alex Leung*¹; Robert Atwood²; Michael Towrie³; Philip Withers¹; Peter Lee¹; ¹University of Manchester; ²Diamond Light Source Ltd; ³Science Technology Facilities Council

A-28: Incorporating Complex Thermal Histories in Grain Microstructure Simulations of Additively Manufactured 316L SS: *Kyle Johnson*¹; Theron Rodgers¹; Joseph Bishop¹; ¹Sandia National Laboratories

A-29: Laser Additive Manufacturing of Nanoparticles Reinforced Aluminum: *Ting Chiang Lin*¹; Jingzhou Zhao¹; Chezheng Cao¹; Xiaochun Li¹; ¹University of California Los Angeles

A-30: Machine Learning Approaches to Optimize Additive Manufacturing Parameters for SLM of Inconel 718: *Branden Kappes*¹; Henry Geerlings¹; Senthamilaravi Moorthy¹; Andrew Petersen¹; Douglas Van Bossuyt¹; Aaron Stebner¹; ¹Colorado School of Mines

A-31: Microstructure vs. Mechanical Properties for Different Al Alloys Deposited by Cold Spray Process: *Reza Rokni*¹; Steve Nutt¹; ¹University of Southern California

A-32: Modeling the Effects of Texture on Process-structure-property Evolution in Additively Manufactured Metals: *Judith Brown*¹; Joseph Bishop¹; Theron Rodgers¹; ¹Sandia National Laboratories

A-33: Phase Field Modeling of Solidification Microstructure during Laser Sintering of Inconel 625: *Supriyo Ghosh*¹; Jonathan Guyer¹; ¹National Institute of Standards and Technology

A-34: Physics Based Modeling of Laser Powder Bed Fusion Process Applied to Inconel 718: *Ranadip Acharya*¹; John Sharon¹; Alexander Staroselsky¹; Tahany El-Wardany¹; Vijay Jagdale¹; Gajawalli Srinivasan¹; William Tredway¹; ¹United Technologies Research Center

A-35: Prediction of the Balling Defect by a Mesoscale Transient Model Combining Heat Transfer and Fluid Flow: *Yi Li*¹; Yousub Lee¹; Ji-Cheng Zhao¹; Wei Zhang¹; ¹The Ohio State University

A-36: Progress toward Predicting Rapidly Solidified Microstructures of Metallic Alloys: *John Roehling*¹; Aurelien Perron¹; Jean-Luc Fattebert¹; Gabe Guss¹; Manyalibo Matthews¹; Patrice Turchi¹; Joseph McKeown¹; ¹Lawrence Livermore National Laboratory

A-37: Role of Grain Orientation and Prior Beta Grain Structures on the Anisotropic Behavior of Additively Manufactured Ti-6Al-4V Components: *Jay Keist*¹; Daudi Waryoba²; *Todd Palmer*¹; ¹Applied Research Laboratory Penn State; ²Penn State DuBois

A-38: Strengthening of 316L Stainless Steel by the Addition of Nanoparticles: *Bandar AlMangour*¹; Dariusz Grzesiak²; Jenn-Ming Yang¹; ¹University of California Los Angeles; ²West Pomeranian University of Technology

A-39: Sub-surface Material Interactions in Laser Polishing Electron Beam Additive Manufactured Ti6Al4V Components: *Yingtao Tian*¹; Wojciech Gora²; Aldara Pan Cabo²; Lakshmi Parimi³; Duncan Hand²; Philip Prangnell¹; ¹The University of Manchester; ²Heriot-Watt University; ³GKN Aerospace

A-40: Sulfuric Acid Corrosion to Simulate Microbial Influenced Corrosion on Stainless Steel 420: *Jacob Miller*¹; Holly Martin¹; ¹Youngstown State University

A-41: Synchrotron X-ray Characterization of Powder-bed Fusion Laser Melt Traces on Solid Nickel-based Super Alloy Plates: *Thien Phan*¹; Lyle Levine¹; Mark Stoudt¹; Jarred Heigel¹; ¹National Institute of Standards and Technology

A-43: Utilization of In Situ Process Monitoring for Determining Consistency in Additive Manufacturing and Flaw Detection: *Jake Raplee*¹; Suresh Babu¹; Michael Kirka²; Ralph Dinwiddie²; Ryan Dehoff²; ¹University of Tennessee Knoxville; ²Oak Ridge National Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas - Austin; Allison Beese, Pennsylvania State University; James Sears, GE Global Research Center; Reginald Hamilton, Pennsylvania State University; Rajiv Mishra, University of North Texas; Edward Herderick, GE Corporate

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A-44: A Partial Solution to Modeling the Anisotropic Material Properties of Fused Deposition Modeling ABS: Part 2 of 2: *Ross Fischer*¹; Keenan Jewkes¹; Scott Kessler¹; ¹Colorado Mesa University

A-45: A Simulation Framework for Quantifying Uncertainty in the Mechanical Performance of Additively Manufactured Parts: *Kai Wing Kelvin Leung*¹; Azadeh Keshtgar¹; Nagaraja Iyyer¹; ¹Technical Data Analysis Inc.

A-46: Composite Powder Consolidation Using Selective Laser Melting: Input Energy/Porosity Morphology/Balling Effect Relation: *Hala Salem*¹; *Hanadi Salem*¹; Moataz Attallah²; ¹The American University in Cairo; ²University of Birmingham

A-47: Current Process Limitations of Synthetic Rock Fabrication Using Additive Manufacturing: *Kevin Hodder*¹; John Nychka¹; Rick Chalaturnyk¹; ¹University of Alberta

A-48: Design and Additive Manufacturing of a Scale Model Heat Exchanger for Geothermal Applications: *Adrian Sabau*¹; James Klett¹; Derek Byrd¹; Keith Carver¹; Frederick List III¹; Yarom Polisky¹; ¹Oak Ridge National Laboratory

A-49: Qualification of Products Manufactured by Additive Manufacturing as per DNVGL-SE-0160: *Harsharn Tathgar*¹; Hanne Hjerpetjonn¹; Sastry Kandukuri¹; ¹DNVGL – Section of Materials Technology

A-50: Evaluation of Graphene Reinforced Aluminum Prepared by Ball Milling and Selective Laser Melting: *Yachao Wang*¹; *Jing Shi*¹; Shiqiang Lu²; ¹University of Cincinnati; ²Nanchang Hangkong University

A-51: Experimental Technique for Extracting Local Mechanical Behavior from AM Components with Spatially Varying Mechanical Properties for Correlation with FEA Modeling: *Denver Seely*¹; David Francis¹; ¹Mississippi State University/Center for Advanced Vehicular Systems

A-53: Feasibility Study of Making α -TiAl Parts with Electron Beam Melting: Pathway towards Additively Manufacturing Complex Engine Components: *Ercan Cakmak*¹; Indrani Sen²; Peeyush Nandwana¹; Thomas Watkins¹; Ryan Dehoff¹; Roger England³; Allen Haynes¹; ¹Oak Ridge National Laboratory; ²India Institute of Technology Kharagpur; ³Cummins Inc.

A-54: In Situ Neutron Diffraction Measurements on Additively Manufactured Stainless Steel: *Bjørn Clausen*¹; Donald Brown¹; John Carpenter¹; Kester Clarke²; Amy Clarke²; John Bernardin¹; Dusan Spornjak¹; James Thompson¹; ¹Los Alamos National Laboratory; ²Colorado School of Mines

A-55: In Situ Nondestructive Evaluation for Achieving Closed Loop Feedback Control of Ultrasonic Additive Manufacturing: *Venkata Karthik Nadimpalli*¹; Li Yang¹; Peter Nagy²; ¹University of Louisville; ²University of Cincinnati

A-56: Microstructure-property Relations of Additively Manufactured 17-4 PH and 316L Steels: *John Smugeresky*¹; Josh Sugar²; David Keicher²; ¹Additive Manufacturing Materials Consultants; ²Sandia National Laboratories

A-57: Microstructure and Mechanical Properties of Ti-6Al-4V Additively Manufactured by Selective Electron Beam Melting: *H. P. Tang*¹; Shenglu Lu¹; Jian Wang²; ¹Northwest Institute for Nonferrous Metal Research; ²Northwest Institute for Nonferrous Metal Research

A-58: Microstructure Evolution in Additively Manufactured Ti-6Al-4V Alloys: *Joseph McKeown*¹; Rupalee Mulay¹; Jeffrey Florando¹; Mukul Kumar¹; ¹Lawrence Livermore National Laboratory

A-59: Microstructure, Mechanical and Electrical Properties of Pure Metallic Microstructures Fabricated Using 3D Localized Electrodeposition: *Majid Minary*¹; ¹University of Texas at Dallas

A-60: Modeling and Testing of ‘Fundamental Primitives’ in Metal Lattices Fabricated via Electron Beam Melting (EBM): *Rachel Collino*¹; Tyler Ray¹; Steven Wehmeyer¹; Matthew Begley¹; ¹University of California, Santa Barbara

A-61: Nanomechanical Characterization of Functionally Graded Al-Fe MMC Processed by Additive Friction Stir Processing: *Paul Allison*¹; Oscar Rivera¹; Zack McClelland²; Jianqing Su³; Nanci Hardwick³; ¹University of Alabama; ²US Army ERDC; ³Aeroprobe Corporation

A-62: Numerical Investigation of Surface Morphology with Different Laser Scanning in Selective Laser Melting: *Yu Che Wu*¹; Weng Sing Hwang¹; Cheng Hung San²; Yang Shan Lin²; Chih Hsiang Chang²; ¹National Cheng Kung University (NCKU); ²Industrial Technology Research Institute (ITRI)

A-64: Physics-based Surrogate Model for Uncertainty Quantification of Single Track Geometry in Selective Laser Melting: *Alexander Wolfer*¹; Umberto Scipioni Bertoli²; Kevin Wheeler³; Dogan Timucin³; Manyalibo Matthews⁴; Saad Khairallah⁴; Andrew Anderson⁴; Rose McCallen⁴; Julie Schoenung²; Jean-Pierre Delplanque¹; ¹University of California, Davis; ²University of California, Irvine; ³NASA Ames Research Center; ⁴Lawrence Livermore National Laboratory

A-65: Plasticity and Damage Modeling Capturing Strain-rate and Stress-state Effects of Solid State AFS Additive Manufactured Aluminum Alloys : *Oscar Rivera*¹; Omar Rodriguez¹; J. Brian Jordan¹; Zackery McClelland²; Jianqing Su³; Nanci Hardwick³; Paul Allison¹; ¹The University of Alabama; ²US Army ERDC; ³Aeroprobe Corporation

A-66: Post-processing Effects on AM Pore Geometry: *Richard Fonda*¹; Amanda Levinson¹; David Rowenhorst¹; ¹Naval Research Laboratory

A-68: Process Parameter Optimization Strategy for Ni-based Superalloy in Electron Beam Melting Additive Manufacturing: As-built Part Quality and Microstructure: *Yousub Lee*¹; Mike Kirka¹; Alfredo Okello¹; Jake Bultman¹; Naren Raghavan²; John Turner¹; Ryan Dehoff¹; ¹Oak Ridge National Laboratory; ²University of Tennessee

A-69: Processing-structure-property Correlation for Fused Deposition Modeling of Graphene-poly(lactic Acid) Composites: *Pranjal Nautiyal*¹; Daniela Montero Zambrano¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International University

A-71: Recyclability Study on a Gamma-TiAl Alloy for use in Electron Beam Melting Additive Manufacturing: *Peeyush Nandwana*¹; Ryan Dehoff¹; William Peter¹; ¹Oak Ridge National Laboratory

A-72: Relating Crack Formation to Process Parameters in MarM-247 Fabricated by Electron Beam Melting: *Christopher Romanoski*¹; *Michael Kirka*²; ¹Vanderbilt University; ²Oak Ridge National Laboratory

A-73: Report on a Large Collaborative Project Focused on Capturing all AM Process and Build Data for Combination with an ICME Ready Software Environment Driving towards Certification: *Will Marsden*¹; *Deborah Mies*¹; ¹Granta

A-74: Stainless 316L Powder Recyclability and Oxygen Pickup as Applicable to Selective Laser Melting (SLM): *Daniel Galicki*¹; Fred List²; ¹University of Tennessee/Oak Ridge National Laboratory; ²Oak Ridge National Laboratory

A-75: Systematic Approach to Quantifying the Anisotropic Elastic Modulus of FDM Materials: *Sven Voigt*¹; James McGuffin-Cawley¹; Jennifer Carter¹; ¹Case Western Reserve University

A-76: The Effect of Laser Energy Density on the Microstructure and Mechanical Properties of Ti-6Al-4V alloys by Selective Laser Melting: *Dang Khoa Do*¹; Peifeng Li¹; ¹Nanyang Technological University

A-77: The Effect of Surface Finish on Performance in Additive Manufacturing: *Joy Gockel*¹; ¹Wright State University

A-79: Understanding the Role of Process Variables on Mechanical Properties: *Wes Everhart*¹; Paul Korinko²; John Bobbitt²; Marissa Reigel²; Michael Morgan²; ¹Honeywell National Security Campus; ²Savannah River National Laboratory

A-80: Vapor Bath Treatment of Fused Filament ABS for Fatigue Life Improvement: *Taylor Tosaya*¹; Michael Maughan¹; ¹University of Idaho

A-82: In-Process Layer-by-layer Surface Characterization of Metals Fabricated using Laser Engineered Net Shaping (LENS): *Andrew Kustas*¹; David Keicher¹; Michael Brumbach¹; Brendan Nation¹; Nicolas Argibay¹; ¹Sandia National Laboratories

Advanced High-Strength Steels — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Wolfgang Bleck, RWTH Aachen; Amy Clarke, Colorado School of Mines; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Monday PM
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Room: Hall B1
Location: San Diego Convention Ctr

F-1: 3D Micromechanical Modeling of Dual Phase Steels Using the Representative Volume Element Method and Response Surface Methodology: Parametric Study: *Tarek Belgasam*¹; Hussein Zbib¹; ¹Washington State University

F-2: Atom Probe Tomography Studies of Complex Oxide Formations in Oxide Dispersion Strengthened Steels: *Dallin Barton*¹; Monica Kapoor²; Florian Vogel¹; B. Chad Hornbuckle³; Kris Darling⁴; Gregory Thompson¹; ¹University of Alabama; ²National Energy Technology Laboratory; ³Army Research Laboratory; ⁴Army Research Laboratory

F-3: Carbide Banding Formation and Prevention in 52100 Bearing Steels: *Ersoy Erisir*¹; Oguz Bilir¹; *Ahmet Gezmisoglu*¹; ¹Kocaeli University

F-4: Cold Deformation Behaviour of Ultrafine-grained Dual Phase Steel Manufactured with Use of a Dynamic Austenite-ferrite Transformation: *Domink Dziedzic*¹; Krzysztof Muszka²; Janusz Majta²; Peter Hodgson³; ¹University of Cambridge; ²AGH University of Science and Technology; ³Deakin University

F-5: Controlling Springback in Dual-Phase Steels: *Milan Agnani*¹; Peter van Liempt²; Jilt Sietsma¹; *Zalao Arechabaleta*¹; ¹Delft University of Technology; ²Tata Steel Research, Development and Technology

F-6: Design of Ultra-high-strength Fe-Cr-Mn-Ni-N-C Stainless Steels with Enhanced Ductilities: *Marco Wendler*¹; Michael Hauser¹; Olena Volkova¹; Javad Mola¹; ¹TU Freiberg

F-7: Effect of Austenite Grain Size on Deformed Microstructures and Tensile Properties of Austenitic Fe-24.5Mn-4Cr-0.45C Alloy: *Sang-In Lee*¹; Hyeon-Seok Lim¹; Byoungchul Hwang¹; ¹Seoul National University of Science and Technology / Department of Materials Science and Engineering

F-8: Effect of Initial Microstructure on the Grain Size of “Warm Deformed” 4140 Steel: *Sammy Tin*¹; ¹Illinois Institute of Technology

F-9: Effect of Plastic Deformation at Elevated Temperatures on the Hardenability of Boron Steels: *Mehmet Özyigit*¹; ¹Eregli Iron & Steel Works, Co

F-10: Effects of Deformation on Hydrogen Solubility and Diffusion in Al-alloyed Fe-Mn Alloys: *Claas Hüter*¹; Siaufung Dang¹; Xie Zhang²; Albert Glensk²; Robert Spatschek¹; ¹Forschungszentrum Jülich; ²MPIE

F-11: Effects of Microstructure on the Strain Rate Sensitivity of Advanced Steels: *Rakan Alturk*¹; Steven Mates²; Fadi Abu-Farha¹; Zeren Xu¹; ¹Clemson University; ²National Institute of Standards and Technology

F-12: Excellent Mechanical Properties Balance of Fine 0.1C-2Si-5Mn Fresh Martensite and Ferrite+Austenite Steels: *Shiro Torizuka*¹; ¹University of Hyogo

F-13: In-situ Synchrotron X-ray Diffraction Study on the Micromechanical Behavior of Medium Manganese Transformation-induced Plasticity Steel at Low Temperature: *Minghe Zhang*¹; Yandong Wang¹; Longfei Li¹; Qingbao Wu¹; Fangmin Guo²; Yang Ren²; ¹University of Science and Technology Beijing; ²Argonne National Laboratory

F-14: Influence of Asymmetrical Cold Rolling on Crystallographic Texture of σ -TRIP Steels: *Ramón Botelho*¹; Eustáquio Baêta¹; Leonardo Araujo²; Luiz Paulo Brandao¹; ¹IME; ²Coppe, UFRJ

F-15: Investigating Deformation Mechanisms in TWIP by Marciniak Multiaxial Testing: *Brian Lin*¹; Adam Creuziger¹; Timothy Foecke¹; ¹National Institute of Standards and Technology

F-16: Mechanical Evaluation of Hypo and Hypereutectic Chromium Carbide Hard Facing Steel: *Yasser Fouad*¹; Bakr Rabeeh²; Hamad Alharbi¹; ¹King Saud University; ²German University in Cairo

F-17: Microstructure-based Modeling of Tensile Properties in High-strength Pipeline Steels: *Byoungchul Hwang*¹; Sang-In Lee¹; Seung-Yong Lee¹; Hwan Gyo Jung²; ¹Seoul National University of Science and Technology; ²POSCO

F-18: Microstructure and Mechanical Properties of GMAW Welds in TWIP Steels: *Alexander Zaddach*¹; Yen-Chih Liao¹; Zhaoqian Liu¹; Carlos Cardenas²; Diego Lozano²; ¹Lincoln Electric; ²Metalsa

F-19: Modeling the Interplay between Transformation and Plasticity in Low-carbon Steels. A Micro-level Constitutive Model / RVE Approach: *Manuel Petersmann*¹; Georges Caillaud²; Thomas Antretter¹; ¹Montanuniversitaet Leoben; ²Mines ParisTech

F-20: Modelling of Hot Deformation Behavior during Ingot Breakdown Process of Medium Carbon Low Alloy Steel Using Hansel-Spittel Approach: *Kanwal Chadha*¹; Davood Shariari¹; Mohammad Jahazi¹; ¹ETS

F-21: Multi-stage Martensitic Phase Transformation in Steel/Copper Nanolaminates: An In Situ X-ray Study: *Kaiyuan Yu*¹; Yadong Ru¹; Yang Ren²; Lishan Cui¹; ¹China University of Petroleum-Beijing; ²APS, Argonne National Laboratory

F-22: Orientation Dependence of Microstructure and Texture Evolution during Tensile Testing of a TWIP Stainless Steel: *Reza Rahimi*¹; Olena Volkova¹; Horst Biermann²; Javad Mola¹; ¹Technical University of Freiberg-Institute of Iron and Steel Technology; ²Technical University of Freiberg-Institute of Materials Engineering

F-23: Review of Bake Hardening Mechanisms of Ultra Fine Grained and Coarse Grained Low Carbon Steel Sheets: *Uma Gupta*¹; Vishnu Sharma¹; Malay Banerjee¹; ¹MNIT Jaipur

F-24: Role of Initial Microstructure in Micro Constituents of Dual Phase Steels: *Ersoy Erisir*¹; Oguz Bilir¹; ¹Kocaeli University

F-26: Tension-Compression Asymmetry and Relationships to the Microstructure in Advanced High Strength Steels: *Jun Hu*¹; Fadi Abu-Farha¹; ¹Clemson University

F-27: Nano-sized Intermetallic Kappa Phase Strengthening in Al-alloyed Steels for Automotive Applications: *Wenwen Song*¹; Wolfgang Bleck¹; ¹RWTH Aachen University

Advanced Materials for Energy Conversion and Storage — Poster Session

Sponsored by: TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee

Program Organizer: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.

Monday PM
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Room: Hall B1
Location: San Diego Convention Ctr

D-1: Perylene Polyimides-based Cathode Materials for High-capacity and Long-cycle Secondary Lithium-ion Batteries: *Michael Rubyraj*¹; Ramalinga Viswanathan Mangalaraja¹; Sambandam Anandan²; ¹University of Concepcion; ²National Institute of Technology

D-2: Tunable Oxygen-deficient Li4Ti5O12 Structure for High-performance Rechargeable Li-ion Batteries: *Ralph Nicolai Nasara*¹; Shih-kang Lin¹; ¹National Cheng Kung University

Advances in Environmental Technologies: Recycling and Sustainability Joint Session — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Pyrometallurgy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Mark Kennedy, Proval Partners SA; Naiyang Ma, ArcelorMittal; Elsa Olivetti, Massachusetts Institute of Technology; Randolph Kirchain, Massachusetts Institute of Technology

Monday PM Room: Hall B1
February 27, 2017 Location: San Diego Convention Ctr

D-4: Chronopotentiometry Applied to the Determination of Copper Transport Properties through a Cation-exchange Membrane: Kayo Barros¹; Jorge Tenório¹; Denise Espinosa¹; Juliana de Jesus¹; ¹University of São Paulo (USP)

D-5: Effect of Flow Rate on Metals Adsorption of Synthetic Solution Using Chelating Resin Dowex XUS43605 in Column Experiments: Isadora Perez¹; Mónica Correa¹; Flávia Silvas¹; Jorge Tenório¹; Denise Espinosa¹; ¹University of São Paulo

D-6: Evaluation of the Silver Recovery from Solid Industrial Wastes in an Electrochemical Reactor: Pedro Ramirez Ortega¹; Victor Reyes Cruz¹; Maria Veloz Rodriguez²; Laura Garcia Hernandez¹; ¹Universidad Tecnológica de Tulancingo; ²Universidad Autónoma del Estado de Hidalgo

D-7: Preparation of Core-shell Fe₃O₄@SiO₂ Nanoparticles from Iron Tailing via Chemical Co-precipitation Method: Chao Lv¹; Shuming Wen¹; Kun Yang¹; Shaojun Bai¹; ¹Kunming University of Science and Technology

D-8: Recycling of Worn Lithium Ion Batteries through a Process of Co-grinding with PVC: Luz Ocampo Carmona¹; Juan Betancur Pulgarin¹; Juan Sanchez Echeverri¹; ¹Universidad Nacional de Colombia

D-9: Chemical Reduction of Fe(III) in Nickel Lateritic Wastewater to Recover Metals by Ion Exchange: Amilton Botelho Junior¹; Monica Jimenez¹; Denise Espinosa¹; Jorge Tenório¹; ¹University of São Paulo

Computational Methods and Experimental Approaches for Uncertainty Quantification and Propagation, Model Validation, and Stochastic Predictions — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Li Ma, NIST; Shawn Coleman, ARL; Jeff Doak, QuesTek Innovations, LLC; Fadi Abdeljawad, Sandia National Laboratory

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Session Chairs: Shawn Coleman, U.S. Army Research Laboratory; Francesca Tavazza, National Institute of Standards and Technology

B-1: Error Reduction in Cross-Sectional Measurements of Materials from Imaged Grayscale Volumes: Trevor Lancon¹; ¹FEI

B-2: Fidelity in Gas Dynamics Simulations: James Kahelin¹; ¹San Diego State University

B-3: Numerical Simulation of Ultrasonic Propagation in Calcium Ferrite Melt: Ruirui Wei¹; ¹Chongqing University

B-4: Ab Initio Scaling Laws for the Formation Energy of Interstitial Defect Clusters in Body-centered-cubic Metals: Mihai-Cosmin Marinica¹; ¹DEN-Service de Recherches de Métallurgie Physique, CEA, Université Paris-Saclay

B-5: Coupled Elasto-plastic Self-consistent and Finite Element Crystal Plasticity Modeling: Applications to Sheet Metal Forming Processes: Milovan Zecevic¹; Marko Knezevic¹; ¹University of New Hampshire

B-6: Finite Element Prediction of Single Particle Cold Spray Impact: Jeremy Schreiber¹; Ivi Smid¹; Timothy Eden¹; Victor Champagne²; ¹Penn State University; ²U.S. Army Research Laboratory

B-7: Numerical Simulation of the Mechanical Behavior of Zr-Nb Alloys over a Wide Range of Strain Rates: Evgeniya Skripnyak¹; Natalia Skripnyak¹; Vladimir Skripnyak¹; ¹National Research Tomsk State University

Computational Thermodynamics and Kinetics — Poster Session

Sponsored by: TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Niaz Abdollahim, University of Rochester; Stephen Foiles, Sandia National Laboratories; James Morris, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University

Monday PM Room: Hall B1
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B-9: A Mathematical Model for the Heat Preservation of Torpedo Ladle: Shiwei Liu¹; ¹Xi'an University of Architecture and Technology

B-11: Control Technique Study of Non-metallic Inclusions in Low Carbon Steel by Rare Earth Final Deoxidization: Peng Bowen¹; ¹Shanghai University

B-12: Developing Iridium-based Alloys as Effective Catalysts for Direct Ethanol Fuel Cells: Lida Mehdizadegan Namin¹; Nathaniel Deskins¹; Koretaka Yuge²; ¹Worcester Polytechnic Institute; ²Kyoto University

B-13: Effect of Cooling Rate on Phase Transformation and Microstructure Evolution in a Large Size Forged Ingot of Medium Carbon Low Alloy Steel: Emna Ben Fredj¹; Hadi Ghasemi Nanesa¹; Davood Shahriari¹; Jean-Benoit Morin²; Mohammad Jahazi¹; ¹ÉTS; ²FINKL STEEL - SOREL

B-14: First-principles Study on Interface Segregation for MoSi₂-Mo₅Si₃ Pseudobinary Alloys: Koretaka Yuge¹; Toshihiro Yamazaki²; Yuichiro Koizumi²; Kyosuke Kishida¹; Haruyuki Inui¹; ¹Department of Materials Science and Engineering, Kyoto University; ²Tohoku University

B-15: Formation and Control of CaS Inclusion in Gear Steel 20MnCr5: Xu Jie¹; Fu Jianxun¹; Wu Yanxin¹; Li Xu¹; ¹Shanghai University

B-16: Kinetics of the α/γ Interface Migration in Fe-Mn and Fe-Ni Alloys: Jianing Zhu¹; Hao Chen¹; Chi Zhang¹; Zhigang Yang¹; Haiwen Luo²; ¹Tsinghua University; ²University of Science&Technology Beijing

B-17: Investigations on the Mechanical Deformation of Amorphous Alloy Nanowires Using Phase-field Modeling and Thermodynamics Avalanche Models: G.P. Zheng¹; ¹Hong Kong Polytechnic University

B-18: Modeling of the Molar Volume of the Al-Co-Ni-W System: Ursula Kattner¹; Eric Lass¹; Peisheng Wang¹; ¹National Institute of Standards and Technology

B-19: Morphological Stability of Rods: Fei Wang¹; Oleg Tschukin¹; Michael Selzer¹; Britta Nestler¹; ¹Karlsruhe Institute of Technology

B-20: Role of the Particle Morphology on the Zener Pinning Effect: A Phase-field Approach: Kunok Chang¹; Junhyun Kwon¹; Chgan-Kyu Rhee¹; ¹Korea Atomic Energy Research Institute

B-22: Studies on the Effect of Solution Heat Treatment on Surface and Subsurface Microstructure in Single Crystal Superalloys: Dimitra Spathara¹; Duncan Putman²; Nils Warnken¹; ¹University of Birmingham; ²Rolls-Royce Plc.

