Celebrating 1 year anniversary of AP60 potline

Delivering exceptional results at the highest amperage ever achieved at an industrial smelter.
MAP KEY & PROGRAMMING

Walt Disney World Dolphin Hotel  (HEADQUARTERS & PROGRAMMING)
- Registration
- Presenters’ Coffee
- TMS2015 Exhibit
- Poster Session
- Technical Sessions on the following topics:
  - Additive Manufacturing and Joining Processes
  - Advanced Materials Properties and Performance
  - Functional Materials and Nanomaterials (Energy Storage and Nanomaterials focus)
  - ICME and Computational Modeling
  - Light Metals

Walt Disney World Swan Hotel  (HEADQUARTERS & PROGRAMMING)
- Technical Sessions on the following topics:
  - Advanced Characterization of Materials
  - Advances in Processing and Fabrication
  - Functional Materials and Nanomaterials (Energy and Biomaterials focus)

Disney’s Yacht & Beach Resorts  (PROGRAMMING AT CONVENTION CENTER)
- Opening Celebration
- Awards Banquet & Ceremony
- Materials Bowl
- Technical Sessions on the following topics:
  - Engineering Solutions for Sustainability
  - Extraction and Processing
  - Functional Materials and Nanomaterials (Thermoelectric and Solar Cell focus)
  - Nuclear Reactor Materials and Fuels
  - Materials for Energy and Sustainability

Disney’s Coronado Springs Resort  Disney’s Caribbean Beach Resort
Shuttle to Meeting Headquarters  Shuttle Drop-Off

Note: This is not a comprehensive listing of all activities happening at each hotel. For the complete list of activities and meetings taking place in each facility, see the Calendar of Events beginning on page 7.
Dear Friends and Colleagues,

Welcome to the 144th installment of the TMS Annual Meeting & Exhibition! We are so pleased to have such a diverse group of colleagues gathered together in one place.

This year, we adopted a new slogan for our meeting: “Connecting the global minerals, metals, and materials community.” We believe that the TMS Annual Meeting & Exhibition does this without equal—bringing together groups from diverse backgrounds and career stages to learn from one another, share ideas, and network. In short, we provide a place for our diverse community to connect.

In that spirit, we are offering a variety of ways for you to connect with your colleagues this week:

**Take Advantage of Designated Networking Events and Spaces:**

Some activities, like the TMS Opening Celebration and Exhibit Hall receptions, will give you the opportunity to interact with attendees from a broad range of technology areas and sectors; specialized events, like the Young Professional Happy Hour Reception or the Student Mixer, will allow you to connect with more targeted groups. A complete listing of networking and social events begins on page 27.

**Learn from Technical Sessions:**

With more than 3,500 technical presentations to choose from, we know you’ll find a way to deepen your understanding of the field and find inspiration from those working in related technology areas. If you haven’t already, take advantage of the scheduling tools available through the TMS2015 mobile application or the TMS Personal Conference Scheduler to create a detailed schedule for the week. A full listing of technical program offerings begins on page 63.

**Go Beyond Technical Sessions:**

Your education doesn’t end in the session room. Learn about the newest products and technologies on the exhibit floor, and browse our robust Poster Gallery, located in the Atlantic Hall of the Dolphin Hotel, to further expand your knowledge.

**Attend a Technical Committee Meeting:**

There’s no better way to find people who share your professional interests than by attending a TMS technical committee meeting. Dates, times, and locations for these meetings can be found in the Calendar of Events beginning on page 7.

**Strike up a Friendly Conversation:**

Want to connect with your colleagues but don’t know how to begin? Try one of these casual conversation starters:

- Which book do you think should win the JOM Materials Fiction Countdown? (See page 17 to brush up on this topic.)
- Did you see the Bladesmithing Exhibit yet? They have more than 25 hand-forged blades on display!
- Have you donated to the TMS Foundation? If so, you can get your picture taken for the Faces of the Foundation collage.
- Or come up with your own conversation starter and tweet it to us using @TMSSociety and #TMS2015Experience.

There are many ways to connect with people who share your interests and with people who can expand your interests. I encourage you to spend this week meeting as many colleagues as you can and learning as much as you can. And I hope, when the meeting is over, you’ll feel truly connected to your global minerals, metals, and materials community.

Sincerely,

Hani Henein
2014 TMS President
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#### Technical Program

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**TIME TO TWEET!**

Follow @TMSSociety or tweet using #TMS2015Experience.

---

**Defined Cooling of Hot Bath Material**

**WE CONVEY QUALITY**

For the Primary Aluminium Smelting Process

- Cooling from 850 °C down to below 100 °C
- Reduction of HF emission
- Clean and environmentally safe conveying and cooling

**AUMUND Foerdertechnik GmbH**
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metallurgy@aumund.de • www.aumund.com

**SEE US AT BOOTH# 421**
Registration

Your full-meeting registration badge provides you access to:

- Technical sessions
- Three-day pass to the TMS2015 Exhibition
- President’s Welcoming Reception and Happy Hour Reception (located in the Exhibit Hall)
- Admission to the awards ceremony portion of the 2015 TMS & AIME Awards Banquet
- General Poster Session and Reception
- TMS Materials Bowl competition
- Technical Division Student Poster displays
- Admission to select social and networking events
- Online access to the complete collected proceedings

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.

Resort Information and Activities

For resort information and details about dining, park tickets, parking, resort transportation, entertainment, services and amenities, and more at TMS2015 properties please visit the following websites:

- Walt Disney World Swan Resort
  [www.swandolphin.com](http://www.swandolphin.com)
- Walt Disney World Dolphin Resort
  [www.swandolphin.com](http://www.swandolphin.com)
- Disney’s Yacht & Beach Club Resorts
- Disney’s Caribbean Beach Resort
  [https://disneyworld.disney.go.com/resorts/caribbean-beach-resort/](https://disneyworld.disney.go.com/resorts/caribbean-beach-resort/)
- Disney’s Coronado Springs Resort

For Orlando area information, please visit the Orlando Convention and Visitors Bureau website at [www.visitorlando.com](http://www.visitorlando.com) or follow @visitorlando on Twitter.

TMS2015 Transportation

For your convenience, complimentary shuttles will run daily between the TMS2015 properties. Shuttles will depart from the Caribbean Beach and Coronado Springs Resorts and bring conference attendees to the Dolphin Hotel and the Yacht & Beach Convention Center every 15 to 30 minutes. Please see signs in the hotel lobbies for pick-up locations at each property.

**Shuttle Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday, March 15</td>
<td>6:30 a.m. to 10:00 p.m.</td>
</tr>
<tr>
<td>Monday, March 16</td>
<td>6:00 a.m. to 9:00 p.m.</td>
</tr>
<tr>
<td>Tuesday, March 17</td>
<td>6:00 a.m. to 8:00 p.m. (Shuttles will be available at the Yacht &amp; Beach Convention Center following the TMS &amp; AIME Awards Banquet to return guests to the Caribbean Beach and Coronado Springs Resorts.)</td>
</tr>
<tr>
<td>Wednesday, March 18</td>
<td>6:00 a.m. to 7:30 p.m.</td>
</tr>
</tbody>
</table>
| Thursday, March 19 | Dolphin Hotel: 6:30 a.m. to 1:00 p.m.  
Yacht & Beach: 6:30 a.m. to 6:00 p.m. |

*TMS2015 conference name badges required.

TMS2015 technical sessions are taking place in the Dolphin Hotel, the Swan Hotel, and the Yacht & Beach Convention Center. While these are within comfortable walking distance, TMS2015 attendees may also ride a pedal cab between the facilities. Pedal cabs will be available on the walkway between the Dolphin and Swan and at the Yacht & Beach Convention Center entrance.

Welcome New TMS Members!

If you registered for TMS2015 at the full-conference nonmember rate, your registration includes membership in TMS for the remainder of 2015.

Select member benefits are highlighted throughout this meeting program to give you a taste of what your TMS membership offers. Visit the TMS Information Center at Booth #401 in the exhibit hall to learn more about the advantages of being a TMS member.
Pedal Cab Schedule*

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday, March 15</td>
<td>7:00 a.m. to 8:00 p.m.</td>
</tr>
<tr>
<td>Monday, March 16</td>
<td>6:00 a.m. to 8:00 p.m.</td>
</tr>
<tr>
<td>Tuesday, March 17</td>
<td>6:00 a.m. to 9:00 p.m.</td>
</tr>
<tr>
<td>Wednesday, March 18</td>
<td>6:00 a.m. to 8:00 p.m.</td>
</tr>
<tr>
<td>Thursday, March 19</td>
<td>7:00 a.m. to 5:00 p.m.</td>
</tr>
</tbody>
</table>

*TMS2015 conference name badges required.

Parking

Parking is available at the Dolphin Hotel for $16/day (self-parking) or $26/day (valet). Self-parking at Disney’s Yacht & Beach Club Resort is complimentary.

Mobile App Information

Download the TMS2015 mobile application to serve as your 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
- Build your personal schedule and download to your device
- Speaker information
- Exhibit map
- Exhibitors and sponsors
- Venue information and much more!

Stay Informed with Twitter

What are you doing at TMS2015? We want to know! We’d love to hear about your #TMS2015Experience. Tweet it to @TMSSociety. You can also access TMS social media through the TMS2015 mobile application by selecting the Social Media icon from the app homepage (in the red box in the photo to the left). The TMS2015 App lets you monitor the @TMSSociety Twitter feed and TMS Facebook and LinkedIn pages without logging in to your social media account. To comment or post, you will need to log in to your social media account.

Business Centers

There is a full-service business center, 11th Hour, located in the Dolphin Hotel. For more information on available services, please visit 11thhourbiz.com/about/locations. You may also reach them directly by calling (407) 934-4259 or emailing dolphinbiz@live.com.

Disney’s Yacht & Beach Club Resort has a 24-hour business center located in the Beach Hotel. This business center is available for basic printing and computer needs. For information or assistance with large business needs please see the resort concierge.

Disney’s Yacht & Beach Resort, Coronado Springs Resort, Caribbean Beach Resort, and the Walt Disney World Swan & Dolphin all have boarding pass printers located in the hotel lobby for guest convenience.

TMS Member Benefit #1

Watch your mailbox every month for your print subscription to JOM, the member journal of TMS.
Internet Access

Swan & Dolphin
- Complimentary wireless internet is available in public areas including the hotel lobby and lounges. For those staying overnight at the Swan or Dolphin Hotels internet access is included in the resort fee.
- Complimentary wireless internet access is available at the TMS Connect Zone in Atlantic Hall at the Dolphin hotel. Access to this hall is restricted from 7:00 a.m. to 8:30 a.m. for Presenters’ Coffee but will be open to all attendees from 8:30 a.m. until 4:00 p.m. Monday through Wednesday and until noon on Thursday. The “Connect Zone” will be closed from 11:30 a.m. to 2:00 p.m. on Wednesday.

Yacht & Beach Convention Center
- Complimentary wireless internet access is available in all public areas and overnight guest rooms.

Charging Stations

Recharge your mobile phones and tablets at the complimentary charging stations located in the Exhibit Hall.

Note about Time

All times printed in this program refer to Eastern Daylight Time.

Notice Regarding Technical Program Cancellations

Changing the times of presentations is disruptive to the program and may cause delegates to miss valuable presentations. So, 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.”

Navigation

Keep in mind that activities will be taking place throughout the week at three Disney properties. For a complete list of event and session rooms, see the Calendar of Events beginning on page 7, the TMS2015 App, and directional signage throughout the Dolphin Hotel, Swan Hotel, and Yacht & Beach Convention Center.
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.

New for TMS2015:

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 a talk presented by their relative. No one under the age of 16 is permitted to attend. Please provide the names of the guests who will be attending your presentations at the registration desk. Guest Function Tickets may be purchased for social functions for your guests at registration.

Refund Policy

The deadline for all refunds was February 9, 2015. 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.

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 in advance at 724-776-9000 or on-site at the TMS Information Center.

Cell Phone Use

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

Recycling

Discard badges and programs after the meeting in the bins located in the Registration area.

Be materials-minded. Join TMS in reducing, reusing and recycling.
### Meeting Information

**Function**

**Saturday, March 14**

<table>
<thead>
<tr>
<th>Committee and Business Meetings</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Registration Item Writers Workshop and Committee</td>
<td>3/14/2015</td>
<td>9:00 a.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod C R</td>
</tr>
<tr>
<td>Financial Planning Committee</td>
<td>3/14/2015</td>
<td>2:00 p.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A R</td>
</tr>
<tr>
<td>Professional Registration Committee Dinner</td>
<td>3/14/2015</td>
<td>6:00 p.m. to 8:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod B R</td>
</tr>
</tbody>
</table>

**Sunday, March 15**

<table>
<thead>
<tr>
<th>All-Conference Events</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>3/15/2015</td>
<td>7:00 a.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall O</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>3/15/2015</td>
<td>12:00 p.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall O</td>
</tr>
<tr>
<td>General, Symposium, Young Professional, and Student Poster Session Set-up</td>
<td>3/15/2015</td>
<td>2:00 p.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall O</td>
</tr>
<tr>
<td>TMS2015 Opening Celebration</td>
<td>3/15/2015</td>
<td>5:00 p.m. to 6:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom North O</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exhibition</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit Move-In</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Pacific Hall R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional Development &amp; Special Presentations</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Melting Workshop</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 12:00 p.m.</td>
<td>Swan</td>
<td>Macaw 1 T</td>
<td></td>
</tr>
<tr>
<td>Explore the Use of the CALPHAD Modeling Tools for Your Daily Practice Workshop</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 12:00 p.m.</td>
<td>Swan</td>
<td>Macaw 2 T</td>
<td></td>
</tr>
<tr>
<td>Mentorship for Young Scientists: Developing Scientific Survival Skills Workshop</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 12:00 p.m.</td>
<td>Swan</td>
<td>Parrot 1 T</td>
<td></td>
</tr>
<tr>
<td>Characterization Techniques for Magnetic Materials Workshop</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 4:30 p.m.</td>
<td>Swan</td>
<td>Parrot 2 T</td>
<td></td>
</tr>
<tr>
<td>Friction Stir Welding &amp; Processing Short Course</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 4:30 p.m.</td>
<td>Swan</td>
<td>Peacock 1 T</td>
<td></td>
</tr>
<tr>
<td>Multiphysics Materials Simulations using the Open Source MOOSE Framework Workshop</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 4:30 p.m.</td>
<td>Swan</td>
<td>Macaw 1 T</td>
<td></td>
</tr>
<tr>
<td>Supplier Technology Workshop - Anode Carbon</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 4:30 p.m.</td>
<td>Swan</td>
<td>Lark 1 T</td>
<td></td>
</tr>
<tr>
<td>Supplier Technology Workshop - Reduction</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 4:30 p.m.</td>
<td>Swan</td>
<td>Lark 2 T</td>
<td></td>
</tr>
<tr>
<td>11th Annual Lead Free Solders and Interconnect Technology Workshop</td>
<td>3/15/2015</td>
<td>9:00 a.m. to 5:00 p.m.</td>
<td>Swan</td>
<td>Mockingbird 2 T</td>
<td></td>
</tr>
<tr>
<td>Additive Manufacturing Materials and Processes Workshop</td>
<td>3/15/2015</td>
<td>1:00 p.m. to 5:30 p.m.</td>
<td>Swan</td>
<td>Macaw 2 T</td>
<td></td>
</tr>
</tbody>
</table>

**Exhibit Move-In**

- Walt Disney World Swan Resort
- Walt Disney World Dolphin Resort
- Disney’s Yacht & Beach Club Resorts
  - O - Open to all attendees
  - R - Restrictions Apply
  - I - Invitation Only
  - T - Ticketed Event, Pre-registration required

### Professional Development Courses Begin Sunday at 8:00 a.m.

Sign up for one of these courses in the Registration area at the Dolphin Hotel or visit www.tms.org/pd for a list of upcoming Professional Development events from TMS.

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**www.tms.org/TMS2015**  
**#TMS2015Experience**

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### Student Events

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Bowl</td>
<td>3/15/2015</td>
<td>12:00 p.m. to 7:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 5-7</td>
<td>O</td>
</tr>
<tr>
<td>Elimination Rounds</td>
<td>3/15/2015</td>
<td>12:00 p.m. to 4:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 5-7</td>
<td>O</td>
</tr>
<tr>
<td>Championship Round</td>
<td>3/15/2015</td>
<td>6:30 p.m. to 7:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom South</td>
<td>O</td>
</tr>
<tr>
<td>Student Networking Mixer</td>
<td>3/15/2015</td>
<td>7:00 p.m. to 9:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom South</td>
<td>O</td>
</tr>
</tbody>
</table>

### Social Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faces of the TMS Foundation</td>
<td>3/15/2015</td>
<td>7:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Convention Registration Foyer</td>
<td>O</td>
</tr>
<tr>
<td>TMS Fellows and Invited Guests Reception</td>
<td>3/15/2015</td>
<td>4:30 p.m. to 6:30 p.m.</td>
<td>Dolphin</td>
<td>Premiere Suite</td>
<td>I</td>
</tr>
</tbody>
</table>

### Committee & Business Meetings

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Registration Leadership Committee</td>
<td>3/15/2015</td>
<td>8:00 a.m. to 11:00 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Stonington A &amp; B</td>
<td>R</td>
</tr>
<tr>
<td>New Board Member Orientation</td>
<td>3/15/2015</td>
<td>8:30 a.m. to 10:00 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A &amp; B</td>
<td>O</td>
</tr>
<tr>
<td>TMS Board of Directors Meeting</td>
<td>3/15/2015</td>
<td>10:00 a.m. to 12:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A &amp; B</td>
<td>R</td>
</tr>
<tr>
<td>Recycling and Environmental Technologies Committee</td>
<td>3/15/2015</td>
<td>12:00 p.m. to 1:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Saybrook</td>
<td>O</td>
</tr>
<tr>
<td>Accreditation Committee</td>
<td>3/15/2015</td>
<td>12:30 p.m. to 2:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod C</td>
<td>O</td>
</tr>
<tr>
<td>Program Committee</td>
<td>3/15/2015</td>
<td>1:00 p.m. to 2:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>R</td>
</tr>
<tr>
<td>Web User Testing</td>
<td>3/15/2015</td>
<td>1:00 p.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Oceanic 4</td>
<td>R</td>
</tr>
<tr>
<td>Magnesium Committee</td>
<td>3/15/2015</td>
<td>1:30 p.m. to 3:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury A</td>
<td>O</td>
</tr>
<tr>
<td>TMS Nominating Committee</td>
<td>3/15/2015</td>
<td>2:00 p.m. to 4:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury A</td>
<td>O</td>
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<tr>
<td>Aluminum Committee</td>
<td>3/15/2015</td>
<td>2:00 p.m. to 4:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>O</td>
</tr>
<tr>
<td>Materials Characterization Committee</td>
<td>3/15/2015</td>
<td>2:30 p.m. to 4:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Saybrook</td>
<td>O</td>
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<tr>
<td>JOM Advisor Orientation</td>
<td>3/15/2015</td>
<td>3:00 p.m. to 4:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod D</td>
<td>R</td>
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<tr>
<td>PRICM-9 International Organizing Committee</td>
<td>3/15/2015</td>
<td>3:00 p.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Oceanic 7</td>
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<td>ABET Refresher Training</td>
<td>3/15/2015</td>
<td>3:00 p.m. to 6:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod B</td>
<td>O</td>
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<tr>
<td>Public &amp; Governmental Affairs Committee</td>
<td>3/15/2015</td>
<td>3:30 p.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod C</td>
<td>O</td>
</tr>
<tr>
<td>Hydrometallurgy and Electrometallurgy Committee</td>
<td>3/15/2015</td>
<td>4:00 p.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 1</td>
<td>O</td>
</tr>
<tr>
<td>Nanomaterials Committee</td>
<td>3/15/2015</td>
<td>4:00 p.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 2</td>
<td>O</td>
</tr>
<tr>
<td>Thin Films and Interfaces Committee</td>
<td>3/15/2015</td>
<td>4:00 p.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 3</td>
<td>O</td>
</tr>
<tr>
<td>Women in Materials Science &amp; Engineering Committee</td>
<td>3/15/2015</td>
<td>4:30 p.m. to 5:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>O</td>
</tr>
<tr>
<td>Materials Innovation Committee</td>
<td>3/15/2015</td>
<td>5:30 p.m. to 7:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A</td>
<td>O</td>
</tr>
<tr>
<td>Nanomechanical Materials Behavior Committee</td>
<td>3/15/2015</td>
<td>5:45 p.m. to 6:45 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 1</td>
<td>O</td>
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<tr>
<td>Process Technology and Modeling Committee</td>
<td>3/15/2015</td>
<td>6:00 p.m. to 7:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salons 3</td>
<td>O</td>
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<tr>
<td>Function</td>
<td>Date</td>
<td>Time</td>
<td>Facility</td>
<td>Room</td>
<td>Access</td>
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<tr>
<td>Pyrometallurgy Committee</td>
<td>3/15/2015</td>
<td>6:00 p.m. to 7:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salon 2</td>
<td>O</td>
</tr>
<tr>
<td>Professional Development Committee</td>
<td>3/15/2015</td>
<td>6:00 p.m. to 8:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury A</td>
<td>R</td>
</tr>
<tr>
<td>Content Development and Dissemination Committee</td>
<td>3/15/2015</td>
<td>6:00 p.m. to 8:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod C</td>
<td>I</td>
</tr>
<tr>
<td>Mechanical Behavior of Materials Committee</td>
<td>3/15/2015</td>
<td>7:00 p.m. to 8:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salon 8</td>
<td>O</td>
</tr>
<tr>
<td>Alloy Phases Committee</td>
<td>3/15/2015</td>
<td>7:30 p.m. to 9:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod D</td>
<td>O</td>
</tr>
<tr>
<td>Phase Transformation Committee</td>
<td>3/15/2015</td>
<td>7:30 p.m. to 9:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A</td>
<td>O</td>
</tr>
</tbody>
</table>

**Monday, March 16**

**All-Conference Events**

- **Registration**
  - Date: 3/16/2015
  - Time: 7:00 a.m. to 6:00 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Programming Support Desk**
  - Date: 3/16/2015
  - Time: 7:00 a.m. to 6:00 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Presenters’ Coffee**
  - Date: 3/16/2015
  - Time: 7:00 a.m. to 8:00 a.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: R

- **General, Symposium, Young Professional, and Student Poster Session Set-up**
  - Date: 3/16/2015
  - Time: 8:00 a.m. to 12:00 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Technical Programming**
  - Date: 3/16/2015
  - Time: 8:30 a.m. to 5:30 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Morning Break**
  - Date: 3/16/2015
  - Time: 9:50 a.m. to 10:30 a.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Afternoon Break**
  - Date: 3/16/2015
  - Time: 3:20 p.m. to 4:00 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Poster Session Presentations and Reception**
  - Date: 3/16/2015
  - Time: 6:30 p.m. to 8:30 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

- **Young Professional Meet the Candidate Poster Session**
  - Date: 3/16/2015
  - Time: 6:30 p.m. to 8:30 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

**Exhibition**

- **TMS2015 Exhibition**
  - Date: 3/16/2015
  - Time: 4:00 p.m. to 6:30 p.m.
  - Facility: Dolphin
  - Room: Pacific Hall
  - Access: O

- **TMS Information Center**
  - Date: 3/16/2015
  - Time: 4:00 p.m. to 6:30 p.m.
  - Facility: Dolphin
  - Room: Booth 401
  - Access: O

- **Bladesmithing Competition**
  - Date: 3/16/2015
  - Time: 4:00 p.m. to 6:30 p.m.
  - Facility: Dolphin
  - Room: Booth 235
  - Access: O

- **President’s Welcoming Reception**
  - Date: 3/16/2015
  - Time: 5:00 p.m. to 6:30 p.m.
  - Facility: Dolphin
  - Room: Atlantic/Pacific Halls
  - Access: O

**Special Presentations**

- **EPD Distinguished Lecture**
  - Date: 3/16/2015
  - Time: 8:30 a.m. to 9:10 a.m.
  - Facility: Yacht & Beach
  - Room: Grand Harbor Ballroom Salon 2
  - Access: O

- **Magnesium Technology 2015 Keynote Session**
  - Date: 3/16/2015
  - Time: 8:30 a.m. to 10:50 a.m.
  - Facility: Dolphin
  - Room: Northern Hemisphere E1
  - Access: O

- **Light Metals Keynote Session: Latest Developments in Smelting of Light Metals**
  - Date: 3/16/2015
  - Time: 8:30 a.m. to 12:00 p.m.
  - Facility: Dolphin
  - Room: Southern Hemisphere I, II, III
  - Access: O

**Student Events**

- **Technical Division Student Poster Contest**
  - Date: 3/16/2015
  - Time: 3:30 p.m. to 5:30 p.m.
  - Facility: Dolphin
  - Room: Atlantic Hall
  - Access: O

**Social Functions**

- **Women in Materials Science & Engineering Breakfast**
  - Date: 3/16/2015
  - Time: 7:00 a.m. to 8:00 a.m.
  - Facility: Dolphin
  - Room: Americas Seminar
  - Access: T

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**Walt Disney World Swan Resort**
**Walt Disney World Dolphin Resort**
**Disney’s Yacht & Beach Club Resorts**

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

**Website:** www.tms.org/TMS2015

**Hashtag:** #TMS2015Experience
## CALENDAR OF EVENTS

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faces of the TMS Foundation</td>
<td>3/16/2015</td>
<td>7:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Convention Registration Foyer</td>
<td>O</td>
</tr>
<tr>
<td>Connect Zone</td>
<td>3/16/2015</td>
<td>8:30 a.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>SMD Luncheon</td>
<td>3/16/2015</td>
<td>12:00 p.m. to 2:00 p.m.</td>
<td>Swan</td>
<td>Osprey 1</td>
<td>T</td>
</tr>
<tr>
<td>IOMMS Council Reception</td>
<td>3/16/2015</td>
<td>4:30 p.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Europe 6</td>
<td>I</td>
</tr>
<tr>
<td>Meet-a-Mentor</td>
<td>3/16/2015</td>
<td>5:00 p.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Northern Hemisphere D</td>
<td>T</td>
</tr>
<tr>
<td>Young Professionals Reception</td>
<td>3/16/2015</td>
<td>6:00 p.m. to 7:00 p.m.</td>
<td>Dolphin</td>
<td>Northern Hemisphere D</td>
<td>O</td>
</tr>
<tr>
<td>Stefanescu Honorary Dinner</td>
<td>3/16/2015</td>
<td>6:30 p.m. to 9:30 p.m.</td>
<td>Dolphin</td>
<td>Americas Seminar</td>
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<tr>
<td>Nagy El-Kaddah Memorial Dinner</td>
<td>3/16/2015</td>
<td>6:30 p.m. to 9:30 p.m.</td>
<td>Swan</td>
<td>Osprey 1</td>
<td>T</td>
</tr>
</tbody>
</table>

### Committee & Business Meetings

- **Metallurgical and Materials Transactions A Board of Review**
  - Date: 3/16/2015
  - Time: 7:00 a.m. to 8:00 a.m.
  - Facility: Yacht & Beach
  - Room: Saybrook
  - Access: I

- **Membership & Student Development Committee**
  - Date: 3/16/2015
  - Time: 8:45 a.m. to 10:00 a.m.
  - Facility: Dolphin
  - Room: Europe 4
  - Access: R

- **TMS Executive Committee**
  - Date: 3/16/2015
  - Time: 10:00 a.m. to 11:00 a.m.
  - Facility: Yacht & Beach
  - Room: Stonington
  - Access: R

- **TMS Past Presidents Meeting**
  - Date: 3/16/2015
  - Time: 11:30 a.m. to 1:00 p.m.
  - Facility: Yacht & Beach
  - Room: Europe 6
  - Access: I

- **Superalloys 2016 Program Committee**
  - Date: 3/16/2015
  - Time: 12:00 p.m. to 2:00 p.m.
  - Facility: Yacht & Beach
  - Room: Cape Cod B
  - Access: I

- **Integrated Computational Materials Engineering Committee**
  - Date: 3/16/2015
  - Time: 12:15 p.m. to 1:45 p.m.
  - Facility: Dolphin
  - Room: Europe 4
  - Access: O

- **Powder Materials Committee**
  - Date: 3/16/2015
  - Time: 12:30 p.m. to 2:00 p.m.
  - Facility: Swan
  - Room: Lark
  - Access: O

- **Superalloys 2016 Organizing Committee**
  - Date: 3/16/2015
  - Time: 5:00 p.m. to 7:00 p.m.
  - Facility: Yacht & Beach
  - Room: Hampton
  - Access: I

- **Composite Materials Committee**
  - Date: 3/16/2015
  - Time: 5:45 p.m. to 6:45 p.m.
  - Facility: Dolphin
  - Room: Asia 5
  - Access: O

- **Advanced Characterization, Testing and Simulation Committee**
  - Date: 3/16/2015
  - Time: 5:45 p.m. to 6:45 p.m.
  - Facility: Swan
  - Room: Pelican 2
  - Access: O

- **Solidification Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 7:00 p.m.
  - Facility: Swan
  - Room: Swan Ballroom Salon 1
  - Access: O

- **Biomaterials Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 7:00 p.m.
  - Facility: Swan
  - Room: Swan Ballroom Salon 9
  - Access: O

- **Energy Conversion and Storage Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 7:00 p.m.
  - Facility: Yacht & Beach
  - Room: Grand Harbor Ballroom Salon 1
  - Access: O

- **Chemistry and Physics of Materials Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 7:30 p.m.
  - Facility: Yacht & Beach
  - Room: Grand Harbor Ballroom Salon 4
  - Access: O

- **Nuclear Materials Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 7:30 p.m.
  - Facility: Yacht & Beach
  - Room: Grand Harbor Ballroom Salon 2
  - Access: O

- **Materials & Society Committee**
  - Date: 3/16/2015
  - Time: 6:00 p.m. to 8:00 p.m.
  - Facility: Yacht & Beach
  - Room: Cape Cod B
  - Access: I

- **Magnetic Materials Committee**
  - Date: 3/16/2015
  - Time: 7:00 p.m. to 8:00 p.m.
  - Facility: Yacht & Beach
  - Room: Grand Harbor Ballroom Salon 7
  - Access: O

### Tuesday, March 17

#### All-Conference Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
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</thead>
<tbody>
<tr>
<td>Registration</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
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</table>
## MEETING INFORMATION

### CALENDAR OF EVENTS

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
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<tbody>
<tr>
<td>Presenters' Coffee</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 8:00 a.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>R</td>
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<tr>
<td>Poster Gallery</td>
<td>3/17/2015</td>
<td>8:30 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
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<tr>
<td>Technical Programming</td>
<td>3/17/2015</td>
<td>8:30 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
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<td>Morning Break</td>
<td>3/17/2015</td>
<td>9:50 a.m. to 10:30 a.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
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<td>Afternoon Break</td>
<td>3/17/2015</td>
<td>3:20 p.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
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<td>TMS2015 Exhibition</td>
<td>3/17/2015</td>
<td>10:00 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Pacific Hall</td>
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<td>TMS Information Center</td>
<td>3/17/2015</td>
<td>10:00 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Booth 401</td>
<td>O</td>
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<tr>
<td>Bladesmithing Competition</td>
<td>3/17/2015</td>
<td>10:00 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Booth 235</td>
<td>O</td>
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<tr>
<td>Bladesmithing Awards Presentation</td>
<td>3/17/2015</td>
<td>1:30 p.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Booth 235</td>
<td>O</td>
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<tr>
<td>Happy Hour Reception</td>
<td>3/17/2015</td>
<td>4:30 p.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Pacific Hall</td>
<td>O</td>
</tr>
<tr>
<td>Young Professional Tutorial Luncheon &amp; Lecture</td>
<td>3/17/2015</td>
<td>12:00 p.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Northern Hemisphere D</td>
<td>T</td>
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<tr>
<td>Student Career Forum</td>
<td>3/17/2015</td>
<td>2:30 p.m. to 4:30 p.m.</td>
<td>Dolphin</td>
<td>Northern Hemisphere D</td>
<td>O</td>
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<tr>
<td>Faces of the TMS Foundation</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Convention Registration Foyer</td>
<td>O</td>
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<tr>
<td>Connect Zone</td>
<td>3/17/2015</td>
<td>8:30 a.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
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<tr>
<td>EPD/MPMD Joint Luncheon Lecture</td>
<td>3/17/2015</td>
<td>12:00 p.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Americas Seminar</td>
<td>T</td>
</tr>
<tr>
<td>TMS Foundation Silent Auction</td>
<td>3/17/2015</td>
<td>4:00 p.m. to 10:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Lobby</td>
<td>O</td>
</tr>
<tr>
<td>TMS &amp; AIME Awards Reception</td>
<td>3/17/2015</td>
<td>5:30 p.m. to 6:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Lobby</td>
<td>O</td>
</tr>
<tr>
<td>TMS &amp; AIME Awards Ceremony</td>
<td>3/17/2015</td>
<td>6:30 p.m. to 7:45 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom North</td>
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</tr>
<tr>
<td>TMS &amp; AIME Awards Banquet</td>
<td>3/17/2015</td>
<td>7:45 p.m. to 9:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom South</td>
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</tr>
<tr>
<td>Electronic Packaging and Interconnection Materials Committee</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 8:00 a.m.</td>
<td>Dolphin</td>
<td>Europe 4</td>
<td>O</td>
</tr>
<tr>
<td>Metallurgical and Materials Transactions B Board of Review</td>
<td>3/17/2015</td>
<td>7:00 a.m. to 8:00 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Saybrook</td>
<td>I</td>
</tr>
<tr>
<td>Fellows Award Committee</td>
<td>3/17/2015</td>
<td>7:30 a.m. to 8:30 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod D</td>
<td>R</td>
</tr>
<tr>
<td>Pan American Conference Planning Meeting</td>
<td>3/17/2015</td>
<td>7:30 a.m. to 9:30 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod B</td>
<td>I</td>
</tr>
<tr>
<td>Young Professionals Committee</td>
<td>3/17/2015</td>
<td>8:15 a.m. to 9:45 a.m.</td>
<td>Dolphin</td>
<td>Northern Hemisphere D</td>
<td>O</td>
</tr>
<tr>
<td>Honors &amp; Professional Recognition Committee</td>
<td>3/17/2015</td>
<td>8:30 a.m. to 9:30 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod D</td>
<td>R</td>
</tr>
</tbody>
</table>
## MEETING INFORMATION

### CALENDAR OF EVENTS

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Pan American Planning Meeting</td>
<td>3/17/2015</td>
<td>7:30 a.m. to 9:00 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod B</td>
<td>I</td>
</tr>
<tr>
<td>TMS-CSM 2017 Energy Materials Conference Discussion</td>
<td>3/17/2015</td>
<td>10:30 a.m. to 11:30 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod C</td>
<td>R</td>
</tr>
<tr>
<td>TMS-CSM Leadership</td>
<td>3/17/2015</td>
<td>11:30 a.m. to 1:30 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Stonington</td>
<td>R</td>
</tr>
<tr>
<td>Education Committee</td>
<td>3/17/2015</td>
<td>12:30 p.m. to 2:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod D</td>
<td>O</td>
</tr>
<tr>
<td>Web Testing</td>
<td>3/17/2015</td>
<td>1:00 p.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Europe 4</td>
<td>R</td>
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<tr>
<td>Titanium Committee</td>
<td>3/17/2015</td>
<td>5:00 p.m. to 6:00 p.m.</td>
<td>Swan</td>
<td>Osprey 1</td>
<td>O</td>
</tr>
<tr>
<td>Energy Committee</td>
<td>3/17/2015</td>
<td>5:00 p.m. to 6:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom Salon 4</td>
<td>O</td>
</tr>
<tr>
<td>Shaping and Forming Committee</td>
<td>3/17/2015</td>
<td>5:00 p.m. to 7:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Cape Cod A</td>
<td>O</td>
</tr>
<tr>
<td>Computational Materials Science &amp; Engineering Committee</td>
<td>3/17/2015</td>
<td>5:45 p.m. to 6:45 p.m.</td>
<td>Dolphin</td>
<td>Oceanic 3</td>
<td>O</td>
</tr>
<tr>
<td>Refractory Metals &amp; Materials Committee</td>
<td>3/17/2015</td>
<td>5:45 p.m. to 6:45 p.m.</td>
<td>Dolphin</td>
<td>Oceanic 1</td>
<td>O</td>
</tr>
<tr>
<td>High Temperature Alloys Committee</td>
<td>3/17/2015</td>
<td>5:45 p.m. to 7:15 p.m.</td>
<td>Dolphin</td>
<td>Oceanic 7</td>
<td>O</td>
</tr>
<tr>
<td>Titanium 2015 Organizing Committee</td>
<td>3/17/2015</td>
<td>6:00 p.m. to 7:00 p.m.</td>
<td>Swan</td>
<td>Osprey 1</td>
<td>R</td>
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</tbody>
</table>

### Wednesday, March 18

#### All-Conference Events

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>3/18/2015</td>
<td>7:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>3/18/2015</td>
<td>7:00 a.m. to 6:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Presenters’ Coffee</td>
<td>3/18/2015</td>
<td>7:00 a.m. to 8:00 a.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>R</td>
</tr>
<tr>
<td>Poster Gallery</td>
<td>3/18/2015</td>
<td>8:30 a.m. to 12:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Technical Programming</td>
<td>3/18/2015</td>
<td>8:30 a.m. to 5:30 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Morning Break</td>
<td>3/18/2015</td>
<td>9:50 a.m. to 10:30 a.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Afternoon Break</td>
<td>3/18/2015</td>
<td>3:20 p.m. to 4:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>O</td>
</tr>
<tr>
<td>Poster Session - Tear Down</td>
<td>3/18/2015</td>
<td>12:00 p.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
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</table>

#### Exhibition

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
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</thead>
<tbody>
<tr>
<td>TMS2015 Exhibition</td>
<td>3/18/2015</td>
<td>10:00 a.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Pacific Hall</td>
<td>O</td>
</tr>
<tr>
<td>TMS Information Center</td>
<td>3/18/2015</td>
<td>10:00 a.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Booth 401</td>
<td>O</td>
</tr>
<tr>
<td>Bladesmithing Competition</td>
<td>3/18/2015</td>
<td>10:00 a.m. to 2:00 p.m.</td>
<td>Dolphin</td>
<td>Booth 235</td>
<td>O</td>
</tr>
<tr>
<td>Lunch in Exhibition Hall</td>
<td>3/18/2015</td>
<td>11:30 a.m. to 1:30 p.m.</td>
<td>Dolphin</td>
<td>Pacific Hall</td>
<td>O</td>
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</table>

#### Special Presentations

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Solutions for Sustainability Plenary I</td>
<td>3/18/2015</td>
<td>8:30 a.m. to 10:10 a.m.</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Ballroom North</td>
<td>O</td>
</tr>
<tr>
<td>Engineering Solutions for Sustainability Poster Set-up</td>
<td>3/18/2015</td>
<td>10:00 a.m. to 5:00 p.m.</td>
<td>Yacht &amp; Beach</td>
<td>Asbury Lobby</td>
<td>O</td>
</tr>
</tbody>
</table>

#### Student Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Send-off Lunch</td>
<td>3/18/2015</td>
<td>11:30 a.m. to 1:30 p.m.</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>T</td>
</tr>
</tbody>
</table>

#### Social Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Date</th>
<th>Time</th>
<th>Facility</th>
<th>Room</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faces of the TMS Foundation</td>
<td>3/18/2015</td>
<td>7:00 a.m. to 5:00 p.m.</td>
<td>Dolphin</td>
<td>Convention Registration Foyer</td>
<td>O</td>
</tr>
</tbody>
</table>
### Meeting Information

**Connect Zone**
- **Date**: 3/18/2015
- **Time**: 8:30 a.m. to 12:30 a.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: O

**LMD Luncheon**
- **Date**: 3/18/2015
- **Time**: 12:00 p.m. to 2:00 p.m.
- **Facility**: Dolphin
- **Room**: Southern Hemisphere 1
- **Access**: T

**Connect Zone**
- **Date**: 3/18/2015
- **Time**: 2:00 p.m. to 4:00 p.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: O

**Engineering Solutions for Sustainability Reception**
- **Date**: 3/18/2015
- **Time**: 5:30 p.m. to 7:30 p.m.
- **Facility**: Yacht & Beach
- **Room**: Asbury Lobby
- **Access**: I

### Committee & Business Meetings

**Audit Committee**
- **Date**: 3/18/2015
- **Time**: 7:30 a.m. to 8:00 a.m.
- **Facility**: Yacht & Beach
- **Room**: Stonington
- **Access**: R

**Light Metals 2016 Subject Chairs Breakfast**
- **Date**: 3/18/2015
- **Time**: 7:30 a.m. to 8:30 a.m.
- **Facility**: Dolphin
- **Room**: Europe 1
- **Access**: R

**TMS Board of Directors Meeting**
- **Date**: 3/18/2015
- **Time**: 8:15 a.m. to 11:40 a.m.
- **Facility**: Yacht & Beach
- **Room**: Cape Cod AB
- **Access**: O

**TMS Annual Business Meeting**
- **Date**: 3/18/2015
- **Time**: 8:25 a.m. to 8:30 a.m.
- **Facility**: Yacht & Beach
- **Room**: Cape Cod AB
- **Access**: O

**Graduate Student Advisory Council Recruitment Session**
- **Date**: 3/18/2015
- **Time**: 9:00 a.m. to 10:00 a.m.
- **Facility**: Dolphin
- **Room**: Europe 6
- **Access**: O

**TMS Foundation Board of Trustees Meeting**
- **Date**: 3/18/2015
- **Time**: 2:00 p.m. to 5:00 p.m.
- **Facility**: Yacht & Beach
- **Room**: Cape Cod A
- **Access**: R

**Programming Reception**
- **Date**: 3/18/2015
- **Time**: 5:30 p.m. to 7:00 p.m.
- **Facility**: Swan
- **Room**: Osprey 1
- **Access**: I

### Thursday, March 19

#### All-Conference Events

**Registration**
- **Date**: 3/19/2015
- **Time**: 7:00 a.m. to 12:00 p.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: O

**Programming Support Desk**
- **Date**: 3/19/2015
- **Time**: 7:00 a.m. to 5:00 p.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: O

**Presenters’ Coffee**
- **Date**: 3/19/2015
- **Time**: 7:00 a.m. to 8:00 a.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: R

**Technical Programming**
- **Date**: 3/19/2015
- **Time**: 8:30 a.m. to 5:30 p.m.
- **Facility**: See Technical Program section for complete schedule and locations
- **Room**: O
- **Access**: O

**Morning Break**
- **Date**: 3/19/2015
- **Time**: 9:50 a.m. to 10:30 a.m.
- **Facility**: Yacht & Beach
- **Room**: O
- **Access**: O

**Afternoon Break**
- **Date**: 3/19/2015
- **Time**: 3:20 p.m. to 4:00 p.m.
- **Facility**: Yacht & Beach
- **Room**: O
- **Access**: O

#### Special Presentations

**Engineering Solutions for Sustainability Poster Tear-down**
- **Date**: 3/19/2015
- **Time**: 8:00 a.m. to 10:30 a.m.
- **Facility**: Yacht & Beach
- **Room**: Asbury Lobby
- **Access**: O

**Engineering Solutions for Sustainability Plenary II**
- **Date**: 3/19/2015
- **Time**: 8:30 a.m. to 10:00 a.m.
- **Facility**: Yacht & Beach
- **Room**: Asbury ABC
- **Access**: O

#### Social Functions

**Faces of the TMS Foundation**
- **Date**: 3/19/2015
- **Time**: 7:00 a.m. to 12:00 p.m.
- **Facility**: Dolphin
- **Room**: Convention Registration Foyer
- **Access**: O

**Connect Zone**
- **Date**: 3/19/2015
- **Time**: 8:30 a.m. to 12:00 p.m.
- **Facility**: Dolphin
- **Room**: Atlantic Hall
- **Access**: O

**Repeat Attendee Luncheon**
- **Date**: 3/19/2015
- **Time**: 11:30 a.m. to 1:30 p.m.
- **Facility**: Yacht & Beach
- **Room**: Cape Cod ABC
- **Access**: I

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**Walt Disney World Swan Resort**
**Walt Disney World Dolphin Resort**
**Disney’s Yacht & Beach Club Resorts**

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

---

**Want to Get Involved?**

Attend one of the many open technical committee meetings being held this week to meet colleagues with similar interests and become a contributing member of the TMS community.
**Dolphin Convention Hall Space**

**Dolphin Lobby Level**
Dolphin Hemispheres Ballroom

Swan Ballroom

www.tms.org/TMS2015
#TMS2015Experience
WILL YOUR FAVORITE WIN?

Make sure by casting your vote by March 20, 2015.

TMS2015 attendees can vote using the convenient mobile form at www.tms.org/vote

The nominees for the Top Ten Greatest Works of Materials Fiction are:

Atlas Shrugged: Ayn Rand
Cat’s Cradle: Kurt Vonnegut
Contact: Carl Sagan
The Cross-Time Engineer: Leo Frankowski
The Dark Knight: Frank Miller
Days of Future Past: Chris Claremont and John Byrne
The Diamond Age: Neal Stephenson
Dragon’s Egg: Robert L. Forward
Foundation: Isaac Asimov

Game of Thrones (Song of Ice and Fire series): George R.R. Martin
The Iliad: Homer
The Iron Giant: Ted Hughes
The Kalevala: Elias Lennrot
Lord of the Rings (trilogy): J.R.R. Tolkien
The Magic Engineer: L.E. Modesitt, Jr.
Mars (trilogy): Kim Stanley Robinson
The Merchant of Venice: William Shakespeare
Mysterious Island: Jules Verne

For details on each nominee, including the materials connection that makes it worthy for this list, visit the JOM Materials Fiction Countdown website at www.tms.org/JOMCountdown.

Bid on the entire collection at the
TMS Foundation Silent Auction
Place your bid Tuesday from 4:00 p.m. to 9:00 p.m. in the Yacht and Beach Grand Harbor Lobby.

OWN THE COMPLETE LIBRARY
MATERIALS FICTION COUTDOWN
The books will be on display all week near the Faces of the Foundation booth.
Light Metals Keynote:  
Latest Developments in  
Smelting of Light Metals

Monday, March 16 • 8:30 a.m. to Noon  
Southern Hemisphere Ballroom I, Dolphin Hotel

Three smelting processes dominate the production of light metals: the Hall-Heroult cell for aluminum, the Kroll process for titanium, and the Pidgeon process for magnesium. This symposium will review the status of the latest programs and developments in potential alternative processes and share these developments across the research community of all three light metals.

This keynote, which will include a panel session, will look to explore synergies among the three light metals, such as co-production and common problems and approaches for all three metals. The intent is to break down silos between research groups and explore cross-fertilization opportunities.

The program organizer is John Grandfield, Grandfield Technology Pty Ltd., Australia.

Presentations and Speakers  
“An Overview of Alternate Smelting Processes for Light Metals”  
James Metson, University of Auckland and Ministry of Business Innovation and Employment, New Zealand

“The Advanced Research Projects Agency-Energy (ARPA-E) Light Metal Production Technology Programs”  
James Klausner, University of Florida and U.S. Department of Energy ARPA-E, USA

“Emerging Titanium Production Processes”  
Kathie McGregor, Commonwealth Scientific and Industrial Research Organisation (CSIRO) Process Science and Engineering, Australia

“An Overview of Thermochemical Processes for Low Cost Production of Ti: Challenges and Opportunities”  
Zak Fang, University of Utah, USA

“Carbothermic Reduction of ZnO, MgO, SiO2, and Al2O3 Using Concentrated Solar Energy”  
Aldo Steinfeld, ETH Zurich and Paul Scherrer Institute, Switzerland

“Carbothermal Production of Aluminum and Magnesium”  
Mark Cooksey, CSIRO, Australia

“Balzano and Magnetherm Alternate Variants of Silicothermic Reduction of Magnesium to Pidgeon Process”  
James Sever, Alpha/Omega Engineering and Nevada Clean Magnesium Inc., USA

“Olivine as a Feedstock for Magnesium Electrolysis: The SilMag Project”  
Per Bjørn Engseth, SilMag Production As, Norway

“Towards Environment-Friendly Minerals Processing: A New Path for Alumina Production with CO2 Utilization”  
Asuncion Aranda, Institute for Energy Technology-IFE, Norway
Magnesium Technology 2015

Keynote Session

Monday, March 16 • 8:30 a.m. to Noon
Northern Hemisphere E1, Dolphin Hotel

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

“Reducing Weight for Transportation Applications: Technology Challenges and Opportunities”
Alan Taub, American Lightweight Materials Manufacturing Innovation Institute and University of Michigan, USA

“The Application of Magnesium Alloys in Aircraft Interiors—Changing the Rules”
Bruce Davis, Magnesium Elektron North America, USA

“Emerging Science and Research Opportunities for Metals and Metallic Nanostructures: A Report on the NSF MMN Workshop”
Tresa Pollock, University of California, Santa Barbara, USA

“Solute Segregation and Aggregation in Mg Alloys”
Jian-Feng Nie, Monash University, Australia

SAVE THE DATES!
Mark your calendars now for these upcoming annual meetings with TMS:

<table>
<thead>
<tr>
<th>TMS Annual Meeting &amp; Exhibition</th>
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<tr>
<td>2016 Nashville, Tennessee</td>
<td>February 14-18</td>
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<tr>
<td>2017 San Diego, California</td>
<td>February 26-March 2</td>
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<tr>
<td>2018 Phoenix, Arizona</td>
<td>March 11-15</td>
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<td>2019 San Antonio, Texas</td>
<td>March 10-14</td>
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<tr>
<td>2020 San Diego, California</td>
<td>February 23-27</td>
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<td>2021 Orlando, Florida</td>
<td>March 7-11</td>
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<table>
<thead>
<tr>
<th>Materials Science &amp; Technology (MS&amp;T)</th>
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<tbody>
<tr>
<td>2015 Columbus, Ohio</td>
<td>October 4-8</td>
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<tr>
<td>2016 Salt Lake City, Utah</td>
<td>October 24-27</td>
</tr>
</tbody>
</table>
Funding support for ESS:M&R II was generously provided by the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME).

With impending and burgeoning societal issues affecting both developed and emerging nations, the global engineering community has a responsibility and an opportunity to truly make a difference and contribute. This symposium will focus on what materials and resources are integral to meeting basic societal sustainability needs in critical areas of energy, transportation, housing, and recycling. The first Engineering Solutions for Sustainability: Materials & Resources symposium was held July 22-24, 2009 in Lausanne, Switzerland. All sessions for this special symposium, including the plenary sessions, will be held at the Yacht & Beach Convention Center.

**ESS: M&R II Wednesday Plenary**

Wednesday, March 18, 8:30 a.m. to 10:10 a.m.
Grand Harbor North Ballroom, Yacht & Beach Convention Center

“Global Materials Resource Challenges (Opportunities) for the 21st Century”
*Diran Apelian*, Worcester Polytechnic Institute, USA

“Sustainability using Biotechnology for the Chemical Industries”
*June Wispelwey*, American Institute of Chemical Engineers, USA

“Sustainability: A Business Imperative, Not a Moral Sacrifice”
*Behrooz Fattahi*, Society of Petroleum Engineers, USA

**ESS: M&R II Thursday Plenary**

Thursday, March 19, 8:30 a.m. to 10:10 a.m.
Grand Harbor North Ballroom, Yacht & Beach Convention Center

“A Healthy Home is a Fractal Home”
*Matthew Grocoff*, THRIVE Net Zero Energy Collaborative, USA

“Sustainable Development Practices in the Minerals Industry”
*Jessica Elzea Kogel*, Imerys, France

“Sustainable Policy from Washington and the States: A Role For the Engineer”
*Mark Burtschi*, ArcelorMittal, USA
Acta Materialia Symposium:
Honoring 2015 Award Recipients
Tresa Pollock and David Embury

Wednesday, March 18 • 3:00 p.m. to 4:30 p.m.
Asia 5, Dolphin Hotel

2015 Acta Materialia Award recipients Tresa M. Pollock and David Embury will deliver invited presentations at this special symposium celebrating their achievements. Following the session, attendees are invited to a special reception.


Tresa Pollock, University of California Santa Barbara, USA

The existence of the ordered L12 Co3(Al,X) phase in ternary and quaternary systems provides a pathway for the design of a new class of high-temperature structural alloys. However, rapid design and development of these new materials is challenged by several major factors: (1) the overwhelmingly large compositional search space for thermodynamically stable L12, (2) the lack of tools to predict the evolution of microstructure, starting from the liquid state, (3) an incomplete set of experimental and computational capabilities for rapid assessment of thermal, physical, and mechanical properties, and (4) the needs and constraints for associated high-temperature coatings. The complementary role of an MGI approach, with new experiments, ab-initio models, thermodynamic assessments, and mechanical property models employed for design of new Co-base single crystals alloys systems will be discussed. Single crystal compositions with creep properties equivalent to current Ni-base single crystal are presented. Needs and opportunities for further acceleration of the design process will be discussed.

“Exploring Controlled Heterogeneity as a Strengthening Mechanism”

David Embury, McMaster University, Canada

The approach to developing high-strength structural materials has, in large part, centered on homogenizing the microstructure by removing defects and inclusions and exploiting the refinement of the scale of the microstructure. This often has the disadvantage of attaining high strength but with limited work hardening capacity or ductility. An alternative is to develop a variety of heterogeneous structures which permit events to occur sequentially or in a spatially distributed manner in the structure. A number of these forms of controlled heterogeneity will be explored in the brief talk.
At the TMS 2015 Annual Meeting & Exhibition, three technical symposia will be held in honor of leaders in the minerals, metals, and materials community, and a fourth will be held in memory of Nagy El-Kaddah. The following symposia are planned:

**HONORARY SYMPOSIA**

### Advances in the Science and Engineering of Casting Solidification*

* A Materials Processing & Manufacturing Division Symposium Honoring Doru Michael Stefanescu

**Dates:** Monday, March 16 to Thursday, March 19  
**Location:** Swan 6, Swan Hotel

This symposium encompasses the following areas: solidification processing, solidification modeling, novel casting and molding processes, cast iron, and nanomanufacturing of materials.

### Constitutive Response and Modeling of Structural Materials

* A Structural Materials Division Symposium in Honor of G.T. Gray III’s 60th Birthday

**Dates:** Monday, March 16 to Wednesday, March 18  
**Location:** Asia 2, Dolphin Hotel

This six-session symposium will provide a forum for the discussion of recent investigations concerning structure/property relations within structural materials. Recent developments of mechanical test techniques, microstructural characterization, and strength and damage modeling will be the focus.

### Micromechanics of Structurally Inhomogeneous Materials

* A Functional Materials Division Symposium in Honor of Armen Khachaturyan

**Dates:** Monday, March 16 to Wednesday, March 18  
**Location:** Asia 3, Dolphin Hotel

This symposium will discuss the current status and recent advances in research areas in which Armen Khachaturyan has made seminal contributions, including theory of phase transformations in metal and ceramic systems; thermodynamics and kinetics of alloy phase decomposition and ordering, martensitic and ferroelastic transformations, and domain structure evolution in ferroelectrics and ferromagnetics; and micromechanics of structurally inhomogeneous materials.

### MHD 2015*

* Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing

**Dates:** Monday, March 16 to Wednesday, March 18  
**Location:** Swan 2, Swan Hotel

This symposium will provide a forum where university and academic professionals can interact with other stakeholders to facilitate the advancement of MHD in industry. Themes include experimental MHD, mathematical modeling of MHD, MHD stability, industrial applications of MHD, and recent applications of MHD.

* Dinners will be held in conjunction with the El-Kaddah and Stefanescu symposia; tickets for these events may be purchased until 10:00 a.m. on Monday, March 16.

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**Download the TMS2015 Mobile Application**

to create a personalized schedule of meeting events. Now available on the App Store and the Google Play™ Store. Just search for “TMS Annual Meeting.”
SPECIAL LECTURES

MONDAY, MARCH 16

2015 William Hume-Rothery Award Lecture

Date: Monday, March 16 • 8:30 a.m. to 9:00 a.m.
Location: Oceanic 1, Dolphin Hotel

Speaker: William Boettinger, National Institute of Standards and Technology (NIST)
Lecture Title: “Solidification of Multicomponent Alloys”
About the Topic: Various topics taken from the speaker’s lifetime research portfolio that involve multicomponent alloy solidification will be reviewed. Topics include: ternary monovariant and invariant eutectics, solder microstructure and wetting, quasicrystal AlCuFe phase diagram, solidification path analysis, Ni metal hydride electrode solidification, freckle formation in superalloys, DTA simulation during melting and freezing, and metallic glass formation.

Extraction & Processing Division Distinguished Lecturer

Date: Monday, March 16 • 8:30 a.m. to 9:20 a.m.
Location: Grand Harbor Ballroom Salon 2, Yacht & Beach Convention Center

Speaker: Uday B. Pal, Boston University
Lecture Title: “Green Technology for Metals Production”
About the Topic: In the metal product value chain from mined ores → concentrates → oxides → metals → alloys → finished products, the most energy-intensive step is usually the oxide to metal conversion. Today’s industry generally uses carbon and large amounts of energy to reduce oxides to metals, resulting in significant pollution. This talk will describe an energy efficient and environmentally friendly metals production technology that utilizes oxygen-ion-conducting solid oxide membranes (SOM) to electrolyze metal oxides dissolved in a flux and directly produce the desired metal and pure oxygen gas as a value-added byproduct. The process has been successfully used to demonstrate production of technologically important metals from their respective oxides. These include light structural metals (aluminum and magnesium), solar-grade silicon, critical rare earth metals (dysprosium and ytterbium), and corrosion-resistant metals (titanium and tantalum). The electrochemical performance of the SOM cell for the production of several of these metals will be presented.

Structural Materials Division Luncheon Lecture*

Date: Monday, March 16 • Noon to 2:00 p.m.
Location: Osprey 1, Swan Hotel

Speaker: David L. Bourell, University of Texas at Austin
Lecture Title: “Additive Manufacturing: Origins, Applications and Future Possibilities”
About the Topic: The history and future will be presented for modern additive manufacturing (AM). The technology, divided into seven categories by ASTM, dates to the 1980s, although precursor processes and AM “prehistory” date to the 1950s and the previous century, respectively. A rationale will be presented for the use of AM processes in lieu of conventional manufacturing processes. Two requirements for parts under consideration for AM are complex geometry and low production runs. Current sectors using AM illustrate the results. A survey of materials for AM will be provided. Some consideration will be presented respecting where AM technology is headed.

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

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www.TMSFoundation.org
Japan Institute of Metals (JIM) International Scholar

Date: Tuesday, March 17 • 11:40 a.m. to 12:10 p.m.
Location: Swan Ballroom Salon 3, Swan Hotel

Speaker: Nobuo Nakada, Kyushu University
Lecture Title: “Microstructural Characteristics of Austenite Formed from Lath Martensite via Martensitic Reversion”
About the Topic: When maraging steel is austenitized, the reversion from martensite to austenite takes place via diffusionless shear mechanism (martensitic reversion). It is thought that the austenite formed by martensitic reversion (martensitically reversed austenite) contains high-density lattice defect. However, it is impossible to observe martensitically reversed austenite directly, because austenite is unstable at ambient temperature in maraging steel. In this study, we focused on a high austenite stabilization effect of carbon and an austenite stabilizing heat treatment consisting of three-step solid-solution annealing was applied to a 18%Ni-C steel. As a result, martensitically reversed austenite remained fully stable at room temperature through the unique heat treatment. After some microstructural characterizations, the following were mainly found. The martensitically reversed austenite has a fine lath structure with high dislocation density inherited from the lath martensite. While, the crystallographic texture of the austenite was the same as that of the original austenite before martensitic transformation.

EPD/MPMD Joint Luncheon Lecture*

Date: Tuesday, March 17 • Noon to 2:00 p.m.
Location: Americas Seminar, Dolphin Hotel
Speaker: Edward J. McGowan, FLSmidth
Lecture Title: “The ‘Envelope of Protection’ and the Value of ‘Mature Safety Cultures’”
About the Topic: The discussion will be directed toward mature safety cultures and how today the envelope of protection involves all levels of management. Safety systems need to capitalize on the approach that multiple tiers are necessary to protect at-risk workers. The talk will focus on protection of the employees beginning with employee empowerment . . . and taking advantage of everything we can for the right purpose. Core to leadership is the understanding that it’s not just about doing things right but doing the right things. The same theme is core to accident prevention.

* 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, March 17 • Noon to 2:00 p.m.
Location: Northern Hemisphere D, Dolphin Hotel
Speaker: Antoine Allanore, Massachusetts Institute of Technology
Lecture Title: “Teaching Sustainable Chemical Metallurgy in 2015”
About the Topic: The early 21st century is experiencing a formidable challenge related to materials extraction and processing. Those core industrial activities will have to ultimately provide more than nine billion inhabitants with commodities such as steel or fertilizer at an unprecedented rate, while mitigating environmental or societal impacts. In that perspective, higher education institutions have the mission to prepare students to shape the technological paradigms for such challenges, and Allanore argues that it all starts with the fundamentals of materials.
extraction, metals in particular. Allanore will present his recent endeavor in teaching the fundamentals of chemical metallurgy to undergraduate students at the Massachusetts Institute of Technology, prior to opening a discussion on the possible future of such classes in connection with online education.

**Speaker:** Peter Hosemann, University of California  
**Lecture Title:** “Material Science: A Field Present in Everyday Life and a Unifying Discipline, but Often Not on Students’ Radar”  
**About the Topic:** Wondering how a young person—a freshly graduated high school student—chooses his or her field of study in college, Hosemann always asks new students: “Why did you choose your field of interest? Why material science?” Common answers are that someone in the student’s past mentioned it previously or works in a related field or that the student had a teacher or college advisor who guided them in making the selection of the field of study. But why and how would a student who is not exposed to a good engineering background choose materials science, a field not widely accessible in pre-college education?

While physics and chemistry are often featured on public platforms, such as newspapers or TV, and engineering is in every student’s life through the use of engineered items, such as phones and cars, material science utilizing physics and chemistry to enable engineering solutions is often not on a student’s mind when choosing scientific disciplines or career paths. While this topic is of immediate interest to academics, it bridges further towards a general public perception of what is needed in everyday life to make devices work. In this talk, the question above will be discussed by asking “What do material scientists do?” in a nonprofessional fashion in order to give thought for outreach activities.

* These lectures are open to all meeting attendees, but only those who purchased lunches in advance will receive a boxed lunch.
WEDNESDAY, MARCH 18

**Light Metals Division Luncheon***

**Date:** Wednesday, March 18 • Noon to 2:00 p.m.
**Location:** Southern Hemisphere Ballroom Salon 1, Dolphin Hotel

**Speaker:** Alan Taub, American Lightweight Materials Manufacturing Innovation Institute and University of Michigan

**Lecture Title:** “The Role of the National Network of Manufacturing Institutes in Improving U.S. Manufacturing Competitiveness”

**About the Topic:** The U.S. government has launched a new National Network of Manufacturing Institutes designed to be a public-private partnership aimed at improving domestic manufacturing competitiveness. Four of these institutes have been awarded and several more are planned. Each institute is focused on a particular advanced manufacturing technology and will serve as the bridge between basic research and final product commercialization. The institutes are designed to link a network of universities and national/federal laboratories with companies in a targeted industrial sector. The companies range from small and medium enterprises to large suppliers and OEMs.

This talk will describe how these institutes are operating using the American Lightweight Materials Manufacturing Innovation Institute (ALMMII) as an example. ALMMII is focused on the land, sea, and air transportation sectors, both commercial and defense. The mission is to provide technology solutions that will make the transport of people and goods more sustainable in terms of energy, the environment, safety, and affordability. Reducing weight is a key enabler for meeting these challenges as well as increasing payload and improving performance. In addition to developing new manufacturing processes, ALMMII is also working to develop a prepared and eager metals processing workforce.

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

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**TMS Member Benefit #4**

Receive discounts from TMS’s publishing partner, John Wiley & Sons, on publications, including textbooks and proceedings.

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+7 (495) 789-9647
energoprom@energoprom.ru
www.energoprom.ru
**SUNDAY, MARCH 15**

**TMS2015 Materials Bowl**

**Date:** Sunday, March 15  
**Elimination Rounds:** Noon to 4:00 p.m.  
**Championship Round:** 6:30 p.m. to 7:00 p.m.  
**Location:** Grand Harbor Ballroom Salons 5-7, Yacht & Beach Convention Center  
**Open to all attendees**

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

**TMS 2015 Opening Celebration**

**Date:** Sunday, March 15  
**Time:** 5:00 p.m. to 6:30 p.m.  
**Location:** Grand Harbor Ballroom North, Yacht & Beach Convention Center  
**Open to all attendees**

Kick off the TMS 2015 Annual Meeting & Exhibition with this social networking event. Refreshments will be provided.

**Student Mixer**

**Date:** Sunday, March 15  
**Time:** 7:00 p.m. to 9:00 p.m.  
**Location:** Grand Harbor Ballroom South, Yacht & Beach Convention Center  
**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, MARCH 16**

**Women in Science Breakfast**

**Date:** Monday, March 16  
**Time:** 7:00 a.m. to 8:00 a.m.  
**Location:** Americas Seminar, Dolphin Hotel  
**Tickets required**

Organized by the TMS Women in Materials Science & Engineering Committee, this annual event offers an opportunity for TMS members to network and discuss issues specific to women in the science and engineering professions.

**Connect Zone**

**Date:** Monday, March 16 to Thursday, March 19  
**Time:** 8:30 a.m. to 4:00 p.m.  
**Location:** Atlantic Hall, Dolphin Hotel  

The Connect Zone is open daily to all attendees as a gathering spot where meeting participants can connect both to the Internet—through free wireless access—and to other TMS2015 attendees. This open area will act as an informal networking center, workspace for attendees, and a convenient location to meet with colleagues. Connect Zone will be closed from 11:30 a.m. to 2:00 p.m. on Wednesday during the Student Send-off Lunch.

Access to the area will be reserved from 7:00 a.m. to 8:30 a.m. for Presenters’ Coffee, but will open daily to all meeting attendees beginning at 8:30 a.m. and ending at 4:00 p.m.

**TMS Member Benefit #5**

Receive discounts on registration fees for select upcoming meetings sponsored by TMS.

Go to [www.tms.org/Meetings](http://www.tms.org/Meetings) to see a list of upcoming TMS events.
Meet the Editors of the Journal of Sustainable Metallurgy

Date: Monday, March 16
Time: 2:30 p.m. to 3:30 p.m.
Location: Springer Booth, Atlantic Hall, Dolphin Hotel

Meet the editors of the Journal of Sustainable Metallurgy, a new quarterly journal from TMS and Springer Science+Business Media, and get your copy of the debut issue. The journal’s distinguished international editorial team will be available to discuss the new publication:

Editors-in-Chief
- Diran Apelian, Worcester Polytechnic Institute, USA
- Bart Blanpain, KU Leuven, Belgium
- Shin-ya Kitamura, Tohoku University, Japan

Managing Editor
- Yiannis Pontikes, KU Leuven, Belgium

The journal is dedicated to presenting metallurgical processes and related research aimed at improving the sustainability of metal-producing industries, with a particular emphasis on materials recovery, reuse, and recycling.

Student Poster Contest Judging

Preliminary Judging: Monday, March 16
Best of Show Judging: Tuesday, March 17
Location: Atlantic Hall, Dolphin Hotel

Browse the student poster displays and ask questions of the contest participants at the Student Poster Contest Judging Session.

President’s Welcoming Reception

Date: Monday, March 16
Time: 5:00 p.m. to 6:30 p.m.
Location: Pacific Hall, Dolphin Hotel

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

Meet-a-Mentor

Date: Monday, March 16
Time: 5:00 p.m. to 6:00 p.m.
Location: Northern Hemisphere D, Dolphin Hotel

For pre-registered participants only

This event will provide early career professionals the opportunity to engage in brief face-to-face meetings with mentors in a structured setting. Following the Meet-a-Mentor event, attendees are invited to continue networking with their new contacts at the Young Professional Reception next door.

Young Professionals Happy Hour Reception

Date: Monday, March 16
Time: 6:00 p.m. to 7:00 p.m.
Location: Northern Hemisphere D, Dolphin Hotel

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

Meet the Candidate Employment Poster Session

Date: Monday, March 16
Time: 6:30 p.m. to 8:30 p.m.
Location: Atlantic Hall, Dolphin Hotel

Open to all attendees

Organized by the TMS Young Leaders Committee, this session allows potential employers to connect with young professionals seeking post-doctoral, full-time, or faculty positions. Candidates present posters on their qualifications and research interests to potential employers from universities, industries, and national labs.

Available Now:

Journal of Sustainable Metallurgy

A new quarterly journal dedicated to presenting metallurgical processes and related research aimed at improving the sustainability of metal-producing industries.

Pick up a copy today at the TMS Information Center in the Exhibit Hall, or at the Springer Booth, Atlantic Hall, Dolphin Hotel.
TUESDAY, MARCH 17

TMS Bladesmithing Competition Judging

Date: Tuesday, March 17
Time: 1:30 p.m.
Location: Pacific Hall, Dolphin Hotel
Join us in the Exhibit Hall at Booth #235 for the announcement of the TMS Bladesmithing Competition winners. More than 25 teams have submitted blades to the competition in two categories: University Students and Artisans and Enthusiasts. Visit the exhibit throughout the week to view the entries and see how they were made.

Student Career Forum

Date: Tuesday, March 17
Time: 2:30 p.m. to 4:30 p.m.
Location: Northern Hemisphere D, Dolphin Hotel
Organized by the TMS Young Leader 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 minerals, metals, and materials.

Exhibit Hall Happy Hour

Date: Tuesday, March 17
Time: 4:30 p.m. to 5:30 p.m.
Location: Pacific Hall, Dolphin Hotel
All attendees are invited to gather in the exhibit hall for appetizers, beverages, and networking with exhibitors and other colleagues.

TMS Foundation Silent Auction

Date: Tuesday, March 17
Time: 4:00 p.m. to 9:00 p.m.
Location: Grand Harbor Lobby, Yacht & Beach Convention Center
Bid on a variety of prizes, ranging from high-quality gifts procured by professional auctioneers to one-of-a-kind items crafted by your minerals, metals, and materials colleagues at the TMS Foundation Silent Auction. All meeting attendees are welcome to participate in the auction, and proceeds will benefit the TMS Foundation, which provides scholarships and career development opportunities for students and young professionals in the minerals, metals, and materials community. Because the event is a silent auction, bids will be placed in writing over the course of the evening.

WEDNESDAY, MARCH 18

Student Send-off Lunch

Date: Wednesday, March 18
Time: Noon to 1:00 p.m.
Location: Atlantic Hall, Dolphin Hotel
For Undergraduate and Graduate Students Only
As the meeting begins to wind down, take this opportunity to relax and swap stories with the friends that you’ve met over the course of the week. Lunch will be provided.

Events for Young Professionals

TMS2015 will include a number of activities geared specifically toward young professionals, including:

- Technical Division Young Professional Poster Contest
- Meet the Candidate Employment Poster Session (Monday evening)
- Young Professional Happy Hour Reception (Monday evening)
- Young Professional Committee Meeting (Tuesday morning)
- Young Professional Tutorial Luncheon Lecture (Tuesday afternoon)
The evening will conclude with a live performance by a professional magician.

**Entertainment**

After dinner, banquet guests will be treated to entertainment from John Ekin, who specializes in *Comedy Magic for World-Class Events*. He’ll offer a mix of magical effects and sophisticated humor for an evening of first-class entertainment.

**Installation of the 2015 TMS President**

*Patrice E.A. Turchi*

During the 2015 TMS & AIME Awards Banquet, TMS will install Patrice E.A. Turchi of Lawrence Livermore National Laboratory (LLNL) as the Society’s 2015 president. Turchi is a distinguished member of the technical staff and group leader in the Condensed Matter and Materials Division of the Physical and Life Sciences Directorate at LLNL. He received a Ph.D. (Thèse d’Etat) in solid-state physics and a Ph.D. (Thèse de Docteur Ingénieur) in materials science from the University of Paris VI, France, after obtaining his Engineering Diploma from the National Superior School of Chemistry of Paris, also in France. He was a professor at the University Paris VI for 11 years, a visiting scientist at University of California, Berkeley for one year, and has been at LLNL for more than 28 years.

His research interests encompass computational materials science and condensed matter physics with an emphasis on alloy theory from first-principles electronic structure and stability and physical properties of complex assemblies. His current research activities focus on ab initio studies, thermodynamics, kinetics, and microstructure evolution of complex rare-earth- and actinide-based materials. Turchi has given more than 310 presentations, including 155 invited presentations, and authored or co-authored more than 275 publications, including 50 technical reports and three book chapters. He has also edited 21 technical books and proceedings.

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**Recognizing Excellence in Minerals, Metals, and Materials**

The 2015 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 community. The ceremony includes presentations of awards from TMS; the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME), of which TMS is a member society; and Acta Materialia, Inc.

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. A photographer will be on hand to capture these moments. After the ceremony, those participants who have purchased banquet tickets will proceed to the adjacent ballroom for an elegant black-and-white themed dinner featuring live dinner music and a bit of magical entertainment.
Turchi has been an active member of TMS for more than 25 years and has served on the TMS board as chair of the Electronic, Magnetic & Photonic Materials Division (now the Functional Materials Division). He has also chaired the Alloy Phases Committee and various administrative committees. In addition, Turchi has been a member of several TMS technical advisory groups and was a contributor to several recent TMS reports. He is co-founder of the International Alloy Conference and organizer of 15 TMS and three Materials Research Society (MRS) symposia, six international conferences, and two Advanced Study Institutes and one Advanced Research Workshop sponsored by NATO. He has received several professional honors and awards, and is on the review board of several scientific journals.

The 2015 TMS & AIME Awards Ceremony

The 2015 TMS & AIME Awards Ceremony will celebrate the many contributions that the minerals, metals, and materials professions have made to advancing society and improving quality of life. It’s a meaningful way to congratulate those important to your career, while being inspired to strive for similar heights yourself.

The ceremony will be hosted by James J. Robinson, TMS executive director, and will include comments from Hani Henein, TMS 2014 president, and Patrice Turchi, TMS 2015 president. In addition, some of the Society’s most esteemed members will act as presenters for the evening:

- Behrooz Fattahi, president of AIME, and Michele Lawrie-Munro, executive director of AIME, will present the AIME Awards.
- Brian Thomas, University of Illinois at Urbana-Champaign, will present the J.K. Brimacombe Prize.
- Carolyn Hansson, University of Waterloo, and George “Rusty” Gray, III, Los Alamos National Laboratory, will present the Acta Materialia Awards.
- Viola Acoff, University of Alabama, will present the Student and Mid-Career Awards.
- J. Wayne Jones, University of Michigan, will present the Elite Awards.
- Phillip Mackey, P.J. Mackey Technology Inc., will present the TMS Fellow Awards.

Society Awards

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<tr>
<th>Fellow Award - Class of 2015</th>
<th>Cyril Stanley Smith Award</th>
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<tr>
<td>Iver Anderson</td>
<td>Michael Loretto</td>
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<td>Senior Metallurgist, Iowa</td>
<td>Emeritus Professor of</td>
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<td>State University</td>
<td>Materials, University of</td>
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<td>Surya Kalidindi</td>
<td>Birmingham</td>
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<td>Materials Science Professor,</td>
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<td>Georgia Institute of</td>
<td>Early Career Faculty</td>
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<td>Technology</td>
<td>Fellow Award</td>
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<td>David Matlock</td>
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<td>Professor, Colorado School</td>
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<td>Michael Mills</td>
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<td>Professor, Ohio State</td>
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<td>Christopher Schuh</td>
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<td>Professor and Department</td>
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<td>Head, Massachusetts</td>
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<td>Institute of Technology</td>
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<td>Barry Welch</td>
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<td>Emeritus Professor,</td>
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<td>University of Auckland, and</td>
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<td>Director, Welbank Consulting</td>
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<td>Brimacombe Medalist - Class of 2015</td>
<td>Guenter Gottstein</td>
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<td>Michael Brady</td>
<td>Director of Institute, RWTH</td>
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<td>Senior Research and</td>
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<td>Development Staff, Oak</td>
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<td>Ridge National Laboratory</td>
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<td>W. Jud Ready</td>
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<td>Principal Research Engineer,</td>
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<td>Georgia Institute of</td>
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<td>Michael Uchic</td>
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<td>Materials Research Engineer,</td>
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<td>Air Force Research Laboratory</td>
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<td>Matthew Willard</td>
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<td>Associate Professor, Case</td>
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<td>Western Reserve University</td>
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<td>Bruce Chalmers Award</td>
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<td>Carl Koch</td>
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<td>Professor, North Carolina</td>
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<td>State University</td>
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2015 TMS & AIME AWARDS CEREMONY AND BANQUET
### TMS & AIME AWARDS CEREMONY AND BANQUET

#### AIME Awards

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<tr>
<th>Award</th>
<th>Recipient</th>
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<tbody>
<tr>
<td>AIME Honorary Membership</td>
<td>Thaddeus Massalski, Professor Emeritus, Carnegie Mellon University</td>
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<td>AIME Champion H. Mathewson Award</td>
<td>Jian-Feng Nie, Professor, Monash University</td>
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<tr>
<td>AIME Robert Lansing Hardy Award</td>
<td>Peter Hosemann, Professor, University of California</td>
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<tr>
<td>AIME-EPD James Douglas Gold Medal</td>
<td>Uday B. Pal, Professor, Boston University</td>
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<tr>
<td>AIME Presidential Citation</td>
<td>Alexandra Anderson, Student, Colorado School of Mines</td>
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<tr>
<td>AIME-Henry deWitt Smith Scholarship</td>
<td>Mohsen Seifi, Student, Case Western Reserve University</td>
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#### Division Awards

**EXTRACTION & PROCESSING DIVISION (EPD)**

<table>
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<th>Award</th>
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<tbody>
<tr>
<td>Distinguished Lecturer Award</td>
<td>Jeffrey M. Kramer, Professor, University of Colorado</td>
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<tr>
<td>Distinguished Service Award</td>
<td>Sungho Jin, Professor of Materials Science, University of California</td>
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<tr>
<td>Science Award</td>
<td>Gordon A. Irons, Dotasco Professor, McMaster University</td>
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<tr>
<td>Tai Xi Zhu</td>
<td>Ph.D. Candidate, McMaster University</td>
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<tr>
<td>Distinguished Scientist/Engineer Award</td>
<td>Kannan Krishnan, Professor and Associate Dean, McMaster University</td>
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<td>MinSoo Park</td>
<td>Senior Engineer, SK Hynix</td>
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**FUNCTIONAL MATERIALS DIVISION (FMD)**

<table>
<thead>
<tr>
<th>Award</th>
<th>Recipient</th>
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<tbody>
<tr>
<td>Brimacombe Prize</td>
<td>Michel Rappaz, Professor, École Polytechnique Fédérale de Lausanne</td>
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<tr>
<td>Distinguished Service Award</td>
<td>Sungho Jin, Professor of Materials Science, University of California</td>
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<tr>
<td>Distinguished Scientist/Engineer Award</td>
<td>Kannan Krishnan, Professor and Associate Dean, McMaster University</td>
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#### Additional Awards

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<th>Award</th>
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<tbody>
<tr>
<td>Acta Materialia Gold Medal Award</td>
<td>David Embury, Professor, McMaster University</td>
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<tr>
<td>Acta Materialia Hollomon Materials &amp; Society Award</td>
<td>Tresa Pollock, Alcoa Professor of Materials, University of California</td>
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<tr>
<td>Acta Materialia Hollomon Materials &amp; Society Award</td>
<td>Laffen, University of California</td>
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**LIGHT METALS DIVISION (LMD)**

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<th>Award</th>
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<td>Distinguished Service Award</td>
<td>Geoffrey Bearne, General Manager, Rio Tinto</td>
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<td>Technology Award</td>
<td>Jomar Thonstad, Professor Emeritus, Norwegian University of Science and Technology</td>
</tr>
<tr>
<td>Light Metals Award</td>
<td>Jean-Marie Drezet, Senior Scientist, École Polytechnique Fédérale de Lausanne</td>
</tr>
<tr>
<td>Pyrometallurgy Best Paper Award</td>
<td>Lorentz Petter Lossius, Principal Engineer, Hydro Aluminium a.s. Ardal</td>
</tr>
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<td>Technology Award</td>
<td>Espen Sandnes, Hydro Aluminium a.s. Ardal</td>
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<td>Hogne Linga, Manager Carbon R&amp;D, Hydro Aluminium a.s. Ardal</td>
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<td>Arne Petter Ratvik, Senior Scientist, Sintef</td>
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Yan Li
Northeastern University
Energy Best Paper Award – Student

Yiling Zhang
Student, Carnegie Mellon University

Paul A. Salvador
Professor, Carnegie Mellon University

Gregory S. Rohrer
Professor and Head, Department of Materials Science & Engineering, Carnegie Mellon University
Magnesium Technology Best Paper Award – Application

Felix Gensch
TU Berlin, Extrusion R&D Center

René Nitschke
TU Berlin, Extrusion R&D Center

Sven Gall
TU Berlin, Extrusion R&D Center

Sören Müller
TU Berlin, Extrusion R&D Center
Magnesium Technology Best Paper Award – Fundamental Research

Hyun Kyu Lim
Principal Researcher, Korea Institute of Industrial Technology

Dae-Guen Kim
Korea Institute of Industrial Technology

Tae-Yang Kwak
Korea Institute of Industrial Technology

Hak Young Kim
Korea Institute of Industrial Technology

Young-Ok Yoon
Korea Institute of Industrial Technology

Shae K. Kim
Principal Researcher, Korea Institute of Industrial Technology

Wonseok Yang
Korea Institute of Industrial Technology

Magnesium Technology Student Paper Award

Michael J. Nemcko
Graduate Student, McMaster University

Pauline Mas
McMaster University

Moisei Bruhis
Research Engineer, McMaster University

David S. Wilkinson
Dean and Faculty of Engineering, McMaster University

Felix Gensch
TU Berlin, Extrusion R&D Center

René Nitschke
TU Berlin, Extrusion R&D Center

Sven Gall
TU Berlin, Extrusion R&D Center

Sören Müller
TU Berlin, Extrusion R&D Center
Magnesium Technology Best Paper Award – Application

Christian Klose
Vice President Biomedical Technology and Lightweight Construction, Leibniz Universität Hannover

Judy Schneider
Professor, Mississippi State University

Michael Kassner
Professor, University of Southern California

James E. Saal
Materials Design Engineer, QuesTek Innovations LLC

Scott Kirklin
Graduate Student, Northwestern University

Muratahan Aykol
Student, Northwestern University

Bryce Meredig
Student, Stanford University

Christopher Wolverton
Professor, Northwestern University
Young Leader Awards

TMS/JIM Young Leaders International Scholar

Quizhen Li
Associate Professor, Washington State University

JIM Young Leaders International Scholar

Nobuo Nakada
Assistant Professor, Kyushu University

FEMS/TMS Young Leaders International Scholar

Kyle Brinkman
Associate Professor, Clemson University

EPD Young Leaders Professional Development Awards

Xiaofei Guan
Postdoctoral Research Associate, Boston University

John Howarter
Assistant Professor, Purdue University

Guillaume Lambotte
Postdoctoral Associate, University of Massachusetts

Li Li
Postdoctoral Associate, Cornell University

Takanari Ouchi
Senior Postdoctoral Associate, Massachusetts Institute of Technology

Mingming Zhang
Research Engineer, ArcelorMittal Global R&D

FMD Young Leaders Professional Development Awards

Ritesh Sachan
Postdoctoral Research Associate, Oak Ridge National Laboratory

Ziqi Sun
University of Wollongong

Hsin-Jay Wu
National Sun Yat-Sen University

Wei Xiong
Research Associate, Northwestern University

Jiahua Zhu
Assistant Professor, University of Akron

Jingxi Zhu
Assistant Professor, Sun Yat-Sen University-Carnegie Mellon University Joint Institute of Engineering

LMD Young Leaders Professional Development Awards

Yashuang Gao
Manager – China, University of Auckland Light Metals Research Centre

Ayesha Gonsalves
Materials Scientist/Engineer, General Electric Global Research Center

Keegan Hammond
Metallurgical Engineer, Aleris International Inc.

Michael Powell
Industrial Engineer, Southwire Company

Mesut Varlioglu
Senior Materials Engineer, Hewlett-Packard

Lei Zhang
Assistant Professor, University of Alaska Fairbanks

MPMD Young Leaders Professional Development Awards

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

Megan Cordill
Scientist, Erich Schmid Institute

Eric Homer
Assistant Professor, Brigham Young University

Virendra Singh
Materials Engineer, Schlumberger

Jason Trelewicz
Assistant Professor, Stony Brook University

Caizhi Zhou
Assistant Professor, Missouri University of Science and Technology

SMD Young Leaders Professional Development Awards

Xian-Ming (David) Bai
Staff Scientist, Idaho National Laboratory

Allison Beese
Assistant Professor, Pennsylvania State University

Avinash Dongare
Assistant Professor, University of Connecticut

Michael Porter
Assistant Professor, Clemson University

Ramprashad Prabhakaran
Research Associate, Pacific Northwest National Laboratory

Timothy Rupert
Assistant Professor, University of California

Student Awards

J. Keith Brimacombe Presidential Scholarship

Thomas Chrobak
Student, University of Wisconsin

EPD Scholarships

Jordan Dick
Student, South Dakota School of Mines and Technology

Allen Holmquist
Student, South Dakota School of Mines and Technology

Molly Mentzer
Student, University of Wisconsin—Madison

Sonja Postak
Student, Massachusetts Institute of Technology

Taylor Brown
Student, University of Alabama at Birmingham

Douglas Fraser
Student, University of Wisconsin—Madison

Aaron Kelley
Student, University of Alabama at Birmingham

Alexandra Glover
Student, Michigan Technological University

Alyx Kahn
Student, Clemson University

Alexandra Glover
Student, Michigan Technological University

Shane Anderson
Student, Michigan Technological University, Houghton

Steven Zeltmann
Student, New York University, Brooklyn

TMS Best Paper Contest - Graduate 1st Place

Brian Lin
Student, Carnegie Mellon University

TMS Best Paper Contest - Graduate 2nd Place

Cheng-Chieh Li
Student, National Taiwan University

2015 TMS & AIME AWARDS CEREMONY AND BANQUET
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Professor, University of North Texas
Collected Proceedings
TMS 2015 Annual Meeting & Exhibition attendees in all registration classes receive free online access to the complete collected proceedings of the meeting—as a single PDF file including all published proceedings books, as separate PDF files for each proceedings publication, or as individual articles. Complimentary proceedings content must be downloaded before June 15, 2015, at which time standard pricing will take effect. Visit the TMS Information Center (Exhibit Booth #401) with any questions about accessing the collected proceedings.

Individual Print Volumes
Print editions of the following volumes are also available for purchase at the Wiley booth, located in the registration area in the Dolphin hotel.

- 6th International Symposium on High-Temperature Metallurgical Processing
- Advanced Composites for Aerospace, Marine, and Land Applications II
- Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu
- Drying, Roasting, and Calcining of Minerals
- Energy Technology 2015: Carbon Dioxide Management and Other Technologies
- EPD Congress 2015
- Friction Stir Welding and Processing VIII
- Light Metals 2015
- Magnesium Technology 2015
- Rare Metal Technology 2015
- TMS 2015 Supplemental Proceedings

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A tool for teaching/learning phase diagrams, thermodynamics, solidification and precipitation kinetics

**PanPhaseDiagram** - A module for thermodynamic calculation of multi-component, multi-phase systems
- Reliable calculation engine and user-friendly interface
- Stable and metastable phase equilibria
- Phase fraction, composition, and transformation temperature
- Molar volume, density, surface tension, and viscosity
- 3D phase projection diagram
- Spindal decomposition curve and contour curves
- Flexible table operations

**PanPrecipitation** - A module for simulation of diffusion-controlled precipitation kinetics of multi-component systems
- Concurrent nucleation, growth/dissolution, and coarsening
- Temporal evolution of average size and PSD
- Temporal evolution of volume fraction and composition of precipitate
- Multiple heat treatment stages
- Multiple precipitates
- Consideration of initial microstructure
- Mechanical properties (yield strength, hardness)

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- Customized databases for special applications

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Download from [www.computherm.com](http://www.computherm.com)

Visit us at Booth 324
Place Your Bid Tuesday, March 17
4:00 p.m. to 9:00 p.m.
Disney’s Yacht & Beach Convention Center
Grand Harbor Lobby

The TMS Foundation is sponsoring a silent auction open to all meeting attendees in conjunction with the 2015 TMS & AIME Awards Ceremony. Come to the auction and bid on a variety of items, ranging from high-quality gifts procured by professional auctioneers to one-of-a-kind items crafted by your minerals, metals, and materials colleagues. Bids will be placed in writing over the course of the evening.

Proceeds from the event will benefit the TMS Foundation, which provides scholarships and career development opportunities for students and young professionals in the minerals, metals, and materials community, so bid generously!
Exhibit Hours

Monday, March 16
4:00 p.m. to 6:30 p.m.
President’s Welcoming Reception
5:00 p.m. to 6:30 p.m.

Tuesday, March 17
10:00 a.m. to 5:30 p.m.
Exhibit Hall Happy Hour
4:30 p.m. to 5:30 p.m.

Wednesday, March 18
10:00 a.m. to 2:00 p.m.
Lunch
11:30 a.m. to 1:30 p.m.

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ABB Inc.  Booth #314

ABB Inc. Analytical Measurements—Measurement Products Group designs, manufactures, and markets high-performance analytical system solutions and spectroradiometers for petroleum, chemical, life sciences, academic, semiconductor, metallurgy, and remote sensing/aerospace 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 #333

A leading supplier in high-temperature ceramic products made of alumina, fused quartz, zirconia, and sapphire. Our products range from crucibles, furnace tubes, plates and discs, thermocouple insulators, sample pans for thermal analysis, and UV cuvettes to custom components. We also carry other labware and accessories such as agate mortars, crucibles tongs, and high-temperature gloves.

Advanced Dynamics Corp. Ltd.  Booth #215

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.

Agilent Technologies  Booth #227

Agilent manufactures and distributes a complete line of instrumentation serving the clinical, analytical, biotech, environmental, pharmaceutical, forensic science, food and flavor, academia, and all other laboratory markets that have needs for the best in quality, performance, and serviceability in the instruments they purchase.

ALTEK, LLC  Booth #224

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. ALTEK's engineers use advanced 3D design/modelling software to design, manufacture, and install: Dross press and cooling equipment (including T ARDIS Dross Press and Cooling technology); electromagnetic 'air cooled' stirring systems for all types and shapes of furnaces; specialized RHINO cast steel containers for handling aluminium drosses and salt cake; Tilt Type Rotary Furnaces – TTRF®; and furnace tending machines (under license with Tomorrow Technology).

Aluminium International Today  Booth #434

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 two Chinese issues and two Russian issues.

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.
AluminiumNetwork.com Booth #416

AluminiumNetwork.com is the global network for the primary aluminium industry. An internet-based portal offering a wide range of daily information and services to companies and individuals engaged in the primary aluminium industry, our services include all engineering disciplines from the alumina through to the primary aluminium, including all the support functions for the processes involved. An important feature of AluminiumNetwork.com is its database of consultants and freelance specialists with experience in the aluminium industry. In addition to providing general consultancy services, the experts can offer their support in a large number of areas including feasibility studies, recommendations for revamps, overhauls and repairs, spare parts, purchasing, technical evaluation, research, advice on compositions and formulations, global supplier evaluation and auditing, process evaluation and optimization. The support can be on a freelance basis and for as long as it is needed.

American Welding Society Booth #439

The American Welding Society (AWS) was founded in 1919 as a multifaceted, nonprofit organization with a goal to advance the science, technology and application of welding and related joining disciplines. From factory floor to high-rise construction, from military weaponry to home products, AWS continues to lead the way in supporting welding education and technology development. The American Welding Society's activities include standard development, personal certification, trade show management, magazine and book publishing, and educational events. The Society also focuses on allied joining and cutting processes, including brazing, soldering and thermal spraying.

Alumina Technology
Advanced refinery solutions tailored to your bauxite quality

Drawing on more than 100 years of Bayer process development, design and operating experience, our proven technology solutions are supported by a unique set of training, commissioning and support services.
For inquiries: antonio.pucci@riotinto.com

Rio Tinto Alcan Yarwun Alumina Refinery — Queensland, Australia
High Temperature Digestion, Commissioned in 2004 and expanded in 2012

Rio Tinto Alcan
ANDRITZ METALS Inc.  Booth #226
ANDRITZ METALS Inc.—leader in engineering and design. ANDRITZ METALS Inc. specializes in furnaces for the steel, aluminum, and precious metals industry. The USA company engineers, supplies and installs a wide variety of furnaces for melting, heating, reheating and heat treating. Our furnaces meet the stringent requirements for a wide variety of batch and continuous operations. Since its founding in 1966 ANDRITZ METALS Inc. has provided complete solutions meeting or exceeding its clients' needs. From initial engineering studies and analyses through project management, construction and commissioning to training the operators, ANDRITZ METALS Inc. covers all aspects of designing and building many types of industrial furnace equipment. The ANDRITZ METALS Inc. vision emphasizes quality as the cornerstone of creating value, benefiting customers and employees. As a member of the Andritz Group, ANDRITZ METALS Inc. complements the group's portfolio within the Metals strategic business area.

Anton Paar USA  Booth #232
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.

ATR National Scientific User Facility  Booth #329

AUMUND Foerdertechnik GmbH  Booth #421
With their proven track record in materials handling and storage from mineral processing to hot materials handling, the AUMUND Group offers engineered and cost effective solutions for the primary aluminium production process. Controlled cooling and clean handling of bath material in the primary aluminium smelting process with the AUMUND cooling conveyor for hot bath material offers the following benefits: economical and efficient handling, defined cooling from 850°C down to below 100°C, drastic reduction of HF emission through controlled suction, improved environmental and health conditions, and reduced investment and operating costs.

Beijing Holland Trading Co., Ltd.  Booth #536
Beijing Holland Co., Ltd. is a technology and trading company engaged in the production and exportation of Chinese production line for the cable and wire industry as well as the electrical equipment industry. We have set up two overseas sales and service offices in India and Brazil. With high-quality service and performance, we win the trust of our customers in the global market.

Bloom Engineering Company, Inc.  Booth #317
Bloom Engineering is the leading supplier of high temperature industrial burners and associated combustion equipment. The company has extensive experience in the steel, aluminum, and forge industries and also provides combustion equipment for many other applications. The company prides itself on its in-depth knowledge of the applications in which its equipment is used and the custom designs it creates to provide the best possible solution for each situation. A truly global business, Bloom has companies and associates in all of the major industrial centers of the world. Its headquarters are in Pittsburgh where it was founded in 1934.

Bose Corporation  Booth #331
Bose® has solutions for the most challenging materials testing applications. Bose test systems offer capabilities that include dynamic mechanical/thermal analysis, fatigue, creep and stress-relaxation testing. All these capabilities can be provided in a single, all-electric, maintenance-free system. Multi-sample and multi-axis test systems, such as axial-torsion and planar biaxial, are also available. Bring us your materials testing challenges and experience the Bose Above & Beyond™ support!

Bruker AXS Inc.  Booth #323
Bruker offers high end solutions for the analysis or comprehensive phase quantification of raw materials, minerals and raw earth. Offering advanced solutions to reliably support geologists and prospectors on locating and analyzing deposits. Bruker's instruments can be found at an altitude of 4,000 meters or in deserts. Also, Bruker's
analytical solutions enable the development, production and refinement of metals at highest quality standards.

**Buss ChemTech**
Booth #431
BUSS ChemTech AG (BCT) is a world leading technology provider for the production of carbon anodes used in aluminum electrolysis. The BCT Paste Kneader became the industry's benchmark at its inception 60 years ago and continues to be the defining standard today. We are offering quality engineering and equipment, and a scope of supply to fit all needs—from basic engineering and key equipment packages to turnkey Green Anode Plants. We also provide upgrades for existing anode facilities. BCT is a member of KRESTA industries. KRESTA industries is an industrial group with its own fabrication facilities associated with full EPC project execution capabilities.

**California Nanotechnologies**
Booth # 230
California Nanotechnologies is a world leader in production and R&D of nano-structured components and materials. Metallic, ceramic, MMC, and MMNC materials are used in products from aerospace to sports and recreation industries. Through the incorporation of nano-sized structures and reinforcements, these materials exhibit improved properties that include ultimate strength, hardness, fracture toughness, wear resistance and chemical resistance. To provide these products, the company has an array of production facilities including cold forging, cryogenic milling, controlled atmosphere handling, high vacuum/high temperature degassing, state of the art furnaces and laboratory facilities including a scanning electron microscope and ion beam milling.

**Carl Zeiss X-ray Microscopy, Inc.**
Booth #415
ZEISS acquired Xradia to offer 3D X-ray microscopes, introducing two new non-destructive 3D imaging systems for synchrotron-quality lab-based research. Xradia 520 Versa offers submicron imaging with unique dual-energy based compositional contrast capability. Xradia 810 Ultra provides <50 nm spatial resolution up to 10X faster for a wide variety of materials. With unique optics and architecture that enable high resolution over large working distances along with the non-destructive nature of X-ray, these systems are ideal for in situ, 4D research and correlative microscopy. These capabilities reveal the details of microstructural evolution from mm to nm to quantify, characterize, and visualize the properties and behaviors of a wide variety of materials.

**CIMM**
Booth #212
CIMM can service for design, equipment & materials supply in global industrial areas. To strengthen our professional service ability, we set up a platform “Ark of China" with support from the Chinese Government, aiming to establish extensive economic-cooperation relationships on trade, investment & financing, technology transaction & information exchange, etc. The goal is to integrate the global resources and provide comprehensive service to global market.

**Claudius Peters Projects GmbH**
Booth #327
In the field of materials handling and processing, from stockyard, pneumatic conveying, silo, clinker cooler, grinding mill and packing & dispatch systems, Claudius Peters are experts in the cement, coal, alumina, gypsum, and bulk handling industries. Claudius Peters Projects GmbH, Germany, and Claudius Peters Technologies SAS France are part of the Technologies Division of Claudius Peters Group GmbH, headquartered in Buxtehude, near Hamburg, with regional offices in the Americas, Europe, China, and the Far East, offering turnkey and semi-turnkey systems. The group’s other principal division, Aerospace, is engaged in the manufacture of aircraft parts for the European Airbus programme. Claudius Peters Group GmbH is a wholly owned subsidiary of Langley Holdings plc, a privately controlled UK engineering group.
CompuTherm LLC  
Booth #324

CompuTherm LLC, established in 1996, develops CALPHAD type of modeling tools in the framework of ICME. The PANDAT 2014 version is released with three modules: PanPhaseDiagram for the calculation of multi-component phase equilibria, PanPrecipitation for the simulation of diffusion-controlled precipitation processes, and PanOptimizer for the optimization of thermodynamic model parameters and other properties. Thermodynamic and mobility databases are available for variety of multi-component alloys.

CRC Press/Taylor & Francis  
Booth # 423

Take your research skills to the next level with Taylor & Francis Group/CRC Press, 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!

Crossroads Trade & Investment LLP  
Booth #301

Crossroads Trade & Investment LLP is a newly established independent British company active in raw material trading for metallurgical industries (ferrous & non-ferrous). We have the target to establish ourselves as a leading player in the Mediterranean, European, Middle Eastern, and north African rapid growing markets dealing in steam and metallurgical coal and petroleum coke with its both grades anode and fuel grades. We also maintain a strong interest in developing the Far East and Australian markets for some specialty carbon products. Crossroads has expanded its business potential through a network of representative offices and agents in several key locations around the globe. A team of specialized and highly experienced dedicated professionals and consultants are supporting the company with the best of their knowledge with up-to
date technical, financial & commercial developments as well as logistical and marketing trends worldwide.

**EBSD Analytical**

Booth #325

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. Our experts have over 18 years’ experience in EBSD/EDS, and 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.

**EDAX Inc.**

Booth #330

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.

