

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 cursive script 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.

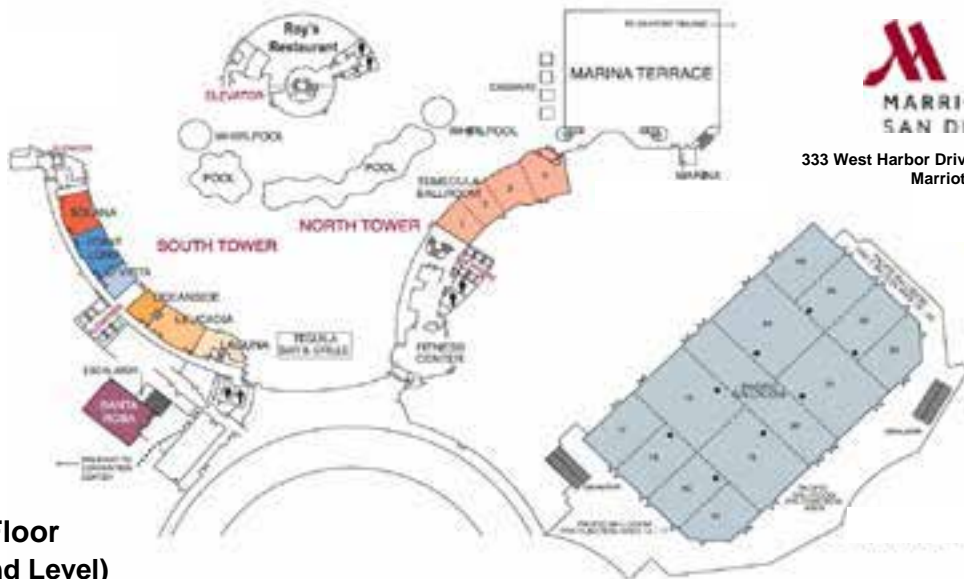
MAPS & FLOOR PLANS



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



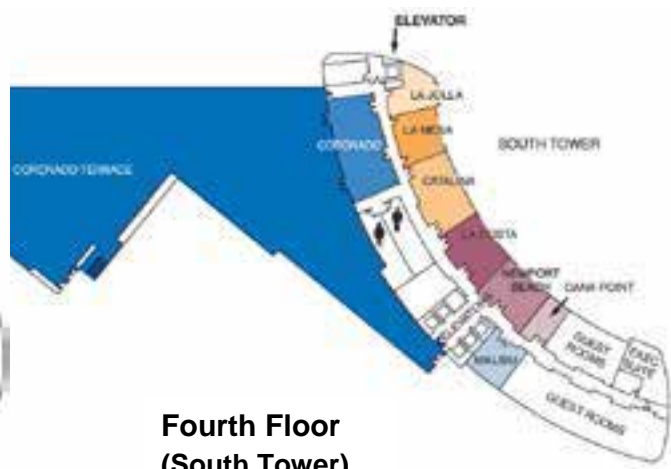
**First Floor
(Ground Level)**



**Second Floor
(Lobby Level)**

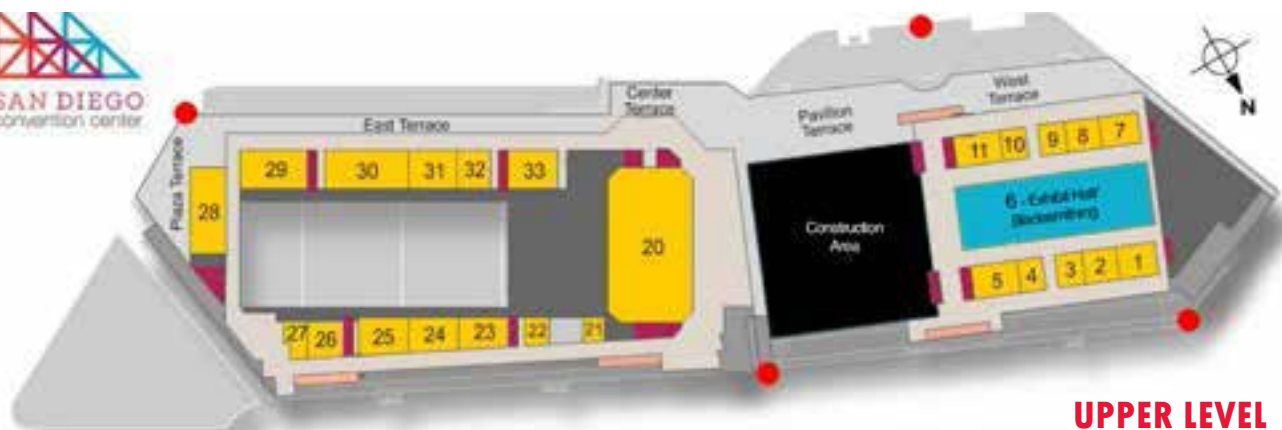


**Third Floor
(South Tower)**

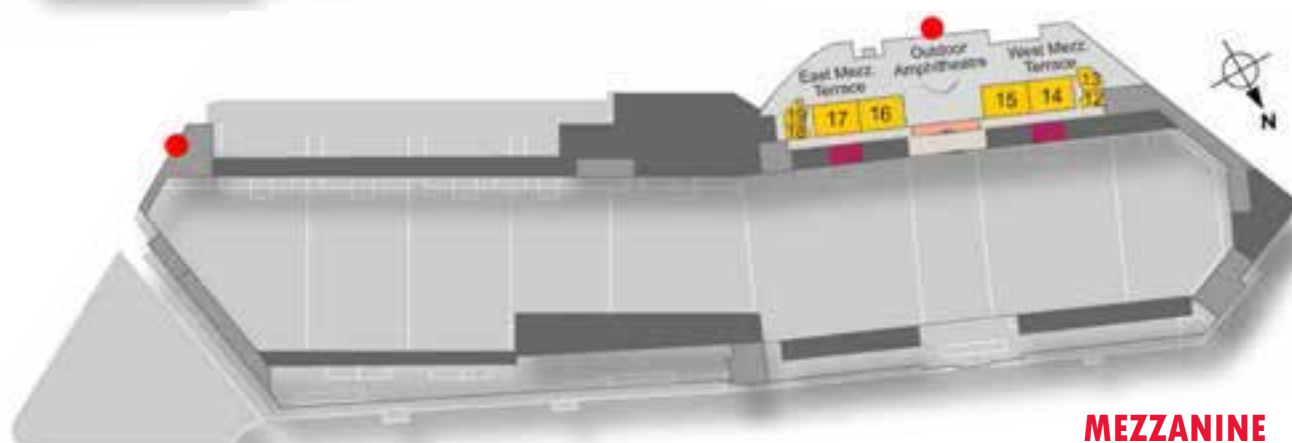


**Fourth Floor
(South Tower)**

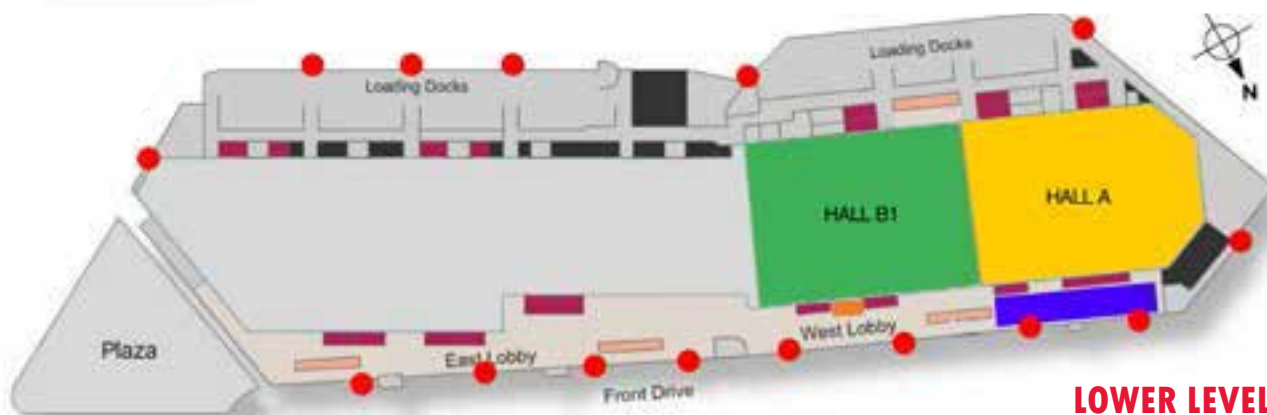
MAPS & FLOOR PLANS












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

DOWNLOAD

THE TMS2017 MOBILE APPLICATION

(See Page 9 for details.)



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.

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

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. The app interface includes a header with the TMS 2017 logo and the tagline 'THE WORLD COMES HERE.' Below the header is a 'Dashboard' section with a grid of icons. Callout boxes with arrows point to specific icons and provide descriptions of their functions:

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

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
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, Marriott-Marriott Marquis & Marina

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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