B-23: The Environment Dependent Dynamic Charge Potential for III-V Materials: *Abduljabar Alsayoud¹; Abu Asaduzzaman¹; Keith Runge¹; Pierre Deymier¹; Krishna Muralidharan¹; ¹University of Arizona*

B-24: Thermodynamic Modeling of Al-Fe-Cr Ternary System: *Shusen Wang¹; Zhu Li¹; Zhiwei Qin¹; Shihua Wang¹; Xionggang Lu¹; Chonghe Li¹; ¹Shanghai University*

B-25: Thermodynamically Based Comparisons of GMCE Refrigerant Performance: *Timothy Brown¹; Patrick Shamberger¹; ¹Texas A&M University*

Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, REWAS Organizing Committee, TMS: Energy Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Elsa Olivetti, Massachusetts Institute of Technology; Mingming Zhang, ArcelorMittal Global R&D; Randolph Kirchain, Massachusetts Institute of Technology; Henry Colorado, Universidad de Antioquia

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Room: Hall B1
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D-10: Indium Extraction of Obsolete LCD Screen: *Gabrielle Jimenez¹; Viviane Moraes¹; Jorge Tenório¹; Denise Espinosa¹; ¹USP*

D-11: Alternative Method for Materials Separation from Crystalline Silicon Photovoltaic Modules: *Pedro Forastieri de Almeida Prado¹; Jorge Alberto Soares Tenório¹; Denise Croce Romano Espinosa¹; ¹University of São Paulo*

D-12: Calcium Aluminate Cement Paste Blended with Steel Slag: *John Zapata¹; Alexandra Loaiza¹; Henry Colorado¹; ¹Universidad de Antioquia*

D-13: Structure-Property Relation Of Asphalt Blended With Electric Arc Furnace Dust (EAFD): *Yailuth Loaiza Lopera¹; Henry Colorado Lopera¹; ¹Universidad de Antioquia*

D-14: Preparation Study of Ceramic Materials with Red Mud and Flying Ash as Raw Materials: *Chen Shichao¹; ¹Beijing Shenwu Environment & Energy Technology Co.,Ltd.*

D-15: Research on Optimization of Sintering Mixture with Low-grade Complex Ore: *Yutsuan Ding¹; Zizong Zhu¹; Zhiqiang Zhou¹; Hao Xiong¹; ¹College of Material Science and Engineering, Chongqing University*

D-16: Bioleaching Process for Metal Recovery from Waste Materials: *Solange Utimura¹; Carlos Rosario¹; Jorge Tenório¹; Denise Espinosa¹; ¹University of São Paulo*

D-17: The Characterization of Hydrotalcite-like Compounds Derived from Blast Furnace Slag : Synthesis, Flame Retardancy: *Jian Peng¹; Hongwei Guo¹; Kang Wan¹; Peng Li¹; Bingji Yan¹; Jinyue Wang¹; ¹Soochow University*

D-19: Study on Adsorption Performance of Ammonia by Zeolite Synthesized from Blast Furnace Slag: *Lizheng Tang¹; Hongwei Guo²; Kang Wan²; Peng Li³; Bingji Yan²; Jinyue Wang²; ¹University of Science and Technology of Beijing; ²Soochow University; ³Soochow university*

D-18: Preparing Ferrosilicon Alloy with Copper Slag: *Ruirui Wei¹; ¹Chongqing University*

D-20: Chemical Analysis of Sludge Originating from Industrial Painting Performed in Brazil: *Rita Alvarenga¹; Henrique Santos¹; Beatryz Mendes¹; ¹Universidade Federal de Viçosa*

D-21: Removal of Magnesium from Liquor Produced by Nickel Mining by Crystallization: *Kristine Wanderley¹; Jorge Tenório¹; ¹University of São Paulo (USP)*

Energy Materials 2017: Energy and Environmental Issues in Materials Manufacturing and Processing — Poster Session

Sponsored by: Chinese Society for Metals, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Subodh Das, Phinix, LLC; Zhancheng Guo, University of Science and Technology Beijing; Minfang Han, China University of Mining and Technology, Beijing; Teruhisa Horita, AIST; Elsa Olivetti, Massachusetts Institute of Technology; Xingbo Liu, West Virginia University

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Room: Hall B1
Location: San Diego Convention Ctr

C-1: Preparation of Battery-grade Ferrous Oxalate by Screening of Reaction Conditions: *Keyu Zhang¹; Xiaoyan Yang¹; Jian Wu¹; Yaochun Yao¹; ¹Kunming University of Science and Technology*

C-2: Synthesis and Characterization of Electrodes Made from Banana Peel for Multivalent Batteries: *Tazmin Mumu¹; Ramesh K. Guduru¹; ¹Lamar University*

Energy Materials 2017: Materials for Coal-Based Power — Poster Session

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Sebastien Dreyepont, Oak Ridge National Laboratory

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February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

C-3: Atomic-scale Modeling of Point Defects, Phase Stability, and the Formation Mechanism of Z Phases CrMN (M=V, Nb, Ta): *Daniel Urban¹; Christian Elsaesser¹; ¹Fraunhofer IWM Freiburg*

C-5: Fireside Corrosion Behaviors of Inconel 740 H Superalloy in Various SO₂ Contents: *Jintao Lu¹; ¹Xi'an Thermal Power Research Institute Co., Ltd.*

C-6: High Cycle Fatigue Behavior of HAYNES282 Superalloy: *Ming Yang¹; ¹Dongfang Electric Corporation. Dong fang Turbine Co.LTD*

C-7: Recent Development in the Characteristics of Alloy 625 for A-USC Steam Turbine Castings: *Wenlong Yu¹; Songfeng Liu¹; Yu Wang¹; Lingen Sun¹; ¹Shanghai Turbine Company, Ltd.*

C-8: The Effect of W and Mo Addition on the Microstructure and Mechanical Properties of GY200 Ni-based Alloy: *Zhihua Gong¹; Gang Yang²; ¹Inner Mongolia University of Science & Technology; ²Central Iron and Steel Research Institute*

Energy Materials 2017: Materials for Energy Conversion with Emphasis on SOFC — Poster Session

Sponsored by: Chinese Society for Metals

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Teruhisa Horita, AIST; Minfang Han, China University of Mining and Technology, Beijing

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C-9: Composition Effects on the Characteristics of Glass Sealants for Intermediate Temperature Solid Oxide Fuel Cell Applications: *Sea-Fue Wang*¹; Yung-Fu Hsu¹; Zu-You Liu¹; ¹National Taipei University of Technology

C-10: Effect of Sn on the Microstructure and Mechanical Properties of AM90 Extruded Alloy: *K Song*¹; FS Pan²; LB Wang¹; CH Duan¹; Hua Du¹; Ying Luo¹; J She¹; L Wu¹; ¹Nuclear Power Institute of China; ²Chongqing University

Energy Materials 2017: Materials for Gas Turbines — Poster Session

Sponsored by: Chinese Society for Metals

Program Organizers: Jeffrey Fergus, Auburn University; Ji Zhang, China Iron and Steel Research Institute Group

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February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

Session Chair: Jeffrey Fergus, Auburn University

C-11: Effect of Thermal Debinding and Sintering Conditions on Mechanical Properties of Silica-based Ceramic Cores: *Jeong-gu Yeo*¹; JeongSoo Park¹; Young-Hwan Kim¹; ¹Korea Institute of Energy Research

C-12: Microstructures and Deposition Mechanisms of Thermal Barrier Coatings Produced by PS-PVD: *Xiaohu Yuan*¹; ¹DongFang Turbine Co., Ltd., DongFang Electric Corporation

C-13: Mullitization of Fused Silica on Silica-based Ceramic Cores by Colloidal Alumina Infiltration: *Jeong-gu Yeo*¹; JeongSoo Park¹; Young-Hwan Kim¹; ¹Korea Institute of Energy Research

C-14: Solidification Behavior and Microstructure of Inconel 625 Superalloy under Electromagnetic Field: Tao Wang¹; Fei Wang¹; *Engang Wang*¹; ¹Northeastern University, China

C-15: Study on the Undercoolability and Single Crystal Castability of Nickel-Based Superalloys: *Wang Haiwei*¹; Ma De-Xin¹; Yang Gong-xian¹; Gong Xiu-fang¹; Zhang Qiong-yuan¹; ¹Dongfang Turbine Co., Ltd.

C-16: Temperature Dependence of the Fracture Behavior of X-750 Alloy and Effect of Heat Treatment: *Christopher Marsh*¹; Djamel Kaoumi²; ¹University of South Carolina; ²North Carolina State University

Energy Materials 2017: Materials for Nuclear Energy — Poster Session

Sponsored by: Chinese Society for Metals

Program Organizers: Raul Rebak, GE Global Research; Zhengdong Liu, China Iron & Steel Research Institute Group; Peter Hosemann, University of California Berkeley; Jian Li, CanmetMATERIALS

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Room: Hall B1
Location: San Diego Convention Ctr

Session Chair: Raul Rebak, GE Global Research

C-17: Effect of Heat Treatments on the Microstructure and Mechanical Properties of Zr-1Nb-1Sn-0.1Fe Alloy used in the Nuclear Industry: Dielle Costa¹; Daniele Baeta¹; Monica Rezende¹; *Neil Medeiros*¹; ¹UFF

C-18: Effects of Irradiation on Thermal Conductivity of Nickel Alloys: Mandeep Singh¹; *Linu MalakkalP*; Aseem Chauhan²; Jerzy Szpunar²; Michael P Bradely²; M Chicoine²; ¹PEC University of Technology; ²University of Saskatchewan; ³University of Montreal

C-19: Reduced Deuterium Retention in Simultaneously Damaged and Annealed Tungsten: *Michael Simmonds*¹; Yongqiang Wang²; Russell Doerner¹; Joseph Barton¹; Matthew Baldwin¹; George Tynan¹; ¹Center for Energy Research at UCSD; ²Los Alamos National Laboratory

C-20: Studies of the Differential Thermal Analysis and Microstructural Characterization of Gd-containing Stainless Steel: *Wu Zhaoyu*¹; Xiao Xueshan²; ¹Panzhuhua University; ²Shanghai University

Energy Materials 2017: Materials in Clean Power — Poster Session

Sponsored by: Chinese Society for Metals, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Sebastien Dreyepont, Oak Ridge National Laboratory; Zhengdong Liu, China Iron & Steel Research Institute Group; Jeffrey Fergus, Auburn University; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Ji Zhang, China Iron and Steel Research Institute Group

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Room: Hall B1
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C-21: Novel Hydrogen Storage Reaction Pathway of LiBH₄+MgH₂ Mixtures Enabled by Ball Milling and Aerosol Spraying: *Zhao Ding*¹; Leon L. Shaw¹; Jie Li¹; ¹Illinois Institute of Technology

C-22: Pyrolysis of Different Wood Species Investigated by TGA-GC-MS: *Ekkehard Post*¹; ¹NETZSCH Geraetebau GmbH

Energy Technologies — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Lei Zhang, University of Alaska Fairbanks; Jaroslav Drellich, Michigan Technological University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Laboratory; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University; Ziqi Sun, Queensland University of Technology; Tao Wang, Nucor Steel; John Howarter, Purdue University; Fiseha Tesfaye, Abo Akademi University

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

D-22: AC Analysis of Impedancemetric, Electrochemical NO_x Sensors for Emission Control: *Andrew Marshall*¹; Ling Cui²; Joe Fitzpatrick²; Brett Henderson²; Robert Novak³; Jaco Visser³; Victor Wang²; Leta Woo²; Jud Ready¹; ¹Georgia Institute of Technology; ²CoorsTek Sensors; ³Ford Motor Company

D-23: Effect of Granularity on Pretreatment of Coke with Microwave Irradiation: *Qing-hai Pang*¹; Zhi-jun He¹; ¹University of Science and Technology Liaoning

D-24: Effect of Microwave and Ultrasonic Coupling Treatment on Granularity and Microstructure of Pulverized Coal: Zhi-jun He¹; *Qing-hai Pang*¹; ¹University of Science and Technology Liaoning

D-25: Influence of Sodium on Coke Microstructure in Different Reaction Atmosphere: Zhijun He¹; *Wenlong Zhan*¹; Junhong Zhang¹; Qinghai Pang¹; Sen Zhang¹; Chen Tian¹; ¹University of Science and Technology Liaoning

D-26: The Energy Efficiency Studies Of Aluminium Electrolysis Cells: *Eda Ergun Songul*¹; Ismail Duman²; ¹Istanbul University; ²Istanbul Technical University

Friction Stir Welding and Processing IX — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovansk, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, University of Wisconsin-Green Bay

Monday PM
February 27, 2017

Room: Hall B1
Location: San Diego Convention Ctr

Session Chair: Yuri Hovanski, Brigham Young University

A-84: Effect of Morphological Characteristics of Intermetallic Compounds on Mechanical and Metallurgical Properties of Aluminium A6061- 304 Steel Joint: *Jhonathan Alfonso Salazar*¹; Edward A Torres Lopez¹; Henry A Colorado¹; ¹University of Antioquia

A-86: Effect of Tool Shoulder Feature on Heat Generation and Material Flow of Friction Stir Welded Al-Mg-Si Alloy: *Krishna Mugada*¹; Adepur Kumar¹; ¹NIT Warangal

A-87: Fabrication and Characterization of Al/Al₂O₃-SiC Hybrid Surface Nano Composite by Friction Stir Process: *Parumandla Naresh*¹; Adepur Kumar¹; ¹National Institute of Technology

A-88: Fatigue-Strength Increase by Friction Stir Processing between Different Strength Grades of Butt-Welded High-Tensile Steels: *Hajime Yamamoto*¹; Kazuhiro Ito¹; Makoto Takahashi¹; Kazuyuki Kohama¹; Hidetoshi Fujii¹; ¹Joining and Welding Research Institute, Osaka University

A-89: Friction Stir Welding of Dissimilar Metals: *Xiangbin Wang*¹; Yi Pan¹; Diana Lados¹; ¹Worcester Polytechnic Institute, Integrative Materials Design Center

A-90: Effect of Heat Treatment on Friction-stir-processed Nanodispersed AA7075 and 2024 Al Alloys: Iman El-Mahallawi¹; Mohamed Ahmed²; Amir Mahdy³; Abdelrahman Abdelmotagaly⁴; Wael Hoziefah⁵; *Mohamed Refat*⁶; ¹Cairo University; ²Suez and Sinai Metallurgical and Materials Research Center of Scientific Excellence (SSMMR-CSE); ³Al-Azhar University; ⁴Centre for Advanced Materials; ⁵Al-Azhar University; ⁶The British University in Egypt

A-91: Circumferential Tool Path Control for Friction Stir Spot Welding of Thin Al/Fe Dissimilar Metal Joint: *JinYoung Yoon*¹; Cheolhee Kim²; Sehun Rhee¹; ¹Hanyang University; ²KITECH

A-92: Numerical Analysis of FSW Employing Discrete Element Method: *Kenta Mitsufoji*¹; Masahito Nambu¹; Fumikazu Miyasaka¹; ¹Osaka University

GAT-2017 (Gamma Alloys Technology - 2017) — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Young-Won Kim, Gamteck LLC; Wilfried Smarsly, MTU Aero Engines AG; Junpin Lin, University of Science and Technology Beijing; Pierre Sallot, Safran Tech; Paul Withey, Rolls-Royce; Al Sommer, Del West Engineering, Inc; Rui Yang, Institute of Metal Research CAS; Florian Pycszak, Helmholtz-Zentrum-Geesthacht; Dennis Dimiduk, BlueQuartz Software, LLC

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Session Chairs: Lin Song, Northwestern Polytechnical University; Todor Stoyanov, ACCESS; Jieren Yang, Northwestern Polytechnical University

F-29: Effect of Crack Location, Size and Shape on the Mechanical Behavior of TC4/TiAl Welded Joints: *Chengli Dong*¹; ¹AECC/BIAM

F-30: Flow Stress Behavior of Ti-45Al-12Nb Alloy with Ultrafine Grains during Hot Compression Deformation: *Hua Chen*¹; Xue Bo Gong¹; ¹Changchun University of Technology

F-31: Influence of Hot Processing Parameters on Dynamic Recrystallization Behavior of Ti-47Al-2Nb-2Cr Alloy: *Lianxi Hu*¹; Zhipeng Wan¹; Yu Sun¹; ¹Harbin Institute of Technology

F-32: Study on the Lamellar Boundary Orientation of Ti-46Al-8Nb Alloy with Various Growth Rate: *Jongmoon Park*¹; Ho Seung Jang¹; Seongwoong Kim²; Seungeon Kim²; Younghwan Hong³; Myunghoon Oh¹; ¹Kumoh National Institute of Technology; ²Korea Institute of Materials Science; ³Suwon Science College

F-33: Vacuum Brazing of Ti-48Al-2Cr-2Nb: *Yusheng Cai*¹; Renci Liu¹; Dong Liu¹; Yuyou Cui¹; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

F-34: Joining Process of Gamma-TiAl and Structural Steel with Insert Metals by Friction Welding: *Myunghoon Oh*¹; Jongmoon Park¹; Kiyoun Kim²; Kyoungkyun Kim²; Ho Seung Jang¹; Younghwan Hong³; ¹Kumoh National Institute of Technology; ²Asan Friction Welding Co., Ltd; ³Suwon Science College

F-35: Microstructure and Mechanical Properties of Powder Metallurgy Ti-22Al-25Nb Alloy Fabricated by Hot-pressing Sintering: *Yu Sun*¹; Heng Zhang¹; Siqiu Wang¹; Lianxi Hu¹; ¹Harbin Institute of Technology

F-37: Microstructural Evolution and Evaluation of Mechanical Behaviors of the Cast Ti-Al-Mo-Nb-(B, Mn) Alloys: *Kwang Soo Choi*¹; Joon Sik Park¹; S. Yi²; Fan Zhang³; Y. B. Song⁴; ¹Hanbat National University; ²Kyungpook National University; ³CompuTerm, LCC; ⁴Agency for Defense System

F-40: TiAl-based Intermetallic Alloy with Addition of Zirconium: *Sangwoo Kim*¹; Hyouk-Chon Kwon¹; Hyo-soo Lee¹; ¹Korea Institute of Industrial Technology

F-42: Interfacial Reaction between TiAl Alloy and Ca(Y)-doped BaZrO₃ Crucible: *Hao Zhang*¹; Mingyang Li¹; Baotong Li¹; Guangyao Chen¹; Ziwei Qin¹; Xiongguang Lu¹; Chonghe Li¹; ¹Shanghai University

F-43: Atom Probe Investigation of the Partitioning of Impurities in TiAl Alloy: *Gong Zheng*¹; Zhixiang Qi¹; Yingbo Peng¹; Guang Chen¹; ¹Nanjing University of Science and Technology

F-45: Fine Structure of Ordinary Dislocation Dipoles and their Evolution in Deformed Gamma-TiAl via Atomistic Simulations: Yan He¹; Zhao Liu¹; *Hao Wang*¹; Dongsheng Xu¹; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

F-46: Hot Working Behavior and Microstructural Evolution of As-cast Ti-42Al-5.5Mn Alloy: *Hao Xu*¹; Bo Chen¹; Yingche Ma¹; Lei Shu¹; Kui Liu¹; ¹Institute of Metal Research

F-48: Gamma Phase Nucleation from Stacking Fault in TiAl Alloys: *Chunyu Teng*¹; Yonghong Li¹; Zhanyong Ren¹; Dongsheng Xu²; Rui Yang²; ¹China Aero-Polytechnology Establishment; ²Institute of Metal Research, Chinese Academy of Sciences

F-51: Characterization of Thermal Deformation Behavior of a Novel Ti-47Al-Cr-2Mn-0.5Fe-0.05Y Alloy: *Xiaopeng Wang*¹; Fantao Kong¹; Qin Sun¹; Yu Zhang¹; Shouzhen Cao¹; Yuyong Chen¹; ¹Harbin Institute of Technology

F-52: Microstructure and Mechanical Properties of High Nb Containing TiAl Alloy Sheets: *Fantao Kong*¹; ¹Harbin Institute of Technology

F-55: Effect of Al Content on the Microstructure and Tensile Properties of Cast Ti-xAl-15Nb-1Mo Alloy: *Liangliang Liu*¹; Dong Liu¹; Yuyou Cui¹; Rui Yang¹; ¹The Institute of Metal Research (IMR), Chinese Academy of Sciences (CAS)

Job Candidate Poster Session — Job Candidate Poster Session

Program Organizers: Ebrahim Asadi, University of Memphis; Michael Tonks, Pennsylvania State University; E-Wen Huang, National Chiao Tung University

Monday PM Room: Hall B1
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JOB-1: About Me, Yi-Hung Chen: E-Wen Huang¹; *Yi-Hung Chen*¹; ¹National Chiao Tung University

JOB-2: Computational Researcher Specialized in Phase Formation Theory and Characterization of Multi-component Alloys: *Changning Niu*¹; ¹Ohio State University

JOB-3: Experimental Material Scientist with Microscopy and Diffraction Tools: *Raghavendra K G*¹; ¹Indira Gandhi Centre for Atomic Research, Homi Bhabha National Institute

JOB-4: Exploration of Structure Property Relationships as Seen by a Beyond Her Years Millennial: *Christina Cox*¹; ¹Oak Ridge National Laboratory

JOB-5: Future Reliability Engineer of Lead-Free System: *Cong Zhao*¹; ¹Auburn University

JOB-6: Looking for a Faculty Position in Material Modeling: *Shengfeng Yang*¹; ¹University of California San Diego

JOB-7: Looking for a Post-doctoral Position in Computational Shock-physics: *Anupam Neogi*¹; ¹IIT Kharagpur

JOB-9: Microstructural Evolution and Mechanical Response of Materials by Design and Modeling: *Aniket Dutt*¹; ¹University of North Texas

JOB-10: My Aspirations, My Background, My World: *Alec Affolter*¹; ¹University of Tennessee

JOB-11: My Background and Ability: *Tsung-Ruei Sui*¹; ¹National Chiao Tung University

JOB-12: Silicon Purification and Growth from Si-based Alloy: Lifeng Zhang¹; *Yaqiong Li*¹; ¹University of Science and Technology Beijing

JOB-13: Solidification Microstructures in Nickel Alloy 718 and Other Materials Research: *Thomas Ivanoff*¹; ¹University of Texas at Austin

Materials and Fuels for the Current and Advanced Nuclear Reactors VI — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

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G-1: Effects of Added Molybdenum on Corrosion of 316L Stainless Steel: *Tahsin Rahman*¹; J. E. Indacochea¹; W. L. Ebert²; ¹University of Illinois at Chicago; ²Argonne National Laboratory

G-2: Fabrication and Microstructures of Burnable Absorber-cored Oxide Pellets for Advanced Nuclear Fuel: *Qusai Mistarishi*¹; Yong Kim¹; Ho Ryu¹; ¹Korea Advanced Institute of Science and Technology

G-3: Diffusion Studies in the Development of an FCCI Barrier for High-Burnup Metallic Nuclear Fuel: *Daniel Eichel*¹; James Vollmer¹; ¹TerraPower, LLC

G-4: Irradiated Materials Characterization Laboratory at Idaho National Laboratory: *Lingfeng He*¹; Brandon Miller¹; Dean Blanton¹; Karen Wright¹; Assel Aitkaliyeva¹; Jian Gan¹; ¹Idaho National Laboratory

G-5: Quantification of the Stress-Stabilization of Tetragonal ZrO₂: Mitra Taheri¹; *Wayne Harlow*¹; ¹Drexel University

G-6: Steam Oxidation Resistance of Silicide and Aluminide-coated Refractory Metals: Woojin Lim¹; Hyun Gil Kim²; *Hojin Ryu*¹; ¹Korea Advanced Institute of Science and Technology; ²Korea Atomic Energy Research Institute

G-7: Advanced Electron Microscopy of Fission Products in Irradiated TRISO Fuel: *Rachel Seibert*¹; Chad Parish²; Kurt Terrani²; Jeff Terry¹; ¹Illinois Institute of Technology; ²Oak Ridge National Laboratory

G-8: Phase Field Modeling of Fission Gas Behavior in Metallic Nuclear Fuel: *San-Qiang Shi*¹; Pengchuang Liu¹; Xin Wang²; Pengcheng Zhang²; ¹The Hong Kong Polytechnic University; ²Institute of Materials

G-9: Asymptotic Expansion Homogenization of Thermal Conductivity and Elasticity of Irradiated Hafnium-Aluminum Composite Performed on Reconstructed and Synthetic Microstructures: *William Harris*¹; Donna Guillen²; ¹North Carolina State University; ²Idaho National Laboratory

G-11: A Composite Waste Form for Electrochemical Processing Wastes: *Xin Chen*¹; J. Ernesto Indacochea¹; William Ebert²; ¹University of Illinois at Chicago; ²Argonne National Laboratory

G-12: A Proposed Mechanism of Corrosion of Nickel by Tellurium in Molten Salt: *Natasha Skowronski*¹; Sam McAlpine¹; ¹MIT

G-14: Fission Gas Release and Swelling Model of Uranium Nitride Based on the Rate Theory: *Jing Liu*¹; Yedong Gao¹; Yang Du¹; Bo Zhang¹; Di Yun¹; ¹Xi'an Jiaotong University

G-16: Simulation of Constituent Redistribution and Fuel Restructuring in MOX Fuel: *Yang Du*¹; ¹Xi'an Jiaotong University

G-17: Thermodynamic Properties of Strontium-Bismuth Alloys for Electrochemical Separation of Strontium: *Nathan Smith*¹; Timothy Lichtenstein¹; Jarrod Gesualdi¹; Hojong Kim¹; ¹Pennsylvania State University

Materials for High Temperature Applications: Next Generation Superalloys and Beyond — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Akane Suzuki, GE Global Research; Martin Heilmair, Karlsruhe Institute of Technology (KIT); Pierre Sallot, Safran Tech; Stephen Coryell, Special Metals Corporation; Joseph Licavoli, NETL - Department of Energy; Govindarajan Muralidharan, Oak Ridge National Laboratory

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F-56: An In-situ Synchrotron X-ray Scattering Study of Microstructural Evolution in a Model Ni-based Alloy: *Govindarajan Muralidharan*¹; Dean Pierce¹; Ross Andrews²; Jan Ilavsky²; Saul Lapidus²; ¹Oak Ridge National Laboratory; ²Argonne National Laboratory

F-57: Long-term Thermal Stability of Nickel-base Superalloys: *Alison Wilson*¹; Mark Hardy²; Howard Stone¹; ¹University of Cambridge; ²Rolls-Royce plc

F-59: Physics-based Creep Model of Ni-based Alloy Welds in High Temperature and Pressure Applications using Crystal Plasticity: *Wen Jiang*¹; Pritam Chakraborty¹; Thomas Lillo¹; ¹Idaho National Laboratory

F-61: Physical Simulation of Skin Formation during Investment Casting of Nozzle Guide Vanes Made of Ni-based Superalloys: *Mehdi Rahimian*¹; Srdjan Milenkovic²; Laura Maestro³; Aitor Eguidazu Ruiz De Azua³; Ichat Sabirov²; ¹BCAST, Brunel University London; ²IMDEA Materials Institute; ³Precicast Bilbao Co.