**Eirich Machines, Inc.**

Booth # 221

Eirich Machines designs, manufactures, and supplies batch and continuous mixers and systems for the processing of raw materials, compounds, waste, and residues in a wide range of industries. Our complete line of products for mixing, agglomerating, pelletizing, grinding, granulating, and plasticizing range from 1 to 10,000 liters can also be equipped with vacuum. The results of this process technology are synonymous worldwide for some outstanding achievements in the solution of problems in diverse applications. A full line of test equipment allows for pre-sale testing in our lab or the customer’s own plant.

**Emirates Global Aluminium**

Booth #201

Emirates Global Aluminium (“EGA”) is a jointly-held, equal-ownership company formed in 2013 by Mubadala Development Company of Abu Dhabi and the Investment Corporation of Dubai. EGA’s core operating entities are Dubai Aluminium (“DUBAL”) and Emirates Aluminium (“EMAL”), whose combined annual production will reach 2.4 million tonnes per annum by mid-2014, making EGA the fifth largest aluminium producer in the world. DUBAL’s in-house developed, proprietary reduction cell technologies, DX Technology and DX+ Technology (operating at 385 kA and 450 kA respectively), currently rank among the best reduction technologies available. EGA also owns Guinea Alumina Corporation (“GAC”), a project to develop an alumina refinery and associated bauxite mine in Guinea (West Africa). As part of EGA’s plans for significant local growth and international expansion, other upstream opportunities are under investigation.

**Energoprom Group**

Booth #231

EPM Group is a leading manufacturer of hi-tech electrode, cathode, graphite and carbon-based products. The Group’s products are widely used in metal, chemical, nuclear, aerospace and electronics industries. The Group’s sales network covers more than 60 countries around the world. The Group ranks among the top five global producers of carbon and graphite. The Group continuously expands its product portfolio and works on improving the product quality. The Group’s own R&D Center develops isostatic graphite, anode materials for lithium-ion batteries, new types of composite materials for electric transport, large-sized items made of silicified graphites, as well as new strategic carbon materials.

**Evans Analytical Group**

Booth #238

Evans Analytical Group (EAG) is the global leader in materials characterization for the advanced materials supply chain. We specialize in measurement of material composition, purity, contaminant levels and crystal structure using advanced analytical techniques such as: GDMS, ICPMS, SEM, TEM, XRD, XRF, XPS, SIMS, Auger and FTIR. EAG provides fast turn-around time, superior data quality and excellent results, with ISO 9001 and 17025 certification. EAG has over 15 locations in the US, Asia and Europe.
FCT Combustion  Booth #432
FCT Combustion is a process and combustion company with more than 30 years of experience worldwide. Having a wide range of proprietary combustion equipment such as Low-NOx, Natural Gas, Coal, Oil or Multi-Fuel burners, valve trains, flame scanners, ignition pilots, and burner management systems, FCT Combustion can cater for all your needs whether kilns, Incinerators, Hot Gas Generators, Calciners, or boilers.

FEI  Booth #425
FEI is showcasing the popular Avizo® 3D visualization and analysis software application for materials research and development. Avizo provides an extensive set of tools addressing 2D and 3D data visualization, materials characterization, reconstruction of 3D models, pore networks and flow analysis, permeability/molecular diffusion/electrical resistivity calculation. Ideal for: synthetic porous materials, polycrystalline metals, geo-materials, and many more.

Fives  Booth #307
Fives specializes in the design and supply of process equipment and the management of complete installations in the three key sectors of aluminium: Reduction: Gas treatment centers on electrolysis pots and bath processing units; Carbon: High-capacity green anode plants, liquid pitch marine terminal, firing and control systems, and fume treatment centers on anode baking furnaces; and Casthouse: melting and holding furnaces, including water cooling systems and integration of downstream casting machines, heat treatment furnaces for rolling mills, and EPC solutions for secondary aluminium casthouses.

FLSmidth  Booth #207
FLSmidth is your major equipment supplier from bauxite mining and refining through calcination to smelting. Every day, worldwide, our equipment crushes, conveys, grinds, digests, clarifies, precipitates, stores, and calcines hydrate to produce alumina. Few other technology suppliers can offer such a broad range of equipment and processes while increasing recoveries, lowering energy consumption, and providing proven reliability with environmental protection. FLSmidth combined the industry’s leading brands and expertise providing integrated solutions that will save valuable time on your project schedule!

FRITSCH Milling and Sizing  Booth #535
FRITSCH is an internationally respected German manufacturer of application-oriented laboratory instruments. Our instruments are used worldwide for sample preparation and particle analysis for fast paced industrial process monitoring and critical applications in QA, QC, and R&D.

Furuya Metal Americas Inc.  Booth #236
Furuya Metal Americas, Inc.’s key products include: precious metals crucibles; precious metals thermocouples; precious metals chemical compounds; precious metals sputtering targets; and precious metals refining. Furuya Metal produces industrial-use products made of platinum group metals (PGM), including platinum, rhodium, palladium, iridium, and ruthenium. PGM possess outstanding properties such as excellent heat resistance, high chemical stability, high electric conductivity, and play an important role in respective fields such as electric, optical glass, the environment, and medicine. Furuya Metal manufactures PGM products such as crucibles for crystal growth, sputtering targets, thermocouples, chemical compounds, and precious metal high-purity refining. Contact general@furuya-ma.com.

Gautschi Engineering GmbH  Booth #410
Gautschi Engineering GmbH is a leading supplier of equipment for primary aluminum casthouses and recycling plants. The product range of Gautschi™ includes: Melting– and holding furnaces, pusher-type furnaces for rolling slab, homogenizing furnaces for extrusion billet and rolling slab, multiple chamber furnaces for coil and foil annealing, single coil annealing furnaces, horizontal D.C. casting plants, open mould ingot casting and stacking plants, vertical D.C. casters for extrusion billet and rolling slab, and AIR GLIDE® and AIRSOL VEIL® mould technology.
More than 25 hand-forged knife and sword blades—crafted around the world and brought to Orlando for display—are now on exhibit for all TMS 2015 Annual Meeting & Exhibition attendees.

The exhibit includes a display of the physical blades created by teams of students and artisans, along with videos depicting the creation of the blades and posters exploring the science behind these processes.

Stop by the Bladesmithing Competition Exhibit Booth during the following exhibit hours to view the competition entries:

**Monday, March 16**
4:00 p.m. to 6:30 p.m.

**Tuesday, March 17**
10:00 a.m. to 5:30 p.m.
*Winners will be announced at 1:30 p.m. on Tuesday!*

**Wednesday, March 18**
10:00 a.m. to 2:00 p.m.

A panel of judges will review the blades and the supporting videos and posters to determine first-, second-, and third-place winners among “University Students” and a first-place winner in the “Artisans and Enthusiasts” category. The winners will be announced on Tuesday, March 17, at 1:30 p.m by 2014 TMS President Hani Henein.

Come and view this unique exhibit for yourself at **Booth #235** in the Exhibit Hall.
Gillespie + Powers, Inc.  Booth #326
Our Mission: To produce an innovatively superior product by integrating science, art, and experience to give you answers found nowhere else in the industry. Gillespie + Powers, Inc. has over 75 years of experience in design, supply, and installation of high-temperature furnace equipment for the non-ferrous melting and hazardous waste industries. We work with our clients to design new equipment or modify existing equipment that works for their long-term goals without compromising flexibility in their process. Our knowledge of refractory selection, burner placement, combustion, and control sequences qualifies Gillespie + Powers, Inc. to furnish the best equipment in the industry.

GLAMA Maschinenbau GmbH  Booth #406
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; and tapping trucks. GLAMA’s many years of experience in 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 #217
GNA is a recognized world leader in the design and construction of furnaces and equipment for the aluminium industry, especially melting and holding furnaces; homogenizing, annealing, and heat treatment furnaces; and cathode sealing equipment and associated machinery. With sales offices in Canada, Brazil and Taiwan, our equipment is in operation all across North America and in South America, Europe, India, the Middle East, extensively throughout Asia, and Australia. Service and technical support is available from GNA alliances and partners in these same countries and regions. Our advanced design, control systems, and construction techniques provide long service life and class-leading efficiency and reliability. Operator safety and comfort are primary goals in the design of our equipment: user-friendly features are built in to all GNA furnaces, extending from the access ladders/stairways and service platforms all the way to the control systems.

Goodfellow Corporation  Booth #520
Goodfellow supplies small quantities of metals, alloys, ceramics, and polymers to meet the research, development, and specialist product requirements of the 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 and ready for immediate shipment worldwide with no extra shipping charge. Custom-made items are available for special order.

Gouda Refractories  Booth #413
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, and 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 cooperation with its customers and renowned research institutes. Gouda’s quality assurance is based on the international ISO 9001 standard.
Granta Design

Booth #508

Granta will be attending the TMS 2015 Annual Meeting & Exhibition to demonstrate and discuss our software and teaching resources for materials education and research. Granta’s Education Division supports anyone teaching materials or related topics across the full range of disciplines in engineering, science, and design. Granta helps to organize the Materials Education Symposia, global events for materials educators. Granta also helps customers in industry to manage materials information and make better materials decisions.

Haarslev Industries Press

Technology GmbH & Co. KG

Booth #414

Danish-based Haarslev Industries A/S has acquired the screw press technology division from German-based C.A. Picard as part of Haarslev’s overall strategy and to strengthen the after sales and services business area. C.A. Picard Engineering GmbH and Co. KG will be renamed Haarslev Press Technology GmbH and Co. KG in Germany. In the United States, C.A. Picard will be merged into Haarslev Industries.

Since 1876, C.A. Picard, a family-run company based in Remscheid, Germany, has specialized in producing highly wear-resistant precision metal parts for various industries, applications, and brands. The company operates globally with eight subsidiaries and sells its products on a worldwide scale. Today we can offer optimized wear and spare parts at economical prices. We offer alternatives, no compromises!

Herbert Gleiter Institute of Nanoscience

Booth #409

The Herbert Gleiter Institute of Nanoscience (HGI) in Nanjing celebrated its official opening in late October 2012. The establishment of HGI is the outcome of international attention to the development of nanoscience in China and has attracted a number of outstanding scientists to integrate here. HGI always strives to provide a high-standard, secular stable platform of academic exchanges and cooperative research, so as to promote our research level and international status in nanoscience. With humanistic characteristics as its source power, HGI will recruit talents worldwide and focus on the frontier research work in nanoscience. The purpose of HGI is to create a world-class research team and base of nanoscience and to cultivate talents with innovative spirit through scientific research practice for innovative achievements.

Huizhou Top Metal Material Co., Ltd.

Booth #438

Hycast AS

Booth #512

Hycast—Technology from within. In 1990 Hycast AS was established by Hydro Aluminium. Today Hycast provides a one stop shop for competitive processes and quality end-products with portfolio that covers the whole casting centre, including: RAM (Removal of Alkaline Metals); SIR—in-line melt refining; launder systems and rod feeders; CMV (Casting Machine Vertical); extrusion ingot; GC (Gas Cushion) and LPC (Low Pressure Casting); sheet ingot; AFM (Adjustable Flexible Moulds) and FM (Flexible Moulds); CCS (Casting Control Systems); and Hycast services, knowledge, and competence. Hycast supports customers to constantly achieve better quality at lower operation cost, thereby increasing the competitiveness of its customers.

Hysitron

Booth #320

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.
ICE Publishing  
**Booth #216**

ICE Science is the innovative multi-disciplinary materials science series from ICE Publishing, the publishing division of the Institution of Civil Engineers, who have been uniting research and practice in science and technology since 1836. ICE Science seeks to inspire fresh thinking in how breakthrough research can be practically applied in the areas of materials science, biomaterials, nanotechnology, energy, green chemistry, and surface engineering. Launched in 2012, the ICE Science collection comprises 5 titles: Bioinspired, Biomimetic and Nanobiomaterials; Emerging Materials Research; Green Materials; Nanomaterials and Energy; and Surface Innovations. For further information, visit www.icevirtuallibrary.com/science.

Innovatherm GmbH + Co., KG  
**Booth #420**

Innovatherm GmbH + Co KG, Butzbach/Germany, is an engineering company specialized in optimization of thermal processes. Innovatherm offers a comprehensive range of products and services including consulting, process analysis, engineering, process optimization, 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 staffs are mainly engineers who have special knowledge in treatment and optimization of thermal processes in addition to their detailed knowledge of automation and computer systems. 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 #522**

*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.

IPS Ceramics Ltd.  
**Booth #234**

IPS is exhibiting at the TMS annual meeting for the second year running, showing an extensive selection of high purity alumina, machinable blocks for composites moulds, and silicon carbide components designed for strong performance in tough environments. We offer tiles, discs, trays, crucibles, tubes, rods, spheres, insulators, seals, threaded parts, bulb holders, wire guides, plates, rings and much more. We have 95%/99% aluminas plus the full spectrum of SiC from clay bonded to silicon infiltrated—thermally stable, technically proven, and cost competitive. We also supply one of the broadest ranges of cordierite refractories for kiln, furnace, and oven wall and roof construction, combustion superstructures, and ware support purposes. www.ipsceramics.com

LAEIS  
**Booth #429**

LAEIS offers hydraulic presses MEGA 2500/1600 AV for production of prebaked anodes. These presses are modifications of the renowned HPF presses, supplied more than 600 times to different industries, optimally adapted to anode production requirements. With die areas up to 1800 x 850 mm² and filling depth up to 1400 mm practically all anode formats can be produced. A vacuum system provides for optimal densification and even density distribution over the whole anode volume. The special weighing and mould filling system together with the sophisticated press control guarantees extremely high accuracy and reproducibility of anode weight and height. Depending on anode formats, production capacity is up to 30-60 t/h in a single line. The remarkably lower forming temperature results in higher green strength, avoids a separate water cooling, and reduces the emission of PAH and other pitch volatiles.
**Light Metal Age**  
*Booth #424*

*Light Metal Age (LMA)* is the pre-eminent magazine of the light metal world, covering the technology of primary production and semi-fabrication of the light metals. As the largest of the light metal markets, aluminum is the main focus of LMA’s editorial, starting at the smelter and moving downstream to include all semi-fabricating processes, such as extrusion, rolling, and remelt. Attention is also placed on the production and processing of magnesium and titanium. Circulation is international and goes to executives, plant managers, technicians, metallurgists, and engineers at primary and secondary smelters, casthouses, extrusion operations, rolling mills, and other operations. LMA also produces select article archive content on DVDs, including the Aluminum Extrusion Article Archive (July 1943–June 2012) and the Magnesium Article Archive (May 1943–August 2011). For more info, visit our webpage: www.lightmetalage.com.

**Linseis Inc.**  
*Booth #407*

Our company manufactures Thermal Analysis Instruments including: DTA, TGA, STA, DSC, Dilatometry, Xenon Flash, Laser Flash Thermal Conductivity Systems, Seebeck Coefficient/Electrical Resistivity Instruments, and Magnetic Suspension Balances. For complete information about all of our products, please visit our website at www.linseis.com.

**Maney Publishing**  
*Booth #229*

The Maney Publishing Materials Science & Engineering Collection is a portfolio of highly regarded, peer-reviewed journals providing both general and topical coverage of materials science and engineering. Original papers and reviews report fundamental and applied research on topics from functional materials for electronics/photonics, energy, and biomedicine, to fabrication, processing, and characterization of materials to design, properties and performances. Our growing list in geotechnical engineering, water science and technology and transportation reflects an increasing specialization in engineering. Find out more online: www.maneyonline.com/matscieng

**Mecfor Inc.**  
*Booth #210*

Mecfor specializes in the design and fabrication of mobile, stationary, and custom-designed equipment used in all sectors of the aluminium industry. We work with you to understand what you need; then we make it. All Mecfor equipment takes into account your harsh working environment. Our trademark: sturdy, reliable, and safe equipment for all operators and maintenance. Mecfor delivers on time and supports its products worldwide. Over the years, Mecfor has developed its expertise. From the engineers to the machinists, together we possess complementary know-how’s, which is an added value. Proven technologies for a better equipped industrial world: www.mecfor.com

**Microtrac**  
*Booth #339*

Microtrac, a pioneer of particle characterization technologies, strives to provide the world with innovative, reliable, and repeatable instruments that deliver insight and solutions to company’s complex product and process problems. Microtrac’s instruments can provide particle sizing, zeta potential, 3D image analysis, molecular weight, surface analysis, and particle counting measurements. Microtrac also offers contract laboratory services, as well as custom service plans designed to meet and exceed customer expectations.

**Momentive Performance Materials Inc.**  
*Booth #337*

For more than 75 years, Momentive Performance Materials Inc. has been supplying the world’s largest companies with cutting-edge materials to create new, successful products in a number of industries, from automotive to construction to electronics to personal care. Momentive helps bring business’ ideas to life quickly and efficiently through its streamlined technology development process, unparalleled commitment to customer service, and technical expertise. Based in Waterford, New York, with more than 50 manufacturing and commercial locations worldwide, Momentive places innovative technologies at customers’ fingertips around the globe. Visit Momentive.com for more information.

**MTI Corporation**  
*Booth #437*

MTI Corporation is a leading provider of material research equipment: serving the R&D community since 1994. It offers vast selections of goods from crystals, powders, wafers, raw battery materials and consumables/accessories, battery R&D equipment, automated machines, analysis hardware, and more.
MTS Systems Corporation
Booth #223

Engineers and researchers worldwide rely on MTS to address the full spectrum of materials testing—from tension/compression 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, composites, and ceramics. Standard solutions and software templates for monotonic testing applications as well as high-cycle fatigue, low-cycle fatigue, thermomechanical fatigue, and direct current potential drop applications simplify test setup and optimize efficiency. Explore the MTS booth and discover how innovative MTS solutions and decades of industry expertise can enhance your test program.

nanoHUB.org
Booth #428

nanoHUB.org is recognized as a global leader in nanotechnology, providing access to simulation tools and learning materials used in both research and education. This science gateway, supported through a National Science Foundation grant, has a growing user base of over 328,000 users annually. Explore our vast array of content on topics such as molecular dynamics, nanoelectronics, nanobio, and more. nanoHUB now features nanoHUB-U courses, five week modules across a variety of nano-related fields, taught by well-known faculty. These courses are designed to be accessible to students in any branch of science and engineering, without requiring a long list of prerequisites. nanoHUB is an open access platform where cutting edge content is freely available across a global community. Visit our site and create a FREE account today!

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.

SGL LANCELOT® and it’s unique features allows high precision measurements inside melting aluminum bath. Surface analysis is used for wear measurement of cathodes to check it’s performance as well to find indicators of potential failure. Side ledge analysis gives instant feedback about impact of process parameters changes on ledge thickness.
Nanomechanics Inc. Booth #506
Nanomechanics, Inc. provides in-situ SEM and vacuum environment tools for measuring the mechanical properties of materials at the micro/nano scale. Our products in the InSEM line of mechanical properties microprobes offer high resolution and exceptional dynamic range. As the inventors of the nanoindenter, our staff is well-positioned to provide products, consulting services, training, and contract laboratory testing in nano indentation, scratch and wear testing, pillar compression, micro- and nano-scale tensile testing, and other characterization techniques.

Nanovea Inc. Booth #521
From the Irvine, California office, Nanovea designs and manufactures 3D non-contact profilometers, mechanical testers, and tribometers to combine the most advanced testing capabilities in the industry: indentation hardness, scratch adhesion, wear friction, and 3D non-contact metrology at nano, micro, and macro range. Unlike other manufactures Nanovea also provides laboratory services, offering clients availability to the latest technology and optimal results through improvements in material testing standards.

Netzsch Instruments NA LLC Booth #501
Thermal analysis and 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 and cooling, new Concavus crucibles and unique sample-cutting tool. Introducing new instruments for battery calorimetry: R&D 100 Award-winning IBC 284 Isothermal Battery Calorimeter for large format Li-ion batteries 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. We also offer 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.

Olympus Booth #427
Olympus DELTA Handheld XRF analyzers provide fast, reliable ID in seconds for accurate geochemistry. Designed for durability to withstand the toughest environments, DELTA XRF analyzers enable reliable sorting and analysis for superior performance in speed, LODs, and elemental range. DELTA brings the power and flexibility of handheld x-ray fluorescence spectrometry to the field. Ruggedized and ultra-portable, this dramatically fast 24/7 technology provides accelerated testing times, allowing for hundreds more tests to be conducted per day with analytical confidence.

Outotec Ltd. Booth #306
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 of experience helping customers worldwide in both segments of the aluminum process to reach their goals.

Parker Hannifin Booth #311
Parker is the world's leading diversified manufacturer of motion and control technologies and systems. Parker provides precision engineered solutions for a variety of commercial mobile, industrial, and aerospace markets. We design and manufacture optimal systems using fluid connectors, hydraulics, pneumatics, instrumentation, refrigeration, filters, electromechanical components, and seals required in motion control systems. Parker's experience in the aluminum industry spans more than 40 years. Parker has equipped machinery in all phases of aluminum production including smelters, casters, and extruders through grinders, rolling mills and strip processing lines, etc.
P-D Refractories GmbH

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. We acquired the know-how over decades in the aluminium industry. 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.

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.

Precimeter Inc.

Precimeter is continuously growing, developing new solutions and serving customers in the molten metal industry. With more than 25 years of experience within the industry and with the highest level of knowledge about molten metal level control, Precimeter is the brand that can be trusted to deliver the solutions you need.

PROTO Manufacturing

PROTO Manufacturing is a leading provider of x-ray diffraction (XRD) systems and services. Our product line includes residual stress & retained austenite measurement systems, powder diffractometers, Laue single crystal orientation systems, x-ray tubes, and custom XRD systems. For over 30 years we have been providing solutions for laboratory, factory, and field environments. Measurement services are also available through ISO 17025 laboratories in the United States, Canada, and Japan. This year we are proud to introduce our new AXRD Benchtop Powder Diffractometer.

RHI AG

RIEDHAMMER GmbH

For the Carbon Industry, Riedhammer is presently the only independent worldwide supplier able to deliver complete solutions and proven furnace technologies for baking anodes, cathodes, and electrodes, supplemented by solutions specifically tailored for the production of special carbon products. Ninety years of experience and know-how guarantee high economic efficiency and reliability of the plants.

Rio Tinto Alcan

Building on more than a century of experience and expertise, Rio Tinto Alcan is a global leader in the aluminium industry. We are one of the world’s largest producers of high quality bauxite, alumina and aluminium worldwide and our APT™ smelting technology is the industry benchmark. Our leadership is reinforced by our access to the largest and best quality bauxite reserves in the industry, benchmark smelting technology, and enviable hydropower position, which delivers significant competitive advantages in today’s carbon constrained world. Rio Tinto Alcan is the aluminium product group of Rio Tinto, a leading international mining company involved in each stage of metal and mineral production. The Group is listed on the London Stock Exchange and Australian Securities Exchange under the symbol RIO. Rio Tinto’s major products are aluminium, copper, diamonds, coal, iron ore, uranium, gold, and industrial minerals.

ROBO-MET.3D® (A UES Product)

Robo-Met.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 that 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.
ROYER Inc.  
Booth #204
Attention workers in the metallurgical industry: Since 1934, Royer is your one stop supplier of innovative specialized safety footwear. Unique in America, our XPAN® dual density soling technology offers a lighter rubber sole, protecting the wearer from both extreme heat and cold. Moreover, this technology offers superior traction, shock absorption, and durability. Visit us and see the ULTIMATE SMELTER’S BOOT! Royer offers a wide range of specialized products with customizable features including internal and external metatarsal protectors as well as non-magnetic toecaps. Royer products meet CSA, ASTM, and CE standards.

SAWNODE Technologies Ltd.  
Booth #222
Sawnode Technologies focuses solely on the design and manufacturing of circular saw blades used for slotting carbon anodes. Its unique approach produces blades that maximize the width-to-depth ratio for slots resulting in a substantial reduction in the carbon volume removed. Thus, a smelter's investment into a slotting machine is rendered a profitable one!

Seneca Ceramics Corporation  
Booth #310
Seneca Ceramics specializes in the design and manufacture of ceramic component parts for use in a wide range of industries. Our unique capabilities allow us to rapidly prototype and produce both porous and dense ceramics in a wide range of complex shapes and surfaces. We can quickly create high quality bodies from a wide range of materials, while tailoring microstructure, porosity, and surface chemistry.

Sente Software  
Booth #517
We offer materials-focused simulation software for modeling the behavior and properties of multi-component alloys used in industrial practice. JMatPro® calculates: stable and metastable phase equilibrium, solidification behavior and properties, mechanical properties, thermophysical and physical properties, phase transformations and chemical properties. Data export available to casting, forming, forging and heat-treatment simulation packages. www.jmatpro.com.

Shenyang Aluminum and Magnesium Engineering and Research Institute Company Limited  
Booth #538
Located in Shenyang, China, Shenyang Aluminum and Magnesium Engineering and Research Institute (SAMI) is the world’s leading aluminum technology supplier, professional consultant, and experienced EP and EPC contractor in non-ferrous metallurgy fields. Founded in 1951, SAMI has long been engaged in engineering or EPC of alumina, aluminum, carbon, and magnesium projects. SAMI has gained lots of proprietary technology patents and achieved unique know-how in aluminum reduction pot development (in particular 400kA, 500kA, and 600kA) with advanced 3D design/modelling software and successfully conducted engineering of more than 25,000 pots of high performance to global customers.

Shenyang Dongda Sensor Technology Co. Ltd.  
Booth #515
Dongda Sensor provides a wide range of thermocouple assemblies, wire, and protection tubes for the global metal and heat treatment industries. We have extensive experience with global primary producers of aluminum with expertise in pot line control systems, as well as cast house and carbon plant operations. We work closely with clients to provide custom solutions to help them meet their operational and business needs. Our products deliver a consistently high level of performance and long service life, helping our clients realize significant cost savings while achieving compliance and sustainability objectives. Our patented products are used in vacuum furnaces, carburizing furnaces, and a wide range of applications for multipurpose industrial furnaces, including continuous temperature measurement for molten copper, iron, steel, aluminum, zinc and salt; Temperature Uniformity Surveys conforming to AMS2750D/E, and thermocouples with calibration wells; and portable on-line calibrators.
Southwire SCR Technologies

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.

STAS

STAS is a Canadian-based company and a world leader in providing various equipment to improve the production and quality of molten aluminium. Aluminium producers who can benefit from such technologies are found throughout the wide variety of aluminium producers, from primary smelter plants down to secondary operations, including rolling mills and aluminium extruders. The company has been in business for more than 25 years, with clients on all continents. Most of STAS’ sales activities are managed from STAS’ head office in Canada, with a network of well-known agents in specific countries or geographical areas.

Techmo Car

Techmo is an Italian independent company focused in the engineering and production of special mobile and stationary equipment for the aluminium and nonferrous 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.

Tenova Core

Tenova Core, a multi-business unit Tenova company, based in Pittsburgh, Pennsylvania, is a worldwide leader in the supply of loose carbonaceous material calciners based on rotary hearth technology. These furnaces are used for the processing of petroleum coke, coal, formed coke briquettes, and various other carbon-based products. Tenova Core representatives will also be available to discuss our advanced aluminum furnace product line.

Thermacore Materials Technology

When extreme conditions threaten performance, Thermacore’s Materials Technology Division (MTD) has the unique materials capabilities to design, develop, and manufacture your mission-critical application solution. From the analysis and characterization of materials to custom alloy processing and finished product manufacturing, you’ll find Thermacore technology in a wide array of applications, including ultra-high-speed flight vehicles, armaments, advanced medical devices; and data centers. Whether it's a custom specialty alloy melt for high-strength applications, high-temperature creep testing at 2,000°C (3,600°F) under a near-space level vacuum, or aluminum brazing of heat exchangers, our unique material development and processing capabilities will let you break through your material and thermal barriers. Our MTD services include: a breadth of joining services; processing, testing, materials analysis services; specialized processes; development and consultation services; and manufacturing services.

Thermo-Calc Software

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 enable 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; and TC-PRISMA: a new tool for predictions of concurrent nucleation, growth, dissolution and coarsening of precipitate phases.

Thorpe Technologies Inc.  
Booth #511
Thorpe Technologies 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; and 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.

TMS Bladesmithing Exhibit  
Booth #235
More than 25 teams responded to the TMS Bladesmithing Competition, which challenged participants to forge their own blades for display at the TMS Annual Meeting Exhibition. View the final products, as well as videos depicting their production, in the exhibit hall. The entries will be judged and winners will be announced in the “University Student” and “Artisan and Enthusiasts” categories on Tuesday at 1:30 at the Bladesmithing booth.

TMS Information Center  
Booth #401
The TMS Information Center provides information on all TMS offerings in one convenient location. Stop by for information about:
- TMS Membership
- TMS Technical Initiatives
- TMS Events
- TMS Publications
- The TMS Foundation
- TMS Volunteer Opportunities

Unimet LLC  
Booth #516

University of Central Florida AMPAC  
Booth #530
The University of Central Florida is home to the Advanced Materials Processing and Analysis Center (AMPAC), the NanoScience Technology Center, and the Materials Science and Engineering Department. Our faculty and students conduct in-depth research to address real-world applications in areas including energy, microelectronics, medicine, bioengineering, optics, and manufacturing.

Vollert Anlagenbau GmbH  
Booth #430
Material handling and storage technology from Vollert stands for a maximum of productivity and resource-efficient processes in aluminium rolling and extrusion plants and in the metal industry. Considering high-bay warehouses, the most powerful stacker cranes or automatic crane systems up to 50 tons, Vollert is setting the standards worldwide. For this, customers such as Aleris, Constellium, Hydro, Novelis, and Tianjin Zhongwang have trusted in the engineering know-how and intralogistics concepts from Vollert since 1925.

Wahl Refractory Solutions  
Booth #228
Wahl Refractory Solutions has been providing high quality refractory products since 1921 and has grown to be a recognized leader in the refractory industry. With expertise in refractory precast shapes and unmatched engineering capabilities, Wahl has developed numerous innovative, cost-effective, and reliable solutions to refractory problems throughout the industrial world.
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### 2015 Functional Nanomaterials: Energy and Sensing

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### 2015 Light Metals Keynote

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### 6th International Symposium on High Temperature Metallurgical Processing

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### Acta Materialia Symposium

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### Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control

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### Advances in Solidification of Metallic Alloys under External Fields

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### Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu

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### Alumina and Bauxite

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### Materials Genome: ICME and CALPHAD-Based Materials Design 5
- **THU 8:30 AM Dolphin Northern Hemisphere A4**

### Cast Shop for Aluminum Production

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<td>Metal Treatment, Alloying, and Grain Refinement</td>
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### Characterization of Materials through High Resolution Coherent Imaging

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### Characterization of Minerals, Metals, and Materials

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<td>Method Development in Characterization</td>
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<td>Characterization of Electronic, Magnetic, Environmental, and Advanced Materials</td>
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### Characterization of Nuclear Reactor Materials and Fuels with Neutron and Synchrotron Radiation

| Session I                                | MON     | 8:30 AM   | Yacht & Beach | Grand Harbor Salon 5 |
## TECHNICAL PROGRAM

### PROGRAM AT-A-GLANCE

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### Computational Modeling and Stochastic Methods for Materials Discovery and Properties

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### Computational Thermodynamics and Kinetics

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### Constitutive Response and Modeling of Structural Materials: An SMD Symposium in Honor of G.T. Gray III's 60th Birthday

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## Deformation and Damage Evolution
- **Overview**: WED 8:30 AM, Dolphin Asia 2
- **Constitutive Modeling**: WED 2:00 PM, Dolphin Asia 2

## Development of "Weak Links" during the Processing of Metallic Materials
**Overview**: MON 8:30 AM, Swan Peacock 92
- **Microstructure Characterization**: MON 2:00 PM, Swan Peacock 116
- **Microstructure Evolution**: TUE 8:30 AM, Swan Peacock 141
- **Joining and Bonding**: TUE 2:00 PM, Swan Peacock 167
- **Properties**: WED 8:30 AM, Swan Peacock 192

## Drying, Roasting, and Calcining of Minerals
**Roasting**: TUE 2:00 PM, Yacht & Beach Grand Harbor Salon 3
- **Drying and Calcining**: WED 8:30 AM, Yacht & Beach Grand Harbor Salon 3
- **Fluidization, Reduction Roasting, and Microwave Treatment**: WED 2:00 PM, Yacht & Beach Grand Harbor Salon 3
- **Induration and Sintering**: THU 8:30 AM, Yacht & Beach Grand Harbor Salon 3
- **Sintering and Energy Use**: THU 2:00 PM, Yacht & Beach Grand Harbor Salon 3

## Dynamic Probing of Microstructure Evolution in Nanostructured Materials
**Dynamic Probing Technique**: MON 8:30 AM, Swan Mockingbird 2
- **Impurity and Twinning Effects**: MON 2:00 PM, Swan Mockingbird 2
- **Poster Session**: MON 6:30 PM, Dolphin Atlantic Hall
- **Interface Mediated Deformation Mechanism**: TUE 8:30 AM, Swan Mockingbird 2
- **Size Effect and Fracture/Fatigue Studies**: TUE 2:00 PM, Swan Mockingbird 2
- **Low Dimensional Materials**: WED 8:30 AM, Swan Mockingbird 2
- **Grain Boundaries Effects**: WED 2:00 PM, Swan Mockingbird 2

## Electrode Technology for Aluminum Production
**Anode Raw Materials**: MON 2:00 PM, Dolphin Southern Hemisphere II
- **Anode Forming and Baking**: TUE 8:30 AM, Dolphin Southern Hemisphere II
- **Anode Properties**: TUE 2:00 PM, Dolphin Southern Hemisphere II
- **Anode Rodding and Inert Anodes**: WED 8:30 AM, Dolphin Southern Hemisphere II
### Energy Technologies and Carbon Dioxide Management Symposium 2015

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### Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R)

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## TECHNICAL PROGRAM

### PROGRAM AT-A-GLANCE

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### TECHNICAL PROGRAM

#### PROGRAM AT-A-GLANCE

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### Nano- and Micro-mechanical Measurements in Harsh Environments

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### Nanocomposites III

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### Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III

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### Neutron and X-Ray Studies of Advanced Materials VIII: Diffraction Limit and Beyond

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## TECHNICAL PROGRAM

### PROGRAM AT-A-GLANCE

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### Elastic and Inelastic Scattering

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### Organic and Functional Materials

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### Defects, Strains, Stress I

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### Defects, Strains, Stresses II

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### New Horizons for Mechanical Spectroscopy in Materials Science

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<td>Surfaces, Films and Interfaces and Nonlinear Acoustics</td>
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### Novel Synthesis and Consolidation of Powder Materials

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### Pb-free Solders and Emerging Interconnect and Packaging

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### Rare Metal Extraction & Processing 2015

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### Recent Developments in Biological, Structural and Functional Thin Films and Coatings

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<td>MON</td>
<td>9:30 AM</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Salon 4</td>
<td>103</td>
</tr>
<tr>
<td>Recycling</td>
<td>MON</td>
<td>2:00 PM</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Salon 4</td>
<td>129</td>
</tr>
<tr>
<td>Poster Session</td>
<td>MON</td>
<td>6:30 PM</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>277</td>
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### Refractory Metals 2015

<table>
<thead>
<tr>
<th>Topic</th>
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</tr>
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<tbody>
<tr>
<td>Alloy Design, Application and Oxidation</td>
<td>MON</td>
<td>8:30 AM</td>
<td>Dolphin</td>
<td>Europe 1</td>
<td>104</td>
</tr>
<tr>
<td>Mechanical Properties, Structure &amp; Processing</td>
<td>MON</td>
<td>2:00 PM</td>
<td>Dolphin</td>
<td>Europe 1</td>
<td>129</td>
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</tbody>
</table>

### SMD 2015 Technical Division Student Poster Contest

<table>
<thead>
<tr>
<th>Topic</th>
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<th>Time</th>
<th>Building</th>
<th>Room</th>
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<tbody>
<tr>
<td>SMD 2015 Student Poster Contest - Graduate</td>
<td>MON</td>
<td>3:30 PM</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>277</td>
</tr>
<tr>
<td>SMD 2015 Student Poster Contest - Undergraduate</td>
<td>MON</td>
<td>3:30 PM</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>277</td>
</tr>
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</table>

### SMD 2015 Technical Division Young Professional Poster Contest

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td>SMD 2015 Technical Division Young Professional Poster Contest</td>
<td>MON</td>
<td>6:30 PM</td>
<td>Dolphin</td>
<td>Atlantic Hall</td>
<td>278</td>
</tr>
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</table>

### Solar Cell Silicon

<table>
<thead>
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<th>Topic</th>
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<th>Time</th>
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<tbody>
<tr>
<td>Silicon Production and Refining</td>
<td>MON</td>
<td>8:30 AM</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Salon 1</td>
<td>104</td>
</tr>
<tr>
<td>Crystallization and Mechanical Properties</td>
<td>MON</td>
<td>2:00 PM</td>
<td>Yacht &amp; Beach</td>
<td>Grand Harbor Salon 1</td>
<td>130</td>
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</tbody>
</table>
### Strip Casting of Light Metals

<table>
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<tr>
<th>Event</th>
<th>Day</th>
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<tbody>
<tr>
<td>Process Technology</td>
<td>TUE</td>
<td>8:30 AM</td>
<td>Dolphin</td>
<td>Northern Hemisphere E2</td>
<td>156</td>
</tr>
<tr>
<td>Modeling and Properties</td>
<td>TUE</td>
<td>2:00 PM</td>
<td>Dolphin</td>
<td>Northern Hemisphere E2</td>
<td>181</td>
</tr>
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</table>


<table>
<thead>
<tr>
<th>Event</th>
<th>Day</th>
<th>Time</th>
<th>Building</th>
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<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Transport Fluids I</td>
<td>MON</td>
<td>2:00 PM</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>130</td>
</tr>
<tr>
<td>Heat Transport Fluids II</td>
<td>TUE</td>
<td>8:30 AM</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>156</td>
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### Sustainable Energy and Layered Double Hydroxides

<table>
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<tr>
<th>Event</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Energy and Layered Double Hydroxides</td>
<td>MON</td>
<td>8:30 AM</td>
<td>Yacht &amp; Beach</td>
<td>Asbury B</td>
<td>105</td>
</tr>
</tbody>
</table>
PROGRAM AT-A-GLANCE

**2015 Functional Nanomaterials: Energy and Sensing — Energy Conversion and Storage I**

*Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee*

*Program Organizers:* Jung-Kun Lee, University of Pittsburgh; Behrang Hamadani, National Institute of Standards and Technology; Sung Hun Wee, HGST, a Western Digital Company; Nitin Chopra, University of Alabama, Tuscaloosa; Terry Xu, The University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH)

**Monday AM**

**8:30 AM Introductory Comments**

**8:35 AM Invited**

Making Polycrystalline Thin Films of the Earth Abundant Solar Absorber (Cu2ZnSn(SxSe1-x)4) from Colloidal Nanocrystal Dispersions: Boris Chemomordik1; Nancy Trejo1; Priyanka Ketkar2; Anne Hunter1; Amélie Béléd3; Donna Deng1; Eray Aydin1; 1University of Minnesota

**9:15 AM**

Solar Energy Capture: Methods of Optimizing Nanofluid-Based Volumetric Solar Flow Receivers: Luqmam Habib1; Mohamed Hassan1; Youssef Shatilla1; 1Masdar Institute of Science and Technology

**9:35 AM Invited**

Electron Energy Filtering for Energy Efficient Electronics: Seong-Jin Koh1; 1University of Texas at Arlington

**10:15 AM Break**

**10:30 AM Invited**

All-metal Solar Energy Conversion Devices Based on Hot Electrons: Jeremy Monday1; 1University of Maryland

**11:10 AM**

In-Situ Localized Surface Plasma Resonance (LSPR) Spectroscopy to Investigate Kinetics of Chemical bath Deposition of CdS Thin Films: Humaira Tau1; Rose Ruther2; Abhinav Malasi3; Sagar Yadavali1; Connor Carr1; Jagjit Nanda4; Ramki Kalyanaraman4; 1University of Tennessee-Knoxville; 2Oak Ridge National Laboratory; 3University of Minnesota; 4University of Pittsburgh

**11:30 AM Invited**

Role of Disorder and Carrier Recombination in the Performance of CH,NH,PbI, Perovskite Films: Elbert Chia1; 1Nanyang Technological University

**12:15 PM Panel Discussion**

**6th International Symposium on High Temperature Metallurgical Processing — High Efficiency New Metallurgical Process and Technology**

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

*Program Organizers:* Tao Jiang, Central South University; Iann-Yang Hwang, Michigan Technological University; Gerardo Alvear, XstrataTech; Onurait Pucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Batten, Midrex Technologies

**Monday AM**

**9:30 AM**

Advances in Products and Processes for Induction Heating: Lesley Frame1; Josef Gaster2; 1Thermatool Corp.

**9:50 AM**

The Use of On-Site Oxygen Generation in the Production of Metals: Frank Vonesh1; 1PCi

**10:10 AM Break**

**10:30 AM**

Development of as Cast Structures of High-manganese Steel Grades Under Extra Slowly Solidification Conditions: Bernhard Steenken1; Dieter Senk1; Joao Rezende1; Dennis Kuhlendahl1; 1RWTH Aachen

**10:50 AM**

Recovery of Iron from Hematite-Rich Diasporic-type Bauxite Ore: Tao Jiang1; Zhuoxuan Li1; Guanghui Li1; Lin Yang1; Yuanbo Zhang1; Jinghua Zeng1; 1School of Minerals Processing and Bioengineering, Central South University

**11:10 AM**

AI Control in High Titanium Ferro with Low Oxygen Prepared by Thermite Reaction: Dou Zhihe1; Wang Cong1; Fan Shigang1; Shi Guanyong1; Zhang Ting-an1; 1Northeastern University
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Deformation

**Sponsored by:** TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee

**Program Organizers:** Rodney McCabe, Los Alamos National Laboratory; J ohn Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Pantele, Technical University of Denmark

**Monday AM**  
**Room:** Pelican 2  
**March 16, 2015**  
**Location:** Swan

**Funding support provided by:** TMS: Materials Characterization Committee

**TMS: Shaping and Forming Committee**

**Session Chairs:** Marko Knezevic, University of New Hampshire; Gregory Thompson, University of Alabama

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>Invited</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Industrial Implementation of Additive Manufacturing: Edward Herderick; Clark Patterson; GE Corporate; Rapid prototype + manufacturing (rp+m)</td>
</tr>
<tr>
<td>9:20 AM</td>
<td>Effects of Process Parameters on Microstructure and Mechanical Properties of Inconel 718 Processed by Laser Engineered Net Shaping: Jakub Tomancik; Pu Zhang; Erica Stevens; Kevin Laux; Albert To; Markus Chmielewski; University of Pittsburgh</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Fabrication of Metal-Diamond-Composites by Selective Laser Melting: Christian Lehnebach; Adrian Spierings; Christoph Kenel; Konrad Wegenaro; Empa-Swiss Federal Laboratories for Materials Science and Technology; Inspire AG; ETH Zurich</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Additive Manufacturing of Strong and Ductile Ti-6Al-4V by Selective Laser Melting: Wei Xu; Milan Brandt; Shouqin Sun; Ma Qian; RMIT University (Royal Melbourne Institute of Technology)</td>
</tr>
<tr>
<td>10:10 AM</td>
<td>Break</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Fundamental Processing-Structure-Property Relationships in Directed Energy Deposition of Nickel and Titanium Alloys: Todd Palmer; Jayme Keist; Allison Beese; Pennsylvania State University</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Mechanical Properties of IN738LC Processed by Selective Laser Melting (SLM): Thomas Etter; Roman Engeli; Hossein Meidani; Felix Roerig; Fabian Geiger; Julius Schurb; ALSTOM (Switzerland) Ltd</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Characterisation of Direct-laser Deposited IN 718: Zewen Huang; Rengan Ding; Ian Mitchell; Gavin Baxter; Paul Bowen; The University of Birmingham; Rolls-Royce plc</td>
</tr>
</tbody>
</table>
Advanced Composites for Aerospace, Marine, and Land Applications II — Advanced Processing Techniques
Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Tirumalai Srivatsan, The University of Akron

Monday AM
Room: Asia 5
March 16, 2015
Location: Dolphin

Session Chairs: Sampath Vedamanickam, Indian Institute of Technology Madras; Tomoko Sano, US Army Research Laboratory

8:30 AM Invited
Effect of Processing Parameters on the Microstructure of Mechanically Alloyed Nanostructured Al-Mn Alloys: Kris Darling¹; Mark Tschopp¹; Laszlo Kecskes¹; 'ARL

8:50 AM
Al-NiTi Metal Matrix Composites for Zero CTE Materials: Fabrication, Design, and Modeling: Adam Hehr¹; Xiang Chen¹; Joshua Pritchard¹; Marcelo Dapino¹; Peter Anderson¹; 'The Ohio State University

9:10 AM
Characterization of the Interface of Co-Extruded Asymmetric Aluminum-Titanium Composite Profiles: Norbert Grittner¹; 'Leibniz Universität Hannover Institut für Werkstoffkunde

9:30 AM
Fabrication and Characterization of Nb-Al Composites. Effect of Sintering Temperature: Lucio Vazquez¹; Juan Miranda¹; Elizabeth Garfias¹; Dulce Medina¹; 'Universidad Autonoma Metropolitana

9:50 AM Break

10:10 AM
Carbon Nanotube Coated Conductors: Terry Holesinger¹; 'Los Alamos National Laboratory

10:30 AM
Spark Plasma Sintering (SPS) of Carbon Nanotube (CNT)/Graphene Nanoplatelet (GNP)-Nickel Nanocomposites: Structure-Property Relationships: Tushar Borkar¹; Jun Yeon Hwang²; Jaimie Tiley³; Soon Hong⁴; Rajarshi Banerjee⁵; 'University of North Texas; 'Korea Institute of Science and Technology; 'Air-force Research laboratory; 'Korea Advanced Institute of Science and Technology

10:50 AM
Effect of in-situ TiB₂ Particle Addition and Friction Stir Processing on Wear Behaviour of 2219 Al Alloy: Sampath Vedamanickam¹; Rajasekaran NR²; 'Indian Institute of Technology Madras; 'Dhanalakshmi College of Engineering

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments II — Environmental Influences of Downhole Alloys and Advanced Materials for Oil and Gas Applications I
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Indranil Roy, Schlumberger; Xingbo Liu, Texas A&M University; Ting Chen, West Virginia University; Greg Kusinski, Chevron; Jefferson Rodrigues, Petrobras; Hani Elshaahwii, Shell Exploration & Production, Co.

Monday AM
Room: Swan 7
March 16, 2015
Location: Swan

Session Chairs: Indranil Roy, Schlumberger; Greg Kusinski, Chevron

8:30 AM Introductory Comments Greg Kusinski and Indranil Roy

8:45 AM Keynote
Corrosion Resistant Alloys for High Pressure High Temperature Sour Environments: Timothy Armstrong¹; 'Carpenter Technologies

9:10 AM Invited
Corrosion Characterization of Advanced High Interstitial Stainless Steels: Brajendra Mishra¹; Eunkyung Lee¹; 'Colorado School of Mines

9:35 AM Invited
Synergistic Effects Between Localized Corrosion Resistance and Environmental Assisted Cracking of Cr-Mn-Stainless Steel in Chloride-Containing Solutions: Helmuth Sarmiento Klapper¹; John Stevens¹; 'Baker Hughes

10:00 AM Break

10:15 AM Invited
Pitting Corrosion and Corrosion Fatigue Crack Propagation of Oil-Grade Nickel-Base Alloy 718: Ting Chen¹; Jared Nutter¹; Naing Naing Aung¹; Jeffrey Hawk¹; Xingbo Liu¹; 'West Virginia University; 'National Energy Technology Laboratory

10:40 AM Invited
The Role of Grain Boundary Character in H-Assisted Intergranular Fracture: Matteo Seita¹; John Hanson¹; Silvija Gradecak¹; Michael Demkowicz¹; 'Massachusetts Institute of Technology

11:05 AM
Hydrogen Embrittlement in Advanced Materials for Oil and Gas Industry: A Nanomechanical Approach: Nousha Kheradmand¹; Roy Johnsen¹; Afroz Barnoushi¹; 'Norwegian University of Science and Technology

11:25 AM
Computational Simulation of the Hydrogen Diffusion and Prediction of Hydrogen Diffusivity in Clustered Nanocrystalline and Fine Grained Polycrystalline Nickel: Sathiskumar Jothi¹; Nick Croft¹; Stephen GR Brown¹; 'Swansea University

11:45 AM
Material Factors Determining Sulfide Stress Cracking Susceptibility in Low-Alloy OCTG Steels: Fang Cao¹; Srinivasan Rajagopalan¹; Russell Mueller¹; Ning Ma¹; Weiij Huang¹; Cecilia Haarseth¹; 'ExxonMobil Research and Engineering Company; 'ExxonMobil Development Company
Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion III — Introductory Session

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachael Myers-Ward, Naval Research Laboratory; Clive Randall, Penn State University; Matthew Willard, Case Western Reserve University; Ty McNutt, APEI, Inc.

Monday AM  Room: Asbury A
March 16, 2015  Location: Yacht & Beach

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory, DOE

8:30 AM Introductory Comments

8:35 AM Keynote
HV Wide Bandgap Semiconductors Demand Materials Evolution: Geraldo Nojima; Eaton Corporation

9:15 AM Invited
High Power Transformer Testing and Applications: John McCarthy; Dynapower

9:45 AM Invited
Very High Voltage SiC Power Switches with Superior Energy Efficiency and Integrated SiC Drive Electronics: Mikael Ostling; KTH

10:15 AM Break

10:35 AM Invited
Advanced III-V Technologies for RF Power Applications: Rajinder Sandhu; Northrop Grumman Aerospace Systems

11:05 AM Invited
A Nanosilver Paste Technology for Pressure-free Bonding of Power Semiconductor Chips: Giao-Quan Lu; Virginia Tech

11:35 AM Invited
Relationship Between Dielectric Performance and Electronic Structure of Poly (aryl ether ether ketone): Carlos Diaz; Marco Olguin; Janet Ho; US Army Research Laboratory

Advanced Materials in Dental and Orthopedic Applications — Session I

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

Program Organizers: Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Elizabeth Trillo, Southwest Research Institute; Grant Crawford, South Dakota School of Mines and Technology

Monday AM  Room: Swan 8
March 16, 2015  Location: Swan

Session Chairs: Paulo Lisboa Filho, Sao Paulo State University-UNESP; Carlos Grandini, Sao Paulo State University-UNESP; Tolou Shokuhfar, Michigan Technological University

8:30 AM Keynote
Development of Ti-10Mo-Zr Alloys for Biomedical Applications: Raul Araujo; Marilia Buzalaf; Carlos Grandini; UNESP - Univ. Estadual Paulista; USP - Univ. São Paulo

9:05 AM
Application of Bio-Degradable Polymers for Controlling Release Rate of Drug Eluting Implants: Azhang Hamlekhan; Cortino Sukotoji; Mathew Mathew; Christos Takoudis; Tolou Shokuhfar; Michigan Tech; University of Illinois at Chicago; Rush University Medical Center

9:25 AM Invited
Biological Interactions of Cathodically Polarized Titanium: Mark Ehrenberger; University at Buffalo

9:55 AM
In Vitro Studies of Secondary Caries Formation and Strategies for Prevention: Jamie Kuczic; Dmitriy Khvostenko; Jack Ferracane; Thomas Hilton; John Mitchell; Oregon State University; Oregon Health & Science University; Midwestern University

10:15 AM Break

10:35 AM Keynote
 Alvoll-Spinel Synthesized TiO2 Nanotubes Used in Dental Composites: Larisa Armada; Daniela Cibim; Kamila Kantovitz; Ana Sanches-Borges; Maria Alves-Rezende; Regina Puppin-Rontani; Paulo Lisboa-Filho; UNESP - Univ Estadual Paulista; Institute of Biomaterials, Tribocorrosion and Nanomedicine – Brazilian Branch; UNICAMP - University of Campinas; USP - Universidade de São Paulo; UNESP - Univ Estadual Paulista

11:10 AM
Bioresorbable Iron-Manganese for Orthopedic Applications – The Effect of Microstructure and Surface Morphology on Degradation Behavior: Lia Stanciu; Michael Heiden; David Johnson; Purdue University

11:30 AM
Novel Fabrication of Transparent Titania Nanotubes on Zirconia Bio-Implant: Sweeta Patel; Natalie Wolfsong; Azhang Hamlekhan; Maria Runa; Cortino Sukotoji; Mathew Mathew; Christos Takoudis; Tolou Shokuhfar; Michigan Technological University; University of Illinois at Chicago; Rush University Medical Center

Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Solidification Processing I

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

Program Organizers: Laurentiu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH - Royal Institute of Technology; Jacques Lacaze, Université de Toulouse; Chun-Pyo Hong, Yonsei University; Adrian Catalina, Caterpillar Inc.; Andreas Buhrig-Polaczek, RWTH Aachen University; Daan Mijer, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhiayu Sen, GEOCENT; Attila Diászegi, Jönköping University, School of Engineering

Monday AM  Room: Swan 6
March 16, 2015  Location: Swan

Session Chair: Adrian Sabau, Oak Ridge NL

8:30 AM Introductory Comments from Laurentiu Nastac

8:40 AM
Science of Casting and Solidification: ASM Handbook Contributions – Honoring Prof. Doru Michael Stefanescu: Afina Lapulescu; Scott Henry; Karen Marken; Steven Lampman; ASM International

9:00 AM Invited
On the Solidification of Metal Alloys during Microgravity Conditions: Hasse Fredriksson; KTH - Royal Institute of Technology

9:25 AM
Formation of the Tin Rich Layer and Inverse-Segregation in Phosphor Bronzes during Continuous Casting: Casting of Phosphorous Bronzes: Saud Salem; Michael Vynnycky; Hasse Fredriksson; The Royal Institute of Technology (KTH), Sweden

9:45 AM Invited
A Model of Cavitation for the Treatment of a Moving Liquid Metal Volume: Gerard Lebon; Koulis Pericleous; Iakovos Tzanakis; Dmitry Eskin; University of Greenwich; Brunel University
Advances in Thin Films for Electronics and Photonics — New Generation Photovoltaics and Solar Fuels

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Federico Rosei, INRS; Nugegahalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG F fuel Cell Systems Inc.; Terry Alford, Arizona State University

Monday AM  Room: Europe 7
March 16, 2015  Location: Dolphin

Session Chair: Oussama Moutanabibir, Ecole Polytechnique

8:30 AM Invited
Kinetically Optimized Quantum Dot Sensitized Solar Cells: Yasuhiro Tachibana1; RMIT University

9:00 AM Invited
Semiconducting Ferroelectric Perovskites for Photovoltaics: Riad Nechache1; Institut National de la Recherche Scientifique

9:30 AM Invited
Semiconductor and Plasmonic Nanostructures: Rational Design and their Applications in Solar Cells: Dongling Ma1; INRS, University of Quebec

10:00 AM Break

10:20 AM Invited
Solution Processed Organic/Inorganic Photovoltaics: Christine Luscombe1; Katherine Mazzio1; Trevor Martin1; University of Washington

10:45 AM Invited
Tailoring Optical and Electronic Properties of Wide Band Gap Materials: Benjamin Gaddy1; Joshua Harris1; Jonathon Baker1; Zachary Bryan1; Isaac Bryan1; Edward Sacher1; Jon-Paul Maria1; Clive Randall1; Long-Qing Chen1; Elizabeth Dickey1; Zlatko Sitar1; Ramón Collazo1; Douglas Irving1; North Carolina State University; Pennsylvania State University

11:10 AM Invited
Templated Growth of Highly Oriented Nanowires for Water Splitting: Wenting Hou1; Sam Macartney2; Rong Liu1; Richard Wuhrer1; Leigh Sheppard1; David Kisailus1; Carleton University; 2Pennsylvania State University

11:35 AM Invited
Wide Bandgap Oxide Semiconductors for High Efficiency Exciton Solar Cells: Alberto Vomiero1; CNR-INO, Sensor Lab

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

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Stéphane Gorse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Ce-Wen Nan, Tsinghua University; G. J. effrey Snyder, California Institute of Technology; Hsin-jay Wu, National Sun Yat-Sen University

Monday AM  Room: Europe 5
March 16, 2015  Location: Dolphin

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen

8:30 AM Introductory Comments

8:35 AM
Reconstruction Mechanisms at the CuInSe2 and AgInSe2 Polar Surfaces: A First-Principles Study: Namhoon Kim1; Pamela Martin1; Angus Rockett1; Elif Ertekin1; University of Illinois

8:55 AM
Optical Parameters of Spray-Deposited CdS: In Thin Films: Shadia Bhamy1; Al Isra University

9:15 AM
Screening the Film Quality of Kesterite Absorber by X-ray Diffraction Method: Xiaojing Hao1; School of PV and Renewable Energy Engineering, UNSW

9:35 AM Invited
n Type Bi2Te3: Texturing, Copper Doping and MWCNT Inclusion: Franck Gascoin1; CRISMAT laboratory

10:00 AM Break

10:20 AM
Thickness Dependence of the Optical Parameters of Spray-Deposited SnO2:F Thin Films: Shadia Bhamy1; Al Isra University

10:40 AM
Effects of Tensile Stress on Thermoelectric Properties of Bi-Te Based Thin Films on Flexible Substrates: Tzu-Tsan Shen1; Chien-Neng Liao1; National Tsing-Hua University, Hsinchu, Taiwan

11:00 AM
Oxidation Behavior of Thermoelectric SnSe at Elevated Temperature: Yi Li1; Bin He1; Ji-Cheng Zhao1; Joseph Heremans1; The Ohio State University

Biological Materials Science Symposium — Multiscale Mechanics of Biological and Bioinspired Materials

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

Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter, Clemson University; Francois Barthelat, McGill University

Monday AM  Room: Swam 9
March 16, 2015  Location: Swam

Session Chairs: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC

8:30 AM Introductory Comments

8:35 AM Invited
Layered Water in Bone as Key for Its Strength, Creep, Permeability, and Mechano-Sensitivity: A Unified Theoretical Approach Integrating Experimental Data Across the Disciplines: Christian Hellmich1; Vienna University of Technology
9:05 AM Invited
Molecular Basis of Disease: Experiments and Modeling in Osteogenesis Imperfecta (OI) of Human Bone: Dinesh Katti; Kalpana Katti; Chunju Gu; Reza Parsa; 1North Dakota State University

9:35 AM
Multiscale Modeling of the Directed Self-Assembly Process for Bacteriophage Virus: Chris Papamitrou1; Wayne Hodo2; David McNiis3; Isayev Olexandr4; 1JSNN; 2US Army ERDC; 3UNC-Chapel Hill

9:55 AM
Strain Rate Hardening: A Hidden but Critical Mechanism for Biological Composites? Ravi Chintapalli1; Stephanie Breton1; Ahmad Khayer Dastjerdi1; 1Washington University

10:15 AM Break

10:25 AM Invited
An Investigation into the Environment And Temperature Dependent Nanomechanical Properties of the Shallow Water Shrimp (PENAEUS SPP) Exoskeleton: Devendra Verma; Vikas Tomar; 1Purdue University

10:55 AM
Atomistic Modeling of Self-Organization in the Complex Structure: Helena Zapolsky1; Mykola Lavsky1; Armen Khachaturyan1; 1University of Rouen; 2University of California and Rutgers University

11:15 AM
A Nanomechanics Based Investigation into Interface Thermomechanics of Collagen and Chitin Based Biomaterials: Tao Qu1; Vikas Tomar1; 1Purdue University

11:35 AM
Thermodynamic and Mechanical Properties of Bamboo in Nano-Scale: Sina Yousefian1; Nima Rahbar1; 1Worcester Polytechnic Institute

11:55 AM
Time Dependent Behavior of Human Dentin: Carolina Montoya Mesa1; Alexander Ossa Henao2; Dwayne Arola3; 1Edit University; 2University of Washington

8:30 AM Keynote
Toward a Universal Description of Homogeneous Crystal Nucleation and Glass Forming Ability of Metallic Liquids: William Johnson1; Jong Hyun Na2; Marios Demetriou3; 1California Institute of Technology; 2Glassmetal Technology Inc.

9:00 AM
A Combined Thermodynamic, Kinetic, and Topological Approach to the Discovery of High Glass Forming Alloys: Sina Sedighi1; Steven Thorpe1; Chandra Veer Singh1; 1University of Toronto

9:20 AM Invited
A Combinatorial Approach to Designing Metallic Glass Alloys: Peter Tsai1; Katharine Flores1; 1Washington University

9:45 AM Invited
Amorphous Approximants as a Basis for Design of Bulk Metallic Glasses: Michael Widom1; 1Carnegie Mellon University

10:10 AM Break

10:25 AM Invited
Developing Structural Aerospace Applications for Bulk Metallic Glasses: Alloy Design, Processing, Prototyping and Experimentation: Douglas Hofmann1; Scott Roberts2; 1NASA JPL/CALtech

10:45 AM Invited
Electromagnetic Forming of Metallic Glasses: Marios Demetriou1; Georg Kaltenboeck2; William Johnson3; 1Glassmetal Technology; 2California Institute of Technology

11:05 AM Invited
Metallic Glass Reinforced Metal Matrix Composites: Konstantinos Georgarakis1; Alain Yavari2; Koji Nakayama3; Yoshihiko Yokoyama4; 1Tohoku University; 2Institut Polytechnique (INP) de Grenoble

11:25 AM Invited
Superelastic Bulk Metallic Glass Composites: Wook Ha Ryu1; Hyun Seok Oh2; Hye Jung Chang2; Wan Chuck Woo2; Eun Soo Park2; 1Seoul National University; 2Korea Institute of Science and Technology; 3Korea Atomic Energy Research Institute

11:45 AM Invited
Characterization of Bulk Metallic Glasses via Fast Differential Scanning Calorimetry: Stefan Pogatscher1; Peter Uggowitzer1; Jörg Löffler1; 1ETH Zurich

TMS2015 FINAL PROGRAM
Characterization of Materials through High Resolution Coherent Imaging — Coherent Imaging

8:30 AM Keynote
A Perfect Storm: Nanoscale Imaging of Materials with Coherent X-rays: Ian McNulty 1; Caroline Henry 1; Aronne J. Labat 1; M.-I. Richard 1; Olivier Thomas 1; Université Aix-Marseille

9:00 AM
In Situ Nano-Mechanical Testing in Combination with Coherent Bragg X-ray Diffraction Imaging: Thomas Cornelius 1; C. Leclere 1; Z. Ren 1; A. Davydov 1; Stephane Labat 1; M.-I. Richard 1; Olivier Thomas 1; Université Aix-Marseille

9:20 AM
Coherent X-ray Diffractive Imaging for Materials Characterization: Yuriy Chushkin 1; Federico Zontone 1; Benoit Maillot 1; Giuseppe Faraci 1; European Synchrotron Radiation Facility; Università di Catania

9:40 AM
Determination of the Phase Domain Distribution in Single Semiconductor Nanowires by Means of Coherent Diffraction Imaging: Ulrich Pietsch 1; Arman Davtyan 1; Omar Loffeld 1; University of Siegen

10:00 AM Break

10:20 AM Invited
Bragg Coherent Diffractive Imaging of Dynamics at the Nano- and Microscale: Jesse Clark 1; Stanford University

10:40 AM Invited
Coherent Imaging in Reflection and Transmission Modes Near the Wavelength Limit Using Tabletop High Harmonics: Matthew Seaberg 1; Daniel Adams 2; Bosheng Zhang 1; Dennis Gardner 1; Elisabeth Shanblatt 1; Henry Kaptienny 1; Margaret Murnane 1; JILA, University of Colorado at Boulder

11:00 AM
Coherent Diffractive Imaging Applied to Materials Characterisation at Multiple Lengthscales: Brian Abbey 1; La Trobe University

11:20 AM
Magnetic Memory in Ferromagnetic CoPd IrMn Films Studied by Coherent X-ray Magnetic Scattering Correlation Spectroscopy: Karine Chesnel 1; BYU

11:40 AM Invited
High-Resolution Quantitative Imaging of Functional Materials with Coherent X-ray Diffraction Microscopy: Huidong Jiang 1; Jiadong Fan 1; Zhibin Sun 1; Jian Zhang 1; Shandong University

11:40 AM Thursday AM Keynote: Ian McNulty, Brookhaven National Laboratory — Coherent Imaging — Coherent Imaging


8:30 AM
Structure-Property Relationships during Processing of Cold Drawn Steel Tubing: Tonya Stone 1; Charles Sullivan 1; Robert Zelinka 1; Mississippi State University; Plymouth Tube Company

8:50 AM
Investigation of Temperature Effects on the Tensile Deformation Characteristics of a Quenched and Partitioned Steel Using Digital Image Correlation: Jun Hu 1; Fadi Abu-Farha 1; Louis Hector Jr. 1; Jody Hall 1; Clemson University; General Motors

9:10 AM
Analysis of the Sensitization of Grain Boundary Engineered Stainless Steel by EBSD and In Situ TEM: Matthew Hartshorne 1; Christopher Barr 1; Drexel University

9:30 AM
Creep Behavior Investigation of P92 Steel by Small Punch Creep Testing: Gauri Deshmukh 1; M Prasad 1; Peshwe 1; J Ganesh Kumar 2; Mathew 1; VNIT, Nagpur; Indira Gandhi Centre for Atomic Research, Kalpakkam; Indira Gandhi Centre for Atomic Research, Kalpakkam

9:50 AM Break

10:00 AM
Characterization of Nitronic 30, 40 and 50 Series Stainless Steels and Correlation of Their Microstructure to Their Properties: Costas Fountzoulas 1; Eric Klier 1; James Catalano 1; U.S. Army Research Laboratory

10:20 AM
Characterization of DP980 Steel by 2-Point Correlation Function and Relation to Mechanical Properties: Fan Zhang 1; David Field 1; Annie Ruimii 1; Pui Ching Wo 1; Washington State University; Texas A&M University at Qatar

10:40 AM
High-resolution Imaging and Quantification of Boron Segregation to Austenite Grain Boundaries in High-Strength Steels Using Combined NanoSIMS/EBSD Analysis: Hanis Ayuni Mohd Yusof 1; Katie Moore 1; Chris Grovenor 1; University of Oxford

11:00 AM
Study of Age Hardening Behavior in a 350 Grade Maraging Steel: Leandro Gomes de Carvalho 1; Ronald Lesley Plaut 1; Marcelo de Aquino Martorano 1; Angelo Fernando Padilha 1; Escola Politecnica da Universidade de Sao Paulo
Characterization of Nuclear Reactor Materials and Fuels with Neutron and Synchrotron Radiation — Session I

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Jonathan Almer, Argonne National Laboratory; Meimei Li, Argonne National Laboratory; Donald Brown, Los Alamos National Laboratory; Tiangan Lian, Electric Power Research Institute

Monday AM Room: Grand Harbor Salon 5
March 16, 2015 Location: Yacht & Beach

Session Chair: Jonathan Almer, Argonne National Laboratory

8:30 AM Introductory Comments

8:35 AM Invited Measurements of H Solubility in Zirconium: Mark Daymond1; Oksana Simane2; Eric Tulk2; ‘Queen’s University; ‘Kinetics Inc

9:05 AM Temperature and Grain Size Dependent Deformation Mechanisms of Ultrafine Grained Austenitic Stainless Steel Studied by In Situ Neutron Diffraction: C. Sue1; D. Brown2; S. Maloy1; K. Hartwig2; X. Zhang1; ‘Los Alamos National Laboratory; ‘Texas A&M University

9:25 AM Characterization of Ion Beam Irradiated 304 Stainless Steel Utilizing Nanoindentation and Laue Microdiffraction: Amanda Lupinacci1; Kai Chen2; Martin Kunz3; Ashley Reichardt1; Hi Vo1; Manuel Abad1; Andrew Minor1; Peter Hosemann2; ‘University of California, Berkeley

9:45 AM Characterization of Neutron-Irradiated HT-UPS Steel by High-Energy X-ray Diffraction Microscopy: Meimei Li1; Xuan Zhang2; Jun-Sang Park1; Jonathan Almer1; ‘Argonne National Lab

10:05 AM Break

10:20 AM In-Situ Studies of Dislocation Structure Evolution during Annealing of Neutron Irradiated Zr-2.5Nb Alloy: Levente Balogh1; Donald Brown1; Bjorn Clausen2; Fei Long1; Paula Mosbrucker3; Thomas Sisneros2; Mark Daymond1; ‘Queen’s University; ‘Los Alamos National Laboratory; ‘University of California, Berkeley

10:40 AM Synchrotron Radiation Study on 14YWT and MA957 Nanostructured Ferritic Alloys: Kuo Mo1; Di Yun1; Jun-Li Lin2; Yinbin Miao2; David Hoelzer1; Jonathan Almer1; Huijuan Zhao3; Abdellatif Yacout2; ‘Argonne National Laboratory; ‘University of Illinois at Urbana-Champaign; ‘Oak Ridge National Laboratory; ‘Clemson University

11:00 AM Characterization of Swift Heavy Ion Induced Effects in Nuclear Materials with Neutron and Synchrotron Radiation: Maik Lang1; Cameron Tracy2; Raul Palomares3; Jacob Shamblin3; Christina Trautmann1; Rodney Ewing4; ‘University of Tennessee; ‘University of Michigan; ‘GSI Helmholtz Centre for Heavy Ion Research; ‘Stanford University

11:20 AM Strain Induced Phase Transformation in a Zirconium Alloy Investigated Using Synchrotron and Neutron Radiation: Christopher Cochrane1; Mark Daymond1; ‘Queen’s University

11:40 AM Characterization of Nano-Precipitates in Irradiated RPV Steels: A Critical Comparison of SANS and APT Techniques: Peter Wells1; Takuya Yamamoto1; G. Odette1; ‘UC Santa Barbara

12:00 PM Concluding Comments

During this period, poster presenters will be given a chance to briefly describe their work.

8:30 AM Invited Response Embedded Atom Method of Interatomic Potentials: Hanchen Huang1; ‘Northeastern University

9:00 AM Computationally Efficient Method to Generate Multi-Component EAM Potentials: David Riegner1; Logan Ward2; Wolfgang Windl1; ‘The Ohio State University; ‘Northwestern University

9:20 AM Development of Semi-Empirical Potentials Suitable for Simulation of Solidification in Al-Sm Alloys: Mikhail Mendelev1; Seth Wilson2; Feng Zhang1; Matthew Kramer1; Cai-Zhuang Wang1; Kai-Ming Ho1; ‘Ames Laboratory

9:40 AM Invited Monte Carlo Methods for Free Energy Calculations: Y. Mishin1; ‘George Mason University

10:10 AM Break

10:25 AM Development of a New Angular-Dependent Interatomic Potential for the Cu-Ta System and Applications to the Design of Immiscible Nano-Crystalline Alloys: Ganga Purja Pun1; K. Darling1; L. Kecskes2; Y. Mishin1; ‘George Mason University; ‘US Army Research Laboratory

10:45 AM Atomistic Modeling Study of the Role of Oxygen Interstitials in the Behavior of Titanium Alloys: William Joost1; Sreeramamurthy Anken1; Maia Kuklja1; ‘University of Maryland

11:05 AM Application and Validation of Inter-Atomic Potentials for Modeling Helium-3 Bubble Growth in Aging Palladium Tritides: Jonathan Zimmermann1; Lucas Hale1; ‘Sandia National Laboratories

11:25 AM A Variable Charge Reactive Potential for Cyanogens for Organic-Metal Nitrides Interactions: Jackelyn Martinez1; Dundar Yilmaz1; Tao Liang1; Susan Sinnott1; Simon Phillpot1; ‘University of Florida

11:45 AM Computational Nanomechanics of Single-Chain Molecular Bond Rupture in Hydrocarbon-Based Polymers Using Modified Embedded-Atom Method Potential: Susan Nouranian1; Steven Gwaltney1; Michael Baskes1; Mark Tschopp1; Mark Horstemeyer1; ‘Mississippi State University

12:05 PM Towards a Fully Automated Framework for Generation and Optimization of Empirical Potentials: H. Metin Aktulga1; Bernd Hartke1; ‘Michigan State University; ‘Christian-Albrechts-University Kiel

12:25 PM An Interatomic Potential for Ionic+Covalent+Metallic Materials Based on the Modified Embedded-Atom Method: Eunkoo Lee1; Kwang-Ryeol Lee1; Byeong-Joo Lee1; ‘Pohang University of Science and Technology; ‘KIST

Computational Modeling and Stochastic Methods for Materials Discovery and Properties — Empirical Potentials

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois at Urbana-Champaign; Mikhail Mendelev, Ames Laboratory; Adrén van Duin, Pennsylvania State University

Monday AM Room: Northern Hemisphere A4
March 16, 2015 Location: Dolphin

Session Chairs: Hanchen Huang, Northeastern University; Mikhail Mendelev, Ames Laboratory

8:30 AM Invited

Response Embedded Atom Method of Interatomic Potentials: Hanchen Huang1; ‘Northeastern University

9:00 AM Computationally Efficient Method to Generate Multi-Component EAM Potentials: David Riegner1; Logan Ward2; Wolfgang Windl1; ‘The Ohio State University; ‘Northwestern University

9:20 AM Development of Semi-Empirical Potentials Suitable for Simulation of Solidification in Al-Sm Alloys: Mikhail Mendelev1; Seth Wilson2; Feng Zhang1; Matthew Kramer1; Cai-Zhuang Wang1; Kai-Ming Ho1; ‘Ames Laboratory

9:40 AM Invited

Monte Carlo Methods for Free Energy Calculations: Y. Mishin1; ‘George Mason University

10:10 AM Break

10:25 AM Development of a New Angular-Dependent Interatomic Potential for the Cu-Ta System and Applications to the Design of Immiscible Nano-Crystalline Alloys: Ganga Purja Pun1; K. Darling1; L. Kecskes2; Y. Mishin1; ‘George Mason University; ‘US Army Research Laboratory

10:45 AM

Atomistic Modeling Study of the Role of Oxygen Interstitials in the Behavior of Titanium Alloys: William Joost1; Sreeramamurthy Anken1; Maia Kuklja1; ‘University of Maryland

11:05 AM Application and Validation of Inter-Atomic Potentials for Modeling Helium-3 Bubble Growth in Aging Palladium Tritides: Jonathan Zimmermann1; Lucas Hale1; ‘Sandia National Laboratories

11:25 AM

A Variable Charge Reactive Potential for Cyanogens for Organic-Metal Nitrides Interactions: Jackelyn Martinez1; Dundar Yilmaz1; Tao Liang1; Susan Sinnott1; Simon Phillpot1; ‘University of Florida

11:45 AM Computational Nanomechanics of Single-Chain Molecular Bond Rupture in Hydrocarbon-Based Polymers Using Modified Embedded-Atom Method Potential: Susan Nouranian1; Steven Gwaltney1; Michael Baskes1; Mark Tschopp1; Mark Horstemeyer1; ‘Mississippi State University

12:05 PM Towards a Fully Automated Framework for Generation and Optimization of Empirical Potentials: H. Metin Aktulga1; Bernd Hartke1; ‘Michigan State University; ‘Christian-Albrechts-University Kiel

12:25 PM

An Interatomic Potential for Ionic+Covalent+Metallic Materials Based on the Modified Embedded-Atom Method: Eunkoo Lee1; Kwang-Ryeol Lee1; Byeong-Joo Lee1; ‘Pohang University of Science and Technology; ‘KIST
Computational Thermodynamics and Kinetics —
Diffusion and Defect Dynamics
Sponsored by: TMS Functional Materials Division (formerly EMP MD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Maryam Ghazisaeidi, The Ohio-State University; Vidvuds Ozolins, University of California Los Angeles

Monday AM 
March 16, 2015
Room: Oceanic 3
Location: Dolphin

Session Chair: Danny Perez, Los Alamos National Laboratory

8:30 AM
A DFT Study of Impurity Diffusion in bcc-Iron: Casper Versteylen1; Marcel Sluiter1; 1TU Delft

8:50 AM
Establishment of Mg Diffusivity Database Using Diffusion-Multiple and CALPHAD Approaches: Wei Zhong1; Weihua Sun1; Ji-Cheng Zhao1; Alan Luo1; 1The Ohio State University

9:10 AM
First Principles Study of the Charge Effect on Vacancy Diffusion Barriers in Alumina: Yinkai Lei1; Guofeng Wang1; 1University of Pittsburgh

9:30 AM
Adaptive C Content in Coherently Strained 954-Carbides — An Ab-Initio Explanation of Atom Probe Tomography Data: Poulami Dey1; Roman Nazarov1; Martin Friák1; Mengji Yao1; Tilmann Hickel1; Jörg Neugebauer1; 1Max-Planck-Institut für Eisenforschung GmbH; 2Lawrence Livermore National Laboratory; 3Institute of Physics of Materials, v.v.i., Academy of Sciences of the Czech Republic

9:50 AM Break

10:10 AM
Analysis of the Stability and Diffusion of Individual Vacancies Using the Vacancy Phase-Field Crystal Model: David Montiel1; Katsuyo Thornton1; 1University of Michigan

10:30 AM
Solute Cluster and Vacancy Interaction in Multicomponent Al Alloys: Dongwoon Shin1; 1Oak Ridge National Laboratory

10:50 AM Invited
Evolution of Defects Near a Dislocation: Solute and Vacancies in Nickel: Dallas Trinkle1; Zebo Li1; Thomas Garnier1; Venkateswara Manga2; Maylise Nastar2; Pascal Bellon2; Robert Averbak1; 1University of Illinois, Urbana-Champaign; 2University of Arizona; 3CEA, DEN, Service de Recherches de Métallurgie Physique

11:20 AM
The Thermodynamics of Cottrell Atmospheres: John Cahn1; Yuri Mishin1; 1NIST; 2George Mason University

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Neil Bourne, University of Manchester; Eric Brown, Los Alamos National Laboratory; James Williams, Ohio State University; Kenneth Vecchio, University of California San Diego

Monday AM 
Room: Asia 2
March 16, 2015
Location: Dolphin

Session Chairs: Eric Brown, Los Alamos National Laboratory; Neil Bourne, University of Manchester

8:30 AM Invited
Understanding the Microstructure in Shocked Solids: Yogendra Gupta1; 1Washington State University

8:50 AM Invited
Micromechanics of Solid-Solid Phase Transformations under Dynamic Conditions: Frank Addessio1; Curt Bronkhorst1; Turab Lookman1; Donald Brown1; Ellen Cerreta1; Paulo Rigg1; 1Los Alamos National Laboratory

9:10 AM Invited
Identifying Deformation Induced Porosity Mechanisms in Polycrystalline Metallic Materials: Curt Bronkhorst1; Neil Bourne1; George Gray1; Francis Addessio1; Veronica Livescu1; Ellen Cerreta1; Milan Ardeljan1; Marko Knezevic1; 1Los Alamos National Laboratory; 2The University of Manchester; 3University of New Hampshire

9:30 AM
A Continuum Dislocation Dynamics Model for Single Crystals: Ioannis Mastorakos1; Hussein Zbib1; 1Clarkson University; 2Washington State University

9:50 AM
Mechanical Behavior and Characterization of Single Crystal Titanium Deformed by Split Hopkinson Pressure Bar: Benjamin Morrow1; Ricardo Lebensohn1; Carl Trujillo1; Francis Addessio1; Curt Bronkhorst1; Turab Lookman1; Ellen Cerreta1; 1Los Alamos National Laboratory

10:10 AM Break

10:30 AM
Microstructure-Sensitive Modeling of Void Nucleation in Single-Phase Polycrystalline Materials: Evan Lieberman1; Anthony Rollett1; Edward Kobert1; Ricardo Lebensohn1; 1Carnegie Mellon University; 2Los Alamos National Laboratory

10:50 AM Invited
Crystal Plasticity Analysis of Constitutive Behavior of 5754 Aluminum Sheet: Minh-Son Pham1; Anthony Rollett1; Adam Creuziger1; Mark Iadicola1; Tim Foecke1; 1NIST; 2Carnegie Mellon University

11:10 AM
Effects of Coupled Shear and Compression Upon Slip and Twinning in Dynamically Loaded Ta: Insights from the Atomistic Scale: Timothy Germann1; Ramon Ravelo1; Brad Hollian1; 1Los Alamos National Laboratory; 2University of Texas El Paso

11:30 AM
A Dislocation Dynamics Model of the Plastic Flow of fcc Polycrystals: Abigail Hunter1; Dean Preston1; 1Los Alamos National Laboratory

11:50 AM
Incorporating Interface Affected Zones into Crystal Plasticity: Jason Mayeur1; Irene Beyerlein1; Curt Bronkhorst1; 1Los Alamos National Laboratory

12:10 PM
Local Stress Associated with Twin Propagation and Transmission in Mg: M. Arul Kumar1; Irene Beyerlein1; Carlos Tome1; 1Los Alamos National Laboratory
12:30 PM Cancelled
Temperature Effects on the Thermo-Mechanical Response of Textured Alpha Uranium: Christopher Calhoun1; Elena Garlee1; Thomas Sissers2; Don Brown1; Sean Agnew1; 1University of Virginia; 2Y-12 Security Complex; 3Los Alamos National Laboratory

Development of “Weak Links” during the Processing of Metallic Materials — Overview
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Lee Semiatin, US Air Force Research Laboratory; Anthony Rollett, Carnegie Mellon University; Thomas Bieler, Michigan State University; Mark Stoudt, National Institute of Standards and Technology

Monday AM Room: Peacock
March 16, 2015 Location: Swan
Session Chairs: Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, NIST

8:30 AM Introductory Comments
8:45 AM Keynote
Limiting Features in Wrought Aerospace Alloys: David Furrer1; A Haynes1; Vasishth Venkatesh; 1Pratt & Whitney

9:15 AM Invited
Cavitation during the Hot Working of Alpha/Beta Titanium Alloys: P.D. Nicolaou1; R.L. Goetz2; T.R. Bieler1; S.L. Semiatin1; 1Bibliosynergatiki SA; 2Rolls-Royce Corp; 1Michigan State University; 2Air Force Research Laboratory

9:45 AM Invited
When the Infrequent Dominate Microstructure in Hot Forming: Eric Taleff1; 1The University of Texas at Austin

10:15 AM Break

10:30 AM Invited
Modeling of Ductile Fracture for Cold Working Processes: Howard Kuhns1; 1University of Pittsburgh

11:00 AM Invited
Recent Advances in Process and Material Modeling Applications: Ravi Shankar1; Wei-Tsu Wu1; Masoud Anahid1; Jixi Zhang1; 1Scientific Forming Technologies Corporation

11:30 AM Invited
The Potential Role for Impulse and High Velocity in Manufacturing: Glenn Daehn1; Anupam Vivek1; Ryan Brune1; Bert Liu1; Steven Hansen1; 1Ohio State University

12:00 PM Invited
Overcoming Challenges in Damage Engineering: Design of Reliable Damage Quantification Methodologies and Damage-Resistant Microstructures: Cem Tusan1; Dingshun Yan1; Johan Hoefnagels1; Dierk Raabe1; 1Max-Planck Institute for Iron Research

Dynamic Probing of Microstructure Evolution in Nanostructured Materials — Dynamic Probing Technique
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Nan Li, Los Alamos National Laboratory; Caizhi Zhou, Missouri University of Science and Technology; Dan Gianola, University of Pennsylvania; Marc Legros, CEMES-CNRS

Monday AM Room: Mockingbird 2
March 16, 2015 Location: Swan
Session Chairs: Nan Li, Los Alamos National Laboratory; Marc Legros, CEMES-CNRS

8:30 AM Introductory Comments
8:35 AM Invited
Characterization and Modeling of Transformation-Induced Microstructure Evolution in NiTi Microcrystals: Michael Mills1; Matthew Bowers1; Xiang Chen1; Yipeng Gao1; Yunzhi Wang1; Peter Anderson1; 1The Ohio State University

9:05 AM Invited
In Situ TEM Characterization of Dislocation Nucleation and Multiplication Mechanisms: Nan Li1; Jian Wang1; X-Y. Liu1; Richard Hoagland1; Amit Misra1; 1Los Alamos National Laboratory; 1University of Michigan

9:35 AM Invited
Local and Transient Strain Mapping during In-Situ Deformation in a TEM: Christoph Gammer1; Josh Kacher1; Jim Ciston2; Cory Czarnik1; Oden Warren1; Andrew Minor1; 1UC Berkeley and LBL; 2LBL; 1Gatan, Inc.; 1Hysitron, Inc.

10:05 AM Break

10:25 AM Invited
Quantitative In-Situ ACOM-STEM Analysis of Nanocrystalline Metals during Mechanical Straining and Heating: Christian Kuebel1; Aaron Kobler1; Krishna Kanth1; Horst Hahn1; 1KIT

10:55 AM In Situ TEM Experiments and MD Simulations of Grain Boundary Mediated Plasticity: Marc Legros1; Armin Rajabzadeh1; Frédéric Mompiou1; Nicolas Combe1; Dmitri Molodov1; Sylvie Larigue-Korinek1; 1CEMES-CNRS; 2RWTH Aachen University; 3Institut de Chimie et des Matériaux Paris-est

11:15 AM Invited
Continuous Stiffness Testing – How Dynamic Indentation Testing Influences the Mechanical Properties: Verona Maier1; Daniel Schwertwitz1; Reinhard Pippan1; Daniel Kiener1; 1Erich-Schmidt Institute for Materials Science; 2Montanuniversität Leoben

11:45 AM In Situ Observations of Deformation Mechanisms in Nanocrystalline Metals: Paul Rottmann1; Kevin Hemker1; 1Johns Hopkins University

EPD Distinguished Lecture
Sponsored by: TMS Extraction and Processing Division

Monday AM Room: Grand Harbor Salon 2
March 16, 2015 Location: Yacht & Beach
Session Chair: Mark E. Schlesinger, Missouri University of Science and Technology

8:30 AM Introductory Comments
8:35 AM Invited
Green Technology for Metals Production: Uday Pal1; 1Boston University

9:15 AM Concluding Comments
Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — Understanding Microstructural 3-D Effects and Fatigue Mechanism

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Monday AM	Room: Australia 3
March 16, 2015
Location: Dolphin

Session Chairs: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

8:30 AM Introductory Comments

8:35 AM Keynote
3D Characterization and Modeling of Fatigue Cracks: Robert Suter1; Anthony Rollett2; ‘Carnegie Mellon University

9:10 AM Invited
A Microstructure-Based Model for Simulating Short Fatigue Crack Growth Behaviors in 3-D: Tongguang Zhai1; Wei Wen2; Pei Cai3; ‘University of Kentucky

9:35 AM Invited
2D vs 3D Analysis of LCF Short Cracks Initiated within Non Metallic Inclusions in an Inconel 718 Superalloy: Damien Texier1; McLean Echlin2; Ana Casanova Gomez2; Patrick Villechaise3; Jonathan Cormier4; Stéphane Pierret5; Tesa Pollock6; ‘Institut Pprime - UCSB; ‘UCSB; ‘University of Cambridge; ‘Institut Pprime, CNRS – ENSMA – Université de Poitiers; ‘Nanoelectronic Devices and Electronics, CNRS – ENSMA – Université de Poitiers; ‘Nanoelectronic Devices and Electronics Group

9:55 AM Invited
3-D Concurrent Multiscale Modeling of Microstructurally Small Fatigue-Crack Evolution in an Aluminum Alloy from Synchrotron-Based Measurements: Ashley Spear1; Jacob Hochhalter1; Shiu D. Li2; Jonathon Lind3; Robert Suter4; Anthony Ingraffea5; ‘University of Utah; ‘NASA Langley Research Center; ‘Lawrence Livermore National Laboratory; ‘Carnegie Mellon University; ‘Cornell University

10:15 AM Break

10:35 AM
3-D Effects of Constituent Particles on Fatigue Crack Initiation in High Strength Aluminum Alloys by FIB: Ian Jin1; Tongguang Zhai2; Pei Cai3; Wei Wen4; Lin Yang5; Dongjie Ke6; ‘University of Kentucky; ‘Metals-New Aluminum Technology Limited

10:55 AM Invited
Understanding Twinning-Detwinning Activity in Magnesium Alloys: Antonios Kontsos1; Kavan Hazeli1; Mike Cabal1; Jefferson Cuadra1; Brian Wisner2; Prashanth Vanniamparambil3; ‘Drexel University; ‘Johns Hopkins University

11:20 AM
Study of Fatigue Crack Nucleation Mechanisms Using High Resolution Electron Backscatter Diffraction and Digital Image Correlation: Jun Jiang1; T. Britton1; Fionn Dunne1; ‘Imperial College London

11:40 AM Invited
Cyclic-loading Induced Lattice-Strain Asymmetry in Loading and Transverse Directions: E-Wen Huang1; Jhen-Yi Huang2; Rozalia Barabash3; ‘National Chiao Tung University; ‘Oak Ridge National Laboratory

Friction Stir Welding and Processing VIII — High Temperature Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory

Monday AM	Room: Northern Hemisphere A3
March 16, 2015
Location: Dolphin

Session Chairs: Yutaka Sato, Tohoku University; Tracy Nelson, Brigham Young University

8:30 AM Keynote
Tool Life for Different eBN Tool Materials Associated with Friction Stir Welding of A516 Grade 70 Steel: Murray Mahoney1; Russell Steel2; Jon Babb3; Chris Tucker4; Dale Fleck5; ‘Retired from Rockwell Scientific; ‘MegaStir

9:10 AM Invited
A Study of Friction Stir Welding for Clad Pipelines: Tsubasa Katayama1; ‘Nippon Steel & Sumikin Engineering co., ltd.