FEDERATION OF EUROPEAN
MATERIALS SOCIETIES



The Minerals, Metals & Materials Society

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, Mihaela 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)



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 Dryepondt, 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

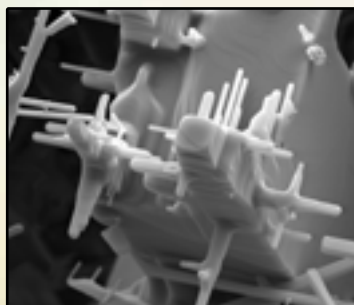
Dates: Monday, February 27 to Wednesday, March 1

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.

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.*

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 opensource 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:

Goodfellow

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, Agrum
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

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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.

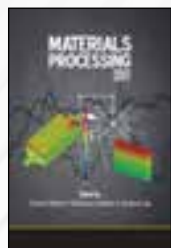
INDIVIDUAL VOLUMES FOR PURCHASE

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

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.

EBSD Analytical

Booth #1142

EBSD 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.



ALTA 2017
20 - 27 May
Perth, Australia

Nickel-Cobalt-Copper, Uranium-REE and Gold-PM Conference & Exhibition
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-Lithium	Copper SX/EW Basic Principles & Detailed Plant Design	Nickel-Cobalt-Copper Including Pressure Acid Leaching Forum & Panel Welcome Reception Conference Dinner			Uranium-REE Including Uranium Processing Forum & Panel - in parallel with - Gold-PM Including Cyanide Alternatives/Innovation Forum & Panel Happy Hour		Heap Leaching and its Application to Copper, Gold, Uranium & Nickel Ores
Exhibition							

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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), BTV, 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.

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.

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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 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>

Netzsch 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

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.

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 plates, 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/ AlF₃ 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

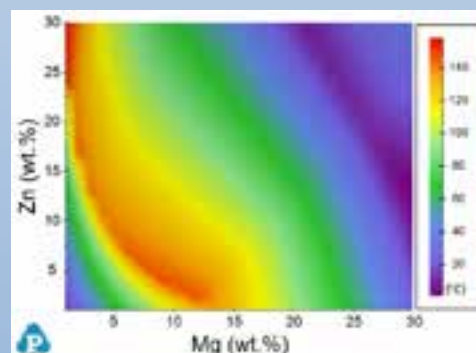
- ◆ Thermodynamic databases for multi-component Al-, Co-, Cu-, Fe-, Mg-, Mo-, Nb-, Ni-, Ti-, TiAl- based commercial alloys, high entropy alloys, noble metal alloys, and Zr-based metallic glasses
- ◆ Mobility databases for Al-, Fe-, Ni- and Ti-based alloys