F-62: Surface Tension and Viscosity of the Ni-based Superalloys LEK94 and CMSX-10 Measured by the Oscillating Drop Method on Board a Parabolic Flight: *Rainer Wunderlich*¹; Georg Löhöfer²; Hans Fecht¹; ¹Ulm University; ²Deutsches Zentrum Luft- und Raumfahrt (DLR)

F-63: Mechanism of Eutectic Growth in Directional Solidification of an Al₂O₃/Y₃Al₅O₁₂ Crystal: Xu Wang¹; Dong Wang¹; Jingyang Wang¹; Langhong Lou¹; Jian Zhang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

Materials Processing Fundamentals — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, University of Massachusetts; Guillaume Lambotte, Boston Electromet

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E-53: Control of Low Melting Point MnO-SiO₂-Al₂O₃ Inclusions in Low Carbon Thin-strip Continuous Casting Steel: *Jing Chen*¹; ¹Shanghai University

E-54: Effect of Modeling Flows on Mixing Time in 40t Ladle with Bottom Gas Blowing Process: *Le Wang*¹; Liu Liu¹; Bingji Yan²; ¹Central Iron and Steel Research; ²Soochow University School of Iron and Steel

E-55: Effect of Temperature, Concentration and Particle Size of the Solid Solution of Potassium-ammonium Arsenojarosita Medium NaOH: J. Eliecer Méndez Reyes¹; Francisco Patiño Cardona²; Julio Cesar Juárez Tapia¹; *Mizraim Uriel Flores Guerrero*³; Iván A. Reyes Domínguez⁴; Martín Reyes Pérez¹; Aislinn Teja Ruiz¹; ¹Universidad Autónoma del Estado de Hidalgo; ²Universidad Politécnica Metropolitana de Hidalgo; ³Universidad Tecnológica de Tulancingo; ⁴Universidad Autónoma de San Luis Potosí

E-56: Effects of Zr on the Microstructure and Mechanical Properties of EH36 Shipbuilding Steel: Dapeng Zhao¹; Xiaodong Zou¹; Cong Wang¹; ¹Northeastern University, China

E-57: Genetic Influence of Mold Corner Structure on the Strand Corner Temperature in Secondary Cooling Zone during Slab Continuous Casting: *Sheng Yu*¹; Dengfu Chen¹; Pei Xu¹; Mujun Long¹; Kui Lv¹; Huamei Duan¹; ¹Chongqing University

E-58: Growth Kinetics on Boriding Process and Mechanical Behaviour of AISI P20 Steel: *Martín Ortiz*¹; Miguel Flores¹; Milton Espinosa²; Oscar Gómez³; Daniel Sánchez¹; ¹Universidad Autónoma del Estado de Hidalgo; ²Instituto Tecnológico y de Estudios Superiores de Monterrey-ITESM Campus Santa Fe; ³Instituto Tecnológico de Tlanepantla-ITTLA

E-60: Numerical Simulation and Experimental Study on Electromagnetic Field and Heat Flow in Electromagnetic Cold Crucible (EMCC): *Hyun-Jae Lee*¹; Hyun-Do Jung¹; Byung-Moon Moon¹; ¹Korea Institute of Industrial Technology

E-61: Recent Progress of Blast Furnace Cooling Stave in China: *Yong Deng*¹; Jian Liang Zhang¹; Ke Xin Jiao¹; Bing Ji Yan¹; ¹University of Science and Technology Beijing

E-62: Separately Copper Recovery from Iron by Using Solvent Extraction Process: *Shun Myung Shin*¹; Dong Ju Shin¹; Sung Ho Joo¹; Chang Hyun Oh¹; ¹Korea Institute of Geoscience & Mineral Resources (KIGAM)

E-64: Study of a Filter-press Electrochemical Reactor for the Treatment of Industrial Waste: *Pedro Ramirez Ortega*¹; Jose Martinez Vazquez²; Marissa Vargas Ramirez²; ¹Universidad Tecnológica de Tulancingo; ²Universidad Autónoma del Estado de Hidalgo

E-65: The Effect of Ti Addition and Aging Treat on Microstructure and Mechanical Properties of a Nb-microalloyed Crack Arrest Steel: *Dan Chen*¹; ¹Harbin Engineering University

E-66: The Interface Characteristics of High-temperature Melt of CaO-Al₂O₃-MgO-SiO₂ System: *Chen Tian*¹; Qing-hai Pang¹; ¹University of Science and Technology Liaoning

Microstructural Processes in Irradiated Materials — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Pacific Northwest National Laboratory; Chu-Chun Fu, Commissariat à l'énergie atomique et aux énergies alternatives (CEA); Djamel Kaoumi, University of South Carolina; Dane Morgan, University of Wisconsin-Madison; Mahmood Mamivand, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University

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Session Chairs: Mahmood Mamivand, University of Wisconsin-Madison; Ryuta Kasada, Kyoto University

G-18: Atom Probe Tomography Investigations of Archival Surveillance Steels from the UCSB ATR-2 Irradiation: *Nathan Almirall*¹; Peter Wells¹; Takuya Yamamoto¹; David Gragg¹; Kirk Fields¹; G. R. Odette¹; Randy Nanstad²; Philip Edmondson²; ¹University of California Santa Barbara; ²Oak Ridge National Laboratory

G-20: Characterization of Nanoscale Intermetallic Precipitates in Highly Neutron Irradiated Reactor Pressure Vessel Steels: *David Sprouster*¹; E Dooryhee¹; S Ghose¹; P Wells²; T Stan²; N Almirall²; G. R. Odette²; L Ecker¹; ¹Brookhaven National Laboratory; ²University of California Santa Barbara

G-21: Development of Standard Protocols for the Analysis of Atom Probe Data of Radiation Damage in Light Water Reactors: *Bertrand Radiguet*¹; Gérald Da Costa¹; John Hyde²; Constantinos Hatzoglou¹; Hannah Weekes²; Paul Styman²; François Vurpillot¹; Cristelle Pareige¹; Auriane Etienne¹; Giovanni Bonny³; Nicolas Castin³; Lorenzo Malerba³; Philippe Pareige¹; ¹GPM UMR CNRS 6634 - Université et INSA de Rouen; ²National Nuclear Laboratory; ³SCK-CEN

G-22: Effect of Helium/dpa Ratio on Microstructure Evolution in Dual Ion Irradiated HT9 Steel: *David Woodley*¹; Elizabeth Getto¹; Zhijie Jiao¹; Kai Sun¹; Gary Was¹; ¹University of Michigan

G-23: Energetic Study of Helium – Nanoparticle Interaction within Nanostructured Ferritic Alloy: *Yingye Gan*¹; Huijuan Zhao¹; David Hoelzer²; Di Yun³; ¹Clemson University; ²Oak Ridge National Laboratory; ³Xi'an Jiao Tong University

G-24: Evolution of Irradiation-induced Precipitates in Reactor Pressure Vessel Steels under High-Dose Irradiation: *Mikhail Sokolov*¹; Michael Miller¹; Randy Nanstad¹; Ken Littrell¹; Lynne Ecker²; David Sprouster²; Enrico Lucon³; ¹Oak Ridge National Laboratory; ²Brookhaven National Laboratory; ³National Institute of Standards and Technology

G-25: On the Effects of Helium-dpa Interactions on Microstructural Evolution in Tempered Martensitic Steels: Analyses of Dual Ion Beam Irradiation Databases: *Takuya Yamamoto*¹; G. Robert Odette¹; Yuan Wu¹; Kiyohiro Yabuuchi²; Sosuke Kondo²; Akihiko Kimura²; ¹University of California Santa Barbara; ²Kyoto University

G-26: In-situ Ion Irradiation Induced Microstructure Evolution in Ferritic/Martensitic Steel T91: *Djamel Kaoumi*¹; Ce Zheng¹; ¹North Carolina State University

G-27: In Situ TEM Cantilever Testing of Irradiated ODS to Determine Grain Boundary Embrittlement and Cohesion: *Kayla Yano*¹; Janelle Wharry²; Xianming Bai³; ¹Boise State University; ²Purdue University; ³Virginia Tech

G-28: Microstructural Evaluation of Ion Irradiated Model Binary Alloys: *Ling Wang*¹; ¹University of Tennessee

G-29: Neutron Irradiation and Post Irradiation Annealing Effects on the Microstructure of HT-UPS Austenitic Stainless Steel: *Chi Xu*¹; Xuan Zhang²; Wei-Ying Chen²; Meimei Li²; Jun-Sang Park²; Jonathan Almer²; Yaqiao Wu³; Yong Yang⁴; ¹Argonne National Laboratory / University of Florida; ²Argonne National Laboratory; ³Idaho National Laboratory / Boise State University; ⁴University of Florida

G-30: Numerical Estimation of Phosphorus Transport for Different Migration Modes in Alpha-iron: *Ken-ichi Ebihara*¹; Tomoaki Suzuki¹; Masatake Yamaguchi¹; ¹Japan Atomic Energy Agency

G-32: The Effect of Pre-implanted Helium on Cavity Nucleation and Swelling Rate in Ion-irradiated T91: *Anthony Monterrosa*¹; Zhijie Jiao¹; Gary Was¹; ¹University of Michigan

G-33: The Evolution of Laves Phase in Ferritic-Martensitic Steel Grade 92 under Thermal Aging and Sodium Exposure: *Wei-Ying Chen*¹; Meimei Li¹; Krishnamurti Natesan¹; ¹Argonne National Laboratory

G-34: TEM Observations on He Bubble Nano Oxide Associations in As-Processed and Annealed Nanostructured Ferritic Alloys: Yuan Wu¹; *Tiberiu Stan*¹; Takuya Yamamoto¹; Jim Ciston²; G. Odette¹; ¹University of California Santa Barbara; ²NCEM at Lawrence Berkeley National Laboratory

G-35: In Situ Studies of Nanopore Shrinkage during Heavy Ion Irradiation of Nanoporous Au: *Jin Li*¹; Cuncai Fan¹; Jie Ding¹; Sichuang Xue¹; Youxing Chen²; Qiang Li¹; Haiyan Wang¹; Xinghang Zhang³; ¹Texas A&M University; ²Los Alamos National Laboratory; ³Purdue University

G-36: Irradiation Effects on Diffusivity of Copper in Ferromagnetic Iron Studied by Atom Probe Tomography: *Takeshi Toyama*¹; Masaki Shimodaira¹; Keiko Tomura¹; Naoki Ebisawa¹; Kazuaki Nagumo¹; Yasuo Shimizu¹; Koji Inoue¹; Yasuyoshi Nagai¹; ¹Tohoku University

G-38: Nickel Ion Irradiation Damage In GH3535 Alloy Weld Metal and the Temperature Effect: *Hefei Huang*¹; Xiaoling Zhou¹; Zhiyong Zhu¹; ¹Shanghai Institute of Applied Physics, Chinese Academy of Sciences

G-39: Radiation-induced Segregation in Proton Irradiated Commercial Fe-Cr-Ni Base Austenitic Alloys: *Miao Song*¹; Chad Parish²; Gary Was¹; ¹University of Michigan; ²Oak Ridge National Laboratory

G-40: Study of Neutron and Ion Irradiation Damage in Aluminum Alloys: *Ziv Ungarish*¹; Benedicte Kapusta²; Pierre Gavoille²; ¹NRCN; ²DEN-Service d'Etudes des Matériaux Irradiés, CEA, Université Paris-Saclay

G-42: Ion Irradiation-induced Structural Damage in Different Multi-component Alloys at Elevated Temperatures: *Tengfei Yang*¹; Songqin Xia²; Yuan Fang³; Yong Zhang²; Congyi Li¹; Yugang Wang³; Steven Zinkle¹; ¹Department of Nuclear Engineering, The University of Tennessee; ²State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing; ³State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University

G-43: Effect of Proton Irradiation on Deformation Mechanisms in Model Alloy Fe–20Cr–25Ni: *Tianyi Chen*¹; Lizhen Tan¹; Kumar Sridharan²; Haixuan Xu³; ¹Oak Ridge National Laboratory; ²University of Wisconsin–Madison; ³The University of Tennessee

G-44: Deformation of He Bubble Superlattice in FCC Cu: *Ian Winter*¹; Daryl Chrzan¹; ¹University of California, Berkeley

G-45: Simulations of Irradiated-enhanced Segregation and Phase Separation in Fe-Cu-Mn Alloys: *Boyan Li*¹; Ben Xu²; Wei Liu²; Chuck Henager³; Shenyang Hu³; ¹Tsinghua University, Pacific Northwest National Laboratory; ²Tsinghua University; ³Pacific Northwest National Laboratory

G-46: A Study on Irradiation Induced Microstructure Dependent Thermal Conductivity Change of Zircaloy using Nanomechanical Raman Spectroscopy: *Hao Wang*¹; Vikas Tomar¹; ¹Purdue University

G-47: Oxide Texture as Cause and Effect in the Corrosion of Zirconium Fuel Cladding - An Atomistic Simulation Study: *Maria Yankova*¹; Christopher Race¹; ¹Materials Performance Centre, University of Manchester

G-48: The Effect of Niobium on the Irradiation Induced Growth Properties of Zr-Nb Binary Alloys Used for Nuclear Applications: *Rebecca Jones*¹; Elisabeth Francis¹; Philipp Frankel¹; Aidan Cole-Baker²; ¹University of Manchester; ²Rolls Royce Plc.

G-49: Ex-situ and In-situ Investigation of Heavy Ion Irradiation Damage in Ti-6Al-4V: *Aida Amroussia*¹; Carl Boehlert¹; Florent Durantel²; Clara Grygiel²; Wolfgang Mittig³; Isabelle Monnet²; Frederique Pellemoine⁴; ¹Michigan State University; ²CIMAP CEA/CNRS/ENSICAEN/UCN; ³National Superconducting Cyclotron Laboratory- Michigan State University; ⁴Facility for Rare Isotope Beams-Michigan State University

G-50: Quantification of Dislocation Densities in Zirconium Hydride by X-ray Line Profile Analysis: Miguel Vicente Alvarez¹; Javier Santisteban¹; Pablo Vizcaino²; Gábor Ribárik³; *Tamas Ungár*³; ¹Centro Atómico Bariloche; ²Centro Atómico Ezeiza, Argentina; ³Eötvös University Budapest

G-51: Microstructural Effects on Helium Plasma-materials Interaction in Tungsten: *Kun Wang*¹; Chad Parish¹; Mark Bannister¹; ¹Oak Ridge National Laboratory, UT-Battelle

G-52: Enhanced Radiation Tolerance and Thermal Fatigue Properties of Nanochannel W Films: *Feng Ren*¹; Wenjing Qin¹; ¹Wuhan University

G-53: Impact of Low Dose ion Irradiation on Raman Spectra and Thermal Conductivity in Beta-SiC: *Vinay Chauhan*¹; M Faisal Riyad¹; Xinpeng Du¹; Changdong Wei¹; Beata Tyburska-Püschel²; Ji-Cheng Zhao¹; Marat Khafizov¹; ¹Ohio State University; ²University of Wisconsin

G-54: Microstructural Response of Si₃N₄ and AlN to Swift Heavy Ion Irradiation: *Arno Janse van Vuuren*¹; Vladimir Skuratov²; Alexey Volkov³; Maxim Zdorovets⁴; ¹Nelson Mandela Metropolitan University; ²Joint Institute for Nuclear Research; ³Nazarbayev University; ⁴National Nuclear Centre

G-56: Temperature and Se Dependence of Latent Track Morphology in TiO₂ and Al₂O₃: *Jacques O'Connell*¹; Vladimir Skuratov²; ¹CHRTEM; ²JINR

G-58: Ion Beam Induced Nanocrystal Formation with High Volume Fraction: *Daryush Ila*¹; ¹Fayetteville State University

G-59: Comparison of Microstructures in Neutron and Ion Irradiated Zr-1.0Nb-0.1Fe Cladding Alloys: *Jing Hu*¹; ¹Argonne National Laboratory

Phase Transformations and Microstructural Evolution — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Gregory Thompson, University of Alabama; Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The University of Tennessee, Knoxville; Deep Choudhuri, University of North Texas; Raju Ramanujan, Nanyang Technological University; Monica Kapoor, National Energy Technology Lab

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F-65: Effects of Microstructural Features on CTOD in Coarse-grained and Inter-critically-heated HAZs of Mn- and Ni-added HSLA Steels: *Seok Gyu Lee*¹; Dong Ho Lee¹; Seok Su Sohn¹; Woo Gyeom Kim²; Kyung-Keun Um²; Sung Hak Lee¹; ¹POSTECH; ²POSCO

F-66: Relationship between Reverse Ferrite Transformation and Recrystallization in Low-carbon Al-containing Steels: *Shih-Che Chen*¹; Yuan-Tsung Wang²; Chun-Te Wu¹; Hung-Wei Yen¹; ¹National Taiwan University; ²China Steel Corporation

F-67: Solidification Microstructures in Ag₃Sn-Cu₃Sn Pseudo-Binary Alloys: *Haibo Yu*¹; Yu Sun¹; S. Pamir Alpay¹; Mark Aindow¹; ¹University of Connecticut

F-68: Morphology of Order-disorder Structures in Rapidly Solidified L1₂ Intermetallics: *Nafisul Haque*¹; ¹University of Leeds

F-69: Phase Transformation Kinetics of Fe₁₆N₂ Based Rare-earth-free Permanent Magnets: *Md Mehedi*¹; Yanfeng Jiang¹; Jian-Ping Wang¹; ¹University of Minnesota

F-70: The Role of Grain Size Distribution in Nanocrystalline Shape Memory Alloys: *Jakub Mikula*¹; Jerry Quek Siu Sin¹; *Shailendra P. Joshi*²; David T. Wu¹; Rajeev Ahluwalia¹; ¹A*Star; ²NUS

F-71: W, Nb, and Cr Effects on High-temperature Tensile Properties in Heat-resistant Austenitic Cast Steels: *Yong Hee Jo*¹; SeungMun Jung¹; Seok Su Sohn¹; Won-Mi Choi¹; Byeong-Joo Lee¹; Yong-Jun Oh²; Gi-Yong Kim³; Seongsik Jang³; Sung Hak Lee¹; ¹Pohang University of Science and Technology; ²Hanbat National University; ³Key Yang Precision

F-72: Controlling of Mechanical Properties on SUS310S Substrate Used at Superconducting Wire: *Seung-gyu Kim*¹; Najung Kim¹; Sung-gi Choi¹; Oh-min Kwon¹; Dongilk Kwon¹; ¹Seoul National University

F-73: Study on the High Temperature Phase Equilibrium Relationship in CaO-SiO₂-10%La₂O₃-Nb₂O₅ System: *Jiyu Qiu*¹; Chengjun Liu¹; Zhaoyun Wang¹; Junjie Shi¹; Lifeng Sun¹; ¹School of Metallurgy, Northeastern University

F-74: Improved Electrochemical Discharge Kinetics of V-based BCC Metal Hydrides via Microstructure Reduction: *Nicholas Weadock*¹; Heng Yang¹; Hongjin Tan²; Brent Fultz¹; ¹California Institute of Technology; ²Liox

F-75: Structure-Property Relations in Doped Ni-Mn-Ga Heusler Alloys for Magnetocaloric Applications: *Michael McLeod*¹; Zafer Turgut²; Bhaskar Majumdar¹; ¹New Mexico Tech; ²Wright Patterson AFB

F-76: In-situ High Energy XRD Study of Optimal Annealing for a Novel Nb/NiTi Nanocomposite: *Fangmin Guo*¹; Shijie Hao¹; Lishan Cui¹; Yang Ren¹; ¹China University of Petroleum (Beijing)

F-77: Relationship of Microstructural Evolution to Magnetic Properties of Alnico Magnets: *Wei Tang*¹; Lin Zhou¹; Andriy Palasyuk¹; Kevin Dennis¹; Jun Cui¹; Matthew Kramer¹; Iver Anderson¹; ¹Ames Lab of DOE

F-78: Microstructure Evolution in Martensitic NiTi Using High Energy Diffraction Microscopy: *Ashley Bucsek*¹; Harshad Paranjape¹; Branden Kappes¹; Darren Dale²; Peter Ko²; Margaret Koker²; Aaron Stebner¹; ¹Colorado School of Mines; ²Cornell High Energy Synchrotron Source

F-79: Phase Equilibria in the Al-Co-Ni Alloy System: *Yang Zhou*¹; Philip Nash¹; ¹Illinois Institute of Technology

F-81: Effect of Composition and Thermal Processing on Transformation Characteristics and Equilibrium Phase Stability in NiTiHf High Temperature Shape Memory Alloys: *Tejas Umale*¹; Bradley Tomes¹; Ibrahim Karaman¹; Anjana Talapatra¹; Raymundo Arroyave¹; Ruben Santamarta²; ¹Texas A&M University; ²Universitat de les Illes Balears, Palma de Mallorca, Spain

F-82: Application of ASTAR/PED Orientation Microscopy Technique in Grain Boundary Character Distribution of Nano-size Pure Zirconium: *Iman Ghamarian*¹; Peyman Samimi¹; Gregory Rohrer¹; Peter Collins¹; ¹Iowa State University

Pioneers in Additive Manufacturing — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: James Foley, Los Alamos National Laboratory; Paul Prichard, Kennametal Inc; Iver Anderson, Iowa State University/ Ames Laboratory; David Bourell, University of Texas

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A-94: 3D Additive Manufacturing of Metals at Micro/Nanoscale Using Localized Electrodeposition: *Majid Minary*¹; ¹University of Texas at Dallas

A-95: Direct Metal Write Additive Manufacturing of Rare-earth Modified Aluminum Alloys Using Electromagnetic Heating Systems: *William Carter*¹; Zachary Sims¹; Orlando Rios¹; Lonnie Love¹; Brian Post¹; Randall Lind¹; Max Neveau¹; ¹Oak Ridge National Laboratory

A-96: FEM Modeling of Steel Additive Manufacturing Using Laser Hot-Wire Process: *Zhenguo Nie*¹; Gang Wang¹; James McGuffin-Cawley²; Badri Narayanan³; Yiming (Kevin) Rong¹; ¹Tsinghua University; ²Case Western Reserve University; ³The Lincoln Electric Company

A-97: Microstructure Evolution and Galling Properties of Hard Facing Coatings Deposited Using Laser Directed Energy Deposition: *Niyanth Sridharan*¹; Brian Jordan²; Ryan Dehoff²; Sudarsanam Babu¹; ¹University of Tennessee Knoxville; ²Oak Ridge National laboratory

A-98: Novel High Temperature Drop on Demand Liquid Metal-jetting for the Production of Complex 2D and 3D objects: *Marco Simonelli*¹; Mark East¹; Nesma Aboulkhair¹; Richard Hague¹; ¹University of Nottingham

Rare Metal Extraction & Processing — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Hojong Kim, The Pennsylvania State University; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Neale Neelameggham, Ind LLC; Takanari Ouchi, Massachusetts Institute of Technology

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Session Chairs: Xiaofei Guan, Harvard University; Hojong Kim, The Pennsylvania State University

F-83: Adsorbents for Selective Recovery of Heavy Rare Earth Elements: *Takeshi Ogata*¹; Hirokazu Narita¹; Mikiya Tanaka¹; ¹National Institute of Advanced Industrial Science and Technology

F-84: Behavior of Sec-octylphenoxy Acetic Acid (CA-12) in Yttrium Recovery from High Concentrated Heavy Rare Earths Mixture: *Corradino Sposato*¹; *Alessandro Blasi*¹; Assunta Romanelli¹; Giacobbe Braccio¹; Massimo Morgana¹; ¹ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

F-85: The Recovery of Bismuth from Bismuthinite Concentrate through Membrane Electrolysis: Lei Jie¹; Yang Jian-guang¹; ¹Central South University

F-89: Selective Recovery of Scandium from Sulfating Roasting Red Mud by Water Leaching: Zhaobo Liu¹; Hongxu Li¹; Zihan Zhao¹; ¹University of Science and Technology Beijing

F-90: Study of a Synergistic Solvent Extracting System to Separate Yttrium and Heavy Rare Earths: A Deep Investigations on System Behavior: Alessandro Blas¹; Corradino Sposato¹; Assunta Romanelli¹; Giacobbe Braccio¹; Massimo Morgana¹; ¹ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

2017 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology — Poster Session

Sponsored by: TMS Functional Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; V. U. Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

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Session Chairs: Jiyoung Kim, University of Texas at Dallas; Nitin Chopra, Univ. of Alabama; Chang-Yong Nam, Brookhaven National Laboratory; Stephen McDonnell, University of Virginia; Vinu Unnikrishnan, University of Alabama

J-1: Adsorption of Fluoride Gases in Aluminum Production Using Nano Technology: Mohsen Amerisiahooei¹; Khirollah Mehrani¹; Mohammad Yousefi¹; Kamibiz Bordbar²; ¹Islamic Azad University; ²Shahid Bahonar University of Kerman

J-2: 12-tungstophosphoric Acid Load on SBA-15 Mesoporous Materials by Ultrasound-assisted Impregnation Method: Li Dong Wei¹; Zhang Tao¹; Yang Qiu Ju²; ¹Chongqing University of Education; ²Chongqing Institute Of Engineering

J-3: Applying Nano Technology to Separation Fluorides Emissions with Oxygen for Aluminum Smelter: Mohsen Amerisiahooei¹; Khirollah Mehrani¹; Mohammad Yousefi¹; Kamibiz Bordbar²; ¹Islamic Azad University; ²Shahid Bahonar University of Kerman

J-4: Directed Self-assembly of Nanoparticles from Immiscible Au-Ni Alloy Thin Films via Laser-induced Thermal Annealing: Sun-Kyu Lee¹; Hye-Jung Lee¹; Yong-Jun Oh¹; ¹Hanbat University

J-5: Electrochemical Corrosion Study in Organic Films Containing Processed Vermiculite and Zinc Oxide Nanometric: Gonçalo Siqueira¹; Hélio Wiebeck²; Paulo Kanayama²; Jose Mauro Oliveira²; Fábio Esper²; ¹University of Sao Paulo; ²University of São Paulo

J-7: Green Synthesis Gold Nanoparticles by the Silybum Marianum Extract: Laura Garcia-Hernandez¹; Pedro Ramirez¹; Mizraim Flores¹; Diana Arenas¹; J.Marlen Lemus¹; Mireya Escorcia¹; ¹Universidad Tecnológica De Tulancingo

J-8: Investigation of Microstructure Evolution in 3-D Memory Devices: Chloe Director¹; ¹Purdue University

J-9: Mechanical Properties of Bio-inspired Nanocomposites: Anthony Shank¹; Scott Muller¹; Arun Nair¹; ¹University of Arkansas

J-11: Novel Synthesis of Variable Size BaTiO₃ Colloidal Nanocrystals Doped with Transition Metals as Multiferroic Material: Tommaso Costanzo¹; Gabriel Caruntu¹; ¹Central Michigan University

J-12: Prospects of Semimetal Microwires for Thermoelectric Applications: Leonid Konopko¹; Albina Nikolaeva¹; Tito Huber²; Anna Kobylanskaya¹; ¹IEEN D.Ghitu; ²Howard University

J-13: Study of Ferric Phosphate Cathode Material for Lithium-ion Battery: Jinhua Lu¹; Yaochun Yao¹; ¹Kunming University of Science and Technology

J-14: Study on the Bonding Strength of the Copper Circuit Layer(Metal) and Anodic Aluminum Oxide Layers(Ceramic): Shin Hyeong-won¹; Hyo-Soo Lee¹; Seung-Boo Jung²; ¹KITECH/Rare metal group/Emotional Materials & Components Research Center; ²Sungkyunkwan University

J-15: Synthesis of AgNP's from Industrial Wastes: Pedro Ramirez Ortega¹; Jose Elizalde Mata¹; Jose Navarro Jimenez¹; Rodrigo Islas Hernandez¹; Laura Garcia Hernandez¹; Mizraim Flores Guerrero¹; ¹Universidad Tecnológica de Tulancingo

J-16: Synthesis of Vertical Si Nanowire Arrays Fabricated by Nanoimprinting Lithography and Magnetically Guided Metal-assisted Chemical Etching: Dong Won Chun¹; Tae Kyoung Kim²; ¹Korea Institute Science and Technology; ²University of California at San Diego

J-17: The Effect of In Situ Magnetic Field and Film Thickness on Magnetic Properties and Residual Stress for Fe-based Amorphous Films: Sibo Wang¹; Hoe Joon Kim¹; David Laughlin¹; Gianluca Piazza¹; Jingxi Zhu²; ¹Carnegie Mellon University; ²Sun Yat-sen University

J-18: Theoretical Study of Sulfur Gases Adsorption in Aluminum Smelter with Carbon Nano Tube by Monte Carlo Simulation: Mohsen Amerisiahooei¹; Khirollah Mehrani¹; Mohammad Yousefi¹; Kamibiz Bordbar²; ¹Islamic Azad University; ²Shahid Bahonar University of Kerman

J-20: Production of Nano Calcium Silicates by Alternative Methods of Synthesis: Juan Restrepo¹; Oscar Restrepo¹; Jorge Tobón¹; ¹Universidad Nacional de Colombia