9:30 AM Invited
Defect Tolerance Investigation of Friction Stir Welded DH36 Steel: Athanasios Toumpis1; Alexander Galloway2; Ryan Stevenson2; Stephen Cather2; ‘University of Strathclyde; ‘TWI

9:50 AM
Friction Stir Welding of Creep Strength Enhanced Ferritic Steels for Power Plant Applications: Jens Darself1; David Catalini2; Yuri Hovanski2; Glenn Grant1; ‘Pacific Northwest National Laboratory

10:10 AM Break

10:30 AM
Fatigue Assessment of Friction Stir Welded DH36 Steel: Athanasios Toumpis1; Alexander Galloway2; Helena Polezhayeva3; Lars Molt3; ‘University of Strathclyde; ‘Lloyd’s Register; ‘Center of Maritime Technologies

10:50 AM Invited
Friction Stir Welding of Induction Motor Components for Increased Efficiency in Electric Vehicles Applications: Glenn Grant1; David Catalini2; Blair Carlson1; Robert Smyrnski3; John Agapiou3; ‘Pacific Northwest National Laboratory; ‘General Motors Research and Development

11:10 AM
Friction Stir Welding of Invar 36: Murray Mahoney1; Russell Steel2; Dale Fleck5; ‘Retired from Rockwell Scientific; ‘MegaStir

11:30 AM
Use of High-Power Diode Laser Arrays for Pre- and Post-Weld Heating during Friction Stir Welding of Steels: Brad Baker1; Terry McNelley1; Manyalibo Matthews2; Mark Rotter2; Alexander Rubenchik2; Sheldon Wu3; ‘Naval Postgraduate School; ‘Lawrence Livermore National Laboratory

11:50 AM
Residual Stress Study in Underwater Friction Stir Welded 304L Steel Joint: Xionghua Ju1; Dongxiao Qiao2; Wei Tang3; Ke An4; Zhili Feng5; ‘Oak Ridge National Laboratory
Fundamental Methods for Integrating Microstructure-Property-Design Relationships into the ICME Paradigm — Microstructure Characterization and Representation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Christopher Woodward, Air Force Research Laboratory; Somnath Ghosh, Johns Hopkins University

Monday AM  Room: Oceanic 2
March 16, 2015  Location: Dolphin

Session Chairs: Michael Groeber, Air Force Research Laboratory; Christopher Woodward, Air Force Research Laboratory

8:30 AM Invited
3D Characterization of Twin Boundaries and Their Role in Fatigue Crack Initiation: McLean Echlin1; William Lenthe1; Tresa Pollock1; Jean-Charles Stinvil1; 1University of California Santa Barbara

9:00 AM
An Image Based Finite Element Model for Ni-Based Superalloys Using a Two Scale Constitutive Model: George Weber1; Chris Woodward1; Dennis Dimiduk1; Somnath Ghosh1; 1Johns Hopkins University; 2Air Force Research Laboratory

9:20 AM Invited
Mining Emergent Material Behavior from Measurements at the Mesoscale: Joel Bernier1; S.F. Li1; Paul Shade1; Todd Turner1; 1Lawrence Livermore National Laboratory

9:50 AM
Coupled High Resolution Experiments and Crystal Plasticity Simulations to Analyze Stress and Strain Partitioning in Multi-Phase Alloys: Cem Tusan1; Martin Diehl1; Dingshun Yan1; Christoph Zambaldi1; Pratheek Shanthraj1; Franz Roters1; Dierk Raabe1; 1Max-Planck Institute for Iron Research

10:10 AM Break

10:30 AM Invited
Creating a Digital Environment for Representing Microstructure: Common Tools for Enabling ICME: Michael Groeber1; Michael Uchic1; Dennis Dimiduk1; Michael Jackson1; 1AFRL

11:00 AM
Generation of Synthetic FRP Microstructures Based on Experimentally Observed Microstructures: Seyed Hamid Reza Sanei1; Ray Fertig1; 1University of Wyoming

11:20 AM Invited
Microstructure Informatics for Mining Structure-Property-Processing Linkages from Large Datasets: Surya Kalidindi1; Ahmet Cecen1; 1Georgia Institute of Technology

High-Performance Aerospace Alloys Design Using ICME Approach — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Awadh Pandey1; Pratt & Whitney; Somnath Ghosh1; Johns Hopkins University; Dongsheng Li1; Pratt & Whitney

Monday AM  Room: Oceanic 6
March 16, 2015  Location: Dolphin

Session Chair: Awadh Pandey1; Pratt & Whitney

8:30 AM Keynote
Accelerated Discovery and Development of Multi-Principle Element Alloys Via ICME: Dan Miracle1; Oleg Senkov1; Jon Miller1; Christopher Woodward1; 1AP Research Laboratory

9:15 AM
Challenges and Approaches Using ICME in Turbine Engine Alloy Design: Dongsheng Li1; Vasisht Venkatesh1; Awadh Pandey1; 1Pratt & Whitney

9:35 AM
Atomistic Observations of Near Crack Plasticity Mechanisms in Precipitation Hardened Alloys: Thomas Berton1; Chandra Veeer Singh1; 1University of Toronto

9:55 AM Break

10:15 AM Invited
Modeling Fatigue Crack Nucleation in Polycrystalline Ti Alloys Using Crystal Plasticity FE Models: Somnath Ghosh1; Ahmad Shaba1; Adam Pilchak1; Johns Hopkins University; 2AFRL/RX

10:45 AM
Effect of Boron Addition on Microstructure and Property of Low Cost Beta Titanium Alloy: Cheng-Lin Li1; Yang Yu1; Wen-Jun Ye1; Song-Xiao Hui1; Xu-jun Mi1; 1General Research Institute for Nonferrous Metals

11:05 AM
Emerging Titanium Technologies and Opportunities for Powder Metallurgy Applications: Curt Lavender1; Vineet Joshi1; 2Battelle - Pacific Northwest National Laboratory

11:25 AM
Progress in Structure-Property Modeling Tools for ’947-TiAl: Kyle Brindley1; Richard Neu1; 1Georgia Institute of Technology

High-Temperature Electrochemistry II — Molten Salt Technology

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Monday AM  Room: Grand Harbor Salon 2
March 16, 2015  Location: Yacht & Beach

Session Chairs: Jerome Downey1; Montana Tech of the Univ of Montana; Steven Herrmann1; Idaho National Laboratory

9:30 AM
A Method for Improving Faradaic Efficiency of Magnesium Production Employing Solid Oxide Membrane (SOM) Based Electrochemical Cells: Uday Pal1; Xiaofei Guan1; Shizhao Su1; 1Boston University

10:10 AM Break

10:30 AM
Electrochemical Preparation of Nano-Materials in High Temperature Molten Salts: Dihua Wang1; Wei Xiao1; Huayi Yin1; 1Wuhan University

11:10 AM
Fabrication of Carbon Film on Stainless Steel in the Molten Salt: Qian Xu1; Qushi Song1; Zhiqiang Ning1; 1Northeastern University

11:50 AM
Studies on the Purification of Na3AlF6-K2SiF6-AlF3 Melts: Zhongliang Tian1; Shu Yang1; Yanqing Lai1; Xun Hu1; Jie Li1; 1Central South University
Hume-Rothery Award Symposium: Multicomponent Alloy Metallurgy, the Bridge from Materials Science to Materials Engineering — Thermodynamics
Sponsored by: TMS Functional Materials Division (formerly EMPD), TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Mark Asta, University of California at Berkeley; Raymundo Arroyave, Texas A&M University

Monday AM  Room: Oceanic 1
March 16, 2015  Location: Dolphin

Session Chairs: Mark Asta, University of California at Berkeley; Anton Van der Ven, University of California at Santa Barbara

8:30 AM Invited
Solidification of Multicomponent Alloys: William Boettinger; ‘NIST

9:00 AM Invited
The Open Quantum Materials Database (OQMD): Multicomponent Ground State Equilibria and Accuracy of DFT Formation Energies: Chris Wolverton; Scott Kirklin; James Saal; Bryce Meredig; Alex Thompson; Jeff Doak; ‘Northwestern University

9:30 AM Invited
Cluster Expansions for Thermodynamics and Kinetics of Multicomponent Mixtures on Fixed Lattices: Marcel Sluiter; Jayashree Pan; ‘TU Delft

10:00 AM Break

10:30 AM Invited
Development of Interatomic Potentials For Multi-component Systems: Michael Baskes; ‘Mississippi State University, Los Alamos National Laboratory, University of California San Diego, and University of North Texas

11:00 AM Invited
Constitution of Calphad Multicomponent Databases: Nathalie Dupin; ‘Calcul Thermodynamique

11:30 AM Invited
Is Alloy Thermodynamics Still a Matter of Principles?: Patrice Turchi; Aurelien Perron; Alexander Landa; Per Söderlind; ‘Lawrence Livermore National Laboratory

Integrative Materials Design II: Performance and Sustainability — Developments and Directions in Additive Manufacturing
Sponsored by: TMS Structural Materials Division; TMS: Materials Processing and Manufacturing Division; TMS: Integrated Materials Engineering Committee; TMS: Mechanical Behavior of Materials Committee; TMS: Materials and Society Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Monday AM  Room: Grand Harbor Salon 8
March 16, 2015  Location: Yacht & Beach

Session Chairs: Diana Lados, Worcester Polytechnic Institute; Karen Taminger, NASA Langley Research Center

8:30 AM Invited
Additive Manufacturing at GE Aviation: Changing the Way We Do Business: David Abbott; ‘GE Aviation

8:55 AM Invited
Additive Manufacturing of Large Polymer Matrix Composite Systems: William Peter; Chad Duty; Lonnie Love; Brian Post; Rachel Smith; Peter Lloyd; Randy Lind; James Earle; Orlando Rios; Vlastimil Kunc; ‘Oak Ridge National Laboratory

9:20 AM Invited
Demonstration of Texture Control through Additive Manufacturing: Ryan Dehoff; Michael Kika; W.J. Sames; F.A. List; M.J. Goin; M.T. Pearce; Kinga Unocic; S.S. Babu; ‘Oak Ridge National Laboratory

9:45 AM Invited
EBF3 Design and Sustainability Considerations: Karen Taminger; ‘NASA Langley Research Center

10:10 AM Break

10:30 AM
Microstructure Evolution, Tensile Properties, and Fatigue Damage Mechanisms in Ti-6Al-4V Alloys Fabricated by Two Additive Manufacturing Techniques: Yuwei Zhai; Haize Galarraga; Diana Lados; ‘Worcester Polytechnic Institute

10:50 AM Invited
Large Scale Additive Manufacturing of Aerospace Components: Brian Thompson; ‘GKN Aerospace

11:15 AM Invited
Additive Manufacturing and Architectured Materials: Christopher Spadaccini; ‘Lawrence Livermore National Laboratory

11:40 AM
Design of Manufacturable Material Architectures Using Topology Optimization: Seunghyun Ha; Josephine Carstensen; James Guest; ‘Johns Hopkins University

Magnesium Technology 2015 — Keynote Session
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Monday AM  Room: Northern Hemisphere E1
March 16, 2015  Location: Dolphin

Session Chairs: Michele Manuel, University of Florida; Alok Singh, National Institute for Materials Science (NIMS)

8:30 AM Introductory Comments
Magnesium Technology Symposium Overview and Awards

8:50 AM Keynote
Reducing Weight for Transportation Applications: Technology Challenges and Opportunities: Alan Taub; ‘University of Michigan

9:30 AM Keynote
The Application of Magnesium Alloys in Aircraft Interiors- Changing the Rules: Bruce Davis; ‘Magnesium Elektron North America

9:50 AM Break

10:10 AM Invited
Emerging Science and Research Opportunities for Metals and Metallic Nanostructures: A Report on the NSF MMN Workshop: Tresa Pollock; Carol Handwerker; ‘University of California Santa Barbara; ‘Purdue University

10:30 AM Invited
Solute Segregation and Aggregation in Mg Alloys: Jian-Feng Nie; Yuman Zhu; Nick Wilson; ‘Monash University; ‘CSIRO Manufacturing Flagship

10:50 AM Panel Discussion
Magnetic Materials for Energy Applications V — Magnetocaloric Materials I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Francis Johnson, GE Global Research; Raju Ramanujan, Nanyang Technological University; Paul Ohodnicki, National Energy Technology Laboratory
Monday AM Room: Grand Harbor Salon 7 March 16, 2015 Location: Yacht & Beach
Session Chairs: Frank Johnson, GE Global Research; Victorino Franco, University of Seville

8:30 AM Invited Development of Magnetocaloric Materials for Magnetic Refrigeration Technology: Akiko Satio; Shiho Kaji; Tadahiko Kobayashi; Toshiba Corporation
9:00 AM Invited Recent Results on Transition Metal Based Magnetocaloric Materials: Ekkes Brück; Delhi University of Technology
9:30 AM Mu Rich Meta Magnetic Shape Memory Alloys: Jose Manuel Barandiaran; Volodymyr Chernenko; Patricia Lazpita; Merivan Sasmaz; BCMaterials and UPV/EHU; Firat University
9:50 AM Break
10:05 AM Invited DRREAM: Reducing Rare Earth Use in Applications of Magnetocalorics: Karl Sandeman; City University of New York and Imperial College London
10:35 AM Low Cost, High Performance Magnetocaloric Nanomaterials: Raju Ramanujan; X. Chen; V. Chaudhary; D.V.M. Repaka; Nanyang Technological University
10:50 AM Break

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Fuels I
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rampreshad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory
Monday AM Room: Grand Harbor Salon 6 March 16, 2015 Location: Yacht & Beach
Session Chair: Rampreshad Prabhakaran, Pacific Northwest National Laboratory

8:30 AM Thermal Conductivity of U-Mo Fuel as a Function of Burnup: Douglas Burke; Andrew Casella; Edgar Buck; Amanda Casella; Matthew Edwards; Paul MacFarlan; Karl Pool; Frances Smith; Francisca Steen; Pacific Northwest National Laboratory
8:50 AM A Formed Can Approach to Hot Isostatically Press-Bonding Aluminum Cladding to Monolithic Uranium-10 wt. pct. Molybdenum Fuel Plates: Kester Clarke; Laura Tucker; Joel Montalvo; Jeffrey Scott; Beverly Aikin; Victor Vargas; Matthew Dvornak; Cheng Liu; Manuel Lovato; Richard Hudson; Donald Buchoz; Matthew Strandy; David Dombrowski; Los Alamos National Laboratory
9:10 AM Alternative Approaches for the Zr Coating of Low Enrichment U-10Mo High Performance Research Reactor Fuel: Curt Lavender; Ayoub Soulami; Vineet Joshi; Doug Burke; Dean Paxton; Greg Coffey; Battelle - Pacific Northwest National Laboratory
9:30 AM Microstructures Observed in U-Mo Dispersion Fuel with Magnesium Matrix: Dennis Keiser; Jan-Fong Jue; Jian Gan; Brandon Miller; Adam Robinson; Pavel Medvedev; Idaho National Laboratory
9:50 AM Diffusional interactions in U-Mo vs. AA6061 Diffusion Couples Annealed at 600°C and 550°C: E. Perez; D.D. Keiser, Jr.; Y.H. Sohn; Idaho National Laboratory; University of Central Florida
10:10 AM Break
10:30 AM Evolution of Phase Constituents and Microstructure in Hot Isostatic Pressed Monolithic U-Mo Fuel Plates in AA6061 Cladding with Zr Diffusion Barrier: Youngjoo Park; Nicholas Eriksson; Dennis Keiser; Yongho Sohn; Idaho National Laboratory
10:50 AM Evolution of Phase Constituents and Microstructure in the U-10wt.%Mo Alloy with Various Zr Additions after Heat Treatment at 900, 650, and 560°C: Nicholas Eriksson; Youngjoo Park; Dennis Keiser; Yongho Sohn; University of Central Florida; Idaho National Laboratory
11:10 AM As Fabricated Microstructures of Diffusion Barriers on U-Mo Dispersion Particles in Al-Matrix: E. Perez; D.D. Keiser, Jr.; A. Leenaers; S. Van den Berge; T. Wieneck; Idaho National Laboratory; Centre de l’Energie Nucléaire (SCK CEN); Argonne National Laboratory
11:30 AM Interdiffusion and Reaction between U-Mo and Zr at 650°C as a Function of Time: Youngjoo Park; Dennis Keiser; Yongho Sohn; University of Central Florida; Idaho National Laboratory

Materials Processing Fundamentals — Extractive Materials Processing
Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: James Yurko, Materion Brush Beryllium and Composites; Antoine Allanoire, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Jonghyun Lee, University of Massachusetts; Laura Bartlett, Texas State University
Monday AM Room: Grand Harbor Salon 3 March 16, 2015 Location: Yacht & Beach
Session Chair: Antoine Allanoire, Massachusetts Institute of Technology

9:30 AM Arsenic and Antimony Removal from Copper Concentrates by Digestion with NaHS-NaOH: Maria Ruiz; Felipe Daroch; Rafael Padilla; University of Concepcion
9:50 AM Carbon-Free Solid Oxide Membrane Based Electrolysis Process for Direct Production of Solar Grade Silicon from Silica: Yongho Jang; Shizhao Su; Xiao Han; Uday Pal; Soumendra Basu; Boston University
10:10 AM Break
10:25 AM Effect of Ni on the Synthesize of Boron Carbide via Aerosol Method: Celaletdin Ergun; Beril Ozcelik; Istanbul Technical University
10:45 AM Rate of Metal Deposition from Aqueous Solutions: Anne-Marie Suriano; Stanley Howard; South Dakota School of Mines and Technology
11:05 AM
Electrochemical Studies On Reduction of Cobalt Tetrafluoroborate in 1-butyl-3-Methylimidazolium Tetrafluoroborate Ionic Liquids: Min Li; Zhaowen Wang; Ramana Reddy; 'The University of Alabama; 'Northeastern University

11:25 AM
Extracting Alumina from Coal Fly Ash with Concentrated Sulfuric Acid Sintering and Ultrasound Aided Leaching: Wenbo Luo; Jilai Xue; Jun Zhu; Kang Liu; Chunlei Yang; Fusheng Mao; 'University of Science and Technology Beijing

MHD 2015: Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing — Electromagnetic Separation
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee Program Organizers: Ramana Reddy, The University of Alabama; Thinhim Natarajan, U. S. Steel

Monday AM  Room: Swan 2
March 16, 2015  Location: Swan

Session Chairs:  David Robertson, Missouri University of Science & Technology; Dahlia Kasperski, University of Alabama

9:30 AM  Introductory Comments
9:35 AM  Invited
Remembrance of Life Time Academic Achievements of Professor Nagy El-Kaddah: Thinhim Natarajan; Ramana Reddy; David Robertson; 'U. S. Steel; 'The University of Alabama; 'Missouri University of Science and Technology

9:50 AM  Invited
Impact of Coil Geometry on Magneto-Hydro-Dynamic Flow in Liquid and Its Relevance to Inclusion Separation by Electromagnetophoresis: Mark Kennedy; Jon Bakken; Ragnhild Aune; 'Proval Partners SA; 'NTNU

10:15 AM  Break

10:30 AM  Invited
Online Electromagnetic Filtration of Molten Aluminum Using a Multistage Separator System: Da Shu; Jun Wang; Baode Sun; 'Shanghai Jiao Tong University

10:55 AM  Invited
Prediction of Inclusions Distribution in a Steel Continuous Casting Slab Cast with FC-Mold: Lifeng Zhang; Qiangqiang Wang; 'University of Science and Technology Beijing

11:20 AM  Invited
Application of Electromagnetic Stirring in Continuous Casting for the Production of High Quality Steel: Takashi Sawai; Hiroshi Harada; Takehiko Toh; 'Nippon Steel & Sumitomo Metal Corporation

11:45 AM  Invited
Recent LIMMCAST Results on Modelling of Steel Casting: Gunter Gerbeth; Sven Eckert; Klaus Timmel; 'Helmholtz-Zentrum Dresden-Rossendorf

Micromechanics of Structurally Inhomogeneous Materials: An FMD Symposium in Honor of Armen Khachatryan — Micromechanics of Ferroic Phase Transformations
Sponsored by: TMS Functional Materials Division (formerly EMFMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Phase Transformations Committee Program Organizers: Long Qing Chen, Penn State University; Mark Asta, University of California, Berkeley; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yongmei Jin, Michigan Technological University; Yann Le Bouar, LEM, CNRS/ONERA

Monday AM  Room: Asia 3
March 16, 2015  Location: Dolphin

Session Chair: Long-Qing Chen, Penn State University

8:30 AM  Introductory Comments

8:40 AM  Invited
Phase Field: Prediction of Structure and Properties of Complex Nano- and Atomic Scale Structures: Armen Khachatryan; 'University of California Berkeley

9:20 AM  Invited
Martensitic Transformation Precursor: 3D Phonon Diffuse Scattering Experiments: Yu Wang; Yongmei Jin; Yang Ren; 'Michigan Technological University; 'Argonne National Laboratory

9:50 AM  Invited
Martensitic Transformation Precursor: Phonon Theory: Yongmei Jin; Yu Wang; 'Michigan Technological University

10:10 AM  Break

10:30 AM  Invited
Strain Glass and Ferroic Glass as New Candidates for Novel Properties: Xiaobing Ren; Yu Wang; Yumei Zhou; Dong Wang; Yunzhi Wang; Kazuhiro Otsuka; 'National Institute for Materials Science; 'Xi’an Jiaotong University; 'Ohio State University

11:00 AM  The Microstructure Theories of Dislocated Martensitic Steels: Liang Qi; Armen Khachatryan; John Morris; 'University of California Berkeley

Microstructural Processes in Irradiated Materials — Reactor Pressure Vessel and Ferritic/Martensitic Alloys
Sponsored by: TMS: Nuclear Materials Committee Program Organizers: Dane Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin

Monday AM  Room: Asia 1
March 16, 2015  Location: Dolphin

Funding support provided by: Idaho National Laboratory
Oak Ridge National Laboratory

Session Chairs: G. Robert Odette, University of California Santa Barbara; Marta Serrano, CIEMAT

8:30 AM  Invited
An Overview of Selected Results from LONGLIFE and PERFORM60 European Projects: Marta Serrano; Eberhard Alstädt; Abderrahim Al Mazouzi; Lorenzo Malerba; 'CIEMAT; 'HZDR; 'EDF; 'SCK CEN
9:00 AM
Atom Probe Tomography Characterizations of Irradiated and Annealed Reactor Pressure Vessel Surveillance Specimens: Michael Miller1; Randy Nanstad2; Kathy Powers1; 1Oak Ridge National Laboratory

9:15 AM
Thermal Stability of Nanoscale Ni-Mn-Si Precipitates in Irradiated Reactor Pressure Vessel Steels: Peter Wells1; Yuan Wu1; Nathan Almirall1; Takuya Yamamoto1; David Gragg1; G. Odette1; 1UC Santa Barbara

9:30 AM
Cluster Dynamics Modeling of Multi-Phase Mn-Ni-Si-Rich Precipitation Evolution in Low Cu RPV Steels: Huibin Ke1; Leland Barnard1; Dane Morgan1; Peter Wells1; G. Odette1; 1University of Wisconsin-Madison; 2University of California-Santa Barbara

9:45 AM
Structural Characterization of Nano-Precipitates in Irradiated Reactor Pressure Vessel Steels: David Sroooster1; J Sinsheimer1; S Ghose1; E Dooryhee1; L Ecker1; P Wells1; Y. Wu1; G. R. Odette1; M Sokolov1; 1Brookhaven National Laboratory; 2University of California Santa Barbara; 3Oak Ridge National Laboratory

10:00 AM Break

10:15 AM
APT Investigation of the Effect of Neutron Fluence on the Microstructural Evolution of Irradiated Low Copper RPV Steels: Sebastiano Cannelli1; Bertrand Radigue1; Philippe Pareige1; 1GPM UMR CNRS 6634 - Université et INSA de Rouen

10:30 AM Invited
Development of Combined Thermomechanical and Radiation Testing Platforms: Daniel Bufford1; Mackenzie Steckbeck1; Khalid Hattar1; 1Sandia National Laboratories

11:00 AM
Effect of Cu and Mn on Radiation Induced Hardening and Microstructure of A533B Model Alloys: Hideo Watanabe1; Yasuhiro Kamada1; 1RIAM, Kyushu University, ; 2RIAM, Kyushu University,

11:15 AM
Diffusivity and Solubility of Cu in Fe and A533B Measured by Atom Probe Tomography: Yasuohsi Nakaj1; Masaki Shimodaira1; Takeshi Toyama1; Yasuo Shimizu1; Koji Inoue1; Naoki Ebisawa1; 1Tohoku University

11:30 AM
Effects of Dose Rate and Primary Defect Structure on Microstructural Evolutions in RPV Steels: Takuya Yamamoto1; Peter Wells1; Yuan Wu1; G. Robert Odette1; Hideo Watanabe1; Akihiko Kimura1; 1University of California Santa Barbara; 2Kyushu University; 3University of California, Santa Barbara

11:45 AM
Development of Improved Accident Tolerant Cladding Materials: Osman Anderoglou1; Yuki Yamamoto1; Lance Sneed1; Joe Tesmer1; Stuart Maloy1; 1Los Alamos National Laboratory; 2Oak Ridge National Laboratory

12:00 PM
Neutron Flux Effects on Irradiation-Induced Solute Clusters and Matrix Defects in RPV Steels Studied by Positron Annihilation: Takeshi Toyama1; Y Yamamoto1; P Wells1; Y Nagai1; G. Odette1; 1Tohoku University; 2University of California Santa Barbara

12:00 PM
Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Characterization and Mechanical Properties
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ENSA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Science and Technology Beijing

Monday AM Room: Oceanic 7 March 16, 2015 Location: Dolphin

8:30 AM Keynote
Fatigue Properties and Acquisition of 3D Microstructural Data for Prediction of Crack Initiation and Early Crack Growth in Polycrystalline Superalloys: Jean-Charles Stinville1; Will Lenth1; Michael Echlin2; Tresa Pollock3; 1University of California Santa Barbara

9:10 AM
Investigation of 3D Microstructural Compatibility during Ambient Temperature Deformation in a New Co-HF Model Alloy: Mohammed Azem1; Shyamprasad Karagade1; Daniel Rowley1; Brian Bay1; Peter Lee1; 1Manchester University; 2Oregon State University

9:30 AM
Porosity Evolution during High Temperature Creep Tests in a Single Crystal Superalloy by 3D X-ray Computed Tomography: Jean-Briac le Graverend1; Jerome Adrien1; Jonathan Cormier1; Franck Gallema1; Serge Knuch1; Jose Mendez1; 1Texas A&M University; 2INSa de Lyon; 3Institut P' / ISAE-ENSA / 4ONERA

9:50 AM
Local/Global Measurement of Primary Dendrite Arm Spacing in Single Crystal Nickel-Based Superalloys: Mark Tschopp1; Andrew Oppedal2; Kiran Solanki1; 1Army Research Laboratory; 2Mississippi State University; 3Arizona State University

10:10 AM Break

10:30 AM Invited
Descriptions of the Deformation Behavior and Properties of Hybrid Superalloys for Elevated Temperature Applications: Samuel Kuh1; John Sosuch1; Gopal Viswanathan1; J.C. Zhao1; Yunzhi Wang1; 1Los Alamos National Laboratory

10:50 AM Invited
Dwell-Fatigue Crack Growth of a Nickel Based Superalloy in the Range 650-800°C: Hamouda Ghonem1; 1University of Rhode Island

11:10 AM
Rejuvenation of Nickel-Based Superalloys GTD444(DS) and René N5(SX): Luke Retterberg1; Tresa Pollock2; 1University of California Santa Barbara

11:30 AM Invited
Effect of Notches on Creep-Fatigue Behavior of P/M Nickel-Based Disk Superalloy: Jack Telesman1; Tim Gabb1; Louis Ghoss1; 1NASA GRC

11:50 AM
Recent Advances in Cast SX Superalloys: Jacqueline Wahl1; 1Cannon-Muskegon
Nanocomposites III — Metal Nanocomposites I
Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Muralidharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWl); Meisha Shofner, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee

Monday AM
March 16, 2015
Room: Europe 2
Location: Dolphin

Session Chair: Meisha Shofner, Georgia Institute of Technology

8:30 AM
Interfacial Fate of Boron Carbide Nanoparticles within Ultrafine Grained Aluminum Matrix Nanocomposites: Lin Jiang1; Haiming Wen1; Harry Yang1; Troy Topping1; Enrique Lavernia1; Julie Schoenung1; 1University of California Davis

8:50 AM Invited
PM Aluminum Composite Reinforced with Al4C3 Nano-Rods: Katsuyoshi Kondoh1; Biao Chen1; Lei Jia1; Hasashi Imai1; Osaka University

9:30 AM
Bulk Amorphous Alloy: Akshish Singh1; Sandip Harimkar1; 1Oklahoma State University

9:50 AM Break

10:10 AM
Crack Formation in Powder Metallurgy CNT/Al Composites during Post Heat Treatment: Biao Chen1; Lei Jia1; Hasashi Imai1; Katsuyoshi Kondoh1; 1Osaka University

10:30 AM
The Dielectric Behavior of Reduced Graphene Oxide/polymer Composites with a Segregated Structure: Mengkai Li1; C. X. Gao1; X. Zhang1; Z. D. Zhao1; F. L. Meng1; 1Jilin University

10:50 AM
The Structural and Mechanical Properties of Graphene Aerogel Supported PVDF/Graphene Oxide Nanocomposites: Zhiyuan Jiang1; Zhao Han1; Guangping Zheng1; 1The Hong Kong Polytechnic University

11:10 AM
Three Dimensional Mesoscale Finite Element Analysis of Polymer/Clay Nanocomposites Using a Physically Based, Internal State Variable Model: William Lawrinore1; Mei Chandler1; Mark Horstemeyer1; 1Mississippi State University; 1Army Engineering Research and Development Center

9:00 AM Invited
Opportunities and Challenges of Magnesium Rechargeable Batteries: Electrolytes and Cathodes: Guosheng Li1; 1Pacific Northwest National Laboratory

9:25 AM Invited
Modification of Magnesium Ion Cathode and Electrolyte for Mg Rechargeable Batteries: Yan Yao1; 1University of Houston

9:50 AM Invited
Sodium Ion Battery Anodes: Gabriel Veith1; 1Oak Ridge National Laboratory

10:15 AM Break

10:30 AM Invited
High Density Sodium and Lithium Ion Battery Anodes from Banana Peels: David Mitlin1; 1Clarkson University

10:55 AM Invited
Achieving Low Overpotentials in Metal-Air Batteries: Yiyung Wu1; 1Ohio State University

11:20 AM Invited
Nanestructured Electrodes for Na-Air Batteries: Understanding of Chemistry and Rechargeability: Andy Sun1; 1The University of Western Ontario

11:45 AM Invited
Na3MnCO3PO4 – A Multi-Electron Transfer Redox Cathode Material for Sodium Ion Batteries: Chunlou Wang1; James Kadak1; Monica Sawicki1; Leon Shaw1; 1Illinois Institute of Technology

Neutron and X-Ray Studies of Advanced Materials
VIII: Diffraction Limit and Beyond — Space and Time Resolved I
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Llaw, University of Tennessee; J amie Tiley, Air Force Research Laboratory

Monday AM
March 16, 2015
Room: Pelican 1
Location: Swan

Funding support provided by: Air Force Research Laboratory

Session Chairs: Rozaliya Barabash, ORNL; Gernot Kostorz, ETH

8:30 AM Introductory Comments

8:40 AM Keynote
HEDM: Spatially Resolved Measurements of Lattice Orientation and Strain in Polycrystals: Robert Suter1; 1Carnegie Mellon University

9:20 AM Invited
Characterization of the Influence of Grain Neighbors on Heterogeneous Deformation Using Synchrotron X-ray Diffraction: Thomas Bieler1; Martin Cripp1; Carl Bookhart1; Philip Eisenlohr1; Farhang Pourboghrat1; Chen Zhang1; Hongmei Li1; Payam Darbandi1; B.C. Zhou1; Quan Zhou1; Leyun Wang1; Armand Beaudoin1; Tae-Kyu Lee1; Peter Kinesei1; Jun-Sang Park1; Wenjun Liu1; 1Michigan State University; 1Institute of Materials Research; 1University of Illinois; 1Cisco Systems, Inc.; 1Argonne National Laboratory

9:50 AM
3D Computational and Diffraction Study of Indentation in Layered Materials: Rozaliya Barabash1; Ivona Jasiuk1; Vineet Agarwal1; Seid Koric1; 1Oak Ridge National Laboratory; 1University of Illinois at Urbana-Champaign
10:10 AM Break

10:20 AM Invited
Combinational Study of Precipitation Kinetics in Cu-Co Composition Gradients: Time and Space Resolved SAXS Measurements: Alexis Deschamps; Frederic De Geuser; Christopher R. Hutchinson; Mark Styles; 1Grenoble Institute of Technology; 2Monash University; 3CSIRO

10:50 AM Invited
The Importance of 3D Synchrotron X-ray Techniques for Advancing the Understanding of Recrystallization Process of Metals: Yabin Zhang; 
1Technical University of Denmark

11:20 AM Invited
In Situ Three Crystal Diffractometry Investigation of a Single Crystal Superalloy during High Temperature Mechanical Testing: Pierre Basstie; Thomas Schenk; Alain Jacques; ILL; 1ILL-CNRs, Labex DAMAS

11:50 AM
Direct Measurement of Hydrogen Dislocation Pipe Diffusion in Deformed Polycrystalline Pd Using Quasielastic Neutron Scattering: Brent Heuser; Dallas Trinkle; Niina Jalarvo; Joseph Serio; Emily Schiavone; Eugene Mamontov; Madhusudan Tyagi; University of Illinois; Oak Ridge National Laboratory; 2NIST

New Horizons for Mechanical Spectroscopy in Materials Science — RUS and Mechanical Spectroscopy in General
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Nicolás Mujica, Universidad de Chile; Michael Demkowicz, MIT; Fernando Lund, Universidad de Chile; Alfredo Caro, Los Alamos National Laboratory

Monday AM Room: Macaw 1
March 16, 2015 Location: Swan
Session Chair: Nicolás Mujica, Universidad de Chile

8:30 AM Invited
Resonant Ultrasound Spectroscopy: An Odyssey in Measurement Science: Albert Migliori; 1Los Alamos National Laboratory

9:00 AM Invited
Magnetoelastic Coupling in Ferroic and Multiferroic Materials from Resonant Ultrasound Spectroscopy: Michael Carpenter; 1University of Cambridge

9:30 AM
Elastic Moduli of Palladium Hydride Near the Tri-Critical Point: Joseph Gladden; Doug Safarik; Rasheed Adebisi; University of Mississippi; Los Alamos National Laboratory; 1Air Force Research Laboratory

9:50 AM
Elastic Stiffness of Cubic and Wurtzite Boron Nitride: Akira Nagakubo; Hirotugu Ogi; Hitoshi Sumiya; Masahiko Hirao; Osaka University; 1Sumitomo Electric Industries

10:10 AM Break

10:30 AM Invited
Viscoelastic Properties of Model Bitumen Systems from Molecular Simulations: Michael Greenfield; 1University of Rhode Island

11:00 AM
RUS Measurements and FE Models of Nickel Superalloy Structures and Damage: Brent Goodlet; Tresa Pollock; University of California Santa Barbara

11:20 AM
Ab Initio Modeling of Internal Friction in Irradiated Zirconium: Céline Varvenne; Emmanuel Clouet; 1SRMP, CEA Saclay

11:40 AM
AFM Force Spectroscopy Experiments and Simulations of Fouling-Resistant Materials: Abdullah Alhajri; Rasheed Auguste; Pavlina Karafilis; Gabrielle Ledoux; Vikash Mishra; Ekaterina Paramonova; Michael Short; 1Massachusetts Institute of Technology; 2University of Arkansas

Novel Synthesis and Consolidation of Powder Materials — Cold Spray Forming, Metal Powders and Additive Manufacturing
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

Monday AM Room: Swan 10
March 16, 2015 Location: Swan
Session Chairs: John Slotwinski, Johns Hopkins University; Stefano Gulizia, CSIRO

8:30 AM
Cold Spray for Repair of Naval Components: Jennifer Wolk; Ben Bouffard; Fred Lancaster; Naval Surface Warfare Center; NAVAIR

8:50 AM
Modeling of Operational Parameters for Cold Spray Deposition: Jeremy Schreiber; Ivi Smid; Tim Eden; Penn State

9:10 AM
Metal Based Additive Manufacturing Using Cold Spray Coating Technology: G. Sundararajan; 1ARCI

9:30 AM
Microstructure of Cold Sprayed hBN-Ni and Ni-Ni Composite Powders: Maryam Neshastehriz; Ivi Smid; Al Segall; Tim Eden; Penn State

9:50 AM Break

10:10 AM Invited
Manipulation of Titanium Powder for Additive Manufacturing Applications: Stefano Gulizia; Anselm Oh; Christian Doblin; Ying Ying Sun; Ma Qian; CSIRO; RMIT

10:35 AM
High-Efficiency Production of Metal Particulate by Modulation-Assisted Maching: James Mann; Kevin Trumble; W Compton; Srinivasan Chandrasekar; 1M4 Sciences LLC; 2Purdue University

10:55 AM
Microstructure-Deposition-Microstructure Relationships for Al-Cu Gas Atomized Powders: Luke Brewer; Jeremy Leazer; Sarah Menon; Jennifer Wolk; Frederick Lancaster; Naval Postgraduate School; Naval Surface Warfare Center Carderock Division; 1NAVAL Air Systems Command
**Pb-Free Solders and Emerging Interconnect and Packaging — Fundamental Materials Behavior**

**Sponsored by:** TMS Functional Materials Division (formerly EMP MD), TMS: Electronic Packaging and Interconnection Materials Committee

**Program Organizers:** John Elmer, Lawrence Livermore National Laboratory; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srini Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnic Institute; Fan Gao, University of Massachusetts Lowell

**Monday AM**

**Room:** Lark

**March 16, 2015**

**Location:** Swan

**Session Chairs:** John Elmer, Lawrence Livermore National Laboratory; Tae-Kyu Lee, Cisco Systems

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8:30 AM

**Solidification Rate and Al Concentration Effects on Cu-Al Intermetallic Phases in Pb-Free Solders: Implications for Solder Joint Microstructure Control:** Iver Anderson; Stephanie Choquette; Kathlene Reeve; Carol Handwerker; 1Ames Laboratory; 2Iowa State University; 3Purdue University

8:55 AM

**Influence of the Substrate on the Nucleation of Beta-Sn in Solder Reactions:** Christopher Gourlay; Sergey Belyakov; 1Imperial College London

9:20 AM

**Heterogeneous Nucleation of Beta-Sn in Aluminum-Modified Lead-Free Solder Alloys:** Kathlene Reeve; Iver Anderson; Carol Handwerker; 1Purdue University; 2Ames Laboratory

9:45 AM

**Understanding the Behavior of Solder Joints Subject to Harsh Environments Using Multi-Scale Characterization Techniques:** Govindarajan Muralidharan; Donovan Leonard; Chad Parish; Claudia Cantoni; 1Oak Ridge National Laboratory

10:10 AM Break

10:25 AM

**In Situ Visualization of One-Dimensional Cu/Sn Diffusion Couples for Nanomaterials Assembly and Interconnection:** Fan Gao; Qiyue Yin; Zhiyong Gu; Guangwen Zhou; 1University of Massachusetts Lowell; 2State University of New York at Binghamton

10:50 AM

**Quantifying the Anisotropy of Sn-Based Solder Alloys by Micropillar Compression Experiments: Influence of Size, Grain Boundaries and Precipitates:** C. Shashank Kaira; Nikhilesh Chawla; 1Arizona State University

11:15 AM

**Slip Parameters for Crystal Plasticity Finite Element Analysis of Cu6Sn5 Single Crystal Intermetallic in Solder Joint: Experiment, Modeling and a Comparative Analysis:** Soud Choudhury; Leila Ladani; 1University of Connecticut

11:40 AM

**Wettability and Interfacial Characteristic of Sn-Bi-Cu Solder on Ni Substrates:** Likun Zang; Living Lu; 1University of Science and Technology
Phase Transformations and Microstructural Evolution — Liquid-Solid Phase Transformations
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of Illinois at Chicago; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Donoix, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

Monday AM
March 16, 2015
Room: Swan 3

Session Chairs: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; John Gibbs, Northwestern University

8:30 AM Invited
3D Characterization of Dendritic Growth in Al-Cu Alloys: John Gibbs1; Kadri Mohan1; Xianghui Xiao1; Charlie Bouman1; Peter Voorhees2; 1Northwestern University; 2Purdue University; 3Argonne National Laboratory
9:00 AM
High-temperature Transformation of Ti-At-Nb Alloys Using a Beta Solidification Technique: Jongmoon Park1; Ho-Seung Jang1; Seong-Woong Kim1; Seung-Eon Kim1; Je-Ha Shon1; Myung-Hoon Oh1; 1Advanced Materials Engineering, Kumoh National Institute of Technology; 2Advanced Materials & System Engineering, Kumoh National Institute of Technology; 3Titanium Department, Korea Institute of Materials Science (KIMS); 4Advanced Technology Team, Pohang Institute of Metal Industry Advancement
9:20 AM
Phase-Field Investigation of the Influence of the Solid-Liquid Interface Energy and Process Parameters on the Dendrite Growth Morphology and Microsegregation for High Manganese Steels: Joao Rezende1; Celso Alves1; Christian Schankies2; Dennis Hütenmeister1; Dieter Senk1; 1RWTH Aachen
9:40 AM
Effect of Two Free Dendritic Growth Models on the Simulation of Microstructure Formation in Solidification Process of Fe-0.4WT.%C Alloy: Wanning Pan1; Jieyu Zhang1; 1Shanghai University
10:00 AM Break
10:20 AM
Effect of Heat Treatment on Microstructure Evolution of a Ni-Base Superalloy Fabricated by Laser-Powder Bed Fusion Additive Manufacturing: Hyeyun Song1; Shawn Kelly1; Wei Zhang1; 1Ohio State University; 2EWhi
10:40 AM
Heterogenous Microstructure Characterization in INCONEL 718 Builds Made by the Direct Laser Additive Manufacturing Process: Yuan Tian1; Donald McAllister1; Sudarsanam Babu1; 1Ohio State University; 2University of Tennessee, Knoxville
11:00 AM
Plasma to Phase Transformation: Lijun Song1; Jyotirmoy Mazumder1; 1SenSigma LLC; 2University of Michigan
11:20 AM
Combinatorial Assessment of the Influence of Alloying Elements on the Oxidation Behavior of Titanium: Peyman Samimi1; Peter Collins1; David Brice1; Iman Ghamarian1; Yue Liu1; 1University of North Texas
11:40 AM
The Role of the Bronze Phase Transformation during Liquid Phase Sintering of Sn-Coated Cryomilled Cu Powders: David Walker1; William Caley1; Mathieu Brochu1; 1McGill University; 2Dalhousie University
12:00 PM
Research on Non-Directional Solidification Process of AISI 301 Austenite Stainless Steel: Liang Bai1; Bo Wang1; Shuqing Xing1; Yonglin Ma1; Jieyu Zhang1; 1Shanghai University; 2Inner Mongolia University of Science and Technology

Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories — Session I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dana Zöllner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

Monday AM
Room: Oceanic 8
March 16, 2015
Location: Dolphin

Session Chairs: Dana Zöllner, Otto-von-Guericke-University Magdeburg; Dorte Juel Jensen, Technical University of Denmark

8:30 AM Invited
3D Experimental Characterizations of Recrystallization Compared to Theoretical Simulations: Dorte Jensen1; 1DTU
9:00 AM
The Influence of Aluminum Content on Recrystallization and Grain Growth in α-Titanium Alloys: Anna Trump1; John Allison1; 1University of Michigan
9:20 AM
Simulating Recrystallization In Plastically Deformed Titanium-Aluminum Alloys: Susan Gentry1; Katsuyo Thornton1; 1University of Michigan
9:40 AM
111/110 Recrystallization Texture Evolution during Solution Treatment of Age-Hardenable Al-Mg-Si Alloy Sheets Fabricated by Cold Rolling and Subsequent Asymmetric Warm Rolling: Hirofumi Inoue1; 1Osaka Prefecture University
10:00 AM
Processing and Microstructure Effects on the Recrystallization of Low-Symmetry Alpha-Uranium as Measured by EBSP: Rodney McCabe1; Andrew Richards1; Marko Knezevic2; Kester Clarke1; Irene Beyerlein1; 1Los Alamos National Laboratory; 2University of New Hampshire
10:20 AM Break
10:40 AM Invited
Three-Dimensional X-Ray Diffraction Microscopy for In Situ Studies of Polycrystalline Materials: Jette Oddershede1; 1DTU Physics
11:10 AM
Physical Aspects of Dynamic Recrystallization: Günter Gottstein1; Katrin Grätz1; 1RWTH Aachen University
11:30 AM
Impurity Effects on Morphological Stability of Recrystallization Fronts: Changfian Wang1; Moneesh Upmanyu1; 1Northeastern University
11:50 AM
Modeling Microstructural Evolution during Recrystallization in Hot Rolled Structure: Khaled Adam1; David Field1; 1Washington State University
9:30 AM  Invited
Production and Characterisation of Al2Cu Reinforced Copper Matrix Composite Coatings: Valbona Dylmishi1; Onur Tazegul1; Huseyin Cimenoglu1; ‘Istanbul Technical University

11:20 AM
Synthesis of Multi-functional Surfaces Inspired from The Peristome of Pitcher Plants: Yu-Min Lin1; Chaio-Peng Hsu1; Po-Yu Chen1; ‘National Tsing Hua University

Recycling and Sustainability Update — Waste
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory

Monday AM
Room: Grand Harbor Salon 4
March 16, 2015
Location: Yacht & Beach

Session Chair: Jeffrey Spangenberger, Argonne National Laboratory

9:30 AM
The Removal of Phosphate and Ammonia Nitrogen from Wastewater Using Steel Slag: Liyan Yang1; ‘University of Science and Technology Beijing

9:50 AM
Biopleaching of Ocean Nodules with Thermophilic Bacteria: N Abhilash1; Anirban Ghosh1; B.D. Pandey1; ‘National Metallurgical Laboratory (CSIR)

10:20 AM Break

10:45 AM
Modifications on the Red Mud via Wet Processes and Its Activity for Chemical Looping Combustion: Zhenhua Gu1; Kongzhai Li1; ‘Kunming University of Science and Technology

11:05 AM
Study of Mineral Admixtures on Mechanical and Physical Properties in the Fabrication of Sustainable Concrete: Nizza Garcia1; Oscar Marcelo Suarez1; Mauricio Cabrera-Rios1; ‘University of Puerto Rico

Monday AM
Room: Asbury C
March 16, 2015
Location: Yacht & Beach

Session Chairs: Shafiq Alam, University of Saskatchewan; Takashi Nakamura, Tohoku University

9:30 AM
Industrial Practice of Biohydrometallurgy in Zambia: Jun Wang1; Hongbo Zhao1; Wenqing Qin1; Xueduan Liu1; Guanzhou Qiu1; ‘Central South University; Key Lab of Biophyrometallurgy of Ministry of Education

9:50 AM
Industry Oxygen and Its Advanced Application Technology for Hydrometallurgy Process: Rocky Wei1; De-liang Zhang1; ‘Linde Gas

10:10 AM Break

10:25 AM
Electrochemical Removal Impurity of NaCl from LiCl-KCl Melts: Bing Li1; ‘East China University of Science and Technology

10:45 AM
Modern Beryllium Extraction - A State-of-the-Art Kroll Reduction Plant: Edgar Vidal1; James Yurko1; Keith Smith1; ‘Materion Brush Beryllium and Composites Inc.

11:05 AM
How to Recover Minor Rare Metals from E-scrap Recycling: Takashi Nakamura1; ‘Tohoku University

11:25 AM
Solvent Extraction of Cu2+ from the Leaching Liquor Containing Cu and Fe Using a Microfluidic Technology: Jiang Feng1; ‘Kunming University of Science and Technology

11:45 AM
Large-Scale Testing of Vacuum-Distillation Refining of Ill-Conditioned Rough Selenium: Sergey Trehubkov1; Vladimir Khrapunov1; Farhad Tyletyai1; Alina Nitencen1; Irina Mark1; ‘Center of the Earth Sciences, Metallurgy and Enrichment JSC

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Session I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradó, IPCMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Nuggehalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Monday AM
Room: Parrot
March 16, 2015
Location: Swan

Session Chairs: Nancy Michael, UT Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology

8:30 AM Keynote
Multifunctional Materials for Electronics and Photonics: Federico Rosel1; ‘INRS

9:10 AM
The Effect of Microstructure and Thickness on Resistance Switching Behavior of Electrodeposited Cuprous Oxide Thin Films: Sanaz Yazdanparast1; Jay Switzer1; ‘Missouri University of Science and Technology

9:30 AM
Refractory Thin-Films Derived from Organometallic Polymers: Mark Roll1; Natalie Kirch1; ‘University of Idaho

9:50 AM Invited
Evaluation of Titanium and Nitrogen Doped Tungsten Oxide Thin Films for Application in Solar Energy Conversion: Ramana Chintalapadu1; ‘University of Texas - El Paso

10:20 AM Break

10:40 AM
New Architectures of Interlayer Systems Designed for Diamond Coating for Aeronautic Applications: Maureen Cheviet1; Angéline Poulon1; Mohamed Gouné1; ‘ICMCB-CNRS

11:00 AM
Production and Characterisation of Al2Cu Reinforced Copper Matrix Composite Coatings: Valbona Dylmishi1; Onur Tazegul1; Huseyin Cimenoglu1; ‘Istanbul Technical University

11:20 AM
Synthesis of Multi-functional Surfaces Inspired from The Peristome of Pitcher Plants: Yu-Min Lin1; Chaio-Peng Hsu1; Po-Yu Chen1; ‘National Tsing Hua University

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Session II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradó, IPCMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Nuggehalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Monday AM
Room: Asbury C
March 16, 2015
Location: Yacht & Beach

Session Chairs: Shafiq Alam, University of Saskatchewan; Takashi Nakamura, Tohoku University

9:30 AM
Industrial Practice of Biohydrometallurgy in Zambia: Jun Wang1; Hongbo Zhao1; Wenqing Qin1; Xueduan Liu1; Guanzhou Qiu1; ‘Central South University; Key Lab of Biophyrometallurgy of Ministry of Education

9:50 AM
Industry Oxygen and Its Advanced Application Technology for Hydrometallurgy Process: Rocky Wei1; De-liang Zhang1; ‘Linde Gas

10:10 AM Break
MONDAY AM

8:30 AM Refractory Metals: Overview and Recent Developments: Prabhat Kumar; Gary Rozak; 1PK Consulting; 2HC Starck Inc

8:50 AM Computational Design of Refractory Metal High-Entropy Alloys: Michael Gao; Jeff Hawk; David Alman; 1NETL/URS; 2NETL

9:10 AM On the Mo-Ti-Fe System for Alloy Design: Alexander Knowles; Nick Jones; Neil Jones; Howard Stone; 1University of Cambridge; 2Rolls-Royce plc, Derby

9:30 AM Coherent and Duplex Precipitation in High-Temperature Cr-Ni-Al-Ti Alloys: Omer Dogan; Xueyan Song; Michael Gao; 1DOE National Energy Technology Laboratory; 2West Virginia University; 3URS Corporation

9:50 AM Break

10:00 AM Invited Crystallography of the BCC/T1/T2 Eutectic in Mo-Nb-Si-B Alloys: Naoki Takata; Nobuaki Sekido; John Perezuko; Masao Takeyama; 1Tokyo Institute of Technology; 2National Institute for Materials Science; 3University of Wisconsin-Madison

10:20 AM Effects of Mo/Si Ratio Inversion on the Oxidation of Nb-Cr-Mo-Si-B Alloys: Shailendra Varma; Kathryn Thomas; 1The University of Texas at El Paso

10:40 AM Influence of Ti Additions on Microstructure and Oxidation Resistance of Mo-Si-B-Ti Alloys: Maria Azim; 1University of Siegen

11:00 AM Interdiffusion and Reaction in Mo vs. Fe Diffusion Couples: Esin Geller; Yongho Sohn; B. Sencer; J. Kennedy; 1University of Central Florida; 2Idaho National Laboratory

11:20 AM Dislocation-magnetic Field Interactions in Nb Used for Superconducting Particle Accelerator Cavities: Miogmin Wang; Di Kang; Zu Sung; Peter Lee; Anatoliy Polianski; Christopher Compton; Thomas Bieler; 1Michigan State University; 2Florida State University

11:40 AM Study of Slip and Dislocations in High Purity Single Crystal Nb for Accelerator Cavities: Di Kang; Derek Baars; Thomas Bieler; Chris Compton; 1Michigan State University; 2Facility for Rare Isotope Beams

Solar Cell Silicon — Silicon Production and Refining

Sponsored by: TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabriella Tranell, Norwegian University of Science & Technology; Yulia Meteleva-Fischer, Materials innovation institute M2i; Shadia Ikhmayes, Al Isra University; Arief Budiman, Singapore University of Technology and Design

8:30 AM Introductory Comments

8:35 AM Directional Growth of Bulk Silicon from Silicon-Aluminum-Tin Melts: Yuqiong Li; Yi Tan; Kazuki Morita; 1Dalian University of Technology, 2The University of Tokyo

8:55 AM Towards Solar Silicon by Direct Carbothermic Reduction - An Experimental Approach and Theoretical Studies using CarboSil Briquettes: Jan-Phillip Mai; Jean-Claude Fischer; 1JPM Silicon GmbH; 2R&D Carbon Ltd.

9:20 AM Boron Removal from Molten Silicon by H2-H2O Gas: Jafar Safarian; Kai Tang; Jan Erik Olsen; Kjetil Hildal; Gabriella Tranell; 1SINTEF; 2ELKEM AS; 3NTNU

9:45 AM Mechanism of Solid Silicon Contamination in a Graphite-Moisture Environment: Yulia Meteleva-Fischer; Amarante Böttger; Wim Sloof; Bert Kraaijveld; 1Materials Innovation Institute M2i; 2Delft University of Technology; 3RGS Development B.V.

10:10 AM Break

10:30 AM Investigation on Mechanism and Kinetics of Electrochemical Reduction of SiO2 Granules in Molten CaCl2: Xiao Yang; Kouji Yasuda; Toshiyuki Nohira; Rika Hagiwara; Koki Ichitsubo; Kenta Masuda; Takayuki Homma; 1Kyoto University; 2Taiheiyo Cement Corporation; 3Waseda University

10:55 AM Preparation of Solar Grade Silicon Precursor by SiO2 Electrolysis in Molten Salts: Liangxing Li; Jin-zhao Guan; Ai-min Liu; Zhong-ning Shi; Michal Korenko; Jun-li Xu; Bing-liang Gao; Zhao-wen Wang; 1Northeastern University; 2Slovak Academy of Sciences

11:15 AM Understanding Membrane Stability Issues in the SOM Process for Silicon Production: JiaPeng Xu; Yihong Jiang; Uday Pal; Soumendra Basu; 1Boston University

11:40 AM Following the Reaction Mechanisms of Silicon Production by µCT Analysis: Jan-Philipp Mai; Raabe Gabriele; 1JPM Silicon GmbH; 2University of Braunschweig - Institute of Technology, IFT

12:05 PM Effect of Temperature in Extraction of High Purity Amorphous Silica from Rice Husk for Silicon Production: Chukwuendu Ilochonwu; Ifeanyichukwu Onyenamu; Emmanuel Nwonye; Christian Nwajagu; 1SED-Enugu; 2Anambra State University

Program Chair: Todd Leonhardt, Rhenium Alloys, Inc

Session Chair: Todd Leonhardt, Rhenium Alloys, Inc

Room: Europe 1
Location: Dolphin

TMS2015 FINAL PROGRAM
Sustainable Energy and Layered Double Hydroxides

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee

Program Organizers: Andrew Gomes, Lamar University; Christian Ruby, Université de Lorraine

Monday AM Room: Asbury B
March 16, 2015 Location: Yacht & Beach

Session Chairs: Andrew Gomes, Lamar University; Christian Ruby, Université de Lorraine

8:30 AM Introductory Comments

8:35 AM Invited
Technical Innovation and Entrepreneurial Potential of “Hydrotalcite Like” Materials: David Cocke1; Andrew Gomes; 1Lamar University

9:00 AM An Efficient and Economically Viable Method for Black Direct Dye Removal Using Layered Double Hydroxides: Aparecida Mageste1; Renata Fidellis1; Anderson Dias1; Kisla Siqueira1; 1Universidade Federal de Ouro Preto

9:20 AM Dephosphatation of Waste Water by using Ferric Oxyhydroxides and CaII-FeIII Layered Double Hydroxides: Christian Ruby1; 1Université de Lorraine

9:45 AM Layered Double Hydroxides in Energy Research: Advantages and Challenges: Andrew Gomes1; David Cocke1; Doanh Tran2; Arnab Baksi1; 1Lamar University; 2GE Power and Water

10:10 AM Break

10:40 AM Modelling The Structure And Vibrational Properties Of Layered Double Hydroxides: Erwan André1; Jean Fahel1; Cedric Carteret1; 1Lorraine University

11:00 AM Structure and Reactivity of Intercalated Amino-acids Into Layered Double Hydroxides: Jean Fahel1; Erwan André1; Cedric Carteret1; 1Lorraine University

11:20 AM Synthesis of Hydrotalcite-Like Compounds from Blast Furnace Slag: The Effect of Synthesis Parameters on Structure and Crystallinity: Mancheng He2; Jianliang Zhang1; Zhiwen Shi1; Feng Liu1; Xinyu Li1; 1University of Science and Technology Beijing

2015 Functional Nanomaterials: Energy and Sensing — Energy Conversion and Storage II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Jung-Kun Lee, University of Pittsburgh; Behrang Hamadani, National Institute of Standards and Technology; Sung Hun Wee, HGST, a Western Digital Company; Nitin Chopra, University of Alabama, Tuscaloosa; Terry Xu, The University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH)

Monday PM Room: Swan 4
March 16, 2015 Location: Swan

Session Chair: Behrang Hamadani, National Institute of Standards and Technology

2:00 PM Invited
Heteroepitaxial Cu2O on Single-Crystal-Like, Metallic Substrates: A Potential Route Towards Non-Toxic, Earth-Abundant Solar Cells: Amit Goyal1; Sung-Hun Wee1; Jun-Kun Lee2; 1Oak Ridge National Laboratory; 2University of Pittsburgh

2:40 PM Energy Storage Utilizing Advanced CVD Nano-Diamond Technology: Stephen Minden1; John Fraley1; Lauren Kegley1; Jim Davidson2; David Kerns3; 1APEI Inc.; 2International FemtoScience, Inc.

3:00 PM Invited
Material Synthesis, Device Operation, and Charge-Carrier Dynamics of Perovskite Solar Cells: Yixin Zhao1; Alexandre Nardes1; Kai Zhu1; 1National Renewable Energy Laboratory

3:40 PM Break

3:55 PM Enhanced Electrical Properties of AZO films Containing Cu-Ni Nanoparticles for Transparent Conducting Oxide: Po-Shun Huang1; Jung-Kun Lee1; 1University of Pittsburgh

4:15 PM Reduced Graphene Oxide as a Coating Layer for Al Bipolar Plates: Haneul Jang1; Hyunjoo Choi1; Hyejung Chang2; 1Kookmin University; 2Advanced Analysis Center, Korea Institute of Science and Tecnology

4:35 PM Invited
Thermodynamics and Electrochemistry of Bimetallic Electrodes for High Temperature Energy Storage: Hojong Kim1; 1Pennsylvania State University

5:15 PM Synthesis of Alloy and Pure Metallic Nanoparticles by Novel Electromagnetic Levitation Melting Technique: Armin Vahid Mohammadi1; Mehrnaz Mojtabavi2; Mohammad Halali3; 1Florida International University; 2Stony Brook University; 3Sharif University of Technology
6th International Symposium on High Temperature Metallurgical Processing — Fundamental Research of Metallurgical Process I

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jianhao Yang, Michigan Technological University; Gerardo Alvear, Xstrata Tech; Onuralp Yucel, Istanbul Technical University; Xiping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies

Monday PM Room: Swan 5 Location: Swan

Session Chairs: Gerardo Alvear Flores, Xstrata Tech; Ting’an Zhang, North East University

2:00 PM
Example of the Refractory Corrosion Test Work with Nickel Matte: Dean Gregurek1; Angelika Ressler1; Alfred Spanring1; Christoph Pichler1; ‘RHI AG; ‘University of Leoben, CD Laboratory

2:20 PM
Effects of Functional Additives on the SHS of Boron Carbide: Onuralp Yucel1; Hasan Ozeti1; Murat Alkan1; Ahmet Turan1; ‘Istanbul Technical University; ‘Yalova University

2:40 PM
High Temperature Softening Behaviours of Iron Blast Furnace Feeds and Their Correlations to the Microstructures: Mao Chen1; Weidong Zhang2; Zhixing Zhao3; Dongqing Wang4; Tim Evans5; Baojun Zhao6; ‘University of Queensland; ‘Shougang Research Institute of Technology, Shougang Group; ‘Rio Tinto Iron Ore

3:00 PM
Sintering Behavior of Pelletizing Feed in Composite Agglomeration Process (CAP) of Iron Ore Fines: Zhengwei Yu1; Ruijun Wang2; Feng Zhou3; Yuanbo Zhang4; Guanghui Li5; Tao Jiang6; ‘School of Minerals Processing and Bioengineering, Central South University

3:20 PM
Effect of Anodic Polarization on Layer-Growth of Ni-Fe-Cr Anodes in Cryolite-Alumina Melts: Germain Kouma Ndong1; Luxing Feng2; Jilai Xue2; Jun Zhu1; ‘USTB

3:40 PM Break

4:00 PM
Influence of Mineralogy on Metallurgical Properties of Lump Ore: Pan Jian1; Yu Hong-bin2; Zhu De-qing3; Hu Xun4; Yanhong Luo5; ‘Central South University

4:20 PM
Study on The Reduction Mechanism of Liquid Lead Slag: Weifeng Li1; Jing Zhan2; Lihuai Jiang3; Chuanfu Zhang4; Lucai Di5; Shi-yan Xu6; ‘Central South University; ‘Jiyuan Vocational and technical College

Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — Modeling of Additive Manufacturing

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas

Monday PM Room: Northern Hemisphere A1 Location: Dolphin

Session Chairs: Richard Fonda, Naval Research Laboratory; Deepankar Pal, University of Louisville

2:00 PM Invited
A New and Efficient Multi-Scale Simulation Architecture for Prediction of Performance Metrics for Parts Fabricated Using Additive Manufacturing: Deepankar Pal1; Brent Stucker2; ‘University of Louisville; ‘University of Louisville, 3DSIM LLC

2:30 PM
Phase-field Modeling of Microstructure Evolution in Electron Beam Additive Manufacturing: Xibing Gong1; Kevin Chou2; ‘The University of Alabama

2:50 PM
FEA Modeling and X-ray Measurement of Residual Stress and Distortion in the Direct Metal Laser Sintering Additive Manufacturing: Li Ma1; Lyle Levine2; ‘NIST

3:10 PM
Modeling the Process of Electron Beam Additive Manufacturing on the Performance of Ti-6Al-4V: Brian Hayes1; Iman Ghamarian2; Wendy Grogg3; Thomas Ales4; Pete Collins5; ‘University of North Texas

3:30 PM Break

3:50 PM
DMLS Process Modelling & Validation: Mustafa Megahed1; Narcisse N’Dri2; Hans-Wilfried Mindt3; Brian Shula4; Alonso Peralta-Duran5; Peter Kantz6; ‘University of Queensland; ‘University of North Texas; ‘University of North Texas

4:10 PM
Computational Modeling and Experimental Study on the Ti Alloys Manufactured by LENS Process: Wei Xiong1; Fuyao Yan2; Gregory Olson3; ‘Northwestern University

4:30 PM
Microstructural Investigation of LENS Processed 316L Stainless Steel: Fuyao Yan1; Wei Xiong2; ‘Northwestern University

4:50 PM
In-situ Shelling via Selective Laser Melting: Microstructural Characterisation and Modelling: Chunlei Qiu1; Nicholas Adkins2; Hany Hassanin3; Khamis Essa4; Moataz Attallah5; ‘The University of Birmingham
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Plasticity Induced Transformation

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

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; J. John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Panteleon, Technical University of Denmark

Monday PM  Room: Pelican 2
March 16, 2015  Location: Swan

Session Chairs: Daniel Kiener, University of Leoben; Shraddha Vachhani, Los Alamos National Laboratory

2:00 PM Invited Application of Precession Electron Diffraction in Understanding Indentation-Induced Grain Growth in Nanocrystalline Metals: Gregory Thompson1; Justin Brons2; Jelani Hardwick3; Xiaoxiang Yu4; Helen Padilla4; Khalid Hattar5; Ryan Ort6; Brad Boyce7; University of Alabama; 8Seagate; 9Sandia National Laboratories; 10Ames Laboratory

2:30 PM In-Situ Studies of Retained Austenite Transformation in Multiphase Steels: Whitney Poling1; Luis Hector2; Raj Mishra3; Anil Sachdev4; Colorado School of Mines; 5GM Research & Development

2:50 PM Martensite Nucleation and Growth Investigated by In-Situ Deformation Experiments, High Resolution EBSD and Microscopic Digital Image Correlation: Dingshan Yan1; Cem Tasan1; Satyapriya Gupta2; Anxin Ma3; Alexander Hartmaier4; Dierk Raabe5; Max-Planck-Institut für Eisenforschung GmbH; 6Interdisciplinary Centre for Advanced Materials Simulation, Ruhr-Universität Bochum

3:10 PM Evolution of Lattice Strain and Phase Transformation of Super-Elastic Nitinol during Cyclic Tension: Song Cai1; J Schaffer2; Y Ren1; 3Fort Wayne Metals Research Products Corp.; 4Argonne National Laboratory

3:30 PM Break

3:50 PM Electron Backscatter Diffraction and Nanoindentation Studies of Dual-Phase Polycrystalline Shape Memory Alloys: Rebecca Dar1; Ying Chen1; 2RPI

4:10 PM 3-D Characterization of Pre and Post-Deformation Lamellae Ti-6Al-4V Using High Energy X-ray Diffraction Microscopy: Euan Wielewski1; David Menasche2; Patrick Callahan2; Robert Suter2; Carnegie Mellon University

4:30 PM Damage Detection Using Acoustic Emission Technique for 304 Stainless Steel: Patricio Carrion1; Pratik Parajuli1; Jonathan Pegues1; Marcos Lugo1; Nima Shamsaei1; 2KIT

4:50 PM Grain Morphology Evolution in Strontium Titanate via Quantitative Correlative 3D Analysis Using TriBeam and Diffraction Contrast Tomography: McLean Echlin1; William Lenhert1; Andreas Trenkle1; Melanie Syha1; Peter Gumbsch2; Tresa Pollock1; University of California Santa Barbara; 3KIT; 4ESRF

Advanced Composites for Aerospace, Marine, and Land Applications II — Metal Matrix Composites

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Tomoko Sano, US Army Research Laboratory; Tirumalai Sivatsan, The University of Akron

Monday PM  Room: Asia 5
March 16, 2015  Location: Dolphin

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Alicia Ares, CONICET/FCEQyN-UNaM

2:00 PM Influence of Reinforcement Content on Tensile Response and Fracture Behavior of an Aluminum Alloy Metal Matrix Composites: K. Manigandan1; Zhencheng Ren2; Jingyi Zhao2; Tirumalai Sivatsan3; 4The University of Akron

2:20 PM Mechanical Properties of Steel Encapsulated Metal Matrix Composites: Sean Fudger1; U.S. Army Research Laboratory

2:40 PM The Evolution of Solid Powders in Liquid Aluminum at Low Temperature and the Effects of Ultrasound on It: Zhwei Liu1; Qingyou Han2; Purdue University

3:00 PM Metal Matrix Composites Directionally Solidified: Alicia Ares1; Carlos Enrique Schwezov2; 3CONICET/FCEQyN-UNaM; 4IMAM (CONICET-UNaM)

3:20 PM Break

3:40 PM A Small Solute Oxygen and Silicon Elements Enhancing Strength and Ductility of Pure Titanium Matrix Composite: Katsuyoshi Kondoh1; Lei Jia2; Takatanri Mimoto3; Junko Umeda2; Hisashi Imai1; Osaka University

4:00 PM Nanoparticulate Reinforced Aluminum Alloy Composites Produced by Powder Metallurgy Route: Kaspar Kallip1; Lauri Kollo1; Marc Leparoux2; Christopher Bradbury1; EMPA Swiss Federal Laboratories for Materials Science and Technology; 2Fällinn University of Technology

4:20 PM Growth Kinetics of Magnesio-aluminate Spinel in Aluminum/Magnesium Lamellar Composite Interface: Yasser Ahmed1; Bakr Rabieeh1; German University in Cairo

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments II — Environmental Influences of Downhole Alloys and Advanced Materials for Oil and Gas Applications II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Indranil Roy, Schlumberger; Xinghang Zhang, Texas A&M University; Ting Chen, West Virginia University; Greg Kusinski, Chevron; Jeffieron Rodrigues, Petrobras; Han Elshahawi, Shell Exploration & Production, Co.

Monday PM  Room: Swan 7
March 16, 2015  Location: Swan

Session Chairs: Gregoire Jacob, Schlumberger; Xinghang Zhang, Texas A&M University

2:00 PM Keynote Effect of the Volume Fraction and Distribution of the Rotated Cube Texture Component on Fracture Toughness in Pipeline Steels: John Jonas1; Alexey Gervasyev2; Roumen Petrov2; Malcolm Gray3; McGill University; 4Ghent University; 5Microalloyed Steel Institute

www.tms.org/TMS2015 #TMS2015Experience 107
2:25 PM
Nanostructured Materials: Addressing Corrosion and Cracking in Extreme Environments: Indranil Roy1; Gregoire Jacob2; Rashmi Bhavsar3; Tony Collins4; ‘Schlumberger

2:45 PM
Effect of Machine Hammer Peening Surface Treatment on Pitting Corrosion Behavior of Oil-Grade Alloy 718: Ting Chen1; Xingbo Liu1; Jeffrey Hawk2; Hendrik John3; Jing Xu4; Saadedine Tebbal4; ‘National Energy Technology Laboratory; West Virginia University; ‘National Energy Technology Laboratory; ‘Baker Hughes Inc; ‘SET Laboratories Inc.

3:05 PM
Invited
Nanostructuring Alloys For Oil and Gas Industry Applications: Terry Lowe1; ‘Colorado School of Mines

3:30 PM
Break

3:45 PM
Keynote
Micromechanics of Hydrogen-Induced Fracture: From Experiments and Modelling to Prognosis: Petros Sofos1; Akhilesh Nagao2; Mohsen Dadfarnia3; Shuai Wang4; May Martin5; Brian Sommerday6; Reiner Kirchheim7; Ian Robertson8; ‘Kyushu University; University of Illinois; ‘Kyushu University; ‘Kyushu University; ‘Tech University; ‘Army Research Laboratory

4:25 PM
Invited
Development of High Strength and Corrosion Resistant Nanostructured Ferritic Alloys for Oil & Gas Applications: Shenyuan Huang1; Richard DiDomizio2; Raul Rebak3; Reza Sharghi-Mostaghbin3; Evan Dolley4; Emanuele Pietrangeli5; ‘GE Global Research; ‘GE Oil & Gas

4:35 PM
Invited
High Temperature Shape Memory Alloys for Potential Applications in Oil and Gas Industry: Ibrahim Karaman1; ‘Texas A&M University

5:00 PM
Corrosion Resistance of Fe-Based Amorphous and Nanocrystalline Alloys: Jose Berger1; ‘PPGCEM-UFSCar


Sponsored by: TMS Functional Materials Division (formerly EPMMD), TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachael Myers-Ward, Naval Research Laboratory; Clive Randall, Penn State University; Matthew Willard, Case Western Reserve University; Ty McNutt, APEI, Inc.

Monday PM Room: Asbury A
March 16, 2015 Location: Yacht & Beach

Session Chairs: Rachael Myers-Ward, Naval Research Laboratory; Ty McNutt, APEI

2:00 PM Invited
Status of Large Diameter SiC Single Crystal Substrates for Semiconductor Applications: Gary Ruland1; ‘II-VI

2:30 PM Invited
4H-SiC Epilayers for High Power Bipolar Device: Jawad Ul Hassan1; Ian Booker2; Robin Karhu3; Louise Lilja4; Ildiko Farkas1; Pontus Stenberg5; Olle Kordina6; Peder Bergman2; Seoyong Ha7; Erik Janzn8; ‘Linköping University; ‘LG Innotek

3:00 PM
Improved Performance in AlGaN/GaN Power HEMTs-on-Silicon by Use of Pulsed MOCVD Technique and Stress Engineering: Jeff Leathersich1; Punceet2; Isa Mahabooob3; Neil Newman1; Jack Bulmer1; Randy Tompkins1; Kenneth Jones1; F. (Shadi) Shahedipour-Sandvik1; ‘College of Nanoscale Science and Engineering; ‘US Army Research Lab

3:10 PM Invited
Multifunctional Nanotubes for Better Dental and Orthopedic Implants: Tolou Shokuhfar1; ‘Michigan Technological University

Advanced Materials in Dental and Orthopedic Applications — Session II

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

Program Organizers: Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Elizabeth Trillo, Southwest Research Institute; Grant Crawford, South Dakota School of Mines and Technology

Monday PM Room: Swan 8
March 16, 2015 Location: Swan

Funding support provided by: Magnetic, and Photonic Materials Division

Session Chairs: Luis Rocha, Sao Paulo State University-UNESP; Ana Ribeiro, Inmetro; Tolou Shokuhfar, Michigan Technological University
3:40 PM Break

4:00 PM Invited
Innovative Multifunctional Calcium-Rich Surfaces for Dental Implant Applications: An Overview About Nanotoxicology Applied to Dental Implants: Ana Ribeiro; F. Oliveira; H. Cruz; J. Moscoso; L. Oliveira; R. Travassos; E. Santos; C.A. Achete; L.A. Rocha; J.M. Granjeiro; ‘National Institute of Metrology Quality and Technology; Brazilian Branch of Institute of Biomaterials, Tribocorrosion and Nanomedicine (IBTN); ‘Brazilian Branch of Institute of Biomaterials, Tribocorrosion and Nanomedicine (IBTN); University of Minho; Universidade Estadual Paulista – UNESP; ‘National Institute of Metrology Quality and Technology; University of Minho; Brazilian Branch of Institute of Biomaterials, Tribocorrosion and Nanomedicine (IBTN);’ Fluminense Federal University

4:05 PM Invited
Characterization of Chitin for Bone Tissue Regeneration: Samson Adeosun; Ganiyu Ishola Lawal; Oluwashina Gbenebor; ‘University of Lagos

4:50 PM Invited
Effects of Air Abrasion Surface Treatments on the Fracture Behaviour of a Veneered Dental Zirconia Ceramic: Sheila Passos; Bernard Linke; Paul Major; John Nychka; ‘University of Alberta

Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Solidification Processing II

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

Program Organizers: Laurentlu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH – Royal Institute of Technology; Jl acqades Lacaze, Université de Toulouse; Chun-Pyo Hong, Yonsei University; Adrian Catalina, Caterpillar Inc.; Andreas Bruhig-Polazcek, RWTH Aachen University; Daan Maier, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhayu Sen, GEOCENT; Attila Diószegi, Jönköping University; School of Engineering

Monday PM Room: Swan 6
March 16, 2015 Location: Swan

Session Chair: Charles Monroe, The University of Alabama at Birmingham

2:00 PM Invited
Modeling of Macrosegregation during Solidification of Steel Ingot Casting: Wutao Tu; Houfa Shen; Baicheng Liu; ‘Tsinghua University

2:25 PM
Scaling Analysis of Alloy Solidification and Flow in a Rectangular Cavity: Alex Plotkowski; Kyle Fezi; Matthew Krane; ‘Purdue University

2:45 PM
 Casting Solidification of Near-Congruent Binary Alloys: Kevin Chaput; Kevin Trumble; ‘Purdue University

3:05 PM
Improvement of Micro-Structure and Mechanical Properties in the Hyper-Eutectic Al-Si Cast Alloys Through Barium Additions: Ganpat Rai; D. Benny Karunakar; ‘Indian Institute of Technology Roorkee

3:25 PM
Interfacial Evolution of Heusler Ms50Ni40In10 Unidirectional Crystal: Jian Ren; Jinke Yu; Hongwei Li; Hongxing Zheng; ‘Laboratory for Microstructures, Shanghai University

3:45 PM Break

4:05 PM Invited
Structure and Casting Defects of Aluminum Billets Produced by Direct-Chill Casting: Dmitry Eskin; ‘Brunel University

4:30 PM
The Fluid Flow and Solidification Phenomenon in Billet Continuous Casting Process with Mold and Final Electromagnetic Stirrings: Dongbin Jiang; Miaoyong Zhu; ‘Northeastern University

4:50 PM
Columnar-to-Equiaxed Transition in Zn-27wt.Al Alloys: A Comparison between Vertical and Horizontal Directional Solidifications: Alicia Ares; Carlos Enrique Schvezov; ‘CONICET/FCEQyN-UNaM; IMAM (CONICET-UNaM)

5:10 PM
Evaluation of the Casting/Chill Interface Thermal Behaviour during A319 Alloy Sand Casting Process: Farzaneh Farhang Mehr; Steve Cockcroft; Carl Reilly; Daan Maier; ‘UBC

Advances in Thin Films for Electronics and Photonics — 2D Materials vs. Silicon
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Federico Roseli, INRS; Nuggehalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Monday PM Room: Europe 7
March 16, 2015 Location: Dolphin

Session Chair: Tatiana Martins, UFG

2:00 PM Invited
Amorphous Boron Based Nanosheets: Rajen Patel; Zafar Iqbal; ‘NJIT

2:25 PM Invited
Laterally Grown Silicon Micro-Films on Amorphous Substrates: Nate Quitoriano; ‘McGill University

2:50 PM Invited
 Nanopatterned Graphene with Controlled Electronic and Optical Properties: Sangho Jin; ‘UC San Diego

3:15 PM Invited
Synthesis and Characterization of 2D MoS2/Graphene Heterostructure Field Effect Transistors: Shamee Paealy; Emory Beck-Millerton; Michael Jespersen; Jianjun Hu; Nicholas Glavin; Michael Check; Andrey Voevodin; ‘AFRL

3:40 PM Break

4:00 PM Invited
Engineering Light Absorption in Group IV Nanowire Heterostructures: Anis Attiaoui; Oussama Moutanabbir; ‘Ecole Polytechnique de Montreal

4:25 PM
Interfacial Assembling of Freestanding and Pinhole-free GO Thin Films: Jiahua Zhu; Long Chen; ‘The University of Akron

4:45 PM Invited
Multifunctional Carbon Nanotube Composites: Xin Wang; Qingwen Li; Philip Bradford; Yunian Zhu; ‘North Carolina State University; ‘Suzhou Institute of Nanotechnology and Nanobionics

5:10 PM
Nano-Indentation Studies on Interface Adhesion of Thin Film Metallization in Silicon Integrated Circuits: Ali Roshanghias; Golta Khatibi; Rainer Pelzer; Juergen Steimbrenner; ‘University of Vienna; ‘Infinion Technologies Austria
Alloys and Compounds for Thermoelectric and Solar Cell Applications III — Session II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Francck Gascoin, Ensicaen University of Caen; Stéphane Gorse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshihiko Kimura, Tokyo Institute of Technology; Ce-Wen Nan, Tsinghua University; G.J. effrey Snyder, California Institute of Technology; Hsin-jay Wu, National Sun Yat-Sen University

Monday PM  Room: Europe 5  Location: Dolphin
Session Chairs: Hsin-jay Wu, National Sun Yat-Sen University; Albert T. Wu, National Central University

2:00 PM Invited
Atomic-Scale Observations of Dislocation Core Structures in Bismuth Telluride: Douglas Medlin1; N. Yang1; K. Erickson1; M. Siegal1; G. Yelton1; S. Limmer1; 1Sandia National Laboratories

3:35 PM Break

4:45 PM Invited
Interfacial Reactions in Thermoelectric Devices: Sinn-wen Chen1; Wei-an Chen1; Ting-ruei Yang1; Po-han Lin1; 1National Tsing Hua University

5:10 PM
Assembly of Highly Effective Bonding Layers for PbTe Thermoelectric Materials Using Rapid Hot-Pressing Method: C.C. Li1; F. Drymiotis2; L.L. Liao1; M.J. Dai1; C.K. Liu1; C.R. Kao1; G.J. Snyder1; 1National Taiwan University; 2California Institute of Technology; 1California Institute of Technology; 1Industrial Technology Research Institute

2:35 PM
Theory and Practice of Bauxite X-ray Sorting: Andrey Panov1; Gennadiy Klimentenok2; Vladimir Shemyakin2; 1RUSAL Engineering & Technology Centre; 2NPK “Technogen”

3:00 PM
Roasting Pretreatment on High-Sulfur Bauxite with Low-Median Grade in Chongqing China: Jianguo Yin1; Mingrong Han1; Wenqiang Yang1; Juan An1; Xuejiao Zhou1; Wentang Xia1; Liwen Huang1; 1Chongqing University of Science and Technology

3:25 PM Break

4:30 PM
Improving Characterization of Low Grade Elburz Bauxite to be Utilized in Jajarm Alumina Plant: Mohammadbaghi Shadloo1; Mohammad Zarbayani2; 1Iran Alumina Co.; 2General mechanic Company

4:05 PM
Bauxite Beneficiation Modifying Factors: A Case Study: Caio van Deursen1; 1Nortonantin Metais

4:30 PM Question and Answer Period

5:00 PM Concluding Comments

Aluminum Alloys: Development, Characterization, and Applications — Material Characterization
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky

Monday PM  Room: Northern Hemisphere E 3  Location: Dolphin
Session Chairs: Knut Marthinsen, Norwegian University of Science and Technology; Ramasis Goswami, Naval Research Laboratory

2:00 PM Keynote
The Influence of Microchemistry and Processing Conditions on the Softening Behavior of Cold-Rolled Al-Mn-Fe-Si Alloys: Knut Marthinsen1; 1Norwegian University of Science and Technology

2:35 PM Invited
Effects of Zr and V Micro-alloying on Activation Energy during Hot Deformation of 7150 Aluminum Alloys: Cangji Shi1; X. Grant Chen1; 1University of Quebec at Chicoutimi

2:55 PM Invited
Microstructure Evolution in Al-Mg Alloys during and After Hot Deformation: Raúl Perez-Bustamante1; Ryann Rupp2; Andrew Weldon1; Trevor Watt3; Ken Takata4; Eric Taleff5; 1The University of Texas at Austin

3:15 PM
Modified Microalloying Aluminum-Scandium-Based Alloys for High-Temperature Applications: David Seidman1; Nhon Vo2; David Dunand3; 1Northwestern University; 2NanoAl LLC

3:35 PM Break

3:50 PM
The Effect of Vanadium Addition on Structure and Material Properties of Heat Treated 6xxx Series Aluminium Alloys: Marzena Lech-Grega1; Wojciech Szymanski1; Sonia Boczkal1; Maciej Gawlik1; Mariusz Bigaj1; 1Institute of Non-Ferrous Metals

4:10 PM
Mechanical Properties of Al-(8,10)%Zn-2%Mg-2%Cu Base Alloys Processed with High-Pressure Torsion: Ichiro Aoi1; Shigeru Kuramoto2; Keiichiro Oh-ishi1; 1Toyota Central R&D Labs., Inc.
2:00 PM
Prioritizing Water Contaminants’ Impact on Heat Transfer in Casting Aluminum Ingots: Robert Baxter; Stephen Wood; John Gast; ‘Ashland Water Technologies

2:25 PM
Direct Flame Impingement: A New Oxy-Fuel Based Technology for Continuous Annealing of Aluminium Strip: Henrik Gripenberg; Rudiger Eichler; ‘Linde Gas

2:50 PM
Aluminum Surface Texturing by Means of Laser Interference Metallurgy: Jian Chen; Adrian Sabau; Jonaarons Jones; Alexandra Hacker; Claus Daniel; Charles Warren; ‘Oak Ridge National Lab; ‘University of Tennessee

3:15 PM Break

3:30 PM
Novelis do Brazil High-Speed Can End Coating Line – Operational Results: Anthony Tropeano; Trajano Roque Neto; ‘FATA Hunter, Division of FATA SpA; ‘Novelis do Brasil

Aluminum Reduction Technology — Cell Technologies and Design
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Laviole, LMRC

Monday P M Room: Southern Hemisphere III
March 16, 2015 Location: Dolphin

Session Chair: Geoff Beare, Rio Tinto Technology and Innovation

2:00 PM Introductory Comments

2:05 PM
Simulation and Measurements on the Flow Field of 600kA Aluminum Reduction Pot: Wei Liu; Dongfang Zhou; Yafeng Liu; Ming Liu; Xiaodong Yang; ‘SAMI

2:30 PM
CHINALCO 600kA High Capacity Low Energy Consumption Reduction Cell Development: Dongfang Zhou; Xiaodong Yang; Ming Liu; Wei Liu; ‘Shenyang Aluminium & Magnesium Engineering & Research Institute Co. Ltd

2:55 PM
Development History and Performance of Dubal DX+ Demonstration Cells: Ali Al Zarouni; Abdalla Zarouni; Nadia Ahl; Sergey Akhmetov; Michel Revery; Munawar Hussain; Konstantin Nikandrov; Lalit Mishra; ‘DUBAL; ‘Emirates Global Aluminium (EGA)

3:20 PM
Arvida Aluminium Smelter - AP60 Technological Center, Start-up Performance and Development of the Technology: Martin Forté; Martin Robitaille; Nicolas Gros; René Gariepy; Isabelle Mantha; Louis Lefrançois; Jean-Pierre Figue; ‘Rio Tinto Alcan, Arvida Research and Development Centre; ‘Rio Tinto Alcan, Arvida Aluminium Smelter; ‘Rio Tinto Alcan

3:45 PM Break

4:00 PM
From D18 to D18+: Progression of Dubal’s Original Potlines: Daniel Whitfield; Sergey Akhmetov; Maryam Mohammad Al-Jallaf; Jose Blasques; Kamel Al-Aswad; Ibrahim Baggash; ‘Dubai Aluminium PJSC

4:25 PM
World’s Longest Potline Start-Up at EMAL: Walid Alsayed; Abdulla Al Riyami; Mohamed Al Hammadi; Ibrahim Al Ali; Vijayakumar Pillai; Ali H. A. M. Al Zarouni; Akhmetov Sergey; Michel Revery; Nadia Ahl; ‘Emirates Global Aluminium, Al Taweelah Operations, PB No. 111023, Abu Dhabi, UAE; ‘Emirates Global Aluminium, Jebel Ali Operations, PB No. 3627, Dubai, UAE

4:50 PM
Technology Research on Aluminum Reduction Cell Pre-Stressed Shell: Pu Zheng; Wei Wang; ‘Guyang Aluminum Magnesium Design and Research Institute Company Limited

5:15 PM
Investment Advantages of the Establishing of Aluminum Clusters: Sergey Akhmedov; Vadim Kozlov; ‘ALCORUS Co Ltd

Biological Materials Science Symposium — Characterization of Natural and Biological Materials
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter, Clemson University; Francois Barthelet, McGill University

Monday P M Room: Swan 9
March 16, 2015 Location: Swan

Session Chairs: Francois Barthelet, McGill University; Rajendra Kasinath, DePuy Synthes Products, LLC

2:00 PM Invited
Deformation and Fracture in Human Cortical Bone: Roles of Strain Rate, Irradiation Aging and Disease: Robert Ritchie; Elizabeth Zimmermann; Bernd Gludovatz; Hirshikesh Bale; Holly Barth; Claire Aevedo; Alessandra Carriero; Björn Busse; ‘University of California Berkeley; ‘University Medical Center Hamburg; ‘Lawrence Berkeley National Laboratory; ‘Lawrence Livermore National Laboratory; ‘Imperial College

2:30 PM
Application of Similitude and Scaling Relationships to Analyze the Structural Response of Novel Bio Inspired (Paddlefish Rostrum) Materials Under Extreme Loading Conditions: Guillermo Riveros; Reena Patel; Wayne Hodo; Jan Hoover; Jeremiah JDeang; Mark Horsemayer; ‘US Army; ‘Mississippi State University

2:50 PM
Combining Acoustic and Spectroscopic Measurement to Characterization Biological Entities: Eric Lesniewska; Pauline Vitry; Alexandre Dazzi; Laurene Téard; Eric Bourillot; ‘University of Bourgogne; ‘University Paris Sud; ‘University of Central Florida

3:10 PM
Depth-Sensing Nanoindentation and Synchrotron Based XRF and XRD Investigation of Tungsten Exposed Bio-Monitoring Systems, Gastropod (Otala Lactea) Shells: Paul Allison; Jen Seiter; Alfredo Diaz; Jay Lindsay; Robert Moser; R.V. Tappero; Alan Kennedy; Omar Rodriguez; ‘US Army Engineer Research & Development Center; ‘US Army Engineer Research & Development Center; ‘University of Puerto at Mayaguez; ‘National Synchrotron Light Source at Brookhaven National Laboratory; ‘University of Alabama

3:30 PM Break

3:40 PM
Experimental Characterization of Bone and Exoskeleton Fish Scale Structures: Wayne Hodo; Kenneth Livit; Jennifer Seiter; Brandon Lafferty; Mark Chappell; Paul Allison; Troyan Landin; Cedric Bouchet-Marquis; ‘ERDC; ‘John Hopkins University; ‘North America NanoPort, FEI Company
4:00 PM Invited
Investigation of Biological and Biomimetic Composites: Nicholas Yaraghli; Enrique Escobar de Obaldia; Nobphadon Suksangpanya; Chris Salinas; Steven Herrera; Pablo Zavattieri; David Kisailus; 'University of California at Riverside; 'Purdue University

4:30 PM
Biochemical Characterisation of the Leaf of Morinda Lucida: Prospects for Environmentally Friendly Steel Rebar Corrosion-Protection in Aggressive Medium: Joshua Okenyi; Olubanke Ogundana; Oluseyi Ogundana; Taiwo Owuoe; Elizabeth Okenyi; 'Covenant University, Ota, Nigeria; 'Crawford University, Igbesa, Nigeria

4:50 PM
In Vitro Studies of Surface Modified Highly Porous Ti6Al7Nb Alloys: Ezgi Buteva; Ziya Esen; Sakir Bor; 'Cankaya University; 'Middle East Technical University

5:10 PM
Magnetic Alignment of Ice Templated Ceramics: Michael Porter; Marc Meyers; Joanna McKittrick; 'Clemson University; 'University of California San Diego

Bulk Metallic Glasses XII — Alloy Development and Application II
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Llau, University of Tennessee; Gongyao Wang, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, University of Tennessee

Monday PM Room: Asia 4
March 16, 2015 Location: Dolphin
Session Chairs: Jan Schroers, Yale University; Atakan Peker, Washington State University

2:00 PM Invited
Structure-Property-Processing Relationships in Metallic Glasses: Jan Schroers; Yanhui Liu; Yanglin Li; Sungwoo Sohn; Katharine Jensen; 'Yale University

2:25 PM
Extrusion of Bulk Metallic Glass in the Supercooled Liquid Region: Gregory Duggan; David Jarvis; Wayne Voice; Nicholas Lavery; David Browne; 'University College Dublin; 'European Space Agency; 'Swansea University

2:45 PM Invited
Bulk Metallic Glass - A Superior Erosion and Cavitation Resistant Material: Harpreet Arora; Ayagari Aditya; Sundeep Mukherjee; 'University of North Texas

3:10 PM Invited
Bulk Metallic Glasses: Scale-Up and Applications: Atakan Peker; 'Washington State University

3:35 PM Break

3:50 PM Invited
Cu-based Glassy Nano Wire Fabrication: Y. Yokoyama; K. S. Nakayama; S. Yaginuma; S. Tsukimoto; J. Okada; T. Ishikawa; 'IMR, AIMR-WPI, Tohoku University; 'AIMR-WPI, Tohoku University; 'Institute of Space and Astronautical Science

4:10 PM Invited
Fabrication of Amorphous Metal Composites and Foams via Equal Channel Angular Extrusion: Suveen Mathaudhu; 'University of California Riverside

4:30 PM Invited
Nano vs. Temperature Effect:Brittle vs. Ductile Deformation in Nano-Sized Metallic Glasses: David Chen; S.W. Lee; Julia Greer; 'California Institute of Technology; 'University of Connecticut

4:50 PM
Interfacial Free Energy, Glass Forming Ability, Local Order of Liquid Metals: Geun Woo Lee; 'Korea Research Institute of Standards and Science

5:10 PM Invited
A Research on the Glass-Forming Ability of High-Entropy Alloys: Ke-Fu Yao; Shaofan Zhao; Zhidong Han; Hongyu Ding; 'Tsinghua University

5:30 PM Invited
Formation and Properties of P-Free Pd-Based Bulk Metallic Glasses with High Glass-Forming Ability: Wei Zhang; Hai Guo; Shuli Ou; Yanhui Li; 'Shanghai University; 'School of Materials Science and Engineering, Dalian University of Technology; 'Institute for Materials Research, Tohoku University

CALPHAD-Based ICME Research for Materials Genomic Design — Materials Genome: ICME and CALPHAD-Based Materials Design 1
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wei Xiong, Northwestern University; Shih-kang Lin, National Cheng Kung University; Chao Jiang, Thermo-Calc Software Inc; Shenyang Hu, Pacific Northwest National Laboratory; Wen-dung Hsu, National Cheng Kung University; Sinn-wen Chen, National Tsinghua University; Shuanglin Chen, CompTherm LLC

Monday PM Room: Northern Hemisphere A2
March 16, 2015 Location: Dolphin
Session Chairs: Jiadong Gong, QuesTek Innovations; Shenyang Hu, Pacific Northwest National Laboratory; Wei Xiong, Northwestern University; Xiao-Gang Lu, Shanghai University

2:00 PM Keynote
Correlative Atom-Probe Tomographic and Simulation Studies Pertinent to Microstructural Evolution of Nickel-Based Alloys: David Seidman; 'Northwestern University

2:35 PM Keynote
Multiscale Modeling of Precipitate Morphologies in Mg-RE Alloys: Yanzhou Ji; Ahmed Issa; James Saal; Chris Wolsveton; Long Qing Chen; 'Pennsylvania State University; 'Northwestern University

3:10 PM Phase Field Simulation on Dendritic Growth in Pressurized Solidification of Mg-Al Alloy: Haowei Pan; Zhiqiang Han; Alan Luo; Baicheng Liu; 'Tsinghua University; 'The Ohio State University

3:30 PM Break

3:45 PM
Phase Equilibria in Ternary Co-Al-W: Toward Accurate CALPHAD-Type Descriptions of Thermodynamic, Molar Volume, and Elastic Properties: Eric Lass; 'NIST

4:05 PM Keynote
Investigation on Ferritic Superalloys with Improved Creep Resistance by Computational Design and Experimental Validation: Peter Liaw; Mark Asta; Bjørn Claussen; Hong Ding; David Dunand; Morris Fine; Gautam Ghosh; Shenyang Huang; Donovan Leonard; Christian Liebscher; Chain Liu; Michael Rawlings; Zhiqian Sun; Giam Song; Zhenke Teng; Nhon Vo; Gongyao Wang; 'University of Tennessee; 'University of California Berkeley; 'Los Alamos National Laboratory; 'Northwestern University; 'Oak Ridge National Laboratory; 'City University of Hong Kong

4:40 PM Invited
Effective Exploration of Novel High-Temperature Steels for Advanced Ultrasonopercircllic Steam Turbines: Changdong Wei; Siwei Cao; Ji-Cheng Zhao; 'The Ohio State University

5:10 PM
An ab Initio-Aided Experimental Investigation on W-Doped Li2Ti2O5: Defect Spinel as Anodes for Li Ion Batteries: Ping-chun Tsai; Shih-kang Lin; Wen-Dung Hsu; 'National Cheng Kung University (NCKU)
Pulsed Magnetic Fields: Observing Nanoscale Magnetostriction with Coherent X-rays in DC and 2:40 PM Invited National Lab: Nanobeam Ptychography of Integrated Circuits 2:20 PM Invited 2:05 PM On Liquid Metal Wetting of Casting Rings for DC Casting: Nazlin Bayat 1; Torbjorn Carlborg 1; 'Mid Sweden University 2:30 PM Thermal Stress Prediction in AAS182 Rectangular Ingots: Yunbo Wang 1; Matthew Krane 1; Kevin Trumble 1; 'Purdue University 2:55 PM Macrosegmentation During Direct Chill Casting of Aluminum Alloy 7050: Kyle Felt 1; John Coleman 1; Matthew Krane 1; 'Purdue University 3:20 PM Break 3:35 PM Experimental Observations of Macrosegmentation in DC Casting of Rolling Slab Ingots: Samuel Wagstaff 1; Antoine Allanore 1; 'Massachusetts Institute of Technology 4:00 PM Development and Demonstration of a Flexible Ingot Mould Filling System: Jean-Francois Desmeules 1; 'Dynamic Concept

Characterization of Materials through High Resolution Coherent Imaging — Coherent and Phase Contrast Imaging
Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee Program Organizers: Ross Harder, Argonne National Lab; Richard Sandberg, Los Alamos National Laboratory; Brian Abbey, La Trobe University; Xianghui Xiao, Argonne National Laboratory; John Carpenter, Los Alamos National Laboratory
Monday PM Room: Macaw 2 March 16, 2015 Location: Swan
Session Chair: Xianhui Xiao, Argonne National Laboratory

2:00 PM Invited Nano-Imaging with Ptychography: Xiaojing Huang 1; Hanfei Yan 1; Ray Conley 1; Nathalie Bouri 1; Juan Zhou 1; Evgeny Nazaretski 1; Kenneth Lauver 1; Ross Harder 1; Julio Da Silva 1; Ian Robinson 1; Yong Chu 1; 'Brookhaven National Laboratory; 2Advanced Photon Source; 1Swiss Light Source; London Centre for Nanotechnology 2:20 PM Invited Nanobeam Ptychography of Integrated Circuits: David Vine 1; 'Argonne National Laboratory 2:40 PM Invited Observing Nanoscale Magnetostriiction with Coherent X-rays in DC and Pulsed Magnetic Fields: Edwin Fohling 1; Ross Harder 1; Oleg Shpyrko 1; Boris Kieffer 1; Eric Fullerton 1; 'LANL/NSMSU; 2Argonne National Lab; 3University of California San Diego; 4New Mexico State University 3:00 PM Invited Three-Dimensional Bragg Coherent Diffractive Imaging Using Polychromatic X-rays: Wonsuk Cha 1; Stephen Hruszkewycz 2; Rebecca Sichel-Tissot 1; Matthew Highland 1; Ross Harder 1; Wenjun Liu 1; Jorg Maser 1; Paul Fuoss 1; 'Argonne National Laboratory 3:20 PM Break 3:40 PM Keynote Watching Microstructure Evolve using Phase Contrast X-ray Imaging: J.W. Gibbs 1; K.A. Mohan 1; E.B. Gulsoy 1; A. Shahaimi 1; X. Xiao 2; C. Bouman 2; M. DeGraef 3; Peter Voorhees 1; 'Northwestern University; 2Purdue University; 3Argonne National Laboratory; Carnegie Mellon University 4:10 PM Three-Dimensional Atomic Resolution Tomography Reconstruction of Tilt Series: Xiangwen Lyu 1; Wenpei Gao 1; Jian Min Zuo 1; 'University of Illinois 4:30 PM In-Situ X-ray Imaging of Microstructural Evolution in Metallic Alloys during Directional Solidification: Amy Clarke 1; Paul Gibbs 1; Seth Imhoff 1; Damien Tourret 1; Younggil Song 1; Kamel Fezzaa 1; Wah-Keat Lee 1; Alain Karma 1; 'Los Alamos National Laboratory; 2Northeastern University; 3Argonne National Laboratory; Brookhaven National Laboratory 4:50 PM Invited X-ray Phase Contrast Tomography for Materials Characterisation: From Synchrotrons to the Lab: Robert Bradley 1; Philip Withers 1; 'The University of Manchester 5:10 PM Estimation of Amount of Recrystallization from Electron Backscatter Diffraction (EBSD) Data Using Grain Orientation Spread (GOS) Measurement: Harshvardhana Natarajan 1; Janamejay Nemade 1; M. P. Gururajan 1; Prita Pant 1; 'IIT Bombay; 'Crompton Greaves Limited

Characterization of Minerals, Metals, and Materials — Characterization of Welding and Solidification
Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee Program Organizers: John Carpenter, Los Alamos National Laboratory; Chenguang Bai, Chongqing University; Juan Pablo Escobedo, University of New South Wales; Jaim-Yang Hwang, Michigan Technological University; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Sergio Neves Monteiro, Military Institute of Engineering, IME, Materials Science Department; Zhiewei Peng, Michigan Technological University; Mingming Zhang, ArcelorMittal; J Ian Li, CamelMATERIALS
Monday PM Room: Mockingbird 1 March 16, 2015 Location: Swan
Session Chairs: Pasquale Russo Spena, Free University of Bozen-Bolzano; Dhriti Bhattacharyya, ANSTO

2:00 PM Laser welding between TWIP Steels and Automotive High-Strength Steels: Pasquale Russo Spena 1; Matteo Rossiini 1; Luca Cortese 1; Paolo Matteis 2; Giorgio Scavino 1; Donato Furrao 1; 'Free University of Bozen-Bolzano; 'Politecnico di Torino 2:20 PM Undercooling of Rapidly Solidified Droplets and Spray Formed Strips of Al-Cu (Sc): Abdoul-Aziz Bogno 1; Philipp Natze 1; Shengze Yin 1; Hani Henein 1; 'University of Alberta 2:40 PM Thermophysical Property Measurement of Metallic Alloys in the Liquid Phase - Experiments on the International Space Station: Rainer Wunderlich 1; Enrica Ricci 1; Jacqueline Elay 1; Livio Battezzati 1; Kenneth Kelton 1; Juergen Brillo 1; Robert Hycs 1; Douglas Matson 1; Hans-Joerg Fecht 1; 'Universität Ulm; 'CNR-ICENI Genoa; 'CNRS-EPMP Grenoble; 'Università di Torino; 'Washington University; 'DLR German Aerospace Center; 'University of Massachusetts; 'Tufts University

MONDAY PM
3:00 PM  
Investigation on Testing Methods of Selective Laser Melted 18Ni300 Maraging Powder: Jun Bao1; Shouping Liu1; Kai Kang1; Xiaon Sun1; ‘College of Mechanical Engineering, University of Chongqing

3:20 PM  
Break

3:40 PM  
The Effect of Welding on Complex Carbide Precipitates in a Ni-Cr-Mo-Si Alloy: Dhruti Bhattacharyya1; Joel Davis1; Ondrej Muransky1; Gordon Thorogood1; Mike Drew1; Lyndon Edwards1; ‘ANSTO

4:00 PM  
Spatially Correlated Nanoindentation, EBSD, and EDX Characterization of Friction Stir Welds: Oscar Rivera1; P.G. Allison1; J.B. Jordan1; ‘The University of Alabama

4:20 PM  
High Resolution Analysis of Ultrasonic-Based Processes and Fatigue Experiments by Laser-Doppler-Vibrometry for Applications in Materials Science and Engineering: Frank Balle1; ‘University of Kaiserslautern

4:40 PM  
Selective Laser Melting: Characteristics of IN718 Powder and Microstructures of Fabricated IN718 Sample: Xiao Sun1; Shouping Liu1; Jun Bao1; Kai Kang1; ‘College of Materials Science and Engineering, ChongQing University

Characterization of Nuclear Reactor Materials and Fuels with Neutron and Synchrotron Radiation — Session II  
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee  
Program Organizers: Jonathan Almer, Argonne National Laboratory; Meimei Li, Argonne National Laboratory; Donald Brown, Los Alamos National Laboratory; Tiangan Lian, Electric Power Research Institute

Monday PM  
Room: Grand Harbor Salon 5
March 16, 2015  
Location: Yacht & Beach

Session Chair: Meimei Li, Argonne National Laboratory

2:00 PM  
Introductory Comments

2:05 PM  
Invited  
Utilization of Synchrotron X-ray Techniques for Microstructural Analyses in Irradiated Metallic Nuclear Fuels and Structural Materials: Maria Okuniewski1; David Sprouster2; James Hunter3; Donald Brown3; Lynne Ecker4; Peter Keneels1; Bjorn Clausen1; John Sinshheimer2; ‘Idaho National Laboratory; ‘Brookhaven National Laboratory; ‘Los Alamos National Laboratory; ‘Argonne National Laboratory

2:35 PM  
Characterization of Grain Growth in Nano-Grained UO2 with In Situ High Energy X-ray Diffraction and TEM: Di Yun1; Kun Mo1; Thierry Wiss2; Jonathan Almer1; Jeffrey Fortner1; Abdellatif Yacout1; ‘Argonne National Laboratory; ‘European Commission, Institute for Transuranium Elements

2:55 PM  
Corrosion at the Surface of a Nuclear Fuel: In-Situ Radiolysis and X-ray Scattering from Thin Single-Crystal UO2 Films: Ross Springell1; Sophie Rennie1; Camilla Stitt1; Elizabeth Cocklin2; Didier Wermelinde2; David Morgan2; Robert Burrows2; Howard Sims1; William Nuttall1; Chris Lucas2; Gerald Lander3; ‘University of Bristol; ‘University of Liverpool; ‘University of Cardiff; ‘National Nuclear Laboratory; ‘Open University; ‘ITU

3:15 PM  
In Situ Carbothermic Reduction of Uranium Carbide and its High Temperature Cubic Phase: H. Matthias Reiche1; Sven Vogel1; ‘Los Alamos National Laboratory

3:35 PM  
Break

3:50 PM  
Isotope Specific Neutron Imaging of Nuclear Fuel Pellets: Adrian Losko1; Sven Vogel1; Anton Tremain1; Darrin Byler2; Ken McClellan3; Mark Bourke2; ‘University of California, Berkeley; ‘Los Alamos National Laboratory

4:10 PM  
Invited  
Combined MeV/Nucleon Irradiation and High Energy Synchrotron X-ray Characterization of Nuclear Materials: Michael Pellin1; Abdellatif Yacout1; Di Yun1; Kun Mo1; Walid Mohamed1; Bei Ye1; Samit Bhattacharyya2; David Seidman3; ‘Argonne National Laboratory; ‘Northwestern University

4:40 PM  
Atomistic Modeling and Diffraction Analysis of Metallic Uranium Alloys: Alex Moore1; Chaitanya Dev1; Michael Baskes2; Maria Okuniewski3; Lynne Ecker4; David Sprouster5; ‘Georgia Institute of Technology; ‘Los Alamos National Laboratory; ‘Idaho National Laboratory; ‘Brookhaven National Laboratory

5:00 PM  
Invited  
Non-Destructive Grain Growth Study in Uranium dioxide Fuel Pellets Using Synchrotron Radiation: Reeju Pokharel1; Donald Brown2; ‘Los Alamos National Laboratory

Computational Modeling and Stochastic Methods for Materials Discovery and Properties — Materials Discovery and Characterization  
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee  
Program Organizers: Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois at Urbana-Champaign; Mikhail Mendeleev, Ames Laboratory; Adi van Duin, Pennsylvania State University

Monday PM  
Room: Northern Hemisphere A4
March 16, 2015  
Location: Dolphin

Session Chairs: Mark Asta, University of California, Berkeley; Yuri Mishin, George Mason University

2:00 PM  
Invited  
Computational Database for Elastic Properties of Materials: Mark Asta1; Maarten de Jong1; Kristin Persson1; Tom Angsten2; Wei Chen2; ‘University of California, Berkeley; ‘Lawrence Berkeley National Laboratory

2:30 PM  
Investigations of Early Stages of Nanoindentation through Combined DFT, MD and Hybrid MD/FEM Simulations: Francesca Tavazza1; Li Ma1; Chandler Becker2; Lyle Levine3; ‘National Institute of Standards and Technology

2:50 PM  
A Stochastic Approach for Predicting the Mechanical Properties of Graphene: Tomas Mawyi1; Prasanth Nair1; Chandra Veer Singh2; ‘University of Toronto

3:10 PM  
Computational Discovery of Novel Two-Dimensional Materials with an Evolutionary Algorithm: Benjamin Revard1; Arunima Singh2; Will Tipton2; Richard Hennig1; ‘Cornell University

3:30 PM  
Break

3:45 PM  
An Ab-Initio Investigation of Water Dissociation on Two-Dimensional MoS2 Edges: Kulbir Ghuman1; Shwetank Yadav1; Chandra Veer Singh2; ‘University of Toronto

4:05 PM  
Effect of Interwall Interaction, Doping and Defects on the Electronic Structure of DWCNTs: Matias Soto1; ‘Rice University
4:00 PM Invited
Effects of Microstructural Anisotropy on the Mechanical Properties of Aluminum Alloy AA 7010 – T7651: Alison Cranston1; Juan P. Escobedo-Diaz2; Paul Hazell1; Elena Garlea2; Don Brown3; Michael Worswick1; Tim Skocz;1 University of Waterloo; Cosma Promatech Research Center

4:40 PM
Warm Forming Of ZEK100 Magnesium Sheet in Tensile Stress States: Cliff Butcher1; Srihari Kurukuri1; Nima Panahi1; Michael Worwick; Tim Skocz;1 University of Waterloo; Cosma Promatech Research Center

5:00 PM Invited
Thermal Residual Stresses in Polycrystalline a-Uranium: Christopher Calhoun1; Elena Garlea2; Don Brown2; Sean Agnew1; University of Virginia; Y-12 Security Complex; Los Alamos National Laboratory

5:20 PM
A Yield Surface for HCP Materials Undergoing a Wide Range of Loading Conditions: Jeffrey Lloyd1; Richard Becker1; US Army Research Laboratory

3:00 PM Invited
Constitutive Behavior of Materials: Experiments, Modeling and Validation: Shuh Rong Chen1; G.T. Gray1; Los Alamos National Laboratory

3:20 PM
The Influence of Microstructural Anisotropy and Strain Rate on the Shear Response OF OFHC Copper Incorporating Microstructure Evolution: Nicola Bonora1; Andrea Ruggiero1; Simone Dichiaro2; Gabriel Testa1; Magnus Hörnqvist; Nooshin Mortazavi Seyedeh; Mats Halvarsson2; University of Cusino; Chalmers University of Technology

5:05 PM
Constitutive Response II
Session Chairs: Ellen Cerreta, Los Alamos National Laboratory; Kenneth Vecchio, University of California, San Diego

2:00 PM Invited
Screw Dislocation Cross Slip at Cross-Slip Plane Jogs and Screw Dipole Annihilation in FCC Cu, Ni Investigated via Atomistic Simulations: Satish Rao1; Dennis Dimiduk2; Triplcane Parthasarathy1; Jaafar El-Awady3; Michael Uchic1; Christopher Woodward1; UES Inc.; Air Force Research Laboratory; Johns Hopkins University

2:20 PM
A Yield Surface for HCP Materials Undergoing a Wide Range of Loading Conditions: Jeffrey Lloyd1; Richard Becker1; US Army Research Laboratory

2:40 PM Invited
Numerical Simulation of Deformation Development during Dynamic Tensile Extrusion of OFHC Copper Incorporating Microstructure Evolution: Nicola Bonora1; Andrea Ruggiero1; Simone Dichiaro2; Gabriel Testa1; Magnus Hörnqvist; Nooshin Mortazavi Seyedeh; Mats Halvarsson2; University of Cusino; Chalmers University of Technology

3:00 PM Invited
Constitutive Behavior of Materials: Experiments, Modeling and Validation: Shuh Rong Chen1; G.T. Gray1; Los Alamos National Laboratory

3:20 PM
The Influence of Microstructural Anisotropy and Strain Rate on the Shear Response OF OFHC Copper Incorporating Microstructure Evolution: Nicola Bonora1; Andrea Ruggiero1; Simone Dichiaro2; Gabriel Testa1; Magnus Hörnqvist; Nooshin Mortazavi Seyedeh; Mats Halvarsson2; University of Cusino; Chalmers University of Technology

3:40 PM Break

4:00 PM Invited
Effects of Microstructural Anisotropy on the Mechanical Properties of Aluminum Alloy AA 7010 – T7651: Alison Cranston1; Juan P. Escobedo-Diaz2; Paul Hazell1; Elena Garlea2; Don Brown3; Michael Worswick; Tim Skocz; University of Waterloo; Cosma Promatech Research Center

4:40 PM
Warm Forming Of ZEK100 Magnesium Sheet in Tensile Stress States: Cliff Butcher1; Srihari Kurukuri1; Nima Panahi1; Michael Worwick; Tim Skocz; University of Waterloo; Cosma Promatech Research Center

5:00 PM Invited
Thermal Residual Stresses in Polycrystalline a-Uranium: Christopher Calhoun1; Elena Garlea2; Don Brown2; Sean Agnew1; University of Virginia; Y-12 Security Complex; Los Alamos National Laboratory
5:20 PM
FFT Modeling of Deformation Behavior in Metallic Glass Matrix Composites: Michael Gibbons1; David Riegner1; Kelly Kranjc2; Nicholas Hutchinson1; Allen Hunter1; Douglas Hoffmann1; Jennifer Carter1; Emmanuelle Marquis2; Katherine Flores3; Stephen Nierzoda1; Wolfgang Windl1; ‘The Ohio State University; 2Washington University in St. Louis; 3University of Michigan; ‘Jet Propulsion Laboratory; ‘Case Western Reserve University

5:40 PM
A Multi-Scale Model of Dislocation Plasticity in á-Fe: Incorporating Temperature, Strain Rate and Non-Schmid Effects: Hojun Lim1; Lucas Hale1; Jonathan Zimmerman1; Corbett Battaile1; Christopher Weinberger2; ‘Sandia National Laboratories; 2Drexel University

6:00 PM
The Origin of Oxygen Strengthening Effect in a-Titanium: Liang Qi1; Qian Yu1; Tomohito Tsurui; Andrew Minor1; John Morris1; Mark Asta1; Daryl Chrzan1; ‘University of California, Berkeley; ‘Japan Atomic Energy Agency

Development of “Weak Links” during the Processing of Metallic Materials — Microstructure Characterization
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Lee Semiatin, US Air Force Research Laboratory; Anthony Rollett, Carnegie Mellon University; Thomas Bieler, Michigan State University; Mark Stoudt, National Institute of Standards and Technology

Monday PM
Room: Peacock
Location: Swan
Session Chairs: Thomas Bieler, Michigan State University; Ayman Salem, Materials Resources LLC

2:00 PM Keynote
Quantifying Microstructural Defects in Materials: Theory and Experiment: Louis Hector Jr1; ‘General Motors

2:30 PM Invited
Accounting for Abnormal Features in Representative Descriptions of Microstructure: Ayman Salem1; Daniel Satko1; Joshua Shaffer1; Surya Kalidindi1; Lee Semiatin1; 1Materials Resources LLC; 2Georgia Institute of Technology; ‘Air Force Research Laboratory

3:00 PM Invited
Finding the Weakest Link within the Hierarchy of Microstructure in Titanium Alloys: Adam Pilchak1; 1Air Force Research Laboratory

3:30 PM Break

3:45 PM Invited
Evolution of Excess Dislocation Density at Grain Boundaries during Deformation of Polycrystalline Metals: David Field1; 1Washington State University

4:15 PM
EBSD versus HEDM Characterization of Orientation Gradients during Plastic Deformation: Anthony Rollett1; Samikshya Subedi1; Rejaa Pokhare1; Robert Suter1; 1Carnegie Mellon University; 2Los Alamos National Laboratory

4:45 PM
Analysis of the Subsurface Slip Activity during Plastic Deformation Using Crystal Plasticity Finite Element Method with Realistic 3D Microstructure: Chen Zhang1; Philip Eisenlohr1; Thomas Bieler1; Martin Crimp1; Carl Boehlert1; 1Michigan State University

5:05 PM
Material Characteristics and Defects Found in Metal Injection Molded (MIM) Materials via Metallographic Cross-Sectioning: Julius Bonini1; Joan Morra1; 1Lucideon M + P
Electrode Technology for Aluminum Production — Anode Raw Materials  
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee  
Program Organizer: Arne Ratvik, SINTEF

Monday PM  
March 16, 2015  
Location: Dolphin  
Session Chair: Alan Tomsett, Pacific Aluminium

2:00 PM Introductory Comments

2:05 PM  
Pilot Anode Testing of Alternative Binder and CPC Raw Materials  
Winfried Boenigk1; Claudia Boltersdorf1; Christopher Kuhnt1; Jens Stiegert1; Les Edwards2; Marvin Lubin3; 1RÜTGERS Basic Aromatics GmbH; 2Rain CII Carbon LLC

2:30 PM  
Calcined Petroleum Coke Density Separation Process: Solution to Maintain Anode Quality with Degrading Coke Density  
Marie-Josée Dion1; Yvon Ménard1; 1Rio Tinto Alcan

2:55 PM  
New Developments of Anode Coke Grinding Using a Vertical Mill Technology  
Hans-Dieter Nolde1; Jan Paepcke1; Jens-Peter Thiél1; Arne Hilck1; 1Claudius Peters Projects

3:20 PM  
Effects of Mixing Parameters and Pores of Cokes on Pitch Absorption in Making Carbon Anode Pastes  
Tong Chen1; Jilai Xue1; Xiang Li1; Guanghui Lang1; Guoqing Zhou1; Lin Tang1; 1University of Science and Technology Beijing; 2Sunstone Carbon

3:45 PM  
Break

4:00 PM  
Real-Time Measurement of Coke Aggregate Size and Vibrated Bulk Density Using Image Texture Analysis  
Wilinthon Bogoya Forero1; Carl Duchesne2; Jayson Tessier2; 1Laval University; 2Alcoa Global Primary Metals

4:25 PM  
Anode Aggregate Bulk Density Determinations Using a Y-Blender  
David Belitskus1; 1DLB Consulting

4:50 PM  
A Size-Dependent Thermodynamic Model for the Carbon/Hydrogen/Sulfur System in Coke Crystallites: Application to the Production of Pre-Baked Carbon Anodes  
Philine Ouzilleau1; Aimen Gheribi1; Patrice Charttrand1; 1CRCT-Ecole Polytechnique de Montreal

5:15 PM  
Traceability of Raw Materials in Silos in an Anode Plant  
Dipankar Bhattacharyya1; Duygu Kocafe1; Yasar Kocafe1; Brigitte Morais2; Jacques Lafrance3; 1University of Quebec at Chicoutimi; 2Aluminerie Alouette Inc.