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



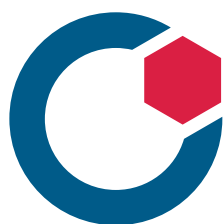
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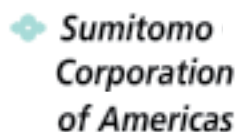
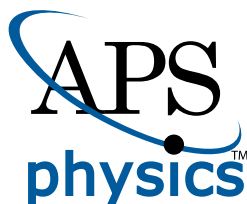
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3 Li 6.941 Lithium	4 Be 9.012182 Beryllium																
11 Na 22.98976928 Sodium	12 Mg 24.305 Magnesium																
19 K 39.0983 Potassium	20 Ca 40.078 Calcium	21 Sc 44.955912 Scandium	22 Ti 47.867 Titanium	23 V 50.9415 Vanadium	24 Cr 51.9961 Chromium	25 Mn 54.938045 Manganese	26 Fe 55.845 Iron	27 Co 58.933195 Cobalt	28 Ni 58.6934 Nickel	29 Cu 63.546 Copper	30 Zn 65.38 Zinc	31 Ga 69.723 Gallium	32 Ge 72.64 Germanium	33 As 74.9216 Arsenic	34 Se 78.96 Selenium	35 Br 79.904 Bromine	36 Kr 83.798 Krypton
37 Rb 85.4678 Rubidium	38 Sr 87.62 Strontium	39 Y 88.90585 Yttrium	40 Zr 91.224 Zirconium	41 Nb 92.90638 Niobium	42 Mo 95.96 Molybdenum	43 Tc (98) Technetium	44 Ru 101.07 Ruthenium	45 Rh 102.9055 Rhodium	46 Pd 106.42 Palladium	47 Ag 107.8682 Silver	48 Cd 112.411 Cadmium	49 In 114.818 Indium	50 Sn 118.71 Tin	51 Sb 121.76 Antimony	52 Te 127.6 Tellurium	53 I 126.90447 Iodine	54 Xe 131.293 Xenon
55 Cs 132.9054 Cesium	56 Ba 137.327 Barium	57 La 138.90547 Lanthanum	72 Hf 178.48 Hafnium	73 Ta 180.948 Tantalum	74 W 183.84 Tungsten	75 Re 186.207 Rhenium	76 Os 190.23 Osmium	77 Ir 192.217 Iridium	78 Pt 195.084 Platinum	79 Au 196.966569 Gold	80 Hg 200.59 Mercury	81 Tl 204.3833 Thallium	82 Pb 207.2 Lead	83 Bi 208.9804 Bismuth	84 Po (209) Polonium	85 At (210) Astatine	86 Rn (222) Radon
87 Fr (223) Francium	88 Ra (226) Radium	89 Ac (227) Actinium	104 Rf (261) Rutherfordium	105 Db (268) Dubnium	106 Sg (271) Seaborgium	107 Bh (272) Bohrium	108 Hs (270) Hassium	109 Mt (276) Meitnerium	110 Ds (281) Darmstadtium	111 Rg (289) Roentgenium	112 Cn (285) Copernicium	113 Nh (284) Nihonium	114 Fl (289) Flerovium	115 Mc (288) Moscovium	116 Lv (293) Livermorium	117 Ts (294) Tennessine	118 Og (294) Oganesson
58 Ce 140.116 Cerium	59 Pr 140.90765 Praseodymium	60 Nd 144.242 Neodymium	61 Pm (145) Promethium	62 Sm 150.36 Samarium	63 Eu 151.964 Europium	64 Gd 157.25 Gadolinium	65 Tb 158.92535 Terbium	66 Dy 162.5 Dysprosium	67 Ho 164.93032 Holmium	68 Er 167.259 Erbium	69 Tm 168.93421 Thulium	70 Yb 173.054 Ytterbium	71 Lu 174.9668 Lutetium				
90 Th 232.03806 Thorium	91 Pa 231.03688 Protactinium	92 U 238.02891 Uranium	93 Np (237) Neptunium	94 Pu (244) Plutonium	95 Am (243) Americium	96 Cm (247) Curium	97 Bk (247) Berkelium	98 Cf (251) Californium	99 Es (252) Einsteinium	100 Fm (257) Fermium	101 Md (258) Mendelevium	102 No (259) Nobelium	103 Lr (262) Lawrencium				

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