J-21: Simple Green Synthesis of Amino Acid Functionalised CdTe/CdSe/ZnSe Core-multi Shell with Improved Cell Viability for Cellular Imaging: Vuyelwa Ncapayi¹; Sandile Songca¹; Oluwafemi Oluwatobi²; ¹Walter Sisulu University; ²University of Johannesburg

J-22: Synthesis of Mn₂O₃ Nanopowders with Urea and Citric Acid by Solution Combustion Route: Esma Yilmaz¹; M. Seref Sonmez¹; Bora Derin¹; Filiz Cinar Sahin¹; Onuralp Yucel¹; ¹Istanbul Technical University

J-23: Effect of Additives on the Microstructures of Highly-oriented (111) Nanotwinned Cu: Kuan-Ju Chen¹; ¹National Chiao Tung University

J-27: Mechanical Properties of Highly (111)-oriented Nanotwinned Cu Lines: Wei-Ling Lai¹; Chih Chen¹; ¹National Chiao Tung University

J-28: Phosphorus Gasification from High-phosphorsiron Ore during Carbothermic Reduction: Yuanyuan Zhang¹; Qingguo Xue¹; Jingsong Wang¹; Zhenfeng Zhou¹; ¹University of Science and Technology Beijing

J-29: Study of Nano-twinned Cu Prepared by Low-temperature Electrodeposition and Its Thermal Stability: Yen-Chieh Chen¹; Chih Chen¹; ¹National Chiao Tung University

J-31: Two-step Annealing of Bilayer Cu and the Mechanism of Grain Growth on (100)-oriented Cu Film: Hsin Yong Liu¹; Chih Chen¹; ¹National Chiao Tung University

J-32: Electrical Property Improvement in Cu@Graphitic-carbon Nanocables: Danmin Liu¹; Tian Tian¹; Bo Zhang¹; Yongzhe Zhang¹; ¹Beijing University of Technology

J-33: The Size-dependent Melting Behaviour of Al-12Si/AlN Nanomultilayered System: Joanna Lipecka¹; Jolanta Janczak-Rusch²; Malgorzata Lewandowska¹; Mariusz Andrzejczuk¹; Gunther Richter³; Lars Jeurgens²; ¹Warsaw University of Technology; ²Empa, Swiss Federal Laboratories for Materials Science and Technology; ³Max Planck Institute for Intelligent Systems

J-34: Thin Hybrid Dielectric Film Engineering on MoS₂ Using Molecular Atomic Layer Deposition (MALD): Jaebeom Lee¹; Lanxia Cheng¹; Antonio T. Lucero¹; Jiyoung Kim¹; ¹University of Texas Dallas

J-35: Thermoelectric Cooling by Holey Silicon and the Role of Thermal Conductivity Anisotropy: Zongqing Ren¹; Jaeho Lee¹; ¹University of California, Irvine

J-36: Preparation of Rare Earth Stabilized Nanocrystalline Zirconia with Tunable Optical/Mechanical Properties: *Gottlieb Uahengo*¹; ¹University of California San Diego

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Beiler, Michigan State University; Khalid Hattar, Sandia National Laboratory; Wolfgang Pantleon, DTU; Irene Beyerlein, Los Alamos National Laboratory

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L-1: Analysis of Compact Forced Simple-Shear and Compact Forced Double-Shear Specimens for Shear Localization in Materials: *Thomas Lebrun*¹; ¹Los Alamos National Laboratory

L-2: Characterization of a Biocompatible Co-Cr-W Alloy by means of Correlative Microscopy and Nanoindentation Experiments: *Irmgard Weissensteiner*¹; Patrick Voigt²; Helmut Clemens¹; Verena Maier-Kiener¹; ¹Montanuniversität Leoben; ²Titanium Solutions GmbH

L-3: Displacement Rate and Temperature Equivalence in Stochastic Cluster Dynamics Simulations of Irradiated Pure alpha-Fe: Aaron Dunn¹; Brittany Muntiferling²; *Remi Dingreville*²; Khalid Hattar²; Laurent Capolungo³; ¹TMS; ²Sandia National Laboratories; ³Los Alamos National Laboratory

L-4: Error Analysis of the Dictionary Approach to Electron Backscatter Diffraction Indexing: *Farangis Ram*¹; Saransh Singh¹; Marc De Graef¹; ¹Carnegie Mellon University

L-5: Microstructural Development During Particle/Substrate Impacts in Cold Spray of Gas Atomized Aluminum Alloy Powders: *Benjamin Bedard*¹; Tyler Flanagan¹; Sumit Suresh¹; Avinash Dongare¹; Seok-Woo Lee¹; Harold Brody¹; Xuemei Wang²; Victor Champagne³; Mark Aindow¹; ¹University of Connecticut; ²United Technologies Research Center; ³U.S. Army Research Laboratory

L-6: NiAl Oxidation Reaction Processes Studied In Situ Using MEMS-Based Closed-Cell Gas Reaction Transmission Electron Microscopy: *Kinga Unocic*¹; Dongwon Shin¹; Raymond Unocic¹; Lawrence Allard¹; ¹ORNL

L-8: The Thermal Stability of Cr-Cu Nanostructured Materials Revealed at the Atomic Resolution: *Zaoli Zhang*¹; Jinming Guo¹; Julian Rosalie¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

L-9: Unidirectional Fibre Composite Characterisation from X-ray Tomography: *Monica Emerson*¹; Ying Wang²; Kristine Jespersen¹; Lars Mikkelsen¹; Philip Withers²; Knut Conradsen¹; Vedrana Dahl¹; Anders Dahl¹; ¹Technical University of Denmark; ²The University of Manchester

Advanced Materials in Dental and Orthopedic Applications — Poster Session

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Rajendra Kasinath, DePuy Synthes Products, LLC

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H-1: Changing in the Elastic Modulus of Ti-10Mo-Zr System Alloys by Specific Heat Treatments: *Raul Araújo*¹; Gabriela Suárez¹; Carlos Grandini¹; ¹UNESP/Bauru

H-2: Correlation between the Presence of Martensitic Phase and Mechanical Properties of Ti-15Mo-xZr Alloys with Potential Orthopedic Application. Alloys with Potential Orthopedic Application: *Fábio Vicente*¹; Marília Buzalaf²; Carlos Grandini³; ¹UNIP; ²USP - Universidade de São Paulo; ³UNESP- Univ. Estadual Paulista

H-4: Structure and Microstructure of Ti-25Ta-Zr Alloys: *Pedro Kuroda*¹; Fernanda Quadros¹; Carlos Grandini¹; ¹Univ. Estadual Paulista

H-5: Titanium-magnesium Composite for Dental Implants (BIACOM): *Martin Balog*¹; Mateja Snajdar²; Peter Krizik¹; Zdravko Schauerper²; Zlatko Stanec³; Amir Catic³; ¹The Slovak Academy of Sciences; ²Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb; ³School of Dental Medicine, University of Zagreb

Advanced Thermo-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Hysitron; Jeffrey Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

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L-10: Deformation Characteristics of NiTi Alloys: *Sujith S*¹; Indrani Sen¹; ¹IIT Kharagpur

L-11: High Temperature Dynamic Mechanical Response of Titanium Alloys: *Sindhura Gangireddy*¹; Steven Mates¹; ¹NIST

Alloys and Compounds for Thermoelectric and Solar Cell Applications V — Student Poster Session

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-jik Hong, Kongju National University; Philippe Jund, Université de Montpellier; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science; Ce-Wen Nan, Tsinghua University; Hsin-jay Wu, National Sun Yat-Sen University

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Session Chair: Sinn-wen Chen, National Tsing Hua University

L-12: Bi_{0.5}Sb_{1.5}Te₃ Thin Films with Bulk-like Thermoelectric Properties on Glass and Flexible Substrates: *Elli Symeou*¹; Christiana Nicolaou¹; Ioannis Giapintzakis¹; ¹University of Cyprus

L-13: Contribution Percentages of Electromigration and Diffusion on Interfacial Reactions at Joints in Thermoelectric Modules: *Jing-wei Chen*¹; Sinn-wen Chen¹; Yi-cheng Lin¹; Tao-chih Chang²; ¹National Tsing Hua University; ²Industrial Technology Research Institute

L-14: Effect of Microstructure of the Thermoelectric Properties of Al-based Intermetallic Compounds Prepared by a Melt-spinning Method: *Akira Umeda*¹; Ken Kurosaki¹; Masaya Kumagai¹; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University

L-15: Electronic Structure and Thermoelectric Properties of Pseudogap Intermetallic Compound Al₃Co₂: *Masaya Kumagai*¹; Ken Kurosaki¹; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University

L-16: Interfacial Reactions between Indium and Bi₂Te₃-based Thermoelectric Materials: *Ji-min Lin*¹; Yohanes Hutabalian¹; Shi-Ting Lu¹; Sinn-wen Chen¹; ¹National Tsing Hua University

L-17: Micro Energy Harvesting Characteristics of Thermoelectric Thin-film Devices Fabricated Using Flip-chip Process: *Jae Hwan Kim*¹; Tae-Yeol Lee¹; Dong-Hwan Kim²; Jae-Ho Lee¹; *Tae-Sung Oh*¹; ¹Hongik University; ²DGIST

L-18: Rapid Synthesis of Zinc and Nickel Co-Doped Tetrahedrite Thermoelectrics by Mechanical Alloying and Reactive Spark Plasma Sintering: *Daniel Weller*¹; Donald Morelli¹; ¹Michigan State University

L-19: Synthesis and Thermoelectric Properties of ZnSnSb₂ with Chalcopyrite Structure: *Ami Nomura*¹; Ken Kurosaki¹; Seongho Choi¹; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University

L-20: Synthesis of Ge-germanide Nanocomposites by Melt-spinning Technique: *Takayuki Sasaki*¹; Ken Kurosaki¹; Yuji Ohishi¹; Hiroaki Muta¹; Shinsuke Yamanaka¹; ¹Osaka University

L-21: Thermoelectric Properties of Amorphous Ti₅₀Cu₂₈Ni₁₅Sn₇-dispersed Bi_{0.4}Sb_{1.6}Te₃ Nanocomposite Prepared by Mechanical Alloying and Vacuum Hot Pressing: *Pee-Yew Lee*¹; ¹National Taiwan Ocean University

L-22: Thermoelectric Properties of Bulk Al₂(FeSi)₃: *Yasutaka Shiota*¹; Kunio Yamamoto¹; Hiroaki Muta¹; Yuji Ohishi¹; Ken Kurosaki¹; Shinsuke Yamanaka¹; ¹Osaka University

L-23: Thermoelectric Properties of Nanostructured HMSs/Si Eutectic Alloy Prepared by a Melt Spinning Method: *Saori Wadagaki*¹; Yuji Ohishi¹; Hiroaki Muta¹; Ken Kurosaki¹; Shinsuke Yamanaka¹; ¹Osaka University

Alumina & Bauxite — Poster Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee

Program Organizer: Zhang Ting'an, Northeastern University

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I-1: A Study on Optimization of Processing Parameters for Synthesis of Calcium Hydroaluminosulfate Using Response Surface Methodology: *Wu Xianxi*¹; Zhu Weidong¹; Lan Jun¹; Wu Song¹; ¹Guizhou University

Aluminum Alloys, Processing and Characterization — Poster Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee

Program Organizer: Yanjun Li, Norwegian University of Science and Technology

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I-1: Investigation of Structure and Properties of New Aluminum Alloys with Scandium: *Mikhail Motkov*¹; Viktor Mann²; Alexander Krokhin²; Alexander Alabin²; Viktor Frolov²; Igor Kostin²; ¹LLC "RUSAL ITC"; ²LLC "RUSAL ITC"

I-2: Corrosion of Al-Mg Alloys in Ethanol: *Gustavo Kramer*¹; Estefanía Gauto¹; Roberto Rozicki¹; Claudia Méndez¹; *Alicia Ares*¹; ¹IMAM (CONICET-UNaM)

I-3: Effect of Ni Addition on Microstructure and Tensile Properties of Squeeze Cast Aluminum Alloy A380: *Li Fang*¹; Xuezhi Zhang¹; Junxiang Zhou¹; Henry Hu¹; Xueyuan Nie¹; Jimi Tjong²; ¹University of Windsor; ²Ford Powertrain Engineering Research & Development Centre

I-4: Creep Behavior of Cast Aluminum-Copper Alloys at 300° C: *Brian Milligan*¹; Shibayan Roy²; Shane Hawkins²; Patrick Shower³; Amit Shyam²; ¹Oak Ridge National Laboratory, Colorado School of Mines; ²Oak Ridge National Laboratory; ³Oak Ridge National Laboratory, Bredsen Center for Interdisciplinary Research and Graduate Education

I-5: Warm Pressing of Al Powders: An Alternative Consolidation Approach: *Peter Krizik*¹; Martin Balog¹; Oto Bajana¹; Maria Victoria Riglos²; Peter Švec Sr.¹; ¹Institute of Materials & Machine Mechanics SAS; ²Centro Atómico Bariloche

I-6: Influence of Reinforcement Particle Size and Spatial Distribution on Microstructure and Mechanical Behavior of Precipitation Strengthened Al Matrix Composites: *Chuangong Wu*¹; Kaka Ma¹; Enrique Lavernia¹; Guoqiang Luo²; Fei Chen²; Qiang Shen²; Lianmeng Zhang²; ¹UC Irvine; ²Wuhan University of Technology

I-7: Hot Deformation Characteristics of Modified AA5052: *Kwangtae Son*¹; Jiwoon Lee¹; Shaekwang Kim²; Youngok Yoon²; Soongkeun Hyun¹; ¹Inha University; ²Korea Institute of Industrial Technology

I-8: Study on the Anodic Oxide Film Formation on Die Casting Aluminum Alloy: *Juseok Kim*¹; Jongmoon Park¹; Sungmo Moon²; Minsu Park³; Nojin Park¹; Myunghoon Oh¹; ¹Kumoh Institute of Technology; ²Korea Institute of Material Science; ³Jangwontech. CO.LTD

I-9: Mechanical Properties of Miniature Samples of Additive Manufactured Aluminum: An Experimental and Computational Study: *Matan Tubul*¹; Tsahi Safar¹; Shai Amar¹; Ziv Ungarish¹; Eitan Tiferet¹; Itzhak Orion²; Eytan Kochavi²; ¹NRCN; ²Ben-Gurion University of the Negev

I-10: Modification of Intermetallic Compounds in Aluminum Alloys by Using Ultrasonic Vibrations: *Tomohiro Ishii*¹; Sergey Komarov¹; ¹Tohoku University

I-11: Structure and Microhardness Analysis in Samples Directionally Solidified: *Alex Kociubczyk*¹; Roberto Rozicki¹; Gustavo Kramer¹; *Alicia Ares*²; ¹IMAM (CONICET-UNaM); ²CONICET/FCEQyN-UNaM

I-12: Fatigue and Tensile Properties of Hypoeutectic Al-Si-Mg Alloys with Excess Mg Contents: *Young-Ok Yoon*¹; Su-Yeon Lee¹; Seong-Ho Ha¹; Bong-Hwan Kim¹; Hyun-Kyu Lim¹; Shae K. Kim¹; ¹Korea Institute of Industrial Technology

I-13: Microstructure and Mechanical Properties of Al Alloys with Mn and AlTiB Addition: *Hyo-Sang Yoo*¹; Yong-Ho Kim¹; Chang-Gi Jung¹; Seong-Hee Lee²; Hyeon-Taek Son¹; ¹Korea Institute of Industrial Technology; ²Mokpo National University

I-14: Mechanical Properties of Near Surface Microstructures (NSM) of Hot Rolled and Cold Rolled 5xxx Aluminum Alloys: *Sepideh Parvinian*¹; ¹Georgia Institute of Technology

I-15: Friction Stir Welding of Wrought and Cast Aluminum Alloys: Heat Transfer Modeling and Process Optimization: Yi Pan¹; Diana Lados¹; *Xiangbin Wang*¹; ¹Worcester Polytechnic Institute, Integrative Materials Design Center

I-16: Friction Welding Process Between 6351-T6 Aluminum Alloy And 1020 Steel: *Sheron Tavares*¹; Alexandre Bracarense¹; ¹Federal University of Minas Gerais

I-17: Quantifying Beta Phase Precipitation Rate in Marine Grade 5xxx Alloys: *William Golumbskie*¹; Jennifer Gaies¹; Emily Holcombe¹; Dan Scotto D'Antuono²; Mitra Taheri²; ¹Naval Surface Warfare Center, Carderock Division; ²Drexel University

I-18: Effect of Different Temperature Sintered SiC Particles on Microstructure and Mechanical Properties of SiC Reinforced Aluminum Matrix Composites: *Bo Zhang*¹; Menghan Ao¹; Long Wang¹; Kailin Long¹; Jienan Liu²; Guangxin Wu³; ¹Guiyang Industrial Technology Institute; ²Guiyang Vocational and Technical College; ³Shanghai University

Applications of Process Engineering Principles in Materials Processing, Energy and Environmental Technologies: An EPD Symposium in Honor of Professor Ramana G. Reddy — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; Michael Free, University of Utah; Shafiq Alam, University of Saskatchewan; Mingming Zhang, Arcelor Mittal; Patrick Taylor, Colorado School of Mines

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Session Chair: Brad Westrom, Freeport-McMoRan

N-1: Effect of Particle Size of Coal and Pyrolysis Temperature on Combustion Reactivity of Coal Char: Implications for Granular Coal Char Injection in a Blast Furnace: *Chong Zou*¹; Cheng Ma¹; Junxue Zhao¹; ¹Xi'an University of Architecture and Technology

N-2: Influence of Diluents Dosage on the Performance of High Solid Anti-corrosion Coating by Converter Dust: *Jinglong Liang*¹; Hui Li¹; Ramana Reddy²; Yungang Li¹; ¹North China University of Science and Technology; ²The University of Alabama

N-3: Treatment of Blast Furnace Gas Washing Water by Utilization of Coagulation Associated with Microwave: *Jun-hong Zhang*¹; Qing-hai Pang¹; ¹University of Science and Technology Liaoning

N-4: Permselectivity Study of Ion-exchange Membranes in the Presence of Cu-HEDP Complexes from a Copper Plating Wastewater Treatment: Juliana Jesus¹; Tatiana Scarazzato¹; *Jorge Tenório*¹; Denise Espinosa¹; ¹University of São Paulo

N-5: High Temperature Properties of Molten Nitrate Salt for Solar Thermal Energy Storage Application: Mehedi Mohammad¹; Geoffrey Alan Brooks¹; Muhammad Akbar Rhamdhani¹; *Muhamad Firdaus*¹; ¹Swinburne University of Technology

Bio-Nano Interfaces and Engineering Applications — Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; John Nychka, University of Alberta; Kalpana Katti, North Dakota State University; Terry Lowe, Colorado School of Mines

Tuesday PM Room: Hall B1
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H-6: Development of Functional Peptides with β -sheet Structures for the Self-assembly on Two-dimensional Materials: *Kohei Sakuma*¹; ¹Tokyo Institute of Technology

H-7: Regeneration Sands Foundry for Deterioration Bacterial in Industrial Scale: Viviane Rodrigues¹; Bruno Karolski¹; *Jorge Tenório*¹; ¹University of São Paulo

H-8: Effect of Doped Magnesium in Titanium Nitride Coatings on Behavior of Mesenchymal Stem Cells: Sakip Onder¹; Ayse Calikoglu-Koyuncu²; Kursat Kazmanli³; Mustafa Urgen³; *Fatma Nese Kok*³; Gamze Torun-Kose²; ¹Isik University; ²Yeditepe University; ³Istanbul Technical University

H-9: Determination of Cell Adhesion on Supported Lipid Bilayers by Quartz Crystal Microbalance Sensor: Abdulhalim Kilic¹; Majid Jadidi¹; Hakan Ozgur Ozer¹; *Fatma Nese Kok*¹; ¹Istanbul Technical University

Biological Materials Science — Biological Materials Science Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

Tuesday PM Room: Hall B1
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H-10: Effect of Cu Content on the Antimicrobial Properties of Copper Alloys: *Monika Walkowicz*¹; Piotr Osuch¹; Beata Smyrak¹; Andrzej Mamala¹; Tadeusz Knych²; Anna Rozanska¹; Agnieszka Chmielarczyk²; Dorota Romaniszyn²; Malgorzata Bulanda²; ¹AGH University of Science and Technology; ²Jagiellonian University Medical College

H-11: Effect of the Oxidation of Copper and its Alloys on the Antimicrobial Efficacy of Touch Surfaces: *Monika Walkowicz*¹; *Piotr Osuch*¹; Beata Smyrak¹; Andrzej Mamala¹; Tadeusz Knych¹; Anna Rózanska²; Agnieszka Chmielarczyk²; Dorota Romaniszyn²; Malgorzata Bulanda²; ¹AGH University of Science and Technology; ²Jagiellonian University Medical College

H-12: Investigating Biochemical Constituents of Cymbopogon Citratus Leaf: Prospects on Total Corrosion of Concrete Steel-rebar in Acidic-Sulphate Medium: *Joshua Okeniyi*¹; Elizabeth Okeniyi¹; Olubanke Ogunlana¹; Taiwo Owoeye¹; Oluseyi Ogunlana²; ¹Covenant University, Ota, Nigeria; ²Crawford University, Igbesa, Nigeria

H-14: Structure-Property Relations of the Ironclad Beetle (*Zopherus nodulus haldemani*) Exoskeleton: *Vina Nguyen*¹; Parker Berthelsen¹; Hongjoo Rhee¹; Melanae Garrett¹; Mark Horstemeyer¹; Lakiesha Williams¹; Jun Liao¹; Robert Moser²; Rajkumar Prabhu¹; ¹Mississippi State University; ²U.S. Army Engineer Research and Development Center

H-15: Synthesis and Characterization of Mesoporous Forsterite/Magnesium Oxide Composite Powder: Seyed Mehdi Mirhadi¹; *Fariborz Tavangarian*²; ¹Shahreza Branch, Islamic Azad University; ²Penn State Harrisburg

H-16: The Protective Scales of *Atractosteus Spatula* and the Production of a Bioinspired Armor: *Vincent Sherman*¹; Nicholas Yaraghi²; Marc Meyers¹; David Kisailus²; ¹University of California, San Diego; ²University of California, Riverside

H-17: Microstructural Characterization of Freeze-casted Al₂O₃ Scaffold: *Guan-Lin Liu*¹; Yi-Ting Liao¹; Joe-Ming Chang¹; Hsiao-Ming Tung¹; ¹Institute of Nuclear Energy Research

H-18: Two-step Sintering Effects on the Microstructure and Mechanical Properties of Forsterite Scaffolds: *Fariborz Tavangarian*¹; Lindsay Childs²; Guoqiang Li³; Dakota Wooten²; Bryant Cornwell²; ¹Penn State Harrisburg; ²Morehead State University; ³Louisiana State University

Biological Materials Science — Biological Materials Science Student Poster Contest

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Po-Yu Chen, National Tsing Hua University; Francois Barthelat, McGill University; Michael Porter, Clemson University; Steven Naleway, University of Utah

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H-19: Aligned Carbon Nanotubes Reinforced Electrospun Polymeric Scaffold for Peripheral Nerve Repair: *Pallavi Gupta*¹; Murali Kumaraswamy¹; Partha Roy¹; Debrupa Lahiri¹; ¹IIT

H-20: Bioinspired by Porcupine Quills: Freeze Cast Porous Scaffolds Strengthened by Shrink Wrap and Infiltration with Biodegradable Materials: *Michael Frank*¹; Ali Ismail¹; Louis Guibert²; Jerry Ng¹; Joyce Mok¹; Cindy Ayala¹; Sze Hei Siu¹; Joanna McKittrick¹; ¹UC San Diego; ²École Polytechnique de l'Université de Nantes

H-21: Bone Remodeling under Tooth Loading: *Kangning Su*¹; Jing Du¹; Li Yuan²; ¹Pennsylvania State University; ²Shenzhen People's Hospital, 2nd Clinical Medical College of Jinan University

H-22: Design and Analysis of Beetle Wings Inspired Foldable Materials by the Origami Approach: *Chi-Huan Tung*¹; Cheng-Chun Shih¹; Po-Yu Chen¹; ¹National Tsing Hua University

H-23: Development of 3D Template Freeze Casted Hydroxyapatite/Magnesium Alloy Biodegradable Implants: *Yajur Maker*¹; Jae-Young Jung¹; Kathryn Kang¹; Michael Frank¹; Joanna McKittrick¹; ¹UC San Diego

H-24: Image Processing Techniques for Testing of Soft Materials: an Example with Tensile Deformation of Pig Skin: *Andrei Pissarenko*¹; ¹UC San Diego

H-25: Mammal Horns as Natural Weapons: *Yuchen Zhang*¹; ¹UCSD

H-26: Microstructural Origins of the Dynamic Behavior of Wood and Bioinspired Designs: *Albert Matsushita*¹; Damian Gonzalez¹; Michael Frank¹; Jae-Young Jung¹; Joanna McKittrick¹; ¹University of California, San Diego

H-27: Porous 45S5 Bioglass®-based Scaffolds Using Stereolithography: Effect of Partial Pre-sintering on Structural and Mechanical Properties of Scaffolds: *Boonlom Thavornnyutikarn*¹; Terence Turney¹; Passakorn Tesavibul²; Krisakrai Sithiiseripratip²; Nattapon Chatarapanich³; Bryce Frltis⁴; ¹Monash University; ²National Metal and Materials Technology Center; ³Kasetsart University; ⁴RMIT University

H-28: Production of Zinc-Magnesium Alloy Wires by Thermal Drawing for Pediatric Bioabsorbable Stent Applications: *Injoo Hwang*¹; Daniel S. Levi²; Xiaochun Li¹; ¹Department of Mechanical and Aerospace Engineering, University of California, Los Angeles; ²Division of Pediatric Cardiology, Mattel Children's Hospital, University of California Los Angeles

H-29: Structure-Property Quantification for the Bio-Inspiration of the Great White (*Carcharodon carcharias*) and the Tiger (*Galeocerdo cuvier*) Shark's Teeth: *John Wood*¹; Hongjoo Rhee²; A. C. McIntosh¹; R. D. Moser³; M. Horstemeyer¹; R. Prabhu¹; ¹Mississippi State University; ²Center for Advanced Vehicular Systems; ³U.S. Army Engineer Research and Development Center

H-30: Structure and Mechanical Behavior of Human Hair: *Yang Yu*¹; Wen Yang¹; Bin Wang¹; Marc Meyers¹; ¹University of California, San Diego

H-31: Structure and Mechanical Implications of the Pectoral Fin Skeleton in Longnose Skates: *Wei Huang*¹; Vlado Lubarda¹; Watcharapong Hongjamrassilp¹; Jae-Young Jung¹; Phil Hastings¹; Joanna McKittrick¹; ¹University of California, San Diego

H-32: Study of Formation of Passivating Oxides in Thin Films of Ti-Nb for Biomedical Applications: *Ernesto Gonzalez Cruz*¹; Pedro Nascente¹; Patricia Sato¹; ¹Universidade Federal de Sao Carlos

H-33: Surface Magnetized Hydroxyapatite for Multi-Axis Strengthened Bone Implants with Magnetic Freeze Casting: *Michael Frank*¹; Cindy Ayala¹; Louis Guibert²; Keyur Karandikar¹; Chin-Hung Liu¹; Sze Hei Siu¹; Olivia Graeve¹; Joanna McKittrick¹; ¹UC San Diego; ²École Polytechnique de l'Université de Nantes

H-34: Comparison of Deproteinization Methods for Porcine Femoral Cortical Bone: *Frances Su*¹; Peter Shyu²; Yik Tung Tracy Ling²; Ekaterina Novitskaya¹; Kyungah Seo¹; Sofia Lambert³; Kimberlin Zarate⁴; Olivia Graeve¹; Iwona Jasiuk²; Joanna McKittrick¹; ¹University of California, San Diego; ²University of Illinois at Urbana-Champaign; ³Centro de Enseñanza Técnica y Superior - Campus Mexicali; ⁴Hilltop High School

Bulk Metallic Glasses XIV — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, The University of Tennessee; Gongyao Wang, The University of Tennessee; Jianzhong Jiang, Zhejiang University

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L-24: Deformation Behavior of a Ti-Zr-based Bulk Metallic Glass Matrix Composite: *Kevin Kaufmann*¹; Laura Andersen¹; Kenneth Vecchio¹; ¹University of California, San Diego

L-25: Effect of Annealing on the Magnetic Properties of Fe-based Amorphous Alloys: *Song Yi Kim*¹; HyeRyeong On¹; A Young Lee¹; Hyun Ah Kim¹; Min Ha Lee¹; ¹Kitech

L-26: Micro-imprinting of High Strength Hf-based Bulk Metallic Glass Using by Athermal Method: *Song Yi Kim*¹; *Min Ha Lee*¹; ¹Korea Institute of Industrial Technology

L-27: Phase Separation in Cu_{47.5}Zr₄₈Al₄Co_{0.5} Bulk Metallic Glass: William Rainforth¹; *Haiyun Wang*¹; ¹The University of Sheffield

L-28: Solid-state Amorphization of W-containing Alloy Powders: *Young Jun Kwon*¹; Christopher A Schuh²; Hoon Kwon¹; Ki Sub Cho¹; ¹Kookmin University; ²Massachusetts Institute of Technology

L-30: The Effects of Nitrogen Addition on the Magnetic Properties of Fe-based Amorphous Alloy: *HyeRyeong Oh*¹; Minha Lee¹; SONGYI Kim¹; A-Young Lee¹; Gyu Hyeon Park¹; Hyun-ah Kim¹; Jongryoul Kim²; ¹KITECH; ²Hanyang University

L-31: Thermal Induced Reversible Devitrification in Zr-Pt Binary Alloy: *Hyun Ah Kim*¹; A Young Lee¹; Hye Ryeong Oh¹; Gyu Hyeon Park¹; Song Yi Kim¹; Ryan T. Ott²; Do Hyang Kim³; Min Ha Lee¹; ¹Korea Institute of Industrial Technology; ²Ames Laboratory (USDOE); ³Yonsei University

L-33: Extending the Realm of Glass Transition Temperature and Strength Relation in Metallic Glasses: *Hehsang Ahn*¹; Jinwoo Kim¹; Soyeon Kim¹; Eun Soo Park¹; ¹Seoul National University

L-34: Viscous Flow Densification during Spark Plasma Sintering of Fe Based Amorphous Alloy Powder: *Tanaji Paul*¹; Sandip Harimkar¹; ¹Oklahoma State University

L-35: Comparative Analysis of the Tribological Behavior of Hf-BMGs and Hf-crystalline Alloys: Manuel Abad¹; Luke Mortimer¹; *Phil Meagher*¹; David Browne¹; ¹University College Dublin

Characterization of Minerals, Metals, and Materials — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jian Li, CanmetMATERIALS; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering; Firrao Donato, Colegio Universitario, Italy; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University; Eren Kalay, METU; Ramasis Goswami, Naval Research Laboratory; Jeongguk Kim, Korea Railroad Research Institute

Tuesday PM
February 28, 2017

Room: Hall B1
Location: San Diego Convention Ctr

Session Chairs: Eren Kalay, METU; Jian Li, CanmetMATERIALS

K-1: Characteristics of Stamp Charging Coke and Top Charging Coke: *Bing Gao*¹; ¹University of Science and Technology Beijing

K-2: Contribution to the β Relaxation Study of the HDPE, LDPE and LLDPE: *Washington Oliani*¹; Luis Filipe Lima¹; Harumi Otaguro²; Hélio Ferreto¹; Ademar Lugao¹; Duclerc Parra¹; ¹Nuclear Energy Research Institute – IPEN/USP; ²Universidade Federal de Uberlândia

K-3: Synthesis and Structural Characterization of BaTiO₃ Doped with Gd³⁺: *Juan Pablo Hernández Lara*¹; Miguel Perez Labra¹; Francisco Raúl Barrientos Hernández¹; Alberto Arenas Flores¹; José Antonio Romero Serrano²; Aurelio Hernández Ramírez²; Pandiyan Thangarasu³; ¹Autonomous University of Hidalgo State; ²ESIQIE-IPN; ³National Autonomous University of México.