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee  
Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Monday PM  
March 16, 2015  
Location: Dolphin  
Session Chairs: Tongguang Zhai, University of Kentucky; Jacob Hochhalter, NASA LaRC

2:00 PM Keynote  
Perspectives on Top-Down and Bottom-Up Microstructure-Sensitive Fatigue Modeling  
David McDowell1; 1Georgia Institute of Technology

2:35 PM Invited  
Statistically Modeling High Cycle Fatigue without Failure Data  
D. Gary Harlow1; 1Lehigh University

2:55 PM Invited  
A Probabilistic Life Prediction Method of Multiple Fatigue Failure Modes  
Liyang Xie1; 1Northeastern University, Shenyang, China

3:15 PM  
Life Prediction of Thermomechanical Fatigue via Strain Energy Density  
Thomas Bouchenol1; Ali Gordon1; Ravi Penmetsa2; 1University of Central Florida; 2Air Force Research Laboratory

3:35 PM Break

3:50 PM  
Multiaxial Fatigue Life Prediction of Titanium Alloy Electronic-Beam Welded Joints under Proportional and Non-Proportional Combined Loading  
Xiaogang Liu1; 1Nanjing University of Aeronautics and Astronautics

4:10 PM Invited  
Defect Modeling and Endurance Limit Prediction for Cast Aluminum Alloys  
Ryan Cooper1; Shibayan Roy1; Adrian Sabau1; Charles Hawkins1; 1Oak Ridge National Laboratory

4:30 PM  
Microstructure-Sensitive MultiStage Fatigue (MSF) Modeling of the Cyclic Behavior of a Rolled Homogeneous Armor (RHA) Class Steel Weld Joint  
Justin Hughes1; Marcos Lugo1; Mark Horstemeyer1; Hongjoo Rhee1; 1Center for Advanced Vehicular Systems

4:50 PM  
Crystal Viscoplasticity of a Ni-Base Superalloy in the Aged State  
Michael Kirka1; Richard Neu1; 1Georgia Institute of Technology

5:10 PM  
Life Prediction of Ti-6242S and IN617 under Thermo-Acousto-Mechanical Fatigue  
Ali Gordon1; Ravi Penmetsa2; 1University of Central Florida; 2Air Force Research Laboratory
**Monday PM**

**Location:** Dolphin

**Session Chairs:** Glenn Grant, Pacific Northwest National Laboratory; Russell Steel, MegaStir

**2:00 PM Invited**

**Performance Enhancement of Co-Bonded Alloy Tool for Friction Stir Welding of Ferritic Steel.:**
Yutaka Sato; Masahiro Miyake; Shinichi Sasakida; Hiroyuki Kokawa; Toshihiro Omori; Kiyohito Ishida; Shinya Imano; Seung Hwan Park; Itto Sugimoto; Satoshi Hirano; Tohoku University; Hitachi, Ltd.

**2:20 PM Invited**

**Process, Microstructure and Fracture Toughness in FSW HSLA Steels.:**
Tracy Nelson; Allan Tribe; Brigham Young University; NOV Intelliserv

**2:40 PM Invited**

**Stabilization of the Retained Austenite in Steel by Friction Stir Welding.:**
Takuya Miura; Rintaro Ueji; Hidetoshi Fujii; Joining and Welding Research Institute, Osaka University

**3:00 PM**

**Study of Mechanical Properties and Characterization of Pipe Steel Welded by Hybrid (Friction Stir Weld + Root Arc) Approach.:**
Yong Chae Lim; Samuel Sanderson; Murray Mahoney; Andrew Wasson; Doug FairChild; Yanli Wang; Zhili Feng; Oak Ridge National Laboratory; MegaStir Technologies LLC; Consultant; ExxonMobil Upstream Research Company

**3:20 PM**

**Friction Stir Welding of Nanolamellar Metallic Composites.:**
Josef Cobbl; Shraddha Vachhani; Nathan Mara; Cheng Liu; Manny Lovato; Judy Schneider; John Carpenter; Mississippi State University; Los Alamos National Laboratory

**3:40 PM Break**

**4:00 PM Invited**

**Improved Temperature and Depth Control during FSW of Copper Canisters Using Feedforward Compensation.:**
Lars Cederqvist; Olof Garpinger; Anton Cervin; Isak Nielsen; SKB; Lund University; Linkoping University

**4:20 PM Invited**

**Friction Stir Welding of Steels Using a Tool Made of Iridium-Containing Nickel Base Superalloy.:**
Tatsuya Nakazawa; Yutaka Sato; Hiroyuki Kokawa; Toshihiro Omori; Kiyohito Ishida; Kunihiro Tanaka; Koichi Sakaii; Tanaka Kinkizoku Kogyo K.K.; Tohoku University

**4:40 PM**

**Heat Input and Post Weld Heat Treatment Effects on Reduced-Activation Ferritic/Martensitic Steel Friction Stir Welds.:**
Wei Tang; Jian Chen; Xinghua Yu; David Frederick; Zhili Feng; Oak Ridge National Laboratory

**Session Chairs:** Jessica Krogstad, University of Illinois; Satish Rao, Ecole Polytechnique Federale de Lausanne

**2:00 PM Invited**

**Benchmarking Multi-Scale Models with Micro-Mechanical Experiments.:**
David Eastman; Zafrin Alam; Jessica Krogstad; Kevin Henker; William Lente; Tresa Pollock; Paul Shade; David Mollenhauer; Michael Uthicke; Johns Hopkins University; University of Illinois, Urbana-Champaign; University of California, Santa Barbara; Air Force Research Laboratory

**2:30 PM**

**Micro-bending Fatigue Testing of Ni and Ni-base Superalloys.:**
Experiments in Support of ICME: Zafrin Alam; Jessica Krogstad; David Eastman; Thomas Straub; Christoph Eberl; Kevin Henker; Johns Hopkins University; Fraunhofer Institute for Mechanics of Materials

**2:50 PM Invited**

**Comparison of Geometrically Necessary Dislocation Density Distribution in Indented FCC and BCC Crystals.:**
Jeffrey Kysar; Muin Oztop; Carl Dahlberg; Christian Niordson; Columbia University; Technical University of Denmark

**3:20 PM**

**Microstructural Modeling of Dynamic Intergranular and Transgranular Fracture Modes in Crystalline Alloys.:** S. Ziaei; Mohammed Zikry; North Carolina State University

**3:40 PM Break**

**4:00 PM Invited**

**Unified Framework for Coarse-Grained Modeling of Plastic Deformation in Metals and Polymers.:** Jaafar El-Awady; Johns Hopkins University

**4:30 PM**

**Dislocation Dynamics Simulations of Precipitate Strengthening in an Mg-Al-Zn Alloy.:**
Larry Aagesen; Jiashi Miao; Sylvie Aubry; Athanasios Arsenlis; John Allison; University of Michigan; Lawrence Livermore National Laboratory

**4:50 PM**

**Simulations of Orientation Dependence of Strain-Hardening Characteristics and Dislocation Microstructure Evolution in 20micron Size Ni Microcrystals.:** Satish Rao; Dennis Dimiduk; Michael Uthicke; Ahmed Hussein; Triplicane Parthasarathy; Jaafar El-Awady; Christopher Woodward; William Curtin; UES Inc.; Air Force Research Laboratory; Johns Hopkins University; EPFL
High-Performance Aerospace Alloys Design Using ICME Approach — Session II
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Awadh Pandey, Pratt & Whitney ; Somnath Ghosh, Johns Hopkins University; Dongsheng Li, Pratt & Whitney

Monday PM  Room: Oceanic 6
March 16, 2015  Location: Dolphin

Session Chair: Dongsheng Li, Pratt & Whitney

2:00 PM  Invited Structural Materials Data Demonstration Project: Outcomes and Lessons Learned: Larry Berardinis; Scott Henry; Careylyn Campbell; Alden Dima; Ursula Kattner; Tom Searles; Laura Bartolo; Warren Hunt; 1ASM International, CMD Network; 2NIST; 3Materials Data Management Inc.; 4Kent State University Center for Materials Informatics; 5Nexight Group

2:30 PM  Stochastic Simulation Methods for Conversion among Multiple Modalities of Grain Size Distributions: Dayu Huang; Jia Xia; Xiaolei Shi; J. Brandon Lafren; Andrew Deal; Timothy Hanlon; Ian Spinelli; James Lafren; General Electric

3:00 PM  Integrating Computational Tools and Physical Models to Predict Process-Structure-Properties of Precipitation-Hardened Aluminum Alloys: Ashley Goulding; Richard Neu; Georgia Institute of Technology

3:30 PM  Break

3:50 PM  Life Prediction: Probabilistic Simulation of Minimum Life Mechanisms for Component Life Prediction: Patrick Golden; Sushant Jha; Reji John; Air Force Research Laboratory; 2Universal Technology Corporation

4:00 PM  Simulation of Microstructure Evolution in Aerospace Alloys – Some Examples: Markus Apel; Bernd Böttger; Janin Eiken; Ulrike Hecht; Georg Schmitz; Access e.V.

High-Temperature Electrochemistry II — Nuclear and Rare Earth Technology
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Monday PM  Room: Grand Harbor Salon 2
March 16, 2015  Location: Yacht & Beach

Session Chairs: Uday Pal, Boston University; Ramachandran Kumar, University of Cambridge

2:00 PM  Application of a 1D Transient Electrorefiner Model to Predict Partitioning of Plutonium from Curium in a Pyrochemical Spent Fuel Treatment Process: Mario Gonzalez; Lauryn Hansen; Devin Rappleye; Riley Cumberlend; Michael Simpson; University of Utah

2:40 PM  Study of Oxygen Ion Diffusion during the Electrolytic Reduction of Uranium Oxide in Molten LiCl-KCl: Steven Herrmann; Clint Baker; Robert Hoover; Jin-Mok Han; Idaho National Laboratory; Korea Atomic Energy Research Institute

3:20 PM  Break

3:40 PM  Characterization of Samarium Chloride-Europium Chloride in Molten LiCl-KCl Eutectic by Electrochemical Impedance Spectroscopy: Kerry Allahar; Michael Shaltry; Darryl Butt; Michael Simpson; Ken Bateman; Boise State University; Idaho National Laboratory; University of Utah

Hume-Rothery Award Symposium: Multicomponent Alloy Metallurgy, the Bridge from Materials Science to Materials Engineering — Solidification
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Mark Asta, University of California at Berkeley; Raymundo Arroyave, Texas A&M University

Monday PM  Room: Oceanic 1
March 16, 2015  Location: Dolphin

Session Chairs: Ursula Kattner, NIST; John Perepezko, University of Wisconsin-Madison

2:00 PM  Invited A Tentative Thermodynamic View of Quasicrystal-Enhanced Nucleation during the Solidification of fcc Metallic Alloys: Michel Rappaz; Güven Kurttulu; EPFL

2:30 PM  Invited Coupled Growth Structures in Ternary Alloys: Ralph Napolitano; Amber Genau; Iowa State University; University of Alabama at Birmingham

3:00 PM  Invited Prediction of A-Segregates and Freckles Due To Multicomponent Thermosolutal Convection during Solidification: Christoph Beckermann; University of Iowa

3:30 PM  Break

4:00 PM  Invited Studies on the Solidification Path of Single Crystal Superalloys: Nils Warnken; University of Birmingham
MAGNESIUM TECHNOLOGY 2015 — ELEVATED TEMPERATURE AND CREEP
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Monday PM
Room: Northern Hemisphere E1
Location: Dolphin

Session Chairs: Amit Pandey, LG Fuel Cell Systems; Karl Kainer, Helmholtz-Zentrum Geesthacht

2:00 PM Invited
Three Decades of Electron Backscatter Diffraction of Magnesium: What Has It Taught Us?: Matthew Barnett; 1Deakin University

2:20 PM Invited
Measuring and Modeling the Effects of Mechanical Twinning on the Behavior of Mg Alloys: Sean Agnew1; Peidong Wu2; Kaan Inal2; Haitham El Kadiri1; Jian Wang1; Carlos Tomé2; 1University of Virginia; 2McMaster University; 3University of Waterloo; 4Mississippi State University; 5Los Alamos National Laboratory

3:00 PM  Invited
Microstructure and Properties of Aged Vs Crept Mg-Al-Zn-Sn Alloys with Additions of Nd and Ce: Uri Vainberg1; Shaul Avraham2; Alexander Katsman3; Menahem Bamberger4; 1Technion - Israel Institute of Technology; 2NRCN – Nuclear Research Center Negev

4:20 PM
Hot Compression Behavior of Magnesium Alloys ZE20 and AM30: Scott Sutton1; Alan Luo2; 1The Ohio State University

4:40 PM
Creep Response of a Zn Containing Mg-Nd-La Alloy: Deep Choudhuri1; David Jaeger2; Srinivasan Srivilliputhur3; Mark Gibson4; Rajarshi Banerjee5; 1University of North Texas; 2CSIRO; 3Deakin University; 4Monsanto; 5North Carolina State University

5:00 PM
Creep Deformation Mechanisms and Related Microstructure Development of AZ31 Magnesium Alloy: Peiman Shafehei Roodposhti1; Apu Sarkar1; Korukonda Murty2; 1North Carolina State University

Magnesium Technology 2015 — PRIMARY, SUSTAINABILITY, RECYCLING, AND PROCESSING
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Monday PM
Room: Northern Hemisphere E2
Location: Dolphin

Session Chairs: Neale Neelameggham, IND LLC; James Saal, QuestTek Innovations, LLC

2:00 PM
Thermal Electrolytic Production of Mg from MgO: Reflections on Commercial Viability: Robert Palumbo1; Scott Duncan2; Luke Venstrom3; Carol Larson4; Shahin Nadehi5; Michal Korenko6; Jon Schoer7; Richard Diver8; Stuart Barkley9; William Prusinski10; Brittany Robbinson11; Jason Toberman12; Kent Warren13; Dave Johnson14; F. Simko15; M. Boca16; Valparaiso University; Diver Solar LLC; 1Institute of Inorganic Chemistry; 2Institute of Inorganic Chemistry,
2:20 PM  Study on Compressive Strength of Pellets for Novel Silicothermic Process: Fu Daxue1; Guan Lukui1; Wen Ming1; Dou Zhihe1; Zhang Rui1; Zhang Ting1; 1Northeastern University

2:40 PM  Carbothermal Production of Magnesium in Vacuum: Tao Qu1; Bin Yang1; Yang Tian1; Yongnian Dai1; 1Kunming University of Science and Technology

3:00 PM  Effect of Argon Flow Rate on the Condensation of Magnesium Vapor from Carbothermic Reduction of Magnesium: Guangyong Bin1; Yu Wang2; Siya Wang3; Xiaoping Liang3; 1College of Materials Science and Engineering, Chongqing University

3:20 PM  Environmental Impact of MgO Carbothermic Reduction in Vacuum: Hong-xiang Liu1; Yang Tian1; Bin Yang1; Bao-qiang Xu1; Da-chun Liu1; Yongnian Dai1; 1Kunming University of Science and Technology

3:40 PM  Comparative Environmental Benefits of Lightweight Design in the Automotive Sector: The Case Study of Recycled Magnesium against CFRP and Steely: Fabrizio D’Errico1; Luigi Ranza2; 1Politecnico di Milano; 2CiaoTech-PNO Consulants Group

4:20 PM  In Situ Synchrotron Radiation Diffraction during Solidification of Mg15Gd: Effect of Cooling Rate: Gabor Szakacs1; Chammini Mendi1; Domonkos Tolnai1; Andreas Stark1; Norbert Schell1; Karl Kainer1; Norbert Hort1; Martin Wolff1; Henry Ovri1; Rainer Schmid-Fetzer1; Joachim Gröbner1; 1Helmholtz-Zentrum Geesthacht; 2Technische Universität Clausthal

4:40 PM  Microstructures and Tensile Properties of Mg-4Al-4La-0.4Mn-xB (x = 0.00, 0.01, 0.02, 0.03) Alloy: Jian Meng1; Qiang Yang1; Zheng Tian1; Xin Qiu1; 1Changchun Institute of Applied Chemistry, Chinese Academy of Sciences

5:00 PM  The Role of Bismuth in Grain Refinement of Magnesium and Its Alloys: Utsavi Joshi1; Hari Babu Nandala1; 1Brunel University

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Fuels II

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rampresh Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday PM  Room: Grand Harbor Salon 6
March 16, 2015  Location: Yacht & Beach

Session Chair: Douglas Burkes, Pacific Northwest National Laboratory

2:00 PM  Out-of-Pile Test of the Effectiveness of Chemical Immobilization of Lanthanide in U-Zr Alloy Fuel: Yeon Soo Kim1; Tom Wieneck1; Ed O’Hare1; Jeff Fortner1; 1Argonne National Laboratory

2:20 PM  Engineering Challenges in the Down Selection of the TREAT Pre-Conceptual Low-Enriched Fuel System Concepts and Design: Isabella van Rooyen1; Kirt Jamison1; Erik Luther1; Dionissios (Dennis) Papadias1; Sean Morrell1; Arthur Wright1; Howard (Buddy) Hartman1; 1Idaho National Laboratory; 2Los Alamos National Laboratory; 3Argonne National Laboratory

2:40 PM  Pre-conceptual Development and Characterization of an Extruded Graphite Composite Fuel for the TREAT Reactor: Erik Luther1; Isabella van Rooyen1; Ching-Fong Chen1; David Dombrowski1; Rafael Leckie1; Pallas Papin1; Andrew Nelson1; 1Los Alamos National Laboratory; 2Idaho National Laboratory

3:00 PM  Fuel-Cladding Chemical Interaction Effects in U, Pu-Based Fuels and Cladding: Asssel Atikaliyeva1; Brandon Miller1; James Madden1; Cynthia Papesch1; 1Idaho National Laboratory
3:20 PM
Effect of Burn-Up on the Thermal Conductivity of Uranium-Gadolinium Dioxide Up to 100 GWd/tHM: Dragos Stanea1; V. V. Rondinella1; C. T. Walker1; D. Papaoaonann1; R.J.M. Konings1; C. Ronchi1; M. Sheindlin1; A. Sashahara1; T. Sonoda1; M. Kinosita1; European Commission, Joint Research Centre, Institute for Transuranium Elements; Central Research Institute of Electric Power Industry

3:40 PM Break

4:00 PM
Diffusion Kinetics, Interface Compound Formation and Radiation Responses of U-Fe and U-Ni Diffusion Couples: Tianyi Chen1; Chao-Chen Wei1; Travis Smith1; Di Chen1; Rory Kennedy1; Bulent Sencer1; Lin Shao1; Texas A&M University; Idaho National Laboratory

4:20 PM
Fission Product Distribution Patterns as a Comparative Characterization Tool for TRISO Fuel Performance: Isabella van Rooyen1; Connie Hill1; Tammy Trowbridge1; Idaho National Laboratory

4:40 PM
Hydrogen Embrittlement Testing of a Zirconium Based Alloy: Paul Korisko1; Robert Sindelar1; Ronald Kesterson1; Thad Adams1; Savannah River National Laboratory

5:00 PM
Interdiffusion between Lanthanides and Cladding through the Vanadium Carbide Coating Obtained From Low-Temperature Chemical Vapor Deposition: Wei-Yang Lo1; ShaoSang Huang1; Nicolas Silva1; Yong Yang1; University of Florida

MHD 2015: Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing — Electromagnetic Containment
Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: James Yurko, Materion Brush Beryllium and Composites; Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Jonghyun Lee, University of Massachusetts; Laura Bartlett, Texas State University
Session Chairs: Laura Bartlett, Texas State University

Monday PM
Room: Grand Harbor Salon 3
March 16, 2015
Location: Yacht & Beach

Session Chair: Laura Bartlett, Texas State University

2:00 PM
Fundamentals of Mold Flux Behavior for Continuous Casting: Eun-yi Ko1; II Sohn1; POSCO; Yonsei University

2:20 PM
Numerical Simulation of the Coupled Turbulent Flow, Heat and Solute Transport in the Turbulent Flow Region of Slab Continuous Casting: Huabiao Chen1; Dengfu Chen1; Lintao Gui1; Mujun Long1; Yunwei Huang1; Youguang Ma1; Chongqing University

2:40 PM
Interphase Evolution and Defect Formation during Horizontally Directional Solidification Process of Sn-Zn Alloys: Alicia Ares1; Alex Ivan Kociejczyk2; Wilky Desrosin1; Lucia Mabel Boycho1; Carlos Enrique Schwezos2; CONICET/FCFQyN-UNaM; IMAM (CONICET-UNaM); CEDIT-Misiones Province.

3:00 PM
Effect of Technological Parameters on Mold Powder Entrainment by Water Model Study: Lishi Zhang1; Yuguang Li1; Qian Wang1; Cheng Yan1; Chongqing University

3:20 PM Break

3:35 PM
Thermoelectric Magnetic Flow in Directional Solidification of Al-Cu Alloy and Its Influence on Solid-Liquid Interface Shape: Jiang Wang1; Zhongming Ren1; Yves Fauretelle1; Xi Li2; Yunbo Zhong1; Shanghai University; SIMAP/EPM

3:55 PM
An Atom Probe Study of Kappa Carbide Precipitation in Austenitic Lightweight Steel and the Effect of Phosphorus: Laura Bartlett1; David Van Aken1; Dieter Isheim2; Julia Medvedeva2; Texas State University; Missouri University of Science and Technology; Northwestern University

4:15 PM
Equivalency Comparison of Heat Transfer Coefficient in Liquid and Gas Quenches: Yuan Lu1; Yiming Rong1; Richard Sisson1; Worcester Polytechnic Institute

4:35 PM
Determination of Cavity Profile Induced by Supersonic Jets Impinging onto Liquids Surface: Qiang Li1; Mingming Li1; Zongshu ZOU1; Northeastern University; Liaoning Institute of Science and Technology

4:55 PM
Investigation On Non-Metallic Inclusions of IF Steel in RH Refining Process: Shunxu Wang1; Jiongming Zhang1; Wei Song1; Yi Liu1; School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM Invited
Applications of Electromagnetic Levitation in Extractive/Process Metallurgy Research: David Robertson1; Missouri S&T

2:30 PM Invited
Instabilities in Electromagnetic Quasi-Levitation: Yves Fauretelle1; Grenoble Institute of Technology

2:55 PM Invited
Electromagnetic Levitation Studies on Decarburization of Liquid Fe-Cr-C Alloys: Ramana Reddy1; K.P. Rao1; The University of Alabama; Indian Institute of Technology

3:20 PM
Gas Heating and Chemical Dissociation: Yves Delannoy1; Guy Chichignoud1; Univ Grenoble Alpes, SIMAP, Univ. Grenoble Alpes, SIMAP

3:45 PM Break

4:00 PM Invited
Modeling of Coupled Electromagnetic and Flow Fields in Induction Crucible Furnace: Jerzy Bergli1; Silesian University of Technology

4:25 PM
Numerical Analysis of Electromagnetic Levitation Employing Meshless Method Based on Weighted Least Square Method: Shuhei Matsuzawa1; Kenta Mitsufuji1; Yurika Miyake1; Katsushiro Hirata1; Fumikazu Miyasaka1; Osaka University
Micromechanics of Structurally Inhomogeneous Materials: An FMD Symposium in Honor of Armen Khachaturyan — Martensitic Transformations

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Phase Transformations Committee

Program Organizers: Long Qing Chen, Penn State University; Mark Asta, University of California, Berkeley; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yongmei Jin, Michigan Technological University; Yann Le Bouar, LEM, CNRS/ONERA

Monday PM
March 16, 2015
Room: Asia 3
Location: Dolphin

Session Chair: Yunzhi Wang, Ohio State University

2:00 PM Invited
Microstructure-Property Relations in Dislocated Martensitic Steel: John Morris1; Chris Kinney2; Liang Qi3; Ken Pytlewski; Armen Khachaturyan; 1University of California Berkeley; 2Anamet, Inc.

2:30 PM Invited
Coupled Kinetic Monte Carlo-Finite Element Mesoscale Simulation of Reversible Thermoelastic Martensitic Transformations: Ying Chen; 1Rensselaer Polytechnic Institute

3:00 PM Invited
Atomic Scale Modeling of Microstructural Evolution: Helena Zapolsky; Armen Khachaturyan; 1University of Rouen; 2University of California and Rutgers University

3:30 PM Break

3:50 PM Invited
Pressure Induced Alpha to Epsilon Transformation in Iron at 15 GPa: Modeling and Experiment: Christophe Denouali; Aurélien Vattré; 1CEA

4:20 PM Invited
Pathway of the Mixed-Mode Phase Transformation in the Zr-U System: Srikumar Banerjee; 1Bhabha Atomic Research Centre

4:50 PM Invited
Numerical Investigation of the Interaction between the Martensitic Transformation Front and the Plastic Strain in Austenite: Julia Kundin; Heike Emmerich; 1University Bayreuth

Microstructural Processes in Irradiated Materials — Ferritic-Martensitic Alloys

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Dane Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin

Monday PM
Room: Asia 1
March 16, 2015
Location: Dolphin

Funding support provided by: Idaho National Laboratory
Oak Ridge National Laboratory

Session Chairs: Zhijie Jiao, University of Michigan; Janelle Wharry, Boise State University

2:00 PM
Role of Alloy Variation on Swelling Behavior in Self-Ion Irradiated Ferritic-Martensitic Steel: Elizabeth Getto; Zhijie Jiao; Kai Sun; Gary Was; 1University of Michigan

2:15 PM
Void Swelling Behavior in High Dose Ion Irradiated Ferritic-Martensitic Steels: Xu Wang; Lumin Wang; 1University of Michigan

2:30 PM
Progress on Understanding Helium-Displacement Damage Interaction Effects on Void Swelling in Tempered Martensitic Steels: G. Robert Odette; Takuya Yamamoto; Yuan Wu; Peter Wells; Stephan Kraemer; Hee Joon Jung; Danny Edwards; Richard Kurtz; 1University of California Santa Barbara; 2Pacific Northwest National Laboratory

2:45 PM
On The Effects of Helium-dpa Interactions on Cavity Evolutions in Tempered Martensitic Steels: Analyses of Dual Ion Irradiations Data: Takuya Yamamoto; G. Robert Odette; Yuan Wu; Sosuke Kondo; Akihiko Kimura; 1University of California Santa Barbara; 2Kyoto University

3:00 PM
The Capillarity Equation at the Nanoscale: He Trapping at Grain Boundaries: Alfredo Caro; Daniel Schwen; Enrique Martinez; 1Los Alamos National Laboratory

3:15 PM
Strength Factor of Voids and He Bubbles in BCC Fe: Kiyohiro Yabuuchi; Ryosuke Nakai; Kouki Kasumi; Shuhei Nogami; Akira Hasegawa; 1Tohoku University

3:30 PM Break

3:45 PM
Cluster Dynamics Modeling of Irradiation Induced Defects in Ferritic Alloys: Aaron Kohnert; Brian Wirth; Cem Topbasi; 1University of Tennessee; 2Pennsylvania State University

4:00 PM
Strengthening Mechanisms Due to Hard Obstacles in Ferritic Alloys: Yuriy Osetskiy; Roger Stoller; 1Oak Ridge National Laboratory

4:15 PM
Multiscale Simulations of Strengthening Induced by Radiation-Induced Cr Precipitates: Ghiath Monnet; 1EDF

4:30 PM
Precipitation Evolution in HT9 at High Dose: Zhijie Jiao; Elizabeth Getto; Anthony Monterrosa; Kai Sun; Gary Was; 1University of Michigan

4:45 PM
Radiation-Induced Segregation at High Doses in Self-Ion Irradiated F/M Alloys: Janelle Wharry; Anthony Monterrosa; Gary Was; 1Boise State University; 2University of Michigan
5:00 PM
A TEM Study of the Effect of Neutron Irradiation on the Microstructure of Fe-Cr Alloys: Dhiren Bhattacharyya1; Yuan Wu2; Joel Davis3; Robert Harrison4; Emmaanuelle Marquis5; Takuya Yamamoto2; G. Robert Odette2; 1ANSTO; 2University of California Santa Barbara; 3University of Michigan

5:15 PM
Influence of Electronic Stopping on Radiation-Induced Defect Formation in Iron: Roger Stoller1; 1Oak Ridge National Laboratory

5:30 PM
Thermal and Irradiation Response of CORRAX Steel: Insight into the Revert Austenite Transformation: Djamel Kaouni1; Joshua Ramsey1; Peter Hosemann2; Z. Huang3; S.A. Maloy1; 1The University of South Carolina; 2University of California Berkeley; 3Los Alamos National Laboratory

Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Atomistic and Mesoscale Modeling
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee
Program Chairs: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ENSMA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Science and Technology Beijing

Monday PM
Room: Oceanic 7
March 16, 2015
Location: Dolphin

Session Chairs: Mark Tschopp, Army Research Laboratory; Avinash Dongare, University of Connecticut

2:00 PM Invited
Ni-Based Superalloy Casting Parameters from Ab-Initio Molecular Dynamic Simulations: Christopher Woodward; James Lill; Jonathan Miller; ‘Air Force Research Laboratory; 2High Performance Computing Modernization Program

2:20 PM
Discrete Dislocation Plasticity Simulations of Rate Effects with Solute and Vacancy Diffusion: Run Zhu; Srinath Chakravarthy1; 1Northeastern University

2:40 PM Invited
Temperature Dependent Deformation Mechanisms Via Ab-Initio Methods: Ajey Venkataraman1; Michael Sangid2; ‘Purdue University

3:00 PM
Atomistic Simulation of Shear-Behavior of γ/γ Interfaces in TiAl Lamellar Microstructures: Mansour Kanani1; Rebecca Janisch1; Alexander Hartmaier1; 1Interdisciplinary Centre for Advanced Materials Simulation (ICAMS), Ruhr-Universität Bochum

3:20 PM Break

3:40 PM Invited
Atomistic Simulations of Dislocation-Interface Interactions in the γ′-γ Microstructure in Ni-Based Superalloys: Juan Wang1; Julien Guénolé; Erik Bitzek; 1Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

4:00 PM Invited
Modeling Precipitate Shearing in Superalloys: Duchao Lv1; Donald McAllister1; Michael Mills1; Yunzhi Wang1; ‘Ohio State University

4:20 PM
Atomic Scale Modeling of High Temperature Deformation and Failure of FCC and HCP Metals: Avinash Dongare1; Karoon Mackenchery2; Garvit Agarwal; 1University of Connecticut

4:40 PM Invited
Predicting Fundamental Properties for Accelerated Materials Design of High Temperature Alloys: Zi-Kui Liu1; 1The Pennsylvania State University

Nanocomposites III — Polymer Nanocomposites I
Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Muralidharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee

Monday PM
Room: Europe 2
March 16, 2015
Location: Dolphin

Session Chair: Chang-So Kim, University of Wisconsin-Milwaukee

2:00 PM Keynote
High Power Factor, Completely Organic, Nanotube-Filled Thermoelectric Polymer Nanocomposites: Jaime Granuan; Choongho Yu1; Gregory Moriarty1; 1Texas A&M University

2:40 PM Invited
Controlling Nanoparticle Microstructure, Dispersion, and Rheology in Polymer Nanocomposites:. David Green1; 1University of Virginia

3:20 PM Break

3:40 PM
Highly-Loaded Cellulose Nanocrystal/Poly(Vinyl Alcohol) Composites: Caitlin Meree1; Gregory Schuemanen; J. Carson Meredith1; Meisha Shofner1; 1Georgia Institute of Technology; 2USDA Forest Service Forest Products Laboratory

4:00 PM
Environmental Degradation of Carbon Nanofiber Reinforced Syntactic Foams: Steven Eric Zeltmann1; Ronald Poveda2; Nikhil Gupta1; 1New York University

4:20 PM
Improved Laser-Induced Thermal Degradation Resistance of Polymer Nanocomposites: Stephen Bartolucci1; Jeffrey Warrender1; Karen Supan1; 1US Army ARDEC; 2Norwich University

4:40 PM
FEM Investigation of Field Effects Processing and Designed Microstructural Toughening in Nanoparticulate Reinforced Composites: Garrett Nygren1; 1University of Miami

5:00 PM
Characterization of Polymer Nanocomposites: Brigitte Wendel1; Breanne Martin1; Kiara Pontious1; Perrin Godbold1; Kyle Gipson1; 1James Madison University

5:20 PM
Fabrication of a Nanofibrous Mat with Geometric Uniformity: Young Hun Jeong1; 1Kyungpook National University

Nanomaterials Structural Materials for Rechargeable Batteries and for Supercapacitors III — Session II: Supercapacitors
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Monday PM
Room: Europe 3
March 16, 2015
Location: Dolphin

Session Chairs: David Mitlin, University of Alberta; Jagit Nanda, Oak Ridge National Laboratory

2:00 PM Invited
Cotton Templated Transition Metal Oxide/Graphene Hybrid Composites for Flexible High-Performance Supercapacitors: Xiaodong Li1; 1University of Virginia
2:25 PM  Invited  
Imaging the Structure of Ionic Liquids on Charged Surfaces: Nina Balke1;  
1Oak Ridge National Laboratory  

2:50 PM  Invited  
Design and Performance of Microfabricated Supercapacitors on Flexible Platforms: Husam Alishareef1; Narendra Kurra1; Nuha Alhebshi1;  
1King Abdullah University of Science & Technology (KAUST)  

3:15 PM  Invited  
Electrical Cables that Store Energy? Zenan Yu1; Jayan Thomas1;  
1University of Central Florida  

3:40 PM  Break  

4:05 PM  Invited  
Surface Modification of Highly Porous Carbon for Enhanced Electric Double Layer Capacitors (EDLCs): Guizhong Cao1;  
1University of Washington  

4:30 PM  Invited  
1D, 2D and 3D Nanocombinatorial Approaches for Supercapacitor Electrodes: Pooi See Lee1;  
1Nanyang Technological University  

4:55 PM  Invited  
Scalable Ambient Hydrolysis Deposition for Capacitive Energy Storage: Xiulei (David) Ji1; Vadivukarasi Raju1; Xingfeng Wang1;  
1Oregon State University  

2:20 PM  Keynote  
Microbeam X-ray and Ultra-Small-Angle X-ray Scattering Measurements of Additive Manufactured Metals: Lyle Levine1; Andrew Allen1; Fan Zhang1;  
Ruoqing Xu1; Jan Ilavsky1; 1National Institute of Standards and Technology; 1Argonne National Laboratory  

2:40 PM  Invited  
Effect of Particle Size on Diffraction from Nanoparticle Powder Aggregates: Hande Ozturk1; Hanfei Yan1; John Hill1; IC Noyan1;  
1SEAS Columbia University; 1Brookhaven National Laboratory  

3:10 PM  Invited  
On the Misalignments of a High-Energy X-ray Diffractometer and the Accuracy of Cell Parameter Measurements: Loïc Renversade1; Peter Keneser2; Jonathan Wright1; Andras Borbely1;  
1École des Mines de Saint-Etienne; 1Advanced Photon Source; 1European Synchrotron Radiation Facility  

3:40 PM  Break  

4:00 PM  Invited  
Anisotropic Thermal Transport in Thermoelectric CrSb2: Chen Li1; Olivier Delaire1; Jiawang Hong1; Brian Sales1; Matt Stone1; Barry Winn1; Jie Ma1;  
Doug Abernathy1; Tao Hong1; Georg Ehlers1; Jennifer Niedziela1; Jeff Lynn1;  
1Oak Ridge National Laboratory; 1NIST Center of Neutron Research  

2:25 PM  Invited  
Energy Selective Neutron Transmission for Determination of H Concentration and Diffusion Rates in Zirconium: Mark Daymond1; Javier Santisteban1; Laura Barrow1; Anton Trensir1;  
1Queen’s University; 1Centro Atomico Bariloche; 1AMG Superalloys; 1University of California Berkeley  

4:40 PM  Invited  
High Resolution Diffraction Analysis Using Nanometer-Sized Electron Probes and Applications for Materials Characterization: Jian Min Zuo1; Yang Hu1; Honggyu Kim1;  
1University of Illinois  

5:10 PM  Invited  
Quantitative Microstructural Imaging by Synchrotron Laue Diffraction: Nobumichi Tamura1; Martin Kunz1; Arief Budiman1;  
1Washington of Additive Manufactured Metals; 1Los Alamos National Laboratory; 1Singapore University of Technology and Design  

MONDAY PM  
Room: Pelican 1  
Location: Swan  

Funding support provided by: Air Force Research Laboratory  

Session Chairs: Chen Li, Oak Ridge National Laboratory; Thomas Watkins, Oak Ridge National Laboratory  

2:00 PM  Keynote  
Microbeam X-ray and Ultra-Small-Angle X-ray Scattering Measurements of Additive Manufactured Metals: Lyle Levine1; Andrew Allen1; Fan Zhang1;  
Ruoqing Xu1; Jan Ilavsky1; 1National Institute of Standards and Technology; 1Argonne National Laboratory  

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1SEAS Columbia University; 1Brookhaven National Laboratory  

3:10 PM  Invited  
On the Misalignments of a High-Energy X-ray Diffractometer and the Accuracy of Cell Parameter Measurements: Loïc Renversade1; Peter Keneser2; Jonathan Wright1; Andras Borbely1;  
1École des Mines de Saint-Etienne; 1Advanced Photon Source; 1European Synchrotron Radiation Facility  

3:40 PM  Break  

4:00 PM  Invited  
Linear and Nonlinear Acoustic Lenses: From Sound Bullets to Acoustic Edge Detection: Miguel Moleron1; Paul Anzel1; Marc Serra Garcia1; Chiara Daraio1;  
1ETH Zurich; 1California Institute of Technology  

4:30 PM  Invited  
Resonant Ultrasound Spectroscopy of Irradiated HT-9 Duct Material: Tarik Saleh1; Stuart Maloy1; Tobias Romero1;  
1Los Alamos National Laboratory  

www.tms.org/TMS2015  
#TMS2015Experience  
125
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

Monday PM
March 16, 2015
Room: Swan 10
Location: Swan

Session Chairs: Paul Prichard, Innovation Ventures Group; Young Do Kim; Hanyang University

2:00 PM
Consolidation of Cemented Tungsten Carbide with Non-Traditional Metal Binders: James Cahill; Olivia Graeve; 'University of California San Diego

2:20 PM
Fabrication of Diamond-WC-Based Cemented Carbide Composites by Microwave Sintering: Quanchao Gu; Lei Xu; Jinhui Peng; Yi Xia; Libo Zhang; Shaohua Ju; Chenglong Wei; 'The Key Laboratory of Unconventional Metallurgy, Ministry of Education, Kunming University of Science and Technology

2:40 PM
Microstructure and Mechanical Properties of Bulk Nanostructured Cu-Ta Alloys Consolidated by Equal Channel Angular Extrusion: Laszlo Keskes; Kris Darling; Mark Tschopp; Rohjirunsaokul Tanaporn; Rajarsi Banerjee; Ganga Purja Pun; Yuri Mishin; 'ARL; 'University of North Texas; 'George Mason University

3:00 PM
Photocatalytic Degradation of Rhodamine B over Dy-Doped TiO2 Film Synthesized through Microwave Sintering: Wang Hongwei; Bingchang Li; 'Shaanxi Energy Vocational and Technical College

3:20 PM Break

3:40 PM
Densification of High Purity Aluminum Nitride by Plasma Activated Sintering: Meijuan Li; Dandan Wang; Chuanbin Wang; Qiang Shen; 'Wuhan University of Technology

4:00 PM Invited
Using Energy Efficient Microwaves to Synthesize High Performance Energy Saving Magnesium (Nano) Composites: Manoj Gupta; S Sankaranarayanan; 'National University of Singapore

4:25 PM
Continuous-Heating Ignition Testing of Hybrid Al-Ni-CuO Reactive Composites Fabricated by Ultrasonic Powder Consolidation: Somayeh Ghehgi Hashemabad; Teiichi Ando; 'Northeastern University

4:45 PM
Use of Spark Plasma Sintering for Producing Compositionally Graded Austenitic Stainless Steel/Titanium Samples: Naveen Kumar; G. D. Janaki Ram; S.S. Bhattacharyya; 'Indian Institute of Technology Madras

5:05 PM
Nano-Phase Separation Sintering for the Manufacture of Bulk Nanocrystalline Alloys: Mansoo Park; Christopher Schuh; 'MIT

5:25 PM
Minimizing Surface Oxidation of Tungsten Nanopowders: Scott Middlemas; Brady Butler; David Runk; 'Army Research Laboratory

Pb-Free Solders and Emerging Interconnect and Packaging — 3D Microelectronics Packages
Sponsored by: TMS Functional Materials Division (formerly EMPMD)
TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: John Elmer, Los Alamos National Laboratory; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinidhi Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnic Institute; Fan-Gao, U. Massachusetts Lowell

Monday PM
March 16, 2015
Room: Lark
Location: Swan

Session Chairs: Yan Li, Intel Corporation; Fay Hua, Intel Corporation

2:00 PM Invited
Packaging and Failure Analysis Challenges in Advanced 3D Packages: Purushotham Srinath; Yan Li; Deepak Goyal; 'Intel Corporation

2:25 PM
Deformation of Copper through Silicon via under Thermal Cycling: H. Ma; J. Gao; Q. Zhu; F. Zhang; 'Institute of Metal Research; 'University of Illinois

2:50 PM
Development of a Fracture Mechanism Map for Thin Solder Joints with High Intermetallic Content: Babak Talebanpour; Indranath Dutta; Ganesh Subbarayan; 'Washington State University; 'Purdue University

3:15 PM
Electromigration in 3D-IC Scale Cu/Sn/Cu Solder Joints: Md. Ariful Rahman; Cheng-En Ho; T. H. Yang; C. H. Yang; C. N. Chen; 'Yuan Ze University

3:40 PM Break

3:55 PM
In Situ Observations of Micromechanical Behaviours of Intermetallic Compounds for Structural Applications in 3D IC Micro Joints: Jeng-Jui Yu; Jui-Yang Wu; 'National Taiwan University

4:20 PM
Study of Grain Size and Orientation of 30 μm Solder Microbumps Bonded by Thermal Compression: Yu-An Shen; Chih Chen; 'National Chiao Tung University

4:45 PM
Low-Temperature and Low-Pressure Direct Copper-to-Copper Bonding: Chien-Min Liu; Han-wen Lin; Chih Chen; 'National Chiao Tung University

5:10 PM
Thiol-Based Self-Assembled Monolayers (SAMs) as an Alternative Surface Finish for 3D Cu Microbumps: Silvia Armini; Yannick Vandelae; Alicia Lesnieks; Vladimir Cerman; Inge De Preter; Fumihiro Inoue; 'Intel Corporation
Phase Transformations and Microstructural Evolution — Crystallization and Diffusional Transformations

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS; Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danoix, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

Monday PM
Room: Swan 3
Location: Swan

Session Chairs: Eren Kalay, Middle East Technical University; Ashley Paz y Puente, Northwestern University

2:00 PM Invited
Microstructural Analysis of Laser Surface Melted Pd-Si and Zr-Cu Alloys: Fanqiang Meng1; Emrah Simsek1; Shihuai Zhou1; Matt Besser1; Ryan Ort1; 1Ames Laboratory

2:20 PM Invited
Prenucleation Clustering in Supercooled Liquid and Amorphous Marginal Metallic Glasses: Mert Ovun1; Mustafacan Kutsal1; Eren Kalay1; 1METU

2:40 PM Invited
Study of Phase Precipitation in Binary Systems Using the Diffusion-Multiple Approach: Qiaofu Zhang1; Ji-Cheng Zhao1; 1The Ohio State University

3:00 PM Break

3:20 PM Invited
Use of XRD to Determine the Crystallinity and Crystallite Sizes of Reduce Graphene Oxide Cement Composite in the First 24-Hour of Hydration: Baig Abdullah Al Muhit1; BooHyun Nam1; Lei Zhai1; 1University of Central Florida

4:10 PM Invited
Ostwald’s Step Rule in the Crystallization of Supercooled Magnesium from Molecular Dynamics Simulation: Junjiang Xiao1; Yongquan Wu1; Rong Li1; 1Shanghai University

3:30 PM Break

4:30 PM Invited
Phase and Kirkendall Void Evolution Study in Aluminized Ni-Cr Wires via Ex Situ Annealing and In Situ X-ray Tomographic Microscopy Experiments: Ashley Paz y Puente1; Dinc Erdeniz1; Julie Fife2; David Dunand2; 1Northwestern University; 2Paul Scherrer Institut

Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytical Theories — Session II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dana Zöllner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

Monday PM
Room: Oceanic 8
Location: Dolphin

Session Chairs: Anthony Rollett, Carnegie Mellon University; Matthias Millitzer, The University of British Columbia

2:00 PM Invited
Combining Experiments, Mean-Field and Full-Field Modelling to Predict Microstructure Evolution during Thermomechanical Processing of Ni Base Superalloys: Nathalie Bozzolo1; Roland E. Logé2; Marc Bernacki1; 1MINES ParisTech; 2EPFL

2:30 PM Invited
An Investigation into the Effects of Thermomechanical History on the Microstructure of a Nickel-Base Superalloy during Forging: Sam Gardner1; Richard Johnston1; Wei Li1; Henry Illsley1; 1Swansea University; 2Rolls-Royce plc

2:50 PM Invited
Mesoscale Modelling of Plastic Deformation and Subsequent Recrystallization: Role of GNDs and Capillarity Effects: Roland Logé1; Ana Laura Cruz Fabiano2; Nathalie Bozzolo3; Marc Bernacki1; 1EPFL; 2Mines ParisTech
3:10 PM  Parallel Modeling of Recrystallization in a TWIP-Steel: Markus Kühbach1; Luis Barrales-Morat1; Christian Haase1; Dmitri Molodov1; ‘Institut fuer Metallkunde und Metalphysik; ‘Institut für Metallkunde und Metallphysik

3:30 PM  Break

3:50 PM  Dynamic Behavior of a Nanocrystalline Cu-Ta Alloy: Scott Turnage1; Kristopher Darling2; Mansa Rajagopal2; Mark Tschopp2; Kiran Solanki2; ‘Arizona State University; ‘Army Research Laboratory

4:10 PM  Plastic Anisotropy of Face-Centered-Cubic Materials: Roles of Textures and Dislocation Interactions: Minh-Son Pham1; Adam Creuziger2; Mark Iadicola3; Timothy Foecke3; Anthony Rollett3; ‘Carnegie Mellon University; ‘National Institute of Standards and Technology

4:30 PM  A New Three Dimensional Thermo-Elasto-Viscoplastic Constitutive Model for FCC Polycrystals: Edward Cyr1; Mohsen Mohammadi2; Raja Mishra3; Kaan Inal4; ‘University of Waterloo; ‘General Motors Research & Development Center

4:50 PM  Microstructural and Mechanical Properties of Iron Based Shape Memory Alloy Severe Deformed by High Speed High Pressure Torsion: Gheorghe Gurau1; Carmela Gurau1; Hanna Myalska2; Meisam Kouhi Habibi3; Gheorghe Gurau1; ‘Dunarea de Jos University of Galati; ‘Umeå University; ‘University of Michigan

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Session II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradò, IPCMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Ruggehalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Monday PM  Location: Swan

Session Chairs: Adele Carradò, IPCMS University of Strasbourg; Heinz Palkowski, TU Clausthal

3:30 PM  Break

3:50 PM  Introductory Comments Introduce posters

4:20 PM  Keynote  Antibacterial DLC-Ag Coating for Long-Term High-Stable Applications: Maxime Cloutier1; Stephane Turgeon1; Jean-Jacques Pireaux1; Diego Mantovani1; ‘Laval University; ‘University of Namur

4:40 PM  The Microstructural and Mechanical Characterisations of Hydroxyapatite Coating Fabricated Using Nd:YAG Laser: Monnamne Tlotleng1; Esther Akinlabi1; Mukul Shukla1; Sisa Pityana1; ‘Council for Scientific and Industrial Research

5:00 PM  Invited  Surface-Modified Biological Scaffold: A New Approach for Tissue Engineering: Francesca Boccafosci1; ‘University of Piemonte Orientale “A. Avogadro”

5:30 PM  Break

5:50 PM  Introductory Comments Introduce posters

6:20 PM  Keynote  Biomimetic Layer-by-Layer Platform for the Promotion of Osteointegration: Fabien Gaudrière1; Khalil Abdelkebir1; Béatrice Labat1; Sandra Morin1; Jean-Pierre Vannier1; Hassan Atmani1; Guy Ladum1; ‘University of Rouen

5:00 PM  Corrosion Resistance and Cytotoxicity Assessment: Vishal Musarambitha1; Rupak Dua1; ‘Florida International University

5:20 PM  Design of Oxide Interface Between Ca-P and Titanium Alloy: Quang Van Le1; Geneviève Pourroy2; Andrea Cochi2; Lia Rimondini2; Wafa Ismail Abdel fattah2; Adele Carradò1; ‘IPCMS, UMR 7504 UDS-CNRS; ‘Università del Piemonte Orientale Amedeo Avogadro; ‘Biomaterials Department
Recycling and Sustainability Update — Recycling
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Jeffery S. Spangenberger, Argonne National Laboratory

Monday PM Room: Grand Harbor Salon 4
March 16, 2015 Location: Yacht & Beach

Session Chair: Randolph Kirchain, Massachusetts Institute of Technology

2:00 PM Sustainable Recycling Policies & Practices in India: Lakshmi Ragupathy1; 1Consultant Sustainable Development

2:20 PM Understanding Copper Scrap Availability: Sian Ueland2; Elsa Olivetti2; Richard Roth3; Randolph Kirchain2; 1MIT

2:40 PM Investigation on Recycling of Ag from Pb-Cu-Ag Alloy by Vacuum Distillation: Bongyi Song1; Wenlong Jiang2; Bin Yang2; Baoqiang Xu3; Qitong Yang3; Shuai Xu3; Dachun Liu3; 1Kunming University of Science and Technology

3:00 PM Recovery of Silver and Copper from Dental Amalgam Wastes via Hydrometallurgical Processes: Emre Yilmaz4; Seliim Erturk5; Cuneyt Arslan6; Fatma Arslan4; 1Istanbul Technical University

3:20 PM Solid State Generation of Recycled Metallic Materials by Powder Metallurgy Processes: Deliang Zhang1; Jianmiao Liang2; Xun Yao2; Antoine Rault1; Dengshan Zhou3; Tian Xia3; 1Shanghai Jiao Tong University

3:40 PM Break

3:55 PM Recycling of Sinter Plant Offgas Cleaning System Dust by Pre-agglomeration: Naiyang Ma1; 1ArcelorMittal

4:15 PM Recovery of Metals from Waste Printed Circuit Boards by Leaching with 1-Ethyl-3-Methyl-Imidazolium Hydrogen Sulfate Ionic Liquid: Tugba Atalay1; Ayfer Kiliciarslan1; Muhlis Saridede1; 1Yildiz Technical University

4:35 PM Use of Recycled Plastic Wastes Instead of Premium Gaseous Hydrocarbons as Feedstocks for Sustainable Synthesis of Carbon Nanotubes: Chuanwei Zuo1; Yiannis Levendis1; 1Northwestern Polytechnical University

4:55 PM Application of 1-Methylimidazolium Hydrogen Sulfate Ionic Liquid to the Oxidative Leaching of Industrial Brass Dross for Recovery of Metals: Ayfer Kiliçarslan1; Muhlis Saridede1; 1Yildiz Technical University

Refractory Metals 2015 — Mechanical Properties, Structure & Processing
Sponsored by: TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Gary Rozak, HC Stark Inc; S.K. Varma, University of Texas at Austin, Dept of Mechanical Engrg; 2University of Central Florida; 3TKC Global; 4US Army Research Laboratory

Monday P M Room: Europe 1
March 16, 2015 Location: Dolphin

Session Chair: Omer Dogan, Dept. of Energy

2:00 PM Overview of Molybdenum 47.5% Rhenium: Todd Leonhardt1; James Ciulik1; 1Rhenium Alloys Inc

2:20 PM Insights into the Mechanical Behavior of Rhenium and its Alloys from Integrated Computational and Experimental Studies: Mark Asta1; Maarten de Jong1; Marcel Sluiter2; Josh Kacher3; Liang Qi4; David Olmsted5; J. W. Morris1; Axel van de Walle6; Andrew Minor7; 1University of California Berkeley; 2Delft University of Technology; 3Brown University

2:40 PM Characterization and Modeling of the Quasi-static Behavior of Polycrystalline Molybdenum: Geremy Kleiser1; Benoit Revil-Baudard1; 1University of Florida

3:00 PM A Strain-Rate and Temperature Dependent Constitutive Model for Tantalum-Tungsten Alloys: Marko Knezevic1; Irene Beyerlein2; Andrew Richards3; Rodney McCabe4; 1University of New Hampshire; 2Los Alamos National Laboratory

3:20 PM Containerless Processing of Refractory Nb-Si Alloy by Electrostatic Levitation: Liang Hu1; Shangjing Yang1; Liuhui Li1; Bingbo Wei1; 1Northwestern Polytechnical University

3:40 PM Break

3:50 PM On the Deformation Behavior of Mo-Si-X (X = Ti, Zr, Hf) Solid Solution: Daniel Schlipphake1; Julia Wagner1; Martin Heinmaier1; 1Karlsruhe Institute of Technology

4:10 PM Effect of Titanium and Chromium on the Microstructure of Tungsten–Manganese Alloys Prepared by Mechanical Alloying: Osama Elsebail1; Kevin Jaansalu2; 1Royal Military College of Canada

4:30 PM Tungsten Grain Refinement via Low-Energy Cryogenic Ball Milling: Frank Kellogg1; Clara Hofmeister1; Anit Giri1; Yongho Sohn2; Kyu Cho3; 1Bowhead Science and Technology; 2University of Central Florida; 3TKC Global; 4US Army Research Laboratory

4:50 PM Enhancement of Fracture Toughness for Mo-Si-B alloy: Jong Min Byun1; Jung Jun Lee1; Seong Lee2; Myung-In Suk3; Sung-Tag Oh4; Young Do Kim1; 1Hanyang University; 2Agency for Defense Development; 3Kangwon National University; 4Seoul National University of Science and Technology

5:10 PM The Effects of Grain Size and Texture on Dynamic Abnormal Grain Growth in Mo: Philip Noell1; Daniel Worthington1; Eric Tallef2; 1University of Texas at Austin, Dept of Mechanical Engrg; 2Fujifilm Dimatix, Inc

5:30 PM Textures in Pure Mo Processed by Different Thermomechanical Processes: Tongguang Zhai1; Yan Jin1; Lin Yang2; Todd Leonhardt2; 1University of Kentucky; 2Rhenium Alloys Inc

#TMS2015Experience
2:00 PM Introductory Comments

2:05 PM
Enabling Thin Silicon Technologies for Next Generation c-Si Solar PV 
Numerical Modeling of Stress Distribution in a Bi-Grain Small Scale 
Silicon Ingot Including Crucible Deformation: Sylvain Gouttebroze1; 
Mohammed M’Hamdi1; 1SINTEF

2:55 PM
Silicon Purification by Segregation: Theory and Limits: Yves Delannoy1; 
Kader Zaidat1; 1Univ. Grenoble Alpes, SIMAP

3:20 PM Break

3:40 PM
Behavior for Nitrogen and Iron in the Bottom of Casting Multicrystalline 
Silicon Ingot: Cong Zhang1; Kuixian Wei1; Wenhui Ma1; Jiao Li 1; Yongnian 
Dai1; ‘Kunning University of Science and Technology

4:00 PM
Thermal Field Design and Optimization of Directional Solidification for 
Multicrystalline Silicon Growth: WenHui Ma1; Xi Yang1; Guoqiang Lv1; 
‘Kunning University of Science and Technology

4:25 PM
Use of Silicon for Solar Cell: Victor Onweuzu1; 1Bridgehead Construction 
(Nig) Ltd

2015 Functional Nanomaterials: Energy and Sensing — Sensing and Electronics 1
Sponsored by: TMS Functional Materials Division (formerly EMPII), 
TMS: Energy Conversion and Storage Committee
Program Organizers: Jung-Kun Lee, POSTECH; Behrang Hamadadi, National Institute of Standards and Technology; Sung Hun Wee, HGST, a Western Digital Company; Nitin Chopra, University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH)

Tuesday AM
Room: Swan 4
Location: Swan
Session Chair: Terry Xu, The University of North Carolina at Charlotte

8:30 AM Invited
Illuminating Chemical Interfaces with Plasmonics: Jason Hafner1; 1Rice University

9:10 AM
Magnetostrictive and Ferroelectric Properties of CFO – BCZT Particulate Multiferroic Composites: Vinitha Monaji1; Paul Praveen1; Dibakar Das1; 1University of Hyderabad

9:30 AM Invited
The Next Big Thing in Photovoltaics: Perovskite Solar Cell: Nam-Gyu Park1; 1Sungkyunkwan University
10:10 AM Break

10:25 AM Invited
Detecting Bacteria by Surface Enhanced Raman Spectroscopy: Yiping Zhao; ‘University of Georgia

11:05 AM
Dynamic Probing of Microstructural Evolution by Magnetic Nanofluids: Raju Ramanujan; Z. Wang; V. Verma; H. Xia; Z. Wang; ‘Nanyang Technological University

11:25 AM Invited
One-Dimensional Nanostructures for Wearable Devices: Yong Zhu; ‘North Carolina State University

6th International Symposium on High Temperature Metallurgical Processing — Fundamental Research of Metallurgical Process II
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jian-Kang Yang, Michigan Technological University; Gerardo Alvear, Xstratatech; Onur Alp Yuvel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies
Tuesday AM
Room: Swan 5
Location: Swan 5
Session Chairs: Mingming Zhang, ArcelorMittal Global R&D; Xuewei Lv, Chongqing University, China

8:30 AM
Solubility of Sc2O3 in Na₃AlF₆-K₃AlF₆-AlF₃ Melts: Zhongliang Tian; Xun Hu; Yanqing Lai; Shu Yang; ShaoLong Ye; Jie Li; ‘Central South University

8:50 AM
Formation Mechanism of 2CaO-SiO2 and 3CaO·P2O5 Solid Solution in CaO-SiO2·FeO·P2O5 Slags: Xiaofei Dou; Mingmei Zhu; Tiancheng Lin; Yu Wang; Bin Xie; Bin Zhu; Hong Zhou; ‘College of Materials Science and Engineering, Chongqing University; ‘Chongqing Iron and Steel Group Corporation

9:10 AM
Liquidus in the System CuO-CaO-Al2O3 at 1250 °C: Joseph Hamuyuni; Pekka Taskinen; ‘Aalto University School of Chemical Technology

9:30 AM
The Substitutional Effects of TiO2 and MnO for SiO2 on the Wetting Properties in a Quaternary Slag System at High Temperature: Jonghwa Kim; Il Sohn; ‘Yonsei University

9:50 AM
Cohering Behavior of Coal Ash with Pellet Scrap Powder and Relationship Between Coal Ash and Kiln Ringing: Yong-bin Yang; Yean Zhang; Qiang Zhong; Tao Jiang; Qian Li; Bin Xu; ‘Central South University

10:10 AM Break

10:30 AM
Improving the Pelletization of Chromite Concentrate by HPGR and Its Mechanism: Deqing Zhu; Congcong Yang; Jian Pan; Yang Zhong; ‘Central South University

10:50 AM
Influence of Sulfur on Dissolution of Graphite in Molten Iron: Zhijia Zhang; Jianliang Zhang; ‘University of Science and Technology Beijing

11:10 AM
Effect of MgO on Emergence of Blast Furnace Primary Slag with Comprehensive Furnace Burden: Kaifa Zhang; Shengli Wu; Wei Huang; Xinliang Liu; Juan Zhu; Kaiping Du; ‘University of Science and Technology Beijing

11:30 AM
Volatilization Behavior and Mechanisms of Arsenic, Sulfur, and Carbon in the Refractory Gold Concentrate: Hou Li-chun; Li Qian; Hu Jian-Jun; Yang Yong-Bin; Xu Bin; Jiang Tao; ‘Central South University

11:50 AM
Study on Enhanced Reduction of Liquid lead Slag with Coal Particles: Weifeng Li; Jing Zhan; Chuanfu Zhang; Gui Li; Jian-yang Huang; ‘Henan Yuguang Gold & Lead Co., Ltd.; ‘Central South University; ‘Michigan Technological University

Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — The Melt Pool and Cellular Foams
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas
Tuesday AM
Room: Northern Hemisphere A1
March 17, 2015
Location: Dolphin
Session Chairs: Brian Patterson, Los Alamos National Laboratory; Jack Beuth, Carnegie Mellon Univ

8:30 AM Invited
Aspects of the Process and Material Relationships in the Selective Laser Melting of Aluminium Alloys: Christopher Tuck; Ian Maskery; Marco Simonelli; Nesma Aboulkhair; Ian Ashcroft; Nicola Everitt; Nicola Everitt; Ricky Wildman; Richard Hague; ‘University of Nottingham

9:00 AM
Time-resolved In Situ Characterization of Laser-induced Rapid Solidification: Joseph McKeown; Kai Zweierer; Can Liu; Aurelien Perron; Jean-Luc Fattebert; Patrice Turchi; Jörg Wiezorek; Geoffrey Campbell; ‘Lawrence Livermore National Laboratory; ‘University of Pittsburgh

9:20 AM Invited
Mapping of Ti64 Melt Pool Geometry and Microstructure Across All Direct Metal AM Processes: Jack Beuth; Jason Fox; Colt Montgomery; Zachary Francis; Daniel Christiansen; Sneha Narra; ‘Carnegie Mellon University

9:50 AM
A Sequential Minimum Energy Design Approach for Optimizing Process Parameters in Additive Manufacturing: W. Young; Brian Torries; Scott Thompson; Nima Shamsaei; Linkan Bian; ‘Mississippi State University

10:10 AM Break

10:30 AM
Micro CT Imaging of Metals and Polymers Made Through Additive Manufacturing: Brian Patterson; Mathew Robinson; Kevin Henderson; Nikolaus Cordes; ‘Los Alamos National Laboratory; ‘Atomic Weapons Establishment

10:50 AM
Variable-Density Cellular Structures: Additive Manufacturing, Constitutive Modeling, and Topology Optimization: Pu Zhang; Emre Biyikli; Jakub Tomanski; Yiqi Yu; Kevin Laux; Markus Chmielus; Albert To; ‘University of Pittsburgh

11:10 AM
Mechanical Characterization of Cellular Materials Manufactured Using 3D Printing: Abhishek Kumar; Nutan Singh; ‘Aerospace Department; ‘Bundelkhand Institute of Engineering & Technology
**Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Micro-strain**

**Sponsored by:** TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee

**Program Organizers:** Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Panteleon, Technical University of Denmark

**Tuesday AM**

**Room: Pelican 2**

**March 17, 2015**

**Location: Swan**

**Session Chairs:** Matthew Barnett, Deakin University; Benjamin Morrow, Los Alamos National Laboratory

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**8:30 AM Invited**

**Characterization of Inhomogeneous Local Strain during Plastic Deformation in Aluminum Alloy**: Masakazu Kobayashi; Toshinobu Matsumoto; Aya Kouno; Hiromi Miura; Hiroyuki Toda; Toyohashi University of Technology; Kyushu University

**9:00 AM**

**High Resolution Strain Measurement at Sub-Grain Scale of Nickel-Based Superalloy René 88DT**: J.C. Stinville; B. Brider; P. Bocher; T.M. Pollock; University of California Santa Barbara; Department of Mechanical Engineering, École de Technologie Supérieure now at DCNS Research; Department of Mechanical Engineering, École de Technologie Supérieure

**9:20 AM**

**Study of Stress State Inside Twin and Parent Grains at Various Length Scales**: Hamidreza Abdolvand; Angus Wilkinson; Mark Daymond; Jette Oddershede; The University of Oxford; The University of Oxford; Queen’s University; Technical University of Denmark

**9:40 AM**

**Strain Measurement in HAZ during Arc Welding by Digital Image Correlation Method**: Jian Chen; Xinghua Yu; Roger Miller; Zhili Feng; Oak Ridge National Laboratory

**10:00 AM Break**

**10:20 AM Invited**

**The Evolution of Deformation Patterning in Two FCC Metals with Different Stacking Fault Energies**: João Fonseca; The University of Manchester

**30:50 AM**

**A Novel, High Resolution Approach for Concurrent Mapping of Mmicro-Strain and Micro-Structure Evolution up to Damage Nucleation**: Cem Tasan; Dingshun Yan; Dierk Raabe; Max-Planck Institute for Iron Research

**11:10 AM**

**Role of Microstructure Evolution during High Strain-Rate Deformation of Tantalum**: Sreedha Vachhani; Nathan Mara; Veronica Livescu; Ellen Cerreta; Los Alamos National Laboratory

**11:30 AM**

**A 3D Laue Micro-diffraction Study of Slip Band and Grain Boundary Interactions in Commercially Pure Titanium**: H Guo; Ben Britton; Edmund Tarleton; David Collins; Angus Wilkinson; University of Oxford; Imperial College

**11:50 AM**

**Effect of Loading Boundary Conditions on Three-Dimensional Distribution of Local Stress, Strain and Misorientation Heterogeneity in a Ferritic Steel**: Yehia Tari; Anthony Rollett; Hossein Beladi; Haitham Elkadi; Mississippi State University; Department of Materials Science and Engineering, Carnegie Mellon University; Institute for Frontier Materials, Deakin University; Mechanical Engineering Dept., Mississippi State University

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**Advanced Composites for Aerospace, Marine, and Land Applications II — Composite Microstructure and Mechanical Property Characterization**

**Sponsored by:** TMS Structural Materials Division, TMS: Composite Materials Committee

**Program Organizers:** Tomoko Sano, US Army Research Laboratory; Tirumalai Sivatsan, The University of Akron

**Tuesday AM**

**Room: Asia 5**

**March 17, 2015**

**Location: Dolphin**

**Session Chairs:** Christopher Muhlstein, Georgia Institute of Technology; Paul Moy, Army Research Laboratory

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**8:30 AM Invited**

**Strain Field Mining: Identifying, Quantifying, and Validating “Hot Spots” in Free Surface Strain Fields**: James Collins; Vincent Wu; Christopher Muhlstein; Georgia Institute of Technology

**8:50 AM**

**In-situ Microscopy for Both Qualitative and Quantitative Measurements in Single UHMWPE Fiber Tensile Experiments**: Paul Moy; Brett Sanborn; Tust Weerasooriya; Army Research Laboratory

**9:10 AM**

**Strain Field Mining: Predicting the Performance of Epoxy Bonded Joints from Free Surface Strain Field Metrics**: James Collins; Christopher Muhlstein; Georgia Institute of Technology

**9:30 AM**

**Quasi-Static and Dynamic Nanoindentation Study of Local Mechanical Properties and Creep Effects of Carbonated Wollastonite Mineral System**: Nannan Tian; Wanda Ashraf; David Bahr; Purdue University

**9:50 AM**

**Prediction of Crack Initiation Site in Fastener Hole of Composite Laminate**: Hossam El-Din Sallam; Amer Abd-Elhady; Jazan University

**10:10 AM Break**

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**10:30 AM**

**Finite Element Analysis of Quantitative Percussion Diagnostics for Evaluating the Strength of Bonds Between Composite Laminates**: Scott Poveromo; James Earthman; University of California, Irvine

**10:50 AM**

**Characterization of Ti/Al Multilayered Composites Subjected to Perforation Testing**: Derrick Stokes; Stan Jones; Viola Acoff; The University of Alabama

**11:00 AM**

**Oxidation Behavior Characterization of Zirconium Diboride Composites at Above 2000°**: Ziyuan Zhou; Xianghe Peng; Zhen Wei; College of Aerospace Engineering, Chongqing University

**11:30 AM**

**Fiber/Matrix Reaction Kinetics in SiC/Ti-15-3m Composites**: A. Muthuchamy; G.D Janaki Ram; V. Subramanya Sarma; Indian Institute of Technology Madras
Tuesday AM  Room: Swan 7  Location: Swan
Session Chairs: Indranil Roy, Schlumberger; Terry Lowe, Colorado School of Mines

8:30 AM Keynote
Nanostructural Design of Ultrafine Grained Materials with Multifunctional Properties: Ruslan Valiev2; Maxim Murashkin2; Ilchat Sabirov3; 1Ufa State Aviation Technical University, Saint Petersburg State University; 2Ufa State Aviation Technical University; 3IMDEA Materials Institute

8:55 AM Invited
Exceptional Functional Properties of Bulk Nanomaterials Processed by Severe Plastic Deformation Techniques: Michael Zehetbauer1; 1University of Vienna

9:00 AM Invited
Ultrafine-grain Metals by Severe Plastic Deformation for Tube Applications: Laszlo Toth1; 1Université de Lorraine

9:45 AM Invited
Surface Duplex Treatments of Steels: Characterization and Properties of the Modified Layers: Thierry Grosdidier1; 1Laboratoire d’Etude des Microstructures et de Mécanique des Matériaux (LEM3)

10:10 AM Break

10:20 AM Keynote
Simultaneous High Strength and Ductility Achieved via Distributed Nanoscale Domains in Elemental Metals: Evan Ma1; 1Johns Hopkins University

10:50 AM Invited
Nanostructured Materials and Design Innovations for Step Changes in Multi Stage Stimulation: Gregoire Jacob1; Indranil Roy1; Tony Collins1; Rashmi Bhavsar1; 1Schlumberger

11:15 AM Multifunctional Composites- Engineered Materials for Enhanced Completion and Stimulation Efficiencies: Andrew Sherman1; Brian Doud1; Nick Farkas1; 1Terves Inc

11:35 AM Advanced High-Performance Composite Molding Systems for Oil & Gas Extreme HP/HT Applications: Yusheng Yuan1; David Gerrard1; Daniel Severa1; Christopher Campo1; Baker Hughes

11:55 AM Novel Cement Composition for Sustaining Wellbore Integrity and Microstructural Characterization: Ruixuan Guo1; 1Louisiana State University

Tuesday AM  Room: Asbury A  Location: Yacht & Beach
Session Chair: Michael Lanagan, Pennsylvania State University

8:30 AM Invited
Recent Development of LTCC Technologies Designed for Nonconventional Applications: Yong Soo Cho1; 1Yonsei University

9:00 AM Invited
Carbon Microelectromechanical Systems (C-MEMS) Based Microsupercapacitors: Chansel Wang1; 1Florida International University

9:30 AM Invited
Glass Capacitors for Power Electronics: Mike Lanagan1; 1Pennsylvania State University

10:00 AM Break

10:20 AM Development of Predictive Tools for Self-Healing Behavior in Coated-Glass Systems: Matthew Pryz1; Michael Lanagan1; 1Pennsylvania State University

10:40 AM Cubic Pyrochlore Bismuth Zinc Niobate Thin Films for Dielectric Energy Storage: Elizabeth Michael1; Susan Trottier-McKinstry1; 1Pennsylvania State University

Advanced Materials in Dental and Orthopedic Applications — Session III
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Elizabeth Trillo, Southwest Research Institute; Grant Crawford, South Dakota School of Mines and Technology

Tuesday AM  Room: Swan 8  Location: Swan
Session support provided by: Magnetic, and Photonic Materials Division
Session Chairs: Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Tolou Shokuhfar, Michigan Technological University

8:30 AM Invited
Nanostructured Metals for Dental and Orthopedic Applications: Ruslan Valiev1; Terry Lowe2; 1Ufa State Aviation Technical University/Saint Petersburg State University; 2Colorado School of Mines

9:00 AM Invited
Processing, Microstructure Characterization and Biological Response of Cold Sprayed Biocomposite Coatings: Eden Bhatta1; Grant Crawford1; 1South Dakota School of Mines and Technology
9:30 AM  Surface Treatment of Ti-45Nb Open Porous Structures Towards Biomedical Applications: A Modified Approach: Iliya Yablokova1; Sasan Dadaksh; Matthew Speirs1; Aliskbar Khandholi; Jean-Pierre Kruth; Jan Luymen; Jan Schrooten; Jan Humbeeck1; ‘KU Leuven’

9:50 AM  Strong Osseo-Integration in Dental and Orthopedic Implants by Surface TIO2 Nanotubes: SungHo Jin1; ‘University of California San Diego’

10:10 AM  Break

10:30 AM  Invited  Nature of Inflammatory Response in Metal-on-Metal Surface Replacement Compared to Metal-on-Polyethylene Bearings with Corroded Modular Joints: Deborah Hall1; Robert Urban1; Joshua Jacobs1; ‘Rush University Medical Center’

11:00 AM  The Analysis of Mechanical and Electrical Property Effects of Bovine Bone Hydroxyapatite Composites Produced with the Addition of LiCO3 on Biocompatibility: Sibel Dagli1; Isil Kerti1; Murat Karagoz1; Faith Dumladag1; Faik Oktar1; ‘Vildiz Technical University’

11:20 AM  Tissue Response and Degradation Performance of a Novel Biodegradable Mg-Ca-Sr for Orthopedic Applications: Ida Berglund1; Brittany Jacobs1; Josephine Allen1; Stanley Kim1; Antonio Pozzi1; Kyle Allen1; Michele Manuel1; ‘University of Florida’

11:40 AM  Influence of Testing Environment on the Degradation Behavior of Magnesium Alloys for Bioabsorbable Implants: Iligo Marco Pelegrin1; Frank Feyerabend2; Regine Willumeit-Römer2; Omer van der Biest1; ‘KU Leuven’; ‘Helmholtz-Zentrum Geesthacht’

8:30 AM  Introductory Comments

8:35 AM  Invited  Influence of the Static Magnetic Field on Dendritic/Columnar Solidification Observed by X-ray Imaging: Hideyuki Yasuda1; Keisuke Inoue1; Yudai Minami2; Tomoya Nagira2; Masato Yoshiya1; Kohei Morishita1; Kantaro Uesugi1; ‘Kyoto University’; ‘Osaka University’; ‘JASRI/SPring-8’

9:05 AM  A Comparative Study on Microstructure Refinement in Al3xxx and Al7xxx Alloys Solidified by the Electromagnetic Vibration Technique: Mingjun Li1; Takuya Tamura1; Naoki Omura1; Yuichiro Murakami1; Kenji Miwa1; Shuji Tada1; Koichi Takahashi1; ‘National Institute of Advanced Industrial Science and Technology, Materials Research Institute for Sustainable Development,; ‘UACJ Corporation’

9:25 AM  DC Casting of Magnesium Alloy AZ80 with Low-Voltage Pulsed Magnetic Field: Yuansheng Yang1; Tianjiao Luo1; Huaming Ji1; Xiaohui Feng1; Yingju Li1; ‘Institute of Metal Research, Chinese Academy of Sciences’

9:45 AM  Dispersion of Nanoparticles in Magnesium and Aluminum Alloys Using Magnetic Fields: Mariano Garrido Pacheco1; Valdis Bojarevics1; Yves Fautrelle1; Laurent Davoust1; ‘SIMAP-EPM’; ‘Greenwich University’

10:05 AM  Break

10:20 AM  Refinement and Enhanced Growth of Al2Cu Eutectic during Magnetic Field Assisting Directional Solidification: Jiang Wang1; Sheng Yue1; Zhongming Ren1; Yves Fautrelle1; Yunbo Zhong2; Xi Li3; Peter Lee1; ‘The University of Manchester’; ‘Shanghai University’; ‘SIMAP-EPM’

10:40 AM  Effects of High Magnetic Fields on the Microstructures and Thermoelastic Properties of Zr-Sb Alloy: Yi Yuan1; Jun Mao2; Tie Liu3; Qiang Wang2; Masahiro Tahashi1; Jicheng He1; ‘School of Materials and Metallurgy, Northeastern University’; ‘Key Laboratory of Electromagnetic Processing of Materials (Ministry Education), Northeastern University’; ‘Department of Electrical Engineering, Chubu University’

11:00 AM  Application of Rotating Magnetic Field to Improve to Reinforcement Distribution, Electrical Conductivity and Mechanical Properties of Copper Matrix Composite: Tongmin Wang1; ‘Dalian University of Technology’

11:20 AM  The Effect of Static Magnetic Field on the Length of Mushy Zone of a Single-Crystal Nickel-Base Superalloy during Directional Solidification: Zhining Hu1; Weili Ren1; ‘Shanghai University’

11:40 AM  The Effect of Magnetic Field on the Morphology of γ' Precipitates in DD483 Nickel-base Superalloy during Directional Solidification: Bin Liu1; Weili Ren1; ‘Shanghai University’

8:30 AM  Invited  Use of AC Magnetic Fields for Flow Control in Solidifying Metallic Alloys: Dirk Räbiger; Tobias Vogt; Sven Eckert; ‘Helmholtz Zentrum Dresden-Rossendorf’

8:55 AM  Dynamic Stability of Three-Phased Eutectic Patterns during Thin-Sample Directional Solidification: Sina Yücetürk1; Melis Serefoglu1; S. Bottin-Roussseau1; S. Akamatsu1; Sven Eckert1; ‘Koc University’; ‘INSP, UPMC, CNRS’

9:15 AM  A Coupled Thermo-Mechanical Simulation on Squeeze Casting Solidification Process of Three-Dimensional Geometrically Complex Components: Jie Tang1; Zhiqiang Han1; Jue Sun1; Shanxin Xu1; ‘Tsinghua University’; ‘Suzhou Sanshi Foundry Equipment Co., Ltd.’

9:25 AM  Dispersion of Nanoparticles in Magnesium and Aluminum Alloys Using Magnetic Fields: Mariano Garrido Pacheco1; Valdis Bojarevics1; Yves Fautrelle1; Laurent Davoust1; ‘SIMAP-EPM’; ‘Greenwich University’

10:05 AM  Break
9:35 AM
Effects of Transition Element Additions on the Oxidation of 2L99 Alloy: Elizabeth Hinton1; William Griffiths1; ‘University of Birmingham

9:55 AM
Double Oxide Film Defects in Al Castings and the Effect of Different Element Additions: Qi Chen1; Adrian Caden1; William Griffiths1; ‘University of Birmingham

10:15 AM Break

10:35 AM Invited
The Design of New Submerged Entry Nozzles for Beam-Blank Continuous Casting: Miaoyong Zhu1; Mianguang Xu2; Sen Lou1; ‘Northeastern University

11:00 AM
Eutectic Solidification: From Multicomponent Alloys to the Macroscale: O. Semminger1; A.V. Catalina2; Peter Voorhees3; ‘Northwestern University; ‘Caterpillar Inc.

11:20 AM
Effects of Ce on the Thermal Stability of the Ω Phase in a Cast Aluminum Metal Matrix Composite: Federico Melotti1; William Griffiths1; Terry Hirst1; Alan Dustan1; ‘University of Birmingham; ‘Controls and Data Services; ‘Aeromet International PLC

Advances in Thin Films for Electronics and Photonics — Functional Materials for Electronics and Photonics I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Federico Rosei, INRS; Nugeghalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Tuesday AM Room: Europe 7
Location: Dolphin
Session Chair: Ravindra Nugeghalli , NJ IT

8:30 AM Invited
3D Orientation Imaging in the Transmission Electron Microscope: Soren Schmidt1; Peter Larsen2; Jakob Schotz2; Xiaoxu Huang1; ‘Technical University of Denmark

9:00 AM Invited
Photophysical and Morphological Characteristics of Luminescent Compounds-Dopes Peptide Nanostructures Systems: Tatiana Martins1; ‘Federal University of Goias

9:30 AM Invited
Polynitrogen Cluster Films for Fuel Cell Catalysis: Zafar Isqat1; ‘New Jersey Institute of Technology

10:00 AM Break

10:20 AM Invited
Role of Complex Energy Landscapes and Strains in Multiscale Inhomogeneities in Perovskite Manganites: Keun Hyuk Ahn1; Tsezar F. Seman1; Turab Lookman2; A. R. Bishop3; ‘New Jersey Institute of Technology; ‘Northern Illinois University and Argonne National Laboratory; ‘Los Alamos National Laboratory

10:45 AM Invited
Role of Electric Field, Defects and Radiation Damage in Determining Reliability in AlGaN/GaN High Electron Mobility Transistors: Steve Pearton1; Fan Ren1; ‘Univ.Florida.

11:10 AM Invited
Symbiotic Bimetallic Nanoparticles: Synthesis and Properties: Abhinav Malavi1; Jingxuan Ge1; Ritesh Sachan1; Anup Gangopadhay2; ‘Hernando Garcia1; Gerd Duscher2; Ramki Kalyanaraman3; ‘University of Tennessee, Knoxville; ‘University of Tennessee Knoxville, ORNL Oak Ridge; ‘Washington University, St. Louis; ‘Southern Illinois University Edwardsville

11:35 AM Invited
Use of Two Photon Polymerization to Create Functional Structures for Biomedical Applications: Roger Narayan1; ‘UNC/NCSU Joint Department of Biomedical Engineering

Alloys and Compounds for Thermoelectric and Solar Cell Applications III — Session III
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Enseicna University of Caen; Stéphane Gorse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshisaburo Kimura, Tokyo Institute of Technology; Ce-Wen Nan, Tsinghua University; G. J. effrey. Snyder, California Institute of Technology; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday AM Room: Europe 5
March 17, 2015 Location: Dolphin
Session Chairs: Terry Tritt, Clemson University; Takao Mori, National Institute for Materials Science

8:30 AM Invited
Hybrid Effect to Possibly Overcome the Trade-Off between Seebeck Coefficient and Electrical Conductivity: Takao Mori1; ‘National Institute for Materials Science (NIMS)

8:55 AM
Transport Properties of ABX Type Thermoelectric Alloys: Haoxing Yang1; Ramana Reddy2; ‘The University of Alabama

9:15 AM
Effects of Electrical Stressing on Microstructure and Thermoelectric Properties of Bismuth Telluride Compounds: Yao-Hsiang Chen1; Chien-Neng Liao1; Hsu-Shen Chu1; ‘National Tsing Hua University; ‘Industrial Technology Research Institute

9:35 AM Invited
Boosted Thermoelectric Performance of Half-Heusler Compound via Carrier Engineering and Nanostructuring Approaches: Wenjie Xie1; Anke Weidenkaff1; Terry Tritt2; ‘University of Stuttgart; ‘Clemson University

10:00 AM Break

10:20 AM
Structures and Thermoelectric Properties of Double-Filled Skutterudites: Lan Li1; Izaak Williamson1; ‘Boise State University

10:40 AM
Phase Equilibria Isothermal Section at 40at%Bi of the Bi-Te-Se-In System: Po-Han Lin1; Sinn-Wen Chen1; ‘National Tsing Hua University

11:00 AM
Flexural Behavior of p-Type Half-Heusler Thermoelectric Material: Sonika Gahlawat1; Ran He1; Shuo Chen1; Zhifeng Ren1; Ken White1; ‘University of Houston

Alumina and Bauxite — Digestion
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Hans-Werner Schmidt, Outotec GmbH

Tuesday AM Room: Southern Hemisphere IV
March 17, 2015 Location: Dolphin
Session Chair: Andrey Panov, RUSAL

8:30 AM Introductory Comments

8:35 AM
A Novel Self-stirring Tubular Reactor Used in Bauxite Digestion Process: Zhang Zimu1; Zhao Qiyue2; Zhang Dianhua1; Zhang Ting’an1; Liu Yan1; Lv Guozhi1; Dou Zhihe1; Zhang Changdong1; ‘Northeastern University
9:00 AM
Research on Digestion Behavior of Sulfur in High-Sulfur Bauxite: Zhanwei Liu; Wangxing Li; Wenhai Ma; Zhonglin Yin; Guobao Wu; ‘Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; ‘Zhengzhou Research Institute of CHALCO

9:25 AM
The Impact of Sulphate and Carbonate on the Performance of Silicate- Type Polymers as Inhibitor of Sealing: Vladimir Kazakov; Vadim Lipin; ‘Saint Petersburg State Polytechnical University

9:50 AM
Fuzzy Technology Application in a Bauxite Digestion Unit: Thiago Franco; Roberto Seno; Anderson Duck; Igor Santiago; Leonardo Freitas; ‘CBA/Votorantim Metais; ‘L’Systems

10:15 AM Break

10:30 AM
Research of the Mineral Fouling Composition and Removal Method in Bauxite Digestion Process: Cao Wenzhong; Dongdong Wang; Weiwei Tian; Hong Zhong; ‘Nanchang University

10:55 AM
Synergistic Effect of C12A, and CA on Alumina Leaching Property of Calcium Aluminate Clinker: Bo Wang; Jiajia Liu; Huilian Sun; Yubing Zhang; Dongdong Liu; ‘Hebei University of Science and Technology

11:20 AM Question and Answer Period

11:45 AM Concluding Comments

Aluminum Alloys: Development, Characterization, and Applications — Development and Applications
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix, LLC; Tongguang Zhai, University of Kentucky

Tuesday AM
Room: Northern Hemisphere E3
March 17, 2015
Location: Dolphin

Session Chair: Zhengdong (Steven) Long, Kaiser Aluminum

8:30 AM
Process Development for Stamping A-Pillar Covers with Aluminum: Jung-Pyung Choi; Aashish Rohatgi; Mark Smith; Curt Lavender; ‘Pacific Northwest National Laboratory

8:50 AM
Development of the Next Generation of Aluminum Alloys for Packaging: Gyan Jha; ‘MetalCure LLC

9:10 AM
Innovative and Sustainable Development of Aluminum Alloys for Transportation: Gyan Jha; ‘MetalCure LLC

9:30 AM
Development of an Accelerated Ageing Test on an Al-Si-Cu-Mg Alloy for Aeronautics: Lisa Grosso; Christophe Desrayaud; Anna Fracekiewicz; Cédric Bosch; Lucie Anssems; Samuel Becquerelle; Baptiste Guerin; ‘Ecole Nationale Supérieure des Mines de Saint-Etienne; ‘Hispano-Suiza (SAFRAN)

9:50 AM
Mechanical and Thermal Properties of Rheocast Telecom Component Using Low Silicon Aluminum Alloy In As-Cast and Heat-Treated Conditions: Mostafa Payandeh; Emma Sjölander; Anders Jarfors; Magnus Wessen; ‘Jönköping University

10:10 AM Break

10:20 AM
Aluminum High Pressure Vacuum Die Casting Applications for the Multi Materials Lightweight Vehicle (MMLV) Program Body Structure: Randy Beals; Jeff Conklin; Tim Skuszek; David Wagner; Matt Zaluzec; ‘Cosma; ‘Magna Int’l Inc.; ‘Ford Motor Co.

10:40 AM
Warm Forming of AA7075-T6 with Direct Electrical Resistance Heating: Thomas Ivanoff; Eric Taleff; Louis Hector; ‘University of Texas at Austin; ‘General Motors

11:00 AM
Influence of Heat Treatment Parameters on the Metallurgical Quality of EN AW 7068 Extruded Bars: Mario Rosso; ‘Politecnico di Torino

11:20 AM
Scrap-Intensive Wrought Aluminum Alloys of Standard Quality: Varuzhan Kevorkijan; Peter Cvahò; Branko Hmelak; Sara Hmelak; Vukašin Dragojević; Marina Jelen; Mariana Lažeta; Uroš Kovacec; ‘Impol R in R d.o.o.; ‘Impol Aluminium Industry; ‘Alcad d.o.o.

11:40 AM
Simultaneously Increasing the Strength and Ductility of Cold-Worked 2024 Aluminum Alloy: Zhiqing Yang; ‘Institute of Metal Research

Aluminum Processing — Session II
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: John Griffin, ACT LLC

Tuesday AM
Room: Southern Hemisphere I
March 17, 2015
Location: Dolphin

Session Chair: Kiran Machiraju, Southwire Company

8:30 AM
Strain Analysis during Symmetric and Asymmetric Rolling of AA 7075 Al Alloy Sheets: Congiang Ma; Longgang Hou; Jishan Zhang; Linzhong Zhang; ‘University of Science and Technology, Beijing

8:55 AM
Results in Production of an Improved Grain Refinement Practise for 6xxx Extrusion Billets: John Courtenay; Marcel Rosefort; Rein Vainik; ‘MQP Limited; ‘Trimet Aluminium SE

9:20 AM
Structural Studies on the Evolution of Texture in Heavily Wire Drawn and Subsequently Annealed Pure Al Metal: Mohammad Shamsuzzoha; ‘University of Alabama

9:45 AM Break

10:00 AM
Use of Vaporizing Foil Actuator for Impact Welding of Aluminum Alloy Sheets with Steel and Magnesium Alloys: Anupam Vivek; Bert Liu; Glenn Dauch; ‘Ohio State University

10:25 AM
Microstructure Evolution of AA3003 Aluminum Alloys Enhanced by Zirconium Addition Studied by Electron Microscopy: Michaela Poková; Miroslav Cieslar; Mariia Zimina; ‘Charles University in Prague, Faculty of Mathematics and Physics

10:50 AM
Theoretical and Experimental Studies of a Thermal Regenerator for Heat Recovery in Aluminum Melting Furnaces: Seyed Mojtaba Sadrameli; Hamid Ajjari; ‘TMU; ‘Ferdowsi University
TUESDAY AM

Aluminum Reduction Technology — Environment I
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Lavoie, LMRC

Tuesday AM
Room: Southern Hemisphere III
March 17, 2015
Location: Dolphin

Session Chair: Eric Phillips, Noranda Aluminum

8:30 AM Introductory Comments

8:35 AM
Use of the Life Cycle Assessment Methodology to Support Sustainable Aluminum Production and Technology Developments: Guillaume Girault1; Stéphane Petit1; Jean-Philippe Rheault1; David Mercereau2; Benoît Verzat3; Rio Tinto Alcan; ENEA Consulting; Quantis

9:00 AM
Comparative Analysis of the Environmental Impacts of Aluminum Smelting Technologies: Viktória Kovács1; László Kiss2; Budapest University of Technology and Economics; Université du Québec à Chicoutimi

9:25 AM
Anode Effect Reduction at Nordural – Practical Points: Andrés Thorhallsson1; Nordural - Grundartangi

9:50 AM Break

10:05 AM
Studies on Background PFC Emission in Hall-Héroult Reduction Cells using Online Anode Current Signals: Ali Jassim1; Akhemtov Sergey1; Barry Welch2; Maria S. Kazacos1; Yuehen Yao2; Jie Bao2; DUBAL; Welbank Consulting Ltd; University of New South Wales

10:30 AM
Non Anode Effect PFCs: Measurement Considerations and Potential Impacts: Neal Dando1; Nick Menegazzo1; Nathan Westendorf1; Luis Espinoza-Nava1; Eliezer Batista1; Alcoa

Aluminum Reduction Technology — Fundamentals Chemistry
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Lavoie, LMRC

Tuesday AM
Room: Southern Hemisphere V
March 17, 2015
Location: Dolphin

Session Chair: Xiangwen Wang, Alcoa, Inc.

8:30 AM Introductory Comments

8:35 AM
Effect of Operational Parameters on the Behavior of Phosphorous and Sulfur in Aluminum Reduction: Raama Meirbekova1; Geir Haarberg2; Jomar Thonstad1; Donald Ziegler1; Julius Brunyjarsson2; Gudrun Sauersdottir2; Reykjavik University; Norwegian University of Science and Technology; Alcoa Technical Center; Alcoa Fjarðaál

9:00 AM
Chemical Characterization and Thermodynamic Investigation of Anode Crust Used in Aluminum Electrolysis Cells: Francois Allard1; Martin Desilets1; Marc LeBreux1; Alexandre Blais1; Université de Sherbrooke; Rio Tinto Alcan

9:25 AM
Non-Intrusive Freeze Layer Detection Method in an Aluminum Reduction Cell: Laszlo Kiss1; Adam Úgron1; Sebastien Guerard1; Jean-Francois Bilodeau1; Université du Québec à Chicoutimi; Rio Tinto Alcan

9:50 AM
Monitoring Local Alumina Dissolution in Aluminum Reduction Cells Using State Estimation: Yuchen Yao1; Cheuk-Yi Cheung1; Jie Bao2; Maria Skyllas-Kazacos1; University of New South Wales

10:15 AM Break

10:30 AM
Study on the Dissolution of Alumina in Cryolite Electrolyte Using the See-Through Cell: Youjian Yang1; Bingliang Gao1; Zhaowen Wang1; Zhongning Shi1; Xianwei Hu1; Northeastern University

10:55 AM
Production of Al-Sc alloy by Electrolysis of Cryolite-Scandium Oxide Melts: Yuryi Shtefanyuk1; V. Mann1; V. Pioqu1; D. Vinogradov2; Yu. Zaikov2; O. Tkacheva2; UC RUSAL; LLC RUSAL ETC; Ural University of High Temperature

Biological Materials Science Symposium — Biomimetic Systems I
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter, Clemson University; Francois Barthelat, McGill University

Tuesday AM
Room: Swan 9
March 17, 2015
Location: Swan

Session Chairs: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University

8:30 AM
Adhesion of Anodic Titanium Dioxide Coatings on Titanium Grades 5 Alloys: Maria Vera1; Mario Rosenberger1; Carlos Schwezon1; Alicia Ares1; IMAM (CONICET-UNaM)

8:50 AM
Bio-inspired Synthesis of Ceramic Scaffolds by a Novel Sol-Gel/Freeze Casting Hybrid Method: Hai-Kai Chang1; Po-Yu Chen1; National Tsing Hua University

9:10 AM
Bone Mimetic Nanoclay Testbed for Prostate Cancer: Kalpana Katti1; Shahajahan Molla1; Dinesh Katti1; North Dakota State University

9:30 AM
Bone Growth Behavior of Hydroxyapatite-Coated TiO2 Nanotubes: Jirapon Khamwannah1; Gary Johnston1; Sungho Jin1; Materials Science and Engineering, University of California San Diego

9:50 AM
Creating Multi-Layered Collagen-Hydroxyapatite Composites Using Biomimetic Processing to Emulate Bone’s Mechanical Properties: Brian Wingender1; Patrick Bradley2; Jeff Ruberti2; Laurie Gower1; University of Florida; Northeastern University

10:10 AM Break

10:20 AM
Bone Inspired Protection from the Armored Carapace of the Boxfish: Steven Naleway1; Wen Yang1; Michael Porter1; Marc Meyers1; Joanna McKittrick1; University of California San Diego

10:40 AM
Dentin Remineralization using Anionic Process-Directing Agents and Phosphate-Containing Small Molecules: Neha Saxeena1; Manuel Esparragoza1; Stefan Habelitz2; Grayson Marshall2; Laurie Gower1; University of Florida; University of California San Fransisco

11:00 AM
Interfacial Adhesion between Polymer and Osteoconductive Minerals: Faezeh Shaichy1; Sina Youssifian1; Pingsheng Liu1; Iie Song1; Nima Rahbar1; Worcester Polytechnic Institute; UMass Medical School

11:20 AM
Laser Induced Diffusion in Metallic Implants for Reduced Heating in MRI Environments: Thiwanka Wickramasooriya1; Ashwani Kaul1; Aravinda Kar1; Raj Vaidyanathan1; University of Central Florida
Bulk Metallic Glasses XII — Structures and Mechanical Properties I
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, University of Tennessee

Tuesday AM
March 17, 2015
Location: Dolphin
Session Chairs: Takeshi Egami, University of Tennessee; Michael Atzmon, University of Michigan

8:30 AM Keynote
Structure and Properties of Shear-Transformation-Zone: Takeshi Egami¹; Yue Fan²; Takuya Iwashita¹; Wojciech Dmowski¹; ¹University of Tennessee; ²Oak Ridge National Laboratory

9:00 AM Invited
Atomistic Interpretation of the Dynamic-Mechanical Behavior of Metallic Glasses: JongDoo Ju¹; Michael Atzmon¹; ¹University of Michigan

9:25 AM
Fine Tuning the Microstructure and Mechanical Properties of a ZrCuNiAl Bulk Metallic Glass by Electropolishing: Yongjiang Huang¹; Hongbo Fan¹; Shisong Guan¹; Dongjun Wang; Jianfei Sun¹; Jun Shen¹; ¹Harbin Institute of Technology

9:45 AM Invited
High Pressure, High Temperature Structural Study of Zr-Based Glasses: Wojciech Dmowski¹; Stanislaw Gierlotka²; Yoshihiko Yokoyama³; Takeshi Egami¹; ¹University of Tennessee; ²Polish Academy of Sciences; ³Tohoku University; ⁴Oak Ridge National Laboratory

10:10 AM Break

10:25 AM
In-Situ TEM Tensile Experiments on Metallic Glasses: Challenges and Opportunities: Jeff De Hosson¹; ¹Univ of Groningen

10:45 AM
Micro-Mechanical Behavior of Fe Based Bulk Metallic Glass: Thien Phan³; Olivia Graeve³; James Kelly²; Andrea Hodge¹; Michael Kassner¹; ¹University of Southern California; ²UCSD

11:05 AM Invited
Relation between Mechanical Relaxations and Plasticity in Bulk Metallic Glasses: Jean-Marc Pelletier¹; Jichao Qiao; Sandrine Cardinal¹; ¹INSa-Lyon

11:25 AM Invited
Structure Evolution and Hot Hardness of Co-Fe-Zr-B-Cu Magnetic Material: Song Lan¹; Matthew Willard¹; John Lewandowski¹; ¹Case Western Reserve University

11:45 AM Invited
Deformation in Ni-Nb Metallic Glassy Film: Jianzhong Jiang¹; Zhejiang University

CALPHAD-Based ICME Research for Materials Genomic Design — Materials Genome: ICME and CALPHAD-Based Materials Design 2
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wei Xiong, Northwestern University; Shihkang Lin, National Cheng Kung University; Chao Jang, Thermo-Calc Software Inc; Shenyang Hu, Pacific Northwest National Laboratory; Wen-dung Hsu, National Cheng Kung University; Sinn-wen Chen, National Tsinghua University; Shuanglin Chen, CompuTherm LLC

Tuesday AM
March 17, 2015
Location: Dolphin
Session Chairs: Eric Lass, NIST; Shuanglin Chen, CompuTherm LLC; Chao Jiang, Thermo-Calc Software Inc; Shengyang Hu, Pacific Northwest National Laboratory

8:30 AM Keynote
CALPHAD Modeling and Materials Genome®: Zi-Kui Liu¹; ¹The Pennsylvania State University

9:00 AM Keynote
High Performance Aluminum Foundry Alloy Development Based on ICME Approach: Xinyan Yan¹; Jen Lin¹; ¹Alcoa

9:30 AM
Investigate Mechanical Properties of Multi-Component Solid Solution Alloy Using First Principles Methods: Lizhi Ouyang¹; ¹Tennessee State University

9:50 AM Break

10:05 AM
Thermodynamic Investigation on the LSM Perovskite Thermal Cycle Shrinkage: Ali Karbasi¹; Shadi Darvish²; Maria Mora¹; Yu Zhong¹; ¹Florida International University

10:25 AM Keynote
The Materials Genome Initiative, CALPHAD and the Data Problem: Carelyn Campbell¹; Ursula Kattner¹; Alden Dima¹; ¹National Institute of Standards and Technology

10:55 AM Invited
Materials Design by the CALPHAD Modeling Tool in the Framework of ICME: Fan Zhang¹; Weisheng Cao¹; Shuanglin Chen¹; Chuan Zhang¹; Jun Zhu¹; ¹CompuTherm, LLC

11:20 AM
Competitive Stabilities of D8m, D88, D8l Structures in Ternary T-X-X’ Ternary Systems: Jean claude Tedenac¹; Catherine Colinet¹; ¹University Montpellier; ²Science et Ingénierie des Matériaux et Procédés, UMR 5266

11:40 AM
Simulation of Precipitation of Nitrides in CrMnN Steels: Karin Frisk¹; ¹Swerea KIMAB
Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; Chenguang Bai, Chongqing University; Juan Pablo Escobedo, University of New South Wales; Jiann-Yang Hwang, Michigan Technological University; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Sergio Neves Monteiro, Military Institute of Engineering, IME, Materials Science Department; Zhiewi Peng, Michigan Technological University; Mingming Zhang, ArcelorMittal; J Ian Li, CanmetMATERIALS

Tuesday AM
Room: Mockingbird 1
March 17, 2015
Location: Swan

Session Chairs: John Carpenter, Los Alamos National Laboratory; J Ian Li, CanmetMATERIALS

8:30 AM
Advanced FIB Applications in Materials Research at CanmetMATERIALS: Juan Li1; P. Liu1; R. Zhang1; J. Lo1; CanmetMATERIALS

8:50 AM
Coupling the Digital Image Correlation and Finite Element Methods for Determining Flow Behavior Beyond Uniform Elongation: Daniel Gerbig1; Allan Bower1; Vesna Savic2; Louis Hector2; Brown University; General Motors

9:10 AM
Cyclic Hardness Test PHYBAL-CHT – A New Short-Time Procedure to Estimate Fatigue Properties of Metallic Materials: Marcus Klein1; Hendrik Hramer2; Dietmar Eiöffler2; TU Kaiserslautern
### TUESDAY AM

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>9:00 AM</td>
<td>Study of Metallic Calibrated Defects by Subsurface Nanoscale Imaging: Pauline Vity; Laurene Tétard; Eric Bourililot; Cédric Plassard; Yvon Lacroute; Eric Lesniewska; University of Bourgogne; University of Central Florida</td>
</tr>
<tr>
<td>9:10 AM</td>
<td>Effective Measurement of Elastic Constants from Polycrystalline Samples: Xinpeng Du; Peng Zhao; Ji-Cheng Zhao; The Ohio State University</td>
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<tr>
<td>9:20 AM</td>
<td>Interface-Driven Plasticity: The Presence of an Interface Affected Zone in Metallic Lamellar Composites: John Carpenter; Rodney McCabe; Jason Mayeur; Nathan Mara; Irene Beyerlein; Los Alamos National Laboratory</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Investigation of Strain Transfer Across Grain Boundaries in Commercially Pure Tantalum: Bret Dunlap; Philip Eisenlohr; Claudio Zambaldi; David Mercier; Yang Su; Thomas Bieler; Martin Crimp; Michigan State University; Max-Planck-Institut für Eisenforschung</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Innovative Procedure for the Characterisation of Thermo-mechanical Properties Of Carbon Base Materials Using The Gleeble® 3800 System: Dany Racine; Dmitry Lukonikov; Daniel Marceau; Denis Laroche; University Research Centre on Aluminium (CURAL) - Aluminium Research Centre (REGAL) - University of Québec at Chicoutimi; Rio Tinto Alcan (Arvida Research and Development Center)</td>
</tr>
<tr>
<td>9:50 AM</td>
<td>Solid Solution Characterization in Metal by Original Tomographic Scanning Microwave Microscopy Technique: Eric Bourililot; Pauline Vity; Virgil Optasanu; Tony Montessin; Eric Lesniewska; University of Bourgogne</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Real Space Measurement of Lattice Misfit with Scanning Transmission Electron Microscopy: Adedapo Oni; Xiahan Sang; Santoshrupa Dampala; Selva Raju; Aakash Kumar; Srikant Srinivasan; Scott Broderick; Surendra Saxena; Susan Sinnott; Krishan Rajan; James LeBeau; North Carolina State University; Iowa State University; Florida International University; University of Florida</td>
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**Computational Modeling and Stochastic Methods for Materials Discovery and Properties — Stochastic, Statistic, and Multiscale Methods**

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

**Program Organizers:** Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois at Urbana-Champaign; Mikhail Mendeleev, Ames Laboratory; Adi van Duin, Pennsylvania State University

**Tuesday AM**

- **Room:** Oceanic 3
- **Location:** Dolphin

**Session Chair:** Dallas Trinkle, University of Illinois, Urbana-Champaign

<table>
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<tr>
<td>8:30 AM</td>
<td>Atoms-to-Continuum Simulation of the Rapid Solidification of Metallic Liquids: Howard Sheng; GMU</td>
</tr>
<tr>
<td>8:50 AM</td>
<td>Computer Simulation of Martensite Spread: A Stochastic Approach: Paulo Rios; Filipi Cardoso; Matheus Nogueira; Tiago Neves; José Roberto Guimarães; UFF-EEIMVR</td>
</tr>
</tbody>
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**Computational Thermodynamics and Kinetics — Grain Boundary and Grain Growth**

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

**Program Organizers:** Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Maryam Ghazisaeidi, The Ohio-State University; Vidvuds Ozolins, University of California Los Angeles

**Tuesday AM**

- **Room:** Oceanic 3
- **Location:** Dolphin

**Session Chair:** Dallas Trinkle, University of Illinois, Urbana-Champaign

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<tr>
<td>8:30 AM</td>
<td>Atomistic Modeling of Pre-Melted Grain Boundaries: J. Hickman; Y. Mishin; George Mason University</td>
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<tr>
<td>8:50 AM</td>
<td>Atomistic Simulations of Grain Boundary Mobilities in the Iron-Helium System: Tegar Wicaksono; Chad Sinclair; Matthias Militzer; The University of British Columbia</td>
</tr>
<tr>
<td>9:10 AM</td>
<td>Computational Study of the Stiffness of Asymmetric Tilt Boundaries in a Model Bee Binary Alloy: Isaac Toda-Caraballo; Paul Bristowe; University of Cambridge</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Invited</td>
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</tbody>
</table>

**Grand-Canonical Thermodynamics of Grain Boundaries: Danny Perez; Thomas Vogel; Blas Uberuaga; Los Alamos National Laboratory**
TUESDAY AM

10:00 AM Break

10:15 AM
Mechanisms of Thermally Damped Grain Boundary Motion, and Its Role in Low Temperature Abnormal Grain Growth: Jonathan Humberson1; Elizabeth Holm1; 2Carnegie Mellon University

10:35 AM
Shear Accommodation in Dirty Grain Boundaries: Monesh Upmanyu1; Changjian Wang1; 2Northeastern University

10:55 AM
Hydrogen Segregation to Vicinal Twin Boundaries in Nickel: Christopher O’Brien1; Stephen Foiles1; Richard Karnesky1; 3Sandia National Laboratories

11:15 AM
Investigation of Grain Boundary Triple Junction Energetics in Face Centered Cubic Materials: Rakesh Adlakha1; Kiran Solanki1; 2Arizona State University

11:35 AM
Influences of Solute Segregation on Grain Boundary Motion: Hao Sun1; Chuang Deng1; 3University of Manitoba

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Neil Bourne, University of Manchester; Eric Brown1; Los Alamos National Laboratory; James Williams, Ohio State University; Kenneth Vecchio, University of California- San Diego

Tuesday AM
Room: Asia 2
March 17, 2015
Location: Dolphin

Session Chairs: James Williams, Ohio State University; Carl Cady, Los Alamos National Laboratory

8:30 AM Invited
Damage Development Induced by Femtosecond Laser Pulses: Michael Titus; McLean Echlin; Tresa Pollock1; 1University of California Santa Barbara

8:50 AM
The Role of Pulse Length and Amplitude on Incipient Damage in Ductile Failure: Neil Bourne1; Sam McDonald; Philip Withers1; G.T. Gray1; 1School of Materials, University of Manchester, Manchester M13 9PL, UK.; 2Los Alamos National Laboratory

9:10 AM Invited
Simulation of Fragmentation Process in Expanding Ring Test of OFHC Copper Using Continuum Damage Mechanics: Nicola Bonora1; Andrew Ruggiero1; Gianluca Iannitti2; 1University of Cassino; 2TECHDYN Engineering

9:30 AM
When Do Interfaces Become Important for Failure? Saryu Fensin1; Ellen Cerreta1; G.T. Gray1; 2Los Alamos National Laboratory

9:50 AM Invited
Effects of Microstructure on the Dynamic Tensile Spall Behavior of Al 5083: Ricky Whelchel1; Naresh Thadhani1; 2Georgia Institute of Technology

10:10 AM Break

10:30 AM
Biaxial Deformation and Damage Initiation in Aluminum: Veronica Livescu1; John Bingert1; Cheng Liu1; Manuel Lovato1; Brian Patterson1; Ellen Cerreta1; 1Los Alamos National Laboratory; 2OUSD(AT&L)/TWS/LW&M

10:50 AM Invited
Pressure Effects on Flow and Fracture of Structural Materials: John Lewandowski1; 1Case Western Reserve University

11:10 AM
Laser Shock-Induced Spalling in Tantalum: Tane Remington1; 1University of California San Diego

11:30 AM Invited
Defect-Defect Interactions in Shock Loaded Materials: Voids and Bubbles at Copper Grain Boundaries: Steven Valone1; Saryu Fensin1; Ellen Cerreta1; G.T. Gray1; Richard Hoagland1; 2Los Alamos National Laboratory

11:50 AM Invited
Damage Evolution in HT-9 and its Relation to Second Phase Precipitation: Stuart Maloy1; Osman Andregolu1; Eda Aydogan1; Sara Perez-Bergquist1; 2Los Alamos National Laboratory; 3University of Tennessee

10:00 AM Break

10:15 AM Invited
Prevention of Coarse Microstructure Features during Conversion of Ingot Metallurgy Nickel- and Titanium-Based Alloys: J.P. Thomas1; S. L. Semiatin2; 1ATI Specialty Materials; 2Air Force Research Laboratory AFRL/RXC

9:30 AM Invited
Abnormal Grain Growth during Supersolvus Heat Treatment of PM Superalloys: Eric Huron1; David Mourié2; Ken Bain1; Joseph Heaney4; Arturo Acosta1; Timothy Hanlon1; 2GE Aviation

10:00 AM Break

10:15 AM Invited
Grain Size Distribution Evolution during Thermomechanical Processing of Powder Metallurgical Superalloys: Eric Payton1; 2Alfred University

10:45 AM
Effect of Zr Addition on Recrystallization Behavior in Rolled Ti-Zr Alloys: Tomoyuki Homma1; Yusuke Matayoshi1; 2Nagaoka University of Technology

11:05 AM Invited
Effect of Microstructure Nonuniformity on Hot Rolling of TIAL Foil: Lee Semiatin1; Fred Meisenkothen2; 1US Air Force Research Laboratory; 2National Institute of Standards and Technology

11:25 AM
Thermal Stability of FeZr Nanocomposites Containing Nanolaminates: Zhe Fun1; Xinghong Zhang1; Haiyan Wang1; 2Texas A&M University

Development of “Weak Links” during the Processing of Metallic Materials — Microstructure Evolution
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Lee Semiatin, US Air Force Research Laboratory; Anthony Rollett, Carnegie Mellon University; Thomas Bieler, Michigan State University; Mark Stoudt, National Institute of Standards and Technology

Tuesday AM
Room: Peacock
March 17, 2015
Location: Swan

Session Chairs: David Furrer, Pratt & Whitney; Anthony Rollett, Carnegie Mellon University

8:30 AM Invited
Effects of Clustered Nucleation in Partially Recrystallized Samples on Ductility: Dorte Jensen1; 2DTU

9:00 AM Invited
Prevention of Coarse Microstructure Features during Conversion of Ingot Metallurgy Nickel- and Titanium-Based Alloys: J.P. Thomas1; S. L. Semiatin2; 1ATI Specialty Materials; 2Air Force Research Laboratory AFRL/RXC

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10:00 AM Break

10:15 AM Invited
Grain Size Distribution Evolution during Thermomechanical Processing of Powder Metallurgical Superalloys: Eric Payton1; 2Alfred University

10:45 AM
Effect of Zr Addition on Recrystallization Behavior in Rolled Ti-Zr Alloys: Tomoyuki Homma1; Yusuke Matayoshi1; 2Nagaoka University of Technology

11:05 AM Invited
Effect of Microstructure Nonuniformity on Hot Rolling of TIAL Foil: Lee Semiatin1; Fred Meisenkothen2; 1US Air Force Research Laboratory; 2National Institute of Standards and Technology

11:25 AM
Thermal Stability of FeZr Nanocomposites Containing Nanolaminates: Zhe Fun1; Xinghong Zhang1; Haiyan Wang1; 2Texas A&M University
Dynamic Probing of Microstructure Evolution in Nanostructured Materials — Interface Mediated Deformation Mechanism

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Nan Li, Los Alamos National Laboratory; Caizhi Zhou, Missouri University of Science and Technology; Dan Gianola, University of Pennsylvania; Marc Legros, CEMES-CNRS

Tuesday AM
March 17, 2015
Location: Swan

Session Chairs: Caizhi Zhou, Missouri University of Science and Technology; Siddhartha Pathak, Los Alamos National Laboratory

8:30 AM Invited
Deformation Mechanisms in Nanocrystalline Metals: Influence of Grain Boundary Topology and Loading Conditions: Aruna Prakash; Benoit Merle; Erik Bitzek; Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

9:00 AM Indentation-Induced Grain Growth and Deformation in Nanocrystalline Nickel: Gurrit Tuckern; Stephen Foiles; Drexel University; Sandia National Laboratories

9:20 AM Invited
A Mesoscopic Model of Plasticity: Dislocation Patterns, Size and Stochastic Effects: Hussien Zbib; Nasrin Taheri-Nassaj; Washigton State University

9:50 AM Mapping Grains and Interface Networks in Atomistic Simulations: Tracking Dynamic Nanocrystalline Microstructures: Jason Pancarino; Timothy Rupert; University of California Irvine

10:10 AM Break

10:30 AM Invited
Determining the Strength of Individual Phases within Nanolayered Composites: Peter Anderson; Michael Grani; Andrew Payzant; The Ohio State University; Oak Ridge National Laboratory

11:00 AM Invited
Exploring the Role of Interfaces in Metal-Ceramics Composites from Atomic to Continuum Scales: Jian Wang; Shuai Shao; Caizhi Zhou; Amit Misra; Los Alamos National Laboratory; Missouri S&T; University of Michigan

11:30 AM Lattice Dislocation Nucleation from Nodes of the (111) Semi-Coherent Interfaces: Shuai Shao; Jian Wang; Irene Beyerlein; Los Alamos National Laboratory

11:50 AM Deformability of UltraHigh Strength Metal-Ceramic Cu/TiN Nanolayered Composites: Siddhartha Pathak; Nan Li; Richard Hoagland; Jon Baldwin; Jian Wang; Amit Misra; Nathan Mara; Los Alamos National Laboratory; University of Michigan

Electrode Technology for Aluminum Production — Anode Forming and Baking

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Ame Ratvik; SINFET

Tuesday AM
March 17, 2015
Room: Southern Hemisphere II
Location: Dolphin

Session Chair: Angelique Adams, Alcoa

8:30 AM Introductory Comments

8:35 AM
A Dynamic Process Model for Predicting the Performance of Horizontal Anode Baking Furnaces: Noua Oumar1; Yasar Kocaefe; Duygu Kocaefe; Brigitte Morais; Jacques Larfrance; University of Quebec at Chicoutimi (UQAC); Fives Solios

9:00 AM
Environmental and Operating Benefits of a New Fume Treatment System at a Restarted Anode Plant: Matthias Hagen; Bernd Schricker; Peter Deinlein; ELY

9:25 AM
Successful Start-up of Firing Control System at Vlissingen: Nicolas Fior; Pierre Mahieu; Bart Van Gars; Fabienne Virieux; Solios Carbone; Century Aluminium; Fives Solios

9:50 AM
Quality Control via Electrical Resistivity Measurement of Industrial Anodes: Yasar Kocaefe; Duygu Kocaefe; Dipankar Bhattacharyya; University of Quebec at Chicoutimi

10:15 AM Break

10:30 AM
Xelios Vibrocompactors: A Step Towards Sustainability: Vincent Philipaux; Jean-François Andre; Bertrand Sonnand; Fabienne Virieux; Solios Carbone; Fives Solios

10:55 AM
Baking Furnace Rebuild Strategy at Dubal to Improve Productivity: Tapan Sahu; Amer Al Marzouqi; Saleh Rabba; Pragasan Palavar; Galappathi Priyanta; Thaseen Aiyaz; Dubal

11:20 AM
Description and Applications of a 3D Mathematical Model for Horizontal Anode Baking Furnaces: Mounir Baiteche; Duygu Kocaefe; Yasar Kocaefe; Daniel Marceau; Brigitte Morais; Jacques Larfrance; University of Quebec at Chicoutimi; Aluminerie Alouette Inc.

Energy Technologies and Carbon Dioxide Management Symposium 2015 — Carbon Management

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Animesh Jha, University of Leeds; Brajendra Mishra, Colorado School of Mines; Eric Peterson, Idaho National Lab; Cong Wang, Northeastern University; Neale Neelameggham, Ind LLC; Donna Guillon, Idaho National Lab; Li Li, Cornell University

Tuesday AM
March 17, 2015
Room: Grand Harbor Salon 4
Location: Yacht & Beach

Session Chairs: Animesh Jha, University of Leeds; Cynthia Belt, Consultant

8:30 AM
A Thermodynamic Study of Gasification Mixed Carbon Feedstock Slags: Jinichiro Nakano; Marc Duchesne; Xueyan Song; James Bennett; Kyei-Sing Kwong; Anna Nakano; US Department of Energy National Energy Technology Laboratory; Natural Resources Canada CanmetENERGY; West Virginia University
Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — General Session

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Tuesday AM Room: Oceanic 4
March 17, 2015 Location: Dolphin

Session Chairs: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

8:30 AM Keynote

8:45 AM Modeling of the 3D Effects of Particles on Fatigue Crack Initiation in High Strength Al Alloys: Pei Cai1; Yan Jin1; Tongguang Zhai1; ‘University of Kentucky

9:25 AM Invited

Damage Behavior at Twin and Grain Boundary in Alloy 690 Material in the Very High Cycle Fatigue Regime: Guocai Chai1; ‘Sandvik Materials Technology

9:45 AM Simulating the Effect of Inclusions on Microstructure-Sensitive HCF/VHCF Life Scatter of Notched Components: Jennifer Jones1; ‘University of Central Florida

8:55 AM Fatigue Behavior of Aluminum-Magnesium-Silicon Alloy (AA6061) Processed by Equal Channel Angular Pressing: Siva Sai Kishore1; Uday Chakkingal1; S.Ganesh Sundara Raman1; ‘Indian Institute of Technology, Madras

9:15 AM A Crystal Plasticity Description of Cyclic Fatigue in an Mg Alloy Bi-Crystal: Simon Knight1; Brad Diak1; Mark Daymond1; ‘Queen’s University

9:35 AM Hysteresis Prediction under Thermomechanical Fatigue with Dwells: Thomas Bouchenot1; Ali Gordon1; ‘University of Central Florida

9:55 AM High Altitude (Low Temperature and Water Vapor Pressure) Environments on Fatigue Crack Propagation Rates in Aerospace Aluminum Alloys: Yan Chen1; Xu Chen1; ‘Tianjin University; ‘Oak Ridge National Laboratory

10:15 AM Break

10:30 AM Real-Time Damage Detection: A Novel Use of Triboluminescent Materials: William Hollemann1; Ross Fontenot1; ‘University of Louisiana at Lafayette

10:55 AM Real-Time Measurement and Timing of Fatigue Crack Propagation Rates in Aerospace Aluminum Alloys: Jennifer Jones1; James Burns1; ‘University of Virginia

11:15 AM Quantifying Surface Roughness Evolution under Cyclic Loads in FCC Metals through Discrete Dislocation Dynamics Simulations: Ahmed Hussein1; Jaafar Elawady1; ‘Johns Hopkins University

11:35 AM Cyclic Behavior and Microstructure-Property Relation of Semi- Crystalline Polymers: Jutima Simsiriwong1; Nima Shamsaei1; ‘Mississippi State University

Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — General Session

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Tuesday AM Room: Australia 3
March 17, 2015 Location: Dolphin

Session Chairs: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

8:30 AM Keynote

Length-Scale Effects on Fatigue Life: Oliver Kraft1; Charlotte Eimslie1; Reiner Mönig1; ‘Karlsruhe Institute of Technology

9:05 AM Modeling of the 3D Effects of Particles on Fatigue Crack Initiation in High Strength Al Alloys: Pei Cai1; Yan Jin1; Tongguang Zhai1; ‘University of Kentucky

9:25 AM Invited

Damage Behavior at Twin and Grain Boundary in Alloy 690 Material in the Very High Cycle Fatigue Regime: Guocai Chai1; ‘Sandvik Materials Technology

9:45 AM Simulating the Effect of Inclusions on Microstructure-Sensitive HCF/VHCF Life Scatter of Notched Components: Jennifer Jones1; ‘University of Central Florida

8:55 AM Fatigue Behavior of Aluminum-Magnesium-Silicon Alloy (AA6061) Processed by Equal Channel Angular Pressing: Siva Sai Kishore1; Uday Chakkingal1; S.Ganesh Sundara Raman1; ‘Indian Institute of Technology, Madras

9:15 AM A Crystal Plasticity Description of Cyclic Fatigue in an Mg Alloy Bi-Crystal: Simon Knight1; Brad Diak1; Mark Daymond1; ‘Queen’s University
10:40 AM Invited
Controllable Fatigue Cracking Mechanisms of Copper Bicrystals with a Coherent Twin Boundary: Linlin Li1; Zhenjun Zhang2; Peng Zhang2; Zhifeng Zhang3; 1Institute of Metal Research, Chinese Academy of Science

11:00 AM
Crack Tip Dislocations under Static and Cyclic Loading: Ramasis Goswami1; Syed Qadri2; Chandra Pande3; 1Naval Research Laboratory

11:20 AM
Microstructure-Based Probabilistic Modeling of Small Fatigue Crack Growth Behavior in a Ni-Base Superalloy: Sashant Jha1; Patrick Golden2; Reji John3; James Larsen4; 1Air Force Research Laboratory/Universal Technology Corporation; 2US Air Force Research Laboratory

11:40 AM
Multiscale Investigation of Dislocation Annihilation during Fatigue in Metals and Alloys: Hao Wang1; Dongsheng Xu2; Rui Yang3; 1Institute of Metal Research, Chinese Academy of Sciences

Frustrated Ferroelectric Materials — General Principles and Commonalities
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Michael Manley, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A&M University; Navdeep Singh, University of Houston

Tuesday AM
Room: Europe 1
Location: Dolphin

Session Chairs: Xiaobin Ren, National Institute for Materials Science; Peter Entel, TU Duisburg-Essen

8:30 AM Invited
Mesoscopic Modeling of Ferroic and Multiferroic Glasses: Avadh Saxena1; Teresa Castan2; Antoni Planes3; 1Los Alamos National Laboratory; 2University of Barcelona

9:00 AM
Displacive Phase Transition Precursor Phenomena: Theory, Computation, and Experiment: Yu Wang1; Yongmei Jin2; Yang Ren3; 1Michigan Technological University; 2Argonne National Laboratory

9:20 AM Invited
Co-Doped NiMnGa Ferromagnetic Shape Memory Alloys: A Magnetic and Structural Playground: Franca Albertini1; Simone Fabbrici2; Giacomo Porcari3; Massimo Solzi4; 1IMEM-CNR; 2MIST E-R; 3Dipartimento di Fisica e Scienze della Terra, Università di Parma; 4Faculty of Physics and CENIDE, University of Duisburg-Essen; Dipartimento di Chimica

9:50 AM Break

10:10 AM Invited
Multiple Ferroelectric Glasses via Ordering in a Single Material Composition: James Monroe1; Jeffery Raymond2; Xiao Xu3; Ryosuke Kainuma4; Yuri Chumlyakov5; Raymundo Arroyave6; Ibrahim Karaman7; 1Texas A&M University; 2Tohoku University; 3Siberian Physical Technical Institute

10:40 AM Invited
Ferromagnetic Strain Glass Phenomenon in Ni-Mn-Ga Based Alloy Systems: Yu Wang1; Xiaoping Song2; Xiaobing Ren3; 1MOE Key Laboratory for Nonequilibrium Synthesis and Modulation of Condensed Matter, Xi’an Jiaotong University; 2National Institute for Materials Science

11:30 AM
Relaxor Ferroelectrics, Spin-Glass and Real Glass: Takeshi Egami1; 1University of Tennessee
Fundamental Methods for Integrating Microstructure-Property-Design Relationships into the ICME Paradigm — Mechanics and Multi-Scale Modeling
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Christopher Woodward, Air Force Research Laboratory; Somnath Ghosh, Johns Hopkins University
Tuesday AM
March 17, 2015
Location: Oceanic 2
Session Chairs: Dennis Dimiduk, Retired Air Force Research Lab; Somnath Ghosh, Johns Hopkins University

8:30 AM Invited
Addressing Some Issues in Computational Mechanics of Materials for Modeling Metals and Composites: An ICME Initiative: Somnath Ghosh1; 1Johns Hopkins University

9:00 AM
Homogenization-Based Modeling of Coupled Crystal Plasticity and Ductile Damage Evolution at High Strain Rates: Coleman Alleman1; Somnath Ghosh1; 1Johns Hopkins University

9:20 AM
A Continuum Dislocation Dynamics Approach to Crystal Plasticity of Two-Phase Titanium Alloys: Hector Basoalto1; Jeffery Brooks1; 1University of Birmingham

9:40 AM
A Multi-Scale Method for Predicting the Influence of Microstructure on Forming Limit Diagrams for Advanced High Strength Steels: Ankit Srivastava1; H. Sung1; H.G. Armaki1; S. Kumar1; A.F. Bower1; L. Zhang1; J. Min1; F. Abu Farha1; J. Carsley1; L.G. Hector Jr.1; 1School of Engineering, Brown University; 1School of Mechanical Engineering, Tongji University; 1Mechanical Engineering Dept., University of Michigan; 1Clemson University - International Center for Automotive Research; 1General Motors R&D Center

10:00 AM Break

10:20 AM Invited
High-temperature Discrete Dislocation Plasticity: Amine Benzerga1; Shyam Keralavarma1; 1Texas A&M University

10:50 AM
Statistical Analysis of Failure in Polymer Matrix Composites: Masoud Safdari1; Nancy Sottos1; Philippe Geubelle1; 1University of Illinois

11:10 AM
ICME for Crashworthiness of TWIP Steels: From Ab Initio to the Crash Performance: Onur Gövenc1; Markus Bambach1; Gerhard Hirt1; 1IBF - RWTH-Aachen

11:30 AM
Micro and Meso-Scale Strength Modeling of Cast Aluminum Alloys: Shibayan Roy1; Adrian Sabau1; G. Muralidharan1; Dongwon Shin1; Lawrence Allard1; Amit Shyam1; 1Oak Ridge National Laboratory

11:50 AM
Concurrent Atomistic Continuum Simulation of Brittle-to-Ductile Transitions in Single Crystal Solids Using Adaptive Mesh Refinement: Shuochi Yao1; Rui Che1; Liming Xiong1; David McDowell1; Youping Chen1; 1Georgia Institute of Technology; 1University of Florida; 1Iowa State University

High-Entropy Alloys III — Alloy Development and Applications
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside
Tuesday AM
March 17, 2015
Location: Dolphin
Session Chairs: Peter Liaw, The University of Tennessee; Suveen Mathaudhu, University of California Riverside

8:30 AM
A-Low-Density, Single-Phase High Entropy Alloy Produced by Mechanical Alloying: Alexander Zaddach1; Khaled Youssef1; Changning Niu1; Douglas Irving1; Carl Koch1; 1North Carolina State University; 1Qatar University

8:50 AM Invited
Accelerated Exploration of Multi-Principal Element Alloys with Solid Solution Phases: Oleg Senkov1; Jonathan Miller1; Daniel Miracle1; Christopher Woodward1; 1Air Force Research Laboratory, Materials and Manufacturing Directorate

9:10 AM Invited
A Critical Review of High Entropy Alloys: Dan Miracle1; Oleg Senkov1; 1AF Research Laboratory

9:50 AM Invited
Irradiation Resistance of High-Entropy Alloys: Takeshi Egami1; Takeshi Nagase1; Wei Guo1; Phillip Rack1; 1University of Tennessee; 1Osaka University

10:30 AM
High Entropy Alloys in Hexagonal Closed Packed Structure: C. Cline1; Abraham Munitz1; R.D. Field1; 1North Carolina State University; 1Colorado School of Mines

10:45 AM Invited
Phase Formation Rules and Serrated Flow in High Entropy Multicomponent Alloys: Yong Zhang1; 1University of Science and Technology Beijing

11:05 AM
Ultrastrong and Thermally Stable Multi-component Alloys at Small Scales: Yu Zou1; Huan Ma1; Ralph Spolenak1; 1ETH Zurich

11:25 AM Invited
Ultrastrong and Thermally Stable Multi-component Alloys at Small Scales: Yu Zou1; Huan Ma1; Ralph Spolenak1; 1ETH Zurich

11:45 AM Invited
High-Throughput Synthesis and Characterization of Thin Film High Entropy Alloys Based on the Fe-Ni-Co-Cu-Ga System: Samuel Guérin1; Anaïs Guyomarc'h1; Brian Hayden1; Jean-Philippe Soulé1; Sergey Yakvolev1; James Cotton1; Ilika Technologies; 1The Boeing Company
Tuesday AM  Room: Oceanic 6  March 17, 2015  Location: Dolphin

Session Chair: Somnath Ghosh, Johns Hopkins University

8:30 AM Invited
Aerospace Alloys by Design: From CALPHAD to Flight: Greg Olson; ’Northwestern University

9:00 AM Invited
Microstructure Quantification and Analysis for ICME of High Temperature Alloys: Mark Tschopp; ’U.S. Army Research Laboratory

9:30 AM
Grain Boundary Engineering of Powder Processed Ni-base Superalloy RR1000: Martin Detroit; ’Illinois Institute of Technology

9:50 AM Break

10:10 AM Invited
Strategies for Multiscale Materials Simulations Using Calibrated Metamodels: Surya Kalidindi; ’Georgia Institute of Technology

10:40 AM
Ni-based Superalloy Micro-lattice Structures: Dinc Erdemiz; Tobias Schaedler; Zhou Lu; Alan Jacobsen; William Carter; David Dunand; ’Northwestern University; HRL Laboratories, LLC

11:00 AM
Simulation of Gamma-Prime Precipitation Kinetics in Commercial Ni-based Superalloys: Michael Fahrmann; David Metzler; ’Haynes International Inc.

High-Temperature Electrochemistry II — Sensors and Advanced Materials

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

Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Tuesday AM  Room: Grand Harbor Salon 2  March 17, 2015  Location: Yacht & Beach

Session Chairs: Michael Simpson, University of Utah; Hirokazu Konishi, Osaka University

8:30 AM
Solid-State Sensing Using High Temperature Electrolytes: Ramachandran Kumar; ’University of Cambridge

9:10 AM
Production of Titanium Oxycarbide from Titania-rich Mineral Sands: Forzin Fatollahi-Fard; Petrus Pistorius; ’Carnegie Mellon University

9:50 AM Break

10:10 AM
Diffuse-Interface Electrochemical Modeling of Metal Oxidation at Elevated Temperatures: Tianle Cheng; Youhai Wen; ’National Energy Technology Laboratory

10:50 AM
Experimental Thermodynamic Study on the Ag–Sb System at Elevated Temperatures: Markus Aspiala; Fiseha Tesfaye; Pekka Taskinen; ’Aalto University

11:20 AM
Production of Fine Tungsten Powder by Electrolytic Reduction of Solid CaWO4 in Molten Salt: Dingding Tang; Dihua Wang; Wei Xiao; ’Wuhan University

High-Temperature Systems for Energy Conversion and Storage — Solid Oxide Fuel Cell: Recent Developments I

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Amit Shyam, Oak Ridge National Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Tuesday AM  Room: Grand Harbor Salon 1  March 17, 2015  Location: Yacht & Beach

Session Chairs: Paul Ohodnicki, National Energy Technology Laboratory; Kyle Brinkman, Clemson University

8:30 AM Introductory Comments

8:35 AM Keynote
Low Temperature Solid Oxide Fuel Cells: A Transformational Energy Conversion Technology: Eric Wachsman; ’University of Maryland, College Park

9:25 AM Invited
Advanced Energy Storage through Solid Oxide Fuel Cells: Kevin Huang; ’University of South Carolina

10:00 AM Break

10:15 AM Invited
(La0.6Sr0.4)xCo0.2Fe0.8O3 and Related Cathode Materials in Solid Oxide Fuel Cells: Kathy Lu; Kris Shen; ’Virginia Tech

10:50 AM Invited
Solid Oxide Fuel Cell Development in the Office of Research and Development at the National Energy Technology Laboratory: Kirk Gerdes; ’U.S. Dept of Energy

11:25 AM
Synthesis of Nanocrystalline Mesoporous Cu-(CeO2-d)-YSZ Composite and Its Electrocatalytic Behavior as Anode in Solid Oxide Fuel Cells: Corina Chanqua; Alejandra Montenegro Hernández; Liliana Mogni; Alberto Caneiro; ’CNEA-CONICET

Hume-Rothery Award Symposium: Multicomponent Alloy Metallurgy, the Bridge from Materials Science to Materials Engineering — Diffusion

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee

Program Organizers: Ursula Kathner, National Institute of Standards and Technology; Mark Asta, University of California at Berkeley; Raymundo Arroyave, Texas A&M University

Tuesday AM  Room: Oceanic 1  March 17, 2015  Location: Dolphin

Session Chairs: Nils Warken, University of Birmingham; John Agren, KTH

8:30 AM Invited
First-Principles Statistical Mechanics and Its Role in Informing Phenomenological Descriptions of Dynamic Processes in the Solid State: Anton Van der Ven; ’University of California

9:00 AM Invited
Analysis and Control of Interface Reactions in Multicomponent Systems: John Perepezko; ’University of Wisconsin-Madison
9:30 AM Invited
Multicomponent Diffusion Couple Experiments: Opportunities and Challenges in Determining Thermo-Kinetic and Other Functional Properties: Yongho Sohn1; 1University of Central Florida

10:00 AM Break

10:30 AM Invited
Simulation of Concentration Evolution of Multiple Species with Kinetic Asymmetry: Application of Physical Metallurgy Fundamentals to Materials for Energy Storage: Hui-Chia Yu1; Katsuyao Thornton1; 1University of Michigan

11:00 AM Invited
Application of Diffusion Studies to the Accelerated Development of Engineering Alloys: Ji-Cheng Zhao2; 2The Ohio State University

11:30 AM Invited
Multicomponent Diffusion Controlled Processes in Industry: Carelyn Campbell1; 1National Institute of Standards and Technology

Integrative Materials Design II: Performance and Sustainability — Design of Magnesium Alloys and Steels
Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Materials and Society Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Tuesday AM
Room: Grand Harbor Salon 8
March 17, 2015
Location: Yacht & Beach
Session Chairs: Weizhou Li, Caterpillar Inc.; Joy Forsmark, Ford Motor Co.

8:30 AM Invited
Can Sustainable Materials Development Ever Become Economically Feasible? Case in Point: The Evolution of the Magnesium Revolution: Eric Nyberg2; Suveen Mathaudhu2; 2Pacific Northwest National Laboratory; 2University of California Riverside

8:55 AM Invited
Using Quality Mapping to Predict Spatial Variation in Local Properties and Component Performance in Mg Alloy Body Castings: Joy Forsmark2; Jacob Zindel1; Larry Godlewski1; Jiang Zheng1; John Allison1; Mei Li1; 1Ford Motor Company; 1University of Michigan

9:20 AM
Intrinsic Microstructure Modeling for Mechanistic-Based Ductility Prediction for Cast: Erin Barker1; Kyoo Sil Choi1; Xin Sun1; 1Pacific Northwest National Laboratory

9:40 AM
Effects of Porosity on the Ductility of Thin-Walled High Pressure Die Casting Magnesium: Kyoo Sil Choi1; Erin Barker1; Xin Sun1; 1Pacific Northwest National Laboratory

10:00 AM
Influence of Aluminum Content and Thickness on the Tensile Behavior of Mg AM Series Alloys: Erin Dedo1; John Allison1; 1University of Michigan

10:20 AM Break

10:30 AM Invited
Mechanistic-Based Design of Mechanical Properties in a Mg-Y Binary Alloy: Dalong Zhang; Subhash Mahajan; Enrique Lavernia1; 1University of California Davis

10:55 AM Invited
M2C – Magnesium Metal Matrix Composites: Norbert Hort1; Karl Kainer1; Hajo Dieringa1; 1Helmholtz-Zentrum Geesthacht

11:20 AM
Effects of MC Morphology and SDAS on Oxidation and Low Cycle Fatigue (LCF) at 950°C for Heat Resistant Austenitic Cast Steel: Hailong Zhao; Jacob Zindel2; Larry Godlewski1; Carlos Engler-Pinto; Yinhuai Zhang; Qiang Feng; Mei Li1; 1Ford Motor Company

11:40 AM
First-Principles Study of Degradation of Mechanical Property of Oxidation and Inhibition of Chromium Alloying in Magnete: Ying Chen1; Arkapol Saendeejing1; Ken Suzuki1; Hideo Miura1; 2Tohoku University

Magnesium Technology 2015 — Design of Magnesium Alloys and Steels
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelamegham, Ind LLC

Tuesday AM
Room: Northern Hemisphere E1
March 17, 2015
Location: Dolphin
Session Chairs: Bilal Mansoor, Texas A&M University at Qatar; Haitham El Kadiri, Mississippi State University

8:30 AM
In-Situ Neutron Diffraction Study of the Deformation Mechanisms in Solutionized Mg-Zn Alloys: Rapalee Malay1; Sean Agnew1; Carlos Caeceres1; 1University of Queensland

8:50 AM
Investigation of Compression Behavior of Mg-4Zn-2(Nd,Gd)-0.5Zr at 350°C by In Situ Synchrotron Radiation Diffraction: Ricardo Buzzoloni1; Domokos Tolnai1; Chaminii Mendi1; Andreas Stark1; Norbert Schell1; Haroldo Pinto1; Karl Kainer1; Norbert Hort1; 1Helmholtz-Zentrum Geesthacht

9:10 AM
The Deformation Behavior, Microstructure and Mechanical Properties of Cast and Extruded Mg-1Mn-xNd (wt%) at Temperatures between 50°C and 250°C: Ajith Chakkaedath1; Jan Bohlen1; Sangbong Yi2; Dietmar Letzig1; Zhe Chen1; Karl Boehlert1; 1Michigan State University; 2Magnesium Innovation Centre; 3University of Michigan

9:30 AM
Effect of Dynamic Strain Aging On the Strain Rate Sensitivity of an Mg-2Zn-2Nd Alloy: Tong Wang1; Stephen Yue1; John J. Jonas1; 1McGill University

9:50 AM Break

10:10 AM
The Deformation Gradient of Interfacial Defects on Twin-Like Interfaces: Christopher Barrett1; Haitham El Kadiri1; 1Mississippi State University

10:30 AM
Geometrically Necessary Twins in Sheet Bending of an AZ31 Alloy: Bin Li1; Zackery McClelland1; Stephen Horstemeyer2; 2University of Nevada, Reno; 3Center for Advanced Vehicular Systems

10:50 AM
Dislocation-twin Interactions in Magnesium Alloy AZ31: Fulin Wang1; Sean Agnew1; 1University of Virginia

11:10 AM
Role of Tensile Twinning on Fracture Behavior of Magnesium AZ31 Alloy: Subrahmanyar Narla1; Narasimhan R1; Satyam Suwas1; 1Indian Institute of Science

11:30 AM
Deformation Twinning Effects on Texture and Microstructure of AZ31B Magnesium Rolled Samples: Lizzy Lina Catorecno1; Luis Flavio Herculano1; 1University of Virginia; 2Texas A&M University at Qatar; 3University of Minnesota

www.tms.org/TMS2015 #TMS2015Experience 147
Magnetic Materials for Energy Applications V — Permanent Magnets II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Francis Johnson, GE Global Research; Raju Ramanujan, Nanyang Technological University; Paul Ohodnicki, National Energy Technology Laboratory
Tuesday AM
March 17, 2015
Room: Grand Harbor Salon 7
Location: Yacht & Beach
Session Chairs: Hariharan Srikanth, University of South Florida; Lin Zhou, Ames Lab

8:30 AM Invited
Limits of Magnetic Anisotropy: Ralph Skomski; Priyanka Manchanda; Tushar Rana; Renu Choudhary; Arti Kashyap; D. J. Sellmyer; 1University of Nebraska; 2IIT Jaipur; 3UNL / IIT Mandi (India); 4IIT Mandi

9:00 AM Invited
Non-Zero Temperature Micromagnetics for Rare-Earth Permanent Magnets: Thomas Schrefl; Simon Bance; 1Danube University Krems, Austria; 2St. Pölten University of Applied Sciences, Austria

9:30 AM Invited
Electronic Structure and Maximum Energy Product of Rare-Earth Free Permanent Magnet (LTP-MnBi): Jihoon Park; Woncheol Lee; Seong-Gon Kim; Chul-Jin Choi; 1The University of Alabama; 2Mississippi State University; 3Korea Institute of Materials Science

9:50 AM AM Break

10:05 AM Invited
Chemical Synthesis and Rational Assembly of Magnetic Nanoparticles into Exchange-Spring Nanocomposites: Shouheng Sun; 1Brown University

10:35 AM Invited
Ferromagnetic Nanoparticles with High Aspect Ratio: J.Ping Liu; 1University of Texas-Arlington

11:05 AM
Influence of Surface Segregation on Magnetic Properties of FePt Nanoparticles: Guofeng Wang; Yinkai Lei; 1University of Pittsburgh

11:25 AM Invited
Coercivity Enhancement of Nanostructured NdFeB Magnets by Grain Boundary Engineering: George Hadjipanayis; Rajasekhar Madugundo; Daniel Salazar; José Manuel Barandiarán; 1Department of Physics and Astronomy, University of Delaware; 2BCMaterials; 3Faculty of Science and Technology, University of the Basque Country

11:45 AM Role of the Applied Magnetic Field on the Microstructural Evolution in Alnico 8 Alloys: Lin Zhou; Wei Tang; H. Dillon; R. McCallum; I. Anderson; M. Kramer; 1Ames Laboratory

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Fuels III
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rampresh Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory
Tuesday AM
March 17, 2015
Room: Grand Harbor Salon 6
Location: Yacht & Beach
Session Chair: Dennis Keiser, Idaho National Laboratory

8:30 AM Graphene-UO2 Composites for Accident Tolerant Nuclear Fuel: Jie Lian; Tiankai Yao; 1Rensselaer Polytechnic Institute

8:50 AM High Energy Xe Ion Irradiation Study of U-Mo/Al Dispersion Fuel: Bei Ye; Di Yun; Kun Mo; Jian Gan; Sumit Bhattacharya; Jeffrey Fortner; Walid Mohamed; Yeon Soo Kim; Gerard Hofman; Michael Pellin; Abdellatif Yacout; 1Argonne National Laboratory; 2Idaho National Laboratory; 3Northwestern University

9:10 AM Enhanced Thermal Conductivity of Uranium Dioxide-Diamond Composite Fuel: Zhichao Chen; Ghatu Subhash; James Tulenko; 1Mechanical & Aerospace Engineering Department, University of Florida; 2Materials Science & Engineering Department, University of Florida

9:30 AM Hydrogen Migration, Precipitation, and Re-orientation of Hydrides in Spent Nuclear Fuel under Dry Storage Conditions: Nicolas Silva; Wei-Yang Lo; Robert Weinmann-Smith; Yong Yang; 1University of Florida

9:50 AM Magnetic Cr-Doped Fe-Fe Oxide Core-Shell Nanoparticles for Used Nuclear Fuel Separation: Y. Wu; M. Kaur; H. Zhang; Y. Qiang; L. Martin; T. Todd; 1Boise State University; 2University of Idaho; 3Idaho National Laboratory

10:10 AM Break

10:30 AM Simulating Changes in Raman Spectra of Point Defects in UO2 from Lattice Dynamics: Eugene Ragasa; Aleksandr Chernyatynskyi; Simon Phillips; 1University of Florida

10:50 AM Correlation between Thermal Conductivity and Microstructural Evolutions in CeO2 upon Radiation and Fission Gas Implantation: Yuehong Wu; Heng Ban; Xianming Bai; Aleksandr Chernyatynskyi; Jian Gai; Yong Yang; 1University of Florida; 2Utah State University; 3Idaho National Laboratory

11:10 AM Hydrogen Induced Degradation Processes in ZrH-U Fuel: Michele Fullarton; Simon Middelburgh; 1ANSTO
MHD 2015: Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing — MHD in Industry
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Ramana Reddy, The University of Alabama; Thinium Natarajan, U. S. Steel
Tuesday AM
Room: Swan 2
March 17, 2015
Location: Swan
Session Chairs: Il Sohn, Yonsei University; Ashish Patel, Timet

8:30 AM Introductory Comments

8:35 AM Invited
Electromagnetic Damping of Liquid Steel Flows in Horizontal Single Belt Casting (HSBC): Roderick Guthrie1; Mihaela Isaac1; Mahdi Aboutalebi1; McGill Metals Processing Centre
9:00 AM Invited
Effect of Ruler Electromagnetic Braking (EMBr) on Transient Turbulent Flow in Continuous Casting of Steel Slabs: Brian Thomas1; Kai Jin1; Ramnik Singh1; S. Pratap Vanka1; University of Illinois at Urbana-Champaign
9:25 AM Invited
Control of Slug-Dragging Effects at the Metal-Slag Interface through Electromagnetic Breaks in a Slab Mold: Rodolfo Morales1; Saul Garcia1; Ismael Calderon1; Jesus Barreto1; Instituto Politecnico Nacional; Instituto Tecnologico de Morelia
10:15 AM Break

10:30 AM CUFLOW: A Collaborative Computational Tool for Transport Phenomena in Materials Processing: Surya Vanka1; Brian Thomas1; Aaron Shin1; Rajneesh Chaudhary1; Ramnik Singh1; Rui Liu1; Kai Jin1; Purushotam Kumar1; University of Illinois at Urbana Champaign; Exxon Research; ABB Research; Schumberge Research
10:55 AM Invited
The Application of MHD Side Stirring Technology to Aluminium Melting Furnaces for Operational Efficiency Improvement – A Case Study: Alan Peel1; Pierre Menet2; ALTEK Group; Constellium
11:20 AM Invited
Optimization of an ElectroMagnetic Technology in ArcelorMittal Gent for Improving Products Quality in Steel Industry: Jean-Francois Domgin1; Marc Anderhuber1; Annick de Paepe2; Michäel de Doncker2; ArcelorMittal R&D; ArcelorMittal Gent
11:45 AM Invited
Phase Separation of Hypermonotectic Alloys during Solidification in Electromagnetically Generated Gravitational Fields: Lazaro Beltran-Sanchez1; Intel Corporation
Micromechanics of Structurally Inhomogeneous Materials: An FMD Symposium in Honor of Armen Khachaturyan — Grain Growth and Plasticity
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Long Qing Chen, Penn State University; Mark Asta, University of California, Berkeley; Yunnan Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yongmei Jin, Michigan Technological University; Yann Le Bouar, LEM, CNRS/ONERA

Tuesday AM  Room: Asia 3  Location: Dolphin

Session Chair: Mark Asta, University of California at Berkeley

8:30 AM Invited
The Phase Field Crystal Model: Grain Growth and Capillarity: K. McReynolds1; V. Chan2; K. Thornton3; Peter Voorhees1; 1Northwestern University; 2University of Michigan

9:00 AM Morphological Instability of Grain Boundaries in Two-Phase Coherent Solids: Pierre-Antoine Geslin1; Yechuan Xu1; Alain Karma1; 1Northeastern University

9:20 AM Coupling Phase Field Methods with Continuum Plasticity: Yann Le Bouar1; Moea Cottura1; Benoît Appolaire1; Alphonse Fine1; 1LEM, CNRS/ONERA

9:40 AM Invited
Continuum Modeling of Dislocations: Alphonse Fine1; Pierre-Antoine Geslin1; Pierre-Louis Valdenaire1; Yann Le Bouar1; Benoît Appolaire1; 1ONERA-CNRS

10:10 AM Break

10:30 AM Phase Field Modeling of Microstructure Evolution in Solder Interconnects: Raymundo Arroyave1; 1Texas A&M University

10:50 AM Multi-Phase Field Model for Heterogeneous Nucleation at Grain Boundaries: Rongpei Shi1; Yunnhzi Wang1; 1The Ohio State University

Microstructural Processes in Irradiated Materials — Nanostructured Metallic Materials (ODS/NFA, Interfaces)
Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yassuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin

Tuesday AM  Room: Asia 1  Location: Dolphin

Funding support provided by: Idaho National Laboratory and Oak Ridge National Laboratory

Session Chairs: Thak Byun, Oak Ridge National Laboratory; Pascal Bellon, University of Illinois at Urbana-Champaign

8:30 AM Overview on the Fracture Behavior of High Chromium Ferritic-Martensitic and Nanostructured Ferritic Alloys: Thak Sang Byun1; David Hoelzer2; Lizhen Tian1; Stuart Maloy3; 1Oak Ridge National Laboratory; 2Los Alamos National Laboratory

8:45 AM Improved Swelling Resistance of ODS Alloys by Combining the Swelling Resistance Arising from both Dispersoids and Tempered Martensite Phase: Tianyi Chen1; Jonathan Gigax2; Di Chen1; Eda Aydogan3; Lloyd Price2; Jing Wang1; Yuemei Wang1; Lin Shao1; Shigeharu Ukai1; Yuedong Wu1; Wei-Yang Lo1; Yong Yang1; Frank Garner1; 1Texas A&M University; 2Hokkaido University; 3University of Florida; 4Radiation Effects Consulting

9:00 AM Radiation Response of Nanolayered, Nanoporous and Nanotwinned Metals: Xinghong Zhang1; Kiyayiu Yu1; Jin Li1; Youxing Chen1; Haiyan Wang1; Lin Shao1; Mark Kirk1; Meimei Li1; Cheng Sun1; Stuart Maloy3; 1Texas A&M University; 2Argonne National Laboratory; 3Los Alamos National Laboratory

9:15 AM Depth-Dependence of Ion-Induced Swelling in Ferritic-Martensitic ODS Alloys: Frank Garner1; Mychialo Toczko2; Alisa Certain2; Lin Shao1; Tianyi Chen1; Jonathan Gigax2; Chaochen Wei2; 1Radiation Effects Consulting; 2Pacific Northwest National Laboratory; 3Texas A&M University

9:30 AM Microstructures and Helium Ion Implantation Effects in HiPed and SPSed 9Cr-ODS Steels: Chenyang Lu1; Zheng Lu1; Lumin Wang1; 1University of Michigan; 2Northeastern University

9:45 AM Irradiation Effects in Oxide Nanoparticle Stability in Oxide Dispersion Strengthened (ODS) Steel: Alexander Matroiv1; Jianchao He2; Kumar Sridharan; Todd Allen2; 1UW-Madison; 2University of Science and Technology Beijing

10:00 AM Break

10:15 AM Ab Initio Investigation of He Bubbles at the Y-Ti2O2-Fe Interface in Nanostructured Ferritic Alloys: Thomas Danielsson1; Celine Hin1; 1Virginia Polytechnic Institute and State University

10:30 AM Energetic Study of Helium Bubble Formation in Y-Ti-O Enriched Iron Matrix: Yingye Gan1; Di Yuan1; David Hoelzer1; Huijuan Zhao1; 1Clemson University; 2Argonne National Laboratory; 3Oak Ridge National Laboratory

10:45 AM Characterization of Mesoscopic Fe - {111}, {110} and {100} Y-Ti2O2-Fe Interfaces: Tiberiu Stan1; Yuan Wu1; Stephan Kraemer1; George Odette1; 1University of California Santa Barbara

11:00 AM Investigation of bcc-Fe Interfaces with B2 Intermetallic Alloys: Benjamin Beeler1; Peter Hosemann2; Mark Asta1; Niels Gronbech-Jensen1; 1University of California, Davis; 2University of California, Berkeley

11:15 AM Optimum Size Effect to Achieve Enhanced Radiation Tolerance in Immiscible Cu/Fe Multilayers: Yaxing Chen1; Engang Fu1; Haiyan Wang1; Yongqiang Wang2; Xinghang Zhang1; 1Texas A&M University; 2Oak Ridge National Laboratory

11:45 AM Role of Interfaces in Trapping Implanted He in Two-Dimensional and Three-Dimensional Cu/Co Nanocomposites: Timothy Lach1; Elvan Ekiz2; Robert Averback1; Pascal Bellon1; 1University of Illinois at Urbana-Champaign

11:45 AM In Situ Observation of Defect Annihilation in Kr Ion Irradiated Bulk Fe/Fe2Zr Nanocomposite Alloy: Kaiyun Yu1; Zhe Fan1; Youxing Chen1; Miao Song1; Yue Liu1; Haiyan Wang1; Mark Kirk1; Meimei Li1; Xinghang Zhang1; 1China University of Petroleum-Beijing; 2Texas A&M University; 3Argonne National Laboratory
Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Multiscale Modeling and Co-based Alloys
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ENSMAM flank Prec – UP CNR S3 3436; Qiang Feng, University of Science and Technology Beijing
Tuesday AM Room: Oceanic 7 Location: Dolphin
Session Chairs: Qiang Feng, University of Science and Technology Beijing; Catherine Rae, Cambridge University; Mark Tschopp, Army Research Laboratory
8:30 AM Keynote
Multi-Scale Crystal Plasticity FEM Approach to Modeling Nickel-Based Superalloys: Somnath Ghosh; Shahriyar Keshavarz; George Weber; Johns Hopkins University
9:10 AM Multiscale Model of Strength in Single Crystal Tungsten under Uniaxial and Biaxial Loading: David Cereceda; Martin Diehl; Franz Roters; Dierk Raabe; Jose Manuel Perlado Martin; Jaime Marian; Lawrence Livermore National Laboratory; Max-Planck-Institut für Eisenforschung; Instituto de Fusión Nuclear. Universidad Politecnica de Madrid
9:30 AM Impact of Microstructural Evolutions on the Stress/strain Distribution at Grain Boundaries in Ni-Based Superalloys: Celine Gerard; Jonathan Cormier; Nikolay Osipov; Djamel Missoum-Benziiane; Alexandre Morel; Institut Prime, CNRS-ENSAUniversité de Poitiers; Mines ParisTech-CNRS UMR 7633; Université de Poitiers
10:00 AM Invited Modelling Creep in Single Crystal Superalloys: Enrique Galindo-Nava; Narges Tabrizi; Catherine Rae; Cambridge University
10:10 AM Break
10:10 AM Invited Microstructure and Creep Properties of Boron and Titanium Containing Cobalt-Based Superalloys: Peter Bocchini; David Seidman; David Dunand; Northwestern University
10:50 AM Invited Influence of Ru on the Microstructural Evolution of Gamma Plus Gamma-Prime-Strengthened Co-Based Superalloys: Daniel Sauza; Peter Bocchini; David Seidman; David Dunand; Northwestern University
11:10 AM Creep Deformation Mechanisms and HRSTEM EDS Mapping of Stacking Faults in L12-Containing Co-Based Superalloys: Michael Tita; Alessandro Mottura; G. Viswanathan; Akane Suzuki; Michael Mills; Tresa Pollock; University of California Santa Barbara; University of Birmingham; The Ohio State University; GE Global Research
11:30 AM Portevin-Le Chatelier Effect in a Ni-Co Base Superalloy: Chuanyong Cui; Kui Du; Xiaofeng Sun; Institute of Metal Research
11:50 AM Invited Creep Mechanism of a Ni-Co Based Wrought Superalloy with Low Stacking Fault Energy: Chenggang Tian; Chuanyong Cui; Xiaofeng Sun; Institute of Metal Research

Nanocomposites III — Ceramic or Metalloid (Si or C) Nanocomposites
Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Muruldharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWI); Meisha Shofer, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee
Tuesday AM Room: Europe 2 Location: Dolphin
Session Chair: Simona Hunyadi Murph, Savannah River National Laboratory
8:30 AM Interfacial Fracture in Ceramic Nanocomposites Reinforced with ALD Coated Carbon Nanotubes: Xin Liang; Philip Loya; Sureetha Vasudevan; Jun Lou; Brian Sheldon; Brown University; Rice University
8:50 AM Invited Carbon Nanomaterials Enabled Thin Film Piezoresistive Sensors: Tao Liu; Florida State University
9:30 AM Invited The Effect of Si- and Al-Based Additives on the Densification and Microstructure of Boron Carbide: Jerry LaSalvia; Kris Behler; Adam Hutchinson; David Manoukian; U.S. Army Research Laboratory; Rutgers University
10:10 AM Break
10:30 AM Za2+ Solubilization and Segregation Influence in Macroscopic Properties of SnO2 Nanopowders: Deise Cristina Rosário; Douglas Gouveia; University of São Paulo
10:50 AM Synthesis of Nanosized Zn1-xCoxAl2O4 Spinels Obtained by Liquid Feed-Flame Spray Pyrolysis Method: Ceramic Pigments Application: Natalia Betancur Granados; Eongyu Yi; Richard Laine; Oscar Restrepo Baena; University Nacional de Colombia; University of Michigan
11:10 AM Electronic Structure of Copper Decorated Carbon Nanotubes: Jingyin Jiang; Chengyu Yang; Quanfang Chen; University of Central Florida
11:30 AM Sol-gel/Hydrothermal Method for the Synthesis of Ultralong (NH4)2V6O16•1.5H2O Nanobelts: Liang Wang; Hong-Yi Li; Chuang Wei; Yu Wang; Chongqing University

Nanomaterials for Rechargeable Batteries and for Supercapacitors III — Session III: In Situ TEM for Batteries
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University
Tuesday AM Room: Europe 3 Location: Dolphin
Session Chairs: Reza Shahbazian-Yassar, Michigan Technological University; Haimei Zheng, Lawrence Berkeley National Laboratory
8:30 AM Invited In Situ Study of Nanostructure Evolution at Electrode-Electrolyte Interfaces in Li-S Batteries: Haimei Zheng; Lawrence Berkeley National Lab
8:55 AM Invited
Multiscale Correlation of Structure and Chemistry of Electrode Materials and Their Properties for Lithium Ions and Beyond: Chongmin Wang1; 1Pacific Northwest National Laboratory

9:20 AM Invited
Dynamic Phenomena in Nano-Structured Electrode Materials for Electrochemical Energy Storage: Shirley Meng1; 1U.C. San Diego

9:45 AM Invited
In-Situ TEM Characterization on Dynamic Lithiation Process in Nanostructured Electrodes: Scott Mao1; 1University of Pittsburgh

10:10 AM Break

10:25 AM
Li Transport and the Coupled Structural Evolution in Rechargeable Batteries: Reza Shahbazian-Yassar1; 1Michigan Technological University

10:45 AM Invited
In Situ Transmission Electron Microscopy of Deposition on Battery Electrodes: Todd Brinlingler1; Olga Baturina1; Corey Love1; 1U.S. Naval Research Laboratory

11:10 AM Invited
Electrochemical Lithiation Behavior of Individual Co,S/Co-Filled Carbon Nanotubes: Wenchi Li1; Qingmei Su1; Gaohui Du1; 1Florida International University; 2Zhejiang Normal University

11:35 AM Invited
Phases and Dynamics of Intercalation in AFePO4 (A = Li or Na) Positive Electrode Materials: Philippe Moreau1; Joel Gauthier1; Florent Boucher1; Lenaic Make1; Marine Cuisinier1; Donatien Robert1; Pascale Bayle-Guillaume1; Dominique Guyomard1; 1Institut des Matériaux Jean Rouxel; 2CEA/LITEN; 3CEA/INAC

12:00 PM Invited
Controllable Lithium Polyselenides Presence in the New Li-Se Rechargeable Battery System: All Abouinmre1; Yanjie Cui1; Khalil Amine1; 1Argonne National Laboratory

9:40 AM Invited
Phonon Localization Generates Polar Nanoregions in Relaxor Ferroelectrics: Michael Manley1; Jeff Lynn1; Douglas Abernathy1; Eliot Specht1; Olivier Delaire1; Alan Bishop1; Rafai Sahul1; John Budai1; 1Oak Ridge National Laboratory; 2NIST Center for Neutron Research; 3Los Alamos National Laboratory

10:10 AM Break

10:20 AM Invited
Early Stage of Structure Change in Synchronized Long-Range Stacking Ordered Structures in Mg-Y-Zn and Related Alloy Systems: Hiroshi Okuda1; Hitoto TANAKA1; Michiaki Yamasaki1; Yoshitomo Kawamura1; Shigeru Kimura1; 1Kyoto University; 2Kumamoto University; 3JASRI SPring-8

10:50 AM Invited
Localised (Selective) Dissolution of Corrosion Model Systems: Frank Renner1; 1Hasselt University

11:20 AM Invited
Neutron and X-Ray Scattering Experiments on Levitated Liquid Droplets of Glass-Forming Alloys: Dirk Holland-Moritz1; 1German Aerospace Center (DLR)

11:50 AM Invited
Anharmonic Lattice Dynamics in Ferroelectrics and Thermoelectrics: Neutron Scattering Experiments and First-Principles Simulations: Olivier Delaire1; Chen Li1; Jiawang Hong1; Andrew May1; Huibo Cao1; Lynn Boatner1; 1Oak Ridge National Laboratory

10:10 AM Break

10:30 AM Invited
Physical Properties of Nuclear Fuel Surrogates Using Laser Ultrasonics: David Harley1; Marat Khafizov1; Robert Schley1; Eric Burgett1; 1Idaho National Laboratory; 2Idaho State University

11:20 AM
Ultrasound – Linear and Nonlinear – As a Quantitative Probe of Plasticity I: Theory: Nicolas Mujica1; Maria Cerda1; Carolina Espinoza1; Rodrigo Espinoza1; Judit Lisoni2; Fernando Lund2; 1Universidad de Chile

11:00 AM
Ultrasound – Linear and Nonlinear – As a Quantitative Probe of Plasticity II: Experiments: Nicolas Mujica1; Maria Teresa Cerda1; Carolina Espinoza1; Rodrigo Espinoza1; Judit Lisoni2; Fernando Lund2; 1Universidad de Chile
Novel Synthesis and Consolidation of Powder Materials — Powder Metallurgy of Light Alloys (Ti, Al, Mg) and Composites I
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

Tuesday AM  Room: Swan 10
March 17, 2015  Location: Swan

Session Chairs: Iver Anderson, The Ames Laboratory; Yong Liu, Central South University

8:30 AM
A Study on Dynamic Consolidation of Titanium Powder for Manufacture of Compacts and Foams: Anupam Vivek; Alexander Koenig; Glenn Daehn; Ohio State University

8:50 AM
The Micro-Mechanical Behavior of Electron Beam Melted Ti-6Al-4V Alloy: Yuan-Wei Chang; Tait McLouth; Marta Pozuelo; Chun-Ming Chang; John Wooten; Jenn-Ming Yang; University of California, Los Angeles; National Tsing Hua University; CalRAM Inc.

9:10 AM Invited
Synthesis and Consolidation of Inhomogeneous Ti-M(M=Ta, Mg) Composite Structures by Powder Metallurgy for Biomedical Applications: Yong Liu; Bin Liu; Xiang Xiong; Huiping Tang; Central South University; Northwestern Institute of Nonferrous Metals Research

9:35 AM Invited
‘Industrial Grade’ Titanium Parts from Powder Compact Forging and Extrusion: Brian Gabbitas; University of Waikato

10:00 AM Break

10:20 AM Keynote
Development of P/M Parts & Techniques in Japan: Hideshi Miura; Kyushu University

10:45 AM Invited
Fabrication and Characterization of Aluminum Composition Reinforced by Boron Nitride Nano Sheet: Seongjin Nam; Junyeon Hwang; Hyunjoon Choi; Kookmin University; Korea Institute of Science and Technology

11:15 AM Invited
Microstructural Evolution of Cryomilled Boron Carbide Reinforced Al-Mg Powders: Gaunt Murdoch; Hanry Yang; Juie M. Schoenung; Enrique J. Lavermia; Troy D. Topping; California State University, Sacramento; University of California Davis

Pb-Free Solders and Emerging Interconnect and Packaging — Lead-Free Solder Reliability
Sponsored by: TMS Functional Materials Division (formerly EMPM), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: John Elmer, Los Alamos National Laboratory; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinivasa Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnic Institute; Fan Gao, U. Massachusetts Lowell

Tuesday AM  Room: Lark
March 17, 2015  Location: Swan

Session Chairs: Srinivasa Chada, Schlumberger; Christopher Gourlay, Imperial College

8:30 AM
Investigation of Deformation-Induced Sn Whiskers for Growth Mechanism and Mitigation Method: Jaewon Chang; Sung Kang; Jae-Ho Lee; Keun-Soo Kim; Hyuck Mo Lee; KAIST; IBM T.J. Watson Research Center; Hongik University; Hoseo University

8:50 AM
Effect of Solute Addition and Grain Structure Modification on Boundary Diffusion and Whisker Growth in Tin Coatings: Lutz Meissner; Soumik Banerjee; Indranath Dutta; Bhaskar Majumdar; Andrea BuckelF; Washington State University; New Mexico Tech

9:45 AM
In-Situ Tensile Behavior of Tin Whiskers: Venkata Sathya Sai Renuka Vallabhaneni; Ehsan Izadi; Sudhanshu Singh; Carl Mayer; Jagannathan Rajagopalan; Nikhilsh Chawla; Arizona State University

10:10 AM Break

10:25 AM
Impact of Elevated Temperature Environment on Sn-Ag-Cu Interconnect Board Level High G Mechanical Shock Performance: Tae-Kyu Lee; Thomas R. Bieler; Choong-Un Kim; Michigan State University; University of Texas, Arlington

10:50 AM
Electrochemical Study of Cu-Al IMCs for Service Reliability of Wire Packages: Yuelin Wu; KN Subramanian; Andre Lee; Michigan State University

11:15 AM
Impact Strength of Sn-Bi/Cu Joints Soldered by Laser Process: Hiroshi Nishikawa; Shinya Kubota; Osaka University

11:40 AM
Microstructure Evolution and Stress-Strain Analysis of Wafer Level Chip Scale Package Corner Joints with Different Thermal Conditions and Thermal Cycles Using In-Situ HE-XRD Method: Quan Zhou; Chen Zhang; Thomas Bieler; Tae-kyu Lee; Michigan State University; Cisco Systems Inc.
Phase Transformations and Microstructural Evolution — Steels I
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danoix, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

Tuesday AM
March 17, 2015
Room: Swan 3
Location: Swan

Session Chairs: Sybrand van der Zwaag, Technical University Delft; Mohamed Gouné, Université de Bordeaux

8:30 AM Invited
New Insights into Alloying Elements Interaction with Interfaces by Coupling Advanced Experimental Techniques and Modelling: Goune Mohamed1; Frédéric Danoix2; Xavier Sauvage2; Didier Huin3; Sébastien Allain4; ICMCB-Bordeaux1; University of Rouen; ArcelorMittal

9:00 AM
Quenching and Partitioning Process Development to Replace Hot Stamping of High Strength Automotive Steel: Daniel Coughlin1; Dean Pierce2; Emmanuel De Moor3; Kester Clarke1; Amy Clarke1; Robert Hackenberg4; Omer Dogan5; Paul Jablonski6; Los Alamos National Laboratory; ASAPRC, Colorado School of Mines; National Energy Technology Laboratory

9:20 AM Invited
Spinodal Decomposition in Fe-Ni-C Martensite: Atomistic Modelling Versus Experience: Mykola Lavsky1; Frédéric Danoix2; Armen Khachatryan1; Helena Zapolsky1; Université de Rouen; Department of Materials Science and Engineering, University of California Berkeley

9:50 AM Break

10:10 AM Invited
The Effect of Mn, Mo, Si and Ni on the Bainitic Stasis in Ternary and Quaternary Fe-C-X-(Y) Alloys: Sybrand Van der Zwaag1; Hao Chen1; Hussein Farahani1; Wei Xu2; Technical University Delft

10:40 AM Invited
Granularization Processes at Low Temperature of Lath Bainitic Microstructures in FeNiC Alloys: Sébastien Allain1; Meriem Ben Haj Slama1; Nathalie Gey1; Lionel Germain1; Kangying Zhu2; Institut Jean Lamour; Lém3; ArcelorMittal Maizières Research SA

11:10 AM Invited
Microstructural Characteristics of Austenite Formed from Lath Martensite via Martensitic Reversion: Nobuo Nakada1; T. Tsuchiyama1; Setsuo Takaki1; Kyushu University

Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories — Session III
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dana Zöllner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

Tuesday AM
March 17, 2015
Room: Oceanic 8
Location: Dolphin

Session Chairs: Douglas Medlin, Sandia National Laboratories; Nathalie Bozzolo, MINES ParisTech

8:30 AM Invited
A New Look at Abnormal Grain Growth: Matthias Militzer1; Thomas Garcin1; Mohammad Abdur Razzak2; Michel Perez2; The University of British Columbia; INSa de Lyon

9:00 AM
X-Ray Imaging of Re crystallization and Precipitate Pinning in Al-1.4 wt% Cu: Paul Gibbs1; Seth Imhoff1; Kester Clarke1; Kamel Fezzaa2; Wijk Kent Lee3; Anthony Rollett4; Amy Clarke1; Los Alamos National Laboratory; Argonne National Laboratory; Brookhaven National Laboratory; Carnegie Mellon University

9:20 AM
Investigation of GB Pinning using Phase Field Modeling and Analytical Theory: Michael Tonks1; Yongfeng Zhang2; Idaho National Laboratory

9:40 AM
Evolution of Microstructure and Transformation Texture during Alpha Precipitation in Polycrystalline Titanium Alloys: Rongpei Shi1; Stephen Niezgoda1; Yunzhi Wang1; The Ohio State University

10:00 AM
The Effect of Bimodal Grain Size Conditions on Abnormal Grain Growth: Catherine Sah1; Steven Chiu1; Peter Kellner1; Jon Madison2; Robert DeHoff3; Burton Patterson3; University of Florida; Sandia National Laboratories

10:20 AM Break

10:40 AM Invited
Modeling Abnormal Grain Growth with Grain Boundary Complexion Transitions: Anthony Rollett1; William Frazier1; Gregory Rohrer1; Carnegie Mellon University

11:10 AM Impact of Grain Boundary Character on Faceting and Migration of Low Angle Boundaries and Grain Rotation: Experiments and Simulations: Jann-Erik Brandenburg1; Luis Barrales-Mora1; Dmitri Molodov2; RWTH Aachen University

11:30 AM Boundary Mediated Plasticity: In-situ TEM Experiments and Simulations: Marc Legros1; Armin Rajabzadeh1; Frédéric Mompiou1; Nicolas Combe1; CEMES-CNRS

11:50 AM Boundary Roughening and Repetitive Grain Growth Behavior in Nano-Grained Nickel: Experimental Support for the Microstructural Evolution Principle: Suk-Joong L. Kang1; Sang-Hyun Jung1; KAIST
Rare Metal Extraction & Processing 2015 — Rare Earth Metals
Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Neale Neelameggham, Ind LLC; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Animesh Jha, University of Leeds; Shijie Wang, Rio Tinto Kennecott Utah Copper

Tuesday AM
March 17, 2015
Room: Asbury C
Location: Yacht & Beach

Session Chairs: Neale R Neelameggham, IND LLC; Joon Soo Kim, Chonnam National University

8:30 AM
Status of Separation and Purification of Rare Earth Elements from Korean Ore: Joon Soo Kim1; Jin-Young Lee1; Rajesh Kumar Jyothi1; 1KIGAM
8:50 AM
Optimization of Rare Earth Leaching: Grant Wallace1; Sean Dudley2; 1Montana Tech of the Univ of MT
9:10 AM
Numerical Simulation of the Mass Transfer for Rare-Earth Concentrate in Leaching Process: Tingyao Liu1; Yong Sheng1; Teng Yang2; Bao Wang2; Liuhui Han1; Qiong Liu1; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; 2Department of Engineering, University of Leicester, UK
9:30 AM
Apatite Concentrate, A Potential New Source of Rare Earth Elements: Tianming Sun1; Mark Kennedy2; Gabriella Tranell2; Raghnild Elizabeth Aune2; 1KTH; 2NTNU
9:50 AM Break
10:05 AM
Rare Earth Elements Gallium and Yttrium Recovery From (KC)Korean Red Mud Samples by Solvent Extraction and Heavy Metals Removal/Stabilization by Carbonation: Thenepalli Thriveni1; Seong Young Nam1; Aho Ji Whan1; 1Korea Institute of Geosciences and Mineral Resources (KIGAM)
10:25 AM
Rare Earth Element Recovery and Resulting Modification of Resin Structure: Sean Dudley1; 1Montana Tech of the U of M
10:45 AM
Electrochemical Reduction of Eu(III) for the Recovery of Eu from Rare Earth Materials Solution Using Channeled Cell: Kyeong Woo Chung1; Jin-yongug Lee1; 1Korea Institute of Geoscience and Mineral Resources
11:05 AM
Ultra High Temperature Rare Earth Metal Extraction by Electrolysis: Bradley Nakanishi1; Guillaume Lambert1; Antoine Allanore1; 1Massachusetts Institute of Technology

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Session III
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrado, IPCMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Nugegahalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Tuesday AM
March 17, 2015
Room: Parrot
Location: Swan

Session Chairs: Heinz Palkowski, TU Clausthal; Adele Carrado, IPCMS University of Strasbourg

8:30 AM Keynote
Interface Characterization of Thermal Spray Coatings via Nanoindentation Methods: Andrew Robertson1; Kenneth White1; 1University of Houston
9:10 AM
Autocatalytic Ni-P and Ni-B Deposition on SiC Ceramic Particles: Isil Kerti1; Gökçe Sezen1; Ayfer Kiliçarslan1; Sibel Daglılar1; 1Yıldız Technical University
9:30 AM Invited
The Intrinsic Size-Dependent Plasticity of Mg/Ti Multilayer Thin Films: Yuanyuan Lu1; Jonathan Lidget1; Ruben Kotoran1; Brian Schuster1; Sergey Yarmolenko1; Qiuming Wei1; 1The University of North Carolina at Charlotte; 2US Army Research Laboratory; 3NC A&T State University
10:00 AM Break
10:20 AM
Ultra-Fast Boriding and Surface Hardening of Low Carbon Steel: Bakr Rabeeh1; 1German University in Cairo, GUC
10:40 AM
Phase Stability in Nanostructured Electrodeposited Cobalt-Phosphorous Coatings: Sriram Vijayan1; Na Luo1; John Carpenter2; Amit Datta1; Mark Aindow1; 1University of Connecticut; 2US Chrome Corporation
11:00 AM
Enhanced Corrosion Resistance of Laser Aligned Al-W Coatings in 3.5% NaCl Solution: Ravi Rajamure1; Hitesh Vora1; Srinivasan Srivilliputhur1; Narendra Dahotre1; 1University of North Texas
11:20 AM
Magnetic Field Assisted Directed and Deterministic Assembly: B. S. Mani1; Nugegahalli Ravindra1; 1New Jersey Institute of Technology
11:40 AM
Thermoelectric Properties of Si-Ge Systems: Aniketannaheba Maske1; Bhakti Jariwala1; Nugegahalli Ravindra1; 1New Jersey Institute of Technology; 2S.V. National Institute of Technology
Strip Casting of Light Metals — Process Technology
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Wim Sillekens, European Space Agency; Murat Dundar, Assan Aluminum; Jan Bohlen, Helmholtz-Zentrum Geesthacht; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH

Tuesday AM Room: Northern Hemisphere E2
March 17, 2015 Location: Dolphin
Session Chairs: Kai Karhausen, Hydro Aluminium Rolled Products; Jan Bohlen, Helmholtz-Zentrum Geesthacht

8:30 AM Introductory Comments
8:40 AM Keynote
Magnesium Twin-Roll Casting Benefits from Aluminium Heritage: Frederic Basson1; 1Novelis PAE
9:10 AM Innovations in the Process Technology for Manufacturing Magnesium Alloy Sheet: Enrico Romano1; Roberto Passoni1; Chris Romanowski1; 1FATA Hunter
9:30 AM The Importance of Heat Removal for Productivity in Industrial Twin Roll Casting of Aluminium: Christian Schmidt1; Andreas Buchholz1; Kai-Friedrich Karhausen1; 1Hydro Aluminium Rolled Products GmbH
9:50 AM A Single Roll Caster Equipped with a Scraper: Toshio Haga1; 1Osaka Institute of Technology
10:10 AM Break
10:30 AM Effect of Casting Parameters on Microstructure, Recrystallization Behaviour and Final Material Properties of Twin-Roll Cast 1050 Alloy: Cemil Isiksaçan1; Onur Meydanoglu1; Vakur Ugur Akdogan1; Gökhan Alper1; Baris Beyhan1; 1Assan Alüminyum A.S
10:50 AM Comparison of Twin-Roll Casting and High-Temperature Roll Bonding for a Steel-Clad Aluminium Strip Production: Alexandr Grydin1; Mirko Schaper1; Mykhailo Stolbchenko1; 1University of Paderborn
11:10 AM Casting of Clad Strip by a Twin Roll Caster: Toshio Haga1; 1Osaka Institute of Technology
11:30 AM High Strength Aluminium Alloy Sheets Fabricated by Twin Roll Casting for Automobile Application: Hyoungh-Wook Kim1; Yun-Soo Lee1; Min-Seok Kim1; Cha-Yong Lim1; 1Korea Institute of Materials Science

Sponsored by: TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee, TMS: Nuclear Materials Committee
Program Organizers: Peter Hoosemann, UC Berkeley; Peiwen Li, University of Arizona; Kumar Sridharan, University of Wisconsin; Bruce Pint, Oak Ridge National Laboratory

Tuesday AM Room: Asbury B
March 17, 2015 Location: Yacht & Beach
Session Chairs: Kumar Sridharan, University of Wisconsin; Peiwen Li, The University of Arizona

8:30 AM Invited
Fundamentals of Liquid Metal Corrosion and Techniques for Assessment of Compatibility: Steven Pawel1; 1Oak Ridge National Laboratory
9:10 AM Factors Affecting the Dissolution Corrosion of 316L Austenitic Stainless Steels in Contact with Static LBE: Konstantina Lambrinou1; 1SCK-CEN
9:30 AM Invited
Molten Salts as High Temperature Heat Transfer Fluids (HTF) and Thermal Energy Storage (TES): Judith Gomez1; 1National Renewable Energy Laboratory
10:10 AM Break
10:30 AM Computation-Guided Design of Structural Alloys for Use in High Temperature Liquid Fluoride Salt Environments: Govindarajan Muralidharan1; Dane Wilson1; 1Oak Ridge National Laboratory
10:50 AM Molecular Dynamics Studies of Viscosity and Thermal Conductivity of NaCl-KCl-ZnCl2 Melts: Stefan Bringuier1; Nicholas Swinteck1; Venkateswara Rao Manga1; Pierre Deymier1; Krishna Muralidharan1; 1University of Arizona
11:10 AM Corrosion Evaluation of Materials for Supercritical Carbon-Dioxide Power Conversion Systems: Kumar Sridharan1; Mark Anderson1; Jacob Mahaffey1; Paul Roman1; 1University of Wisconsin
11:30 AM Corrosion Test of Low Temperature Colossal Super-Saturation Engineered 316L Material: Wei Niu1; Scott Lillard1; 1University of Akron
11:50 AM Structural Characterization of ZnCl2 based Molten Salts using Raman Spectroscopy and Quantum Chemical Methods: Venkateswara Rao Manga1; Stefan Bringuier1; Abduljabar Alsayoud1; Pierre Lucas1; Krishna Muralidharan1; Pierre Deymier1; 1University of Arizona
12:10 PM Study of 304-Stainless Steel Performances in Supercritical Water Collier Reactor Conditions: Andrej Zeman1; 1International Atomic Energy Agency
2015 Functional Nanomaterials: Energy and Sensing — Sensing and Electronics II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: J.-ung-Kun Lee, University of Pittsburgh; Behrang Hamadani, National Institute of Standards and Technology; Sung Hun Wee, HGST, a Western Digital Company; Nitin Chopra, University of Alabama, Tuscaloosa; Terry Xu, The University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH) POSTECH
Tuesday PM Room: Swan 4 Location: Swan
Session Chair: Nitin Chopra, University of Alabama

2:00 PM Invited
IOM/Mehl Award: The Role of Materials Science in Microelectronics: Past, Present and Future: Subhash Mahajan1; 1University of California Davis

2:40 PM
The Role of Structure Directing Agent on the Formation of Copper Nanowires: A DFT Study: Soon Ho Kwon1; Hyack Mo Lee1; 1KAIST
3:00 PM Invited
DFT Study of 2D TMD Layers for Device Applications: Santosh KC1; Chenxi Zhang1; Cheng Gong1; Kyeongjoe Cho1; 1UT Dallas
3:40 PM Break
3:55 PM Invited
Template-free Electrochemical Synthesis of Nanowires and Applications to Nanodevices: Sun Hwa Park1; Hyun Min Park1; Jae Yong Song1; 1Korea Research Institute of Standards and Science
4:35 PM Invited
Anamolous Emission in Organic Conjugated Metal Oxide Nanoparticles: S Sael1; Michael Leuenberger1; Andre Gesquire1; Sanka Mallik2; 1UCF; 2NDSU
5:15 PM
Theoretical and Experimental Investigations of Nanometric Alkali Oxide Layers on Silicon as Low Work Function Electrodes for Thermionic Converters: Abu Asaduzzaman1; Krishna Murailitharan1; Pierre Deymier1; Francois Morini1; Valentina Giorgis1; Jean-Francois Robillard1; Emmanuel Dubois1; 1University of Arizona; 1IEMN
5:35 PM
DC Electric Field Induced Phased Array Self-Assembly of Nanoparticles: Sagar Yadavalli1; Ramakrishnan Kalayanaraman1; 1University of Tennessee

6th International Symposium on High Temperature Metallurgical Processing — Fundamental Research of Metallurgical Processes III
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jian-Yang Hwang, Michigan Technological University; Gerardo Alvear, Xstratatech; Onuralp Yucel, Istanbul Technical University; Xiping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies
Tuesday PM Room: Swan 5 Location: Swan
Session Chairs: Daqiang Cang, University of Science & Technology Beijing; Deqing Zhu, Central South University

2:00 PM
Progress on Protection of Titanium-bearing Materials in Chinese Blast Furnace: Qiuye Cai1; Jianliang Zhang1; Kexin Jiao1; Cui Wang1; 1University of Science and Technology Beijing

2:20 PM
Ecomaster-Hatch Technology: Reliable Commercial-Scale Slag Valorisation Option for Metal Producers: Lily Lai Chi So2; Santiago Faucher1; Sina Mostaghel1; Victor Hernandez2; 1Hatch Ltd.

2:40 PM
Homogeneous Nucleation Control in Deep-Overcooled Liquid Metals for Finer Crystal Structure: Daqiang Cang1; Lingzhe Zhang1; Yanbing Zong1; 1University of Science and Technology Beijing
3:00 PM
Study on Inclusions in CuCr Prepared by Thermit Reduction -Electromagnetic Casting: Don Zhihe1; Wang Cong1; Shi Guanyong2; Zhang Ting-an1; Zhang Hongyan1; 2Northeastern University
3:20 PM Break
3:40 PM
The Upper Limit of Trace Elements of Low-Grade Iron Ore Used in Sinter: Yi Qian1; Jianliang Zhang1; Kexin Jiao1; Chao Zhang1; 1University of Science and Technology Beijing

4:00 PM
Comprehensive Research on Basicity and Coal Dosage of Sinter Based on Cost Analysis: Xiangwei Zheng1; Xuwei Lv2; Changyang Ji1; Rende Zhang1; Chengyi Ding1; 1Chongqing University

Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — Mechanical Properties of Additively Manufactured Metals
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas
Tuesday PM Room: Northern Hemisphere A1 Location: Dolphin
Session Chairs: Larry Murr, University of Texas as El Paso; Stefan Leuders, Universitat Paderborn

2:00 PM Invited
Fatigue Life Prediction for Metals Processed by Selective Laser Melting Using Finite Element Analyses: Stefan Leuders1; Wadim Reschetnik2; Andre Riemer1; Thomas Tröster1; Hans Albert Richard1; Thomas Niendorf1; 1DMRC / University of Paderborn; 2Institute of Materials Engineering / TU Freiberg

2:30 PM
Process-Structure-Property Relationship of an Additively Manufactured Magnesium Alloy: Kumar Kandasamy1; Jacob Calvert1; 1Aeroprobe Corporation
2:50 PM Invited
Comperative Metallurgy for Additive Manufacturing of Metal and Alloy Components by Electron Beam Melting: L. Murr1; 1University of Texas at El Paso

3:20 PM
Functionally Graded Ti-6Al-4V/TiB Composite Fabricated by LENS Metal Additive Manufacture: Denver Seely2; Mark Horstemeyer2; 1Mississippi State University/Center for Advanced Vehicular Systems

3:40 PM Break
4:00 PM
Variability in Mechanical Properties of Laser Engineered Net Shaping Material: Jay Carroll1; David Adams1; Michael Maguire1; Joseph Bishop1; Benjamin Reedlunn1; Bo Song1; 1Sandia National Laboratories
4:20 PM
Stress Rupture Behavior of P91-AISI 304 Weld Transition Joint Developed by Friction Surfaced Additive Manufacturing Method: Javed Akram; Prasad Kalvala; Mano Misra; "University of Utah

4:40 PM
Microstructure and Mechanical Properties of Inconel 718 Component Fabricated by CO2 and Diode Laser Deposition: A Comparative Study: Guru Dinda; Ashish Dasgupta; "Wayne State University; "Focus HOPE

5:00 PM
Transition Microstructures and Properties in the Laser Additive Manufacturing Repair Of Monel K-500 (UNS N05500) and Toughtmet 3AT (UNS C72900): Manuel Maruya; Virendra Singh; You Lu; Jean-Yves Hascoet; Surendar Maraya; "Schlumberger Technology Corporation

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Deformation Twinning

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezovic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Panteleon, Technical University of Denmark

Tuesday PM Room: Pelican 2
March 17, 2015 Location: Swan

Session Chairs: João Fonseca, The University of Manchester; Reeju Pokharel, Los Alamos National Laboratory

2:00 PM Invited
Probing the Onset of Twinning in Magnesium Alloys: Matthew Barnett; "Deakin University

2:30 PM
Microstructural Investigation of Twin Boundaries and Twin-Twin Interactions in HCP Metals Using HRTEM and In-Situ Loading: Benjamin Morrow; Rodney McCabe; Ellen Cerruta; Carlos Tomé; "Los Alamos National Laboratory

2:50 PM
In Situ Electron Microscope Characterization on the Effect of Size on the Deformation Twinning Behavior: Qian Yu; Andrew Minor; Raj Mishra; "Zhejiang University; "UC Berkeley; "GM

3:10 PM
Identifying Thin Compression Twins in Magnesium AZ31 Using Information from Individual Kikuchi Bands Found in EBSD Patterns: Travis Rampton; David Fullwood; Matt Nowell; "EDAX; "BYU

3:30 PM Break

3:50 PM
Characterization of Twin/Grain Boundary Interactions in Pure Rhenium Under Compressive Loads: Josh Kacher; Andrew Minor; "University of California, Berkeley

4:10 PM
Explicit Incorporation of Deformation Twinning in Crystal Plasticity Finite Element Models: Milan Ardeljan; Rodney McCabe; Irene Beyerlein; Marko Knezovic; "University of New Hampshire; "Los Alamos National Laboratory

4:30 PM
Characterization of Twinning Behavior and Corresponding Crystal Plasticity-Based Modeling in Commercial Purity Titanium: Harsha Phukan; Chen Zhang; Philip Eisenlohr; Leyun Wang; Jun-Sang Park; Peter Kenesi; Thomas Bieler; David Mercier; Martin Crimp; "Michigan State University; "Institute of Materials Research, Helmholtz-Zentrum, Greifswacht; "Advanced Photon Source, Argonne National Laboratory; "Max Planck Institute für Eisenforschung

4:50 PM
Discrete Dislocation Dynamics Simulation of the Effect of Tension-Twinning on the Plastic Deformation of Magnesium Crystals: Haidong Fan; Sylvie Aubry; A. Arsenlis; Jiafar El-Awady; "Johns Hopkins University; "Lawrence Livermore National Laboratory

Advanced Composites for Aerospace, Marine, and Land Applications II — Advanced Composites and Syntactic Foams

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Tirumalai Srivatsan, The University of Akron

Tuesday PM Room: Asia 5 Location: Dolphin

Session Chairs: Timothy Walter, U.S. Army Research Laboratory; Gundolf Kopp, German Aerospace Center (DLR) - Institute of Vehicle Concepts

2:00 PM
Development of Lightweight Carbon Nanofiber Reinforced Syntactic Foam Composites: Steven Eric Zeltmann; "New York University

2:20 PM
Evaluation of Syntactic Foam for Energy Absorption at Low to Moderate Loading Rates: Timothy Walter; Jennifer Sietins; Paul Moy; "U.S. Army Research Laboratory

2:40 PM
Study of Microstructure and Mechanical Properties of Particulate Reinforced Aluminum Matrix Composite Foam: Suresh Kumar; Om Pandey; "Thapar University

3:00 PM
Bio-inspired Synthesis of Lightweight, Hierarchically Structured Porous Composites by Freeze Casting: Pang-Hsuan Lee; Chih-Hsiang Chang; Tzer-Shen Lin; Ching-Yu Yang; Haw-Kai Chang; Po-Yu Chen; "National Tsing Hua University; "Industrial Technology Research Institute

3:20 PM Break

3:40 PM
Atmospheric Plasma Treatment of Nylon 6.6 for Improved Interfacial Adhesion in Thermoplastic Composites: Andres Bujanda; "Chi-Chin Wu; John Demaree; Jason Robinette; Amanda Weerasooriya; David Flanagan; Timothy Walter; "U.S. Army Research Laboratory

4:00 PM
Next Generation Car – Example of Function Integration at the Light Urban Vehicle (LUV) Vehicle Concept: Gundolf Kopp; Simon Brueckmann; Michael Kriescher; Horst Friedrich; "German Aerospace Center (DLR) - Institute of Vehicle Concepts

4:20 PM
The Synthesis and Processing of Self-Healing Materials – A Lamellar Shape Memory Alloy in Composite Structure: Bakr Rabeeh; Yasser Fouad; "German University in Cairo
Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments II — Nanocrystalline Materials and Novel Innovations for Oil and Gas Applications II

**Sponsored by:** TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee

**Program Organizers:** Indranil Roy, Schlumberger; Xinghang Zhang, Texas A&M University; Ting Chen, West Virginia University; Greg Kusinski, Chevron; J efferson Rodrigues, Petrobras; Hani Elshahawi, Shell Exploration & Production, Co.

Tuesday PM  
March 17, 2015  
Room: Swan 7  
Location: Swan

Session Chairs: Ting Chen, University of West Virginia; Bing Han, Schlumberger

**2:00 PM Keynote**

*Gradient Nanostructures in Metals: K. Lu*  
Invited:  
1Institute of Metal Research, Chinese Academy of Science

**Advantages of Gradient Surface Structure:** Yunchan Zhu; Wu Xiaolei;  
North Carolina State University; Institute of Mechanics

**A Combined Experimental-Simulation Study of Strain Localization in Austenitic Steels:** Diana Farkas; Gary Was; Ian Robertson;  
Virginia Tech; University of Michigan; University of Wisconsin

**High Temperature Flow Response of Severely Deformed Titanium:** Seyedvahid Sajadifar

**2:35 PM Break**

**3:00 PM Invited**

*Understanding Thermal Stability of Tin-Base Solders and Its Effect on Reliability of Downhole Electronics:* Ying Wang; Bin Li; Yun Xi; Yansong Wang; Casey Amude; John Stevens; Purdue University; Southern Methodist University; Baker Hughes

**Wear Resistance of the Ti/TiC Coatings Deposited by Means of Supersonic Cold Gas Spray Technique:** Jan Kasinski; Slawomir Kac; Paolo Matteazzi; Alberto Coella; Sergi Dosta; Javier Fernandez; Jorge Garcia-Forgas; University of Mining and Metallurgy; CSGI and MBN Nanomaterialia; Thermal Spray Centre (CPT), Universitat de Barcelona; Thermal Spray Centre (CPT), Universitat de Barcelona; ALHENIA AG

**High Temperature Flow Response of Severely Deformed Titanium:** Seyedvahid Sajadifar

**3:35 PM Break**

**4:00 PM Invited**

*Performance Mapping of Tungsten Carbide Metal Matrix Composites for Use in Severely Wear Applications:* Tonya Wolfe; Thamarara Silva; Gary Fisher; Han Henein; Alberta Innovates - Technology Futures; University of State of Minas Gerais, Brazil; University of Alberta

**Effect of Ti Addition on Microstructure and Mechanical Properties of 13Cr Super Martensitic Stainless Steel:** Yong Lian; Jinfeng Huang; Jin Zhang; Cheng Zhang; Wen Gao; Zhimeng Guo; Fang Yang; Institute of Advanced Materials and Technology, University of Science and Technology Beijing; State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing

**Mechanical Behaviors and Radiation Response of Nanostructured Cu/Fe Multilayers:** Youxing Chen; Engang Fu; Yue Liao; Kaizyan Yu; Haiyan Wang; Yongqiang Wang; Xinghang Zhang; Texas A&M University; Peking University; Los Alamos National Laboratory

**The Preparation of a New Biodiesel Antioxidant and Kinetic Analysis:** Li She; Kunming University of Science and Technology

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion III — Capacitors and Dielectric Materials II

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

**Program Organizers:** Paul Ohodnicki, National Energy Technology Laboratory; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachael Myers-Ward, Naval Research Laboratory; Clive Randall, Penn State University; Matthew Willard, Case Western Reserve University; Ty McNutt; APEI, Inc.