K-5: Accelerated Degradation of the Polypropylene Inducing Thermal Aging: *Rebeca Romano*¹; Washington Oliani¹; Duclerc Parra¹; Ademar Lugao¹; ¹Nuclear Energy Research Institute – IPEN/USP

K-7: Automated Optical Microstructural Characterization of Thermal Spray Coatings: Satya Ganti¹; Elizabeth Jenkins¹; Rabi Bhattacharya¹; *Veeraraghavan Sundar*¹; ¹UES Inc.

K-8: Effect of Exposure to Salt Spray in Multiple-use Mortars with Addition and Waste from Paper Production: *Afonso Azevedo*¹; Jonas Alexandre²; Niander Aguiar²; Gustavo Xavier²; Sergio Monteiro³; Victor Souza⁴; Markssuel Marvila²; ¹IFF; ²UENF; ³IME; ⁴UFF

K-9: Effects of Wet Grinding on the Structure and Granularity of Biological Origin Aragonite and Its Polymorphic Transformation into Calcite: *Tang Yunhui*¹; He Mingsheng²; ¹Beijing University of Technology; ²R&D Center of WISCO

K-10: A Kinetic Model for the Growth of FeB and Fe₂B Phases on the AISI M2 Borided Steel during the Powder-pack Boriding: *Miguel Flores*¹; Martín Ortiz¹; Oscar Gómez²; Milton Espinosa³; Joaquín Oseguera²; ¹Escuela Superior de Ciudad Sahagún-Universidad Autónoma del Estado de Hidalgo; ²Instituto Tecnológico y de Superiores de Monterrey campus Estado de México; ³Instituto Tecnológico y de Estudios Superiores de Monterrey-ITESM Campus Santa Fe

K-11: Addition of Cellulose Nanofibers in Reactive Powder Concrete: Felipe Machado¹; *Leonardo Pedroti*¹; Joao Vitor Lemes¹; Gustavo Lima¹; Lucas Fioresi¹; Wellington Fernandes¹; Rita Alvarenga¹; Jonas Alexandre²; ¹Universidade Federal de Vicosa; ²Universidade Estadual Norte Fluminense

K-12: Alkaline Decomposition of Synthetic Thallium Jarosite in NaOH and CaO Medium: Hernán Islas¹; Francisco Patiño²; Iván Reyes³; *Mizraim Flores*⁴; Sayra Ordoñez¹; Martín Reyes¹; Elia Palacios⁵; Víctor Flores⁶; ¹Universidad Autónoma del Estado de Hidalgo; ²Universidad Politécnica Metropolitana de Hidalgo; ³Universidad Autónoma de San Luis Potosí; ⁴Universidad Tecnológica de Tulancingo; ⁵Instituto Politécnico Nacional; ⁶Escuela Superior de Zimapán Universidad Autónoma del Estado de Hidalgo

K-13: Application of Membrane Separation Technology in Wastewater Treatment of Iron and Steel Enterprise: *Lei Zhang*¹; ¹Wuhan Iron and Steel Company

K-14: Boiler Ashes Incorporation in Mixed Mortar Using Experimental Planning in Simplex Network: Marina Caetano¹; Leonardo Pedroti¹; *Gustavo de Lima*¹; Igor Andrade¹; Wellington Fernandes¹; Rita Alvarenga¹; Gustavo Xavier²; Afonso Azevedo²; Caio Torres¹; Ricardo Almeida¹; ¹UFV; ²UENF

K-15: Brillouin Scattering Study on Elastic Properties of Bulk hcp ZnO Single Crystal: *Pingping Fan*¹; Yongquan Wu¹; ¹Shanghai University

K-16: Characterization and Leaching Proposal of Ag (I) from a Zn Concentrate in a S₂O₃²⁻ - O₂ Medium: Aislínn Teja Ruiz¹; Julio Juárez Tapia¹; Leticia Hernández Cruz¹; Martín Reyez Pérez¹; *Uriel Flores Guerrero*¹; Ivan Reyes Dominguez¹; Eliecer Mendez¹; ¹Universidad Autónoma del Estado de Hidalgo

K-17: Characterization of Mercury Jarosite: Sayra Ordoñez¹; Francisco Patiño²; *Mizraim Flores*³; Iván Reyes⁴; Elia Palacios⁵; Víctor Flores⁶; Martín Reyes¹; Ister Mireles³; Hernán Islas¹; ¹Universidad Autónoma del Estado de Hidalgo; ²Universidad Politécnica Metropolitana de Hidalgo; ³Universidad Tecnológica de Tulancingo; ⁴Universidad Autónoma de San Luis Potosí; ⁵Instituto Politécnico Nacional; ⁶Escuela Superior de Zimapán Universidad Autónoma del Estado de Hidalgo

K-18: Chemical and Mineralogical Characterization of a Mixed Sulphide Ore at Zimapán, Hidalgo: Laura Angeles¹; Martín Reyes¹; Miguel Pérez¹; Elia Palacios²; Francisco Patiño³; Ivan Reyes⁴; *Mizraim Flores*⁵; ¹Universidad Autónoma del Estado de Hidalgo; ²Instituto Politécnico Nacional; ³Universidad Politécnica Metropolitana de Hidalgo; ⁴Universidad Autónoma de San Luis Potosí; ⁵Universidad Tecnológica de Tulancingo

K-19: Brazilian Bentonite Characterization Aiming Their Use in Clay/Polymer Nanocomposites: *Francisco Valenzuela-Díaz*¹; Dijalma Dias²; Rogerio Sakahara¹; Guilherme Cardoso¹; Kilça Botelho³; Gabriel Machado¹; Maria das Graças Silva-Valenzuela⁴; Julio Harada⁴; ¹Universidade de Sao Paulo; ²IPEN; ³UNIGRAN/USP; ⁴UFABC

K-20: Characterization of a Bentonitic Clay and Its Use in Bleaching Brazilian Nut Oil: *Alexandre Machado*¹; Jivaldo Matos¹; Flavio Carvalho¹; Adriano Araujo¹; Christiano Andrade¹; Maria das Graças Silva-Valenzuela²; Francisco Valenzuela-Díaz¹; ¹Universidade de Sao Paulo; ²Universidade Federal do ABC

K-21: Characterization of Biodegradable Mulch Black Films Incorporated with Organics Fertilizers and Rice Husk Ash: Julio Harada¹; Camila Amorim¹; Paula Braga¹; Abner Cabral Neto²; José Ricardo Machado³; Luci Diva Machado¹; *Leonardo Silva*¹; Derval Rosa³; ¹IPEN-CNEN/SP; ²Universidade Presbiteriana Mackenzie; ³Universidade Federal do ABC

K-22: Characterization of Polyamide 6 with Coloidal Silicon Dioxide (Aerosil®) Irradiated and Non Irradiated: Camila Amorim¹; Julio Harada¹; Jessica Moura²; Waldir Ferro³; *Leonardo Silva*¹; ¹IPEN-CNEN/SP; ²Rhodia Poliamida e Especialidades Ltda; ³Radici Plastics Ltda

K-23: Characterization of Steel Production Dust and Their Use in Structural Ceramics: *Alexandre Machado*¹; Jivaldo Matos²; Flavio Carvalho²; Adriano Araujo³; Maria das Graças Silva-Valenzuela⁴; Francisco Valenzuela-Díaz²; ¹INOVAT/USP; ²Universidade de Sao Paulo; ³Universidade Federal de Sergipe; ⁴Universidade Federal do ABC

K-24: Charpy Toughness Behavior of Jute Fabric Reinforced Polyester Matrix Composites: Foluke de Assis¹; Sergio Monteiro¹; Artur Pereira¹; Fabio Braga¹; ¹Military Institute of Engineering

K-25: Clay: Characterization and Evaluation of the Application Potential: Gustavo Lima¹; Leonardo Pedroti¹; Wellington Fernandes¹; Jonas Alexandre²; Afonso Azevedo²; Carlos Maurício Vieira²; ¹Universidade Federal de Viçosa - UFV; ²Universidade Estadual do Norte Fluminense Darcy Ribeiro

K-26: Determination of Ten Impurity Elements in Tin Concentrate and Smelting Products by ICP-AES: Yunke Wang¹; Ping Long¹; Jian Wu¹; Wenli Zhang¹; Peipei Liu¹; Xinlin Ren¹; Bin Yang¹; ¹Kunming University of Science and Technology

K-27: Effects of Magnetic Field Curing on Microactuation of Magnetorheological Elastomers Based on Iron-natural Rubber Nanocomposites: Imaddin Al-Omari¹; M P Vasudevan²; P M Sudeep³; Philip Kurian³; P M Ajayan⁴; T N Narayanan⁵; M R Anantharaman³; ¹Sultan Qaboos University; ²Sree Sankara Vidya Peetom College; ³Cochin University of Science and Technology; ⁴Rice University; ⁵TIFR Centre for Interdisciplinary Sciences

K-28: Electron Beam Effect on Mechanical and Thermal Properties of DGEBA/EPDM Composite: Anderson Mesquita¹; Ian Cavalcante¹; Traian Zaharescu²; Leonardo Silva¹; ¹Instituto de Pesquisas Energéticas e Nucleares - IPEN/USP; ²INCDIE, ICPE-CA

K-29: Efficient High-Resolution Study of Dissimilar Metal Interfaces: Genevieve Lee¹; Jonathan Orsborn¹; Antonio Ramirez¹; ¹The Ohio State University

K-30: Evaluation of Ballistic Armor Behavior with Epoxy Composite Reinforced with Malva Fibers: Lucio Nascimento¹; Luane Ferreira Holanda¹; Luis Henrique Leme Louro¹; Sérgio Neves Monteiro¹; Alaelson Vieira Gomes¹; Édio Pereira Lima Júnior¹; Fábio Braga¹; ¹Instituto Militar de Engenharia

K-31: The Non-Isothermal Crystallization Behavior of Polyethylene/calcium phosphate Composite: Andre Colonese¹; Mônica Andrade²; Ana Silva²; Fernanda Silva²; ¹INCQS-Fiocruz; ²IPRJ_UERJ; ³IMA-UFRJ; ⁴IQ-UFRJ

K-32: Evaluation of Durability of Red Ceramic Incorporated with Ornamental Stone Waste: Gustavo Xavier¹; Jonas Alexandre¹; Afonso Azevedo¹; Sergio Monteiro¹; Leonardo Pedroti¹; Heloia Ferreira¹; ¹UENF

K-33: Evaluation of Elastic Properties by Impulse Excitation Technique in Epoxy Composites Reinforced with Coir Fiber: Fernanda da Luz¹; Sérgio Monteiro¹; ¹Military Institute of Engineering, IME

K-34: Wood-to-concrete Joints Using Steel Connectors: Experimental Evaluation: Juliano Correa¹; Rita de Cássia Alvarenga¹; Beatryz Mendes¹; Márcio Moreira¹; ¹Universidade Federal de Viçosa

K-35: Evaluation of the Pozzolanic Activity of Residue from the Paper Industry: Afonso Azevedo¹; Jonas Alexandre²; Lucio Petrucci¹; Euzébio Zanelato²; Thainá Oliveira²; ¹IFF; ²UENF

K-36: Evaluation of the Properties of the Adhesive Mortar in the Fresh State with Addition of Glass Waste: Diogo Santos¹; Afonso Azevedo²; Jonas Alexandre¹; Sergio Monteiro¹; Gustavo Xavier¹; Beatryz Mendes³; Leonardo Pedroti³; Lucio Petrucci⁴; Marta Prellwitz²; ¹UENF; ²IFF; ³UFV; ⁴UCAM

K-37: Experimental Evaluation of the Influence of Mortar's Mechanical Properties on the Behavior of Clay Masonry: Rita Alvarenga¹; Gustavo Nalon¹; Lucas Fioresi¹; Mônica Pinto¹; Leonardo Pedroti¹; José Carlos Ribeiro¹; ¹Universidade Federal de Viçosa

K-38: Experimental Study on Limestone Gypsum Desulfurization Agent with SDA Desulfurization Ash: Lu Lj¹; ¹Wisco

K-40: X-ray and Microstructural Study of a Set of Cast Aluminum Alloys: Thomas Watkins¹; Shibayan Roy²; Lawrence Allard Jr.¹; Amit Shyam¹; Dongwon Shin¹; J. Allen Haynes¹; ¹ORNL; ²Indian Institute of Technology

K-41: Porosity of Soil Pigments Based Paints: Reinaldo Santos¹; Beatryz Mendes¹; Rita de Cássia Alvarenga¹; Fernando Cardoso¹; Anôr Carvalho¹; ¹Universidade Federal de Viçosa

K-42: Use of Gamma-alumina Nanoparticles for Drug Delivery System: Antonio Munhoz Jr.¹; Leila Miranda¹; Leonardo Silva¹; Mariana Oliveira¹; Raphael Andrades¹; Renato Peres¹; ¹U.P.Mackenzie

K-43: The Mineralogical and Gemmological Characteristics of Turquoise from Luo Nan, Shan Xi, China: Luo Yuanfei¹; ¹China University of Geoscience

K-44: Mechanical Properties of Nanocomposites High Melt Strength Polypropylene (HMSPP) Obtained by Gamma Radiation in Comparison to Conventional Polypropylene Nanocomposites with Smectite Nano clay: Danilo Fermino¹; Washington Oliani²; Christiano Bastos Andrade¹; Duclerc Parra²; Maria Silva Valenzuela¹; Francisco Valenzuela Diaz¹; ¹USP; ²IPEN

K-45: Polymer Blend Based on Recycled Polyethylene and Ethylene Vinyl Acetate Copolymers Reinforced with Natural Fibers from Agricultural Wastes: Renata Coiado¹; Gisele Lazo¹; Rene Oliveira¹; Rita Rodrigues²; Esperidiana Moura¹; ¹Instituto de Pesquisas Energéticas e Nucleares; ²Escola de Engenharia de Lorena, Departamento de Biotecnologia. Universidade de Sao Paulo

K-46: Mechanical, Thermal and Electrical Properties of Polymer (Ethylene Terephthalate - PET) Filled with Carbon Black: Anderson Mesquita¹; Leonardo Silva¹; Leila Miranda²; ¹Instituto de Pesquisas Energéticas e Nucleares - IPEN/USP; ²Universidade Presbiteriana Mackenzie

K-47: The Use of Network Simplex Method for Planning the Incorporation of Recycled Paper Mill Sludge in Manufacturing of Ceramic Bodies: Andreiva Carmo¹; Nirlane Silva¹; Anna Sartori¹; Ana Rezende¹; Leonardo Pedroti¹; Wellington Fernandes¹; Benício Ribeiro¹; ¹Universidade Federal de Viçosa

K-48: Nd³⁺ Doping Effect on the Structure, Microstructure, Lattice Distortion and Electronic Properties of TiO₂ Nanoparticles: Balter Trujillo-Navarrete¹; Edgar Alonso Reynoso-Soto¹; María del Pilar Haro-Vázquez²; Henry Alvarez-Huerta¹; Rosa María Félix-Navarro¹; Sergio Pérez-Sicairos¹; ¹Instituto Tecnológico de Tijuana; ²Universidad Autónoma de Baja California

K-49: Microstructural Evolution of Ni-Superalloys during Hot Rolling and Thermal Aging: Matjaz Godec¹; Simon Malej¹; Jaka Burja¹; Franc Tehovnik¹; Bojan Podgornik¹; ¹Institute of Metals and Technology

K-50: Optical Marker Synthesis for Use in Polymer Processing Based on the Doping with Europium Complex: Luiz Komatsu¹; Washington Oliani¹; Ademar Lugao¹; Duclerc Parra¹; ¹Nuclear and Energy Research Institute

K-51: Plasmonic Behavior of Nonstoichiometric Alumina on Al: Hansoo Kim¹; ¹Texas A&M University

K-53: Use of Alkaline Solid Wastes from Kraft Pulp and Paper Mills, Dregs and Grits in Cement Production: Caio Torres¹; Leonardo Pedroti¹; Claudio Silva¹; Wellington Fernandes¹; Natália Viana¹; Gustavo Lima¹; Roseli Martins¹; Roseli Martins¹; Lorena Sathler¹; Marina Caetano¹; Igor Andrade¹; ¹UFV / DEC

K-55: Synthesis and Characterization of PVA/Bio-hydroxyapatite Nanoparticle for Sunscreen Application: Karine Sousa¹; Pedro Reis¹; Rene Oliveira¹; Esperidiana Moura¹; ¹Instituto de Pesquisas Energéticas e Nucleares

K-56: Research on the Advanced Treatment of Coking Wastewater with Semi-coke Modified with Water Vapor: Lina Wang¹; ¹Wuhan Iron and Steel Co.

K-57: Preparation and Characterization of Polyethylene Nanocomposites with Clay and Silver Nanoparticles: Washington Oliani¹; Danilo Fermino²; Luiz Komatsu¹; Ademar Lugao¹; Vijaya Rangari³; Nilton Lincopan⁴; Duclerc Parra¹; ¹Nuclear Energy Research Institute - IPEN/USP; ²Department of Metallurgical and Materials Engineering; ³Center for Advanced Materials Science and Engineering Tuskegee University; ⁴Department of Microbiology-Institute of Biomedical Sciences, University of São Paulo

K-58: Radiation Effects in the Crystal Polystyrene Composite with Clays: Djalma Dias¹; Elaine Silva¹; Francisco Valenzuela-Diaz²; Mariana Sartori¹; Leonardo Silva¹; ¹IPEN/CNEN-SP; ²Universidade de São Paulo

K-59: Production of Concrete Interlocking Blocks with Partial Replacement of Sand in Bulk by Waste Glass Machined: Niander Cerqueira¹; Victor Souza²; Igor Pereira³; Rondinelli Ribeiro³; Afonso Azevedo¹; Victor Bartolazzi³; Mairyanne Souza¹; Glenio Daniel³; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro - UENF; ²UFF; ³Faculdade Redentor

K-60: Steel Slag: Analysis of Application in Cementitious Materials: Gustavo Lima¹; Leonardo Pedroti¹; José Carlos Junior²; Wellington Fernandes¹; Sergio Monteiro³; ¹Universidade Federal de Viçosa - UFV; ²Universidade Federal de São João del Rei; ³Instituto Militar de Engenharia

K-61: Reactive Powder Concrete Production with the Addition of Granite Processing Waste: Joao Vitor Lemes¹; Gustavo Lima¹; Felipe Gabriel Machado¹; Leonardo Pedroti¹; Lucas Fioresi¹; Wellington Fernandes¹; Rita Alvarenga¹; Sergio Monteiro²; ¹Universidade Federal de Viçosa; ²Instituto Militar de Engenharia

K-62: Study of Synergistic Effect of Light Stabilizer Additive, Conventional and Nanoparticles, Applied to Polyethylene Films Submitted to Ultraviolet Radiation: Patricia Poveda¹; Leonardo Silva¹; ¹Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN-SP

K-64: Saw Dust of Waste as Partial Substitute Fine Aggregate in Structural Concrete: Niander Cerqueira¹; Victor Souza²; Victor Bartolazzi³; Henri Gazal³; João Victor Silveira³; Mairyanne Souza¹; Olivia Campinho³; André Gomes³; Glenio Daniel³; ¹Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF; ²UFF; ³Faculdade Redentor

K-65: Study of Calcined Mixtures from Industrial Residues for Production of Agglomerates: Letícia Fernandez¹; Leonardo Pedroti¹; Elisson Ferreira¹; Rita Alvarenga¹; Larice Justino¹; Wellington Fernandes¹; ¹Universidade Federal de Viçosa

K-66: Study of the Effect of Surface Liquid Flow during Column Flootation of Mining Tailing of the Dos Carlos Dam: Javier Flores Badillo¹; Juan Hernández Ávila¹; Eleazar Salinas Rodríguez¹; Isaura Rivera Landero¹; María Reyes Valderrama¹; Eduardo Cerecedo Sáenz¹; Martín Reyes Pérez¹; Mauricio Guerrero Rodríguez¹; ¹Universidad Autónoma del Estado de Hidalgo

K-67: Study on Advanced Treatment of Coking Wastewater Using Catalytic Ozonation Process: Liu Pu¹; ¹Research and Development Center of Wuhan Iron and Steel Company Limited

K-69: Study on Bending Test on Concrete Structural Use Crumb Rubber as Substitute in Fine Aggregate: Niander Cerqueira¹; Victor Souza²; Bruno Padilha³; Pâmela Berçot³; Afonso Azevedo¹; Victor Bartolazzi³; Glenio Daniel³; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro - UENF; ²UFF; ³Faculdade Redentor

K-71: Surface Characterization of FeS₂ and Pulp during Grinding in an Inert Mill: Martín Reyes¹; Elia Palacios²; Francisco Patiño³; Miguel Pérez¹; Mizraim Flores⁴; Iván Reyes⁵; Laura Angeles¹; Aislinn Teja¹; ¹Universidad Autónoma del Estado de Hidalgo; ²Instituto Politécnico Nacional; ³Universidad Politécnica Metropolitana de Hidalgo; ⁴Universidad Tecnológica de Tulancingo.; ⁵Universidad Autónoma de San Luis Potosí

K-72: Synthesis of ZnO and TiO₂ Nanocomposites for Antibacterial Activity: Luiz Komatsu¹; Washington Oliani¹; Ademar Lugao¹; Duclerc Parra¹; ¹Nuclear and Energy Research Institute

K-73: Texture Analysis and Anisotropic Properties of a Rolled CuZn36 Brass Alloy: Athanasios Vazdirvanidis¹; George Pantazopoulos²; Anagnostis Toulfatzis²; Andreas Rikos²; ¹ELKEME; ²ELKEME

K-75: Weibull Analysis of the Behavior on Flexural Strength of Clayey Ceramic Incorporated with Fluorescent Lamp Glass Waste Powders for Different Firing Temperature: Aline Morais¹; Carlos Mauricio Vieira²; Sergio Monteiro³; ¹Instituto Federal Fluminense - IFF; ²State University of the North Fluminense Darcy Ribeiro; ³Military Institute of Engineering - IME, Materials Science Department

K-76: Advanced Ion Column Solution for Low Ion Damage Characterization and Ultra-fine Process: Sang Hoon Lee¹; Mostafa Maazouz¹; Liang Zhang¹; Mauricio Gordillo¹; Micah Ledoux¹; Jeff Blackwood¹; ¹FEI

K-77: Characterization and Mechanical Properties of Additively Manufactured Stainless Steel 316L: M.A. Bevan¹; A.A.H. Ameri¹; D. East²; Juan P. Escobedo-Diaz¹; A.D. Brown¹; M.Z. Quadir³; P.J. Hazell¹; ¹School of Engineering and Information Technology, UNSW Australia; ²Manufacturing Flagship, CSIRO Clayton; ³Microscopy and Microanalysis Facility (MMF), John de Laeter Centre (JdLC), Curtin University

Defects and Properties of Cast Metals — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Mark Jolly, Cranfield University; Charles Monroe, University of Alabama; Brian Thomas, Colorado School of Mines; Peter Lee, University of Manchester

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L-36: Effect of the Addition of Ce and Si on the Hot Cracking Behavior of SiMn Alloy during the Solidification Process: Zizong Zhu¹; Zhiqiang Zhou¹; Shengnan Zhou¹; Yuchuan Ding¹; ¹Chongqing University

L-37: Improved Wear Resistance of Hadfield Steel Through the Addition of Nb Containing Carbides: Vijay Bhatia¹; Gwenaelle Proust¹; Julie Cairney¹; ¹The University of Sydney

L-39: Influence of Different Cooling Microstructure on Surface Cracks of HSLA Steel Plate by DHCR: Banglun Wang¹; ¹Anhui Polytechnic University

L-42: Solidification Path of Fe Bearing Phases in the Effect of Sr and Cooling Rate in Al-Si Hypoeutectic Alloys: Jeyakumar Manickaraj¹; Anton Gorny¹; Sumanth Shankar¹; ¹McMaster University

Deformation and Transitions at Interfaces — Poster Session

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee

Program Organizers: Saryu Fensin, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Rozaliya Barabash, OakRidge National Lab; Shen Dillon, Universe of Illinois; Jian Luo, University of California, San Diego; Doug Spearot, University of Florida