Tuesday PM  
March 17, 2015  
Room: Aspen B  
Location: Yacht & Beach

Session Chair: Michael Lanagan, Penn State University

**2:00 PM Invited**

*Thin Films of Barium Oxide Based Glasses for Dielectric Material:* Charles Stutz; Gregory Kozloski; John Jones; Steven Smith; Goldstein Jonathan; Gerald Landis; Chad Holbrook; Air Force Reserch Laboratory; University of Dayton Research Institute

**2:30 PM Invited**

*Development of PLZT-based Ceramic Capacitors for Power Electronics in Electric Drive Vehicles:* U. Balu Balachandran; Beihai Ma; Tae Lee; Stephen Dorris; Argonne National Laboratory

**3:00 PM Invited**

*(1-x)BaTiO3-xNaNbO3 Complex Perovskite Relaxor Ferroelectrics for High Temperature Capacitor Applications:* Do-Kyun Kwon; Yumin Goh; Dong Soo Son; Baek Hyun Kim; Korea Aerospace University

**3:30 PM Break**

**4:10 PM**

*Zirconium and Calcium Modified BaTiO3 Thin Films for Electrical Energy Storage Applications:* Alvaro Instan; Shojan Pavunny; Sudheendran Kooriyattil; Dhiren Pradhan; Ram Katiyar; University of Puerto Rico

**4:30 PM**

*Laminated Aluminum/Graphite Composite Roll with High Thermal Conductivity and Thermal Stress Relaxation Effect:* Yuka Yamada; Hiroshi Hohjo; Hidetsuki Kimura; Atsushi Kawamoto; Tadayoshi Matsumori; Tsugu Kondoh; Toyota Central R&D Labs, Inc.

**4:40 PM**

*Origin of Low Frequency Noise in the Low Drain Current Range of AlGaN/GaN High-Electron-Mobility Transistors (HEMTs):* Miao Zhao; Key Laboratory of Microelectronics Device & Integrated Technology, Institute of Microelectronics of the Chinese Academy of Sciences

Advanced Materials in Dental and Orthopedic Applications — Session IV

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

**Program Organizers:** Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Elizabeth Trillo, Southwest Research Institute; Grant Crawford, South Dakota School of Mines and Technology

Tuesday PM  
March 17, 2015  
Room: Swan 8  
Location: Swan

Session Chairs: Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Tolou Shokuhfar, Michigan Technological University

**2:00 PM Invited**

*Nanostructured Metals for Innovation Applications in Dentistry and Orthopedics:* Ruolan Yuleve; Terry Lowe; Ufa State Aviation Technical University, Saint Petersburg State University; Colorado School of Mines
2:30 PM
Tribocorrosion Studies on Surface Modified Medical Grade Stainless Steel: Guohua Zhao1; Nuria Espallargas2; Ragnhild E. Aune2; ‘KTH Royal Institute of Technology; ‘Norwegian University of Science and Technology

2:50 PM
Preparation and Evaluation of Rare-Earth Added Magnesium Alloys for Implant Applications: Zhigang Xu1; Christopher Smith1; Yongjian Chen1; Jag Sankar1; ‘NC A&T State University

3:10 PM
Mechanical Properties of Biocompatible Ti-13Nb-13Zr Alloys Processed by SPD: Ajit Panigrahi1; Bartosz Sulkowski2; Thomas Waizt1; Anton Hohenwarter1; Michael Zehebauer1; ‘University of Vienna; ‘AGH University of Science and Technology; ‘Montanuniversitaet Leoben

3:50 PM Invited
Strength and Fracture Toughness of Zirconia Y-TZP Core Veneered with Aesthetic Feldspathic Ceramic: Carlos Elias1; Heraldo Elias1; Marcelo Garbossa2; Claudinei dos Santos3; ‘Instituto Militar de Engenharia; ‘Universidade Veiga de Almeida; ‘Universidade do Estado do Rio de Janeiro

4:20 PM
Titanium Anodic Oxidation: A Powerful Technique for Tailoring Surfaces Properties for Biomedical Applications: Mariapia Pedelferrì1; ‘Politecnico di Milano

4:40 PM
Microstructure and Mechanical Properties of a Directionally Solidified Co-20 wt.% Cr Alloy for Biomedical Applications: Ana Ramirez-Ledesma1; Julio Juarez-Islas1; ‘Universidad Nacional Autonoma de Mexico

**Advances in Solidification of Metallic Alloys under External Fields — Solidification under Ultrasonic Field**

**Sponsored by:** TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS: Aluminum Committee, TMS: Solidification Committee

**Program Organizers:** Jiawei Mi, University of Hull; Dmitry Eskin, Brunel University

**Tuesday PM Room:** Swan 1

**March 17, 2015 Location:** Swan

**Session Chairs:** Laurentiu Nastac, The University of Alabama; Sergey Komarov, Tohoku University

2:00 PM Invited
Contactless Ultrasound Generation in a Crucible: Kouls Pericleous1; Valdis Bojairevics2; Georgi Djambazov2; ‘University of Greenwich; ‘University of Greenwich

2:30 PM Invited
Industrial Application of Ultrasonic Vibrations to Improve the Structure of Al-Si Hypereutectic Alloys: Potential and Limitations: Sergey Komarov1; ‘Tohoku University

3:00 PM
Application of External Fields to the Development of Aluminum-based Nanocomposite and Master Alloys: Dmitry Eskin1; Nadendla Hari Babu1; Sreeram Vadakke Madami1; Javier Tamayo1; Sergey Vorozhtsov1; Alexandr Vorozhtsov2; ‘Brunel University; ‘Tomsk State University

3:20 PM
Modelling the Breakup of Nanoparticle Clusters in Aluminium and Magnesium Based Metal Matrix Nanocomposites: Anton Manoylov1; Valdis Bojairevics2; Kouls Pericleous1; ‘Centre of Numerical Modelling and Process Analysis, University of Greenwich

3:40 PM Break

4:05 PM
The Effect of External Fields and Application of Novel Dense Master Alloys to Increase the Physico-Mechanical Properties of Light Alloys: Sergey Vorozhtsov1; Dmitry Eskin2; Javier Tamayo1; Alexander Vorozhtsov2; Artem Averin1; Vladimir Promakov1; Anton Khristalyov1; ‘Tomsk State University; ‘Brunel University; ‘Federal Research & Production Center “Altai”

4:25 PM
Ternary Peritectic Solidification of Sn-Cu-Sb Alloy within Ultrasonic Field: Wei Zhai1; Peng Fei Zuo1; Xian Lian Zhu1; Jia Yuan Li1; Bingbo Wei1; ‘Northwestern Polytechnical University

4:45 PM
The Use of Alumina and Zirconia Nanopowders for Optimization of the Al-based Light Alloys Properties: Sergey Vorozhtsov1; Vladimir Promakov1; Dmitry Eskin2; Alexander Vorozhtsov1; Ilya Zhukov1; ‘Tomsk State University; ‘Brunel University

5:05 PM
Grain Refinement of Pure Aluminium by A3Ti1B Master Alloy and Ultrasonic Treatment: Gui Wang1; Matthew Dargusch1; Qian Ma1; Dmitry Eskin1; David StJohn1; ‘The University of Queensland; ‘RMIT University; ‘Brunel University

**Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Solidification Processing IV**

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

**Program Organizers:** Laurentiu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH - Royal Institute of Technology; Jacques Lacaze, Université de Toulouse; Chun-Pyo Hong, Yongsei University; Adrian Catalina, Caterpillar Inc.; Andreas Buhring-Polaczek, RWTH Aachen University; Daan Maijer, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhayu Sen, GECENT; Attila Dözségzi, Jönköping University; School of Engineering

**Tuesday PM Room:** Swan 6

**March 17, 2015 Location:** Swan

**Session Chair:** Attila Dözségzi, Jönköping University

2:00 PM Invited
Key Roles of Impurities During Solidification of Al Alloys: Peter Schumacher1; Jiehua Li1; ‘University of Leoben

2:25 PM
High-precision Numerical Simulation for Effect of Casting Speed on Solidification of 40Cr during Continuous Billet Casting: Yanan Chen1; ‘University of Science and Technology Beijing

2:45 PM
The Unidirectional Solidification of Ti-46Al-8Nb Alloy with BaZrO3 Coated Al2O3 Mould: Wei Chao1; ‘Shanghai University

3:05 PM
Non-Metallic Ti Oxides and MnS/FeS2 Complex Precipitation in Ti-Killed Steel: Jeyun Chen1; Dan Zhao1; Huigai Li1; Shaobo Zheng1; ‘Shanghai University

3:25 PM Invited
CFD Modeling of Macrosegregation and Shrinkage in Large Diameter Steel Roll Castings Using the AH and MC Techniques: Laurentiu Nastac1; Kevin Marsden1; ‘The University of Alabama; ‘Whemco, Inc.
3:50 PM Break

4:10 PM
Prediction of Surface Porosity Defects in High Pressure Die Casting: Mahdi Saecidipour; Simon Schneiderbauer; Stefan Pirker; Salar Bozorgi; Christoph Angermeter; 1Johannes Kepler University; 2Austrian Institute of Technology

4:30 PM
Engineered Cooling Process for High Strength Ductile Iron Castings: Simon Lekakh; Antoni Michailov; Joseph Kramer; 1MST

4:50 PM
Macro-Segregation in Uranium-6%Niobium Castings: Robert Aikin; 1Los Alamos National Laboratory

5:10 PM
Numerical Simulation of Solidification Structure for YQ450NQRI Steel Bloom in Continuous Casting Process: Kun Dou; Lei Wang; Jiasheng Qiu; Xiaofeng Zhang; Bao Wang; Bo Liu; Qing Liu; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; 2Department of Engineering, University of Leicester, UK

**Advances in Thin Films for Electronics and Photonics II — Functional Materials for Electronics and Photonics II**

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

**Program Organizers:** Federico Roselli, INRS; Nuggehalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Tuesday PM Room: Europe 7
March 17, 2015 Location: Dolphin

**Session Chair:** Roger Narayan, NCSU

2:00 PM Invited
A Tip-Based Lithography Tool for Writing MetallicThin Film Line Patterns on Substrates by Electromigration Induced Liquid Metal Flow: Lutz Meinshausen; Benjamin Luce; Z Chen; Indranath Dutta; 1Washington State University; 2University of Michigan

2:30 PM Invited
Exploring Novel Plasmonic Nanostructures by Ultra-Localized Electron Probe: Ritesh Sachan; 1Oak Ridge National Laboratory

2:55 PM
Flexible Resistive Switching Memory Device Based on Graphene Oxide Embedded with ZnO Nanorods: Geetika Khurana; Pankaj Misra; Nitu Kumar; Ram Katiyar; 1University of Puerto Rico Rio Piedras

3:15 PM Invited
Local Microstructure in Functional Oxide Films and Microcrystals Using Spatially-Resolved Synchrotron Microdiffraction: John Budai; Jonathan Tischler; T. Zac Ward; Christianne Beekman; Wolter Siemons; Hans Christen; Alexander Tselev; Jagdish Narayan; 1Oak Ridge National Laboratory; 2Argonne National Laboratory; 3North Carolina State University

3:40 PM Break

4:00 PM Invited
Microstructural Evolution of Binary Nanoparticle Systems: Michael Chandraoss; Fadi Abdeljawad; 1Sandia National Laboratories

4:25 PM Invited
Upconverting Nanoparticles as Optical Nanothermometers to Study the Heat Releasing Properties of Gold Nanorods: Fiorenzo Vetrone; 1Université du Québec

4:50 PM
Nanostructures a Strategy for Improving the Electric Properties of MgSiSn Alloys: Angéline Poulon-Quintin; Pierre Lannelongue; Mohamed Gouni; 1ICMCB-CNRS

5:10 PM
Surface/Interface Structure and Optical Properties of Nanocrystalline Hafnium Oxide Thin Films: Mirella Vargas; Ramana Chintalapalii; 1The University of Texas at El Paso

**Alloys and Compounds for Thermoelectric and Solar Cell Applications III — Session IV**

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee

**Program Organizers:** Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Stéphane Gorse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; C.-Wen Nan, Tsinghua University; G. Jeffery Snyder, California Institute of Technology; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday PM Room: Europe 5
March 17, 2015 Location: Dolphin

**Session Chairs:** Stéphane Gorse, Institut de Chimie de la Matière Condensée de Bordeaux; Jean-Claude Tédéna, Institut de Chimie Moléculaire et des Matériaux

2:00 PM Invited
Process Scalability for Promising Si Based Thermoelectric Materials: Christelle Navone; 1Commissariat à l’Energie Atomique et aux Energies Alternatives

2:25 PM Invited
Effect of Texture and Grain Growth on Thermoelectric Properties of Higher Manganese Silicide: Solange Vivès; Stéphane Gorse; 1ICMCB

2:50 PM Invited
Thermal Budget for Bulk Nanostructured Thermoelectric Compounds: Samuel Humphry-Baker; Christopher Schuh; 1Massachusetts Institute of Technology

3:15 PM
Doping Effects (Ge, Cr, Os) on Thermoelectric Properties of Higher Manganese Silicides: Matthieu Régniere; Solange Vivès; Stéphane Gorse; David R. Clarke; Laetitia Laversenne; 1School of Engineering and Applied Science, Harvard University; 2Institut de Chimie de la Matière Condensée de Bordeaux - CNRS; 3Univ. Grenoble Alpes, Inst NEEL and CNRS, Inst NEEL

3:35 PM Break

3:55 PM Invited
Design of Thermoelectric Materials via First Principles Calculations: Philippe Jund; Kinga Niedziolka; Patrick Hermet; Jean-Claude Tédéna; 1Université Montpellier 2 - ICGM

4:20 PM Invited
Exploratory Study on Hybrid Materials for Thermoelectric Applications: Jean-Michel Rueff; Paul-Alain Jaffres; Marion Galmiche; Olivier Perez; Bernard Nysten; 1CNRS - CRISMAT; 2UBO / CEMCA; 3UCL - IMCN/BSMA

4:45 PM Invited
Experimental Optimization of Thermoelectric Properties of HfS: Alexandre Berche; Antony Lluch; Solange Vivès; Jean-Claude Tédéna; Stéphane Gorse; Philippe Jund; 1Institut Charles Gerhardt; 2ICMCB

5:10 PM
Phase Stability of Thermoelectric Alkaline Earth Metal Borides and Silicides: Mallikharjuna Bogala; Ramana Reddy; 1The University of Alabama
Alumina and Bauxite — Precipitation and Calcination
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Hans-Werner Schmidt, Outotec GmbH
Tuesday PM March 17, 2015
Room: Southern Hemisphere IV Location: Dolphin
Session Chair: Peter-Hans Ter Weer, TWS Services & Advice BV

2:00 PM Introductory Comments

2:05 PM
CFD Simulations of a Large-Scale Seed Precipitation Tank Stirred with Multiple Intermig Impellers: Guoquan Zhang1; Hongliang Zhao1; Chao Lv1; Yan Liu1; Ting’an Zhang1; ‘Northeastern University of China; ‘University of Science & Technology Beijing

2:30 PM
Recovering Waste-Heat and Water from Alumina Calciner Gas: Yingying Liu1; Laishi Li1; Xqinxi Liao1; Ruizheng Bai1; ‘Shenyang Aluminum & Magnesium Engineering & Research Institute Co., Ltd.

3:35 PM
Alumina Calcination – A Mature Technology under Review from Supplier Perspective: Cornelis Klett1; Linus Perander1; ‘Outotec GmbH

3:40 PM
Break

3:45 PM
Question and Answer Period

4:50 PM Concluding Comments

Aluminum Alloys: Development, Characterization, and Applications — Simulation and Modeling
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee Processing Committee
Program Organizer: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky
Tuesday PM March 17, 2015
Room: Northern Hemisphere E3 Location: Dolphin
Session Chair: Grant Chen, Université du Québec à Chicoutimi

2:00 PM
Generation of Process-Structure-Property Data on a Commercial 7xxx-series Aluminum for Development of ICME Tools: Ashley Goulding1; Richard Neu1; ‘Georgia Institute of Technology

2:20 PM
Modeling Sensitization of AA6xxx Aluminum Alloys Through β-phase Precipitation Kinetics: Matthew Steiner1; Sean Agnew1; ‘University of Virginia

2:40 PM
Modeling Over-Aging in Al-Mg-Si Alloys by a Multi-Phase Kampmann-Wagner Numerical Model: Xuezhi Du1; ‘SINTEF

3:00 PM
Prediction of Microstructure Evolution of Direct-Chill Cast Ingots of 7075 Aluminum Alloys during Homogenization: Siamak Rafiezadeh1; Ahmad Falahati1; Ernst Kozeschnik1; ‘Vienna University of Technology

3:20 PM
Simulation of the 3D Meso-Scale Deformation of an Aluminum 6061 Semisolid Weld Pool: Hamid Reza Zarei Rajani1; Andre Phillion1; ‘University of British Columbia

3:40 PM Break

3:50 PM
Deformation and Failure of an Al-Mg Alloy Investigated Through Multiscale Microstructural Models: Andrew Magee1; Leila Ladani1; ‘University of Connecticut

4:10 PM
Constitutive Behaviour of Aluminum B206 in the As-Cast State: Seyyed Mohammad Moshoseli1; André Phillion1; Daan Maijer1; ‘University of British Columbia

4:30 PM
Experimental Verification of Through-Process Modeling of Cold Spray Al Alloys: Ballie McNally1; Danielle Beltsio1; Richard Sisson1; Victor Champagne1; ‘Worcester Polytechnic Institute; ‘U.S. Army Research Lab

4:50 PM
Load/Displacement and Energy/Displacement Performances of Aluminum and Magnesium Extrusions Subjected to Quasi-Static and Dynamic Loading Under Axial Crush and Cutting Deformation Modes: Ryan Smith1; Philipp Strabburger1; William Altenhof1; Elmar Behr1; ‘University of Windsor; ‘German Aerospace Center (DLR)

5:10 PM
Estimation of Heat Transfer Coefficient in Squeeze Casting of Wrought Aluminum Alloy 7075 by the Polynomial Curve Fitting Method: Xuezhi Zhang1; Li Fang1; Henry Hu1; Xueyuan Nie1; Jimi Tjong1; ‘University of Windsor; ‘Ford Powertrain Engineering Research & Development Center

Aluminum Reduction Technology — Environment II
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee Program Organizer: Pascal Lavoie, LMR C
Tuesday PM March 17, 2015
Room: Southern Hemisphere III Location: Dolphin
Session Chair: Stephan Broek, Hatch Ltd

2:00 PM Introductory Comments

2:05 PM
Horizontal In-Duct Scrubbing of Sulfur Di Oxide from Flue Gas Exhauster: Rajat Ghosh1; John Smith1; Angelique Adams1; ‘Alcoa, Inc.

2:30 PM
Impact of Potroom Work Practices on Roofline Fluoride Wet Scrubber Efficiency: Neal Dando1; Weizong Xu1; ‘Alcoa

2:55 PM
Mobile Monitoring System for Potroom Roof HF Emissions: Frederic Girault1; Bruno Petitjean1; Gaston Riverin1; ‘Rio Tinto Alcan

3:20 PM
Solution to Reduce Fluoride Emissions from Anode Butts: Guillaume Girault1; Bruno Petitjean1; Gaston Riverin1; ‘Rio Tinto Alcan

3:45 PM Break

4:00 PM
Start-Up of the OZEOS Gas Treatment Center (GTC) for RTA AP 60 Phase 1: Mathieu Frainait1; Jean-Nicolas Maltiats1; Philippe Martineau1; Fabienne Virieux1; ‘Solios Environment Inc; ‘Rio Tinto Alcan; ‘Fives Solios

4:25 PM
Treatment of Gas Emissions in Potrooms: Alain Periers1; Bassam Hureiki1; Antoine de Gromard1; Chin Lim1; Gheorghe Dobra1; Marian Cilianu1; Fabienne Virieux1; ‘Fives Solios; ‘Solios Environment Sa; ‘Alro

4:50 PM
Possible Use of 25 MW Thermal Energy Recovered from the Potgas at Alba Line 4: Anders Sorhus1; Sieve Ose1; Bent Möller Nilsen1; ‘Alstom
Aluminum Reduction Technology — Fundamentals Chemistry II
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Laviole, LMRC

Tuesday PM
March 17, 2015
Room: Southern Hemisphere V
Location: Dolphin

Session Chair: Alton Tabareaux, Consultant

2:00 PM Introductory Comments

2:05 PM
Behavior of Powders on the Surface of a Liquid: Csilla Kaszás1; László Kiss1; Sándor Poncsák1; Sébastien Guérard2; Jean-François Bilodeau2; 'Université du Québec à Chicoutimi; 'Río Tinto Alcan

2:30 PM
Development of a Mechanized Bath Sampling Method: Antoine Molin1; Laszlo Kiss1; Sándor Poncsák1; Sébastien Guérard2; Jean-François Bilodeau2; 'Université du Québec à Chicoutimi; 'Río Tinto Alcan

2:55 PM
Impact of Variable Bath Chemistry and Wetting on Gas Bubble Flow in Aluminium Electrolysis Cells: Kristian Etienne Einarsrud1; Ingo Eick2; Peter Witt2; Asbjorn Solheim1; Yuqing Feng1; 'HiST; 'Hydro Aluminium Deutschland GmbH; 'CSIRO; 'SINTEF

3:20 PM
Study of the Structure and Thermophysical Properties of Side Ledge in Hall-Héroult Cells Operating with Modified Bath Composition: Sándor Poncsák1; Laszlo Kiss1; Alexandre Belley1; Sébastien Guérard2; Jean-Francois Bilodeau2; 'Université du Québec à Chicoutimi; 'Río Tinto Alcan

3:45 PM Break

4:00 PM
The Performance of Aluminium Electrolysis in Cryolite Based Electrolytes Containing LiF, KF and MgF2: Peng Cui1; Geir Martin Haarberg2; 'Norwegian University of Science and Technology

4:25 PM
Wetting between Carbon and Cryolitic Melts. Part I: Theory and Equipment: Ana Maria Martinez1; Ove Paulsen1; Asbjorn Solheim1; Henrik Gudbrandsen1; Ingo Eick2; 'SINTEF; 'Hydro Aluminium

4:50 PM
Wetting between Carbon and Cryolitic Melts. Part II: Effect of Bath Properties and Polarisation: Asbjorn Solheim1; Henrik Gudbrandsen1; Ana Maria Martinez1; Kristian Tretli-Einarsrud2; Ingo Eick2; 'SINTEF; 'HiST; 'Hydro Aluminium

5:15 PM Break

5:30 PM
Structural Analysis of the Woodpecker Tongue: Jae-Young Jung1; Eric Bushong2; Vincent Sherman2; Esther Cory3; Mark Ellisman2; Marc Meyers1; Joanna McKittrick1; 'University of California, San Diego

5:40 PM Invited
Retaining Catalytic Mimetics of Cerium Oxide Nanoparticle Post Ion Interaction: Rameech McCormack1; Priscilla Mendez2; Swetha Barkam1; Craig Neal1; Soumen Das2; Sudipta Seal1; 'UCF/AMPAC; 'UCF/NSTC; 'UCF/AMPAC

6:00 PM Break

6:30 PM Invited
Systematic Design of Bio-Inspired Materials: Exploring Synergies between Micro-Architecture and Interfaces for Simultaneous Stiffness, Strength and Toughness: Mohammad Mirkhalaf1; Francois Barthelat1; 'McGill University

7:00 PM Invited
Bioinspired Materials by Freeze Casting: Ulrike Wegg1; 'Dartmouth College

7:30 PM
Extraneous Tear Resistance of Skin: Wen Yang1; Vincent Sherman2; Bernd Gludovatz2; Eric Schaible2; Polte Stewart2; Robert Ritchie2; Marc Meyers1; 'University of California, San Diego; 'Lawrence Berkeley National Laboratory

8:00 PM
Design and Optimization of Polymer Gels to Replicate Impact Energy Dissipation of Biological Tissues: Bo Qing1; Krystyn Van Vliet1; 'Massachusetts Institute of Technology

Biological Materials Sciences Symposium — Biomimetic Systems II
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter, Clemson University; Francois Barthelat, McGill University

Tuesday PM
March 17, 2015
Room: Swan 9
Location: Swan

Session Chairs: Rajendra Kasinath, DePuy Synthes Products, LLC; Kalpana Katti, North Dakota State University

2:00 PM Invited
Strength and Toughness of Nacre: Contributions of Mineral and Organic Components: Marc Meyers1; Maria Lopez1; Wen Yang2; 'UCSD; 'ETH Zurich

TUESDAY PM
3:45 PM Break

4:00 PM Invited
Mechanical Response of Zr-based BMG after Mechanical Rejuvenation by High-Pressure Torsion: Koichi Tsuchida; Fanqiang Meng; Yoshihiko Yokoyama; Kirin Dahmen; Peter Liaw; 1NIMS; Iowa State University; 1Tohoku University; 1University of Illinois Urbana-Champaign; 1University of Tennessee Knoxville

4:20 PM Invited
Quantification of Nanoscale Metastable Phases in Amorphous Alloys: Dong Ma; Alexandra D. Stoica; 1ORNL

4:40 PM Invited
Soft Spots in a Metallic Glass: GUMs as a Structural Signature of Liquid-Like Regions: Evan Ma; 1Johns Hopkins University

5:00 PM
Nonlinearity of Elastic Moduli during Compression of the Zr-Based BMG: Przemyslaw Wietzak; Zbigniew Wietzak; Wojciech Dmowski; Yang Tong; Yoshihiko Yokoyama; Takeshi Egami; 1Polish Academy of Sciences; 1University of Tennessee; 1Tohoku University; 1Oak Ridge National Laboratory

5:20 PM
Configurational and Vibrational Entropy in Amorphous Copper Zirconium: Hillary Smith; Chen Li; Glenn Garrett; Andrew Hoff; Marios Demetriou; Matthew Stone; Douglas Ahernathy; Brent Fultz; 1California Institute of Technology; 1Oak Ridge National Laboratory

CALPHAD-Based ICME Research for Materials Genomic Design — Materials Genome: ICME and CALPHAD-Based Materials Design3
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wei Xiong, Northwestern University; Shih-kang Lin, National Cheng Kung University; Chao Jiang, Thermo-Calc Software Inc; Shenyang Hu, Pacific Northwest National Laboratory; Wen-dung Hsu, National Cheng Kung University; Sinn-wen Chen, National Tsinghua University; Shuanglin Chen, CompuTherm LLC

Tuesday PM
Room: Northern Hemisphere A2
March 17, 2015
Location: Dolphin
Session Chairs: Shengyang Hu; Pacific Northwest National Laboratory; Xia-Gang Lu; Shanghai University; Shuanglin Chen, CompuTherm LLC; Eric Lass, NIST

2:00 PM Keynote
Phase Stability of γ′ (L12) Compound and Design for Alloy Development: Kiyohito Ishida; 1Tohoku University

2:35 PM Keynote
ICME Approach to Design of Novel Microstructures for Ti-Alloys: Dong Wang; Yufeng Zheng; Rajarshi Banerjee; Hamish Fraser; Yunzhi Wang; Xi'an Jiao Tong University; 1Ohio State University; 1University of North Texas

3:10 PM
Thermodynamic Stability of NiAs-Type MnBi Phase by Addition of Sb: Hiroshi Ohtani; 1Masanori Enoki; 1Tohoku University

3:30 PM Break

3:45 PM
Calculation of 3D Phase Diagrams: Shuanglin Chen; Weisheng Cao; Fan Zhang; Chuan Zhang; Jun Zhu; 1CompuTherm, LLC

4:05 PM Invited
Coupling of CALPHAD Data to Multi-Phase-Field Simulations of Microstructure Evolution in Technical Alloy Systems: Markus Apel; Ralph Altenfelder; Ralf Berger; Bernd Böttger; Janin Eiken; Gottfried Laschet; Georg Schmitz; Alexandre Viardin; 1Access e.V.

4:35 PM
DICTRA Multiphase Moving Phase Boundary Simulations Under Local Equilibrium Conditions: Henrik Larsson; 1Thermo-Calc Software

4:55 PM
An Integrated Atomistics-CALPHAD Framework for Modeling the NaCl-KCl-ZnCl2-AlCl3 Quaternary System: Venkateswara Rao Manga; Stefan Brinquier; Pierre Deymier; Krishna Muralidharan; 1University of Arizona

Cast Shop for Aluminum Production — Metal Treatment, Alloying, and Grain Refinement
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pete Forakis, STAS Middle East

Tuesday PM
Room: Northern Hemisphere E4
March 17, 2015
Location: Dolphin
Session Chairs: Corleen Chesonis, Alcoa Technical Center; Edward Williams, Alcoa Technical Center

2:00 PM Introductory Comments

2:05 PM
Recent Progress with Development of a Multi Stage Filtration System Employing a Cyclone: John Courtenay; Marcel Rosefort; 1MQP Limited; 1Trimet Aluminium SE

2:30 PM
Effect of Electromagnetic Fields on the Priming of High Grade Ceramic Foam Filters (CF) with Liquid Aluminum: Robert Fritzsch; Mark Kennedy; Shahin Akbarnejad; Ragnhild Aune; 1Norwegian University of Science and Technology; 1Royal Institute of Technology

2:55 PM
Practical Use of MetalVision Ultrasonic Inclusion Analyzer: Dawid Smith; Brett Hixson; Hugh Mounford; Iain Sommerville; 1JWA Aluminum; 1MetalVision Manufacturing (Canada)

3:20 PM
Ultrasonic Degassing and Processing of Aluminum Part II: Victor Rundquist; Kiran Manchiraju; Qingyou Han; 1Southwire Company; 1Purdue University

3:45 PM Break

4:00 PM
An Investigation on Permeability of Ceramic Foam Filters (CF): Shahin Akbarnejad; Robert Fritzsch; Mark Kennedy; 1Ragnhild Aune; 1Royal Institute of Technology (KTH); 1Norwegian University of Science and Technology (NTNU)

4:25 PM
Assessment of Modification Level in EN AC-46000 Aluminum Casting Alloys Using Thermal Analysis and Microscopic Evaluation: Mohammadreza Zamani; Salem Seifeddine; 1Jönköping University, School of Engineering
Tuesday PM
Room: Mockingbird 1
Location: Swan

2:00 PM
Bending Mechanical Behavior of Polyester Matrix Reinforced with Fique Fiber: Giulio Altoè1; Frederico Margem1; Sérgio Monteiro1; Pedro Netto1; André Gomes1; Mariana Barcelos1; 1State University of the Northern Rio de Janeiro - UENF

2:20 PM
Understanding the Behaviour of Abradable Coatings Using X-ray Micro Computer Tomography: Daniel Moyle1; Matt Hancock2; Glen Pattinson2; Richard Johnston1; 1Swansea University; 2Rolls-Royce plc

2:40 PM
Unloading-Rate Dependent Amorphization in Si Phase in Reaction Bonded Ceramic Composite: Alison Trachet1; Ghatha Subhash1; 1University of Florida

3:00 PM
Weibull Analysis of the Behavior on Tensile Strength of Hemp Fibers for Different Intervals of Fiber Diameters: Lázaro Rohcn1; Sérgio Monteiro1; Frederico Margem1; Carlos Mauricio Vieira1; Rafael de Castro1; Gustavo Borges1; Anna Carolina Neves1; Maycon Gomes1; 1State University of Northern of Rio de Janeiro; 2Instituto Militar de Engenharia; 3Isecensa; 4Redenton; 5Instituto Federal Fluminense

3:20 PM
Development of Artificial Stone Using Particulate Glass Waste: Lucas Martins1; Carlos Mauricio Vieira1; Sérgio Monteiro1; 1 UENF

3:40 PM Break

3:50 PM
Preparation and Characterization of Natural Rubber/Organophilic Clay Nanocomposites: Marcos Fernandes1; Fabio Esper1; Maria das Graças Valenzuela1; Guillermo Martín-Cortés2; Francisco Diaz2; Hélio Wiecek2; 1Universidade de São Paulo/PMT; 2FMU; 3Centro Universitário Estácio Radial

4:10 PM
Tensile Properties of Epoxy Composites Reinforced with Continuous PALF Fibers: Gabriel Glória1; Giulio Altoè1; Frederico Margem1; Sérgio Monteiro1; Ygor Moraes1; Maria Teles1; Pedro Netto1; 1State University of the Northern Rio de Janeiro; 2Instituto Militar de Engenharia

4:30 PM
Replacement of Carbon-Black on Natural Rubber Composites and Nanocomposites – Part 1: Guillermo Martín-Cortés1; Fabio Esper1; Antonio Santana de Araujo1; Wildor Hennies1; Maria Silva Valenzuela1; Francisco Valenzuela-Díaz1; 1Universidad Estadística de Sá; 2University of São Paulo

4:50 PM
Flexural Mechanical Characterization of Epoxy Composites Reinforced with Continuous Banana Fibers: Foluke Salgado1; Pedro Netto1; Frederico Margem1; Sérgio Monteiro1; Romulo Lotola1; 1State University of the Northern Rio de Janeiro; 2Military Institute Engineering


Tuesday PM
Room: Macaw 2
Location: Swan

2:00 PM
Comparison of the Mechanisms of Voids Formation by Plastic Deformation in Single- and Dual-Phase bcc- Steels: Gregory Gerstein1; Hans Besserer1; Florian Nürnberg1; Hans Jürgen Maier1; 1Leibniz Universität Hannover

2:20 PM
Analysis of Microstructural Process in the Hot Forging Process: Luana de Costa1; Lirio Schaeffer1; 1Federal University of Rio Grande do Sul - UFRGS

2:40 PM
Characterization of Sintering Dust, Blast Furnace Dust and Carbon Steel Electric Arc Furnace Dust: Feng Chang1; Shengli Wu1; Fengjie Zhang1; Hua Lu1; Kaiping Du1; 1School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

3:00 PM
The Effect of MgO Content in BOF Slag on Dephosphorization of Molten Steel: Guijun Chen1; Shengping He1; Yintao Guo1; Qian Wang1; 1Chongqing University

3:20 PM
Influence of Mineralogical Characteristics of Iron Ore on Formation and Flow of Liquid Phase: Bo Su1; Sheng-lyi Wu1; Guo-liang Zhang1; 1School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

3:40 PM Break

3:50 PM
Effect of Pressure on the Corrosion of Materials in High Temperature Water: Wenjing Li1; OnTing Woo1; Dave Guzonas1; Jian Li1; Xiao Huang1; Rainier Sanchez1; Cathy Bibby1; 1Atomic Energy of Canada Limited; 2CanmetMATERIALS; 3Carleton University; 4CanmetMATERIALS

4:10 PM
Wide Beam Laser Remelted Hot Dip Galvanizing Al-Zn-Mg-Si Coating: Matjas Godec1; Bojan Podgornik1; David Nolan1; 1Institute of Metals and Technology; 2Bluescope Steel

4:30 PM
Evaluation of Cr- and Cr Free Surface Corrosion Inhibitors: Maribel Del la Garza Garza1; Nelson Garza-Montes-de-Oca1; Mayra Rodriguez1; Antonio Mani1; 1FIME, UANL; 2Ternium

4:50 PM
The Effect of Strain Reversal during High Pressure Torsion on the Microstructure Evolution and Texture of Aluminum Alloys: Kanwal Chaudha1; Pinaki Bhattacharjee1; Mohammad Jahazi1; 1ETS; 2Indian Institute of Technology Hyderabad
Computational Thermodynamics and Kinetics — Interfaces and Surfaces

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Maryam Ghaziaei, The Ohio State University; Vidvuds Ozolins, University of California Los Angeles

Tuesday PM Room: Oceanic 3
March 17, 2015 Location: Dolphin

Session Chairs: Francesca Tavazza, National Institute of Standards and Technology; Susan Sinnott, University of Florida

2:00 PM
Atomic Simulation and Virtual Diffraction Characterization of Homophase and Heterophase Alumina Interfaces: Douglas Spearot1; Shawn Coleman1, "University of Arkansas"

2:20 PM
A Mechanistic Study of the Interaction Among C, N and the Ti3O5(100) Surface Based on Density Functional Theory: Hong Zhong1; Liangying Wen1; Chong Zou1; Shengfu Zhang1; Chenguang Bai1; Feng Lu1; ChongQing University

2:40 PM
Diffuse-interface Modeling of Crystallization in Organic Thin Films: Alta Fang1; Mikko Haataja1, "Princeton University"

3:00 PM Invited
Applications of Charge Optimized Many-Body (COMB) Potentials to Problems in Surface and Interface Chemistry: Susan Sinnott1; University of Florida

3:30 PM
Dependence of Solid-Liquid Interface Free Energy on Liquid Structure: Seth Wilson1; Mikhail Mendelev1, "Ames Laboratory"

3:50 PM Break

4:05 PM
Anisotropy of the Solid-Liquid Interface Properties of the Ni-Zr B33 Phase: Seth Wilson1; Mikhail Mendelev1, "Ames Laboratory"

4:25 PM
From Coherent to Incoherent Mismatched Interfaces: A Generalized Continuum Formulation of Surface Stresses: Remi Dingreville1; AbdelmaksHallif1; Stéphane Berbenni1, "Sandia National Laboratories; Université de La Rochelle; Université de Lorraine"

4:45 PM
Al/AI2O3: Coherent Interfaces and Misfit Accommodation: Xiang-Yang Liu1; Ghanishyam Pilania1; Steven Valone1; Richard Hoagland1; Barend Thijssen1, "Amsterdam University of Technology; Delft University of Technology"

5:05 PM
Effect of Alloying with Transitional Metals on the Deformation and Brittle-Ductile Behavior of bcc Fe and the Strength of Fe/MC (M=Ti, V, Nb, Mo) Interfaces: Oleg Kontsev1; Arthur Freeman1; Gregory Olson1, "Northwestern University"

5:25 PM
Modeling Molten Particle Impact on Solid Surfaces: Edmund Webb1; Lehigh University
2:00 PM Invited
Materials Response Under Extremes: Marc Meyers1; Bruce Remington1; Tané Remington1; Eduardo Bringa2; Shiteng Zhao1; Eric Hahn2; Bimal Kad2; Carlos Ruestes3; 1University of California San Diego; 2Lawrence Livermore National Laboratory; 3Universidad Nacional de Cuyo

2:20 PM Invited
Development and Application of an Explosively Driven Two Shockwave Physics Tool Targeted At Ejecta Measurements and Ejecta Model Development: William Butler1; David Oro1; Russell Olson1; Frank Cherne1; James Hammerberg1; Robert Hixson1; Shabnam Monfared1; Cora Pack1; Joseph Stone1; Guillermo Terrones1; 1Los Alamos National Laboratory

2:40 PM Cancelled
New Regimes of Plastic Flow in BCC Metals at Extreme Conditions of Pressure and Strain Rate: Bruce Remington1; 1Lawrence Livermore National Laboratory

3:00 PM Compression of Single Crystal and Polycrystalline Tantalum from Low to High Strain-Rates: Glenn Whiteman1; Jeremy Millett2; Simon Case1; Alex Worley; 1AWE; 2Imperial College London

3:20 PM Invited
Optical Properties of Lithium Fluoride under Extreme Stress and Strain-Rate Conditions: Paolo Rigg1; Marcus Knudson1; Robert Scharff1; Robert Hixson1; 1Los Alamos National Laboratory; 2Sandia National Laboratories, New Mexico

3:40 PM Break

4:00 PM The Effect of Microstructure on Rayleigh-Taylor Instability Growth in Solids: Russell Olson1; Ellen Cerreta1; Christopher Morris1; Adam Montoya1; Fessha Mariam1; Alexander Saunders1; Eric Brown1; George Gray; John Bingert; 1Los Alamos National Laboratory

4:20 PM Invited
The Mechanical and Optical Response of Polychlorotrifluoroethylene during One-Dimensional Shock Loading: Jeremy Millett1; Michael Lowe2; Gareth Appleby-Thomas1; Andrew Roberts1; 1AWE; 2Cranfield Defence and Security

4:40 PM Invited
Deformation Behavior of Binary Magnesium Alloys Under Dynamic Loading: Toshiyo Mukai1; Hidetoshi Somekawa1; 1Kobe University; 2National Institute for Materials Science

5:00 PM Shock Induced Amorphization in Monocrystalline Silicon: Shiteng Zhao1; Eric Hahn2; Tané Remington1; Bruce Remington1; Christopher Wehrenberg1; Eduardo Bringa1; Bimal Kad1; Marc Meyers1; 1University of California, San Diego; 2Lawrence Livermore National Laboratory; 3Universidad Nacional de Cuyo

5:20 PM Effect of Temperature on the Precursor Wave Amplitude of Al and Ta Under Laser-Induced Shock Loading: Jeffrey Florando1; Ryan Austin1; Laura Chen1; James Hawrelia1; Amy Lazzic1; Damian Swift1; Mukul Kumar1; 1Lawrence Livermore National Laboratory; Imperial College

5:40 PM Characterization of Sheet Metal Yield Surfaces using Hydrostatic Bulging with Elliptical Dies: Kevin Boyle1; Bruce Williams1; Daniel Green2; CanmetMATERIALS; 1University of Windsor

6:00 PM Wave Propagation and Dispersion in Elasto-Plastic Microstructured Materials: Remi Dingerville1; Joshua Robbins1; Thomas Voth1; 1Sandia National Laboratories

Development of “Weak Links” during the Processing of Metallic Materials — Joining and Bonding
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Lee Semiatin, US Air Force Research Laboratory; Anthony Rollett, Carnegie Mellon University; Thomas Bieler, Michigan State University; Mark Stoudt, National Institute of Standards and Technology

Tuesday PM Room: Peacock
March 17, 2015 Location: Swan

Session Chairs: Adam Pilchak, Air Force Research Laboratory; Lee Semiatin, US Air Force Research Laboratory
TUESDAY PM

Drying, Roasting, and Calcining of Minerals — Roasting
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies
Tuesday PM
March 17, 2015
Room: Grand Harbor Salon 3
Location: Yacht & Beach

Session Chairs: Boyd Davis, Kingston Process Metallurgy Inc.; Sergio Sanchez-Segado, University of Leeds

2:00 PM
Sulfation Roasting of a Bornite Flotation Concentrate to Optimize Silver Extraction in a Ferric Chloride Leach: Ryan Foy1; Steve Lloyd2; Jerome Downey3; Brandon Steinborn4; 'Montana Tech; 'Troy Mine, Inc.; 'Montana Tech; 'Freeport-McMoRan, Inc.

2:20 PM
Chlorination Roasting of Rare Earth Element OXides: Dan Gaede1; Bryce Ruffier1; Jerome Downey1; Larry Twidwell1; Jannette Chorney1; Ryan Foy1; Katelyn Lyons1; 'Montana Tech

2:40 PM
Bromination Roasting of Rare Earth Element OXides: Bryce Ruffier1; Dan Gaede1; Jerome Downey1; Larry Twidwell1; Jannette Chorney1; Ryan Foy1; Katelyn Lyons1; 'Montana Tech

3:00 PM
The Advantages of Thermal Analysis Prior to Bench Scale Roasting: Tyler Salisbury1; Jesse White1; 'Hazen Research, Inc

3:20 PM
Roasting of Zinc Sulfide Concentrates in Fluidized Bed Furnace: Boyan Boyanov1; Alexander Peltekov1; 'University of Plovdiv

3:40 PM Break

4:00 PM
Extraction of Indium from Zinc Oxide Flue Dust by Microwave Sulfation Roasting and Water Leaching: Jun Chang1; Jin-hui Peng1; Li-bo Zhang1; Jing Chen2; 1Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; 2School of Chemical Science and Technology, Yunnan University

4:20 PM
Behavior of Arsenic, Antimony and Bismuth at Roasting Temperatures: Rafael Padilla1; Maria Ruiz1; 'University of Concepcion

4:40 PM
Characterization of Physico-Chemical Changes during the Alkali Roasting of Niobium and Tantalum Oxides: Sergio Sanchez-Segado1; Ahmad Fahmi Ruraideh1; Yuan Zhang1; Animesh Jha1; 'University of Leeds

5:00 PM
Mechanism of Na2SO4 on Refractory Gold Concentrate at Roasting Pretreatment: Li Qian1; Jianjun Hu1; Yongbin Yang2; Bin Xu1; Tao Jiang1; 'Central South University

Dynamic Probing of Microstructure Evolution in Nanostructured Materials — Size Effect and Fracture/Fatigue Studies
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Nan Li, Los Alamos National Laboratory; Caizhi Zhou, Missouri University of Science and Technology; Dan Gianola, University of Pennsylvania; Marc Legros, CEMES-CNRS
Tuesday PM
March 17, 2015
Room: Mockingbird 2
Location: Swan

Session Chairs: Shuai Shao, Los Alamos National Laboratory; Ill Ryu, Brown University

2:00 PM Invited
Dynamic TEM Observations of Grain Rotation via Climb of Grain Boundary Dislocations in Nanocrystalline Platinum: Evan Ma1; 'Johns Hopkins University

2:30 PM
Approaching Stabilized Plasticity in Ultrahigh Strength Crystals: In-Situ TEM Study of Submicron Al Pillars: Tao Hu1; Lin Jiang1; Harry Yang2; Kaka Ma3; Troy Topping3; Joshua Yee3; Meijuan Li1; Amiya Mukherjee1; Julie Schroenung1; Enrique Lavernia1; 'University of California, Davis; 'Wuhan University of Technology

2:50 PM Invited
Size Dependent Strain Rate Sensitivity of Submicron-Sized Single Crystal Iron and Aluminum Pillars: Zhivei Shan1; 'Xi’an Jiaotong University

3:20 PM
Modeling Plasticity of FCC/BCC Micro-Pillars under Torsion Using Dislocation Dynamics: Ill Ryu1; Wei Cai1; William Nix2; Huajian Gao2; 'Brown University; 'Stanford University

3:40 PM Break

4:00 PM Invited
In-Situ TEM Studies of Fracture in Nanoscale Multilayer Films: Andreas Kelling1; Hans-Ulrich Krebs1; Cynthia Volkert1; 'University of Göttingen

4:30 PM Invited
Fatigue Induced Microstructure Evolution in Nanotwinned Cu and thin Films in the HCF and VHCF Regime: Chris Eberl1; 'Fraunhofer IWM

5:00 PM
The Fracture Properties of Gold Thin Films Investigated by Bulge Testing: Benoit Merle1; Eva Preiß1; Mathias Göken1; 'University Erlangen-Nürnberg

5:20 PM
In-situ TEM Fatigue and Stress Relaxation in Ultrathin Nanocrystalline Films: Ehsan Hosseini1; Marc Legros2; Olivier Pьеррon3; 'Georgia Institute of Technology; 'CEMES-CNRS

Electrode Technology for Aluminum Production — Anode Properties
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Arne Ratvik, SINTEF
Tuesday PM
March 17, 2015
Room: Southern Hemisphere II
Location: Dolphin

Session Chairs: Mario Fafard, Laval University; Houshang Alamdari, Laval University

2:00 PM Introductory Comments

2:05 PM
Evaluating the Crack Resistance of Carbon Anodes - Implementation of a Measurement System for Tensile Strength and Fracture Toughness: Dag Herman Andersen1; Hagge Linga1; 'Hydro Primary Metal Technology
Energy Technologies and Carbon Dioxide Management Symposium 2015 — Iron & Steel

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

**Program Organizers:** Animesh Jha, University of Leeds; Brajendra Mishra, Colorado School of Mines; Eric Peterson, Idaho National Lab; Cong Wang, Northeastern University; Neale Neelameggham, Ind LLC; Donna Guillet, Idaho National Lab; Li Li, Cornell University

**Session Chairs:** Cong Wang, Northeastern University; Zuotai Zhang, Peking University

**2:30 PM** Invited

**Influence of the Initial Solidification Controlling on the Energy Saving during Continuous Casting:** Lejun Zhou; Wanlin Wang;  `Central South University`

**2:20 PM**

**Performance of Twin Oxygen-Coal Lances for PCI Operation in Blast Furnace Iron Making:** Huaqing Tang; `University of Science and Technology Beijing`

**2:40 PM**

**Energy Saving and CO2 Emission Reducing Analysis in Chinese Iron and Steel Industry:** Qi Zhang; `Northeastern University`

**3:00 PM** Invited

**Investigation of the Heat Recovery from High Temperature Slags:** Zuotai Zhang; Yongqi Sun; `Peking University`

**3:20 PM**

**Optimal Distribution of Byproduct Gases in Iron and Steel Industry Based on Mixed Integer Linear Programming (MILP):** Xiancong Zhao; Hao Bai; Qi Shi; Jiehai Han; Hongxu Li; `State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing`; `School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing`; `Handan Iron and Steel Company Limited`

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**Sponsored by:** TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

**Program Organizers:** Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

**Tuesday PM**

**Room:** Australia 3

**March 17, 2015**

**Location:** Dolphin

**Session Chairs:** Christopher Muhlstein, Georgia Institute of Technology; Ramasis Goswami, Naval Research Laboratory

**2:00 PM Invited**

**Micro-scale Notch Effects on the Nucleation and Propagation of Small Fatigue Cracks in Ni Thin Films:** Farzad Sadeghi-Tohidi; Olivier Pierron; `Georgia Institute of Technology`

**2:25 PM**

**Cyclic Loading of Nano crystalline FCC Metals Performed In Situ in a TEM:** Daniel Bufford; John Sharon; William Mook; Brad Boyce; Khalid Hattar; `Sanda National Laboratories`; `United Technologies Research Center`

**2:45 PM**

**Effect of Seed Crack on Plasticity of Ni Nanowire:** Mohammed Ashi; `Menoufi university`

**3:05 PM Invited**

**Fatigue Crack Growth in Two-Dimensional Nanosheets:** Wade Lanning; Roi Meiron; Christopher Muhlstein; `Georgia Institute of Technology`; `Pennsylvania State University`

**3:30 PM**

**Fatigue Crack Propagation in Conventionally Grained Ti and Ti Processed by ECA Process:** Stanislava Fintová; Ludvík Kunz; Mandana Arzaghi; Christine Sarrazin-Baudoux; Jean Petit; `CEITEC Brno University of Technology`; `Institute of Physics of Materials Academy of Sciences of the Czech Republic v.v.i.; 'Institute P'`

**3:50 PM Break**

**4:10 PM**

**Fatigue Damage Evolution and Accommodation in an Ultrafine-Grained Al-Mg-Sc Alloy:** Piyas Chowdhury; Huseyn Sehitoglu; Richard Rateick; Hans Maier; `University of Illinois at Urbana-Champaign`; `Honeywell Aerospace`; `University of Hannover`

**4:30 PM**

**Improved Fatigue Properties of Ultrafine-Grained Copper under Cyclic Torsion Loading:** Ronghua Li; Zhenjun Zhang; Peng Zhang; Zhefeng Zhang; `Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences`

**4:50 PM**

**Predicting Fatigue Resistance of Nano-Twinned Materials:** E-Wen Huang; Wanchuck Wool; `Chungnam National University`; `National Chiao Tung University`; `Korea Atomic Energy Research Institute`

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**Fatigue Crack Propagation in Conventionally Grained Ti and Ti Processed by ECA Process**

**Sponsored by:** TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

**Program Organizers:** Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

**Tuesday PM**

**Room:** Australia 3

**March 17, 2015**

**Location:** Dolphin

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**2:25 PM**

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**2:45 PM**

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**3:05 PM Invited**

**Fatigue Crack Growth in Two-Dimensional Nanosheets:** Wade Lanning; Roi Meiron; Christopher Muhlstein; `Georgia Institute of Technology`; `Pennsylvania State University`

**3:30 PM**

**Fatigue Crack Propagation in Conventionally Grained Ti and Ti Processed by ECA Process:** Stanislava Fintová; Ludvík Kunz; Mandana Arzaghi; Christine Sarrazin-Baudoux; Jean Petit; `CEITEC Brno University of Technology`; `Institute of Physics of Materials Academy of Sciences of the Czech Republic v.v.i.; 'Institute P'`

**3:50 PM Break**

**4:10 PM**

**Fatigue Damage Evolution and Accommodation in an Ultrafine-Grained Al-Mg-Sc Alloy:** Piyas Chowdhury; Huseyn Sehitoglu; Richard Rateick; Hans Maier; `University of Illinois at Urbana-Champaign`; `Honeywell Aerospace`; `University of Hannover`

**4:30 PM**

**Improved Fatigue Properties of Ultrafine-Grained Copper under Cyclic Torsion Loading:** Ronghua Li; Zhenjun Zhang; Peng Zhang; Zhefeng Zhang; `Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences`

**4:50 PM**

**Predicting Fatigue Resistance of Nano-Twinned Materials:** E-Wen Huang; Wanchuck Wool; `Chungnam National University`; `National Chiao Tung University`; `Korea Atomic Energy Research Institute`
Friction Stir Welding and Processing VIII — Dissimilar Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory

Tuesday PM  Room: Northern Hemisphere A3
March 17, 2015  Location: Dolphin

Session Chairs: Yuri Hovanski, Pacific Northwest National Laboratory; Jennifer Wolk, Naval Surface Warfare Center

2:00 PM Invited
Realization of Metal Hybrid-Joints by Ultrasound Supported Friction Stir Welding — An Innovative Method to Improve the Joint Quality: Benjamin Strauss1; Guntram Wagner2; 1University of Kaiserslautern

2:20 PM Invited
Friction Stir Welding of Dissimilar Lightweight Metals with Addition of Adhesive: Wei Yuan1; Kush Shah1; Bita Ghaffari2; Harsha Badarinarayan1; 1Hitachi America Ltd.; 2Ford Motor Company

2:40 PM Invited
Dissimilar Aluminum-Steel FSW Lap Joints: Egoitz Aldanondo1; Ekaitz Arruti1; Jorge Garagorri1; Alberto Echeverria1; 1IK4-LORTEK

3:00 PM
Fatigue Behavior of Friction Stir Linear Welded Dissimilar Aluminum-to-Magnesium Alloys: Harish Rao1; J. Jordan1; W. Yuan2; B. Ghaffari1; X. Su1; A. Khosrovanah1; Y. Lee2; 1University of Alabama; 2Hitachi America Ltd.; 2Ford Motor Company; 2General Motors Research and Development Center; 2Chrysler Group LLC

3:20 PM
Dissimilar Materials Joining of Aluminum/ Dual Phase 980 Spot Welded by Friction Bit Joining and Weldbonding: Study of Mechanical and Corrosion Properties: Yong Chae Lim1; Lile Squires2; Tsung-Yu Pan1; Michael Miles1; Yanli Wang1; Zhili Feng2; 1Oak Ridge National Laboratory; 2Brigham Young University

3:40 PM Break

4:00 PM
Friction Stir Lap Welding of Aluminum - Polymer Using Scribe Technology: Piyush Upadhyay1; Yuri Hovanski1; Leo Fitzfield1; Kevin Simmons1; 1Pacific Northwest National Laboratory

4:20 PM
Friction Stir Scribe Welding of Dissimilar Aluminum to Steel Lap Joints: Todd Curtis1; Christian Widener1; Bharat Jashti1; Michael West1; Yuri Hovanski1; Blair Carlson2; Robert Szymanski1; William Bane1; 1South Dakota School of Mines and Technology; 2Pacific Northwest National Laboratory; 2General Motors R&D Center

4:40 PM
Coating Design for Controlling γα6 Phase IMC Formation in Dissimilar Al-Mg Metal Welding: Yin Wang1; Li Wang1; Joe Robson1; Phil Prangnell1; 1The University of Manchester

5:00 PM
Friction Stir Welding of Austenitic Stainless Steel to an Aluminum-Copper Alloy: S. Babu1; S.K. Panigrahi1; G.D. Janaki Ram1; P.V. Venkitakrishnan2; R. Suresh Kumar2; 1Indian Institute of Technology Madras; 2Indian Space Research Organisation

Frustrated Ferroic Materials — Modeling and Simulation

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee

Program Organizers: Michael Manley, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University; Navdeep Singh, University of Houston

Tuesday PM  Room: Europe 1
March 17, 2015  Location: Dolphin

Session Chairs: Yunzhi Wang, Ohio State University; Markus Gruner, TU Duisburg-Essen

2:00 PM Invited
Modeling Strain and Magnetic Glass Behavior in Magnetic Shape-Memory Alloys: Antoni Planes1; Teresa Castán1; Avadh Saxena2; Pol Lloveras3; 1Universitat de Barcelona; 2Los Alamos National Laboratory; 3Universitat Politècnica de Catalunya

2:20 PM Invited
First Principles Based Simulations of Relaxor Ferroelectrics: Benjamin Burton1; 1NIST

3:00 PM
Modeling Spin Glass Behavior in Shape Memory Alloys: Navdeep Singh1; Markus Gruner1; Peter Entel2; Raymundo Arroyave2; 1University of Houston; 2University of Duisburg-Essen; 3Texas A&M University

3:20 PM Break

3:40 PM Invited
First-Principles Calculation of Frustrated Ferroic Materials Ni-Co-Mn-(Ga, In, Sn): Peter Entel1; Navdeep Singh2; Markus Gruner1; Anna Grünebohm1; Vladimir Sokolovskiy2; Vasiliy Buchelnikov4; 1University of Duisburg-Essen; 2Texas A&M University; 4Chelyabinsk State University

4:10 PM
Monte Carlo Simulation of Magnetic Domain Structure and Property Near Morphotropic Phase Boundary: Songrui Wei1; Sen Yang2; Dong Wang2; Xiaoping Song2; Xiaojin Ke1; Yipeng Gao1; Yunzhi Wang1; 1The Ohio State University; 2Xi’an Jiaotong University

4:30 PM Invited
Interdependence of Magnetism and Adaptive Microstructure in Magnetic Shape-Memory Alloys: Markus Gruner1; Sebastian Fähler2; Peter Entel2; 1University of Duisburg-Essen; 2IFW Dresden

5:00 PM
Flexoelectricity in Dielectrics: Jiawang Hong1; Olivier Delaire1; 1Oak Ridge National Laboratory
Plasticity Finite Element Simulations
A High-Performance Computational Framework for Fast Crystal
Laboratory
Daniel Savage 1; Rodney McCabe 2; 1University of New Hampshire; 2Los
Bieler1; Farhang Pourboghrat1; 1Michigan State University
Alexander Karl
Manufacturing and Service
Uncertainty Quantification and Robust Design Across Design,
5:00 PM  Invited
Jönköping University
Olofsson
Variations in Microstructure into Finite Element Simulations
The Multi-Scale Closed Chain of Simulations – Incorporating Local
Crystal Plasticity Models for BCC Materials
Comparing the Predictions of Non-Schmid and Dislocation Density Based
3:10 PM  Break
3:30 PM  Break
3:50 PM  Invited
Morphology and Size Sensitivity of Polycrystalline Microstructure
Response: Kirubel Teferra1; Lori Graham-Brady1; 1Johns Hopkins University
4:20 PM  Invited
Quantifying the Uncertainty of Microstructure Features Induced by Data
Collection Protocols: Kirubel Teferra1; Lori Graham-Brady1; Michael
Grober2; Michael Uchic1; 1Johns Hopkins University; 1Air Force Research
Laboratory
4:40 PM  Invited
The Multi-Scale Closed Chain of Simulations – Incorporating Local
Variations in Microstructure into Finite Element Simulations: Jakob
Olofsson1; Kent Salomonsson1; Ingvar Svensson1; ‘School of Engineering, Jönköping University
5:00 PM  Invited
Uncertainty Quantification and Robust Design Across Design, Manufacturing and Service: Alexander Karl1; 1Rolls-Royce
High-Entropy Alloys III — Structures and Mechanical Properties
Sponsored by: TMS Structural Materials Division, TMS: Mechanical
Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy
Technology Lab; Suev Mathaudhu, University of California Riverside
Tuesday PM  Room: Oceanic 5
March 17, 2015  Location: Dolphin
Session Chairs: Hamish Fraser, The Ohio State University; Nilesh Kumar, University of North Texas
2:00 PM Invited
Fracture Toughness and Fatigue-Crack Propagation Behavior of FCC
High-Entropy Alloys at Ambient to Cryogenic Temperatures: Bernd
Gludovatz1; Keli Thurston1; Anton Hohenwarter2; Dhiraj Catoor2; Hongbin Be1; Easo George1; Robert Ritchie1; 1Lawrence Berkeley National Laboratory; 2Montanuniversität Leoben and Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; 3Oak Ridge National Laboratory
2:20 PM Invited
Determination of the Three-Dimensional Microstructure and Ordering
Schemes in Compositionally Complex Alloys: Brian Welk1; Jake Jensen1; John Sosa1; Dan Huber1; Robert Williams1; Gopal Viswanathan1; Jon Miller2; Adam Pilchak2; Dan Evans2; Oleg Senkov3; Mark Gibson4; Rajarshi Banerjee1; Hamish Fraser1; 1The Ohio State University; 2Air Force Research Laboratory; 3UES Inc.; 4CSIRO ; 5University of North Texas
2:40 PM  Invited
Correlation of Structural-Disorder and Properties of Refractory High-
Entropy Alloys: Soumyadipita Maity1; Walter Steurer2; 1ETH Zurich ; 2ETH Zurich
3:00 PM  Invited
Deformation Behavior of an Ultrafine Grained CrMnFeCoNi High-
Entropy Alloy at Different Temperatures: Nokieu Park1; Cemal Tasan2; Dierk Raabe3; Nobuhiro Tsuji1; 1Kyoto University; 2Max Planck Institute for Iron Research GmbH
3:20 PM Invited
Effect of Zr and Si Addition on Microstructure and Mechanical Properties
of Multi-Component AlCuFeNiCr Alloys: Dai-hong Xiao1; Penghui Zhou2; 1Central South University
3:40 PM  Break
3:55 PM Invited
On the Friction Stress and Hall-Petch Coefficient of a Single Phase Face-
Centered-Cubic High Entropy Alloy, Al0.1FeCoNi: Nilesh Kumar1; Mageshwari Komarasamy1; Zhi Tang2; Rajiv Mishra1; Peter Liaw2; 1University of North Texas; 2The University of Tennessee
4:15 PM  Invited
High Pressure Torsion-Induced Structural Changes in AlxCoCrFeNi High
Entropy Alloys: Hyun Seok Oh1; Jin Yeon Kim1; Hye Jung Chang1; Koichi Tsuchiya1; Eun Soo Park1; 1Seoul National University; 2Korea Institute of Science and Technology; 3National Institute for Materials Science
4:35 PM  Invited
Mechanical Behavior of CoCrFeMnNi, CoCrFeNi, CoCrFeMn High
Entropy Alloys at Elevated Temperatures: Joseph Licavoli1; Michael Gao1; Paul Jablonski1; Jeffrey Hawk1; 1Department of Energy
4:55 PM  Invited
Mechanical and Thermodynamic Instabilities in Refractory High Entropy
Alloys: Michael Widom1; 1Carnegie Mellon University
5:15 PM Invited  
Strength and Deformation of Individual Phases in High-Entropy Alloys: A. Giwa1; Haoyan Diao2; Xie Xie3; S. Y. Chen2; Zhi Tang4; Karin Dahmen1; Peter Lie1; Julia Green1; 1California Institute of Technology; 2The University of Tennessee; 3University of Illinois at Urbana Champaign  

High-Performance Aerospace Alloys Design Using ICME Approach — Session IV  
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee  
Program Organizers: Awadh Pandey, Pratt & Whitney; Somnath Ghosh, Johns Hopkins University; Dongsheng Li, Pratt & Whitney  
Tuesday PM  
March 17, 2015  
Location: Oceanic 6  
Session Chair: Awadh Pandey, Pratt & Whitney  

2:00 PM Invited  
Advances in Modeling and Simulation of Microstructure, with an Emphasis on 3D Aspects: Roeju Pokharel1; Anthony Rollett2; 1Los Alamos National Laboratory; 2Carnegie Mellon University  

2:30 PM Invited  
Modeling of Microstructurally Small Crack Growth through 3D Microstructures Using Crystal Plasticity Finite Element Simulations: William Musinski1; David McDowell2; 1US Air Force Research Laboratory; 2Georgia Institute of Technology  

3:00 PM  
Crystal Plasticity Based Constitutive Modeling and Finite Element Simulation of Twinning in Magnesium Alloys: Jiahao Cheng1; Somnath Ghosh1; 1Johns Hopkins University  

3:20 PM Break  

3:40 PM Invited  
Tailoring Microstructure to Minimize the Probability of Life-Limiting Fatigue Failures in the Titanium Alloy Ti-6Al-2Sn-4Zr-2Mo: Sushant Jha1; Vikas Sinha1; Robert Brockman1; Adam Pilchak2; Reji John3; James Larsen4; 1Air Force Research Laboratory/Universal Technology Corporation; 2UES Inc.; 3University of Dayton Research Institute; 4US Air Force Research Laboratory  

4:10 PM  
Modelling Microstructure Evolution during Dynamic Recrystallisation of Ni-Based Superalloys: Enrique Galindo-Nava1; Catherine Rae2; 1University of Cambridge  

4:30 PM  
Reduced Order Descriptors for ICME of Titanium Alloys: Veera Sundararaghavan1; John Allison1; Abhishek Kumar1; Anna Trump1; Susan Gentry1; Katsuyo Thornton2; 1University of Michigan  

High-Temperature Electrochemistry II — Energy Storage Devices, Corrosion and Molten Salt Science  
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee  
Program Organizers: Prabhath Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab  
Tuesday PM  
March 17, 2015  
Location: Yacht & Beach  
Session Chairs: P. Chris Pistorius, Carnegie Mellon University; Dihua Wang, Wuhan University  

2:00 PM  
Modeling the Operating Voltage of Liquid Metal Battery Cells: Jocelyn Newhouse1; Donald Sadoway2; Takanari Ouchi3; 1Massachusetts Institute of Technology; 2Stanford University
Hume-Rothery Award Symposium: Multicomponent Alloy Metallurgy, the Bridge from Materials Science to Materials Engineering — Solid State Transformations
Sponsored by: TMS Functional Materials Division (formerly EMP MD), TMS: Alloy Phases Committee.
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Mark Asta, University of California at Berkeley; Raymundo Arroyave, Texas A&M University

Tuesday PM Room: Oceanic 1
March 17, 2015 Location: Dolphin

Session Chairs: Raymundo Arroyave, Texas A&M University; Katsuyo Thornton, University of Michigan

2:00 PM Invited
Thermodynamics of Multi-Component Phases with Classical Atomistic Potentials: Y. Mishin1; 1George Mason University

2:30 PM Invited
Some Multicomponent Issues in Solid State Phase Transformations: John Aggrei1; 1Royal Institute of Technology

3:00 PM Invited
Aperiodic Zoo of Al-Fe-Si System: Leonid Bendersky1; 1NIST

3:30 PM Break

4:00 PM Invited
High Throughput Diffusion Research on Ti Alloys: Yuwen Cui1; 1University of Michigan; Bin Tang1; 1Guanglong Xu1; 1IMDEA Materials Institute

4:30 PM Invited
Phase-field Modeling of Phase Transformation and Microstructure Evolution in Ti-alloys: Yanzhou J1; 1Taewook Heo1; 2Long Qing Chen1; 1Penn State University; 2Lawrence Livermore National Laboratory

5:00 PM Invited
Phase Relations in High Temperature Coating Systems: Carlos Levi1; 1University of California Santa Barbara

Integrative Materials Design II: Performance and Sustainability — Sustainability in Design and Manufacturing
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Tuesday PM Room: Grand Harbor Salon 8
March 17, 2015 Location: Yacht & Beach

Session Chairs: Diana Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories

2:00 PM Invited
Sustainable Materials Development: Design and Manufacturing for Recovery and Recyclability: Diran Apelian1; 1Worcester Polytechnic Institute

2:25 PM Invited
Designing for Resilience, Sustainability and Robustness in Materials Processing: Richard Sisson1; 1Worcester Polytechnic Institute, Center for Heat Treating Excellence

2:50 PM Invited
Factors Influencing Rare-Earth Metals Sustainability: Brajendra Mishra1; 1Colorado School of Mines

3:15 PM Invited
Development of Sustainable Non-Rare Earth High Energy Permanent Magnets for Electric Drive Vehicles: Iver Anderson1; 1Andry Palasyuk1; 1Aaron Kasseri1; 1Emma M.H. White1; 1Lin Zhou1; 1Wei Tang1; 1Kevin Dennis1; R McCallum1; 1Matthew Kramer1; 1Ames Laboratory

3:40 PM Break

4:00 PM Invited
Materials Challenges for a Novel Wind Turbine Rotary Electrical Contact Technology: Nicolas Argibay1; 1Jeff Koplow1; 1Michael Dugger1; 1Brad Boyce1; 1Wayne Staats1; 1Brendan Nation1; 1Bradley Salzbrenner1; 1Tomas Babuska1; 1Sandia National Laboratories

4:25 PM
Data-Driven Analysis of Thermoelectric and Battery Materials: Performance and Resource Considerations: Taylor Sparks1; 1Leila Ghandbeigi1; 1Michael Gaultois1; 2Christopher Borg1; 2Jaye Harada1; 2Ram Seshadri1; 2William Bonificio1; 2David Clarke1; 2University of Utah; 2University of California; 2Harvard University

4:45 PM Invited
Greenhouse Gas Emissions Evaluation of Electronics towards Sustainable Design: Elsa Olivetti1; 1Massachusetts Institute of Technology

5:10 PM Invited
Interconnected Carbon Nanosheets Derived from Hemp for Ultrafast Supercapacitors with High Energy: David Mittin1; 1Clarkson University

Magnesium Technology 2015 — Deformation II
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC
Tuesday PM Room: Northern Hemisphere E1
March 17, 2015 Location: Dolphin

Session Chairs: Suveen Mathaudhu, University of California, Riverside; Kiran Solanki, Arizona State University

2:00 PM
Micromechanical Modeling of Evolving Anisotropy in AZ31 Mg for Various Strain Paths: Oana Cazacu1; 1Nitin Chandola1; 1University of Florida

2:20 PM
Crystal Plasticity Modeling of the Dynamic Behavior of Mg Alloy, WEA3-T5, Plate: Jishnu Bhattacharya1; 1Sean Agnew1; 1Peidong Wu1; 1Wilburn Wittington1; 1Haitham El Kadii1; 1University of Virginia; 1McMaster University; 1Mississippi State University

2:40 PM
New Model Prediction of the Unusual Buckling Behavior of AZ31 Mg: Nitin Chandola1; 1Oana Cazacu1; 1University of Florida

3:00 PM
Why Do Magnesium Alloys Develop Sharp Textures upon Dynamic Recrystallization? Haitham El Kadii1; 1Christopher Barrett; 1Aidin Imandoust1; 1Sean Agnew1; 1Mississippi State University

3:20 PM
Recrystallization Behavior of the Magnesium Alloy ZZ20: Xianfeng Ma1; 1Ming Li1; 1John Allison1; 1University of Michigan; 1Ford Motor Company

3:40 PM Break

4:00 PM
Ballistic Characterization of the Scalability of AMX602: Tyrone Jones1; 1Katsuyoshi Kondoh1; 1U.S. Army Research Laboratory; 1Osaka University

4:20 PM
Large Strain Behaviour of ZEK100 Magnesium Alloy at Various Strain Rates: Julie Lévesque1; 1Shrihari Kurukuri1; 1Raja Mishra1; 1Michael Worwick1; 1Kaan Inal1; 1Université Laval; 1University of Waterloo; 1GM R&D Center
Effect of Solute Segregation on Fracture Behavior of Mg Alloy: Tomoaki Kawa; Masatake Yamaguchi; Naoko Ikeo; Toshiji Mukai; ‘Kobe University; ‘Japan Atomic Energy Agency

Magnetic Materials for Energy Applications V — Magnetocaloric Materials II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Francis J. Johnson, GE Global Research; Raju Ramanujan, Nanyang Technological University; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday PM  Room: Grand Harbor Salon 7
March 17, 2015  Location: Yacht & Beach

Session Chairs: Karl Sandeman, Imperial College of London; Alex Leary, Carnegie Mellon University

2:00 PM  Invited
Advanced Nanocomposites for Functional Magnetic Refrigeration: Haribaran Srikanth; ‘University of South Florida

2:30 PM  Invited
The Role of Structural Disorder in Magnetic Nanostructures for Magnetocaloric Applications: Michael McHenry; ‘Carnegie Mellon University

3:00 PM  Invited
Tips and Tricks for the Correct Analysis of the Field Dependence of the Magnetocaloric Effect: Victorino Franco; Luis Moreno-Ramirez; Carlos Romero-Muñiz; Ihon Ipus; Javier Blazquez; Alejandro Conde; ‘Sevilla University; ‘Autonomous University of Madrid

3:30 PM  Break

3:45 PM
Magnetocaloric Behaviour of Mn-Fe-P-Ge Alloys: Xi Chen; Raju Ramanujan; ‘NTU

4:05 PM
Microstructural and Crystallographic Characterization of Ni49+δMn36-xMn15 Alloys (x=0.5, 1, 1.5 and 2.0): Le Zhou; Anit Giri; Kyu Cho; Yongho Sonh; ‘University of Central Florida; ‘TKC Global; ‘US Army Research Laboratory

4:25 PM
Field-Induced Deformation in Magnetic Shape Memory Alloys: Domain Mechanisms and Magnetoelastic Properties: Songmei Jin; ‘Michigan Technological University

4:45 PM
Enhanced Efficiency of Layered Ceramic Magnetic Refrigerant: Jong-Woo Kim; Jong-Jin Choi; Cheol-Woo Ahn; Byung-Dong Hahn; Jungho Ryu; Woon-Ha Yoon; Joon-Hwan Choi; Dong-Soo Park; ‘Korea Institute of Materials Science

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Structural Materials I
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Tuesday PM  Room: Grand Harbor Salon 6
March 17, 2015  Location: Yacht & Beach

Session Chair: Steve Zinkle, Oak Ridge National Laboratory

2:00 PM
Advanced ODS FeCrAl Alloys for Accident-Tolerant Fuel Cladding: Sebastien Dryepondt; Kinga Unocic; David Hoelzer; Bruce Pint; ‘Oak Ridge National Laboratory

2:20 PM
The Lift-Out Mechanical Testing of Highly Irradiated Structural Materials: David Frazier; Nathan Bailey; Hi Vo; Ashley Reichardt; Josh Kacher; Y. Chen; E.A Marquis; Peter Homan; ‘University of California, Berkeley; ‘University of Michigan Ann Arbor

2:40 PM
Advanced Investigations on the Strengthening Mechanisms in Austenitic ODS Stainless Steels: Yinbin Mao; Kun Mo; Bai Cui; Zhangjian Zhou; Michael Miller; Kathy Powers; Virginia McCready; Xiang Liu; Kuan-Chie Lan; Guangming Zhang; Jonathan Almer; Ian Robertson; James Stubbins; ‘University of Illinois at Urbana-Champaign; ‘Argonne National Laboratory; ‘University of Science and Technology Beijing; ‘Oak Ridge National Laboratory; ‘University of Wisconsin-Madison

3:00 PM
Tensile and Fracture Toughness Properties of 14Cr-3W-0.3Ti-0.2Y (FCRD NFA-1): Md Ershadul Alami; N.J. Cunningham; Kirk Fields; David Gragg; G.R. Odule; David Hoelzer; S.A. Maloy; ‘University of California Santa Barbara; ‘Oak Ridge National Laboratory; ‘Los Alamos National Laboratory

3:20 PM
Thermal Ageing Experiments of Ferritic-ODS Alloys: Marta Serrano; Mercedes Hernandez-Mayoral; Elvira Ohorbe; Hassan Eddaoudi; ‘CIEMAT

3:40 PM  Break

4:00 PM
Quantification of the Variability in Physical and Mechanical Properties of Nuclear-Grade Graphites: M.C. Carroll; ‘Idaho National Laboratory

4:20 PM
Performance of Ultrafine-Grained Tungsten under ELMs-Like Transient Heat Loads of ITER: Osman El-Awani; Anastassiia Suslova; Sivanandan Harilal; ‘Ahmed Hassanein; ‘Purdue University

4:40 PM
Mechanical Properties and Microstructural Stability of Oxide Dispersion Strengthened Alloy 617: Young-Bum Chun; Chang-Hee Han; Jinsung Jang; ‘Korea Atomic Energy Research Institute

5:00 PM
Microstructure Characterization of 12Cr ODS Steel after Creep Rupture Test at 700°C: Jinsung Jang; Xiaodong Mao; Sung Soo Kim; Woo Gon Kim; Chang Hee Han; Tae Kyu Kim; Young Soo Han; ‘Korea Atomic Energy Research Institute
MHD 2015: Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing — MHD Flow

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Ramana Reddy, The University of Alabama; Thinium Natarajan, U. S. Steel

Tuesday PM  Room: Swan 2
March 17, 2015  Location: Swan

Session Chairs: Chris Pistorius, Carnegie Mellon University; Francisco Acosta-Gonzalez, CINVESTAV

2:00 PM Introductory Comments

2:05 PM Invited
Convection in Duct Flows with Very Strong Magnetic Fields: Oleg Zikanov; Xuan Zhang; 1 University of Michigan Dearborn

2:30 PM Invited
Non-Contact Flow Measurement and Flow Control in Metal Melts Using Lorentz Force Techniques: Christian Karcher; Nataliia Dubovikova; Daniel Hernandez; Yuri Kolesnikov; 1 Technische Universitaet Ilmenau

2:55 PM Invited
Arrays of Rotating Permanent Magnet Dipoles for Stirring and Pumping of Liquid Metals: Andris Bojarevics; Toms Beinerts; Martinš Sarma; Mihails Šcepanskis; 1 Institute of Physics of University of Latvia; 2 University of Latvia

3:20 PM Break

3:35 PM Invited
Flow Control of Molten Metal Using Measurements of Physical Properties and Flow Rate by MHD Techniques: Yuri Kolesnikov; Rico Klein; 1 Ilmenau University of Technology

4:00 PM Invited
Flow Visualization by Means of Contactless Inductive Flow Tomography in the Presence of a Magnetic Brake: Matthias Ratajczak; Thomas Wondrak; Klaus Timmel; Frank Stefani; Sven Eckert; Gunter Gerbeth; 1 Helmholtz-Zentrum Dresden-Rossendorf

4:25 PM
The Formation of a Magnetically Driven Tornado-Like Vortex: Tobias Vogt; Ilmars Grants; Sven Eckert; Gunter Gerbeth; 1 Helmholtz-Zentrum Dresden-Rossendorf

4:45 PM
Application of Lorentz Force Techniques for Flow Rate Measurement: Reshad Ebert; Nataliia Dubovikova; Christian Karcher; Christian Resagk; 1 Technische Universitaet Ilmenau


Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Long Qing Chen, Penn State University; Mark Asta, University of California, Berkeley; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yongmei Jin, Michigan Technological University; Yann Le Bouar, LEM, CNRS/ONERA

Tuesday PM  Room: Asia 3
March 17, 2015  Location: Dolphin

Session Chair: Raymundo Arroyave, Texas A&M

2:00 PM Invited
Elastic Domains: from Epitaxial Film Nanostructures to Bulk Crystal Microstructure: Alexander Roytburd; Julia Slutske; 1 University of Maryland

2:30 PM Invited
Morphological Transitions in Domain Structures and Their Effects on P(E) Hysteresis Curves in Thin Ferroelectric Films: Andrei Artemev; 1 Carleton University

3:00 PM Invited
Functional Materials with High Twin-Wall Densities: Dwight Viehland; 1 Virginia Polytechnic Institute and State University

3:30 PM Break

3:50 PM Invited
Universal Morphology of Nonlinear Telephone Cord Buckles: Yong Ni; Senjiang Yu; Ai-Kah Soh; Linghui He; 1 University of Science and Technology of China; 2 Department of Physics, China Jiliang University; 3 School of Engineering, Monash University Sunway Campus

4:20 PM
First Order Morphological Transition of Ferroelastic Domains in Ferroelectric Thin Films: Jason Britson; Chris Nelson; Xiaoqing Pan; Long Qing Chen; 1 Penn State University; 2 University of Michigan

4:40 PM
Crystallographic Design of Ferroic Smart Materials: Transformation Pathway Network Analysis: Yipeng Gao; Suliman Dregia; Yunzhi Wang; 1 The Ohio State University

5:00 PM
Modeling Microstructural Stability for Advanced FE Systems: Youhai Wen; 1 National Energy Technology Laboratory
Microstructural Processes in Irradiated Materials — Austenitic, Ni-based, and Zr-based Alloys
Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Dan Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin

Tuesday PM
March 17, 2015
Room: Asia 1
Location: Dolphin

Funding support provided by: Idaho National Laboratory and Oak Ridge National Laboratory

Session Chairs: Yanwen Zhang, University of Tennessee; Emmanuelle Marquis, University of Michigan

2:00 PM Invited
Quantitative Characterization of Microstructures in Proton Irradiated Stainless Steels: Yiming Chen1; Peter Chou; George Jiao2; Gary Was2; Emmanuelle Marquis3; University of Michigan

2:30 PM Invited
Ferrite Decomposition and G-Phase Precipitation in Ion-Irradiated CASS CF8 Revealed by APT: Meimei Li1; Michael Miller1; Jonathan Poplawsky1; Weiyang Chen1; Mark Kirk1; Pete Baldo2; Tiangan Lian3; Argonne National Laboratory

3:00 PM Invited
Effects of Chemical Disorder on Defect Dynamics under Ion Irradiation: Yanwen Zhang1; Hongbin Be1; Ke Jin2; Liang Qiao3; Hans Christen4; William Weber5; Oak Ridge National Laboratory; University of Tennessee

3:30 PM Break

3:45 PM
Influence of Grain Boundary Character Effects on Neutron Irradiated Stainless Steel: Christopher Barr1; James Cole1; Mitra Taheri1; Drexel University; Idaho National Laboratory

4:00 PM
Swelling and Radiation-Induced Segregation/Depletion in Annealed 304SS Irradiated at PWR-Relevant Dose Rates: Yan Dong1; Bulent Sencer2; Frank Garner1; Emmanuelle Marquis3; University of Michigan; Idaho National Laboratory; Radiation Effects Consulting

4:15 PM
Phase Instability in 300 Series Austenitic Steels Irradiated in Different Environments: Maxim Gussev1; Jeremy Busby1; Kevin Field1; David McClintock1; Oak Ridge National Laboratory

4:30 PM
Disordering and Dissolution of Ordered L12 Precipitate in Rene N4 under Irradiation: C. Sun1; T. Lee2; M. Demkowicz3; S. Maloy4; O. Anderoglu5; Los Alamos National Laboratory; Massachusetts Institute of Technology

4:45 PM
Improvement of Irradiation and Corrosion Resistance of a 316 Austenite Stainless Steel by Grain Refinement: Prasath Babu Revathy Rajan1; Eric Hug1; Isabelle Monnet2; Auriane Etienne3; Nariman Enikeev4; Bertrand Radiguet5; GPM UMR 6634 - Université et INSa de Rouen; CRISMAT, UMR 6508, ENSICAEN, université de Caen; CIMP-ENSICAEN-CEN-CNRS-Université de Caen; Institute of Physics of Advanced Materials

5:00 PM
Vacancy Clustering in Zirconium: An Atomic Scale Study: Céline Varvenne1; Emmanuel Clouet2; SRMP, CEA Saclay

5:15 PM
The Effect of Fe on Dislocation Loop Formation Studied in Pproton-Irradiated Binary Zr Alloys: Matthew Topping1; Michael Preuss1; Philipp Frankel1; Simon Dumbill1; University of Manchester; National Nuclear Laboratories

5:30 PM
Physics-Based Modeling of Zirconium Hydride Precipitation and Growth in Zirconium Using a CALPHAD-Based Phase Field Model: Andrea Jokisaari1; Katsuyo Thornton2; University of Michigan

Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Processing and In Situ Characterization
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ENSMA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Science and Technology Beijing

Tuesday PM
March 17, 2015
Room: Oceanic 7
Location: Dolphin

Session Chairs: Lei Wang, Northeastern University; Jean-Briac le Graverend, Texas A&M; Jonathan Cormier, ISAE-ENSMA & Institut Pprime

2:00 PM Invited
Deformation Mechanism Maps for Grain Boundary Engineering of Ni-Base Superalloys: Sammy Tin1; Baishun Li2; Illinois Institute of Technology

2:20 PM
Thermomechanical Processing of Nickel Aluminide Intermetallics: Bernard Tougas1; Mohammad Jahazi2; Centre de Metallurgie du Quebec; Ecole de technologie superieure

2:40 PM
Hot workability and Deformation Behavior of the NiAl-Based Eutectics: Srdjan Milenkovic1; Arcadio Varona1; Du Rou2; IMDM Materials Institute; Beihang University

3:00 PM
An Investigation of Grain Boundary Character Evolution in Nickel 200: Olivia Underwood1; University of Alabama Huntsville

3:20 PM
Application of External Field Treatment for the Microstructure Controlling of Nickel-Base Superalloy: Lei Wang1; Yang Liu; Yao Wang2; Guoshun Xu2; Northeastern University; Central Iron and Steel Research Institute

3:40 PM Break

4:00 PM
The Effect of Strain Distribution on Microstructural Developments during Forging in a New Ni Based Superalloy: Ross Buckingham1; Christoph Argyriakis2; Mark Hardy; Soran Biosca1; Swansea University; Rolls-Royce plc

4:20 PM Invited
Experimental Investigation of Full-Field Deformations at the Microstructural Length Scale: Samantha Daly1; University of Michigan

4:40 PM
Real Time In Situ X-Ray Diffraction Study of the High Temperature Mechanical Behavior of a Raffted Single Crystal Superalloy: Thomas Schenk1; Alain Jacques1; Jean Briac Le Graverend2; Jonathan Cormier3; JIL-CNRS/LabEx DAMAS; California Institute of Technology; Institut P; CNRS-ENSMA-Université de Poitiers

5:00 PM
Time and Spatial Resolved Observation of Phase Transformation during Solidification of Laser-Beam Welded TiAl Alloy: Jie Liu1; Peter Staron2; Stefan Riekehr1; Andreas Stark1; Norbert Schell2; Norbert Huber3; Andreas Schreyer1; Martin Müller2; Nikolai Kaschev3; Helmholtz-Zentrum Geesthacht, Germany
Nano- and Micro-Mechanical Measurements in Harsh Environments — Micromechanical Testing of Irradiated Materials

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Peter Houseman, UC Berkeley; Jeffrey Wheeler, EMPA; Verena Maier, Erich Schmidt Institut; Douglas Stauffer, Hysitron

Tuesday PM Room: Oceanic 4
March 17, 2015 Location: Dolphin

Session Chair: Peter Houseman, Berkeley University

2:00 PM Invited
In-Situ Measurements of Irradiation-Induced Creep in Nanocrystalline and Amorphous Alloys: Robert Averbach1; Sezer Özverinç1; William King1; Sungeun Kim1; Yinon Ashkenazy1; 1University of Illinois of Idaho; 3CAES/Univerisity of Idaho; 4CAES/Idaho State University

2:40 PM Effect of Gamma Radiation on the Mechanical and Degradation Properties of Bromobutyl Rubber Compounds. Sandra Scaglioni1; Elizabeth Cardoso1; Ademar Lugão1; 1Instituto de Pesquisas Energeticas e Nucleares - IPEN

3:00 PM High Temperature Nanoindentation and Ex Situ Microcompression Testing on Proton-Beam Irradiated 304 SS: Ashley Reichardt1; Manuel Abad1; Hi Vo1; Amanda Lupinacci1; David Frazer1; Peter Housemann1; 1University of California, Berkeley

3:20 PM Break

3:50 PM Probing Nanoscale Damage Gradients in Irradiated Materials with Spherical Nanoindentation: Siddhartha Pathak1; Surya Kalidindi1; Yongqiang Wang1; Russ Doerner1; Nathan Mara1; 1Los Alamos National Laboratory; 2Georgia Institute of Technology; 3University of California San Diego

4:10 PM Unusual Size-Dependent Strengthening Mechanisms in Helium Ion Irradiated Immiscible Coherent Cu/Co Nanolayers: Youxing Chen1; Yue Liu1; Engang Fu1; Yongqiang Wang1; Haiyan Wang1; Xinghang Zhang1; 1Texas A&M University; 2Peking University; 3Los Alamos National Laboratory

4:30 PM Correlate Nano-Hardness to Conventional Vickers Hardness on Irradiated ODS Alloy: Jatuporn Burns1; Ramprashad Prabhakaran1; Yaqiao Wu1; Joanna Talyor1; Kristi Moser1; Darryl Butt1; 1CAES/Boise State University; 2University of Idaho; 3CAES/Boise State University; 4CAES/Idealo State University

Nanocomposites III — Multifunctional Nanocomposites and Tailored Nanostructures

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Muralidharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee

Tuesday PM Room: Europe 2
March 17, 2015 Location: Dolphin

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Scott Poveromo, University of California at Irvine and Northrop Grumman

2:00 PM Invited
Metallurgical and Hybrid Nanostructures: Synthesis, Properties and Applications: Simona Hanyadi Murphy1; 1Savannah River National Laboratory

2:40 PM Invited
Broad-Band and Omni-directional Graded-Refractive-Index, Anti-reflective Coatings with Self-Cleaning and Anti-Fogging Capability: Tolga Aygül1; L Tao1; A Lupini1; P Joshi1; I Ivanov1; M Paranathan1; R Menon1; P Wang1; Oak Ridge National Laboratory; 3University of Utah

3:20 PM Break

3:40 PM Completely Green Synthesis of Dextrrose Reduced Silver Nanoparticles Decorated MWNT, Its Antibacterial and Catalytic Properties: Sneha Mohan1; Oluwafemi Oluwatosi1; Sandile Songca2; Nandakumar Kalarikkal1; Sabu Thomas3; 1Cape-Peninsula University of Technology; 3Walter Sisulu University; 4Mahatma Gandhi University

4:00 PM Modeling Mechanical Properties of a 2D Single Walled Carbon Nanotube (SWCNT) Network: Ankit Gupta1; Elizabeth Holm1; 1Carnegie Mellon University

4:20 PM Controlling Orientation and Morphology of Pores in Mesoporous Silica Thin Film: Eun-Mee Kim1; Choong-Un Kim1; 1University of Texas at Arlington

4:40 PM Synthesis and Characterization of Metallic Tubular Nanoporous Structures: Theresa Juarez1; Andrea Hodge1; 1University of Southern California

Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III — Session IV: Computational Methods and Advanced Batteries

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Tuesday PM Room: Europe 3
March 17, 2015 Location: Dolphin

Session Chairs: Yan Yao, University of Houston; Reza Shahbazian-Yassar, Michigan Technological University

2:00 PM Invited
Predict and Design Interface Properties for Si Based Electrode in Li-Ion Batteries: Yue Qi1; 1Michigan State University

2:25 PM Invited
Pursue High Energy Density and Power Density Battery with Atomic Simulation: Chen Ling1; 1Toyota Motor Engineering & Manufacturing North America, Inc.

2:50 PM Invited
Effects of Nanostructures on Beyond Li-Ion Energy Storage: Insights from First Principles Calculations: Yifei Mo1; 1University of Maryland College Park

3:15 PM Invited
Supercapacitors Based on Graphene Electrodes and Polymeric Ionic Liquid Electrolyte: Computer Simulation Study: Andrew DeYoung1; Hyung Kim1; 1Carnegie Mellon University

3:40 PM Break

3:55 PM Invited
Combined Electrochemical Impedance and Acoustic Emission Characterization of Lithium-Ion Battery Electrodes: Partha Mukherjee1; Chien-Fan Chen1; Pallab Barai1; 1Texas A&M University

4:20 PM Invited
Mineral-Inspired, Nanostructured Polyion ion Materials for Rechargeable Battery Electrodes: Ran Zhao1; Candace Chan1; 1Arizona State University
5:10 PM Invited
Understanding Electrode-Electrolyte Solution Interactions between TiO2 Nanotube Electrode and Nonaqueous Electrolytes for Sodium-Ion Batteries: Riley Parrish1; Richard Cutler2; Ganesh Kamath1; Eric Dufek3; Subramanian Sankaranarayanan1; Hui (Claire) Xiong4; 1Boise State University; 2University of Missouri–Columbia; 3Idaho National Laboratory; 4Argonne National Laboratory

New Horizons for Mechanical Spectroscopy in Materials Science — Glasses, Models and Measurements
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Nicolás Mujica, Universidad de Chile; Michael Demkowicz, MIT; Fernando Lund, Universidad de Chile; Alfredo Caro, Los Alamos National Laboratory

Tuesday PM  Room: Pelican 1
March 17, 2015  Location: Swan
Funding support provided by: Air Force Research Laboratory
Session Chairs: Michael Manley, Oak Ridge National Laboratory; Feng Ye, SNS

2:00 PM Keynote
Anisotropic Lattice Distortions in Crystals Grown by Organisms: Emil Zołotowybkow1; 1Technion

2:40 PM Invited
From Phonons to Functionality: Winfried Petry; 1Technische Universität München

3:10 PM
Neutron Diffraction Study of Crystal Structure and Magnetic Transition in Mn2-xFe1+xP1-yGa1+y: Darrin Liu1; Qingrui Huang2; Zhenglu Zhang2; Ming Yue1; Jiuxing Zhang1; 1Beijing University of Technology; 2National Institute of Standards and Technology

3:30 PM
Strain Gradients Near Domain Boundaries in NiMnGa-Based Twinned Single Crystal: Rozaliya Barabash1; 1Oak Ridge National Laboratory

3:50 PM Break

4:00 PM Invited
Magnetic Studies in Shape Memory Alloys by Neutron and Synchrotron Techniques: Jose Manuel Barandiaran1; Volodymyr CHERenchko1; Maria Luisa Fernandez-Guibéda1; Patricia Lzapita1; Akio Kimura1; 1BCMaterials and UPV/EHU; 1Hiroshima University

4:30 PM
Understanding Improved Magnetocaloric Performance of Ni2+xMn1-xGa Heusler Alloys Based on Texture Studies: Michael McLeod1; Blashkar Majumdar2; Sven Vogel1; Olivier Gourdan1; Matt Reiche1; 1New Mexico Tech; 2Los Alamos National Laboratory

4:50 PM
Mapping of Texture and Phase Fractions in Non-Uniform Stress States during Torsional Loading of Supercritical TiNi: Douglas Nicholson1; Volodymyr CHERenchko1; Santo Padula2; Othmane Benafan1; Robin Woracek1; Stephen Puplampu1; Jeffrey Bunn2; Andrew Payantz1; Dayakar Penamadu1; Raj Vaidyanathan1; 1University of Central Florida; 2NASA Glenn Research Center; 3University of Tennessee; 4Oak Ridge National Laboratory

5:00 PM Invited
In-Situ Study of Phase Transition of NiMnInFe Alloys under High Magnetic Field by High-Energy X-ray Measurement: Gang Wang1; 1Northeastern University

New Horizons for Mechanical Spectroscopy in Materials Science — Glasses, Models and Measurements
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Nicolás Mujica, Universidad de Chile; Michael Demkowicz, MIT; Fernando Lund, Universidad de Chile; Alfredo Caro, Los Alamos National Laboratory

Tuesday PM  Room: Pelican 1
March 17, 2015  Location: Swan
Funding support provided by: Air Force Research Laboratory
Session Chairs: Michael Manley, Oak Ridge National Laboratory; Feng Ye, SNS

2:00 PM Invited
Measurement of Plastic Deformation in Silica Glasses with Raman Spectroscopy: A Theoretical Study: Anne Tanguy1; Nikita Shecheblanov1; 1University Lyon

2:30 PM Invited
Studying Glass under Extreme Conditions Using In-Situ Brillouin and Raman Light Scattering: Liping Huang1; Rensselaer Polytechnic Institute

3:00 PM Invited
Relaxation-Time Spectra of Glasses: Michael Atzmon1; JongDoo Ju2; 1University of Michigan

Novel Synthesis and Consolidation of Powder Materials — Powder Metallurgy of Light Alloys (Ti, Al, Mg) and Composites II
Sponsored by: TMS Powder Metals Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

Tuesday PM  Room: Swan 10
March 17, 2015  Location: Swan
Session Chairs: Katsuyoshi Kondoh, Osaka University; Manoj Gupta, National University of Singapore

2:00 PM
Influence of Lattice Expansion via Annealing-Induced Carbon Intercalation on the Strength of Aluminum-Based Nanocomposite.: Kwangmin Choi1; Hyunjoo Choi1; Se-eun Shin2; Donghyun Bae3; 1Kookmin University; 2Yonsei University

2:20 PM
Strengthening Behavior and Mechanisms of Extruded Powder Metallurgy Pure Ti Materials Reinforced with Ubiquitous Light Elements: Takanori Mimoto1; Junko Umeda1; Katsuyoshi Kondoh1; 1Osaka University

2:40 PM
Processing-Structure-Property Relations in Powder Metallurgy (PM) Processed MgYZn1 Alloys: R. Sadangi1; D. Kapoor2; T. Zahrah3; 1Armament Research Development Engineering Center; 2Retired - Armament Research Development & Engineering Center; 3Matsys, Inc

3:00 PM Invited
In-Situ Formed AlN Dispersed Aluminum Composite via Powder Metallurgy Route: Katsuyoshi Kondoh1; Motohiro Onishi1; Lei Jia1; Junko Umeda1; Hisashi Imai1; 1Osaka University
Phase Transformations and Microstructural Evolution — Understanding Phase Transformations using APT and Other Complimentary Techniques
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danox, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

Tuesday PM  Room: Swan 3
March 17, 2015  Location: Swan

Session Chairs: Soumya Nag, GE Global Research Center; Rajarshi Banerjee, University of North Texas

2:00 PM
The Study of Structural and Compositional Characteristics of Omega Phase in Beta Titanium Alloys: Yufeng Zheng1; Robert Williams2; Deep Choudhuri3; Talukder Alam4; Rajarshi Banerjee2; Hamish Fraser5; The Ohio State University; University of North Texas

2:20 PM
Competing Mechanisms of Homogeneous and Discontinuous γ’ Precipitation in Ni-Al-Co Alloys: Tanaporn Rojhirunsakool1; Soumya Nag2; Jamie Tiley1; Rajarshi Banerjee2; University of North Texas; GE Global Research Center; Air Force Research Laboratory

2:40 PM
On the Temporal Evolution of the Gamma (f.c.c.)- and γ’(L12)-Phases in a Ni-12.5 Al at.% Alloy: Elizaveta Plotnikov1; Daniel Cecchetti2; Mehmet Yildirim1; Zugang Mao1; Yongsheng Li1; Ronald Noebe2; David Seidman3; Northwestern University; NASA Glenn Research Center

3:00 PM
Coupier Electron Back Scattered Diffusion and Focused Ion Beam Techniques for Atom Probe Tomography Specimen Preparation: Frederic Danox1; Claire Debeux1; Fabien Cuivilly2; Thomas Sourmail2; Nathalie GEY2; CNRS - Université de Rouen; Ascometal CREAS; Laboratoire LEM3

3:20 PM  Break

3:40 PM
Quantification of Solute Segregation in the Design of Nanocrystalline Alloys: Monica Kapoor1; Brad Boyce2; Kristopher Darling2; Gregory Thompson3; University of Alabama; Sandia National Laboratories; U.S. Army Research Laboratory

4:00 PM  Invited
Comparison of Thermodynamic Database Models and APT Data for High Nb Content γ-γ’ Ni-Base Superalloys: Stoichko Antonov1; Sammy Tin1; Illinois Institute of Technology

4:30 PM
Morphological and Compositional Evolution of Omega Precipitates in a High Misfit Ti-V Alloy: Deep Choudhuri1; Talukder Alam1; Rongpei Shi2; Yufeng Zheng3; Soumya Nag1; Yunzhi Wang1; Hamish Fraser1; Rajarshi Banerjee1; University of North Texas; Ohio State University

4:50 PM
Crystallographic Behavior of a Zr41.2Ti13.8Cu12.5Ni10Be22.5 Bulk Metallic Glass – A Correlative Atom Probe Tomography Study: Sanghita Mridha1; David Jaeger1; Rajarshi Banerjee1; Sundeep Mukherjee1; University of North Texas
Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories — Session IV

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee

Program Organizers: Dana Zöllner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

Tuesday PM
March 17, 2015
Location: Oceanic 8

Session Chairs: David Rowenhorst, Naval Research Lab; Katayun Barmak, Columbia University

2:00 PM Invited
Grain Growth and the Puzzle of Its Stagnation in Metallic Films: Experiment, Simulation and Analytic Theory: Katayun Barmak1; Columbia University

2:30 PM
Self-Similar Grain Growth in Nanocrystalline Two-Dimensional Polycrystals and Thin Films: Dana Zöllner; Peter Streitenberger; Otto von Guericke University Magdeburg

2:50 PM
Case Studies of the Temperature Dependence of Grain Boundary Mobility: Christopher O’Brien; Stephen Foiles; Sandia National Laboratories

3:10 PM
Crystallographic Trends of Energy and Mobility in Incoherent Twin Boundaries: Eric Homer1; Jonathan Friedeman1; Cameron Rogers1; Brigham Young University

3:30 PM
A Coarse-Grained Atomic Study of the Stability of Nanotwinned Cu Structures: Shuozhi Xu; David McDowell; Rui Che2; Liming Xiong2; Youping Chen1; Georgia Institute of Technology; University of Florida

3:50 PM Break

4:10 PM Invited
Three Dimensional Analysis of Grain Boundary Curvatures and Anisotropies during Grain Growth: David Rowenhorst1; Amanda Levinson1; US Naval Research Laboratory

4:40 PM
A Phase Field Model for the Inclusion of Solute Effects and Anisotropy: Philip Goins1; Elizabeth Holm1; Carnegie Mellon University

5:00 PM
Atomistic Modeling for Grain Boundary (Segregation) Engineering: Exploiting Micro- and Macro-Scale Interfacial Structure-Property Relationships: Mark Tschopp1; Kiran Solanki2; Fei Gao3; Army Research Laboratory; Arizona State University; Pacific Northwest National Laboratory

5:20 PM
Defect Character at Grain Boundary Facet Junctions: A Combined HAADF-STEM and Atomistic Modeling Study of an Asymmetric S=5 Grain Boundary in Fe: Douglas Medlin1; K. Hattar1; J. Zimmerman1; Farhad Abdeljawad1; S. Foiles1; Sandia National Laboratories

Rare Metal Extraction & Processing 2015 — Vanadium-Molybdenum-Tungsten

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

Program Organizers: Neale Neelameggham, Ind LLC; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Animesh Jha, University of Leeds; Shijie Wang, Rio Tinto Kennecott Utah Copper

Tuesday PM
March 17, 2015
Location: Asbury C

Session Chairs: Harald Oosterhof, Umicore; Bing Li, East China Univ of Science & Technology

2:00 PM
A Novel Technology of Vanadium Extraction from Stone Coal: Mingyu Wang1; Bowen Li2; ‘Central South University’; ‘Michigan Technological University

2:20 PM
Mechanical Activation of Processing of Egyptian Wolframite: Aly Abdel-Rehim1; Alexandria University

2:40 PM
Leaching of Vanadium from the Roasted Vanadium Slag with High Calcium Content by Direct Roasting and Soda Leaching: Xiao-Man Yan1; Bing Xie1; Lu Jiang1; Hong-Yi Li1; Hai-Peng Guo1; Chongqing University

3:00 PM
Solvent Extraction of Vanadium from Converter Slag Leach Solution by P204 Reagent: Zhang Ying1; Zhang Tieg’an1; Lv Guozi1; Liu Yan1; Zhang Guoquan1; Liu Zhaolin1; Northeastern University

3:20 PM Break

3:35 PM
Recovery of Tungsten from Machining Waste Alloy Scrap: Rahul Kumar1; ‘National Institute of Technology, Jamshedpur

3:55 PM
Establishment and Application of Activity Model Based on FeO-SiO2-V2O3-TiO2 System: Zhenyu Zhou1; ‘Chongqing University

4:15 PM
Effect of Solution Compositions on Optimum Redox Potential in Bioleaching of Chalcoprite by Moderately Thermophilic Bacteria: Hongbo Zhao1; Jun Wang1; Wenqing Qin1; Guanzhou Qiu1; Central South University; Key Lab of Biophydometallurgy of Ministry of Education

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Session IV

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Adele Carradó, IPCMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Nuggesthali Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Tuesday PM
March 17, 2015
Location: Parrot

Session Chair: Nuggesthali Ravindra, New Jersey Institute of Technology

2:00 PM Keynote
Magnetic, Magneto-Transport and Optical Properties in Arrays of Magnetic Iron Oxide or Metallic Nanoparticles: Sylvie Beguin1; Benoit Pichon1; IPCMS

2:40 PM
Deposition Dynamics of Polymer-Grafted Nanoparticles for Membranes and Protective Coatings: John Howarter1; Logan Kearney1; Kai Gao1; Purdue University
3:00 PM
Deposition and Characterization of FeAlCr Thin Films by Magnetron Sputtering: Kátia Cardoso; Douglas Neves; Juliano Libardi; Argemiro Sobrinho; Marcos Massi; José González Carrasco; 1Universidade Federal de São Paulo - UNIFESP; Instituto Tecnológico de Aeronáutica, 2 CENIM - CSIC

3:20 PM Invited
AFM Techniques for Nanomechanical Characterization of Thin Coatings: Daniele Passeri; Melanie Reggente; Lia Angelloni; Emanuela Tamburri; Maria Letizia Terranova; 1 Sapienza University of Rome; 2 University of Rome Tor Vergata

3:50 PM Break

4:10 PM
Effect of Microstructure and Composition on the Mechanical Behavior of Nanotwinned CuAl: Nathan Heckman; Andrea Hodge; 1 University of Southern California

4:30 PM Invited
Robust Ultralow-k Dielectrics for Advanced Chip Interconnect: Integration Challenges and Thermo-Mechanical Reliability: Choong-Un Kim; Ioonki Sa; Akanksha Pandey; Sean King; Todd Ryan; 1 UT; 2 University of Texas, Arlington; 3 Intel Co.; 4 Globalfoundries

3:00 PM
Strip Casting of Light Metals — Modeling and Properties
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Wim Sillekens, European Space Agency; Murat Dundar, Assan Aluminium; Jan Bohlen, Helmholtz-Zentrum Geesthacht; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH

Tuesday PM Room: Northern Hemisphere E2
March 17, 2015 Location: Dolphin
Session Chairs: Dietmar Letzig, Helmholtz-Zentrum Geesthacht; Murat Dundar, Assan Aluminium

2:00 PM Invited
Modelling of the Twin Roll Casting Process including Friction: Dag Mortensen; Hallvard Fjaer; Dag Lindholt; Kai Karhausen; Jakob Kvaløvdåg; 1 Institute for Energy Technology; 2 Hydro Aluminium Rolled Products

2:20 PM
Twin Roll Casting of Magnesium Strip at CanmetMATLERS - Modeling and Experiments: Amjad Javaid; Jeremy Hanke; Hart Simha; Mark Kozdras; 1 CANMET Materials; 2 CD-Adapco

2:40 PM
Microstructure Evolution of Different Magnesium Alloys during Twin Roll Casting: Gerrit Kurz; Joachim Wendl; Jan Bohlen; Dietmar Letzig; 1 Helmholtz-Zentrum Geesthacht

3:00 PM
Effect of Cu Addition on the Microstructural Constituents and Mechanical Properties of Twin Roll Cast AlFeMnSi Alloys: Onur Meydanoglu; Onur Birbasar; Ali Ulus; Baris Beyhan; Eren Kalay; 1 Assan Aluminium; 2 Middle East Technical University

3:30 PM Break

3:40 PM
The Microstructure and Texture Development during Twin-Roll Casting and Rolling of Magnesium Alloy AZ31: Jan Bohlen; Sangbong Yi; Jose Victoria-Hernandez; Norbert Schell; Bernd Schweber; Heinz-Guenter Brokmeier; Gerrit Kurz; Dietmar Letzig; 1 Helmholtz-Zentrum Geesthacht; 2 TU Clausthal

4:00 PM
Improvement of Corrosion Resistance in Modified 3003 Aluminum Alloys Produced by Twin-Roll Casting under Different Casting Parameters: Mert Gümüş; Hatice Molloaglu Altuner; Ali Ulus; 1 Assan Aluminyum A.S.