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L-43: A Hybrid Fast Fourier Transform Based Elasto-Viscoplastic Formulation: Jaspreet Nagra¹; Abhijit Brahma¹; Ricardo Lebensohn²; Raja Mishra³; Kaan Inal¹; ¹University of Waterloo; ²Los Alamos National Laboratory; ³General Motors Research and Development Center

L-44: Dislocation and Twin Interactions with Specific Ag/Cu Interfaces: Ben Eftink¹; ¹University of Illinois

L-45: Controlling the Deviation of Twins in Inconel 600 Alloy by Hot Rolling: Sandeep Sahu¹; Shashank Shekhar¹; ¹Indian Institute of Technology Kanpur

L-46: Correlation of Bendability of CuAg Conductors with Their Tensile Properties: Rongmei Niu¹; Ke Han¹; Jun Lu¹; Doan Nguyen¹; ¹National High Magnetic Lab

L-47: Deformation Mechanisms in Ti/TiN Multi-layered Thin Films: Tarang Mungole¹; Bilal Mansoor²; Georges Ayoub³; David Field¹; ¹Washington State University; ²Texas A and M University, Doha, Qatar; ³American University of Beirut

L-48: Development of Synthetic Driving Force Methods in HCP Crystals and Comparison to Existing Techniques: *Matthew Guziewski*¹; Shawn Coleman²; Ian Bakst¹; Mark Tschopp²; Christopher Weinberger¹; ¹Colorado State University; ²Army Research Lab

L-51: Effect of Deformation Heterogeneity of TWIP Steels on Near Boundary Twinning Behavior Using Crystal Plasticity Simulation: *Jaimyun Jung*¹; Jae Ik Yoon¹; Jung Gi Kim¹; Marat Latypov²; Jin You Kim²; Hyoung Seop Kim¹; ¹POSTECH; ²Georgia Tech; ³POSCO

L-52: Effect of Electric Fields on Grain Boundary Characteristics in Ceramics: *Wei Qin*¹; ¹University of California, Davis

L-53: Grain Boundary Mechanisms in Nickel-based Superalloys: *John Rotella*¹; Martin Detrois²; Sammy Tin²; Michael Sangid¹; ¹Purdue University; ²Illinois Institute of Technology

L-55: In-situ EBSD Study on Recrystallization Nucleation in Deformed Al: *Guilin Wu*¹; ¹Chongqing University

L-56: Influence of Deformation Processing on the Superelastic Behavior of NCAXB Alloys: *Cheng Zhang*¹; Kenneth Vecchio¹; ¹Department of NanoEngineering and Materials Science and Engineering Program, University of California, San Diego

L-57: Interaction of Grain Boundaries with Nano-clusters in Immiscible Alloys: *R. K. Koju*¹; M. Rajagopalan²; K. A. Darling³; L. J. Kecskes³; K. N. Solanki²; Y. Mishin¹; ¹George Mason University; ²Arizona State University; ³US Army Research Laboratory

L-58: Interface Controlled Work Hardening Ability in Ultrafine-grained Ti-6Al-4V Alloy with Bimodal Microstructure: *Yan Chong*¹; Tilak Bhattacharjee¹; Ruixiao Zheng¹; Tsuji Nobuhiro¹; ¹Kyoto University

L-59: Mechanical Characterization of Ti-6Al-4V Titanium Alloy at Multiple Length Scales Using Spherical Indentation Stress-strain Measurements: *Jordan Weaver*¹; Surya Kalidindi²; ¹Los Alamos National Laboratory; ²Georgia Institute of Technology

L-60: Non-uniform Magnetostress in Magnetic Shape-memory Alloys: *Anthony Hobza*¹; Peter Müllerner¹; ¹Boise State University

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Fan-Yi Ouyang, National Tsing Hua University; C. Robert Kao, National Taiwan University; Albert T Wu, National Central University; Fay Hua, Intel Corporation; Yan Li, Intel Corporation; Babak Arfaei, Binghamton University; Kazuhiro Nogita, The University of Queensland

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L-61: Effect of Component Surface Finish on the Thermo-mechanical Reliability of Lead-free High Temperature Solder Alloys: *Faramarz Hadian*¹; Harry Schoeller²; Eric Cotts¹; ¹Binghamton University; ²Universal Instrument Corporation

L-62: Investigation of Melting Behavior and Morphology Change of Sn Nanowires based on Infra-red (IR) Heating Method: *Jirui Wang*¹; Fan Gao¹; Zhiyong Gu¹; ¹University of Massachusetts Lowell

L-63: Study on Thermomechanical Properties of Graphene-added Solder Paste for Automotive Electronics: *Sang Jun Park*¹; Dong-Yurl Yu¹; Kyoung-Ho Kim¹; Junghwan Bang¹; Soong-Keun Hyun²; Yong-Ho Ko¹; ¹Korea Institute of Industrial Technology; ²Dept. of Materials Science and Engineering, Inha University

L-64: Synchrotron X-ray Study of Sn Whisker Growth Induced by Electromigration: Cheng-En Ho¹; Wan-Zhen Hsieh¹; *Pei-Tzu Lee*¹; Cheng-Hsien Yang¹; ¹Yuan Ze University

Environmentally Assisted Cracking: Theory and Practice — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies

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L-65: High Pressure Hydrogen Embrittlement of Fe-30Mn-0.2C-(1.5)Al High-Mn Steel: *Seung-Yong Lee*¹; Han-Jin Kim²; Jin-Yoo Seo³; Jae-Hyeok Shim³; Joonho Lee²; Byoungchul Hwang¹; ¹Seoul National University of Science&Technology; ²Korea University; ³Korea Institute of Science and Technology

L-66: The Characterization of Grain Boundary Precipitates in Aluminum-Magnesium Alloys at Mildly Elevated Temperatures: *Sarah Fakler*¹; ¹University of Virginia

L-67: The Influence of Global Slip Behavior on Hydrogen Environment-Assisted Cracking in Monel K-500: *Zachary Harris*¹; James Burns¹; ¹University of Virginia

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Koutsos, Drexel University; Tongguang Zhai, University of Kentucky

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L-68: A Strain Energy Based Damage Model for Fatigue Crack Initiation and Growth: *Peter Huffman*¹; ¹John Deere

L-69: Acoustic Induced Vibration and Failure Assessment in Piping; Fluid-Structural-Interface: *Bakr Rabeeh*¹; Mariz Mattar¹; ¹German University in Cairo, GUC

L-70: Crack Initiation and Propagation Modeling Using Extended Finite Element Method (XFEM): A Review: *Mashhour Alazwari*¹; Singiresu Rao¹; ¹University of Miami

L-71: Crack Initiation in a Ni-based Superalloy Studied by Miniaturised Ultrasonic Fatigue Testing: *Jicheng Gong*¹; Isaac Cabrera¹; Angus Wilkinson¹; ¹University of Oxford

L-72: Creep, Damage and Fatigue Failure of Sn3.0Ag0.5Cu Solder Joints: *Travis Dale*¹; Dennis Chan¹; Chaitra Chavali¹; Carol Handwerker¹; Ganesh Subbarayan¹; ¹Purdue University

L-74: Effect of Laser Ablation Coating Removal (LACR) on the Fatigue Behavior of a Steel Substrate: *Md Shamsujjoha*¹; Sean Agnew¹; James Brooks²; James Fitz-Gerald¹; ¹University of Virginia; ²Newport News Shipbuilding

L-75: Effects of Deformation Behaviors on S-N Fatigue Properties of High-Mn Steels at Ambient and Cryogenic Temperatures: *Hyokyung Sung*¹; Daeho Jung¹; Wongyu Seo¹; Jehyun Lee²; Sangshik Kim¹; ¹Gyeongsang National University; ²Changwon National University

L-77: Fatigue Crack Initiation and Fatigue Crack Growth Behavior of Pre-Corroded AA7050-T7451: *Noelle Easter Co*¹; James Burns¹; ¹University of Virginia

L-79: Finite Element Analyses of Pure Ni Cold Spray Particles Impact Related to Coating Crack Behavior: *Pasquale Cavaliere*¹; ¹University of Salento

L-81: Micromechanical Analysis of Acoustically Induced Vibration; Piping Bulging and Thinning: *Bakr Rabeeh*¹; Alaa Mazroua¹; Marwa Abdelbaqy¹; ¹German University in Cairo, GUC

L-83: The Effect of Rare-earth Additions on Low-cycle Fatigue Behavior in Mg Alloys: *Aeriel Murphy*¹; John Allison¹; ¹University of Michigan

L-84: The Effects of Microstructure on Fatigue in a Polycrystalline Nickel Base Superalloy at Intermediate Temperature: *J.C. Stinville*¹; M.P. Echlin¹; P.G. Callahan¹; W.C. Lenthe¹; E. Marin²; J. Miao³; T.M. Pollock¹; ¹University of California Santa Barbara; ²GE Global Research; ³University of Michigan

L-85: VHCF Strength of Spring Steel with Small Scratches: *Yoshio Nishimura*¹; Masahiro Endo²; Keiji Yanase²; Yuichi Ikeda²; Yuya Tanaka²; Susumu Miyakawa¹; Nobuyuki Miyamoto¹; ¹Denso Corporation; ²Fukuoka University

General Poster Session — General Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Functional Materials Division, TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division

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M-1: A Comparison between Quenching and Furnace Cooling after Sintering of Al-4Cu-1.5Mg Alloy: *Byungmin Ahn*¹; SeHwan Lee²; ¹Aju University; ²Ehwa Diamond Industrial Co., Ltd.

M-2: Advances in Automated Optical 3D Materials Characterization: Satya Ganti¹; Brian Hayes¹; *Veeraraghavan Sundar*¹; ¹UES Inc.

M-3: Analyzing Polycrystalline Grain Microstructures in Thin Films: *Ahu Öncü*¹; Thomas Hempel¹; Bodo Kalkofen¹; Thorsten Halle¹; Dana Zöllner¹; ¹Otto von Guericke University Magdeburg

M-5: Solving Challenges of Silicon Anodes for Li-ion Batteries: *Hallgeir Klette*¹; Trygve Mongstad¹; Hanne Andersen¹; Kenneth Knudsen¹; Samson Lai¹; Jan Petter Maehlen¹; Thomas Preston¹; Anita Reksten¹; Asbjørn Ulvestad¹; Martin Kirkengen¹; ¹IFE (Institute for Energy Technology)

M-6: Densification Mechanism of Fe based Amorphous Alloy Powder during Spark Plasma Sintering: *Tanaji Paul*¹; Sandip Harimkar¹; ¹Oklahoma State University

M-7: Determination of Retained Stress by Jominy Method in Al-Cu Alloys: *Ibrahim Hizli*¹; Burak Tasli¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

M-8: Development of Cu-Alloy Films for Energy-saving LED Applications: *Chon-Hsin Lin*¹; ¹Asia-Pacific Institute of Creativity/Biotechnology

M-9: Direct Conversion of Celestite to SrCO₃ by Wet Milling: *Rasit Sezer*¹; Aysegül Bilen²; Ibrahim Göksel Hizli³; Selim Erturk²; Cüneyt Arslan²; ¹Karadeniz Technical University; ²Istanbul Technical University; ³Istanbul University

M-10: Effect of Strontium on Surface Oxide Structure of Liquid Al-12Si Alloy: *Ugur Aleev*¹; Gurer Zeren¹; Derya Dispinar¹; Cem Kahraman¹; ¹Istanbul University

M-11: Enhancement of Strength and Formability for Super-light Mg-Li Alloys: *Hyeon-Taek Son*¹; Yong-Ho Kim¹; Hyo-Sang Yoo¹; ¹Korea Institute of Industrial Technology

M-12: Evaluation of Anodized Aluminum for Potential Use as an Interposer for the Test Socket Industry: Boon-Chai Ng¹; *Will Allen*¹; Dominique Tan-Ng²; ¹Andrews University; ²Andrews Academy

M-13: Fabrication of Cu-Be Alloy Matrix CNT Composite and Enhancement of Materials Properties: *Kwang-jin Lee*¹; Yeong-seok Kim²; Sang-don Mun²; ¹Korea Institute of Industrial Technology; ²Chonbuk National University

M-14: Global Solar Radiation as an Alternative to Energy Production for Earth Climate System Using Common Meteorological Data: Bukola Dawodu¹; *Hammed Ogundiran*²; Isa Elegbede³; ¹University Of Lagos; ²Fountain University; ³Brandenburg University of Technology

M-15: Graphite Supported Template Synthesized Intermetallic Co-Ni Nanoparticles for Biomedical Applications: *Mehmet Burcin Piskin*¹; Ivania Markova²; Emre Karaduman³; Ivan Zahariev²; ¹Yildiz Technical University; ²University of Chemical Technology and Metallurgy-Sofia, Bulgaria; ³Yildiz Technical University

M-16: Hot Deformation Properties of 5xxx Aluminum Alloys for Automotive Applications: *Paul Ebenberger*¹; Bodo Gerold²; Ramona Prillhofer²; Anna-Catharina Kaiß²; Peter Uggowitzer³; Stefan Pogatscher¹; ¹Montanuniversitaet Leoben; ²AMAG rolling GmbH; ³ETH Zürich

M-17: Improvement of Corrosion Resistance of Low Carbon Steel by Ni-electrodeposition with Reduced Graphene Oxide: *Jung-Woo Choi*¹; Gye-Won Kim¹; Bongyoung Yoo¹; Dong-Hyuk Shin¹; ¹Hanyang University

M-18: Influence of Addition of Alumina Nanoparticles on Thermoelectric Properties of Bi_{0.4}Sb_{1.6}Te₃ Fabricated by Mechanical Alloying and Vacuum Hot Pressing: *Pee-Yew Lee*¹; ¹National Taiwan Ocean University

M-19: Influence of Microstructure and Strain Hardening on Rheological and Fatigue Resistance of Cu-Ag Alloys Wires: Artur Kawecki¹; *Kinga Korzen*¹; Eliza Sieja-Smaga¹; Andrzej Nowak¹; Tadeusz Knych¹; Andrzej Mamala¹; Beata Smyrak¹; Malgorzata Zasadzinska¹; ¹AGH University of Science and Technology

M-20: Role of ZnO Nanoparticle Reinforcing the Ductility of Al-Si Alloys: *Sangjun Lee*¹; Donghyun Bae¹; ¹Yonsei University

M-21: Sigma-phase Formation in the Reaction Zone between Mo-41Re Alloy and SiC during Diffusion Bonding: Seung-Sik Jang¹; Sun-Kyu Lee¹; Godwin Kwame Ahiale¹; *Yong-Jun Oh*¹; ¹Hanbat National University

M-22: Study on a Bipolar Plate Corrosion Properties for an STS316 and STS430 Specimen's on the PEMFC Environment by the Surface Treatment through Low-temperature TiAlCrN PVD Process: *Min Seok Moon*¹; Myeong Han Yoo¹; Joon Hyuk Song¹; Je Ha Oh¹; Jong Il Rho¹; Shin Jae Kang²; Kee Do Woo²; Sung Mo Yang²; Young Choi³; ¹Korea Institute of Carbon Convergence Technology; ²Chonbuk National University; ³KITECH

M-23: Study on the Behavior of Ultrafine-grained, Precipitation Strengthened Steels at High Strain Rates: *Janusz Majta*¹; Remigiusz Bloniarz¹; ¹AGH University of Science and Technology

M-24: Study of the Effects of High Temperature Processing on Microstructure and Texture Evolution in Ti Alloys based on Reconstruction of Beta Phase Using EBSD Data: Maciej Szymula¹; Mateusz Sternalski¹; Lukasz Madej¹; Brad Wynne²; *Krzysztof Muszka*¹; ¹AGH University of Science and Technology; ²The University of Sheffield

M-25: Structural Characterization of NaF-AlF₃ Melts Used in Aluminum Refining by High-temperature Raman Spectroscopy: *Xianwei Hu*¹; Jingjing Liu¹; Gaowei Li¹; Zhongning Shi¹; Bingliang Gao¹; Wenju Tao¹; Jiangyu Yu¹; Zhaowen Wang¹; ¹Northeastern University

M-26: Synthesis and Characterization of Al-B4C Powders by Mechanical Alloying: *Hao Guo*¹; ZhongWu Zhang¹; Yu Zhao¹; Songsong Xu¹; Junpeng Li¹; Jing Zhang¹; ¹College of Materials Science and Chemical Engineering, Harbin Engineering University

M-27: The Effect of Temperature on Fracture and Fatigue in the High-entropy Alloy CrMnFeCoNi: *Keli Thurston*¹; Bernd Gludovatz²; Guillaume Laplanche³; Anton Hohenwarter⁴; Robert Ritchie²; ¹UC Berkeley; ²Lawrence Berkeley National Laboratory; ³Ruhr University; ⁴Montanuniversität Leoben

M-28: Thermomechanical Fatigue Behavior of Heat-resistant Cast Austenitic Stainless Steel for Automobile Turbocharger Housing: *Godwin Kwame Ahiale*¹; Seungmun Jung²; Sunghak Lee²; Yong-Jun Oh¹; ¹Hanbat National University; ²Pohang University of Science and Technology

M-29: Transitioning Ideas to Reality: Melding Casting and Additive Manufacturing to Advance Engineering Education: *Matthew Willard*¹; James McGuffin-Cawley¹; ¹Case Western Reserve University

M-30: Ultrasonic Vibration Assisted Laser Surface Engineering of Aluminum Alloys: *Sourabh Biswas*¹; Seyyed Habib Alavi¹; Sandip Harimkar¹; ¹Oklahoma State University

M-31: Variation of Thermal Diffusivity of Cu-RGO Composites by SPS Process: *Hyo-Soo Lee*¹; Yeo-Reum Lee¹; Sangwoo Kim¹; ¹KITECH

M-32: Correlation between Microstructure Evolution and Mechanical Properties of Al 6061 Alloy Fabricated by Differential Speed Rolling after Cryogenic Treatment: *Haewoong Yang*¹; Yong Hwan Lee¹; Danasesha Paradinda Putra¹; Young Gun Ko¹; ¹Yeungnam university

M-33: Corrosion Characteristics of Ti-free B Grain Refined A360: *Eda Ergun Songul*¹; Cemre Bas¹; Derya Dispinar¹; Gokhan Orhan¹; ¹Istanbul University

M-34: Correlation between Corrosion Resistance and Microstructure of Al-12Si Eutectic Alloy: *Cemre Bas*¹; Yurdanur Temel¹; Eda Ergun Songul¹; Derya Dispinar¹; Gokhan Orhan¹; ¹Istanbul University

High Entropy Alloys V — Poster Session

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; Suveen Nigal Mathaudhu, University of California Riverside; Xie Xie, The University of Tennessee, Knoxville; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University

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L-86: Annealing Twin Evolution and Grain Boundary Engineering during Recrystallization in CoCrFeNiMn High Entropy Alloys: *Christopher Barr*¹; Elaf Anber¹; J. Liu²; Yong Zhang²; Mitra Taheri¹; ¹Drexel University; ²University of Science and Technology Beijing

L-87: Atomic-scale Homogenization in an fcc-based High-entropy Alloy via Severe Plastic Deformation: *Hao Yuan*¹; Ming-Hung Tsai²; Gang Sha¹; Fan Liu¹; Zenji Horita³; Yuntian Zhu⁴; Jing Tao Wang¹; ¹Nanjing University of Science and Technology; ²National Chung Hsing University; ³Kyushu University; ⁴North Carolina State University

L-88: Construction of Pseudo Binary Phase Diagram in FeCoCrNi-Cu High Entropy Alloy System: *Kook Noh Yoon*¹; Khurram Yaqoob²; Je In Lee¹; Jin Yeon Kim¹; Eun Soo Park¹; ¹Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University; ²School of Chemical and Materials Engineering, National University of Sciences and Technology

L-89: Hydrogen Effects on the Mechanical Behavior of CoCrFeMnNi High-entropy Alloy: Role of Pre-strain: *Yakai Zhao*¹; *Dong-Hyun Lee*¹; Jung-A Lee¹; Jin-Yoo Suh²; Jae-il Jang¹; ¹Hanyang University; ²Korea Institute of Science and Technology

L-90: Mechanical Properties of Entropy Stabilized Oxides: *Tyler Harrington*¹; Matthew Quinn²; William Mellor²; Joshua Gild³; Jian Luo¹; Kenneth Vecchio¹; ¹Department of NanoEngineering and Materials Science and Engineering Program, UC San Diego; ²Department of NanoEngineering, UC San Diego; ³Materials Science and Engineering Program, UC San Diego

L-91: Precipitation in High-entropy FeNiMnAlCr Alloy: *Margaret Wu*¹; Zhangwei Wang¹; Paul Munroe²; Ian Baker¹; ¹Dartmouth College; ²University of New South Wales

L-92: The Fabrication and Oxidation Behavior of High-entropy Refractory Metal Carbides: *Tyler Harrington*¹; Lavina Backman²; Joshua Gild³; Jian Luo¹; Elizabeth Opila²; Kenneth Vecchio¹; ¹Department of NanoEngineering and Materials Science and Engineering Program, UC San Diego; ²Department of Materials Science and Engineering, University of Virginia; ³Materials Science and Engineering Program, UC San Diego

L-93: The Role of Mass Scattering on Thermal Transport across Multiple Component Systems: *Ashutosh Giri*¹; Jeffrey Braun¹; Mina Lim²; Zsolt Rak²; Donald Brenner²; Patrick Hopkins²; ¹University of Virginia; ²North Carolina State University

L-94: Microstructure and Properties of the VNbMoTaW High Entropy Alloy Prepared Powder Metallurgy: *Jong Hwa Lim*¹; Ki Buem Kim²; *Jin Kyu Lee*³; ¹Kongju National University; ²Sejong University; ³Kongju National University

L-95: A Combinatorial Assessment of AlxCrCuFeNi₂ (0 < x < 1.5) Complex Concentrated Alloys: Microstructure, Microhardness, and Magnetic Properties: *Bharat Gwalani*¹; Tushar Borkar¹; Deep Choudhuri¹; Rajarshi Banerjee¹; ¹University of North Texas Denton

L-96: An Assessment of the Lattice Strain in the CrMnFeCoNi High-Entropy Alloy: *Lewis Owen*¹; Ed Pickering²; Helen Playford³; Howard Stone¹; Matthew Tucker⁴; Nicholas Jones¹; ¹University of Cambridge; ²University of Manchester; ³STFC ISIS Facility; ⁴Spallation Neutron Source

L-97: Deformation Behavior and Solid Solution Hardening of Al-containing Refractory High-entropy Alloys: *Hans Chen*¹; Alexander Kauffmann¹; Bronislava Gorr²; Daniel Schliephake¹; Christoph Seemüller¹; Julia Wagner³; Hans-Jürgen Christ²; Martin Heilmaier¹; ¹Karlsruhe Institute of Technology (KIT); ²University of Siegen; ³University of Stuttgart

L-98: Development of Lightweight High Entropy Alloys using a CALPHAD Approach: *Xuejun Huang*¹; Weihua Sun¹; Alan Luo¹; ¹The Ohio State University

L-101: Exploring the Effects of Grain Refinement in Non-equiatomic High Entropy Alloys: *Benjamin MacDonald*¹; Zhiqiang Fu¹; Baolong Zheng¹; Weiping Chen²; Julia Ivanisenko³; Yizhang Zhou¹; Horst Hahn³; Enrique Lavernia¹; ¹University of California Irvine; ²South China University of Technology; ³Karlsruhe Institute of Technology

L-102: High Throughput Exploration of High Entropy Alloys for High Temperature and Nuclear Applications via Diffusion Multiples: *Owais Waseem*¹; Soon Hyung Hong¹; Ho Jin Ryu¹; ¹Korea Advanced Institute of Science and Technology

L-103: Liquid Phase Separation in Equiatomic High-entropy Alloys Containing Copper: *Nicholas Derimow*¹; Abraham Munitz²; Reza Abbaschian¹; ¹University of California, Riverside; ²Nuclear Research Center-Negev

L-104: Microstructural Investigations of a Nanocrystalline TiZrHfNbTa High-entropy Alloy: *Benjamin Schuh*¹; Jean-Philippe Couzinié²; Verena Maier-Kiener¹; Bernhard Völker¹; Anton Hohenwarter¹; ¹Montanuniversität Leoben; ²CNRS & Université Paris-Est

L-105: Positron Annihilation Study on Equiatomic Multicomponent Alloys: *Shuhei Yoshida*¹; Tilak Bhattacharjee¹; Yu Bai¹; Kazuki Sugita²; Masataka Mizuno²; Hideki Araki²; Nobuhiro Tsuji³; ¹Kyoto University; ²Osaka University; ³Kyoto University / Elements Strategy Initiative for Structural Materials (ESISM)

L-107: Structural and Mechanical Characterization of Refractory High Entropy Alloys: *Boliang Zhang*¹; Yang Mu²; Yi Zhang²; Bin Zhang²; Wen Jin Meng²; Shengmin Guo²; ¹Louisiana State University; ²Louisiana State University

L-108: Synthesis of High-entropy Metal Diborides and Fluorite Oxides: *Joshua Gild*¹; Yuanyao Zhang¹; Tyler Harrington¹; Kenneth Vecchio¹; Jian Luo¹; ¹University of California, San Diego

L-109: Thermal Properties of Entropy Stabilized Oxides: *Jeffrey Braun*¹; Ashutosh Giri¹; Zsolt Rak²; Mina Lim²; Christina Rost²; John-Paul Maria²; Donald Brenner²; Patrick Hopkins¹; ¹University of Virginia; ²North Carolina State University

L-110: Thermodynamic Approach for Designing New FCC High Entropy Alloy: *Won-Mi Choi*¹; Seungmun Jung¹; Yong Hee Jo¹; Sunghak Lee¹; Byeong-Joo Lee¹; ¹POSTECH

L-111: Thermomechanical and Nanoindentation Study of High Entropy Alloys Derived from Equilibrium Solidification: *Artashes Ter-Isahakyan*¹; John Balk¹; ¹University of Kentucky

L-113: Microstructures and Properties of As-Cast AlCrFeMnV, AlCrFeTiV, and AlCrMnTiV High Entropy Alloys: *Prithvi Narayana*¹; Keith Knipling²; Lily Nguyen²; ¹Thomas Jefferson High School for Science and Technology; ²U.S. Naval Research Laboratory

L-112: Microstructural Details and Indentation Behavior of Microcrystalline and Nanocrystalline Ti-Ni-Cr-Co-Fe High-entropy Alloy: *Abhijit Abhijit*¹; G. Madhusudhan Reddy¹; *Koteswararao Rajulapati*¹; ¹University of Hyderabad

In-situ Methods for Unraveling Structure-Property Relationships in Light Metals — Poster Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Wim Sillekens, European Space Agency

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Room: Hall B1
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I-19: Development of Plasticity Models via Point-by-Point Comparison with HREBSD and Microscale DIC: *Timothy Ruggles*¹; Geoffrey Bomarito²; Jacob Hochhalter²; Saikumar Yeratapally¹; ¹National Institute of Aerospace; ²NASA LaRC

I-20: Effects of Alloying Elements and Processing on Deformation Mechanisms and Properties of Mg-Li base Alloys: *Zhongwu Zhang*¹; Yun Zou¹; Jian Li²; Hong Wang²; Ke An³; ¹Harbin Engineering University; ²China Academy of Engineering Physics; ³Oak Ridge National Laboratory

I-21: Parameter Study and Experimental Validation of Crystal-scale Finite Element Analyses of Titanium Alloys: *Kayleigh Nelson*¹; Euan Wielewski¹; ¹University of Glasgow

I-22: The Application of Synchrotron X-ray Tomography in the Solidification of Mg Alloys: *Enyu Guo*¹; Sansan Shuai²; André Philliond²; Tao Jing²; Peter Lee¹; ¹University of Manchester; ²Tsinghua University; ³McMaster University

Magnesium Technology 2017 — Poster Session

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Kiran Solanki, Arizona State University; Dmytro Orlov, Lund University; Alok Singh, National Institute for Materials Science; Neale Neelamegham, Ind LLC

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Session Chair: Dmytro Orlov, Lund University

I-23: A High-specific-strength and Corrosion-resistant Magnesium Alloy: *Wangqiang Xu*¹; Michael Ferry¹; ¹University of New South Wales

I-24: A Study on the Mechanical Characteristic of Heat Dissipation Magnesium Alloy by Thixomolding Process: *Ho Seung Jang*¹; Jong Moon Park¹; Sueng Hoon Yang¹; No Jin Park¹; Min Su Park²; Myung Hoon Oh¹; ¹Kumoh National Institute of Technology/Materials Science and Engineering; ²Jangwontech Co. Ltd.

I-25: Characterization of Ultrafine Grained WE43 Magnesium Alloy by Equal-channel Angular Pressing and High Pressure Torsion Process: *Camila De Souza*¹; Tung Nguyen¹; Marc Meyers¹; Bingfeng Wang²; ¹University of California, San Diego; ²Central South University, P.R. China

I-26: Constrained Groove Pressing of AZ31 and ZE10 Magnesium Alloys: *Mariia Zimina*¹; Jan Bohlen²; Dietmar Letzig²; Gerrit Kurz²; Michaela Šlapáková¹; Jan Bajer¹; Miroslav Cieslar¹; ¹Charles University in Prague; ²Helmholtz-Zentrum Geesthacht

I-27: Damage and Fracture in Magnesium AZ31, Experiments and Modeling: *Babak Kondori*¹; Ahmed Benzerga¹; ¹Texas A&M University

I-28: Development of High Strength Mg Alloys with Good Formability at Room Temperature: *T.T.T. Trang*¹; J. Zhang²; A. Zargaran¹; J.H. Kim¹; J.H. Hwang¹; Nack J. Kim¹; ¹Graduate Institute of Ferrous Technology (GIFT) and CAAM, Pohang University of Science and Technology (POSTECH); ²Harbin Engineering University

I-29: Effects of Alloying Elements on Mechanical and Corrosion Properties of Extruded Mg-Al-Ca Alloys: *Hyunkyung Lim*¹; Wonseok Yang¹; Tae yang Kwak¹; Youngkyun Kim¹; Young-Ok Yoon¹; Shae K. Kim¹; ¹KITECH

I-30: Enhancement of Impact Fracture Toughness of Magnesium Alloys by Microstructure Modification: *Toshiji Mukai*¹; Takayuki Hase¹; Naoko Ikeo¹; Masataka Yamaguchi²; ¹Kobe University; ²Japan Atomic Energy Agency

I-31: First-principles Model of Alloy-dependent Magnesium Corrosion: *Krista Limmer*¹; Joseph Labukas¹; Michael Garvey²; Santanu Chaudhuri²; Jan Andzelm¹; ¹U.S. Army Research Laboratory; ²University of Illinois Urbana-Champaign

I-32: First Principles Modeling of <c+a> Dislocations in an Mg-Y Alloys: *Daniel Buey*¹; Maryam Ghazisaeidi¹; ¹Ohio State University

I-33: Formability Analysis on Optimized Condition of Superplastic Forming of Magnesium Alloy Sheet: *Gopal Kumaresan*¹; K Kalaichelvan²; ¹Production Technology, MIT Campus, Anna University; ²Ceramic Technology, Anna University

I-34: Hot Blank – Cold Die (HB-CD) Stamping of Magnesium Alloy Sheets – Material Characterization and Modeling: *Fadi Abu-Farha*¹; Abdelrahim Lhal¹; Zeren Xu¹; Nan Zhang¹; ¹Clemson University

I-35: Hydrogen Uptake by Magnesium Alloys during Aqueous Corrosion: Michael Brady¹; Anton Ievlev¹; Mostafa Fayek²; Donovan Leonard¹; Harry Meyer III¹; *Matthew Frith*¹; Luke Daemen¹; Anibal Ramirez-Cuesta¹; Olga Ovchinnikova¹; Lawrence Anovitz¹; Gernot Rother¹; Dongwon Shin¹; Guang-Ling Song³; Bruce Davis⁴; ¹Oak Ridge National Laboratory; ²University of Manitoba; ³Xiamen University; ⁴Magnesium Elektron North America

I-36: Influence of Thermal Treatment on Corrosion Rates of Mg-RE and Mg-10%Zn-0.3%Ca Alloys in 3.5%NaCl Solution: *Marilia Girardi Zorzato*¹; Joseph Robson¹; Dirk Engelberg¹; Julie Gough¹; ¹University of Manchester

I-38: Magnesium Based Biodegradable Composites for Orthopedic Application: Satish Jaiswal¹; Pallavi Gupta¹; Partha Roy¹; *Debrupa Lahiri*¹; ¹Indian Institute of Technology Roorkee

I-39: Mechanical and Microstructural Characterization of a Multi-Axis Forged AZ31 Billet: *Christian Roach*¹; Lauren Oh¹; Xavier Hernandez¹; Suveen Mathaudhu¹; ¹University of California, Riverside

I-40: Microstructures and Tensile Properties of As-cast Magnesium AM60-based Composite Containing Alumina Fibres and Nano Particles: *Junxiang Zhou*¹; Li Fang¹; Xuezhi Zhang¹; Henry Hu¹; ¹University of Windsor

I-41: Negative Difference Effect of Mg Alloy AZ31D in NaCl Solutions: *Shuoshuo Xi*¹; ¹University of Illinois at Chicago

I-42: Origin of Non-Schmid Behavior of {-1011} Deformation Twinning in Mg: *Akio Ishii*¹; Shigenobu Ogata¹; ¹Osaka University

I-43: Phase Transformations of Long Periodic Stacking Ordered (LPSO) Phases at Finite Temperature in Magnesium-Gadolinium-Aluminum Ternary System: *Hongyeun Kim*¹; Yi Wang¹; Laszlo Kecskes²; Kristopher Darling²; Zi-Kui Liu¹; ¹Pennsylvania State University; ²US Army Research Laboratory

I-44: Production of Mg-Li Alloys by Vacuum Aluminothermic Reduction Process: Wang Yaowu¹; *Xianwei Hu*²; ¹Northeastern University of China; ²Northeastern University of China

I-45: Quasi-static and Dynamic Behavior and Microstructure Evolution of WE43 Rare Earth Magnesium Alloy: Experiments and Crystal Plasticity Modeling: *Mohammad Jahedi*¹; Miroslav Zecevic¹; Brandon McWilliams²; Irene Beyerlein³; Marko Knezevic¹; ¹Department of Mechanical Engineering, University of New Hampshire; ²Weapons and Materials Research Directorate, US Army Research Laboratory; ³Department of Mechanical Engineering, Materials Department, University of California at Santa Barbara

I-47: Strengthening Mechanism of AZ31 Magnesium with Gradient Structure: Maryam Jamalain¹; *David P. Field*¹; ¹Washington State University

I-48: Study on Electric and Thermal Properties of Mg Alloys with Sn and Ca Elements: *Yong-Ho Kim*¹; Hyo-Sang Yoo¹; Chang-Gi Jung¹; Hyeon-Taek Son¹; ¹Korea Institute of Industrial Technology

I-49: Study on the Reversion Reaction between Magnesium Vapor and CO in the Carbothermic Reduction of Magnesia under Vacuum: *Yang Tian*¹; Baoqiang Xu¹; Bin Yang¹; Dachun Liu¹; Hai Liu¹; ¹Kunming University of Science and Technology

I-50: Surface Integrity Characterization from Shot Peening a Biodegradable Magnesium Alloy: *Michael Sealy*¹; Yuebin Guo²; Ziye Liu²; Chao Li²; ¹University of Nebraska-Lincoln; ²The University of Alabama

I-51: Textural Contributions to Strengthening in Mg-RE Alloy with Nanospaced Stacking Faults: *Heather Salvador*¹; Vishnu Bhattacharyya²; Yuntian Zhu³; Sean Agnew²; Suveen Mathaudhu¹; ¹University of California, Riverside; ²University of Virginia; ³North Carolina State University

I-52: The Deformation Behavior of Mg-2Zn Alloy Sheet Containing Oxygen Atoms: *Seung Won Kang*¹; Dognhyun Bae¹; ¹Yonsei University

I-53: The Effect of Annealing on the Properties of AW5754 Aluminium Alloy - AZ31 Magnesium Alloy Joints Produced with Explosion Welding: Martin Sahul¹; *Miroslav Sahul*¹; Ján Lokaj¹; Petr Nesvadba²; ¹Slovak University of Technology in Bratislava; ²OZM Research, Ltd.

I-54: Grain Refining in Mg Welds with Arc Oscillation: *Tao Yuan*¹; Shujun Chen¹; Sindo Kou¹; ¹Beijing University of Technology

Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nuclear Materials Committee
Program Organizers: Indrajit Charit, University of Idaho; Yuntian Zhu, North Carolina State University; Stuart Maloy, Los Alamos National Laboratory; Peter Liaw, University of Tennessee - Knoxville

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L-114: Effects of Blade Curvature on Fatigue Life of Nickel-based Single Crystal Structures with Film-cooling Holes: *Zhixun Wen*¹; Yamin Zhang¹; Youliang Li¹; Zhufeng Yue¹; ¹Northwestern Polytechnical University

L-115: Understanding of Microstructure and Mechanical Properties of Friction Stir Processed Aluminum-bearing High-Chromium Ferritic Stainless Steel: *Anumat Sittitho*¹; Vedavyas Tungala²; Indrajit Charit¹; Rajiv Mishra²; ¹University of Idaho; ²University of North Texas

L-116: In Situ Investigation on the Micromechanical Behavior of the CuZr-based BMGC by Neutron Diffraction: *Dongmei Wang*¹; Ke An²; Juan Mu³; Yan Chen²; Yandong Wang³; Haijian Xu²; ¹Northeastern University 2.Oak Ridge National Laboratory; ²Oak Ridge National Laboratory; ³Northeastern University

L-117: Mechanical and Creep Behavior of EPDM: *Saeed Babamohammadi*¹; Jahan Rasty¹; ¹Texas Tech University

L-118: High Temperature Tensile Properties and Related Microstructural Evolution of Grade 92 Steel: Sultan Alsagabi¹; Somayeh Pasebani²; *Indrajit Charit*³; ¹King Abdulaziz City for Science and Technology - KACST; ²Oregon State University; ³University of Idaho

L-119: Mechanical Properties and Serrated Flow in Al-bearing, High-Cr Accident-tolerant Ferritic Steel: Ankan Guria¹; *Indrajit Charit*¹; ¹University of Idaho

L-120: Spherical Nanoindentation Creep Behavior of Indium at Room Temperature: *Woo-Jin Kim*¹; Jung-A Lee¹; Yakai Zhao¹; Jae-il Jang¹; ¹Hanyang University

Mechanical Behavior of Nanostructured Materials — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Xinghang Zhang, Purdue University; Yuntian Zhu, North Carolina State University; Joseph Poon, University of Virginia; Suryanarayana Challapalli, University of Central Florida; Enrique Lavernia, University of California, Irvine; Haiyan Wang, Texas A&M University

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Funding support provided by: AJA International; Hysitron Inc.

Session Chairs: Joseph Poon, University of Virginia; Yuntian Zhu, North Carolina State University; Deliang Zhang, Shanghai Jiaotong University; Zhe Fan, Texas A&M University

L-121: Cyclic Response of Friction-stir Processed Ultra-fine Grained Copper: *Salar Salahi*¹; G. Guven Yapici¹; ¹Ozyegin University

L-122: Projectile Induced Deformation Twinning in Nanocrystalline Aluminum: *Sichuang Xue*¹; Zhe Fan¹; Olawale Lawal²; Thevamaran Ramathanan²; Yue Liu³; Kaiyuan Yu⁴; Edwin Thomas²; Xinghang Zhang²; ¹Texas A&M University; ²Rice University; ³Los Alamos National Laboratory; ⁴China University of Petroleum; ⁵Purdue University

L-123: Aluminum with High Modulus and Superior Strength by Self-Dispersed TiC Nanoparticles: *Chezhen Cao*¹; Abdolreza Javadi¹; Weiqing Liu²; Xiaochun Li¹; ¹University of California, Los Angeles; ²Harbin Institute of Technology

L-124: Multiscale Modeling of Deformation Behavior in Metal/Ceramic Multilayer Nanocomposites: *Mohsen Damadam*¹; Iman Salehinia²; Georges Ayoub³; Hussein Zhib¹; ¹Washington State University; ²Northern Illinois University; ³University of Michigan-Dearborn

L-125: Competition between Slip and Martensitic Transformation of Retained Austenite in Carbon-steel/Copper Nanolaminates: *Yadong Ru*¹; Yang Ren²; Lishan Cui¹; Kaiyuan Yu¹; ¹China University of Petroleum Beijing; ²X-ray Science Division, Argonne National Laboratory

L-126: The Influence of Glassy Phase on the Crack Healing Efficiency of Silicon Carbide/Spinel Ceramic: *Fariborz Tavangarian*¹; Guoqiang Li²; ¹Penn State Harrisburg; ²Louisiana State University

L-128: The Thermal Stability of Cryomilled 5083 Aluminum Containing Diamantane Nanoparticles: *Walid Hanna*¹; Khinlay Maung²; Mohammed Enayati³; James Earthman⁴; Farghalli Mohamed⁴; ¹Military Technical College; ²Precision Castparts Corp.; ³Department of Materials Engineering, Isfahan University of Technology; ⁴Department of Chemical Engineering and Materials Science, University of California, Irvine

L-129: Dynamic Behavior of Ultra High Molecular Weight Polyethylene Reinforced with Ceramic Nanoparticles at High Strain Rates: *Édio Lima Júnior*¹; Sergio Monteiro¹; Ricardo Weber¹; Alaelson Vieira¹; ¹Military Institute of Engineering

L-130: Molecular Dynamics Study of the Creep Behavior of Metallic Glasses and Glass-composites: *Constanze Kalcher*¹; Tobias Brink¹; Jochen Rohrer¹; Alexander Stukowski¹; Karsten Albe¹; ¹Technische Universität Darmstadt

L-131: Dislocation Engineering in Novel Nanowire Structures: Chris Chow¹; *Sam Reeve*¹; Alejandro Strachan¹; ¹Purdue University

L-132: An Experimental Investigation of Deformation Mechanisms in FCC Thin Films: *Marissa Linne*¹; Samantha Daly²; ¹University of Michigan; ²University of California, Santa Barbara

L-133: Impact of Heat Treatments at Varying Temperature on the Strength and Ductility of Nanotwinned Inconel: *Nathan Heckman*¹; Andrea Hodge¹; ¹University of Southern California

L-134: Mechanical Characterization of fcc and bcc Metals by Extraction of Nanoindentation Stress-strain Curves: *Alexander Leitner*¹; Verena Maier-Kiener¹; Reinhard Fritz¹; Daniel Kiener¹; ¹Montanuniversität Leoben

L-135: Multi-stages Spiral Twist Extrusion: A Novel Severe Plastic Deformation Technique for Bulk Nanostructured Materials: Waleed El-Garaihy¹; *Dina Fouad*²; Hanadi Salem²; ¹Qassim University; ²American University in Cairo

L-136: Superelasticity, Micaceous Plasticity and Size Effects of Novel Intermetallic Compound CaFe₂As₂ At Small Length Scales: *John Sypek*¹; Christopher Weinberger²; Paul Canfield³; Sergey Bud'ko³; Seok-Woo Lee¹; ¹University of Connecticut; ²Drexel University; ³Iowa State University

L-138: Manipulating the Grain Boundary Structure of an Ultrafine Grained Cu-Zr Alloy to Enhance Strain Hardening Capability and Strength: *Dengshan Zhou*¹; Deliang Zhang¹; ¹Northeastern University

L-139: Enhanced Mechanical and Electrical Properties of Nanocrystalline Cu Matrix Nanocomposite with In-situ Formed NbC Nanoparticles: *Wei Zeng*¹; Dengshan Zhou¹; Deliang Zhang¹; ¹Shanghai Jiaotong University

L-140: Effects of the Angle between Micro-crack and Loading Direction on Crack Propagation of Single Crystal γ -TiAl Alloy: Ruicheng Feng¹; *Jiantao Lu*¹; Haiyan Li¹; Hui Cao¹; Zhiyuan Rui¹; ¹Lanzhou University of Technology

L-141: Tensile Properties of Perovskite in Flexible Solar Cells: *Seung-min Ahn*¹; Eui Dae Jung¹; Myoung Hoon Song¹; Ju-Young Kim¹; ¹UNIST

L-142: Fabrication and Characterization of Aluminum-carbon Nanotubes (Al-CNT) Functionally Graded Cylindrical Composites: Amal Esawi¹; Ehab Salama¹; *Sherry Morad*²; ¹American University in Cairo; ²American University in Cairo

L-143: High Strength and High Conductivity Wires Made from Cu-Ag Alloys Designed for the Construction of High Magnetic Fields Generators: *Eliza Sieja-Smaga*¹; Artur Kawecki¹; Tadeusz Knych¹; Andrzej Mamala¹; Krystian Franczak¹; Kinga Korzen¹; Grzegorz Kiesiewicz¹; Pawel Kwasniewski¹; ¹AGH University of Science and Technology

L-144: Mechanical Characterization of Cold Sprayed Aluminum Alloy Using Micropillar Compression: *Tyler Flanagan*¹; Benjamin Bedard¹; Sumit Suresh¹; Mark Aindow¹; Avinash Dongare¹; Harold Brody¹; Xuemei Wang²; Victor Champagne³; Seok-Woo Lee¹; ¹University of Connecticut; ²United Technologies Research Center; ³U.S. Army Research Laboratory

L-145: Development and Characterization of Sputter Deposited Nickel-molybdenum-tungsten Thin Films for High Temperature Metal MEMS Applications: *Gianna Valentino*¹; Gidong Sim¹; Jessica Krogstad²; Timothy Weihs¹; Kevin Hemker¹; ¹Johns Hopkins University; ²University of Illinois at Urbana-Champaign

L-146: Mechanical Behavior of Sub-micron-sized Nanocrystalline Pillars under Monotonic and Cyclic Loading: *Jung-A Lee*¹; Brandon B. Seo²; Moo-Young Seok¹; Yakai Zhao¹; Upadrasta Ramamurty³; Ting Y. Tsui²; Jae-il Jang¹; ¹Hanyang University; ²University of Waterloo; ³Indian Institute of Science

L-147: Nanoindentation Response of Fe-10%Cr Structures with Voids: An Atomistic Study: *Mohammad Abu-Shams*¹; Ishraq Shabib¹; ¹Central Michigan University

L-148: Preparation and High Temperature Deformation of Nanocrystalline MgO: *Darren Dewitt*¹; Yasuhiro Kodera¹; Harry Green²; Javier Garay¹; ¹University of California, San Diego; ²University of California, Riverside

L-149: Solute Atoms Enhance Tensile Ductility in a Nanostructured Al-Mg Alloy: *Yaojun Lin*¹; Shulei Li²; Zhigang Yan²; Haiming Wen³; Enrique Lavernia⁴; ¹Wuhan University of Technology; ²Yanshan University; ³Idaho State University; ⁴University of California, Irvine

L-150: Strong, Ductile, Thermally Stable Cu-based Metal-intermetallic Nanostructured Alloys: *Keith Dusoe*¹; Sriram Vijayan¹; Thomas Bissell¹; Mark Aindow¹; Seok-Woo Lee¹; ¹University of Connecticut

L-151: Synthesis of Bulk Single-crystalline Quasicrystal Approximant YCd₆ and Its Small-scale Mechanical Properties: *Gyuhong Song*¹; Tai Kong²; Paul Canfield²; Seok-Woo Lee¹; ¹University of Connecticut; ²Iowa State University

L-152: Flexibility of Perovskite LED Based on Mechanical Properties of Component Materials: *Si Hoon Kim*¹; Jae Choul Yu¹; Young-Cheon Kim¹; Yun-Seok Nam¹; Myoung Hoon Song¹; Ju-Young Kim¹; ¹UNIST

L-153: The Influence of Severe Plastic Deformation on the Fatigue Crack Growth Behavior of Pure Metals and Alloys: *Thomas Leitner*¹; Anton Hohenwarter¹; Reinhard Pippan²; ¹Montanuniversität Leoben; ²Austrian Academy of Sciences

L-154: The Precipitation and Strengthening Behavior of Ultrafine Structured Al-7wt%Si-0.3wt%Mg Alloy: *Jiamiao Liang*¹; Zhen Zhang¹; Xun Yao¹; Yifeng Zheng¹; Deliang Zhang¹; ¹Shanghai Jiao Tong University

L-155: Towards an Understanding of Shear Band Formation in Nanocrystalline and Ultrafine-grained Single Phase Materials: *Oliver Renk¹; Pradipta Ghosh¹; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science*

L-156: Effect of Annealing Temperature on Texture Transformation in FCC Thin Films: *Nathaniel Rogers¹; Rekha King¹; Margaret Kirkland¹; Laurel Vincett²; Brandon Hoffman²; Shefford Baker¹; ¹Cornell University; ²Houghton College*

L-157: Anisotropy of Solute Effect on Dislocation Slip in an HCP Metal: A Molecular Simulation Study of Mg Alloys: *Peng Yi¹; Michael Falk¹; ¹Johns Hopkins University*

L-158: A Study on Growth Nanotwins for CuZn Synthesized by Electrodeposition and Magnetron Sputtering: *Chelsea Appleget¹; Andrea Hodge¹; ¹University of Southern California*

L-159: Atomistic Simulation of Creep Deformation in Metallic Nanoglasses: *Omar Adjaoud¹; Karsten Albe²; ¹Technische Universität Darmstadt; ²Technische Universität Darmstadt*

L-160: Effects of the Processing Variables on Microstructural Homogeneity Manufactured by High Pressure Double Torsion: *Mohammad Jahedi¹; Irene Beyerlein²; Marko Knezevic¹; ¹Department of Mechanical Engineering, University of New Hampshire; ²Department of Mechanical Engineering, Materials Department, University of California at Santa Barbara*

L-161: Grain Growth in Nanostructured Materials during Cyclic Loading: Is the Description Complete?: *Marlene Kapp¹; Oliver Renk¹; Thomas Leitner²; Bo Yang¹; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science; ²Montanuniversität Leoben*

L-162: Microstructural Influences on the Transition to Drag Dominated Dislocation Motion at High Rates of Strain: *Scott Turnage¹; Kristopher Darling²; Kiran Solanki¹; ¹Arizona State University; ²Army Research Laboratory*

L-163: Low Temperature Compositional Patterning in Plastically-deformed Immiscible Alloys: *Nirab Pant¹; Yinon Ashkenazy²; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois at Urbana-Champaign; ²The Hebrew University of Jerusalem*

L-164: Effect of High Temperature Annealing Time and Temperature on Microcrack, Micro-nanostructures and Mechanical Properties of a 14YWT Nanostructured Ferritic Alloy: *Md Ershadul Alam¹; Souptak Pal¹; Yuan Wu¹; G. R. Odette¹; ¹University of California, Santa Barbara*

L-165: Microstructure and Mechanical Behavior of Nanostructured FeMn Bioresorbable Alloy: *Anqi "Angel" Yu¹; Michael Heiden²; Christian Roach¹; Lia Stanciu²; Suveen Mathaudhu¹; ¹University of California Riverside; ²Purdue University*

L-166: Stress-driven Microstructural Evolution and Grain Boundary Doping in Nanocrystalline Alloys: A Direct Link Revealed by Quantitative In Situ Electron Microscopy: *Mo-Rigen He¹; Gyuseok Kim²; Saritha Samudrala³; Peter Felfer³; Andrew Breen³; Julie Cairney³; Daniel Gianola⁴; ¹University of Wisconsin-Madison; ²University of Pennsylvania; ³University of Sydney; ⁴University of California-Santa Barbara*

L-168: Surface Rebound of Relativistic Dislocations Directly and Efficiently Initiates Deformation Twinning: *Qingjie Li¹; Ju Li²; Zhi-Wei Shan²; Evan Ma¹; ¹Johns Hopkins University; ²Massachusetts Institute of Technology; ³Xi'an Jiaotong University*

L-169: Thermal Stability and Mechanical Behaviour of Electrodeposited Nanocrystalline Iron: *Vijay Kumar D¹; Prasad Mjnv¹; ¹Indian Institute of Technology Bombay*

L-170: Twinning-dominated Deformation in Body-centered Cubic Tungsten Nanowires: *Jiangwei Wang¹; ¹Zhejiang University*

L-171: UV Light, Temperature and Humidity Effects on the Mechanical Behavior of Nanocomposites: *Claudia Luhrs¹; Stephanie Rockford¹; Sarath Menon¹; Hugo Zea²; ¹Naval Postgraduate School; ²Universidad Nacional de Colombia*

Multiscale Architected Materials (MAM II): Tailoring Mechanical Incompatibility for Superior Properties — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Yuntian Zhu, North Carolina State University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble Institute of Technology; Huajian Gao, Brown University; Ke Lu, Institute of Metal Research, Chinese Academy of Science; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Science

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L-172: Principle of One-step Synthesis for Multilayered Structures Using Tube High-pressure Shearing: *Zheng Li¹; Pin Fang Zhang¹; Hao Yuan¹; Kui Lin¹; Ying Liu¹; De Liang Yin¹; Jing Tao Wang¹; Terence Langdon²; ¹Nanjing University of Science and Technology; ²University of Southampton*

L-173: Fabrication of Functionally Graded Materials via Asymmetric Cold Rolling: *Tyler Harrington¹; Jordan Furlong²; Roxan Afshari²; Chaoyi Zhu²; Kenneth Vecchio²; ¹Department of NanoEngineering and Materials Science and Engineering Program, University of California San Diego; ²Department of NanoEngineering, University of California San Diego*

Nanocomposites IV: Nanoscience for Renewable Energy — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Changsoo Kim, University of Wisconsin-Milwaukee; Simona Murph, Savannah River National Laboratories; Muralidharan Paramsothy, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology

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Room: Hall B1
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J-37: Electrochemical Supercapacitor Based on the Hierarchical Coral-like ZnCo₂O₄ Nanowires: *John Anthuvan Rajesh¹; Jae-Hong Kim¹; Woo-Sik Jung¹; Kwang-Soon Ahn¹; ¹Yeungnam University*

Nanostructured Materials for Nuclear Applications II — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Cheng Sun, Idaho National Laboratory; Khalid Hattar, Sandia National Laboratories; Celine Hin, Virginia Tech; Fei Gao, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Mitra Taheri, Drexel University; Haiming Wen, Idaho State University

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Room: Hall B1
Location: San Diego Convention Ctr

J-38: Grain Boundary Density Dependence of Radiation Induced He Bubble Formation in Nanocrystalline Fe and Ni Thin Films: *James Nathaniel¹; Asher Leff¹; Jon Baldwin²; Osman El-Atwani¹; Khalid Hattar³; Mitra Taheri¹; ¹Drexel University; ²Los Alamos National Laboratory; ³Sandia National Laboratory*

Nanostructured Surfaces for Improved Functional Properties — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Homnero Casaneda, Texas A&M University; Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University; Bobby Mathan, James Cook University

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J-39: Development of Economic Ta₂O₅-based Catalytic System towards Efficient Oxygen Evolution Reaction via Surface Engineering: *Jun Ding*¹; ¹National University of Singapore

J-40: Novel Bilayered Nanostructured Ni-Co-SiC/Zn-Ni Composite Coating with Exceptional Tribological and Corrosion Properties by Pulse Electrodeposition: *Swastika Banthia*¹; Saptarshi Das²; Arghya Patra¹; Srijan Sengupta¹; Siddhartha Das¹; Karabi Das¹; ¹IIT Kharagpur; ²Heritage Institute of Technology, Kolkatta

J-41: Surfactant Assisted Synthesis of Brown TiO₂ and Its Photocatalytic Activity: *Swati Nair*¹; Gabriel Caruntu¹; ¹Central Michigan University

J-42: Thermal Diffusivity of Cu-based Composite Materials by Volume Fraction Using SPS Process: *Sangwoo Kim*¹; Hyouk-Chon Kwon¹; Hyo-soo Lee¹; ¹Korea Institute of Industrial Technology

Pan American Materials Congress: Advanced Biomaterials — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Carlos Elias, Instituto Militar de Engenharia; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

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Session Chair: Carlos Elias, Instituto militar de Engenharia