4:20 PM
The Impact of Cast Structure on the Bend Surface Roughening of Roll Cast 3003 H-24 Sheet: Dionisios Spathis; John Tsiros; 1 Hellenic Aluminium Industry (ELVAl SA)

4:40 PM Concluding Comments

2015 Functional Nanomaterials: Energy and Sensing — Nanomaterial Fabrication I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Jang-Sik Lee, University of Pittsburgh; Behrang Hamadani, National Institute of Standards and Technology; Sung Hun Wee, HGST, a Western Digital Company; Nitin Chopra, University of Alabama, Tuscaloosa; Terry Xu, The University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH)

Wednesday AM Room: Swan 4
March 18, 2015 Location: Swan
Session Chair: Jang-sik Lee, Postech
6th International Symposium on High Temperature Metallurgical Processing — Materials Preparation

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

**Program Organizers:** Tao Jiang, Central South University; Jann-Yang Hwang, Michigan Technological University; Gerardo Alvear, XstrataTech; Onuralp Yucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip MacKey, P.J. Mackey Technology; Tom Battle, Midrex Technologies

**Wednesday AM**

**9:00 AM**

**High Temperature Investigation of Viscosity for FeCrMnNi as-Cast TRIP/ TWIP Steel:** Tobias Dubbersteins; Hans-Peter Heller; 1TU Bergakademie Freiberg

**9:30 AM**

**TiO2 in Cryolite Melts at 960ºC:** Huaqiang Shi; Xiaming Hu; Qianhong Wang; Hong Kong University of Science and Technology

**9:40 AM**

**Microstructural Analysis and Mechanical Evaluation of Ti-45Nb:** Changrappa Kasigavi; Chunyang Zengjie Wang; Jun Li; Guangzhao Tian; 1Central South University

**9:50 AM**

**Production of CrB, Powder via Self Propagating High Temperature Synthesis:** Mehmet Bugdaycil; Buket Tuncer; Onuralp Yucel; 1Istanbul Technical University

**10:00 AM**

**Formation of Intermetallic Phases in Al-Sc Alloys Prepared by Molten Salt Electrolysis at Elevated Temperatures:** Zengjie Wang; Chuyang Guan; Qiaochu Liu; Haibo Xue; 1Beijing University of Technology; 2School of Metallurgical and Ecological Engineering, University of Science and Technology, Beijing

**10:10 AM**

**Effect of Cooling Speed and Varying Strain Rate on the Second Ductility Minima in Microalloyed, High Manganese Steels:** Tobias Brune; Dieter Senk; Steve Münch; 1RWTH Aachen University

**10:20 AM**

**Copper Removal From Ferronickel:** Liao Lingen; Wang Jianjun; Peng Jiaqing; Lin Yinghe; Li Zhengbang; 1China Iron & Steel Research Institute Group; 2Anhui University of Technology; 3University of Science and Technology Beijing

**10:30 AM**

**Chemical Processing of a High Carbon FeCr Alloy Fine Powder:** Eduardo Brocchi; Douglas Torres; Rogério Navarro; Rodrigo de Souza; José Brant; 1Pontificial Catholic University of Rio de Janeiro; 2Rio de Janeiro State University

**10:40 AM**

**Effects of Austempering Temperature on the Mechanical Properties of S50C Medium Carbon Steel:** Cheng-Yi Chen; Fei-Yi Hung; Tuan-Sheng Lui; Li-Hui Chen; 1National Cheng Kung University

**10:50 AM**

**Friction Stir Additive Manufacturing for High Structural Performance Through Microstructural Control in an Mg Based WE43 Alloy:** Sivanesh Palanivel; Phalgun Nelaturu; Ben Glass; Rajiv Mishra; 1University of North Texas

**11:00 AM**

**Effects of Austempering Temperature on the Mechanical Properties of S50C Medium Carbon Steel:** Cheng-Yi Chen; Fei-Yi Hung; Tuan-Sheng Lui; Li-Hui Chen; 1National Cheng Kung University

**11:10 AM**

**Effect of Arsenic Content and Quenching Temperature on Solidification Microstructure and Distribution of Arsenic in Iron-Arsenic Alloys:** Wenbin Xin; Bo Song; Mingming Song; Chuangen Huang; 1University of Science and Technology Beijing

**11:50 AM**

**Preparation of Al-Ti Master Alloys by Aluminothermic Reduction of TiO2 in Cryolite Melts at 960ºC:** Liu Aimin; Xie Kaiyu; Li Liangxing; Shi Zhongning; Hu Xianwei; Xu Junli; Gao Bingliang; Wang Zhaowen; 1Northeastern University of China

**12:10 PM**

**Effect of Non-Metallic Inclusions on the Fatigue Behaviour of Cast ZZnAl10-5. Sha Lv; 1Central South University**

**Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — New Frontiers in Additive Manufacturing**

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

**Program Organizers:** J ohn Carpenter, Los Alamos National Laboratory; David Bourrell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas

**Wednesday AM**

**9:30 AM**

**Microstructure and Shape Memory Behavior of NiTi Processed via Laser-Based Direct Energy Deposition Additive Manufacturing:** Reginald Hamilton; B. Bimber; Todd Palmer; 1Pennsylvania State University

**9:40 AM**

**Composition and Microstructure of Direct Metal Laser Sintered 15-5PH Stainless Steel:** Kevin Coffey; Le Zhou; Yongho Sohn; 1University of Central Florida

**10:00 AM**

**Fusion Stir Additive Manufacturing for High Structural Performance Through Microstructural Control in an Mg Based WE43 Alloy:** Sivanesh Palanivel; Phalgun Nelaturu; Ben Glass; Rajiv Mishra; 1University of North Texas

**10:40 AM**

**Influence of Weld Power on Build Quality in Ultrasonic Additive Manufacturing:** Adam Hehr; Marcelo Dapino; 1The Ohio State University

**11:00 AM**

**Microstructure and Texture Evolution in Dissimilar Material Welds Made Using Very High Power Ultrasonic Additive Manufacturing (VHP UAM):** Niyong Sritharan; Mark Norfalk; Sudarsanam Babu; 1University Of Tennessee Knoxville; 2Fabrisonic

**11:20 AM**

**At Sea Additive Manufacturing:** Jennifer Wolc; Caroline Scheck; Lonnie Love; Brock Aron; Ryan Hayleck; 1Naval Surface Warfare Center; 2Oak Ridge National Laboratory
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Dislocations

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

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Panteleon, Technical University of Denmark

Wednesday AM
Room: Pelican 2
Location: Swan

Session Chairs: Daniel Gianola, University of Pennsylvania; Henning Poulsen, DTU

8:30 AM Invited
Towards the Materials Oscilloscope: In-Situ, Real-time Diffraction on Metals Under Thermo-Mechanical Deformation: Klaus-Dieter Liss;
Australian Nuclear Science and Technology Organisation

9:00 AM
In Situ High Energy Synchrotron X-ray Diffraction Investigation on Deformation Mechanisms in High Mn Steels: Wenwen Song; Wolfgang Bleck;
RWTH Aachen University

9:20 AM
Measuring the Critical Resolved Shear Stress of Various Slip Modes in Hexagonal Ti by 3DXRD: Leyun Wang; Harsha Phukan; Peter Kenesei; Jun-Sang Park; Thomas Bieler; Helmholtz-Zentrum Geesthacht; Michigan State University; Argonne National Laboratory

9:40 AM
Quantification of Dislocation Nucleation Stress in TiN Through High-Resolution In Situ Experiments and First Principles Calculations: Nan Li; Satyesh Yadav; Xiang-Yang Liu; Jian Wang; Richard Hoagland; Amit Misra; Los Alamos National Laboratory; University of Michigan

10:00 AM Break

10:20 AM
Atomic Resolution Energy Dispersive Spectroscopy of Chemical Segregation at Superlattice Extrinsic Stacking Faults in a Ni-Based Disk Alloy: Tim Smith; Brian Esser; Nik Antolini; Babu Vivaswanathan; Andrew Wessman; Michael Mills; The Ohio State University

10:40 AM Invited
Spherical Nanoindentation and Local Crystal Plasticity Modeling of Ti-6Al-4V: Matthew Pridly; Jordan Weaver; Surya Kalidindi; David McDowell; Georgia Institute of Technology

11:10 AM
Analysis of the Reversible Behaviour of Dislocations in the Pre-Yield Regime Using a Physically Based Model and Advanced Characterization Techniques: Zalou Arestabaleta; Peter van Liempt; Jilt Stetsma; Delft University of Technology; Tata Steel Research, Development & Technology

11:30 AM
Size Effects of Coarse Graining on Dislocation Mobility in FCC Crystals:Liming Xiong; Xiang Chen; David McDowell; Youping Chen; University of Florida; Georgia Institute of Technology

11:50 AM
TEM Analysis of IN100 Disk Material Crept Under High Stresses: Jaimie Tiley; Sang-Lan Kim; Krishna Murthy Mahalingam; John Porter; Reji John; Air Force Research Laboratory; UES; University of Dayton Research Institute

Advanced Composites for Aerospace, Marine, and Land Applications II — Carbon Fiber Reinforced Composites and Modeling & Simulations

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Tomoko Sano, US Army Research Laboratory; Tirumalai SriVatsan, The University of Akron

Wednesday AM
Room: Asia 5
Location: Dolphin

Session Chairs: David Saylor, FDA-CDRH-OSEL; Tomoko Sano, US Army Research Laboratory

8:30 AM Invited
Surface Modification of Carbon Fiber Polymer Composites After Laser Structuring: Adrian Sabau; Jian Chen; Jonaaron Fitzgerald; Alexander Hackett; Gerald Jellison; Claus Daniel; David Warren; Jackie Rehkopf; Oak Ridge National Laboratory; University of Tennessee; Plasan Carbon Composite

8:50 AM
Comparing Strengthening Mechanisms of Vapor Grown Carbon Fiber vs. Titanium Carbide Reinforced PM Titanium Metal Matrix Composites: Franco Staub; Katsuyoshi Kondoh; Junko Umeda; Hisashi Imai; University of California Irvine; Osaka University

9:10 AM
Unique Method for Evaluation of Galvanic Corrosion in Impact Damaged Carbon-fiber Composite Core Bare Overhead High-Voltage Conductors: Eva Hakansson; Paul Predecki; Maciej Kumosa; University of Denver

9:30 AM
Microstructural Characterization of Fatigue Damage of CFRP in the Very High Cycle Fatigue Regime: Daniel Backe; Frank Balle; Dietmar Ejler; University of Kaiserslautern, Institute of Materials Science and Engineering

9:50 AM
Processing and Characterization of Carbon Fiber-Reinforced Silicon Carbide (C/SiC) Matrix Composites: Singe Tülhez; Arcan Dericioglu; Middle East Technical University

10:10 AM Break

10:30 AM
Effective Creep Response and Uniaxial Tension Behavior of Linear Viscoelastic Polymer Composites: Tian Tang; Sergio Felicelli; University of Akron

10:50 AM
Correlating the Free-Volume Evolution to Plastic Deformation of Highly Cross-Linked Polymers from Large Scale Coarse-Grained MD Simulations: Amin Aramoon; Stephen Bae; Timothy Breitman; Christopher Woodward; Jaafar El-Awady; Johns Hopkins University; Wright-Patterson Air Force Base

11:10 AM Invited
Molecular Dynamics Assessment of Small Molecule Diffusion in Medical Plastics: David Saylor; Christopher Forrey; FDA-CDRH-OSEL
**Advanced Energy-Efficient Light Metal (Al, Mg, and Ti) Extraction Technologies and Processes — Session I**

**Sponsored by:** TMS: Energy Committee

**Program Organizers:** James Klausner, US Department of Energy; Adam Powell, INFINIUM, Inc.; Peter McGrail, PNNL; Aldo Steinfeld, ETH Zurich

**Wednesday AM**  
**Room:** Southern Hemisphere V  
**March 18, 2015**  
**Location:** Dolphin  
**Session Chair:** To Be Announced

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### 8:30 AM Introductory Comments

### 8:40 AM Keynote


1. Massachusetts Institute of Technology

### 9:10 AM

**Catalyzed Organo-Metathetical (COMET) Process for Magnesium Production: Peter McGrail**

1. Phillip Koech; Satish Nune; Radha Motkuri; Leo Fifield; Vanda Glezakou; Jian Liu; 1. Pacific Northwest National Laboratory

### 9:50 AM

**Carbothermal Reduction of Magnesia in a Vacuum Solar-simulated Thermogravimeter: Boris Chubukov**

1. Aaron Palumbo; Majk Brkic; Zoran Jovanovic; Aldo Steinfeld; Alan Weimer; 1. University of Colorado; 2. ETH Zurich

### 10:10 AM Break

### 10:30 AM

**Production of Mg and Al-Mg/Mg-Al Alloys from Secondary Aluminum Scrap Using RE-12TM Process: Subodh Das**

1. Adam Gesing; Raouf Loutfy; 1. Phinix, LLC

### 10:50 AM

**Hydrogen Absorption Property of Magnesium Formate by Spillover at the Ambient Temperature: Shota Hirokata**

1. Mitsuo Notomi; 1. Graduate Meiji University; 2. Meiji University

### 11:10 AM

**Dual Electrolyte Extraction Electro-Refinery (DEEE) for Aluminum Production: Chinbay Fan**

1. Jason Garlanger; 1. Gas Technology Institute

### 11:30 AM Invited

**Zero Carbon Emission Aluminum Production by Solid Oxide Membrane Based Electrolysis Process: Shizhao Su**

1. Xiaofei Guan; Uday Pal; 1. Boston University

### 11:50 AM Invited

**Pure Oxygen Anodes™ for Low-Cost Energy-Efficient Zero-Emissions Aluminum Primary Production: Adam Powell**

1. Steve Tucker; Salvador Barriga; Matthew Earlam; 1. INFINIUM, Inc.

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**Advanced Materials in Dental and Orthopedic Applications — Session V**

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

**Program Organizers:** Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Elizabeth Trillo, Southwest Research Institute; Grant Crawford, South Dakota School of Mines and Technology

**Wednesday AM**  
**Room:** Swan 8  
**March 18, 2015**  
**Location:** Swan  
**Session Chairs:** Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines

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### 8:30 AM

**Mechanical and Electrochemical Performance of Mg-HA Nanocomposites Fabricated by Combined HSS and SPD: Yan Huang**

1. Junyi Li; Debao Liu; Minfang Chen; 1. Brunel University; 2. Tianjin University of Technology

### 8:50 AM

**Animal Models of PMMA-NVP Hydrogels for Orthotropic, Self-Inflating Tissue Expanders: Jessica Smith**


### 9:10 AM

**Fabrication and Characterization of Titanium Nano Hydroxyapatite Surface Composites for Osseointegrated Implant Applications: Francisco Rumiche**

1. Paulo Munante; Josymar Garcia; Rolf Greiseler; Peter Schaaf; 1. Pontificia Universidad Catolica del Peru; 2. Technische Universitat Ilmenau

### 9:30 AM Break

### 10:10 AM

**Fatigue Analysis of Nitinol and Beta Titanium Arch Wires: Janet Gbur**

1. Brian Benni; John Lewandowski; 1. Case Western Reserve University

### 10:30 AM

**Novel Biodegradable Metal-Ceramic Interpenetrating Composites for Bone Implant Applications: Jae-Young Jung**

1. Steven Naleway; Michael Porter; Marc Meyers; Joanna McKittrick; 1. University of California San Diego; 1. Clemson University

### 11:10 AM

**Nanoscale Mechanical Properties of Apatite Crystals: Arun Nair**

1. Scott Miller; 1. University of Arkansas

### 10:50 AM Invited

**A Comparative Assessment of Magnetoelectropolishing (MEP) and Anodization (ANO) Based Surface Modification Techniques in Evaluating the Surface, Mechanical and Cellular Responses of Novel Titanium Implant Materials: Vishal Musaramthota**

1. Rupak Dua; 1. Florida International University
**Advances in Solidification of Metallic Alloys under External Fields — Modelling, Experimental Studies and Applications**

**Sponsored by:** TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS: Aluminum Committee, TMS: Solidification Committee

**Program Organizers:** Jiawei Mi, University of Hull; Dmitry Eskin, Brunel University

Wednesday AM  Room: Swan 1  March 18, 2015  Location: Swan

**Session Chairs:** Koulis Pericleous, University of Greenwich; Yves Fautrelle, Grenoble Institute of Technology

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**8:30 AM Invited**

**Numerical Modeling of Fluid Flow and Solidification Characteristics during Ultrasonic Processing of A356 Alloys:**

*Laurentiu Nastac*, 1; The University of Alabama

**9:00 AM**

Melt Flow and Grain Refinement in Al-Si Alloys Solidified Under the Influence of Applied Electric Currents: Dirk Räbiger1; Yunhu Zhang2; Vladimir Galindo1; Sven Franke1; Sven Eckert1; 1Helmholtz Zentrum Dresden-Rossendorf

**9:20 AM**

Development of Al-B-C Master Alloy under External Fields: *Utsavi Joshi*1; Sreekumar VadakkeMadam1; Dmitry Eskin1; Hari-Babu Nadendla1; 1Brunel University

**9:40 AM**

Shock the Growing Grains during Solidification by Electro-Magnetic Pulses: Theerapatt Manuwong1; Wei Zhang1; Jiawei Mi1; 1University of Hull

**10:00 AM Break**

**10:15 AM**

Solidification Structure Refinement of 2205 Duplex Stainless Steels by Pulse Magneto-Oscillation: *Jie Ni*1; Congsen Wu1; Honggang Zhong1; Qijie Zhai1; 1Shanghai University

**10:35 AM**

Simulation of Solidification Process of Steel Ingot Under the Forced Convection Condition: *Senyang Qian*1; Jieyu Zhang1; Bo Wang2; Jian Zhao1; Jie Ma1; 1Shanghai University

**10:55 AM**

Grain Refinement of Pure Aluminum under External Electromagnetic Field Treatment — Reviews and New Experimental Evidence: *Zhuyuan Liang*1; Dong Liang1; Jie Sun1; Changjiang Song1; Qijie Zhai1; 1Shanghai University

**11:15 AM**

Separation Mechanism of Primary Silicon from the Hypereutectic Al-Si Melts under Alternating Electromagnetic Field: *Xue Haiyang*1; Guoqiang Lv1; Ma Wenhui1; Yu Jie1; 1Southern University of Science and Technology

**11:35 AM**

Containerless Rapid Solidification of Ni-Zr Eutectic Alloy within Electrostatic Field: *Liang Hu*1; Shangjiing Yang1; Liuhui Li1; Binghe Wei1; 1Northwestern Polytechnical University

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**Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Cast Iron I**

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

**Program Organizers:** Laurentiu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH - Royal Institute of Technology; Jiacs Lacaze, Université de Toulouse; Chun-Pyo Hong, Yonsei University; Adrian Catalina, Caterpillar Inc.; Andreas Buhrig-Polacek, RWTH Aachen University; Daan Maijer, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhaya Sen, GEOCENT; Attila Diószegi, Jönköping University, School of Engineering

Wednesday AM  Room: Swan 7  March 18, 2015  Location: Swan

**Session Chair:** Roxana Ruxanda, Emerson

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**8:30 AM**

Defect Formation Mechanisms in Lamellar Cast Iron related to the Casting Geometry: *Attila Diószegi*1; Peter Svidró1; Lentart Elmqist1; Izudin Dugi1; 1Jönköping University, School of Engineering; 1SinterCast AB; 1Linnaeus University, Faculty of Technology

**8:50 AM**

Characterization of Directionally Solidified Gray Iron: *Amber Genau*1; Elis Rivera-Martínez1; Tyler Christiansen1; Adrian Catalina1; 1University of Alabama at Birmingham; 1Caterpillar Inc.

**9:10 AM**

A Review of Macro-Microscopic Modeling of Solidification of Castings and Its Application to Cast Iron Solidification: *Dilip Banerjee*1; 1NIST

**9:30 AM**

Age-Strengthening of Cast Iron and Its Effects on Machinability – Review of the Literature: *Von Richards*1; 1Missouri University of Science and Technology

**9:50 AM**

Examination of Austenite Solidification and Spheroidal Graphite Growth in Ni-Fe-C Alloys: *Jingjing Qing*1; Von Richards1; David Van Aken1; 1Missouri University of S&T

**10:10 AM Break**

**10:30 AM Invited**

Control of the As-Cast Microstructure of Nodular Cast Irons: *Jacques Lacaze*1; Jon SERTUCHA2; Lena Magnusson Åberg3; 1Université de Toulouse; 1IK4-Azterlan; 1Elkem AS

**10:55 AM Invited**

Production of Selected Key Ductile Iron Castings Used in Large-Scale Windmills: *Chung-Ning Pan*1; Hsuan-Te Lin1; Chi-Chia Lin1; Re-Mo Chang2; 1National Taiwan University; 2MIRDC

**11:20 AM Invited**

Influence of Cobalt and Nickel on Solidification, Microstructure and Mechanical Properties of Silicon Solution Strengthened Ductile Iron: *Sebastian Fischer*1; Johannes Brachmann1; Philipp Weiß1; Andreas Bührig-Polacek1; 1RWTH Aachen University

**11:45 AM**

An Overview of Isothermal Coarsening in Hypoeutectic Lamellar Cast Iron: *Juan Carlos Hernando*1; Attila Diószegi1; Jönköping University
Wednesday AM

Beckermann
Materials, School of Materials Science and Engineering, Southeast University; Koshiro Yamane; Akira Sugiyama; Tomoya Nagira; Masato Yoshiya; Shinji Suzuki;
1; Kyoto University; 2; IHI Master Metals; 3; Osaka Sangyo University; 4; University of Akron; 2; California State University, Los Angeles

9:20 AM

Convection: A Lattice Boltzmann Model for Dendritic Growth Under Natural

9:20 AM

Suzuki;
1; Kyoto University; 2; IHI Master Metals; 3; Osaka Sangyo University; 4; Osaka University; 5; IHI; 6; JASRI / Spring-8

8:30 AM Invited

In-Situ and Time-Resolved Imaging for Knowing Influence of Mg Content on Solidification in Hypereutectic Cast Iron: Hideyuki Yasuda;
1; University of Iowa;
2; GE Global Research

9:20 AM

Simulations of the Columnar-to-Equiaxed Transition due to Dendrite Fragmentation during Alloy Solidification: Mahdi Torabi Rad;
1; University of Iowa;
2; Christoph Beckermann;
1; University of Iowa

11:05 AM

Three-Dimensional Grains Envelopes Tracking at the Casting Scale: Saleem Mostabah;
1; Self-Employed

11:25 AM

Modeling of Dendritic Structure and Microsegregation in Solidification of Al-Rich Quaternary Alloys: Ting Dai;
1; Mingfang Zhu;
1; Weisheng Cao;
2; Shuanglin Chen;
1; Jiangsu Key Laboratory for Advanced Metallic Materials, School of Materials Science and Engineering, Southeast University;
2; CompuTherm LLC

Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Microstructure Evolution I

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

Program Organizers: Laurentiu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH - Royal Institute of Technology; Jacques Lacaze, Université de Toulouse; Chun-Pyo Hong, Yonsei University; Adrian Catalina, Caterpillar Inc.; Andreas Buhlig-Polaczek, RWTH Aachen University; Daan Majer, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhaya Sen, GE OCCENT; Attila Diószegi, Jönköping University

Program Chairs: Hideyuki Yasuda, Kyoto University; Laurentiu Nastac, The University of Alabama

Wednesday AM

Room: Swan 6
March 18, 2015
Location: Swan

Session Chairs: Hideyuki Yasuda, Kyoto University; Laurentiu Nastac, The University of Alabama

8:30 AM Invited

In-Situ and Time-Resolved Imaging for Knowing Influence of Mg Content on Solidification in Hypereutectic Cast Iron: Hideyuki Yasuda;
1; University of Iowa;
2; GE Global Research

9:20 AM

Convection: A Lattice Boltzmann Model for Dendritic Growth Under Natural

9:20 AM

Suzuki;
1; Kyoto University; 2; IHI Master Metals; 3; Osaka Sangyo University; 4; Osaka University; 5; IHI; 6; JASRI / Spring-8

8:55 AM Invited

Modeling of Microstructure Evolution during Alloy Solidification: Mingfang Zhu;
1; Shiyan Pan;
2; Dongke Sun;
1; Southeast University;
2; Nanjing University of Science and Technology;
1; Shanghai Jiao Tong University

9:20 AM

A Lattice Boltzmann Model for Dendritic Growth Under Natural Convection: Mohammad Hashemi;
1; Mohsen Eshraghi;
2; Sergio Felicelli;
1; The University of Akron;
2; Calvin State University, Los Angeles

9:40 AM

A 3D Numerical Investigation of the Influence of Casting Defects on Channel Segregates: Shyamprasad Karagadde;
1; Lang Yuan;
2; Peter Lee;
1; University of Manchester;
2; GE Global Research

10:00 AM

Novel Tool for Microstructure Prediction of the Investment Castings: Srdjan Milenkovic;
1; Mehdi Rahimian;
1; Ilechat Sabirov;
1; IMDEA Materials Institute

10:20 AM Break

10:40 AM Invited

Simulation of the Columnar-to-Equiaxed Transition due to Dendrite Fragmentation during Alloy Solidification: Mahdi Torabi Rad;
1; Christoph Beckermann;
1; University of Iowa

11:05 AM

Three-Dimensional Grains Envelopes Tracking at the Casting Scale: Saleem Mostabah;
1; Self-Employed

11:25 AM

Modeling of Dendritic Structure and Microsegregation in Solidification of Al-Rich Quaternary Alloys: Ting Dai;
1; Mingfang Zhu;
1; Weisheng Cao;
2; Shuanglin Chen;
1; Jiangsu Key Laboratory for Advanced Metallic Materials, School of Materials Science and Engineering, Southeast University;
2; CompuTherm LLC

Advances in Thin Films for Electronics and Photonics — Functional Materials and Oxides

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Federico Rosei, INRS; Nuggehalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Wednesday AM

Room: Europe 7
March 18, 2015
Location: Dolphin

Session Chair: Fiorenzo Vetrone, INRS

8:30 AM Invited

Analyses of Thin-Films for Electronic and Photonics via Atom-Probe Tomography: David Seidman;
1; Northwestern University

9:00 AM

Characterization and Integration of Printed Flexible Strain Sensors: Amit Pandey;
2; Pooran Joshi;
3; Oak Ridge National Laboratory

9:20 AM Invited

Multilevel Resistive Switching for High Density Non-Volatile Memory Applications: Khatkatkar;
1; Yogesh Sharma;
2; Geetika Khurana;
3; Pankaj Misra;
4; University of Puerto Rico

9:50 AM Break

10:10 AM Invited

Phase Coarsening Phenomena in Thin Film Growth: Ke-Gang Wang;
1; Martin Glicksman;
1; Florida Institute of Technology

10:40 AM Invited

Revisiting ‘Silicon as a Mechanical Material’: Brad Boyce;
1; Sandia National Laboratories

11:10 AM

A Method for Efficient Transmittance Spectrum Prediction of Transparent Composite Electrodes: Zhao Zhao;
1; Aritra Dhar;
2; Terry Alford;
3; Arizona State University

11:30 AM

Lateral Polar Structures Based on III-Nitrides for Second Harmonic Generation in the UV: Ramón Collazo;
1; Marc Hoffmann;
2; Ronny Kirste;
3; Martin Rigler;
4; Joseph Rajan;
5; Seiji Mita;
6; Isaac Bryan;
7; Wei Guo;
8; Dorian Pandey

Session Chairs: Teruyuki Ikeda, Ibaraki University; Sinn-wen Chen, National Tsing Hua University; Francq Gascoin, Eniscaen University of Caen; Stéphane Gorisse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Ce-Wen Nan, National Tsing Hua University; G. Jeffrey Snyder, California Institute of Technology; Hasse Fredriksson, KTH - Royal Institute of Technology; Jacques Lacaze, Ensicaen University of Caen; Stéphane Gorsse, INRS; Nuggehalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

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

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Francq Gascoin, Eniscaen University of Caen; Stéphane Gorisse, Bordeaux INP; Chih-Huang Lai, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Ce-Wen Nan, National Tsing Hua University; G. Jeffrey Snyder, California Institute of Technology; Hasse Fredriksson, KTH - Royal Institute of Technology; Hsin-jay Wu, National Sun Yat-Sen University

Wednesday AM

Room: Europe 5
March 18, 2015
Location: Dolphin

Session Chairs: Teruyuki Ikeda, Ibaraki University; Sinn-wen Chen, National Tsing Hua University

8:30 AM Invited

Combinatorial Approach Using Diffusion Couples as a Tool for the Optimization of Thermoelectric Materials: Philippe Bellanger;
1; Aude Simar;
2; Stéphane Gorisse;
3; Pascal Jacques;
1; Université Catholique de Louvain, IMM, IMAP;
2; ICIMCB-CNRS

Session Chairs: Teruyuki Ikeda, Ibaraki University; Sinn-wen Chen, National Tsing Hua University
Alumina and Bauxite — Red Mud Disposal and Utilisation
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Hans-Werner Schmidt, Outotec GmbH

Wednesday AM  Room:  Southern Hemisphere IV
March 18, 2015  Location:  Dolphin

Session Chair: Benny Raahauge, FLSmidth Minerals

Aluminum Alloys: Casting, Characterization, and Applications — Casting and Solidification
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix, LLC; Tongguang Zhai, University of Kentucky

Wednesday AM  Room: Northern Hemisphere E3
March 18, 2015  Location:  Dolphin

Session Chair: Hiromi Nagaumi, Suzhou Research Institute for Nonferrous Metals

8:30 AM  Invited
Statistical and Thermodynamic Optimization of Trace-element Modified Al-Mg-Si-Cu Alloys:  Stefan Pogatscher; Helmut Antrekowitsch; Marion Werinos; Gunter Rank; Anna Kaiß; Ramona Prillhofer; Jörg Löffler; Peter Uggowitzer;  ETH Zurich; Montanuniversitats Leoben; AMAG rolling GmbH

8:50 AM  Invited
The Influence of Cooling Rate and Alloying Elements on the Microstructure
Refinement of Al-SiFe Alloy: Yulin Liu; Ming Liu; Lei Luo; Li Zhang; Yuhua Zhao; JiJie Wang; Chanzhong Liu;  Shenyang Aerospace University

9:10 AM  Invited
An Alternative Eutectic System for Casting Aluminum Alloys I: Casting Ability and Tensile Properties: Theodoros Koutsoukis; Makhlouf Makhlouf;  Worcester Polytechnic Institute

9:30 AM  Invited
An Alternative Eutectic System for Casting Aluminum Alloys II: Modification of the Eutectic Morphology: Theodoros Koutsoukis; Makhlouf Makhlouf;  Worcester Polytechnic Institute

9:50 AM  Break

10:20 AM  Invited
Role of Solidification Conditions in Determining the Microstructure of Al-Si-Cu Cast Alloys: Agnes Samuel; Saleh Alkahtani; Khaled Abuhasef; Fawzy Samuel;  UQAC; Salman bin Abdulaziz University

10:40 AM  Invited
Microstructure And Tensile Data of a Very Ductile as Cast Al-21%Si-1.5% Ba Hyper-Eutectic Alloys: Mohammad Shamsuzzoha;  University of Alabama

11:00 AM  Invited
Grain Refinement Behavior of Al-Zn-Si Alloy by Inoculation in Hot-Dip Coating: Wangping Peng; Guangxin Wu; Xuan Dai; Jieyu Zhang; Weidong Hu; Guoding Gao; Kuochih Chou;  Shanghai University

11:25 AM  Concluding Comments

Aluminum Reduction Technology — Materials and Equipment
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Lavoie, LMRC

Wednesday AM  Room:  Southern Hemisphere III
March 18, 2015  Location:  Dolphin

Session Chair: Jacques Caissy, Bechtel

8:30 AM  Introductory Comments

8:35 AM  Invited
Improved Efficiency of Red Mud Processing Through Scandium Oxide Recovery: Olga Petrakova; Andrey Panov; Sergey Gorbachev; Gennadiy Klimentenok; Aleksey Perestoronin; Sergey Vishnyakov; Vyacheslav Anashkin;  UC RUSAL;  Uralspromenergoopreokt PLC

8:55 AM  Invited
Enhanced Thermoelectric Properties of Higher Main Group Thallium Tellurides: Quansheng Guo; Hodger Kleineke;  University of Waterloo

9:05 AM  Invited
Diffusion between Mg2Si and Mg2Sn Single Crystals: Qingfeng Xing; T. Riedemann; S. Zhou; W. Tang; T. Lograsso;  Ames Laboratory

9:40 AM  Invited
Preparation and Thermoelectric Properties of Mg5Si12Sn4Ge4 with Doped Ag: Takahiro Isoda; Satoki Tada; Hirofumi Fujii; Haruhiko Udo; Yoshikazu Shinohara;  National Institute for Materials Science;  Mitsuba;  Ibaraki University

10:00 AM  Break

10:20 AM  Invited
Control and Stability of Nanostructures of Thermoelectric Materials: Teruyuki Ikeda;  Ibaraki University

10:45 AM  Invited
Thermal Conductivity in Mg_X (X=Si,Ge, Sn and Pb) from First Principles: Aleksandr Chernatynsky; Simon Philipp;  University of Florida

11:05 AM  Invited
Study of Feasible Dielectric Layers and Conductive Electrodes for Implementation of Magnesium Silicide-Based Miniaturized Thermoelectric Devices: Codrin Prahoveanu; Ana Lacoste; Cédric de Riedemann; S. Zhou; W. Tang; T. Lograsso;  Ames Laboratory

11:25 AM  Concluding Comments

8:55 AM  Invited
External Potshell Insulation: A Multi-Usage Tool in Low Power Pot Operation: Pierre Remy; Martin Segatz; Ingo Eick; Katarzyna Mirek-Sliwa; Ole Johnny Midtun; Jette Hovmand Jørgensen;  Hydro Aluminium

9:20 AM  Invited
The Influence of Cooling Rate and Alloying Elements on the Microstructure
Refinement of Al-SiFe Alloy: Yulin Liu; Ming Liu; Lei Luo; Li Zhang; Yuhua Zhao; JiJie Wang; Chanzhong Liu;  Shenyang Aerospace University

9:40 AM  Invited
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10:00 AM  Break

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11:25 AM  Concluding Comments

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11:25 AM  Concluding Comments
9:00 AM
In-Depth Analysis of Lining Designs for Several 420 kA Electrolytic Cells: Jianfei Zhou1; Marc Dupuis2; Guiyang Aluminum Magnesium Design and Research Institute; 1GéniSim Inc

9:25 AM
Energy Savings Using a Different Anode Rod Design: Ivar Sousa1; 1Alumar - Alcoa

9:50 AM
New ECL Embedded Service Robot: Towards an Automated, Efficient and Green Smelter: Anne-Gaëlle Hoquet1; Jérôme Guerin1; 1ECL

10:15 AM
Primary Aluminium Production is Automation the Key to New Success? Maarten Meijer1; 1Hencen

10:45 AM
Standard Development Work in ISO Technical Committee 226 “Materials for the Production of Primary Aluminium”: Lorenz Peter Lossius1; Raymond E. Brown1; Jean-Claude Fischer1; Harold A. Oye1; Xujin Xue1; Lin Wu1; Nigel Turner1; Andreas Schnittker2; 1Hydro Aluminium AS; 2Alcoa World Alumina; 3R&D Carbon Ltd.; 4NTNU; 5Do-Fluoride Chemicals Co., Ltd.; 6Koppers EU; 7SGL Carbon SE

11:20 AM
Break

8:30 AM
Bioinspired Design of Light-Harvesting J-Aggregate Nanotubes for Sensor Applications: Jyu Fang1; 1University of Central Florida

8:50 AM
Enhanced Biocatalytic Property of Room Temperature Doped Cerium Oxide Nanoparticles: Ankur Gupta1; Soumen Das1; Sudipta Seal1; 1University of Central Florida

9:10 AM
Preliminary In-Vitro Study of Surface Alterations of Subcutaneous Venous Access Ports Exposed to Antipneumatic Drugs and Whole Blood: Maren Fossum1; Emma Strömberg1; Javier Sanchez2; Samuel Rotstein3; Gunilla Björling1; Ragnhild Aune1; 1NTNU; 2Royal Institute of Technology (KTH); 3Karolinska Institutet

9:30 AM
Magnetic Assembly of Bioinspired Composites Exhibiting Bouligand Structure: Wen Yang1; Florian Bouville1; Rafael Libanori1; Andre Studart1; 1ETH Zurich

9:50 AM
Toughening Mechanisms in Naturally-Occurring Helicoidal Composite Materials: Nobphadon Sukhsangpanya1; Michael Jones1; David Ksiaias2; Pablo Zavattieri1; 1Purdue University; 2University of California, Riverside

10:10 AM
Break

10:20 AM
Underwater Attachment and Functional Adaptations of River Loach: Yung-Chieh Chuang1; Guan-Lin Liu1; Po-Yu Chen1; 1National Tsing Hua University

10:40 AM
Synthesis of Biomorphic TiO₂ Using Leaf Vein as Template: Jui-Yi Chen1; Po-Yu Chen1; 1National Tsing-Hua University

11:00 AM
Experimental and Computational Characterization of Delamination Resistant Bio-Laminates: M.D. Nevels1; W.D. Hodo2; P.G. Allison2; A.M. Rajendran3; 1University of Mississippi; 2U.S. Army ERDC

11:20 AM
Biocompatible Graphene Liquid Cells for High Resolution In-situ Imaging of Biological Matters: Torou Shokuhfar1; 1Michigan Technological University

11:40 AM
Behavior of Giant Vesicles in Acoustically-Excited Microchannels: Ata Dolatmorad1; Bilal El-Zahab1; 1Florida International University

Bulk Metallic Glasses XII — Fatigue and Other Properties
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, University of Tennessee
Wednesday AM
Room: Asia 4
March 18, 2015
Location: Dolphin

Session Chairs: Jurgen Eckert, IFW Dresden; Cang Fan, Nanjing University of Science and Technology

8:30 AM Invited
Selective Laser Melting of Metallic Glasses: Jurgen Eckert1; K.G. Prashanth2; S. Scudino3; M. Stoica1; Simon Pauly1; U.-K. Kühl1; 1IFW Dresden; 2TU Dresden; 3IFW Dresden; 4Poltchnov University of Timisoara

8:55 AM
The Fatigue-Property Improvements of Bulk Metallic Glass Substrates with the Existing of Thin-Film Metallic Glasses: Haoling Jia1; Chia-chi Yu1; Weidong Li1; Jinn Chu1; Yanfei Gao1; Peter Liaw1; 1University of Tennessee; 2National Taiwan University of Science and Technology

9:15 AM
Thermal Imaging During Processing of Metallic Glasses: Scott Roberts1; Douglas Hofmann1; 1JPL

9:35 AM Invited
Electron Correlation Microscopy of Bulk-Glass Forming Alloys in the Supercooled Liquid State: Li He1; Matt Kramer1; Matt Besser1; Paul Voyles1; 1University of Wisconsin-Madison; 2Ames Laboratory

10:00 AM
Temperature Evolution in Bulk Metallic Glasses Under Different Loading Conditions: Xie Xie1; Janwei Qiao2; Gongyao Wang1; Yoshikki Yokoyama1; Karin Dahmen3; Peter Liaw1; 1University of Tennessee; 2Taiyuan University of Technology; 3Tohoku University; 4University of Illinois at Urbana Champaign

10:20 AM
Break

10:35 AM Invited
Quantitatively Characterizing the Free-Volume, Interconnecting-Zone and Atomic Cluster in Metallic Glasses: Cang Fan1; C.T. Liu2; P.K. Liaw2; 1Materials Science and Engineering, Nanjing University of Science and Technology; 2Center for Advanced Structural Materials, City University of Hong Kong; 3Materials Science and Engineering, University of Tennessee
10:50 AM Keynote
Study of the Ti-Mo-Nb-Ta-Zr System Using Diffusion Multiples for the Development of Low-Modulus Ti Alloys: Zhangqi Chen1; Ji-Cheng Zhao1; The Ohio State University

11:20 AM
Thermodynamic Reassessment of BaO-YO1.5 System: Chongmao Lin1; Shanghai University

Cast Shop for Aluminum Production — Metal Quality
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pete Forakis, STAS Middle East

Wednesday AM
Room: Northern Hemisphere E4
Location: Dolphin

Session Chair: George English, Ma’aden Aluminium

8:30 AM Introductory Comments

8:35 AM
Development of a LiMCA Methodology for the Measurement of Inclusions at Different Depths in Molten Aluminium: Pierre Le Bruin1; Fabio Taina1; Constellium Technology Center

9:00 AM
Improvements in LiMCA Technology: Introducing the LiMCA III: Thomas Buja1; Daniel Gagnon1; Claude Dupuis1; ABB; Rio Tinto Alcan; Arvida Research & Development Centre

9:25 AM
Evaluating the Metal Cleanliness of Al-Si Casting alloys by Fracture Surface Analysis of K-Mold Samples: Brock Robertson1; Marcos Cardoso; Eulogio Velasco; Superior Industries International Inc.; Corporativo Nemak S.A. de C.V.

9:50 AM
Molten Metal Treatment Improvements at JW Aluminum Used as a Method to Guarantee Metal Quality: Claude Dube1; Dawid Smith1; Brett Hixson1; JW Aluminium; JWAluminium

10:15 AM Break

10:30 AM
The Influence of Melt Charge Materials on Molten Metal Quality at JW Aluminium: Brett Hixson1; Claude Dube1; Dawid Smith1; JW Aluminium

10:55 AM
SIC Particle Detection in Liquid Aluminium via Laser-Induced Breakdown Spectroscopy: Shaymus Hudson1; Diran Apelian1; Robert De Saro1; Joe Craparo1; Worcester Polytechnic Institute; Energy Research Company

11:20 AM
Study of Particle Settling and Sedimentation in a Crucible Furnace: Mark Badowski1; Mertol Goekelma1; Johannes Morscheiser1; Thien Dang1; Pierre Le Bru1; Sebastain Tewes1; Hydro Aluminium; RWTH Aachen; Aleris Rolled Products Germany GmbH; TRIMET Aluminium SE; Constellium Technology Center; Nemak Europe GmbH

11:55 AM
Glassy Magnetostriective Films Prepared by Thermal Spray Method Used for the Torque Sensor: Kenji Amiya1; Masahiro Komaki1; Yasunori Saotome1; Tohoku University; Nakayama T. Amorphous

8:30 AM Keynote
Calphad Methodology Applied to Materials Design of Hypoeutectic Al-Si Cast Alloys: Rainer Schmid-Fetzer1; Song-Mao Liang1; Clausthal University of Technology

9:00 AM Invited
The Role of CALPHAD-Based Tools in an ICME Modeling Infrastructure: Paul Mason1; Kaisheng Wu1; Chao Jiang; Qing Chen; Johan Bratberg1; Anders Engstrom1; Thermo-Calc Software Inc; Thermo-Calc Software AB

9:25 AM
Re-Assessment of the Mo-Nb, Mo-Re, and Nb-Re Binary Systems: Shuchang Wu1; Ki-lin Cheng1; Chuan Zhang2; Shih-kang Lin2; National Cheng Kung University; CompuTherm LLC

9:45 AM
Experimental Investigation of Zn-Zr Binary of Zr-Rich Phase Diagram: Jiujian Luo1; Tian Yin1; Bingyi Bai1; Jiuyu Zhang1; Shanghai University

10:05 AM Break

10:20 AM Keynote
Phase Equilibria and Thermodynamic Data Repository for Efficient CALPHAD Assessments: Ursula Kattner1; Carolyn Campbell1; Robert Chirico1; Alden Dima1; National Institute of Standards and Technology
Wednesday AM  Room: Mockingbird 1  March 18, 2015  Location: Swan

Session Chairs: Sabriye Piskin, Yildiz Technical University; Simona Murph, Savannah River National Laboratory

8:30 AM  Preparation and Characterization of Single Phase Strontium Borate (SrB6O10) by Mineral Sol-Gel Method: Sabriye Piskin1; Nazli Elif Sur1; Ayse Kanturk Figen1; 1Yildiz Technical University, Chemical Engineering Department

8:50 AM  Improvement in Performance of Mg-C Refractories as Lining of Vanadium-Extraction Converters: Weijun Huang1; Xu Lei1; Shuai Zhang1; Min Chen1; 1Northeastern University

9:10 AM  Analysis on Deep Treatment Effect of Coking Wastewater with 3D Electrode Combined Fenton Reagent: Lei Zhang1; 1Wuhan Iron and Steel Company

9:30 AM  Characterization of Steelmaking Desulfurization Slag: Mallikharjuna Bogala1; Mingming Zhang2; Ramana Reddy1; 1The University of Alabama; 2ArcelorMittal Global R&D

9:50 AM  Break

10:00 AM  Development and Characterization of Nanomaterials for Zinc Vapor Capture: Paul Korinko1; Simona Murph1; 1Savannah River National Laboratory

10:20 AM  Separation of Roasted Coating and Core in Double-layered Pellet Roasting For Pretreatment of Sulfur andArsenic-Bearing Gold Concentrate: Tao Jiang1; Xishan Li1; Yongbing Yang1; Qian Li1; Jie Ge1; 1Central South University

10:40 AM  Recovery of Rare Earth Metals form Wasted Magnet by Metals: Yasuke Sudo1; Yuki Kuromiya1; Kazuki Tomiyama1; Shinya Uchiyama1; Takashi Nagai1; 1Chiba Institute of Technology

11:00 AM  A Novel Technology of Producing Manganese Sulfate as By-Product from Low-Grade Pyrolusite: Jing Zhan1; Zhiyan Wang1; Chuanfu Zhang1; Xiang Zhang1; Jian-yan Huang2; 1Central South University; 2Michigan Technological University

11:20 AM  Prediction for the Surface Tension of FeO-TiO2-Ti2O3-X(SiO2, CaO, MgO) Slag Systems: Yanhua Liu1; Xuewei Lv1; Chenguang Bai1; 1School of Materials Science and Engineering, Chongqing University

Wednesday AM  Room: Macaw 2  March 18, 2015  Location: Swan

Session Chairs: Juan Pablo Escobedo-Diaz, University of New South Wales; Sreevamamurthy Ankeni, University of Maryland

8:30 AM  The Influence of Microstructure and Volume Fraction on the Ambient Temperature Creep Deformation Mechanisms of Binary Ti–V Alloys: Zane Wyatt1; R. Prakash Kolli1; Sreevamamurthy Ankeni1; 1University of Maryland

8:50 AM  Elastic and Anelastic Properties of Ti-6Al-4V: Effects of Interstitial Elements: Sarah Driver1; Nicholas Jones1; David Rugg2; Howard Stone1; Michael Carpenter1; 1University of Cambridge; 2Rolls-Royce plc.

9:10 AM  Characterization of a Controlled Texture Tantalum Plate: Thomas Buchheit1; Ellen Cerretta1; Lisa Deibler2; Shuh-Rong Chen1; Joseph Michael1; 1Sandia National Laboratories; 2Los Alamos National Laboratory

9:30 AM  Mechanical Properties of Microstructural Gradients in the Low Solvus High Re refractory (LSHR) Nickel Base Superalloy: Samuel Kuhre1; Babu Viswanathan1; Jay Tiley1; Hamish Fraser1; 1The Ohio State University; 2Air Force Research Laboratory

9:50 AM  Stress Induced Microstructural Evolution in Haynes 282: Kinga Unocie1; Hong Wang1; Peter Tortorelli1; 1Oak Ridge National Laboratory

10:10 AM  Break

10:20 AM  Characterization of Closed-Cell Aluminium Foams Subjected to Compressive Loading: Md Ashraful Islam1; Md Zakaria Quadir1; Paul Hazell1; Gareth Appleby-Thomason2; Juan P. Escobedo-Diaz2; 1UNSW Australia; 2Cranfield University

10:40 AM  Microcompression of Nanocrystalline and Amorphous Tungsten-Based Powders: Emily Huskins1; Zachary Cordero1; Christopher Schuh1; Brian Schuster1; 1US Army Research Laboratory; 2MIT

11:00 AM  Interfacial Structure and Mechanisms of Precipitate Growth in AI-Cu: Laure Bourgeois1; Nikhil Medhekar1; Julian Rosalie1; Andrew Smith1; Matthew Weyland1; Jian-Feng Nie1; Christian Dwyer3; 1Monash University; 2Los Alamos National Laboratory; 3Forschungszentrum Jülich

11:20 AM  Deformation Mechanisms at Varying Temperatures in Alloy 718 Ni-Based Superalloy: Donald McAllister1; Duchao Lv1; Halle Deutchman1; Brian Streich1; Michael Mills1; 1The Ohio State University; 2Honeywell Aerospace

11:40 AM  In Situ Transmission Electron Microscopy and Electron Tomography Investigation of Void Healing in an Aluminum Alloy: Miaoj Song1; Kui Du1; Shengping Wen1; Zuoren Nie1; Hengqiang Ye1; 1Shenyang National Laboratory for Materials Science, Institute of Metals Research, Chinese Academy of Sciences; 2Beijing University of Technology
Computational Modeling and Stochastic Methods for Materials Discovery and Properties —
Computational Materials Design II

Sponsored by: TMS Functional Materials Division (formerly EMPMD),
TMS Materials Processing and Manufacturing Division, TMS
Structural Materials Division, TMS: Chemistry and Physics of Materials
Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca
Tavazza, National Institute of Standards and Technology; Dallas
Trinkle, University of Illinois at Urbana-Champaign; Mikhail Mendeleev,
Ames Laboratory; Adi van Duin, Pennsylvania State University

Wednesday AM
Room: Northern Hemisphere A4
March 18, 2015
Location: Dolphin

Session Chair: Francesca Tavazza, National Institute of Standards and Technology

8:30 AM
Ab Initio Prediction of the Material with Highest Known Melting Point:
Qijun Hong1; Axel van de Walle2; 1CalTech; 2Brown University

8:50 AM
Cooperative and Competing Relations of Structure, Dynamics and
Chemical Bonding in Bulk Metallic Glasses: Reza Mahjoub1; Kevin Laws1;
Michaël Ferry1; 1University of New South Wales

9:10 AM
DFT Analysis of Structure/Property Relations in Room Temperature
Ferroelectrics: Michael Ashton1; Aleksandr Chernatinskiy1; Susan Sinnott1;
1University of Florida

9:30 AM
Molecular Simulation of Ultra-Fast Resistance Switching in
Electrometallization Cells: Optimizing Geometry and Processing
Conditions: Alejandro Strachan1; Nicolas Onofrio1; David Guzman1; 1Purdue
University

9:50 AM Break

10:05 AM
Effects of Grain Size on the Martensitic Phase Transformation of Nano-
Polycrystalline NiAl Shape Memory Alloys via Cooling or Strain:
Keith Morrison1; Mathew Cherukara1; Alejandro Strachan1; 1Purdue
University

10:25 AM
Defect reduced GaN heterostructures: Marisol Koslowski1; Lei Cao1;
1Purdue University

10:45 AM
Cantilever Box-Beam Application of Composite Stacking Sequence
Optimization Using Adaptive Genetic Algorithm: Daniel Gutierrez1;
Roselia Fragoudakis1; Michael Zimmerman1; Anil Saigal1; 1Tufts University

11:05 AM
First-Principles Study of Thermionic Emission from Os-Coated Tungsten
Cathodes: Qunfei Zhou1; Thomas Balk1; Matthew Beck1; 1University of Kentucky

Computational Thermodynamics and Kinetics —
Precipitates

Sponsored by: TMS Functional Materials Division (formerly EMPMD),
TMS Materials Processing and Manufacturing Division, TMS
Structural Materials Division, TMS: Chemistry and Physics of Materials
Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca
Tavazza, National Institute of Standards and Technology; Maryam
Ghazisaeidi, The Ohio-State University; Vidvuds Ozolins, University of California Los Angeles

Wednesday AM
Room: Oceanic 3
March 18, 2015
Location: Dolphin

Session Chairs: Pascal Bellon, University of Illinois; Dane Morgan,
University of Wisconsin - Madison

8:30 AM Invited
Atomistic Modeling of Coarsening Resistance of Nanoprecipitates
Induced by Ion Irradiation: Pascal Bellon1; Xuan Zhang1; Shipeng Shu1;
Robert Averback1; 1University of Illinois

9:00 AM
Earliest Stages of Precipitation in fcc Al-Rich Alloys with Realistic
Compositions: Xi Zhang1; Marcel Sluiter1; 1TU Delft

9:40 AM Invited
Structure and Thermokinetics of Y-Ti-O Precipitates in Nanostructured
Ferritic Alloys: Dane Morgan1; Leland Barnard1; Nicholas Cunningham2; G.
R. Odette2; 1University of Wisconsin - Madison; 2University of California - Santa Barbara

10:10 AM Break

10:25 AM
Interstitial Solutes and Vacancies in α-Fe: Early Stages of Precipitation:
Thomas Schuler1; Maylise Nastar1; 1CEA/SRMP

10:45 AM
Numerical Simulation of Precipitation Kinetics of Radiation-Induced
Phases in Type 316 Austenitic Stainless Steels: Jae-Hyek Shin1; Erwin
Povoden-Karadeniz2; Ernst Kozeschnik2; Brian Wirth2; 1Korea Institute of
Science and Technology; 2Vienna University of Technology; 3University of
Tennessee, Knoxville

11:05 AM
Experimental Determination and Modeling of Carbide Precipitation
Sequences in a 2.25Cr - 1Mo Bainitic Steel during Tempering: Sylvain
Dépino1; Caroline Toffolon-Masclet1; Anne-Françoise Gourgues-Lorenzon2;
Ernst Kozeschnik2; Bernard Marini1; François Roch1; 1CEA; 2Mines ParisTech;
1Vienna University of Technology; 2AREVA
Constitutive Response and Modeling of Structural Materials: An SMD Symposium in Honor of G.T. Gray Ill’s 60th Birthday — Deformation and Damage Evolution

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

Program Organizers: Neil Boume, University of Manchester; Eric Brown, Los Alamos National Laboratory; James Williams, Ohio State University; Kenneth Vecchio, University of California - San Diego

Wednesday AM

Room: Asia 2

Location: Dolphin

Session Chairs: J uan Pablo Escobedo, University of New South Wales; Oana Cazacu, University of Florida

8:30 AM

Comparison of a New Sin-Hyperbolic Creep Damage Constitutive Model with the Classic Kachanov-Rabotnov Model Using Theoretical and Numerical Analysis: Mohammad Shafinul Haque1; Calvin Stewart1; 1University of Texas El Paso

8:50 AM

Atomic Simulation of Spall Strength and Damage Evolution in Shocked Single and Polycrystalline Tantalum: Eric Hube1; Tane Remington1; Diego Tramontini1; Bruce Remington1; Ramon Ravelo1; James Hammerberg1; Timothy Germain1; Marc Meyers1; 1University of California San Diego; 2Lawrence Livermore National Laboratory; 3Los Alamos National Laboratory

9:10 AM

Finite Element Analysis of the Dynamic Crush Response of TRIP Steel Crush Tubes for Crashworthiness: Christopher Kohar1; Mohammed Cherkao1; Hadi Mamlad1; Anders Jurfors1; 1Jonkoping University

9:30 AM

Micro-Crack Initiation in High-Silicon Cast Iron during Tension Loading: Kervin Amiris Kasvayee1; Ehsan Ghassemali1; Anders Jurfors1; 1University of Waterloo; 2Georgia Institute of Technology; 3Mississippi State University

10:30 AM

Characterization and Prediction of Severely Deformed Titanium at High Temperatures: Seyedehad Sahidahf1; Kambiz Shojaei1; G. Gavan Lapic1; 1Ozaygin University

10:50 AM

Dynamic Behaviour of a Metastable Austenitic Stainless Steel After Low Rate Deformation: Matti Isakov1; Michael May1; Stefan Hiera1; Veli-Tapani Kuokkala1; 1Tampere University of Technology; 2Fraunhofer EMI

11:10 AM

Anisotropy in the Transformation Dynamics of Austenite (B2) to Martensite (B19’): Associated with Superelasticity in NiTi: Sourav Gur1; Venkateswarao Rao Mangala1; Stefan Bringuier1; Krishna Muralidharan1; Frantzikonis George1; 1University of Arizona

11:30 AM

Influence of Hydrostatic Pressure on Yield and Deformation in Infiltrated Ceramic Particle Reinforced Metals: M. Gabriella Tarantino1; Ludger Weber1; Andreas Mortensen1; 1Ecole Polytechnique Federale de Lausanne (EPFL)

11:50 AM

Inelastic Response of Boron Carbide to Quasi-Static Knoop Indentation: Jerry Lasalva1; Vladislav Domnich1; Scott Wake1; Jonathan Lidga1; Brian Schuster1; 1U.S. Army Research Laboratory; 2Rutgers University

Development of “Weak Links” during the Processing of Metallic Materials — Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Lee Semiatin, US Air Force Research Laboratory; Anthony Rollett, Carnegie Mellon University; Thomas Bieler, Michigan State University; Mark Stoudt, National Institute of Standards and Technology

Wednesday AM

Room: Peacock

Location: Swan

Session Chair: Louis Hector, General Motors Corporation

8:30 AM Invited

Developing Statistical Descriptions of Defect-Mediated Structure-Properties Relationships in Metals: Corbett Battalle1; Brad Boyce2; Luke Brewer2; Jay Carroll1; Blythe Clark1; John Emery1; Richard Field1; James Foulk1; Hojun Lim1; 1Sandia National Laboratories; 2Naval Postgraduate School

9:00 AM Invited

Dynamic Damage Evolution at Interfaces in Cu and Its Alloys: Ellen Cerveta1; Saryu Fensin1; Carl Trujillo1; George Gray1; 1Los Alamos National Laboratory

9:30 AM Invited

(Meso)scoping) Driving Forces for Crack Turning in Hard Aluminum Alloys: Armand Beaudoin1; Mark Messner2; Robert Dodds1; 1University of Illinois at Urbana-Champaign; 2Lawrence Livermore National Laboratory

10:00 AM Break

10:15 AM

A Study on Forming Limit Diagram Using a Self-Consistent Crystal Plasticity Model: Youngung Jeong1; Minh-Son Pham2; Mark Iadicola1; 1Adam Creuziger1; 2National Institute of Standards and Technology

10:35 AM

Effect of Grain Size and Grain Boundary Microstructure on Fatigue Crack Nucleation in FCC Polycrystalline Materials: Li Ma1; Mark Stoudt1; Lyle Levine1; Jeffrey Fong1; 2NIST

Drying, Roasting, and Calcining of Minerals — Drying and Calcining

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

Program Organizer: Thomas Battle, Midrex Technologies

Wednesday AM

Room: Grand Harbor Salon 3

Location: Yacht & Beach

Session Chairs: Neale Neelameggham, Ind LLC; James Sever, Alpha Omega Engineering

8:30 AM Introductory Comments

8:50 AM

Optimization on Drying of CuCl Residue by Hot Air Using Response Surface Methodology: Zhanyong Guo1; Shaohua Ju1; Jinhui Peng1; 1Kummimg University of Science and Technology

9:10 AM

Application of Kumera Steam Dryers in Mineral Processing: Carl-Gustav Berg1; Shaolong Chen1; Hannu Mansikka1; 1Kumera Corporation

9:30 AM

Dielectric Properties and Microwave Drying Characteristics of CICI Residue: Zhanyong Guo1; Shaohua Ju1; Jinhui Peng1; 1Kumming University of Science and Technology
9:50 AM
Moisture Dependent Dielectric Properties and Microwave Drying Behavior of Zirconium Hydroxide: Aiyouan Ma1; Zheng Xuemei1; Zhong Libo1; Peng Jianhui1; Li Shiwai1; Zao Yonggang1; 1Yunnan Provincial Key Laboratory of Intensification Metallurgy, Key Laboratory of Unconventional Metallurgy, Ministry of Education

10:00 AM Break

10:30 AM
Optimization of Microwave Drying of Salt with Response Surface Methodology: Bao Wang1; Bo Zhang1; Hui Peng1; Guo Liu1; Ying Xia1; Qiang Li1; 1Kunming University of Science and Technology

10:50 AM
The Impact of Calcination Conditions on Production of Magnesium by the Magnatherm Process: James Sever1; 1Alpha / Omega Engineering

11:10 AM
Calix Calciner, a Green Application in the Production of Magnesium: James Sever1; 1Alpha / Omega Engineering

11:30 AM
Modeling and Design of Experiment in Calcination of Magnesites: Bijoy Chakrabarti1; 1National Institute of Foundry & Forge Technology

11:50 AM
Study on Effect of Untreated and Calcined Olivine on Low Silicon Pellet Production Process and Quality: Gele Qing1; Keng Wu1; Yingchang Yu1; Yunqing Tian2; 1University of Science and Technology Beijing; 2Shougang Research Institute of Technology

Dynamic Probing of Microstructure Evolution in Nanostructured Materials — Low Dimensional Materials
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Nan Li, Los Alamos National Laboratory; Caizhi Zhou, Missouri University of Science and Technology; Dan Gianola, University of Pennsylvania; Marc Legros, CEMES-CNRS

Wednesday AM Room: Mockingbird 2
March 18, 2015 Location: Swan
Session Chairs: Yong Zhu, North Carolina State University; Sanjit Bhowmick, Hysitron

8:30 AM Invited
Coupled Imaging, Structural and Mechanical Characterization of Nanomaterials: Xiaodong Li1; 1University of Virginia

9:00 AM
Effect of Defect Density on the Size Dependent Fracture Strength of Silicon Carbide Nanowires: Yong Zhu1; Guangming Cheng1; Qingguan Qin1; Tzu-Hsuan Chang2; Hanchen Huang2; 1North Carolina State University; 2Northeastern University

9:20 AM
In Situ Electromechanical Characterization of ZnO and Si Nanowires: Sanjit Bhowmick1; Douglas Stauffer1; Ryan Major1; Oden Warren1; S.A. Syed Asli1; 1Hysitron Inc.

9:40 AM
Radiation Effects on Nanomechanics of Low Dimensional Carbon Systems: Joseph Wallace1; Lin Shao1; 1Texas A&M Nuclear Engineering

10:00 AM Break

10:20 AM
Improving the Controllability of Plastic Deformation of Submicron Sized Aluminum by Introducing Alloy Atoms: Zhangjie Wang1; Junhai Xia1; Simon Ringer1; Zhwei Shan1; 1Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; 2School of Aerospace, Mechanical & Mechatronic Engineering, The University of Sydney; 3Australian Centre for Microscopy & Microanalysis, and School of Aerospace, Mechanical & Mechatronic Engineering, The University of Sydney

10:40 AM
Plastic Behavior of Single Crystal Gold Pillars up to the Micron Scale by Coarse-Grained Simulation: Shouzi Xu1; Rui Che2; Liming Xiong3; David McDowell1; Youping Chen2; 1Georgia Institute of Technology; 2University of Florida; 3Iowa State University

Electrode Technology for Aluminum Production — Anode Rodding and Inert Anodes
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Arne Ratvik, SINTEF

Wednesday AM Room: Southern Hemisphere II
March 18, 2015 Location: Dolphin
Session Chair: Egil Skybakmoen, SINTEF

8:30 AM Introductory Comments

8:35 AM
Anode Stub 3D Inspection System: Jean-Pierre Gagne1; Harold Fenette2; Pascal Côté2; René Minville1; Rémi St-Pierre1; 1STAS; 2Alcoa Canada

9:00 AM
Determination of the Microstructural Creep Properties of Cast Iron Connector at High Temperatures for the Prediction of the Thermomechanical Behavior of Anodic Assemblies: Dmitry Lukovnikov1; Dany Racine1; Daniel Marceau1; Rimma Zhelateleva1; Denis Larroche1; David Balloy1; 1University Research Centre on Aluminium (CURAL) - University of Québec at Chicoutimi; 2ARDC Rio Tinto Alcan; 3Laboratoire de Mécanique de Lille, École Centrale de Lille

9:25 AM
Development of a New Approach to Increase the Electrical Performance of Anodic Assemblies: Simon-Olivier Tremblay1; Daniel Marceau1; Duygu Kornyö5; Charles-Luc Lagaëcé6; Jules Côté6; 1CURAL-REGAL-UQAC; 2CURAL-REGAL-UQAC; 3Aluminerie Alouette Inc

9:50 AM
On the Evolution of Steel Stub Thermo-Physical and Thermomechanical Properties during Operational Stage of Anodic Assemblies: Dmitry Lukovnikov1; Dany Racine1; Daniel Marceau1; Rimma Zhelateleva1; László Kisa1; Denis Larroche1; David Balloy1; 1University Research Centre on Aluminium (CURAL) - University of Québec at Chicoutimi; 2ARDC Rio Tinto Alcan; 3Laboratoire de Mécanique de Lille, École Centrale de Lille

10:15 AM Break
11:20 AM
Application of Grey Relational Analysis for Corrosion Rates of Inert Anodes in Aluminum Electrolysis: Qingwei Qin; Yanling Xu; Jianhong Yang; Xin Zheng; ’Wuhan University of Science and Technology

Energy Technologies and Carbon Dioxide Management Symposium 2015 — Metal Processing/ Molten Salt/ Electrochemistry
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS; Energy Committee
Program Organizers: Animesh Jha, University of Leeds; Brajendra Mishra, Colorado School of Mines; Eric Peterson, Idaho National Lab; Cong Wang, Northeastern University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Lab; Li Li, Cornell University

Wednesday AM
Room: Grand Harbor Saloon 4
March 18, 2015
Location: Yacht & Beach

Session Chairs: Animesh Jha, University of Leeds; Donna Guillen, Idaho National Laboratory; Li Li, Cornell University; Shulan Wang, Northeastern University

8:30 AM
Energy Efficient Separation of Magnetic Alloy from the Carbothermic Reduction of Nakwa Cu-Co Concentrates: Yotamu Hara; Animesh Jha; ’Leeds University

8:50 AM
LCA Evaluation for Different Treatment Processes of Nickel Laterite Ore: Hongxu Li; Shuai Wang; Lifeng Zhang; Chao Li; Xiangxin Hao; ’University of Science and Technology

9:10 AM
Low Temperature Sulphidization of Cu-Co Slag in the Presence of Calcium Sulphide: Yotamu Hara; Animesh Jha; ’Leeds University

9:30 AM
The Effect of The Concentration of HF on The Electrical Parameters of Metal-Porous Silicon Direct Hydrogen Fuel Cell: Cigdem Oruc Lus; Emine Agcabay; ’Yildiz Technical University

9:50 AM
A Kinetic Analysis of Acid Leaching of Niobium and Zirconium from Titania Waste Residue Stream: Animesh Jha; Stephen Sutingfie; ’University of Leeds; ’Huntsman Tioxide

10:10 AM Break

10:30 AM
The Optimization Formula Design of CuZn(1-\(x\))O Infrared Radiation Material and Coating Shurry: Yuhao Ding; Hao Bai; Chao Lian; Wei Wei; Wenquan Liu; ”University of Science and Technology Beijing; ’State Key Laboratory of Advanced Metallurgy; ’China Metallurgical Industry Planning and Research Institute

10:50 AM
The Role of Austenitizing Routines of Pipe Steels during CCS: Anja Pfennig; ’HTW Berlin

11:10 AM Invited
Design of 3D Nanowire Architectures and Piezocatalysis effect for Efficient Electrochemical Processes: Xiaodong Wang; ’University of Wisconsin - Madison

11:30 AM
Evaluation of Surface Tension for the NaNO\(_3\)-KNO\(_3\)-Ca(NO\(_3\))\(_2\) System and Its Sub-System: Jifang Xu; Jingjing Zhao; Jixu Wang; Jianchao Li; Kang Wan; ’Soochow University; ’Shanghai University; ’Vocational and Industry Institute of Hebei

11:50 AM Invited
From Waste to Energy Storage Materials Through High Temperature Molten Salt Technologies: Dihua Wang; Huayi Yin; ’Wuhan University

12:10 PM Invited
New Trend of Molten Salt Electrolysis: Preparation of Titanium Carbide-Derived Carbon: Shulan Wang; Chaopin Wan; Ziyou Yu; Xuan Liu; Li Li; ’Northeastern University; ’Northeastern University; ’Carnegie Mellon University; ’Cornell University

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Plenary Session I
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday AM
Room: Grand Harbor North Ballroom
March 18, 2015
Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chair: Brajendra Mishra, Colorado School of Mines

8:30 AM Introductory Comments

8:40 AM Plenary
Global Materials Resource Challenges (Opportunities) for the 21st Century: Divran Apelian; ’Worcester Polytechnic Institute

9:10 AM Plenary
Sustainability Using Biotechnology for the Chemical Industries: June Wispelwey; ’AIChe

9:40 AM Plenary
Sustainability: A Business Imperative, Not a Moral Sacrifice: Behrooz Fattahi; ’SPE

10:10 AM Break

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Advanced Automotive Design
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday AM
Room: Asbury A
March 18, 2015
Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chair: Neale Neelameggham, Ind LLC

10:30 AM Introductory Comments

10:35 AM
Multi-Material Light Weight Vehicle (MMLV) – Powertrain Materials: Matthew Zalusce; Wolfram Buschhaus; Hong Jiang; John Sabo; Mike Barry; ’Ford Motor Company; ’Magna International; ’BASF
Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — Crack Propagation and Low Cycle Fatigue

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Wednesday AM  
Room: Australia 3  
Location: Dolphin

Session Chairs: Tongguang Zhai, University of Kentucky; Daolun Chen, Ryerson University

8:30 AM Keynote

Low Cycle Fatigue of Aluminum-Silicon Alloys for Power-Train Applications: Sugrib Shaha; Frank Czerwinski; Wojciech Kasprzak; Jacob Friedman; Daolun Chen; Ryerson University; CannnetMATERIALS, Natural Resources Canada

9:10 AM Invited

Low Cycle Fatigue of Nickel-Base Superalloy René 88DT: J.C. Stinville; M.P. Echlin; W. Lenthe; T.M. Pollock; University of California Santa Barbara

9:35 AM

Prediction of Paris’ Law Parameters Using Continuum Damage Mechanics: Nicola Bonora; Gentile Domenico; Italo Persechino; University of Cassino

9:55 AM

Simulation of Fatigue Crack Deviation in AA7050 T7651 Al Alloy Thick Plates: Lin Yang; Yan Jin; Tongguang Zhai; University of Kentucky

10:15 AM Break

10:35 AM Invited

High-Resolution EBSD, Image Correlation, and Crystal Plasticity Analysis Near Propagating Fatigue Cracks in Single- and Bi-Crystals of Al-Cu Alloys: Jacob Hochhalter; Thomas Hardin; vipul Gupta; Eric Horner; NASA Langley Research Center

11:00 AM

Investigating the Plastic Zone at the Tip of a Crack: A 3D Diffraction and Imaging Study Using Synchrotron X-rays: Jason Williams; Sudhanshu Singh; Peter Kenesei; John Almer; Xianghui Xiao; Francesco De Carlo; Nikhilesh Chawla; Arizona State University; Advanced Photon Source, Argonne National Laboratory

11:20 AM

Effects of Strain Amplitude, Cycle Number and Orientation on Low Cycle Fatigue Microstructures in fcc Materials Studied by Electron Channeling Contrast Imaging: Jens Nellessen; Stefanie Sandlöbes; Dierk Raabe; Max-Planck-Institut für Eisenforschung GmbH

Friction Stir Welding and Processing VIII — Friction Stir Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory

Wednesday AM  
Room: Northern Hemisphere A3  
Location: Dolphin

Session Chairs: Richard Fonda, Naval Research Laboratory; Hidetoshi Fuji, Osaka University

8:30 AM Invited

Friction Stir Processing to Improve the Fatigue Properties of Steel: Saumyadeep Jana; Glenn Grant; Rajiv Mishra; Blair Carlson; Pacific Northwest National Laboratory; University of North Texas; General Motors R&D Center

8:50 AM

Friction Stir Processing of Direct-Metal-Deposited 4340 Steel: Bharat Jashthi; Todd Curtis; Christian Widener; Michael West; Matthew Carriker; Ashish Dasgupta; Robert Raokolainen; South Dakota School of Mines and Technology; Focus: HOPE; Chrysler Group LLC

9:10 AM

Effect of Carbon Nanotube Orientation on Mechanical Properties of Carbon Nanotube Reinforced Aluminum Matrix Composites: Z.Y. Ma; Z.Y. Liu; B.L. Xiao; Institute of Metal Research, Chinese Academy of Sciences

9:30 AM Invited

Laser-Assisted Friction Stir Processing for Controlling Microstructural Evolution in Mg-4Y-3Nd Alloy: Niles Kumar; Rajiv Mishra; Raymond Brennan; Kevin Doherty; Kyu Cho; University of North Texas; U.S. Army Research Laboratory

9:50 AM Break

10:10 AM

Manufacturing a Surface Composite Material Made of Nanoceramic Particles of TiC and Aluminum Alloy 7075 by Means of Friction Stir Processing: David Verdura; Pilar Rey; Felipe Garcia; Rocio Saldaña; AIMEN; COMIMSA

10:30 AM

Microstructural Evaluation of Cold Spray Deposited WC with Subsequent Friction Stir Processing: Tom Peer; Alexander Galloway; Tiziana Marocco; Naveed Iqbal; University of Strathclyde; TWI

Frustrated Ferroic Materials — Strain Glasses

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee

Program Organizers: Michael Manley, Oak Ridge National Laboratory; Raymundo Arroyave, Texas A & M University; Navdeep Singh, University of Houston

Wednesday AM  
Room: Europe 1  
Location: Dolphin

Session Chairs: James Monroe, Texas A&M University; Turab Lookman, Los Alamos National Laboratory

8:30 AM Invited

Strain Glass as A New Class of Smart Materials: Xiaobing Ren; National Institute for Materials Science
9:00 AM Invited
The Influence of Doping in Martensite on the Strain Glass Transition: 
Hongxiang Zong1; Dezhen Xue1; Xiangdong Ding1; Turab Lookman1; Jun Sun1; 
‘Xi’an Jiaotong University; ‘Los Alamos National Laboratory

9:20 AM
Defect Strength and Strain Glass State in Ferroelastic Systems: Dong 
Wang1; Duchao Lv2; Yipeng Gao2; Xiaobing Ren2; Yunzhi Wang2; 
‘Xi’an Jiaotong University; ‘The Ohio State University; ‘National Institute for 
Materials Science

9:40 AM Invited
Glassy Behavior in Ferroics: A Network-Like Description for Martensite 
Glass: Turab Lookman1; ‘Los Alamos National Laboratory

10:00 AM Break

10:30 AM
Direct Evidence for Local Symmetry Breaking during a Strain Glass 
Transition: Jonei Zhou; Dezhen Xue1; Xiangdong Ding1; Jun Sun1; Kazuhiro 
Otsuka; Xiaobing Ren2; ‘Xi’an Jiaotong University; ‘National Institute for Materials Science

10:50 AM
Evolution of Spontaneous Transition from Strain Glass State in Ti-Ni 
Alloy: Yuanchao Ji1; Xiaobing Ren2; Kazuhiro Otsuka1; ’Xi’an Jiaotong University; 
‘National Institute of Materials Science

11:10 AM
Slow Dynamics of Strain Glass: Aging, Scaling, Memory and Rejuvenation: 
Dezhen Xue1; Turab Lookman1; Xiaobing Ren2; ‘Los Alamos National Laboratory; ‘State Key Laboratory for Mechanical Behavior of Materials, 
Xi’an Jiaotong University

11:30 AM
Heterogeneous Networks in Defect-Induced Ferroelastic/Martensite 
Glass: Hongxiang Zong1; Xiangdong Ding1; Turab Lookman1; Dezhen Xue1; 
Yumei Zhou1; Xi’an Jiaotong University; ‘Los Alamos National Laboratory

High-Entropy Alloys III — Other Properties I
Sponsored by: TMS Structural Materials Division, TMS: Mechanical 
Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao 
Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside

Wednesday AM Room: Oceanic 5
March 18, 2015 Location: Dolphin

Session Chairs: Ralph Spolenak, ETH Zurich; Hongbin Bei, Oak 
Ridge National Laboratory

8:30 AM Invited
Refractory High Entropy Alloys - Size, Grain Boundaries and High 
Temperature: Ralph Spolenak1; ‘ETH Zurich

8:50 AM
Stability of High Entropy Alloys for Use in Next Generation of Nuclear 
Reactors: Simon Middleburgh1; Daniel King1; Gregory Lumpkin1; Lyndon 
Edwards1; Michael Cortie2; ‘Australian Nuclear Science and Technology 
Organisation; ‘University of Technology

9:10 AM
Al-Co-Cr-Fe-Ni Phase Equilibria and Properties: Zhi Tang1; Oleg Senkov2; 
Chuan Zhang1; Fan Zhang1; Carl Lundin1; Peter Liaw1; ‘The University of 
Tennessee; ‘Air Force Research Laboratory; ‘CompuTherm LLC

9:30 AM Invited
In-Situ Deformation and Microstructure Determination of High Entropy 
Alloys: Hu Yang; Hui Xing; Jian Min Zuo1; ‘University of Illinois

9:50 AM
Fatigue Behavior of an Al0.1CoCrNiFe High Entropy Alloy: Bilin Chen1; 
Xie Xie1; Shuying Chen1; Ke An1; Peter Liaw1; ‘University of Tennessee; ‘Oak 
Ridge National Laboratory

10:10 AM Break

10:25 AM Invited
Investigating the Onset of Plasticity in a FeCrNiCoMn High Entropy 
Alloy Using Nano-Indentation Technique: Dong Wu1; Chao Zhu1; T.G. 
Nieh1; ‘University of Tennessee

10:45 AM Invited
Flow and Fracture Behavior of a High Entropy Alloy: Yong Zhang1; 
Peter Liaw2; John Lewandowski2; ‘University of Science and Technology; 
‘University of Tennessee; ‘Case Western Reserve University

11:05 AM
Phase Equilibrium, Microstructure, and High Temperature Oxidation 
Resistance of Refractory High-Entropy Alloys: Bronislava Gorr; Hans-
Juergen Christ1; Daniel Schliefpake2; Martin Heilmaker2; ‘University Siegen; 
‘Karlsruher Institut fuer Technologie

11:25 AM Invited
Sigma Phase Formation in High Entropy Alloys: Ming-Hung Tsai1; 
‘National Chung Hsing University

11:45 AM Invited
Single Crystal Plasticity of Multi-Component Equiatomic Solid Solution 
Alloys: Hongbin Bei1; Yanfei Gao2; Easo George2; ‘Oak Ridge National 
Laboratory; ‘The University of Tennessee; Oak Ridge National Laboratory

High-Performance Aerospace Alloys Design Using 
ICME Approach — Session V
Sponsored by: TMS Materials Processing and Manufacturing Division, 
TMS: Integrated Computational Materials Engineering Committee
Program Organizer: Awadh Pandey, Pratt & Whitney; Somnath 
Ghosh, Johns Hopkins University; Dongsheng Li, Pratt & Whitney

Wednesday AM Room: Oceanic 6
March 18, 2015 Location: Dolphin

Session Chair: Dongsheng Li, Pratt & Whitney

8:30 AM Invited
Uncertainty Quantification of bcc Fe Single Crystal Plasticity Using 
Multi-Model Analysis: Aaron Tallman1; Joel Blumer1; Sankar Narayanan1; 
Zhi Zeng1; Yan Wang1; Ting Zhu1; David McDowell2; ‘Georgia Institute of 
Technology

9:00 AM
Implementation of the Co-Ta System for the Modeling of Co-Rich 
Superalloys: Shengyen Li1; Eric Lasl2; Ursula Kattner1; Carelyn Campbell2; 
‘National Institute of Standards and Technology

9:20 AM
Through-Process Modeling for Al Alloy Design and Process Optimization 
for Cold Spray Processing: Danielle Belsito1; Baillie McNally2; Victor 
Champagne2; Richard Sisson2; ‘Worcester Polytechnic Institute; ‘U.S. Army 
Research Laboratory

9:40 AM
Investigation on Microstructures and Properties of Ti-Al-Cr-Fe-V-Zr 
Alloy: Dong Li1; Cheng-Lin Li1; Song-Xiao Hui1; Wen-Jun Ye1; ‘General 
Research Institute for Nonferrous Metals

10:00 AM
Electronic Structure of Solute Strengthened (001) Anti-Phase Boundary 
of Co3(Al, TM) (TM=Ta, Ti and W) L10 Phase: William Wang1; Shunli 
Shang1; Yi Wang1; Fei Xue2; Xidong Hui1; Qiang Feng2; Zi-Kui Liu2; ‘The 
Pennsylvania State University; ‘University of Science and Technology Beijing
### High-Temperature Electrochemistry II — Corrosion and Molten Salt Science
**Sponsored by:** TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Hydrometallurgy and Electrometallurgy Committee
**Program Organizers:** Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

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<th>Time</th>
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<td>Wednesday AM</td>
<td>Boyd Davis</td>
<td>Kingston Process Metallurgy Inc.</td>
<td>Grand Harbor Salon 2</td>
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- **9:30 AM** Invited
  - *Electrochemical Separation of Dy and Nd from Nd Magnet Scrap in a Molten LiCl-KCl Eutectic: Hirokazu Konishi*; Hideki Ono; Eiichi Takeuchi; Toshiyuki Nohira; Tetsuo Oishi; Osaka University; Kyoto University; National Institute of Advanced Industrial Science and Technology

- **9:40 AM** Invited
  - *Electrochemistry of Multi-Lanthanide (Gd and La) Mixtures in Molten LiCl-KCl Eutectic: Devin Rapplsey*; Michael Simpson; University of Utah

- **9:50 AM** Invited
  - *Electrochemical and Temperature Durability of Nickel/Zirconia Electrodes at High Humidity Levels at High Temperature: Olga Marina*; Pacific Northwest National Laboratory

- **10:00 AM** Invited
  - *Oxidation Induced Aluminum Depletion and Lifetime Prediction of Co Based Coating Alloys: S. Salam*; Y.-D. Zhang; H.-F. Wang; C. Zhang; Z.-G. Yang; Tsinghua University

- **10:10 AM** Break

### High-Temperature Systems for Energy Conversion and Storage — Solid Oxide Fuel Cell: Recent Developments II
**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
**Program Organizers:** Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Amit Shyam, Oak Ridge National Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

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<tr>
<td>Wednesday AM</td>
<td>Paul Ohodnicki</td>
<td>National Energy Technology Laboratory</td>
<td>Grand Harbor Salon 1</td>
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</tbody>
</table>

- **8:30 AM** Introductory Comments

- **8:40 AM** Invited
  - *In-Operando XRD of LSCF Cathodes in Humid Air during 700+ h Anode-Supported SOFC Tests: John Hardy*; Jared Templeton; Chris Coyle; Jeff Stevenson; Pacific Northwest National Laboratory; Washington River Protection Services

- **9:05 AM** Invited
  - *Evaluating Electrophoretically Deposited Cu-Mn-O Spinel Coatings on Stainless Steel Substrates Used in Solid Oxide Fuel Cell Interconnects: Michael Galbo*; Kyung-Joong Yoon; Uday Pal; Srikanth Gopalan; Sonamder Basu; Boston University

- **9:40 AM** Invited
  - *Oxidation Induced Aluminum Depletion and Lifetime Prediction of Co Based Coating Alloys: S. Salam*; Y.-D. Zhang; H.-F. Wang; C. Zhang; Z.-G. Yang; Tsinghua University

- **10:05 AM** Break

- **10:25 AM** Invited
  - *Durability of Nickel/Zirconia Electrodes at High Humidity Levels at High Temperature: Olga Marina*; Pacific Northwest National Laboratory

### Integrative Materials Design II: Performance and Sustainability — Integrated Design for Fatigue and High Temperature Performance
**Sponsored by:** TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Materials and Society Committee
**Program Organizers:** Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

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<td>Wednesday AM</td>
<td>Michael Sangid</td>
<td>Purdue University</td>
<td>Grand Harbor Salon 8</td>
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- **9:20 AM** Invited
  - *Understanding Damage Mechanisms in Nickel Alloy Disc Rotors: Mark Hardy*; Stephen Williams; Daniel Child; Robert Goetz; Christos Argyrakis; Rolls-Royce plc; Rolls-Royce Corporation

- **9:45 AM** Invited
  - *Residual Stress and Long-Term Material Performance in Sustainment and Design: Michael Hill*; University of California, Davis

- **10:05 AM** Invited
  - *On Possible Linkages between Microstructural Distribution and Structural Design Allowables: Rajiv Mishra*; University of North Texas

- **10:55 AM** Invited
  - *Elevated Temperature Exposure Effects on Limiting Fatigue Life of Sheet Ti6242S: Reji John*; W. Porter; Norman Schelh; Adam Pilchak; Dennis Buchanan; Sushant Jha; Kumar Jata; Air Force Research Laboratory; University of Dayton Research Institute; Universal Technology Corporation

- **11:20 AM** Invited
  - *Fracture and Fatigue Reliability Predictions for Crack Bridging Materials: Jamie Kruzic*; Oregon State University

- **11:45 AM** Invited
  - *Microstructure Dependent Determination of Fatigue Crack Initiation and Scatter in Polycrystalline Materials: Saiukumar Yeraguppally*; Michael Sangid; Mark Hardy; Michael Glavicic; Purdue University; Rolls-Royce PLC; Rolls-Royce
8:30 AM
The Effects of Plastic Anisotropy in Warm and Hot Forging of Mg Sheet
Materials: Eric Taleff; Aravindha Antoniswamy; Alexander Carpenter; Emre Yavuz;
1; The University of Texas at Austin; 2; Intel Corporation; 3; Southwest Research Institute
8:50 AM
Studies on the Magnesium Alloys Cladding In the Plastic Forming Processes (Die Forging and Extrusion) Using as the Clad Layer Corrosion Studies on the Magnesium Alloys Cladding In the Plastic Forming Research Institute
Hengqiang Ye
Weisheng Cao2; Alan A. Luo 1;  1The Ohio State University; 2CompuTherm
9:10 AM
Deformation Behavior of Rolled Magnesium Slabs and Twin Roll Cast Strips Studied by the Acoustic Emission Technique: Patrik Dobron; Dura Drozdenko; Jan Bohlen; Dietmar Letzig; František Chmelík; 1; Charles University in Prague; 2; Helmholtz-Zentrum Geesthacht
9:30 AM
Effect of Initial Microstructures on Cold-Rollability of RE-Free Magnesium Alloys: Young Min Kim1; Su Mi Jo2; Jun Ho Bae1; Bong Sun You1;
1; Korea Institute of Materials Science; 2; Korea University of Science and Technology
9:50 AM
Effect of Heat Treatment on Microstructure and Damping Capacity of Twin Roll Cast ZK60 Strip: Hongmei Chen1; Qianhao Zang1; Jing Zhang1;
1; Institute of Metal Research, Chinese Academy of Sciences; 2; Nagaoka University of Technology
10:10 AM Break
10:30 AM
Effects of Texture and Alloying Elements on Stretch Formability of Mg Alloy Sheets: Byeong-Chan Suh1; Jae H. Kim1; Jun Ho Bae2; Nack J. Kim1;
1; Graduate Institute of Ferrous Technology (GIFT), POSTECH; 2; Korea Institute of Materials Science (KIMS)
10:50 AM
Progress in Thermodynamic Database Development for ICME of Mg Alloys: Rainer Schmid-Fetzer1; 1; Clausthal University of Technology
11:10 AM
Simulation of Concurrent Precipitation of Two Strengthening Phases in Magnesium Alloys: WeiHua Sun1; Chuan Zhang1; Andrew D. Klamer1;
1; the Ohio State University; 2; CompuTherm LLC
11:30 AM
Strengthening Mechanisms in Mg97Zn1Y2 Alloys: Zhiqiang Yang1; Hengqiand Ye1; 1; Institute of Metal Research

8:30 AM
Development of Thin-Walled Magnesium Alloy Extrusions for Improved Crash Performance Based Upon Texture Control: Bruce Williams1; Sean Agnew2; Robert Klein2; Jonathan McKinley1; 1; Natural Resources Canada; 2; University of Virginia
8:50 AM
Role of Zr in the Microstructure Evolution in Mg-Zn-Zr Based Wrought Alloys: Tilak Bharaticharjee1; Tatiseke Sasaki2; ByeongChan Suh1; Taiki Nakata1;
1; National Institute for Materials Science; 2; POSTECH; 3; Nagaoka University of Technology
9:10 AM
Effect of Alloy Composition on Microstructure and Strength of Fine Grained Extruded Mg-Zn-Y alloys Containing Quasicrystal Phase: Alok Singh1; Yoshiaki Osawa2; Hitotoshi Somekawa1; Toshiji Mukai2; Catherine Parrish1; Donald Shih1;
1; National Institute for Materials Science; 2; Korea University; 3; Boeing Research and Technology
9:30 AM
An Extruded and Peak Aged Mg-5Gd-3Y-1Zn-Zr Alloy with High Strength: Di Wu1; Jingli Li1; Min Hong2; Wenhui Wang3; Rongshi Chen3;
1; Texas A&M University at Qatar; 2; Thixomat Inc.
10:10 AM
Strengthening in Thermomechanically Processed Magnesium Alloys: Bilal Mansoor1; Vasanth Chakravarthy Shunmugasamy1; Raymond Decker2; S.E. LeBeau1;
1; Virginia Tech; 2; Boeing Research and Technology
10:30 AM
Microstructures and Mechanical Properties of Mg-1mol%X Alloys Processed with High-Pressure Torsion: Hiroyuki Kawabata1; Shigeru Kuramoto1; Keiichiro Ohishi2;
1; Toyota Central R&D labs.; 2; Nagaoka University of Technology
10:50 AM
Dependence of Compression-Tension Loading on Twinning in Wrought Mg Alloy: Duria Drozdenko1; Jan Bohlen1; Sangbong Yi2; Dietmar Letzig2;
1; Charles University in Prague; 2; Helmholtz-Zentrum Geesthacht
11:10 AM
Effect of Mn Content on Microstructure and Mechanical Properties of Mg-Al-Ca-Mn Alloys Fabricated by High-Speed Extrusion: Taiki Nakata1; Kazunori Shimizu2; Yasunobu Matsumoto3; Satoru Hanaki1; Shigebaru Kamado1;
1; Nagaoka University of Technology; 2; Sankyo Tateyama, Inc. Sankyo Material-Company
11:30 AM
Effects of Extrusion Processing and Heat Treatment on Mechanical Property and Heat Dissipation Performance of Mg-2.5Nd-1.0Zn-0.5Zr Alloy: Jixia Wang1; Jieyu Zhang1; Guangxin Wu1; 1; Shanghai University
11:50 AM
Radiation Effects on the Thermophysical Properties of a New Neutron Absorbing Material: Donna Guillen1; Heng Ban2; Idaho National Laboratory; 1Utah State University

Messaging Research to a Broad Audience — Session I
Program Organizers: Kevin Chaput, Purdue University; Andrew Kustas, Purdue University; Kathlene Reeve, Purdue University; Lisa Rueschhoff, Purdue University

Wednesday AM
March 18, 2015
Location: Dolphin

Session Chairs: Kevin Chaput, Purdue University; Kathlene Reeve, Purdue University; Lisa Rueschhoff, Purdue University; Andrew Kustas, Purdue University

8:30 AM Invited
The Power of Small Words for Big Impacts: Michelle Dickinson1; 1Auckland University

9:10 AM Invited
Communicating the Critical Implications of Support for Materials Research on Capitol Hill: Iver Anderson1; 1Iowa State University

9:40 AM
Nanohub.org: An Open-Access Platform for the Dissemination of Models and Tools on the Web: Tanya Falten2; Alejandro Strachan3; Gerhard Klimmek1; 1Purdue/NCN; 2Purdue/Materials Science and Engineering

10:00 AM Break

10:20 AM Invited
The Impact of Materials on Society Course: Kevin Jones1; 1University of Florida

10:50 AM
Preparing an NSF CAREER Proposal: Alexis Lewis1; 1National Science Foundation

MHD 2015: Nagy El-Kaddah Memorial Symposium on Magnetohydrodynamics (MHD) in Materials Processing — Induction Heating and Melting
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Ramana Reddy, The University of Alabama; Thinium Natarajan, U. S. Steel

Wednesday AM
March 18, 2015
Location: Swan 2

Session Chairs: Mark Weaver, The University of Alabama; Thinium Natarajan, United States Steel

8:30 AM Introductory Comments

8:35 AM Invited
Magnetic Suspension Melting Developments: Valdis Bojarevics1; Koulis Pericleous1; 1University of Greenwich

9:00 AM
On the Influence of Coil Frequency on the Flow in Electromagnetic Solidification Systems: Gregory Poole1; Laurentiu Nastac2; 1Purdue University; 2University of Alabama

9:25 AM Invited
Stochastic Mesoscopic Modeling of the Globular Microstructure and Microsegregation Evolution during the Solidification of Cast Mg AZ31B Alloys at Low Superheat: Laurentiu Nastac1; 1The University of Alabama

9:50 AM Break

10:05 AM Invited
A New Electromagnetic Heating Method to Study Spray Cooling: Mario Huerta-Larumbe1; Francisco Acosta-Gonzalez1; 1CINVESTAV

10:30 AM Invited
3D Mathematics Model of Formation and Motion of Metal Droplets during Electro-Slag Remelting Process: Lifeng Zhang1; Le Yu1; 1University of Science and Technology Beijing

10:55 AM Invited
Mathematical Modeling of the Mold Current and Its Influence on Slag and Ingot Behavior during ESR: Mathilde Hugo1; Alain Jardy2; Bernard Dussoubs3; Jessica Escaffre5; Henri Poisson2; 1Institut Jean Lamour; 2Aubert & Duval

11:20 AM Invited
Application of a Model for Simulating the Vacuum Arc Remelting Process: Ashish Patel1; 1Timet

Micromechanics of Structurally Inhomogeneous Materials: An FMD Symposium in Honor of Armen Khachatryan — Thermodynamics and Kinetics of Phase Transformations
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Long Qing Chen, Penn State University; Mark Asta, University of California, Berkeley; Yunzhi Wang, Ohio State University; Ramundo Arroyave, Texas A & M University; Yongmei J in, Michigan Technological University; Yann Le Bouar, LEM, CNRS/ONERA

Wednesday AM
March 18, 2015
Location: Swan

Session Chair: Yong Mei J in, Michigan Tech

8:30 AM Invited
Atomistic Modelling of the Pd-H System: Ricardo Schwarz1; Alfredo Caro1; Daniel Schwen2; 1Los Alamos National Laboratory; 2Idaho National Laboratory

9:00 AM Invited
The Third Law of Thermodynamics and Low Temperature Phase Stability: David Laughlin2; William Sofia3; 1Carnegie Mellon University; 2University of VA

9:30 AM
Atomistic Modeling of Grain Boundary Complexions: Toughening Effects and Interface Thermodynamics: Zhiliang Pan1; Timothy Rupert1; 1University of California, Irvine

9:50 AM
Activation of Ferroelastic Toughening in Multi-Phase Ceramics: Jessica Krogstad2; 1University of Illinois, Urbana-Champaign

10:10 AM Break

10:30 AM Invited
The Influence of Non-Conventional Pathways for Nucleation on Microstructural Evolution in Titanium Alloys: Yufeng Zheng1; Robert Williams1; Gopal Viswanathan1; Soumya Nag2; Rajarsi Banerjee3; Hamish Fraser4; 1The Ohio State University; 2GE Global Research Center; 3University of North Texas

11:00 AM Invited
Vibrational Dynamics and Thermodynamics of Nanostructures: Brent Fulze1; Hillary Smith1; 1California Institute of Technology
Microstructural Processes in Irradiated Materials — Ceramics and Fuels (SiC, UO₂, General Ceramics, and Metal Fuels)

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin

Wednesday AM Room: Asia 1
March 18, 2015 Location: Dolphin

Funding support provided by: Idaho National Laboratory and Oak Ridge National Laboratory

Session Chairs: Xian-Ming Bai, Idaho National Laboratory; Tatsuya Hinoki, Kyoto University

8:30 AM Invited

Effects of Radiation in Silicon Carbide Ceramics and Composites: Current Understanding of Irradiation Stability and Our Ability to Characterize Irradiation-Induced Microstructural Evolution: Taitai Kato; Chad Parish; Lance Snead; Takaaki Koyanagi; Alejandro Perez-Bergquist; Paul Voyles; ‘Oak Ridge National Laboratory

9:00 AM Invited

Structure and Kinetics of “Invisible” Defects in Irradiated SiC: Izabela Szlufarska; ‘University of Wisconsin

9:30 AM Invited

Constitutive Modeling of Irradiation Effect on Silicon Carbide Composites: Tatsuya Hinoki; Takaaki Koyanagi; Sosuke Kondo; ‘Kyoto University

10:00 AM Break

10:15 AM

Ionization-Induced Self-Healing of Ballistic Collision Damage in Silicon Carbide: William Weber; Ritesh Sachan; Olli Pakarinen; Miguel Crespiolo; Peng Liu; Haizhou Xue; Yanwen Zhang; ‘University of Tennessee; ‘Oak Ridge National Laboratory

10:30 AM

Ab Initio Study for Resistance to Radiation-Induced Amorphization in ZrC: Ming-Jie Zheng; Izabela Szlufarska; Dane Morgan; ‘Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences, China; ‘University of Wisconsin - Madison

10:45 AM Invited

Simulation of Xenon, Uranium Vacancy and Uranium Interstitial Diffusion and Grain Boundary Segregation in UO₂: David Andersson; ‘Los Alamos National Laboratory

11:15 AM

Influence of Radiation Induced Point Defects on Thermal Conductivity in UO₂: Marat Khafozov; Janne Pakarinen; Lingfeng He; Aleksandr Chernatsynskiy; Xianming Bai; Andrew Nelson; Simon Phillpot; Todd Allen; David Hurley; ‘The Ohio State University; ‘University of Wisconsin; ‘University of Florida; ‘Idaho National Laboratory; ‘Los Alamos National Laboratory

11:30 AM

Mesoscale Modeling of Effects of Radiation-Induced Microstructures on Thermal Transport in UO₂: Xian-Ming Bai; Michael Tonks; ‘Idaho National Laboratory

11:45 AM TEM Study of Restructuring of LWR UO₂ Fuels at Very High Burnup: Thierry Wiss; Oliver Dieste-Blanco; Rudy Konings; Vincenzo Rondinella; ‘European Commission - JRC - ITER

12:00 PM

Ion Irradiation Characterization Studies of MAX Phase Ceramics: Daniel Clark; Steven Zinkle; Yanwen Zhang; ‘University of Tennessee

Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Environmental Degradation, Coatings, and Mechanical Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ÉNSMA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Science and Technology Beijing

Wednesday AM Room: Oceanic 7
March 18, 2015 Location: Dolphin

Session Chairs: Kiran Solanki, Arizona State University; Mark Tschopp, Army Research Laboratory

8:30 AM Invited

Role of Oxygen on Mechanical Properties of High Temperature Materials: A QM/MM Study: Kiran Solanki; M Bhattacharjee; X Zhang; M Azarouch; G Lu; ‘Arizona State University; ‘California State University Northridge

8:50 AM

Microstructure Evolution of a Platinum-Modified Nickel-Aluminide Coating under Thermo-Mechanical Fatigue: Pierre Salot; Vincent Maurel; Luc Remy; Franck Nguyen; Arnaud Longuet; ‘SAFRAN; ‘MINES ParisTech, PSL Research University, MAT - Centre des matériaux, CNRS UMR 7633; ‘SAFRAN-Sneca

9:10 AM

Design, Synthesis, and Performance of γ’ NiAl Bond Coats: David Jorgensen; R Jackson; Akane Suzuki; Don Lipkin; ‘University of California, Santa Barbara; ‘GE Global Research

9:30 AM

Creep-Rupture Properties of Ni-Base Superalloy in Marine-Like Environment: Venkateswarao Manna; M. Kamaraj; S.N. Narendra Babu; Neeta Paulose; Ravi S. Kottada; ‘Metallurgical and Materials Engineering, IIT Madras; ‘Gas Turbine Research Establishment (GTRE)

9:50 AM

High Temperature Oxidation and Hot Corrosion Behavior of Directionally Solidified Rene 80 Ni Superalloy: Ashok Royalla; Lakshman Neelakantan; M. Kamaraj; S.N. Narendra Babu; Neeta Paulose; ‘IIT Madras; ‘Gas Turbine Research Establishment (GTRE)

10:10 AM Break

10:30 AM

Mechanical Behavior of a Notched Oxide/Oxide CMC in Combustion Environment: Experiment and Simulations: Nima Rahbar; Sina Askarinejad; Volodymyr Sabelkin; Shankar Mall; ‘Worcester Polytechnic Institute; ‘Air Force Institute of Technology

10:50 AM Invited

Thermomechanical Fatigue Behavior of a Ni-Base Superalloy: Influence of Temperature, Dwell, and Aged States: Michael Kirka; Kyle Brindle; Richard Neu; Stephen Antolovich; Sachin Shinde; Phillip Gravetti; ‘Georgia Institute of Technology; ‘Siemens Energy Inc.