PAN-1: Control of Shell Thickness on CeO₂-ZnO Core-shell by Surfactant Assisted Co-precipitation Methods: *Felipe Sanhueza*¹; Ramalinga Mangalaraja¹; Stephano Morales¹; Saeed Farhang¹; Elizabeth Elgueta¹; ¹University of Concepcion

PAN-2: Elastic Modulus of Ternary Titanium Alloys for Biomedical Applications: *Marcos da Silva*¹; Raul Araújo¹; Pedro Kuroda¹; Carlos Grandini¹; ¹Unesp/Bauru

PAN-5: Injectable Bone Substitute of Fibroin and Nanohydroxyapatite: *Maritza Buitrago*¹; Claudia Ossa¹; ¹Universidad de Antioquia

PAN-6: Metal-vitreous Biocide Coating: *Felipe Santos*¹; Sonia Mello-Castanho¹; Antonio da Silva¹; José Bartolomé²; Maria Teresa Prieto²; Elisa Fernandez-Garcia³; Claudinei Santos⁴; ¹IPEN - USP; ²CSIC - UAM; ³CINN - University of Oviedo; ⁴UERJ/FAT

PAN-7: Nature's Technical Ceramic: The Avian Eggshell: Eric Hahn¹; Andrei Pissarenko¹; Vincent Sherman¹; Daniel Fernandes²; Marc Meyers¹; ¹University of California, San Diego; ²Biomaterials Laboratory, Military Institute of Engineering, Rio de Janeiro, Brazil

PAN-8: Preparation and Characterization of Biodegradable Polymer Blend Reinforced with Bio-hydroxyapatite Nanoparticle: *Pedro Reis*¹; Esperidiana Moura¹; Felipe Lourenço²; Maria José Oliveira¹; ¹Instituto de Pesquisas Energéticas e Nucleares; ²Faculdade de Ciências Farmacêuticas

PAN-9: Selective Laser Sintering of Co-Cr-Mo Alloy for Dental Applications: *Claudinei Santos*¹; Alexandre Habibe¹; Paula Silva²; Bruno Simba¹; ¹UERJ; ²USP-EEL

PAN-10: Surface Characterisation of Anodised Zirconium with Proved Bioactivity: *Andrea Gomez Sanchez*¹; Maria Katunar¹; Silvia Cere¹; ¹INTEMA - CONICET

PAN-11: Wear of TiO₂ Nanofilm Synthetized on Ti6Al4V and 316 Stainless Steel: Jonathan M. Schuster¹; Mario Rosenberger¹; *Carlos Schvezov*¹; ¹IMAM (UNaM-Conicet)

Pan American Materials Congress: Advanced Manufacturing — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Sonia Brühl, UTN - National University of Technology; Ricardo Castro, University of California, Davis; Dachamir Hotza, UFSC

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PAN-12: Influence of Dendritic Morphology on the Strain Field of Dendritic Solidification Structures: Alejandro Moreno¹; Mario Rosenberger²; *Carlos Schvezov*²; ¹Facultad de Ciencias Exactas Químicas y Naturales - Universidad Nacional de Misiones; ²Instituto de Materiales de Misiones

PAN-13: Microhardness Assessment of 316L Stainless Steel Fabricated by Laser Engineered Net Shaping: *Katherine Acord*¹; Thale Smith²; Julie Schoenung¹; ¹University of California, Irvine; ²University of California, Davis

Pan American Materials Congress: Materials for Green Energy — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Ramalinga Viswanathan Mangalaraja, University of Concepcion; Hector Calderon, ESFM-IPN; Julie Schoenung, University of California, Irvine; Roberto Arce, SAM - Soc. Argentina de Materiales

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PAN-14: Extrusion and Flash Sintering of Nickel Oxide-Samarium Doped Ceria (NIO-SDC) Nanostructure Composite Microtubular Anodes for Solid Oxide Fuel Cells: *Ramalinga Viswanathan Mangalaraja*¹; Jonathan Usaba¹; Hernán Valle¹; Jorge Durango¹; Marta Lopez¹; Chan Siew Hwa²; ¹University of Concepcion; ²Nanyang Technological University

PAN-15: Green Extract of Mate Tea as Corrosion Inhibitor of Copper and Aluminum: Ana Derna¹; Claudia Méndez²; Liliana Gassa³; *Alicia Ares*⁴; ¹FCEQyN-UNaM; ²IMAM (CONICET-UNaM); ³INIFTA; ⁴CONICET/FCEQyN-UNaM

PAN-16: Heat Capacity and Thermal Expansion of Solar Salts Determined by Thermal Analysis Techniques: *Ekkehard Post*¹; ¹NETZSCH Geraetebau GmbH

PAN-17: Influence of Organic Solvent on Pt Nanoparticles Synthesis on MWCNT for ORR: *Carolina Silva Carrillo*¹; Edgar Reynoso-Soto¹; Rosa-Maria Felix Navarro¹; Balter Trujillo-Navarrete¹; Jose Chavez-Carvayar²; Francisco Paraguay-Delgado³; Gabriel Alonso-Nuñez⁴; ¹Instituto Tecnológico de Tijuana; ²Instituto de Investigación En Materiales, Universidad Nacional Autónoma de México; ³Centro de Investigación de Materiales Avanzados; ⁴Centro de Nanociencia Y Nanotecnología, Universidad Autónoma de México

PAN-18: One-pot “Green” Synthesis of Nitrogen Doped Porous Titania Nanospheres for Photocatalytic Degradation of Direct Blue-71: *Nalandhiran Pugazhenthiran*¹; *Panneerselvam Sathishkumar*²; *Ramalinga Mangalaraja*¹; *Sambandam Anandan*³; *Sepperumal Murugesan*⁴; ¹University of Concepcion; ²University of Concepcion; ³National Institute of Technology - Trichy; ⁴Madurai Kamaraj University

PAN-19: Plasmon-enhanced Solar Fuel Production with Gold-metal Oxide Hybrid Nanomaterials: *Christian Engelbrekt*¹; *Matt Law*²; *Jingdong Zhang*¹; ¹Technical University of Denmark; ²University of California Irvine

PAN-20: Platinum Salts Synthesis as Precursors to Get Heterogeneous Catalysts for Biofuels Production: *Adriana Martínez*¹; *Sherly Acosta*²; *Jonathan Sierra*²; *Carlos Guerrero*²; ¹Universidad Nacional de Colombia; ²Universidad Nacional de Colombia

PAN-21: Structural and Magnetic Properties of Nano Cobalt Ferrites for Green Refrigeration Technology: *Prabhakaran Thandapani*¹; *Mangalaraja R.V.*²; ¹University of Concepcion; ²University of Concepcion

PAN-22: Structural and Optical Properties of Graphene-based Nano-architectures Decorated with (Ag, Cu) Metal Nanoparticles: *Udayabhaskar Rednam*¹; *Mangalaraja R. V.*¹; *Pandiyarajan Thangaraj*¹; *Karthikeyan B.*²; ¹University of Concepcion; ²National Institute of Technology, Trichy

PAN-23: Synthesis of Mesoporous TiO₂ for Photo-anode in Dye-sensitized Solar Cell: *Victor Gonzalez*¹; *Edgar Reynoso*¹; *Balter Trujillo*¹; *Rosa Felix*¹; ¹Instituto Tecnológico de Tijuana

PAN-24: Tape Casting and Flash Sintering of Nickel Oxide-Gadolinium Doped Ceria (NiO-GDC) Nanostructure Composite Anode for Solid Oxide Fuel Cells: *Jonathan Usuba*¹; *Mangalaraja Ramalinga Viswanathan*¹; *Miguel Niño*¹; *Jorge Durango*¹; *Marta Lopez*¹; *Chan Siew Hwa*²; ¹Universidad de Concepcion; ²Nanyang Technological University

Pan American Materials Congress: Materials for Infrastructure — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Henry Colorado, Universidad de Antioquia; Oliverio Rodriguez, Centro de Investigacion en Química Aplicada

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PAN-25: Calcium Aluminate Cements Under High Temperature Oxidation Environment: *John Zapata*¹; *Henry Colorado*¹; *Maryory Gómez*¹; ¹Universidad de Antioquia

PAN-26: Carbonation Study in Calcium Aluminate Cement Pastes: *José Vanegas*¹; *Henry Colorado*¹; *John Zapata*²; ¹CCComposites Lab, Universidad de Antioquia (UdeA); ²GISI. Institución Universitaria de Envigado (IUE)

Pan American Materials Congress: Materials for Oil and Gas Industry — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Lorenzo Martínez Gomez, Instituto de Ciencias Físicas UNAM; Adriana Rocha, Federal University of Rio de Janeiro

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PAN-27: Blends of PVDF with Its Processing Waste: Study of the Mechanical Properties of the Blends Thermally Aged: *Leilane Cirilo*¹; *Marysilvia Costa*¹; ¹Programa de Engenharia Metalúrgica e de Materiais - COPPE/UFRJ

Pan American Materials Congress: Materials for Transportation and Lightweighting — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Mary Wells, University of Waterloo; Rafael Colás, Universidad Autónoma de Nuevo León; Fernand Marquis, San Diego State University; Ramalinga Viswanathan Mangalaraja, University of Concepcion; Marta Lopez, University of Concepcion; Elvi Dalgaard, Pratt & Whitney Canada; Patricia Zambrano, Universidad Autonoma de Nuevo Leon

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PAN-28: Analysis of Coir Fiber Porosity: *Fernanda da Luz*¹; *Sérgio Monteiro*¹; ¹Military Institute of Engineering, IME

PAN-29: Ballistic Performance in Multilayer Armor with Epoxy Composite Reinforced with Malva Fibers: *Lucio Nascimento*¹; *Luis Henrique Leme Louro*¹; *Sérgio Neves Monteiro*¹; *Alaelson Vieira Gomes*¹; *Édio Pereira Lima Júnior*¹; *Rubens Marçal*¹; *Fábio Braga*¹; ¹Instituto Militar de Engenharia

PAN-30: Curaua Non-woven Fabric Composite for Ceramic Multilayered Armors: A Lightweight, Natural, and Low Cost Alternative for Kevlar™: *Fábio Braga*¹; *Augusto Cabral*¹; *Édio Lima Jr.*¹; *Sérgio Monteiro*¹; *Foluke de Assis*¹; ¹Military Institute of Engineering (IME)

PAN-31: Effect of Porosity and Bimodal Microstructure of Ti-based Alloy Foams Consolidated by Hot Pressing: *Christopher Salvo*¹; *Claudio Aguilar*²; *Sheila Lascano*²; *R.V. Mangalaraja*¹; ¹University of Concepcion; ²Universidad Técnica Federico Santa María

PAN-32: Heat Treatment of Reaction Bonded Composites: *Evgeni Ionash*¹; *Helen Dilman*¹; *Shmulik Hayun*¹; *Nachum Frage*¹; ¹Ben Gurion University of Negev

PAN-33: Influence of Carbon Nanotube and Graphene on Mechanical and Damping Characteristics of Epoxy Matrix Composite- A Comparative Analysis: *Ankita Bisht*¹; *Pallavi Gupta*¹; *Debrupa Lahiri*¹; ¹Indian Institute of Technology Roorkee

PAN-34: Izod Impact Tests in Polyester Matrix Composites Reinforced with Jute Fabric: *Foluke de Assis*¹; *Sérgio Monteiro*¹; *Artur Pereira*¹; *Fábio Braga*¹; ¹Military Institute of Engineering

PAN-35: Processing and Characterization of the Electromagnetic Wave Absorption Potential of Glass Fiberreinforced Thermoset Polymer Matrix Composites: *Tugce Altuntop*¹; ¹Middle East Technical University

PAN-36: Tensile and Impact Properties of Two Fiber Configurations for Curaua Reinforced Composites: *Fábio Braga*¹; *Noan Simonassi*¹; *Augusto Cabral*¹; *Sérgio Monteiro*¹; *Foluke de Assis*¹; ¹Military Institute of Engineering (IME)

PAN-37: The Effect of Ni on the Structural, Hardness and Magnetic Properties of Cu_{90-x}Co₁₀Ni_x – 7.5% SmCo₅ Composite Alloys Prepared by Powder Metallurgy Route: *Marta Lopez*¹; *Mangalaraja Ramalinga Viswanathan*¹; *Christopher Salvo*¹; *Felipe Sanhueza*¹; *Jose Jiménez*²; ¹University of Concepcion; ²Centro Nacional de Investigaciones Metalúrgicas, CENIM-CSIC

PAN-38: Thermo-mechanical Properties of Copolymer/Clay Nanocomposites: A Comparative Study of Production Method by In-situ and Solution Mixture: *Oscar Hernández Guerrero*¹; *Mireya Hernández Vargas*²; *Rubén Castillo Pérez*²; *Bernardo Campillo Illanes*²; ¹UAEM; ²Universidad Nacional Autónoma de México

PAN-39: Thermo-Mechanical Behavior of Nanostructure Polyacrylic Polymer Based on Al₂O₃ and Bentonite Nanoparticles: *Ruben Castillo-Pérez*¹; Mireya Hernández-Vargas¹; Oscar Hernández-Guerrero²; Bernardo Campillo-Illanes¹; Osvaldo Flores-Cedillo¹; ¹Universidad Nacional Autónoma de México; ²Universidad Autónoma del Estado de Morelos

PAN-40: Thermo-Mechanical Properties of Waterborne Acrylate Hybrid Nanocomposites: *Mireya Lizbeth Hernandez-Vargas*¹; Rubén Castillo-Perez¹; Oscar Hernández-Guerrero²; Bernardo Fabián Campillo-Illanes¹; Osvaldo Flores-Cedillo¹; ¹Universidad Nacional Autónoma de México; ²Universidad Autónoma del Estado de Morelos

PAN-41: Ultra High Molecular Weight Polyethylene Reinforced with Ceramics Nanoparticles: *Édio Lima Júnior*¹; Sergio Monteiro¹; Ricardo Weber¹; Alaelson Vieira¹; ¹Military Institute of Engineering

Pan American Materials Congress: Minerals Extraction and Processing — Poster Session

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Program Organizers: Mery Gómez Marroquín, Asociación Peruana de Metalurgia Materiales y Minerale APMMM; Mark Schlesinger, Missouri University of Science and Technology; Alejandro Valdivieso, U.A. of San Luis Potosi; Carlos Sampaio, UFRGS

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PAN-42: Biotechnologies for Water Recycling in the Mineral Industry: Natalia Barboza¹; Sueli Bertolino²; Renata Guerra-Sá¹; *Versiane Leao*¹; ¹Universidade Federal de Ouro Preto; ²Universidade Federal de Uberlândia

PAN-43: Effect of Ethylenediamine on Smithsonite Flotation: Chao Lv¹; Shuming Wen²; *Shaojun Bai*²; Kun Yang²; ¹ Kunming University of Science and Technology; ²Kunming University of Science and Technology,

PAN-44: Electrochemical Preparation of Ti5Si3/TiC Composite from Titanium-rich Slag in Molten CaCl₂: *Shangshu Li*¹; Xingli Zou¹; Xionggang Lu¹; Kai Zheng¹; Xin Li¹; Yinshuai Wang¹; ¹Shanghai University

PAN-45: Kinetic Study on the Leaching of Vanadium-bearing Converter Slag with Dilute Sulfuric Acid: Junyi Xiang¹; Qingyun Huang²; Xuwei Lv¹; Chenguang Bai¹; ¹School of Materials Science and Engineering, Chongqing University; ²School of Materials and Metallurgical Engineering, Chongqing University of Science and Technology

PAN-46: Leaching of Celestite Concentrate in Hcl Media with BaCl₂-NaCl Addition: *Emre Yilmaz*¹; Aysegul Bilen¹; Rasit Sezer¹; Selim Erturk¹; Ibrahim Hizli²; Cuneyt Arslan¹; ¹Istanbul Technical University; ²Istanbul University

PAN-47: Mechanical Activation Strengthen the Leaching of Oxide-sulphide Zinc Ore: *Kun Yang*¹; Shiwei Li¹; Chao¹; Libo Zhang¹; Jinhui Peng¹; ¹Kunming University of Science and Technology

PAN-48: Production of Strontianite from Celestite Ore in Carbonate Media: *Ibrahim Hizli*¹; Aysegul Bilen²; Rasit Sezer³; Selim Erturk²; Cuneyt Arslan²; ¹Istanbul University; ²Istanbul Technical University- ATUM; ³Karadeniz Technical University

PAN-49: Recovery of Zinc from Oxide-sulfide Zinc Ore through Oxidation and Chelation: *Kun Yang*¹; Libo Zhang¹; Chao Lv¹; Shiwei Li¹; Jinhui Peng¹; ¹Kunming University of Science and Technology

PAN-50: The Direct Leaching of Micro-disseminated Gold Concentrate by Bromide Process and the Characterization of Leaching Products: Chao Li¹; *Hongxu Li*¹; Qiankun Jing¹; ¹University of Science and Technology Beijing

Pan American Materials Congress: Nanocrystalline and Ultra-fine Grain Materials and Bulk Metallic Glasses — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Terence Langdon, University of Southern California; Megumi Kawasaki, Hanyang University; Roberto Figueiredo, Federal University of Minas Gerais; Jose-Maria Cabrera, Universidad Politecnica de Catalunya

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PAN-51: Cyclic Closed-die Forming of Commercially Pure Cu at Room and Subzero Temperatures: Danielle Magalhães¹; Allana Pratti¹; Andrea Kliauga¹; Benaque Rubert¹; *Vitor Sordi*¹; ¹Federal University of São Carlos

PAN-52: Direct Influence of Recovery Behaviour on Mechanical Properties in Oxygen-free Copper Processed Using Different SPD Techniques: HPT and ECAP: *Meshal Alawadhi*¹; Yi Huang¹; Terence Langdon¹; ¹University of Southampton

PAN-53: Wear Behavior of 2024 and 5083 Aluminum Alloys Processed by ECAP: M. Orozco Sandoval¹; L. Guerra Fuentes²; R. Deaquino Lara³; M. A. L. Hernandez Rodriguez²; *E. Garcia-Sanchez*²; ¹UANL; ²Universidad Autónoma de Nuevo León -Facultad de Ingeniería Mecánica y Eléctrica; ³Cinvestav Unidad Saltillo

PAN-54: Fatigue Response of ARMCO Iron after Deformation by Equal Channel Angular Pressing: Jairo-Alberto Muñoz-Bolaños¹; *Oscar-Fabian Higuera-Cobos*²; Jose-Maria Cabrera¹; ¹Universidad Politecnica de Catalunya; ²Universidad del Atlántico

PAN-55: Hardness Evolution of AZ80 Magnesium Alloy Processed by HPT at Different Temperatures: *Saad Alsubaie*¹; Yi Huang¹; Terence Langdon¹; ¹University of Southampton

PAN-56: Investigation on Activation Volume and Strain-rate Sensitivity in Ultrafine-grained Tantalum: *Yue Wang*¹; Ying Liu¹; Jing Tao Wang¹; ¹Nanjing University of Science and Technology

PAN-57: Microstructural Characterization of a Asymmetric Accumulative Roll Bonded (AARB) AA1050 Aluminum: Renan de Godoi¹; Felipe Almeida¹; Vitor Sordi¹; *Andrea Madeira Kliauga*¹; ¹UFSCar

PAN-58: Microstructure and Dynamic Mechanical Response of AA6061-T6 Processed by ECAP: *Carlos Arturo Reyes Ruiz*¹; Chedly Braham²; Jose Maria Cabrera Marrero³; Nicolas Ranc²; Veronique Favier²; Gonzalo González¹; ¹Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México; ²Laboratoire Procédés et Ingénierie Mécanique et Matériaux, CNRS UMR 8006, ENSAM-CNAM; ³Universidad Politécnica de Cataluña

PAN-59: Microstructure and Properties of Equal Channel Angular Extruded and Recrystallized OFHC Copper: *Abhinav Srivastava*¹; Jason Springs¹; Zach Levin¹; Robert Barber²; Karl Hartwig¹; ¹Texas A&M University; ²Shear Form Inc.

Pan American Materials Congress: Steels — Poster Session

Sponsored by: Third Pan American Materials Congress Organizing Committee

Program Organizers: Omar Garcia-Rincon, TERNIUM Mexico SA de CV; Andre Costa E Silva, EEMVR - Universidade Federal Fluminense

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PAN-60: Effect of Titanium Sulfide Precipitates on Grain Size in Low Carbon Steel: *Yuan Wu*¹; ¹Shanghai University

PAN-61: Hydrogen Gaseous Embrittlement Effect over Mechanical Properties of a Heat Treated Experimental Microalloyed Steel with Different Cooling Rates: *Julio Villalobos*¹; *Edgar Lopez*²; *Octavio Vazquez*²; *Sergio Serna*¹; *Bernardo Campillo*⁴; ¹CIICAP; ²Universidad del Istmo, Campus Tehuantepec; ³Instituto Tecnológico de Morelia; ⁴ICF-UNAM, FQ-UNAM

PAN-62: Influence of Oxide Size and Composition on MnS Formation in Continuous Casting Slab of Low Carbon Steel: *Fangjie Li*¹; ¹Shanghai University

PAN-63: Kinetic Study of the Austenite Decomposition during Continuous Cooling in a Welding Steel: *Octavio Vázquez-Gómez*¹; *Edgar López-Martínez*²; *Alexis Gallegos-Pérez*²; *Heber Santoyo-Avilés*⁴; *Héctor Vergara-Hernández*²; *Bernardo Campillo*⁵; ¹Instituto Tecnológico de Morelia - CONACYT; ²Universidad del Istmo; ³Instituto Tecnológico de Morelia; ⁴Ternium México; ⁵Universidad Nacional Autónoma de México

PAN-64: Study of Ductile Austempered Iron Alloyed with V, Mo AND Cr: *Fatima Alicia de la Rosa Castañeda*¹; ¹IPN - UPIIZ

PAN-66: Tempering Response of Bainitic and Martensitic Microstructures: *Igor Vieira*¹; *Emmanuel De Moor*¹; ¹Colorado School of Mines

PAN-67: Using CCT and TTT Diagrams Obtained by Simulation for Developing AHSS: *Jose Pacheco*¹; *Jose Cruz*²; *Pedro Garnica*³; *Jose Lopez*²; *José Gutierrez*²; *Jose Quezada*¹; ¹DICIM UASLP; ²Facultad de Ingeniería UASLP; ³Instituto Tecnológico de Morelia; ⁴Instituto de Metalurgia UASLP

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVI — Poster Session

Sponsored by: TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Florida International University; Shijo Nagao, Osaka University; Shien Ping Tony Feng, The University of Hong Kong; Yee-wen Yen, National Taiwan Univ of Science & Tech

Tuesday PM
February 28, 2017

Room: Hall B1
Location: San Diego Convention Ctr

Session Chair: Shih-kang Lin, National Cheng Kung University

L-174: Investigation on Interfacial Reactions between the Multi-walled Carbon Nanotubes Reinforced Sn-Ag-Cu Composite Solders with Cu: *Gita Hermana*¹; *Shu Fu*¹; *Yee Yen*¹; ¹National Taiwan University of Science and Technology

L-175: Application of Computational Thermodynamics in SOFCs: *Shadi Darvish*¹; *Yu Zhong*¹; ¹Florida International University

L-177: Calorimetric Investigation of the Liquid Sn-3.8Ag-0.7Cu Alloy with Minor Additions of Mn and Ni: *Andriy Yakymovych*¹; *Hans Flandorfer*¹; *Herbert Ipser*¹; ¹University of Vienna

L-178: Degradation Mechanism of Piezoelectric Materials: *Hooman Sabarou*¹; *Yu Zhong*¹; ¹Florida International University

L-179: Effect of Silver Precursor Addition on Shear Strength of Cu-Cu Joints with Silver Nanoparticle Paste: *Hung-Tao Chen*¹; ¹National Cheng Kung University

L-180: Investigating Mixed Crystal Solid Solution of High Performance Scintillators K_{Ba}2I₅:Eu & K_{Sr}2I₅:Eu: *Jesse Johnson*¹; *Luis Stand*¹; *Mariya Zhuravleva*¹; *Merry Koschan*¹; *Chuck Melcher*¹; ¹University of Tennessee-Knoxville

L-182: Stretchability Characteristics of Thin Metal Films on Polydimethylsiloxane Substrates with the Parylene Adhesion Layer for Stretchable Electronic Packaging: *Donghyeon Park*¹; *Soo Jin Shin*¹; *Jae-Ho Lee*¹; *Tae-Sung Oh*¹; ¹Hongik University

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Poster Session

Sponsored by: TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, UTEP; Heinz Palkowski, Clausthal Univ of Technology; Vikas Tomar, Purdue Univ; Nuggehalli Ravindra, NJIT

Tuesday PM
February 28, 2017

Room: Hall B1
Location: San Diego Convention Ctr

Session Chairs: Ramana Chintalapalle, University of Texas at El Paso, UTEP; Nuggehalli Ravindra, New Jersey Institute of Technology

H-35: Effects of Carbon Coating on Magnetic Susceptibility of NiTi Alloy: *Ari Shin*¹; *Sang Jin Park*¹; *Jun Hyun Han*¹; ¹Chungnam National University

H-36: Investigation of Mechanical Properties of W_{1-y}Mo_yO Nanocomposite Thin Films: *P. Dubey*¹; *G. Lopez*¹; *G. Martinez*¹; *C. Ramana*¹; ¹University of Texas at El-Paso

H-37: Microstructure and Optical Properties of HfO₂/Mo/HfO₂ Based Heat Mirrors and Their Potential Use for Efficient Windows Applications: *Juan Gomez*¹; *Paritosh Dubey*¹; *C. Ramana*¹; ¹University of Texas at El Paso

H-38: Preparation of Porous Titanium Oxide Film by Sol-gel Method: *Baoqiang Xu*¹; ¹National Engineering Laboratory for Vacuum Metallurgy, Key Laboratory of Nonferrous Metals Vacuum Metallurgy of Yunnan Province, Kunming University of Science and Technology

H-39: Structure Property Relationship of Tannic Acid Based Copolymers for Anti-oxidant Infused Wound Dressing: *Matthew Korey*¹; *John Howarter*¹; ¹Purdue University

H-40: Structure Property Relationship Studies of Electron Beam Welded Dissimilar Steel to Fe-Al Alloy Joints: *Soumitra Kumar Dinda*¹; *Gour Gopal Roy*¹; *Prakash Srirangam*²; ¹Indian Institute of Technology, Kharagpur; ²University of Warwick

H-41: Effect of Bias Induced Microstructure on Mechanical Properties of Nanocrystalline ZrWN Coatings: *P. Dubey*¹; *S. Srivastava*²; *R. Chandra*²; *C. Ramana*¹; ¹University of Texas at El-Paso; ²Indian Institute of Technology Roorkee

Solid State Precipitation — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division,
TMS: Phase Transformations Committee

Program Organizers: Seth Imhoff, Los Alamos National Laboratory;
Robert Hackenberg, Los Alamos National Laboratory; Gregory
Thompson, University of Alabama

Tuesday PM

Room: Hall B1

February 28, 2017

Location: San Diego Convention Ctr

Session Chair: Seth Imhoff, Los Alamos National Laboratory

L-183: Analysis of Beta' Cu₄Ti Precipitation in Cu-Ti Alloys by Conventional and Diffusion-couple Methods: Felipe Hernandez-Santiago¹; Victor Lopez-Hirata²; Maribel Sauced- Muñoz²; Pamela Hernandez-Duran²; Erika Avila-Davila³; ¹Instituto Politecnico Nacional (ESIME); ²Instituto Politecnico Nacional (ESIQIE); ³Instituto Tecnológico de Pachuca

L-184: Carbide Precipitation in a Low-alloy Ferritic Steel: Maribel Saucedo-Muñoz¹; Victor Lopez-Hirata¹; Rodrigo Gomez-Martinez¹; Arturo Ortiz-Mariscal¹; Jose Villegas-Cardenas²; Jorge Gonzalez-Velazquez¹; ¹Instituto Politecnico Nacional (ESIQIE); ²Universidad Politecnica (Valle de México)

L-185: Nanocomposites Ti/B/TiO₂ by Mechanical Alloy Synthesis: Diana Jaramillo¹; ¹Centro de Investigacion y Desarrollo Tecnológico en Electroquímica

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