11:10 AM

Abnormal Stress Rupture Property in K465 Superalloy at 900°C: Xiaofei Yuan; Yunrong Zheng; Qiang Feng; ‘University of Science and Technology Beijing
11:30 AM

Microstructural Stability in High Refractory Containing Nickel-Base Superalloys: Subhashish Meher1; Mark Carroll1; Laura Carroll1; Tresa Pollock2; 1IIdaho National Laboratory; 2University of California, Santa Barbara

11:50 AM

Effects of Microstructural Degradation on Creep Behavior of GH4037 Wrought Superalloy: Jinyan Tong1; Koichi Yagi1; Yunrong Zheng1; Qiang Feng1; 1National Center for Materials Service Safety, University of Science and Technology Beijing

Nano- and Micro-Mechanical Measurements in Harsh Environments — Nanoindentation in Harsh Environments

Sponsored by: TMS Structural Materials Division; TMS: Corrosion and Environmental Effects Committee; TMS: Nanomechanical Materials Behavior Committee; TMS: Nuclear Materials Committee

Program Organizers: Peter Hosemann, University of California Berkeley; Jeffrey Wheeler, EMPA; Verena Maier, Erich Schmidt Institut; Douglas Stauffer, Hysitron

Wednesday AM
Room: Oceanic 4
March 18, 2015
Location: Dolphin

Session Chair: Jeffrey Wheeler, EMPA

8:30 AM Invited

High Temperature Nanoindentation of Irradiated Materials: David Armstrong1; James Gibson1; Steve Roberts1; 1University of Oxford

9:10 AM

A Method for Minimizing Oxide Formation during Elevated Temperature Nanoindentation: I-Chung Cheng1; Andrea Hodge1; 1University of Southern California

9:30 AM

A Procedure to Set Up Nano-Indentations at Elevated Temperatures with Isothermal Contact between the Indenter and the Sample in Thermal Equilibrium: Xiaodong Hou1; 1National Physical Lab, UK

9:50 AM

Use of Nanoindentation at High Temperature to Evaluate the Mechanical Properties of Materials: Manuel Abad1; Zijing Huang1; Marisa Rebelo de Figueiredo1; Susanne Koch1; Amanda Lupinacci1; David Frazer1; Ashley Reichardt1; Peter Hosemann1; 1University of California Berkeley

10:10 AM Break

10:30 AM Invited

Micro- and Nanomechanical Testing under Simulated Environmental Conditions: Afrooz Barnoush1; 1NTNU

11:10 AM

The Effects of Solute Hydrogen in FCC Metals Probed with Nanoindentation: Samantha Lawrence1; David Bahr1; 1Purdue University

11:30 AM

Humidity Controlled Static and Dynamic Nanoindentation of the Secondary Cell Wall in Picea Abies: Igor Zlotnikov1; Luca Bertinetti1; Ude Hangen1; Michaeala Eder1; Peter Fratzl1; 1Max Planck Institute of Colloids and Interfaces; 2Hysitron, Inc.

11:50 AM

Indentation-Based In-Situ Toughness Characterization Utilizing Nanomechanical Characterization Techniques: Joseph Bonivel1; Michael Birnkrant1; 1United Technologies Research Center

Nanocomposites III — Multifunctional Nanocomposites II and Metal Nanocomposites II

Sponsored by: TMS Structural Materials Division; TMS: Composite Materials Committee

Program Organizers: Muralidharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee

Wednesday AM
Room: Europe 2
March 18, 2015
Location: Dolphin

Session Chair: Muralidharan Paramsothy, National University of Singapore, NanoWorld Innovations (NWI)

8:30 AM

Synthesis and Characterization of Bio-Composites and Ferroelectric Nanoparticles: Amarilis Declet Vega1; Edgardo Reyes Brondo1; Johnny López1; Ruddy Rivera1; Nakaira Ramírez1; Carolyn Ortiz Rivera1; O. Marcelo Suárez1; 1University of Puerto Rico; 2University of Puerto Rico

8:50 AM Keynote

Tailoring and Measuring Dispersion State in Carbon Nanomaterial Composites: Virginia Davis1; 1Auburn University

9:30 AM Invited

The Role of Percolation Theory in Developing Next Generation Smart Nanomaterials: Daneeh Simion1; 1University of Alabama at Birmingham

10:10 AM Break

10:30 AM

Graphene Reinforced Electroless Ni-P Coatings: Mohammad Islam1; Ifithibar Ahmad1; David Burleigh1; 1King Saud University

10:50 AM Invited

Excellent Strength-Ductility Combination in Nickel-Graphene Nanoplatelet (GNP/Ni) Nanocomposites: Tushar Borkar1; Jun Yeon Hwang2; Igor Zlotnikov1; Andrea Hodge1; 1University of Alabama at Birmingham; 2Korea Institute of Science and Technology; 3Air-Force Research Laboratory; 4Korea Advanced Institute of Science and Technology

11:30 AM

Fracture Mechanics of Nickel-Graphene Nanocomposites: Arun Nair1; 1University of Arkansas

11:50 AM

Effects of Silver Nanowires on the Behavior of Polylactide Nanocomposite Films: Doga Doganay1; Sahin Coskun1; Husnu Unalan1; Cevdet Kaynak1; 1Middle East Technical University

Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III — Session V: Advanced Cathode and Anode Materials for Li-Ion Batteries

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Reza Shahbazi-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Wednesday AM
Room: Europe 3
March 18, 2015
Location: Dolphin

Session Chairs: Yifei Mo, University of Maryland; Reza Shahbazi-Yassar, Michigan Technological University

8:30 AM Invited

2D Materials for Energy Storage: Vivek Shenoy1; 1University of Pennsylvania

8:55 AM Invited

Graphene Electrodes for Next Generation Lithium-Ion Batteries: Nikhil Koratkar1; 1Rensselaer Polytechnic Institute
Neutron and X-Ray Studies of Advanced Materials VIII: Diffraction Limit and Beyond — Defects, Strains, Stress I
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, University of Tennessee; Jaimie Tiley, Air Force Research Laboratory

Wednesday AM
Room: Pelican 1
Location: Swan

Funding support provided by: Air Force Research Laboratory

Session Chairs: Iuliana Cematescu, Pratt and Whitney; Lyle Levine, National Institute of Standards and Technology

8:30 AM Keynote
Formation and Propagation of Microstructure Defects in Austenitic Steels As Seen by In Situ X-ray Diffraction: David Rafajla1; 1Freiberg University of Technology

8:40 AM Invited
Understanding Functional Properties of Nanomaterials from Structural Parameters Obtained by Line Profile Analysis: Michael Zehetbauer1; Erhard Schaffer1; Michael Kerber1; 1University of Vienna

9:00 AM Invited
Stress/Strain Distribution in Multilayered Steels Consisting of Dissimilar Steels: Mayumi Ojima1; Junya Inoue1; Ayumi Shiro1; Takahisa Shobu1; Pingguang Xu1; Hiroshi Suzuki1; Stefanus Harjo1; Shoichi Nambu1; Toshihiko Koseki1; 1The University of Tokyo; 2Japan Atomic Energy Agency

9:10 AM Break

9:20 AM Invited
Investigation of Nano and Nanostructured Silicon as Advanced Anodes for Lithium-Ion Cells: James Wu1; 1NASA Glenn Research Center

9:45 AM Invited
High-Energy Conversion Cathodes for Rechargeable Lithium Batteries: Feng Wang1; Sung-Wook Kim1; Jason Graetz2; 1Brookhaven National Laboratory; 2HRL Laboratories

10:10 AM Break

10:25 AM Invited
3D Mesostructured Electrodes for High Energy and Power Density Secondary Batteries: Paul Braun1; 1University of Illinois at Urbana-Champaign

10:50 AM Invited
Silicon Oxycarbides as Anode Materials for Li-Ion Batteries: Gian Domenico Soraru1; Vallachiria S. Pradeep1; Magdalena Graczyk-Zajac1; Ralf Riedel1; 1University of Trento, Trento, Italy; 2TU Dortmunt, Dortmund, Germany

11:15 AM Invited
Substituted LiCoP04 as Cathode for High Energy Li-Ion Batteries: Taiguang Jow1; Jan Allen1; Joshua Allen1; Samuel Dep1; Oleg Borodin1; Marco Olguin1; Jeffrey Wolfenstine1; 1Army Research Laboratory

11:40 AM Invited
Inhomogeneity Study of Large Format Li-Ion Batteries by Synchrotron X-ray Diffraction: Xinghua Yu1; Daniel Henri1; Ke An1; Yang Ren1; Zhili Feng1; Bi Wu2; Christian Faur1; 1Oak Ridge National Laboratory; 2University of Tennessee; 3Argonne National Laboratory; 4Honda R&D Americas

11:30 AM
Neutron Diffraction Study and EVPSC Modeling of Deformation Mechanisms in Solid-Solution-Strengthened Magnesium Alloys: Soo Yool Lee1; Michael Gharghouri1; Huamiao Wang1; Ghazal Nayyer1; Wansuch Wool1; E-Wen Huang1; Peidong Wu1; Warren Poole1; Wei Wu1; Ke An1; 1Chungnam National University; 2Chalk River Laboratories; 3McMaster University; 4University of British Columbia; 5Korea Atomic Energy Research Institute; 6National Chiao Tung University; 7Oak Ridge National Laboratory

11:50 AM Invited
Hydrogen Cracking in Gas Tungsten Arc Welding of an AISI Type 321 Stainless Steel: Paul Rosenak1; Yakov Unigovski1; Roni Shneek1; 1Hydrogen Energy Batteries Ltd.; 2Ben Gurion University

12:00 PM Invited
Substituted LiCoPO4 as Cathode for High Energy Li-Ion Batteries: Taiguang Jow1; Jan Allen1; Joshua Allen1; Samuel Dep1; Oleg Borodin1; Marco Olguin1; Jeffrey Wolfenstine1; 1Army Research Laboratory

12:10 PM Break

12:30 PM Keynote
Dislocations in Nanocrystalline Domains: Paolo Scardi1; Alberto Leonard1; 1University of Trento

12:40 PM Invited
Mechanisms in Solid-Solution-Strengthened Magnesium Alloys: Michael Gharghouri2; Yi-Hsun Shih1; Jinmin Lee1; 1Oak Ridge National Laboratory; 2University of Illinois at Urbana-Champaign

1:10 PM
In-Situ Observation of Deformation and Failure of Multilayered Steel Composite Sheets: Rui Cao1; Xinghua Yu1; Zhili Feng1; Wenjun Liu4; Ruqing Xu4; Mayumi Ojima1; Junya Inoue1; T Koseki1; 1Oak Ridge National Laboratory; 2Argonne National Laboratory; 3University of Science & Technology Beijing; 4Honda R&D Americas

1:20 PM Break

1:30 PM Keynote
The In Situ Center at CHESS: Matthew Miller1; 1Cornell University

1:50 PM Invited
Structural-Resolved Study of Photon-Sensitive Piezoelectric Properties of P(VDF-TrFE)/TiOPc Films via In-Situ Synchrotron X-ray Measurements: E-Wen Huang1; Tzu-Kang Liao2; Wen-Chi Chang3; Chen-Chang Ko1; Wei-Tsung Chiang1; Yu-Hsiang Hsu1; Chao-Fang Wang1; Jing-Jong Hsu1; 1National Chiao Tung University; 2National Central University; 3National Taiwan University; 4Industrial Technology Research Institute; 5National Synchrotron Radiation Center

3:20 PM Invited
Hydrogen Cracking in Gas Tungsten Arc Welding of an AISI Type 321 Stainless Steel: Paul Rosenak1; Yakov Unigovski1; Roni Shneek1; 1Hydrogen Energy Batteries Ltd.; 2Ben Gurion University

3:30 PM Break
Novel Synthesis and Consolidation of Powder Materials — Novel Fabrication of Ceramics
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

Wednesday AM Room: Swan 10
March 18, 2015 Location: Swan
Session Chairs: Deliang Zhang, Shanghai Jiaotong University; Cuie Wen, RMIT University (Royal Melbourne Institute of Technology)

8:30 AM
Effect of Additives on Microwave and Conventional Sintering of Barium Zinc Tantalate Ceramics: Swathi Manivannan; Pramod Kumar Sharma; Dibakar Das; 'University of Hyderabad; 'Institute for Plasma Research

8:50 AM
Effect of Colloidal Processing on Densification Behavior of Barium Zinc Tantalate Ceramics: Swathi Manivannan; Pramod Kumar Sharma; Dibakar Das; 'University of Hyderabad; 'Institute for Plasma Research

9:10 AM
Fabrication of Complex-Shaped Ceramic Components through Novel Room-Temperature Injection Molding and 3D Printing of Ceramic Powder Suspension Gels (CeraSGels): Lisa Rueschhoff; Rodney Trice; Jeffrey Youngblood; 'Purdue University

9:30 AM
Effect of TiO2 Doping on the Densification and Microstructure in High Pressure Sintering Nano Size γ-Al2O3: Nilgun Kuskonmaz; Zeynep Taslicukur Ozturk; 'Yildiz Technical University; 'Gedik University

9:50 AM Break

10:10 AM Invited
Fabrication of High Performance n-Type Bi2Te3 Thermoelectric Materials by Powder Metallurgy Processes: Soon-Jik Hong; Hyo-seop Kim; Seung-Taek Han; Jar-Myung Koo; 'Kongju National University and Institute for Rare Metals

10:35 AM
Structure, Microstructure and Electrical Properties of ZnO Based Varistors Obtained by Spark Plasma Sintering: Yannick Beynet; Sophie Guillemet-Fritsch; Vincent Bley; Thomas Pérèl; Frédéric Malpièce; Jonathan Morel; Claude Estournès; 'CIRIMAT; 'LAPLACE; 'Tridelta

10:55 AM
Synthesis of Europium Tetrakis Dibenzoylmethide Triethylammonium: Ross Fontenot; William Hollerman; Kamala Bhat; Mohan Aggarwal; 'University of Louisiana at Lafayette; 'Alabama A&M University

11:15 AM
Synthesis of Europium Tetrakis Dibenzoylmethide Triethylammonium: Ross Fontenot; William Hollerman; Kamala Bhat; Mohan Aggarwal; 'University of Louisiana at Lafayette; 'Alabama A&M University

11:35 AM
Processing and Properties of Injection Moulded Alumina and Alumina Composites Using Water Soluble Binder System: Nutthida Chaunkrekkul; Punnapa Somboonthanasarn; Rattanaporn Chareenkijmongkol; Chirapon Auechalitanukul; Ryan McCuiston; 'Chulalongkorn University; 'King Mongkut’s University of Technology Thonburi

Pb-Free Solders and Emerging Interconnect and Packaging — Novel Interconnect and Nano-Materials
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: John Elmer, LLNL; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinil Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnique Institute; Fan Gao, University of Massachusetts Lowell

Wednesday AM Room: Lark
March 18, 2015 Location: Swan
Session Chairs: Fu Guo, Beijing University of Technology; Kwang-Lung Lin, National Cheng Kung University

8:30 AM
Development of Pb-Free and Halogen-Free Nanosolder Paste for Electronics Assembly and Packaging: Evan Wernick; Fan Gao; Gregory Morose; Zhiyong Gu; 'University of Massachusetts Lowell; 'Toxics Use Reduction Institute

8:55 AM
Phase Evolution of Sn/In Nanosolder Particles at Elevated Temperatures: Yang Shu; Teichi Ando; Zhiyong Gu; 'University of Massachusetts Lowell; 'Northeastern University

9:20 AM
Synthesis and Characterization of Sn-Ag-Cu Alloy Nanoparticles: Ali Roshanbagias; Andriy Yakymovych; Herbert Ipsi; 'Universiy of Vienna

9:45 AM Break

10:00 AM
Synthesis and Characterization of Sn Coating on MWCNT Using DBA as Capping Agent: Frischea Wachid; Kwang-Lung Lin; 'Department of Materials Science and Engineering, National Cheng Kung University

10:25 AM
Strength of MWCNT Reinforced 70Sn–30Bi Solder Alloys: Md Muktaidur Billah; Quanfang Chen; 'University of Central Florida

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials
XIV — Session I
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Clemens Schmeterer, Forschungszentrum Juelich, Inst. For Energy and Climate Research - IFK; Ikuo Ohnuma, Tohoku University; Shien Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University; Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan University of Science and Technology

Wednesday AM Room: Parrot
March 18, 2015 Location: Swan
Session Chairs: Chao-hong Wang, National Chung Cheng University; Shih-Kang Lin, National Cheng Kung University

8:30 AM Invited
Cu-Ag Core-Shell Nanoparticles as Conductive Ink Material for Printed Electronics Application: Changsoo Lee; Na Rae Kim; Jahyun Koo; Yung Jong Lee; Hyuck Mo Lee; 'KAIST

9:00 AM
Effect of P Content on the Interfacial Reaction and Mechanical Properties of the SnNi-xP Solder Joints: Md. Arifur Rahman; T. C. Yeh; Cheng-En Ho; 'Yuan Ze University
8:55 AM Invited
Topological Representation of Polyhedral Grains: Growth Kinetics: Paulo Rios1; Martin Glicksman2; 1UFF-EEIMVR; 2Florida Institute of Technology
9:20 AM
Stereology of Mean Curvature Driven Grain Growth: Robert DeHoff3; Burton Patterson1; Steven Chiu1; Catherine Sahli1; 1University of Florida
9:40 AM
An In-Situ TEM Study of the Thermal Response of Ultrafine-Grained Magnesium: Dinakar Sagapuram1; Mert Efe2; Cem Akatay1; 1Purdue University; 2Middle East Technical University
10:00 AM
Atomistic Simulations of Microstructural Evolution: Diana Farkas1; 1Virginia Tech
10:20 AM Break
10:40 AM Invited
Design of Interfacial Networks in Polycrystalline Materials: Oliver Johnson; Christopher Schuh1; 1Massachusetts Institute of Technology
11:10 AM
Tailoring the Twin Spacing in the Formation of Highly Nanotwinned Cu Alloys: Leonardo Velasco1; Andrea Hodge1; 1University of Southern California
11:30 AM
Influence of Grain Boundary Character on the Rotation of Grains under a Capillary Driving Force: Luis Barrales-Mora1; Dmitri Molodov1; 1Institut für Metallkunde und Metallphysik; 2Institut für Metallkunde und Metallphysik
11:50 AM
Influence of Pressure on the Shear Strength of Symmetric Tilt Interfaces in Cu: Shreevant Tiwari1; David McDowell1; 1Georgia Institute of Technology

2015 Functional Nanomaterials: Energy and Sensing — Nanomaterial Fabrication II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Jung-Kun Lee, University of Pittsburgh; Behrang Hamadani, National Institute of Standards and Technology; Sung Hun Wee, HGST, A Western Digital Company; Nitin Chopra, University of Alabama, Tuscaloosa; Terry Xu, The University of North Carolina at Charlotte; Jang-Sik Lee, Pohang University of Science and Technology (POSTECH)

Wednesday PM Room: Swan 4
March 18, 2015 Location: Swan

Session Chair: Sung-Hun Wee, HGST, A Western Digital Company

2:00 PM
Nanocrystalline Sm-Fe Based Alloys: Structural and Magnetic Properties: Lotfi Bessais1; Karim Zehani1; Jacques Moscovici1; Najeh Mlik1; 1CNRS
2:20 PM
Silicon Nanowire/Graphene Hybrids as Sensors: Yuan Li1; John Dykes1; Nitin Chopra1; 1The University of Alabama
2:40 PM
Transversely Modulated Palladium-Hydride Nanostructure Formation in Epitaxial Film: Brad Boyerinas1; 1National Institute of Standards and Technology
3:00 PM
Effects of Porous Carbon/CNTs on the Discharge Performance of Li-Air Batteries: Xuexing Yan1; 1Kunming University of Science and Technology
3:20 PM
Current-Driven Domain Wall Behaviors in Magnetic Nanowires: Liwei Geng1; Yongmei Jin1; 1Michigan Technological University
3:40 PM Break
3:55 PM
Low Temperature Synthesis of Graphite on Ni Films Using Inductively Coupled Plasma Enhanced CVD: Laxia Cheng1; Kayoung Yun2; Antonio Lucero1; Archana Venugopal1; Luigi Colombo1; Jiyoung Kim1; 1UTD; 2Kookmin University; 3Texas Instruments
4:15 PM Nanomaterials Synthesis by Novel Rayleigh Taylor Instabilities: Sagar Yadavali1; Daniel San Roman1; Mikhail Knennen2; Ramakrishnan Kalyanaraman1; 1University of Tennessee; 2Western Kentucky University
4:35 PM Completely Green Synthesis of Silver Nanoparticles Decorated MWCNT and Its Antibacterial and Catalytic Properties: Sneha Mohan1; Oluwafemi Ohuwoto1; Sandle Songca2; Nanadkumar Kalarikkal2; Sabu Thomas1; 1Cape-peninsula University of Technology; 2Walter Sisulu University; 3Mahatma Gandhi University
4:55 PM Structural and Magnetic Properties of Fe55 Co45 Nanoparticles Synthesized by Different Methods: Riadh Bezi1; Najeh Mliki1; Karim Zehani2; Lotfi Bessais2; 1LMOP, Faculté des Sciences de Tunis, Université de Tunis El Manar; 2ICMPE, UMR7182 CNRS-UPEC

5:15 PM Synthesis of High Active NiCu Alloy Fibers as Anode Catalysts for the Electro-Oxidation of Ethanol: Jing Zhai1; Meng Cai1; Chuanfu Zhang1; Chen Wang1; Jian-Yang Hwang1; 1Central South University; 2Michigan Technological University

6th International Symposium on High Temperature Metallurgical Processing — Characterization of High Temperature Metallurgical Process
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao J. Jiang, Central South University; Jian-Yang Hwang, Michigan Technological University; Gerardo Alvear, Xstratatech; Onuralp Yucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies

Wednesday PM Room: Peacock
March 18, 2015 Location: Swan

Session Chairs: J. Jian-Yang Hwang, Michigan Technological University; Yuanbo Zhang, Central South University

2:00 PM
CFD Simulations of Molten Steel Flow Patterns, Distribution of Inclusions, and Forces Imposed by the Melt Flow on Clogged Surfaces Inside a Submerged Entry Nozzle: Mahdi Mohammadighaleni1; Mohsen Asele Zaeem1; Jeffery Smith1; 1Missouri University of Science and Technology
2:20 PM
Characterisation of Coal Burnouts In The Raceway of Ironmaking Blast Furnace: Tiansong Shen1; Aibing Yu1; 1Monash University
2:40 PM
Analysis of BF Hearth Reasonable Cooling System Based on the Water Dynamic Characteristics: Zuo Haibin1; Jiao Kexin1; Zhang Jianliang1; Li Qian1; Wang Cuil1; 1USTB
3:00 PM
Techno-Economic Assessment of Recycling BOF Steelmaking Offgas Cleaning System Solid Wastes by Using Zinc-Free Scrap: Naiyang Ma1; 1ArcelorMittal
6th International Symposium on High Temperature Metallurgical Processing — Direct Reduction and Smelting Reduction

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

Program Organizers: Tao Jiang, Central South University; Jianliang Zhang, Michigan Technological University; Gerardo Alvear, Xstratatech; Onurulp Yucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies

Wednesday PM
Room: Swan 5
Location: Swan

Session Chairs: Phillip Mackey, P.J. Mackey Technology; Zhiwei Peng, Michigan Technological University

Wednesday PM

2:00 PM
On the Simultaneous Iron Oxide Reduction and Carburization Kinetics: Jose Carlos D’Abreu1; Mauricio Otaviano2; Helio Kohler2; Edelink Efrain Falero1; 1PUC-Rio; 2Samarco Mining Co.; 3Techn-os

2:20 PM
Slag Chemistry of Bottom Blown Copper Smelting Furnace at Dongying Fangyuan: Mao Chen1; Zhixiang Cui2; Baojun Zhao1; 1University of Queensland; 2Dongying Fangyuan Nonferrous Metals Co., Ltd

2:40 PM
Reduction Behavior of Multi-Nonferrous Metals-bearing Iron Concentrate Pellet by Mixed CO/H2 Gas: Guanghui Li1; Peidan Wen1; Zhixiang You1; Yuanbo Zhang1; Tao Jiang1; 1School of Minerals Processing and Bioengineering, Central South University

3:00 PM
Viscosity Property of Gold-Antimony Smelting Slags by Blast Furnace: Yongbin Yang1; Qiang Zhong2; Tao Jiang1; Qian Li1; Bin Xu1; 1Central South University; 2Central South University

3:20 PM
Experimental Investigation on Reduction Kinetics of Stainless Steel-Making Slag in Iron Bath Smelting Reduction: Bo Zhang1; Jienan Liu2; Yanfeng Yang3; Luming Liu4; Jiechao Liu5; Lijian Luo6; Yubao Ma7; Hong Xin8; 1Shanghai University; 2Qinghai Provincial Research and Design Academy of Environmental Sciences; 3Beijing General Research Institute of Mining and Metallurgy; 4Beijing University of Chemical Technology; 5Beijing General Research Institute of Mining and Metallurgy; 6Beijing University of Chemical Technology; 7Beijing General Research Institute of Mining and Metallurgy; 8Beijing General Research Institute of Mining and Metallurgy

4:00 PM
Effect of MgO and Basicity on the Viscosity and Structure of the CaO-SiO2-Al2O3-MgO Blast Furnace Slag: Wang Zhe1; Jianliang Zhang1; Fanyi Meng2; Tao Yu3; 1University of Science and Technology of Beijing; 2Qinghai Provincial Research and Design Academy of Environmental Sciences

4:20 PM
Kinetcs of Vanadium Extraction from Hot Metal by Basic Slag: Tao Zhang1; Bing Xie2; Xuan Liu1; Jiang Diao2; Zhen Zhang2; Hong-Yi Li1; 1Chongqing University

4:40 PM
Phase Transformation in Magnesium-rich Nickel Oxide Ore After Reduction Roasting Process: Qian Li1; Yonggang Wei2; Bo Li1; Shiwei Zhou3; Hua Wang4; Baozhong Ma5; Chengyan Wang2; 1State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology; 2Beijing General Research Institute of Mining and Metallurgy; 3Shaanxi University of Science and Technology; 4Beijing General Research Institute of Mining and Metallurgy; 5Beijing University of Chemical Technology

5:00 PM
Recovery of Cr during Smelting Treatment of Stainless Steel Dust: Yanling Zhang1; Wenming Guo2; Xinlei Jia3; 1University of Science and Technology of Beijing; 2University of Science and Technology of Beijing

5:20 PM
Effect of Additives on the Reduction and Melting Separation of Ludwigtite/Coal Composite Pellet: Guang Wang2; Jingsong Wang1; Xuelfeng She1; 1University of Science and Technology of Beijing; 2University of Science and Technology of Beijing

Acta Materialia Symposium — Honoring 2015 Award Recipients Tresa Pollock and David Embury

Program Organizer: Carolyn Hansson, University of Waterloo

Wednesday PM
Room: Asia 5
Location: Dolphin

Session Chair: Carolyn Hansson, University of Waterloo

3:00 PM
Introductory comments by Carolyn M. Hansson, University of Waterloo; and George T. “Rusty” Gray, III, Los Alamos National Laboratory

3:10 PM
Invited Design of New Co-base Alloy Single Crystals: The Impact of an MGI Approach: Tresa Pollock1; Michael Titus; Robert Rhein; A. Mottura1; A. Suzuki2; A. Van der Ven1; 1University of California Santa Barbara

3:40 PM
Question and Answer Period

3:50 PM
Invited Exploring Controlled Heterogeneity as a Strengthening Mechanism: David Embury1; 1McMaster University

4:20 PM
Question and Answer Period

4:30 PM
Reception
Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — Additive Manufacturing of Ti-6Al-4V

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

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

Wednesday PM
Room: Northern Hemisphere A2
Location: Dolphin

Session Chairs: Allison Beese, Pennsylvania State University; Ola Harrysson, North Carolina State University

2:00 PM Invited
Comparison of Mechanical Properties of Titanium (Ti6Al4V) Produced via Powder Bed Direct Metal Additive Manufacturing: Ola Harrysson1; Timothy Horn1; Ronald Aman1; Harvey West1; 'North Carolina State University

2:30 PM
Automated Multi-Scale Microstructure Heterogeneity Analysis of Selective Electron Beam Melted TiAl6V4 Components: Hao Zhao1; Phil Prangnell1; 'The University of Manchester

2:50 PM
Correlation of Microstructure and Mechanical Properties of Ti-6Al-4V Components Fabricated Through Laser-Based Directed Energy Deposition: Beth Carroll1; Todd Palmer1; Allison Beese1; 'Pennsylvania State University

3:10 PM
Martensite Decomposition in Ti-6Al-4V Additively Manufactured by Selective Laser Melting (SLM): Wei Xu1; Shoujin Sun1; Suming Zhu1; Joe Elambasseril1; Qianchu Liu1; Mark Easton1; Ma Qian1; Milan Brandt1; 'RMIT University; 'Defence Science and Technology Organisation

3:30 PM Break

3:50 PM
Microstructure Evaluation of Ti-6Al-4V Fabricated by Additive Manufacturing Process: Allen Bagheri1; Denver Seely1; Nima Shamsaei1; Scott Thompson1; 'Mississippi State University

4:10 PM
Integration of Deformation Processing with Additive Manufacture of Ti-6Al-4V Components for Improved β Grain Structure and Texture: Jack Donoghue1; Jagjit Sidhu1; Andrew Wescott1; Phil Prangnell1; 'University of Manchester; 'BAE Systems

4:30 PM
Microstructure Evolution, Properties, and Damage Mechanisms in Structural Materials Manufactured by Laser Engineered Net Shaping: Yuede Zhu1; Hayley Sandgren1; Diana Lados1; 'Worcester Polytechnic Institute, Integrative Materials Design Center


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

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

Wednesday PM
Room: Northern Hemisphere A1
Location: Dolphin

Session Chairs: John Carpenter, Los Alamos National Laboratory; Leila Ladani, University of Connecticut

2:00 PM Invited
Local and Global Mechanical Behavior and Microstructure of Ti6Al4V Parts Built Using Electron Beam Melting Technology: Leila Ladani1; 'University of Connecticut

2:30 PM
Hot Isostatic Pressing as a Means to Enhance the High Cycle Fatigue Resistance of Inconel 718 Produced Through Electron Beam Melting: Michael Kirk1; William Sames2; Frank Medina3; Ryan Dehoff1; 'Oak Ridge National Laboratory; 'Texas A & M University; 'Arcam AB

2:50 PM
Fracture and Fatigue Crack Growth Behavior of Ti-6Al-4V Made by Electron Beam Melting: Mohsen Seifi1; Matt Dahar1; Ron Aman1; Ola Harrysson1; Jack Beuth1; John Lewandowski1; 'Case Western Reserve University; 'North Carolina State University; 'Carnegie Mellon University

3:10 PM
Fabrication of Turbine Disk Materials by Additive Manufacturing: Chantal Sudbrack1; Quincy Bean2; Kenneth Cooper2; Robert Carter1; S. Lee Semiatin1; Timothy Gabb1; 'NASA Glenn Research Center; 'NASA Marshall Space Flight Center; 'Air Force Research Laboratory

3:30 PM Break

3:50 PM
Investigation of Residual Stress Distributions and Anisotropic Build Properties in Electron Beam Additively Manufactured Inconel 718 Thetashaped Specimens: Ercan Cakmak1; Thomas Watkins1; Lindsey Kolbus1; Ryan Dehoff1; Chad Duty1; Sudarsanam Babu1; 'Oak Ridge National Laboratory; 'Oak Ridge National Laboratory and University of Tennessee

4:10 PM
Characterization of Functional Gradient Mixing in Additive Manufactured Material: Craig Brice1; Allisson Popernack2; Ravi Shenoy1; James Baughman1; 'NASA Langley Research Center; 'Virginia Polytechnic Institute and State University; 'Northrop Grumman Corporation; 'Analytical Mechanics Associates

4:30 PM
The Effect of Post-Processing on the Microstructure and Mechanical Properties of Inconel 718 Produced by Electron Beam Melting: William Sames1; Michael Kirk1; Kinga Unocic2; Frank Medina3; Ryan Dehoff1; 'Texas A&M University; 'Oak Ridge National Laboratory; 'Arcam AB

4:50 PM
3D Printing of Titanium Alloys at NIN by Selective Electron Beam Melting (SEBM): H. P. Tang1; J. Wang1; 'Northwest Institute for Nonferrous Metal Research

5:10 PM
Phase Transformation in Electron Beam Melting of Commercially Pure Titanium and Ti-6Al-4V Alloy: Kenta Yamakawa1; Manami Mori1; Tsuyoshi Saito1; Wataru Saito1; Akihiko Chiba1; 'Tohoku University; 'Sendai National College of Technology
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Dislocation Structures

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

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; J. John Carpenter, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Khalid Hattar, Sandia National Laboratory; Irene Beyerlein, Los Alamos National Laboratory; Wolfgang Pantleon, Technical University of Denmark

Wednesday PM Room: Pelican 2
March 18, 2015 Location: Swan

Session Chairs: Klaus-Dieter Liss, Australian Nuclear Science and Technology Organisation; David McDowell, Georgia Institute of Technology

2:00 PM Invited Multiscale and Nondestructive 3D Mapping of Grains and Sub Grains and Their Evolution during Deformation Using X-ray Microscopy: Henning Poulsen1; Hugh Simons1; Søren Schmidt1; Wolfgang Pantleon1; Carsten Detlefs1; Wolfgang Ludwigs1; ‘DTU; ESF

2:30 PM Invited Characterizing Stress-Driven Microstructural Evolution in Nanocrystalline Alloys: Mo-riegen He1; Gyuseok Kim1; ‘University of Pennsylvania

3:00 PM Quantitative Analysis of the Orientation Spreading in Individual Grains during Plastic Deformation: Wolfgang Pantleon1; ‘Technical University of Denmark

3:20 PM Break

3:40 PM Mapping Dislocation Densities Using Precession Electron Diffraction: Asher Leff1; Christopher Weinberger1; Mitra Tahir1; ‘Drexel University

4:00 PM Application of Precession Electron Diffraction in Deformation Studies of Advanced Non-Ferrous Structural Alloys: Iman Ghamarian1; Yue Liu1; Peyman Samimi1; Yang Cao1; Peter Collins1; ‘University of North Texas

4:20 PM Stacking Faults, Dislocation Configuration, and Mechanical Behavior in Mg-Y Alloys: Dalong Zhang1; Subhash Mahajan1; Enrique Lavernia1; ‘University of California-Davis

4:40 PM Plastic Deformation in a Wrought Magnesium Alloy Under a Biaxial-Loading Condition Investigated by in-situ Synchrotron X-ray Diffraction Mapping: Wei Wu1; Chih-Pin Chuang1; Yang Ren1; Ke An1; ‘Oak Ridge National Laboratory; ‘Argonne National Laboratory

5:00 PM Deformation Induced Stacking Fault Tetrahedra in Gold Nanocrystals: Scott Mao1; Jiangwei Wang1; Sankar Narayanan1; Ting Zhu1; ‘University of Pittsburgh; ‘Georgia Institute of Technology

Advanced Energy-Efficient Light Metal (Al, Mg, and Ti) Extraction Technologies and Processes — Session II

Sponsored by: TMS: Energy Committee

Program Organizers: James Klausner, US Department of Energy; Adam Powell, INFINIUM, Inc.; Peter McGrail, PNNL; Aldo Steinfield, ETH Zurich

Wednesday PM Room: Southern Hemisphere V
March 18, 2015 Location: Dolphin

Session Chair: To Be Announced

2:00 PM New Approaches for the Production of Titanium Metal: Prabhat Tripathy1; Derek Fray2; Guy Fredrickson3; ’Idaho National Laboratory; ’University of Cambridge

2:20 PM Novel Titanium Electrowinning Process Using Specialized Segmented Diaphragms: Chang-Jung Hseuh1; Mirko Antloga1; Craig Vinelso1; Uziel Landau1; Mark DeGuire1; Rohan Akolkar1; ‘Case Western Reserve University

2:40 PM Review of Oxy carbide Approach to Electrolytic Titanium Production: P. Chris Pistorius1; Farzin Fatollahi-Fard1; ‘Carnegie Mellon University

3:00 PM Research on the Optimization of Ti Metal Extraction from Ti-Slag by an Energy-Efficient Chemical Pathway: Ying Zhang1; Zhigang Fang1; Jun Guo1; Zhe Huang1; Hynum Lefler1; ‘University of Utah

3:20 PM Break

3:50 PM Investigation of Leaching Methods for Impurity Removal from Reduced Upgraded Slag: Nathan Hamilton1; Amarchand Sathyapalan1; Michael Free1; Zak Fang1; ‘University of Utah

4:10 PM Study of Separating Ti-CO from Simulated Carbon-Thermal Reduced Titanium Ores by Flotation Process: Zhoudi Chen1; Kai Huang1; Bo Jiang1; Qiuyu Wang1; Hongmin Zhu1; ‘State Key Laboratory of Advanced Metallurgy and School of Metallurgical & Ecological Engineering, University of Science and Technology Beijing

4:30 PM Preparation of Ti-Al-V Alloys by Aluminothermic Reaction: Zhijiang Gao1; Huimin Lu1; Liyuan Zhao1; ‘Beihang University

4:50 PM Study on Smelting Reduction of Coal-Containing Pellets of Vanadic-Titanomagnetite Sand by Combined Rotary Hearth Furnace and Grinding Magnetic Separation: Zhijiang Gao1; Huimin Lu1; Liang Fan1; ‘Beihang University

5:10 PM Concluding Comments
Session Chairs: Dmitry Eskin, Brunel University; Jiawei Mi, University of Hull

Wednesday PM
March 18, 2015
Room: Swan 1
Location: Swan

2:00 PM Invited
Studies on Solidification Using Synchrotron Based X-ray Radiography and Automated Data Extraction: Patrick Grant1; Enzo Liotti1; ‘Oxford University

2:30 PM Invited
Effects of Thermo-Electric-Magnetic Convection on Solidification: Yves Fattarolle1; ‘Grenoble Institute of Technology

3:00 PM
In-situ Synchrotron X-ray Studies of Ultrasound Shock Wave and Enhanced Flow during Metal Solidification Processes: Dongyue Tan1; Tung Lik Lee1; Jiawei Mi1; ‘University of Hull

3:20 PM
Ultrasonic Melt Processing of Metal Matrix Composites: A 4D Experimental Study of Solidification and Remelting: Sofiane Terzi1; Rémi Daudin2; Luc Salvo3; Pierre Lhuissier2; Elodie Boller3; Wim Sillekens1; David Jarvis1; ‘European Space Agency; ‘Grenoble University; ‘ESRF

3:40 PM Break

3:55 PM
In Situ Synchrotron Radiography of Ultrasonic Cavitation in a Molten Al-10Cu Alloy: Wemwa Xu1; Jakovos Tzanakis2; Prakash Sirrangam3; Sofiane Terzi1; Wajira Mirihanage1; Dmitry Eskin1; Ragnvald Mathiesen1; Andrew Horsfield2; Peter Lee1; ‘The University of Manchester; ‘Brunel University; ‘University of Warwick; ‘European Space Agency; ‘Norwegian University of Science and Technology; ‘Imperial College London

4:15 PM
Study of Cavitation Induced Nucleation in Metallic Alloy Melt via Small Angle X-ray Scattering: Da Shu1; Jian Su2; Haiguo Ren1; Lin Liu1; ‘Northwestern Polytechnic University

4:35 PM
Melting and Solidification Processes Under Surface Laser Irradiation as a Driving Force for Discrete-Gradient Design in Fe-Alloys Volume: Sergey Sidorenko1; Yevgen Ivashenko1; Natalia Franchik1; ‘National Technical University of Ukraine “KPI”

4:55 PM
Solidification Behavior of Mg-HA Nanocomposites Subjected to High Shear Treatment: Junyi Li1; Yan Huang1; ‘Brunel University

5:15 PM
The Directional Solidification of Two Kinds of Al-Si Alloys Under the Pulsed Magnetic Field: Zhilong Zhao1; Jian Su2; Haiguo Ren1; Lin Liu1; ‘Northwestern Polytechnic University

5:25 PM
Application of a New Method of Ultrasonic Melting and Solidification of Metal Alloys: Andriy Burbelko1; Sofiane Terzi2; Esther De la Fuente1; Subhayu Sen1; ‘GEOCENT; ‘Attila Diöszegi; ‘Emerson Climate Technologies; ‘Alan Luo; ‘The Ohio State University; ‘Veigalan Estudio 2010; ‘Caterpillar Inc; ‘Northwestern Polytechnic University

5:40 PM
Understanding Superfine Graphite Iron Solidification through Interrupted Solidification Experiments: Gorka Alonso1; Doru Stefanescu2; Richard Huff2; Amber Genau1; ‘Caterpillar Inc; ‘Northwestern University; ‘Caterpillar; ‘University of Alabama at Birmingham

5:50 PM
The Effect of Oxygen and Sulfur on Superfine Interdendritic Graphite Growth: Edurme Aguado1; Gorka Alonso1; Doru Stefanescu2; Jon Sertuch1; ‘AZTERLAN; ‘The Ohio State University and The University of Alabama; ‘Veigalan Estudio 2010; ‘I+D y Procesos Metalurgicos

5:10 PM
Understand Cast Iron Materials and Components – A Never Ending Story: Ingvar Svensson1; Jakob Olofsson1; ‘Jonkoping University

4:00 PM Invited
Understanding Cast Iron Materials and Components – A Never Ending Story: Ingvar Svensson1; Jakob Olofsson1; ‘Jonkoping University

4:25 PM Invited
A Eutectic Growth Model for Binary Alloys Accounting for Phase Fractions Adjustment during Solidification: Adrian Catalina1; Peter Voorhees1; Richard Huff2; Amber Genau1; ‘Caterpillar Inc; ‘Northwestern University; ‘Caterpillar; ‘University of Alabama at Birmingham

4:50 PM
Understanding Superfine Graphite Iron Solidification through Interrupted Solidification Experiments: Gorka Alonso1; Doru Stefanescu2; Esther De la Fuente1; Edurme Aguado1; Ramon Suarez2; ‘AZTERLAN; ‘The Ohio State University and The University of Alabama; ‘Veigalan Estudio 2010; ‘I+D y Procesos Metalurgicos

5:10 PM
The Effect of Oxygen and Sulfur on Superfine Interdendritic Graphite Growth: Edurme Aguado1; Gorka Alonso1; Doru Stefanescu2; Jon Sertuch1; ‘AZTERLAN; ‘The Ohio State University and The University of Alabama; ‘Veigalan Estudio 2010

5:24 PM
Understanding the Dynamic Effects of a Pulsed Electromagnetic Field on Solidification: Patrick Grant1; Enzo Liotti1; ‘Oxford University

5:39 PM
Effects of Thermo-Electric-Magnetic Convection on Solidification: Yves Fattarolle1; ‘Grenoble Institute of Technology

5:54 PM
In-situ Synchrotron X-ray Studies of Ultrasound Shock Wave and Enhanced Flow during Metal Solidification Processes: Dongyue Tan1; Tung Lik Lee1; Jiawei Mi1; ‘University of Hull

6:19 PM
Ultrasonic Melt Processing of Metal Matrix Composites: A 4D Experimental Study of Solidification and Remelting: Sofiane Terzi1; Rémi Daudin2; Luc Salvo3; Pierre Lhuissier2; Elodie Boller3; Wim Sillekens1; David Jarvis1; ‘European Space Agency; ‘Grenoble University; ‘ESRF

6:44 PM
Study of Cavitation Induced Nucleation in Metallic Alloy Melt via Small Angle X-ray Scattering: Da Shu1; Jian Su2; Haiguo Ren1; Lin Liu1; ‘Northwestern Polytechnic University

7:19 PM
Melting and Solidification Processes Under Surface Laser Irradiation as a Driving Force for Discrete-Gradient Design in Fe-Alloys Volume: Sergey Sidorenko1; Yevgen Ivashenko1; Natalia Franchik1; ‘National Technical University of Ukraine “KPI”

7:54 PM
Solidification Behavior of Mg-HA Nanocomposites Subjected to High Shear Treatment: Junyi Li1; Yan Huang1; ‘Brunel University

8:24 PM
Application of a New Method of Ultrasonic Melting and Solidification of Metal Alloys: Andriy Burbelko1; Sofiane Terzi2; Esther De la Fuente1; Subhayu Sen1; ‘GEOCENT; ‘Attila Diöszegi; ‘Emerson Climate Technologies; ‘Alan Luo; ‘The Ohio State University; ‘Veigalan Estudio 2010; ‘Caterpillar Inc; ‘Northwestern Polytechnic University

8:54 PM
Understanding Cast Iron Materials and Components – A Never Ending Story: Ingvar Svensson1; Jakob Olofsson1; ‘Jonkoping University

9:24 PM
A Eutectic Growth Model for Binary Alloys Accounting for Phase Fractions Adjustment during Solidification: Adrian Catalina1; Peter Voorhees1; Richard Huff2; Amber Genau1; ‘Caterpillar Inc; ‘Northwestern University; ‘Caterpillar; ‘University of Alabama at Birmingham

9:54 PM
Understanding Superfine Graphite Iron Solidification through Interrupted Solidification Experiments: Gorka Alonso1; Doru Stefanescu2; Esther De la Fuente1; Edurme Aguado1; Ramon Suarez2; ‘AZTERLAN; ‘The Ohio State University and The University of Alabama; ‘Veigalan Estudio 2010; ‘I+D y Procesos Metalurgicos

10:24 PM
The Effect of Oxygen and Sulfur on Superfine Interdendritic Graphite Growth: Edurme Aguado1; Gorka Alonso1; Doru Stefanescu2; Jon Sertuch1; ‘AZTERLAN; ‘The Ohio State University and The University of Alabama; ‘Veigalan Estudio 2010

10:54 PM
Session Chair: Adrian Catalina, Caterpillar
Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Microstructure Evolution II

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

Program Organizers: Laurentiu Nastac, The University of Alabama; Baicheng Liu, Tsinghua University; Hasse Fredriksson, KTH - Royal Institute of Technology; Jacques Lacaze, Université de Toulouse; Chun-Pyo Hong, Yonsei University; Adrian Catalina, Copperhill Inc.; Andreas Buhlig-Polaczek, RWTH Aachen University; Daan Maiter, The University of British Columbia; Charles Monroe, University of Alabama at Birmingham; Adrian Sabau, Oak Ridge National Laboratory; Roxana Ruxanda, Emerson Climate Technologies; Alan Luo, The Ohio State University; Subhayan Sen, GEOCENT; Attila Diószegi, Jönköping University, School of Engineering

Wednesday PM  Room: Swan 6
March 18, 2015  Location: Swan

Session Chair: Adrian Sabau, Oak Ridge National Laboratory

2:00 PM Invited
In Situ Study on the Evolution of Dendrite Morphology Affected by Electric Field in Sn-Bi Alloy: Tongmin Wang1; Dalian University of Technology

2:25 PM Invited
Heterogeneous Strip Originated from Inclusions: Characterization and Physical Mechanism: Xiaoping Mu1; Dianzhong Li1; Institute of Metals Research, Chinese Academy of Sciences

2:50 PM
Nanoparticle-Enabled Phase Domain Growth Control during Solidification Processing: Lianyi Chen1; Jiaquan Xu1; Xiaochun Li1; University of California at Los Angeles

3:10 PM
An Investigation of Dendritic Segregation in Directionally Solidified CMSX-4 Superalloy: Gheorghe Matache1; Doru Stefanescu2; Cristian Puscasu1; Elvira Alexandrescu1; INCDT COMOTI; The Ohio State University and The University of Alabama

3:30 PM
Modeling of Casting Defects In an Integrated Computational Materials Engineering Approach: Adrian Sabau1; Oak Ridge National Laboratory

3:50 PM Break

4:10 PM Invited
X-ray Observations Showing the Effect of Fluid Flow on Dendritic Solidification in Ga-In Alloys: Natalia Shevchenko1; Olga Roshchupkina1; Sven Eckert1; Helmholtz Zentrum Dresden-Rossendorf

4:35 PM
Advances on 3D Stochastic Modeling of Microstructure Evolution during the Solidification of Dendritic Alloys: Duojie Zhang1; Laurentiu Nastac1; The University of Alabama

4:55 PM
Observation of the Solidification Microstructure of GCr15 Bearing Steel Billets: Lifeng Zhang1; Shengqian Wang1; University of Science and Technology Beijing

5:15 PM
Phase Field Modelling of Multiple Dendrites with Different Growth Orientations and Constant Cooling Rate: Alexandre Ferreira1; Monira Valente1; Dimas Moraes1; Universidade Federal Fluminense

Advances in Thin Films for Electronics and Photonics — Functional and Multifunctional Materials

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Federico Rosel, INRS; Nugeghalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Wednesday PM  Room: Europe 7
March 18, 2015  Location: Dolphin

Session Chair: Sylvain Cloutier, École de Technologie Supérieure

2:00 PM Invited
Ion Beam Modification of Sliding Contact Materials: Nanoscale Observations to Implementation: Daniel Bufford1; Jon-Erik Mogonye1; Khalid Hattar2; Somuri Prasad3; Sandia National Laboratories

2:25 PM Invited
Structure Tuning of Titania Nanotubes for Physical-Photochemical Multifunctionalization: Tohru Sekino1; Osaka University

2:50 PM
New Multicomponent Antimonite Glasses for Non-Linear Optical Applications: Ali Erçin Ersundu1; Miray Celikbilek1; Mohamed Toufik Soltani2; Süheyla Aydin3; Nisantasi University; University of Biskra; Istanbul Technical University

3:10 PM
Adhesion of Ge Electrode to Ni Substrate for Li Ion Battery Applications: Aadithya Jayaranjan1; Alex Volinsky1; Nicholas Rudawski1; Kevin Jones1; University of South Florida; University of Florida

3:30 PM Break

3:50 PM Invited
Fabrication and Charge-Transfer Dynamics in PbS and PbSe Quantum Dot-Based Heterostructures: Fan Xu1; Xin Ma1; Chelsea R. Haughn1; Jaime Benavides2; Luis F. Gerlein2; Matthew F. Doty1; Sylvain Cloutier1; University of Delaware; École de Technologie Supérieure

4:15 PM
E-Beam Induced Effects in Ge-Se Based Redox Conductive Bridge Memory Devices and Thin Films: Maria Mitkova1; Kasandra Wolf1; Dmitri Tenne1; Mahesh Ailavajhala2; Hugh Barnaby2; Michael Kozicki1; Boise State University; Arizona State University

4:35 PM
Understanding and Exploiting the Electronic Interface in Stacked 2D Atomic Layered Materials: Madan Dubey1; Matthew Chin1; Barbara Nichols1; Eugene Zakar1; Robert Burk1; Alex Mazziotti1; Tyler Klarr1; Glen Birdwell1; Pankaj Shah1; US Army Research Lab

4:55 PM
Sol-Gel Dip Coated Vo2-Based Thin Films for Smart Window Applications: Melis Can Ozdemir1; Miray Celikbilek1; Ali Erçin Ersundu1; Süheyla Aydin3; Istanbul Technical University; Nisantasi University

5:15 PM
Comparison of Optical Properties of Silicon and Black Silicon: Sita Marthi1; Suramya Sekhri2; Nugeghalli Ravindra2; New Jersey Institute of Technology
Alumina and Bauxite — Alternative Raw Materials and Processes, Industrial Trends
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Hans-Werner Schmidt, Outotec GmbH

Wednesday PM
March 18, 2015
Room: Southern Hemisphere IV
Location: Dolphin

Session Chair: Linus Perander, Outotec GmbH

2:00 PM Introductory Comments

2:05 PM
Preparation of Zeolite 4A by Using High-Alumina Coal Fly Ash: Yan Shaoong; Zhang Tiantan; Cheng Chunj; Zhang Qianqi; Sun Junmin; Lv Guozhi; Yang Huibin; Zhang Weiguang; Li Yan; 1Northeastern University; 2High Alumina Coal R&D Center of Datang International Power Generation Co., Ltd.

2:30 PM
Study of Filtration and Washing of Residue After HCl Leaching of Kaolin Clay: Andrey Panov; Alexander Sensut; Andrey Smirnov; Alexander Damaskin; 1RUSAL Engineering & Technology Centre

2:55 PM
Energy in Alumina Refining - Setting New Limits: Alessio Scarsella; 1Outotec GmbH

3:20 PM
Sustainability and Alumina Refinery Design: Peter-Hans ter Weer; 1TWS Services and Advice

3:45 PM Break

4:00 PM
Study on the Production of Ceramic Glass from Calcium-Silica Residue: Huilian Sun; Hao Zhang; Bo Wang; Shuo Rong; 1Hebei University of Science and Technology

4:25 PM
Preparation of Pseudo-boehmite by Using High-Alumina Coal Fly Ash: Zhang Xiaqi; Zhang Ting’an; Feng Wei; Yan Shaoong; Sun Junmin; Lv Guozhi; Yang Huibin; Jiang Xiaoli; 1Northeastern University; 2High Alumina Coal R&D Center of Datang International Power Generation Co., Ltd.

4:50 PM Question and Answer Period

5:25 PM Concluding Comments

Aluminum Alloys: Development, Characterization, and Applications — Advanced Analysis
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky

Wednesday PM
March 18, 2015
Room: Northern Hemisphere E4
Location: Dolphin

Session Chair: Gang Sha, Nanjing University of Science and Technology

2:00 PM Keynote
Effect of Si Addition on Precipitation Kinetics of Al-Cu-Mg Alloys: Gang Sha; 1Nanjing University of Science and Technology

2:35 PM
High Temperature Creep Characterization of A380 Cast Aluminum Alloy — A Neutron Diffraction Study: Dimitry Sediako; Mike Walker; Frank Czerwinski; Wojciech Kasprzak; 1Canadian Neutron Beam; 2General Motors Corporation; 3CANMET Materials Technology Laboratory

2:55 PM
A Comparison of β' and β Phase Precipitation during Varying Heat Treatments in Al-Mg Alloys via In-Situ TEM: Daniel Scotto D’Antuono; 1Drexel University; 2University of Maryland; 3Naval Surface Warfare Center; 4Drexel University

3:15 PM
Hydrogen Visualization in the Deformed Microstructure of Al-Zn-Mg Base Alloys: Keitaro Horikawa; Tanigaki Kenichi; Hitoteshi Kobayashi; 1Osaka University

3:35 PM Break

3:50 PM
Hydrogen Trapping Behaviors in Al-Zn-Mg-Cu Alloys: Peng Zhang; Md Shahnewaz Bhuyan; Hiroyuki Toda; Keitaro Horikawa; Kentaro Uesugi; Akhissa Takeuchi; Yoshio Suzuki; Nobuto Sakaguchi; Yoshio Watanabe; 1Kyushu University; 2Osaka University; 3Japan Synchrotron Radiation Research Institute; 4UACJ Corporation

4:10 PM
Investigation of the Structural Stability of Nanostructured Al+5.7wt.%Ni Mechanically Alloyed Eutectic Alloy Powder: Mohyeddin Ragab; Hanadi Salem; 1North Dakota State University; 2The American University in Cairo

4:30 PM
Optimization of Degassing Parameters for Nanocrystalline AA5083 Powder: Clara Hofmeister; Frank Kellogg; Anit Girl; Kyo Cho; Yongho Sohn; 1University of Central Florida; 2Bohweed Science and Technology; 3TKC Global; 4US Army Research Laboratory

4:50 PM
Embrittlement of Al-Based Alloys with Liquid Ga as a Way to Study of Grain Boundary Composition: Rodin Alexey; Ksenia Kovaleva; Dmitri Podgorny; 1National University of Science and Technology “MISIS”

5:10 PM
A Comprehensive Study on the Effect of Retrogression and Reaging on the Properties of Aluminium Alloy Conforming to AA 7049 Specification: Muralidhara Krishnappa; Shahnewaz Bhuiyan; Hiroyuki Toda; Keitaro Horikawa; 1University Visvesvaraya College of Engineering; 2S. J. C. Institute of Technology

Aluminum Alloys: Development, Characterization, and Applications — Deformation and Texture
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky

Wednesday PM
March 18, 2015
Room: Northern Hemisphere E3
Location: Dolphin

Session Chair: Xiuy Wen, University of Kentucky

2:00 PM
Evaluation of Forming Limit Diagram of Aluminum Alloy 6061-T6 at Ambient Temperature: Manoj Sharma; Jyoti Mukhopadhyay; 1Institute of Technology Gandhinagar

2:20 PM Invited
On Microstructures, Textures and Electric Resistivity of AA1350 Alloy Sheets after Annealing: Xiuy Wen; Jingwu Zhang; Shridas Ningilkeri; 1University of Kentucky; 2State Key Laboratory of Metastable Materials Science and Technology; 3University of Kentucky/Secat Inc.

2:40 PM
Twinning in A1 and A1 Alloys: Leonardo Velasco; Andrea Hodge; 1University of Southern California

3:00 PM
Characterizing Modeling the Deformation of AA5182 for Hot Blank – Cold Die (HB-CD) Stamping: Nan Zhang; Fadi Abu-Farha; 1Clemson University
3:20 PM  
Correlation between Deformation Route and Microstructural Evolution of 6001 Al Alloy Deformed by Differential Speed Rolling: Haewoong Yang; Mosab Kaseem; Young Gun Ko; Yeungnam University

3:40 PM  
Break

3:50 PM  
The Portevin-Le Châtelier Effect in a Rheocast Al-Si-Cu Alloy: Anders Jafors; Niels-Eric Andersson; Toni Bogdanoff; Mostafa Payandeh; Salem Seifeddine; Alexander Leick; Aron Tapper; JTH

4:10 PM  
An Investigation on High-Rate Formability of High-Strength Aluminum Alloys: A Study on Objectivity of Measured Strain and Strain-Rate: Pyush Upadhyay; Aashish Rohatgi; Elizabeth Stephens; Richard Davies; David Catalini; Pacific Northwest National Laboratory

4:30 PM  
The Surface Necking Forming Mechanism in an AA6016 Automotive Sheet during Bending: Q. Zhang; P.Z. Zhao; J.D. Liu; Y.J. Feng; CHINALCO Research Institute of Science and Technology

4:50 PM  
Effects of Stretch Forming on Aging and Corrosion of Third Generation Al-Li Alloys: Ellen Wright; Michael Kaufman; Colorado School of Mines

Aluminum Reduction Technology — Operations and Energy Consumption  
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee  
Program Organizer: Pascal Laviole, LMRC

Wednesday PM  
Room: Southern Hemisphere III  
March 18, 2015  
Location: Dolphin

Session Chair: Claude Fradet, Rio Tinto Alcan

2:00 PM  
Introductory Comments

2:05 PM  
On-line Monitoring of Individual Anode Current to Understand and Improve the Process Control at Alouette: Lukas Dion; Charles-Luc Lagacé; James Evans; Ron Victor; László Kiss; Université du Québec à Chicoutimi; Aluminerie Alouette Inc.; Wireless Industrial Technologies

2:30 PM  
High Frequency Measurements of Current through Individual Anodes: Some Results from Measurement Campaigns at Hydro: Steinar Kolas; Phillip McIntosh; Ashjarn Solheim; Hydro; SINTEF

2:55 PM  
Frequency Response Analysis of Electrolysis Cell Voltage Signals during the Alumina Feed Cycles: Luisa Azevedo; Milton Nagem; João da Fonseca Neto; Federal University of Maranhão (UFMA); Aluminum Consortium of Maranhão (ALUMAR)

3:20 PM  
Experiments on Measurement of Online Anode Currents at Anode Beam in Aluminum Reduction Cells: Shuai Yang; Zhong Zou; Jie Li; Hong-liang Zhang; Central South University in China

3:45 PM  
Break

4:00 PM  
Investigation of Cathode & Collector Bar Modification on Thermal Balance of a Low Anode Power: Amit Gupta; Saibul Modak; Mahesh Sahoo; Jinil Janardhanan; Aditya Birla Science & Technology Company Ltd.; Hindalco Industries Ltd.

4:25 PM  
Trading Current or Resistance for Metal Depth to Maintain Ledge: Richard Beeler; Donald Ziegler; Alcoa Inc.

4:50 PM  
Reduction in Power Consumption at UC RUSAL’S smelter 2012-2014: Victor Buzanov; Viktor Mann; Nikolay Piterzey; Grenady Arkhipov; Viktor Chesnya; RUSAL "Engeneering and Technological Center"; UC RUSAL

5:15 PM  
Aspects of Change Management and Process Management at Some Smelters: Yashuang Gao; Albert Mulder; Mark Taylor; John Chen; University of Auckland

Biological Materials Science Symposium — Biointerfaces for Biomedical Applications  
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee  
Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter; Clemson University; Francois Barthelat, McGill University

Wednesday PM  
Room: Swan 9  
March 18, 2015  
Location: Swan

Session Chairs: Rajendra Kasinath, DePuy Synthes Products, LLC; Francois Barthelat, McGill University

2:00 PM  
Invited  
Biomimetic Interfaces for Peptide Mediated Antimicrobial Implant Coatings: Deniz Yucesoy; Nicole Chin; Sarah VanOosten; Marketa Hnilova; Candan Tamerler; University of Kansas; University of Washington

2:30 PM  
Displacements of Bacterial Cells on Activated Photocatalytic Films: X. Wang; J. Zhang; L. Li; F. Fang; J. Shang; Institute of Metal Research; Southeast University; University of Illinois

2:50 PM  
Magnetic Nanocomposites for Localized Hyperthermia Treatment of Breast Cancer: Kwabena Kan-Dapaah; Worcester Polytechnic Institute

3:10 PM  
Prior Evaluation of Bioactive Coatings of Blood Contacting Applications: Narayana Garimella; University at Buffalo

3:30 PM  
Break

3:50 PM  
Adhesion of Blood Platelets in TiO₂ Nanoparticles Synthesised via a Green Method: X. Wang; J. Zhang; L. Li; F. Fang; J. Shang; Institute of Metal Research; Southeast University; University of Illinois

4:10 PM  
Translation of Mg Alloy Properties to Stent Performance: Jacob Edick; Dennis Boismier; Jan Weber; Boston Scientific

4:30 PM  
Biomimetic Surface Treatment of Titanium Alloys Associated with Electrosprining: Ana Paula Alves Claro; Marisa Souza; Rosemeire Almeida; Marcos Akira; Maria Cristina Alves Rezende; UNESP; Unicamp

4:50 PM  
Optical and Imaging Properties of Highly Luminescent Water Soluble Type II CdTe/CdSe Nanoparticles Synthesised via a Green Method: Vuyelwa Ncapayi; Oluwafemi Oluwatosi; Sandile Songca; Cape-Peninsula University of Technology; Walter Sisulu University

5:10 PM  
Production and Characterization of Magnesium Based Composites: Ziya Esen; Ezgi Bütev; Emre Yılmaz; Cankaya University
2:00 PM Invited  
Intrinsic Amorphous Structure Difference in Ductile and Brittle ZrCu 

2:25 PM  
Applying Computational Fluid Dynamics to Bulk Metallic Glass 

2:45 PM  
Stress Corrosion Interactions of the Bulk Glassy Zr_{22}Cu_{17.9}Al_{10}Ni_{14.6}Ti_{5} 

3:05 PM Invited  
Relaxation and Elastic-Plastic Crossover Phenomenon in a Bulk-Metallic- 

3:30 PM  
Repetitive Ultra-Low Stress Induced Nanocrystallization in Amorphous 

3:50 PM Break  

4:05 PM  
The Extended Defect and Its Percolation during the Deformation of 

4:25 PM  
Laser Deposition as a Combinatorial Tool for Discovering New Metallic 

4:45 PM  
Trigger Mechanism of Deformation in Bulk Metallic Glass: Yue Fan; 

5:05 PM Invited  
Xe Ion Irradiation Induced Surface Homogeneity in a Metallic Glass: 

5:25 PM  
Development of Zr-Cu-Based Bulk Metallic Glasses with Super High Glass 

WEDNESDAY PM
Cast Shop for Aluminum Production — General Cast Shop
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pete Forakis, STAS Middle East

Wednesday PM  Room: Southern Hemisphere II  Location: Dolphin
March 18, 2015

Session Chair: Mohamed Ali, Masdar Institute

2:00 PM Introductory Comments

2:05 PM  A Method of Measuring the Sticking Strength of Alloy A380 on Bare and Coated Die Steels: Bo Jiang1; Gerald Boulton2; Stephen Midson2; Andras Korenyi-Both2; Michael Kaufman2; ‘Colorado School of Mines’

2:30 PM  Deformation of the Aluminum Bath Surface in an Induction Melting Furnace: Akshay Bansal1; Pierre Chapelle1; Yves Delannoy1; Emmanuel Waz1; Pierre LeBrun2; Jean-Pierre Bellot2; ‘University of Lorraine’

2:55 PM  The History and Future of Aluminum Dross Processing: David Rooth1; ‘GPS Global Solutions’

3:20 PM  Recycling of Die Cast Aluminum A380 Machining Chips: Bojan Xiong1; Xuezhi Zhang1; Henry Hu1; Chi Liu1; Li Fang1; ‘Magnas Powertrain’

3:45 PM  Break

4:00 PM  Production and Certification of Metallic Certified Reference Materials for the Analysis of Aluminum Alloys: Hafida Hamouche1; Jean-François Archambault1; Claude Dupuis1; ‘Rio Tinto Alcan’

4:25 PM  Recycling of Automotive Wrought Alloys: Ray Peterson1; ‘Aleris International Inc.’

2:00 PM  Elemental Identification of Surface and Subsurface Particles within a Mineralogical Core using Micro X-ray Computed Tomography and Confocal Micro X-ray Fluorescence Spectroscopy: Nikolaus Cordes1; Sivitys Basanta2; Michael Feser3; Xiaoli Yuan1; Ying Gu1; Deming Wang1; George Havrilla1; Brian Patterson1; ‘Los Alamos National Laboratory’

2:40 PM  Characterization of Feldspar by Instrumental Analytical Techniques: Adele Garkida1; Zainab Aliyu1; Edwin Ali1; Muhammad Dauda1; ‘Ahmadu Bello University’

3:00 PM  Microwave Power Absorption Characteristics of Iron Oxides: Zhiwei Peng1; Jian-Yang Huang2; Matthew Andriese3; Yuzhe Zhang1; Guanghui Li1; Tao Jiang1; ‘Central South University’

3:20 PM  Break

3:40 PM  Qualitative and Mineralogical Characterization of Lead Deposit in Ishiagu, Ebonyi State, Nigeria: Gerald Onyedika1; Kelechukwu Onwukamike2; Martin Ogwuegbu1; Chidi Onyenehide1; ‘Federal University of Technology, Owerri’

4:00 PM  Sintering Characteristics of Iron Ores with Addition of Laterite Nickel Ores: Xinyu Li1; Jianliang Zhang1; Chaoquan Yao1; Yapeng Zhang1; Zhiwen Shi1; ‘University of Science and Technology, Beijing’

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Sergio Neves Monteiro, Military Institute of Engineering, IME, Materials Science Department; Zhiwei Peng, Michigan Technological University; Mingming Zhang, ArcelorMittal; Jian Li, CanmetMATERIALS

Wednesday PM  Room: Mockingbird 1  Location: Swan
March 18, 2015

Session Chairs: Brian Patterson, Los Alamos National Laboratory; Sergio Monteiro, Military Institute of Engineering

2:00 PM  Dynamic In-situ Compression with Synchrotron 3D Tomographic Imaging of Cellular Materials: Brian Patterson1; Nikhilesh Chawla1; Sudhanshu Singh1; Myrtle Lin1; Jason Williams2; Xianghui Xiao3; Mathew Robinson3; Zachary Smith1; Kevin Henderson1; Nikolaus Cordes1; ‘Los Alamos National Laboratory’

2:20 PM  Constitutive Modeling of a Glass Fiber-Reinforced PTFE Gasketed-Joint Under a Re-Force: James Williams1; Ali Gordon1; ‘University of Central Florida’

2:40 PM  Microwave Absorption Characteristics of Tire: Yuzhe Zhang1; Jian-Yang Huang2; Zhiwei Peng1; Matthew Andriese3; Bowen Li1; Xiaoli Yuan1; ‘Michigan Technological University’

3:00 PM  Optical Evaluation for Biomimetic Microlens Array on PDMS Sheet: Kenji Monden1; ‘Denki Kagaku Kogyo K.K.’
3:20 PM
Behavior of Linear Low Density Polyethylene Under UV Ageing for Agricultural Application: Patrícia Poveda1; Hamilton Viana2; Leonardo Silva3; 1Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN-SP; 2Centro Universitário Fundação de Santo André - FSA/FAENG

3:40 PM Break

3:50 PM
Photoacoustic Thermal Characterization of Malva Fibers: Jean Margenot1; Frederico Margenot2; Vinicius Gomes2; Marina Margenot2; Rafael Castro2; Sergio Monteiro3; Carolina Ribeiro3; 1Instituto de Ensino Superiores do Censo, ISECENSA; 2UENF -State University of the Northern Rio de Janeiro; 3IME-Military Institute of Engineering

4:10 PM
Characterization of Hydrophobic Aerogel For Insulation Application: Mehmet Burcin Piskin1; Nevim Karamahmut Mermer2; Muge Sari Yilmaz3; Ozgul Dere Ozdemir4; 1Yildiz Technical University

4:30 PM
Assessing Viscoelastic Properties of Polydimethylsiloxane (PDMS) Using Loading and Unloading of the Compression Test: Mustafa Fincan1; Alex Volinski1; Zhixin Wang1; Nathan Gallant1; 1University of South Florida

4:50 PM
Mechanical, Morphological and Thermal Properties of Açai Fibers Reinforced Biodegradable Polymer Composites: Célio Wataya1; Roberta Lima2; Rene Oliveira3; Esperidiana Moura4; 1Instituto de Pesquisas Energéticas e Nucleares

5:10 PM
Influence of Clay Exfoliation on the Properties of EVOH/Clay Flexible Films: Messias Machado1; Renato Godoy2; Andressa Silva2; Roberta Lima3; Rene Oliveira4; Francisco Valenzuela-Diaz5; Esperidiana Moura6; 1Universidade de São Paulo; 2Instituto de Pesquisas Energéticas e Nucleares

March 18, 2015

Computational Modeling and Stochastic Methods for Materials Discovery and Properties — Materials for Energy Applications

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca Taverna, National Institute of Standards and Technology; Dallas Trinkle, University of Illinois at Urbana-Champaign; Mikhail Mendeleev, Ames Laboratory; Adri van Duijn, Pennsylvania State University

Wednesday PM
Room: Northern Hemisphere A4
Location: Dolphin

Session Chairs: Yue Qi, Michigan State University; Richard Hennig, University of Florida

2:00 PM Invited
Predicting Lithium and Electron Transport in Solid Electrolyte Interphases in Li-Ion Batteries: Yue Qi1; 1Michigan State University

2:30 PM
Unraveling Catalytic Mechanism of Co3O4 for Oxygen Evolution Reaction in Li2O2 Battery: Jianjun Liu1; 1Shanghai Institute of Ceramics, Chinese Academy of Sciences

2:50 PM
Computational Design of Nanosegregated Pt Alloy Catalysts: Guiofeng Wang1; Zhiyao Duan1; Shyam Kattel1; 1University of Pittsburgh

3:10 PM
Atomic Scale Investigation of NiAlx Alloys Using a Combined First-Principles and Statistical Learning Approach: Aakash Kumar1; Scott Broderick2; Aleksandr Chernatymskii3; Adedapo Oni4; James LaBeau5; Krishna Rajan6; Simon Phillipot7; Susan Simint8; 1University of Florida; 2Iowa State University; 3North Carolina State University

3:30 PM Break

3:45 PM
Computational Modeling of Structural and Dynamic Properties of Al-Li-Zn and Al-Li-Cu Alloys: Marcela Trybula1; Tomasz Ganczar2; Louis Hennet2; Wladyslaw Gasior3; Alain Pasturel4; 1Institute of Metallurgy and Materials Science; 2CEMHTI-CNRS UPR3079; 3Science et Ingénierie des Matériaux et Procédés, France

4:05 PM
Multi-Objectives Computational Design of Nickel-Based Superalloys: Edern Menou1; Philippe Leray2; Gérard Ramstein2; Franck Tancer2; 1Institut des matériaux Jean Rouxel; 2Laboratoire d’Informatique de Nantes Atlantique

4:25 PM
ReaxFF Molecular Dynamics Simulation on Oxidation Behaviors of 3C-SiC: Uniaxial Strain Effect: Yu Sun1; Yijun Liu2; Fei Xu3; 1Northwestern Polytechnical University

4:45 PM
Developing Multiscale Models to Understand the Mechanics of Transition Metal Carbides: Christopher Weinberger1; Hang Yu2; Xiao-Xiang Yu3; Nicholas De Leon4; Duraivelan Palanisamy5; Gregory Thompson6; 1Drexel University; 2University of Alabama

5:05 PM
Predictive Simulations of Amorphous Polymers: Processing and Ultimate Thermo-Mechanical Properties: Alejandro Strachan1; Chunyu Li2; Yae-jii Kim3; 1Purdue University

Computational Thermodynamics and Kinetics — Energy-Storage Materials

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Richard Hennig, University of Florida; Francesca Taverna, National Institute of Standards and Technology; Maryam Ghazisaeidi, The Ohio-State University; Vidvuds Ozolins, University of California Los Angeles

Wednesday PM
Room: Oceanic 2
Location: Dolphin

Session Chairs: Stefano Curtarolo, Duke University; Christopher Wolverton, Northwestern University

2:00 PM Invited
Thermodynamics and Kinetics of Multivalent Energy Storage Materials from First-Principles: Kristin Persson1; 1LBNL

2:30 PM
A Molecular Dynamics Study of Lithium-Ion Intercalation in Battery Anode Materials: Christopher Shamesky1; Edmund Webb III1; 1Lehigh University

2:50 PM Invited
From Thermoelectrics to Superconductors: Advances in High-Throughput Accelerated Materials Development: Stefano Curtarolo1; 1Duke University

3:20 PM
Physically-Based Modeling of Redox Reactions in SOFC Anodes: Optimizing Materials and Microstructures for Fracture Resistance: Joel Berry1; Fadi Abdeljawad2; Ryan Davis3; Alexander Hall4; Mikko Haataja5; 1Princeton University

3:40 PM Break

4:00 PM
Molecular Structure and Ion Transport Near Electrode-Electrolyte Interfaces in Lithium-Ion Batteries: Vincenzo Lordi1; Mitchell Ong2; Oswalds Verners3; Adri Van Duijn4; Erik Draeger5; John Pask6; 1Lawrence Livermore National Laboratory; 2Penn State University

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

Program Organizers: Neil Bourne, University of Manchester; Eric Brown, Los Alamos National Laboratory; James Williams, Ohio State University; Kenneth Vecchio, University of California - San Diego

Wednesday PM  Room: Asia 2
March 18, 2015  Location: Dolphin

Session Chairs: Eric Brown, Los Alamos National Laboratory; Neil Bourne, University of Manchester

2:00 PM  Microstructure-Based Constitutive Model for Yield Strength and Strain Hardening of 5xx-series Aluminum Alloys after Non-Isothermal Fire Exposure: Patrick Summers1; Scott Case1; Brian Lattimer1; Virginia Tech

2:20 PM  Low-Temperature Creep in Metals and Alloys: Descriptive Equations: Michael Kassner1; Kamia Smith1; University of Southern California

2:40 PM  Micromechanics of Plastic Deformation and Phase Transformation in a Three-Phase TRIP-Assisted Advanced High Strength Steel: Experiments and Modeling: Ankit Srivastava1; Hassan Ghassemi-Armaki1; Hyokyung Sung1; Peng Chen1; Sharvan Kumar1; Allan Bower1; School of Engineering, Brown University

3:00 PM  Investigation on Tensile Property and Constitutive Relationship for As-Quenched AlCu5Mn Alloy: Wenguang Wang1; Peng Du1; Gang Wang1; Tsinghua University

3:20 PM  Microstructure-Based Simulations of a Pearlilite Steel: Benjamin Anglin1; US Army Research Laboratory

3:40 PM  Break

4:00 PM  Model for Predicting the Plastic Anisotropy and Tension-Compression Asymmetry of Zr for 3D Loadings: Oana Cazacu1; Philip Flater1; Nitin Chandola1; Benoit Revil-Baudard1; University of Florida

4:20 PM  Computer Assisted Microstructure Design of Dual-Phase Steels: Sbastien Allain1; Olivier Bouaziz1; Institut Jean Lamour; LEM3

4:40 PM  Experimental Study and Modeling of Ultra High Strength Low Alloy Steel Quenching Process: Wei Shi1; Xiaohui Lin1; Gang Wang1; Huanyu DI; Tsinghua University

5:00 PM  Thermostastitical Modelling of Twinning in Hexagonal-Closed Packed Alloys: Enrique Galindo-Nava1; Pedro Rivera-Diaz-del-Castillo1; University of Cambridge

5:20 PM  Plastic Deformation of High-Purity Alpha-Titanium: Model Development and Validation Using the Taylor Cylinder Impact Test: Benoit Revil-Baudard1; Oana Cazacu1; Philip Flater2; Geremy Kleiser2; University of Florida; Air Force Research Laboratory

5:40 PM  Physical Based Constitutive Model for the Prediction of Plastic Deformation of Fe-Cr-Ni Stainless Steel under High Strain Rate: Jianchao Yu1; Gang Wang1; Yiming Rong1; Tsinghua University; Worcester Polytechnic Institute

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### Drying, Roasting, and Calcining of Minerals — Fluidization, Reduction Roasting, and Microwave Treatment

**Sponsored by:** TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
**Program Organizer:** Thomas Battle, Midrex Technologies

**Wednesday PM**

#### Program Organizer: Thomas Battle, Midrex Technologies

<table>
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<th>Time</th>
<th>Session Title</th>
<th>Presenters</th>
<th>Location</th>
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<tbody>
<tr>
<td>2:00 PM</td>
<td>Fluidization and Magnetization Roasting Technology Research on Siderite</td>
<td>Wen Chen; Zhenhong Liao; Xiaoyn Liu; Ligang Zhang; Jialin Li; Xinghua Liu; 'Changsha Research Institute of Mining and Metallurgy Co., Ltd.</td>
<td>Grand Harbor Salon 3</td>
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<td>'Kunming University of Science and Technology</td>
<td>Yacht &amp; Beach</td>
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<tr>
<td>2:20 PM</td>
<td>The Temperature Behavior and Microwave Thermo Gravimetric Analysis of ammonium Paratungstate in a Microwave Field</td>
<td>Cheng Fang; 'Kunming University of Science and Technology</td>
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<td>2:40 PM</td>
<td>Green Evaluation of Microwave Shaft Furnaces</td>
<td>Jin Chen; Guo Chen; Jinhui Peng; 'Kunming University of Science and Technology</td>
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<tr>
<td>3:00 PM</td>
<td>Behavior of Phosphorus during Reduction Roasting of Oolitic Hematite Ore with High Phosphorus Content</td>
<td>Guanghui Li; Chongzhong Ouyang; Mingjun Rao; Yuanbo Zhang; Tao Jiang; 'School of Minerals Processing and Bioengineering, Central South University</td>
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<tr>
<td>3:20 PM</td>
<td>Effect of Additives on Phase Transformation of Nickel Laterite Ore during Low-Temperature Reduction Roasting Process Using Carbon Monoxide</td>
<td>Li Bo; Wei Yonggang; Zhou Shiwei; 'Kunming University of Science and Technology; 'Kunming University of Science and Technology</td>
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<td>3:40 PM</td>
<td>Break</td>
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<tr>
<td>4:00 PM</td>
<td>Effect of Temperature on Reduction Roasting Of Low-Grade Iron Ore after Granulating with Coal</td>
<td>Zhiucheng Huang; Ronghai Zhong; Jun Zou; Tao Jiang; 'Central South University; 'Qidong County Shunda Mining Co., Ltd.</td>
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<tr>
<td>4:20 PM</td>
<td>Reductive Decomposition of Lime/Iron Salt Sludge with Anthracite</td>
<td>Hua Wang; Xing Zhu; 'Kunming University of Science and Technology</td>
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<td>4:40 PM</td>
<td>Metallic Tin Preparation from Cassiterite Concentrates by Gas-Based Reduction Roasting in the Presence of Na2CO3</td>
<td>Chuan Su; Yuanbo Zhang; Jun Chen; Guanghui Li; Tao Jiang; 'Central South University</td>
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<td>5:00 PM</td>
<td>Thermo-Physical Properties of Petroleum Coke during Calcinization</td>
<td>Jinhao Sheng; Muqin Long; Tao Liu; Denggu Chen; Yi Yang; Chikai Gong; Chunmei Chen; Chongqing University; 'Guangxi Alumnium Magnesium Design &amp; Research Institute Co., Ltd.</td>
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### Dynamic Probing of Microstructure Evolution in Nanostructured Materials — Grain Boundaries

**Sponsored by:** TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
**Program Organizers:** Nan Li, Los Alamos National Laboratory; Caizhi Zhou, Missouri University of Science and Technology; Dan Gianola, University of Pennsylvania; Marc Legros, CEMES-CNRS

**Wednesday PM**

#### Program Organizer: Thomas Battle, Midrex Technologies

<table>
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<th>Time</th>
<th>Session Title</th>
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<tbody>
<tr>
<td>2:00 PM</td>
<td>Effects of Grain Refinement on Friction and Wear of Metals</td>
<td>Ao Li; Izabela Szlufarska; 'University of Wisconsin Madison</td>
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<td>2:20 PM</td>
<td>Influences of Triple Junctions on Stress-Assisted Grain Boundary Motion in Nanocrystalline Materials</td>
<td>Mohammad Aramfard; Chuang Deng; 'University of Manitoba</td>
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<td>2:40 PM</td>
<td>In-Situ Irradiation-Transmission Electron Microscopy (TEM) Experiments on Ultrafine- and Nanocrystalline- Grain Boundary</td>
<td>Mohammad Aramfard; Chuang Deng; 'University of Manitoba</td>
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<tr>
<td>3:00 PM</td>
<td>Unusual Structural Transition in Titanium and Molybdenum Induced by Plastic Deformation</td>
<td>Hao Wang; 'Institute of Metal Research, Chinese Academy of Sciences</td>
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<td>3:20 PM</td>
<td>Grain Boundary Segregation and Thermal Stability of Nanocrystalline Alloys: A Phase Field Approach</td>
<td>Fadi Abdeljawad; Stephen Foiles; 'Sandia National Laboratories</td>
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<td>3:40 PM</td>
<td>Break</td>
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<tr>
<td>4:00 PM</td>
<td>Investigation of Deformation Twins Using a DFT-Informed 3D Phase Field</td>
<td>Abigail Hunter; Irene Beyerlein; 'Los Alamos National Laboratory</td>
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<td>4:20 PM</td>
<td>Mesoscale Modeling of Microstructure Evolution in Graded Nanocrystalline Materials</td>
<td>Zhanyang Chen; Ying Chen; 'Rensselaer Polytechnic Institute</td>
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### Energy Technologies and Carbon Dioxide Management Symposium 2015 — Solar Energy

**Sponsored by:** TMS Extraction and Processing Division, TMS: Light Metals Division, TMS: Energy Committee
**Program Organizers:** Abiomech; University of Leeds; Brajendra Mishra, Colorado School of Mines; Eric Peterson, Idaho National Lab; Cong Wang, Northeastern University; Neale Neelameggham, Ind LLC; Donna Guillen, Idaho National Lab; Li Li, Cornell University

**Wednesday PM**

#### Program Organizer: Thomas Battle, Midrex Technologies

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<th>Time</th>
<th>Session Title</th>
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<tr>
<td>2:00 PM</td>
<td>Development of High Flux Solar Simulators for Solar Thermal Research</td>
<td>Ben Ekman; Geoffrey Brooks; M. Akbar Rhamdhani; John Grandfield; 'Swinburne University; 'Grandfield Technology Pty Ltd</td>
<td></td>
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</tbody>
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2:20 PM  Functionalized TiO2 Demonstrating Enhanced Photovoltaic Current Density for Potential Water Splitting Application. Manuel Giráldo1; Shashank Saraf2; Hari Paudel3; Catherine Shepard4; Tamil Saktivel5; Ankur Gupta6; Michael Leuenberger7; Sudipta Seal8; 1Advanced Materials Processing and Analysis Center, University of Central Florida; 2Nanoscience Technology Center, University of Central Florida; 3Department of Chemistry, Principia College

2:40 PM  Invited
Nanostructure Engineering: A Robust Thruster to Boost the Performance of the Current Photovoltaic Devices. Ziqi Sun1; Jung Ho Kim2; Shi Xue Dou2; 1University of Wollongong

3:00 PM  Invited
Solar Polar Surface Domains and their Role in Photochemical Reactions. Gregory Rohrer1; Ratiporn Munprom2; Yisi Zhu2; Paul Salvador2; 1Carnegie Mellon University

3:20 PM  Break

3:40 PM  Invited
Characterizing Hydrogen Bubble Nucleation and Growth during Electrolysis via In-Situ TEM. Shen Dillon1; Yin Liu1; 1University of Illinois at Urbana-Champaign

4:00 PM  The Carbon Footprint in E-Waste Recycling - Indian Scenario. Lakshmi Ragupathy1; 1Consultant Sustainable Development

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Beneficial Use of Waste Products and Recycling
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); Jeffrey Fergus, Auburn University; All Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday PM  Room: Asbury A  Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chairs: Diana A. Lados, Worcester Polytechnic Institute; Shafiq Alam, University of Saskatchewan

2:00 PM  Introductory Comments

2:10 PM  Melt Characteristics of Poly-Lactide (PLA) – Modified Agro-Wastes Fibre Composites: Emmanuel Akpan1; Samson Adeosun2; Ganiu Lawal1; Sambbo Balogun1; 1Ambrose Alli University; 2University of Lagos; ‘Bells University of Technology

2:35 PM  Improving the Engineering Properties of PLA for 3D Printing and Beyond. David Roberson1; Carmen Rocha1; Angel Torrado Perez1; Joel English1; Lauro Barberi1; Ryan Wicker1; 1The University of Texas at El Paso

3:00 PM Experimental Research on the Co-Combustion Interaction Among Bituminous Coal, Anthracite And Charcoal of Blast Furnace Blending Injection. Tengfei Song1; Runsheng Xu1; Haiyang Wang1; 1University of Science & Technology Beijing

3:25 PM  Break

3:40 PM Pilot-Scale Dechlorination of CuCl Residue from Zinc Hydrometallurgy by Microwave Roasting. Zhanyong Guo1; 1Kumming University of Science and Technology

4:05 PM Preparation of Blocks from Tailings. Javier Flores1; Juan Hernández1; Eleazar Rodríguez2; Miguel Pérez1; Isao Rivera1; Ister Mireles1; Eduardo Cerecedo1; 1Universidad Autónoma del Estado de Hidalgo

4:30 PM Crystallization behaviour of glass-ceramic under various sintering atmospheres. Liu Zhaohui1; Yanbing Zong1; Hongxu Li2; 1University of Science and Technology Beijing

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Biomaterials, Biofuels and Green Chemistry
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); Jeffrey Fergus, Auburn University; All Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday PM  Room: Asbury B  March 18, 2015  Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chair: John Craynon, Virginia Tech

2:00 PM Introductory Comments

2:10 PM  Determining the Energy Value on Different Compression of Sawdust Briquettes. Ifeanyichukwu Onyenwan1; Chukwunwenda Ilochonwa2; Philip Tanno1; 1Anambra State University; 2Scientific Equipment Development Institute, Enugu - Nigeria
Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Energy Challenges & Solutions
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); Jeffrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University
Wednesday PM Room: Asbury C
March 18, 2015 Location: Yacht & Beach
Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Session Chair: Jonathan Motherwell, JTM & Associates

2:00 PM Introductory Comments

2:10 PM
High Temperature Fuel Cells for Efficient Conversion of Fossil Fuel Energy: Jeffrey Fergus; 1Auburn University

2:35 PM
A Pathway to Near Zero Emission Electric Energy Through Additive Manufacture of Superconducting Electric Transmission Conduits: Ian Sheehy; 1RMIT University

3:00 PM
Combustion Gas Absorption by Micro Algae, an Effective Way for Reducing Carbon Footprint in Developing Countries: Leonardo Di Mare1; Antonio Bula1; Pedro Villalba1; ‘Universidad del Norte

3:25 PM Break

3:40 PM
The INGRID project: Development of Solutions for Sustainable and Highly Interconnected Grids: Fabrizio D’Errico1; Massimo Bertoncini1; Adamo Sceneci1; ‘Politecnico di Milano; ‘Engineering Ingegneria Informatica; ‘Mc Phy Energy

4:05 PM
Study on the Effect of Heating Rate on Combustion and Kinetics of Pulverized Coal in Mixed O2/Co2 Atmosphere: Qing Shan1; Jingyi Zhang1; ‘Kunming University of Science and Technology

4:30 PM
Rechargeable Magnesium Batteries with Novel PVdF–PAN Graft Copolymer Electrolyte Membranes: Vatsala Jetti1; ‘IICT

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Metrics, Design & Policy
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); Jeffrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday PM Room: Grand Harbor Salon 5
March 18, 2015 Location: Yacht & Beach
Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Session Chair: Darlene Schuster, Amer. Institute for Chemical Engineers

2:00 PM Introductory Comments

2:10 PM
An Interactive and Visual Tool for Sustainable Use of Materials in Engineering Design: Claes Fredriksson; 1Granta Design

2:35 PM
Societal Implications of Nanotechnology: Sharmila Mukhopadhyay; 1Wright State University

3:00 PM
Multi-Material Lightweight Vehicle (”MMLV”): Lindita Bushi; Tim Skszek1; David Wagner1; Jeff Conklin1; Matthew Zaluzec1; 1Athena Sustainable Materials Institute; 1Magna International; 1Ford Motor Company

3:25 PM
Sustainable Solutions for Societal Needs Through Multifunctional Carbon Building Blocks: Sharmila Mukhopadhyay1; 1Wright State University

3:50 PM Break

4:05 PM
Energy and Cost Saving Through Metallurgical Treatments of Tools in Agriculture and Mining Sectors: Amol Jha1; 1CSIR-Advanced Materials and Processes Research Institute Bhopal, India

4:30 PM
Topology Optimization for Sustainability: Natasha Vermaa; Georgios Michailidis1; Guillaume Parry1; Rafael Estevez1; Gregoire Allaire1; Yves Brechet1; 1Lehigh University; 1Ecole Polytechnique; 1Grenoble Institute of Technology

4:55 PM
Sustainability Metrics for Efficient and Innovative Residential Building Wall Systems: Ryan Solnosky1; Ali Memari1; 1Penn State University

5:20 PM Invited
Synthesis and Self-Assembly of Nano-Sized 3D Conjugated Molecules: Hong Chen-Yang; Wu San-Lien1; Wu Kuan-Yi1; Wang Chien-Lung1; 1National Chiao Tung University
Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — Effects of Loading and Environment on Fatigue Properties

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Wednesday PM Room: Australia 3
March 18, 2015 Location: Dolphin

Session Chairs: Youshi Hong, Institute of Mechanics, Chinese Academy of Sciences; E-Wen Huang, National Chiao Tung University

2:00 PM Invited
The Effect of Chloride Concentration on Corrosion-Fatigue Crack Initiation Behavior of Precipitation-Hardened Stainless Steel (Custom 465-1950): Ryan Donahue1; James Burns1; 1University of Virginia

2:20 PM
Effects of Machining On Fatigue Properties of a Nickel Based Superalloy for Aero-Engine Disc Applications: Craig Knogler1; Hangyue Li1; Paul Bowen1; Yue Li1; 1University of Birmingham; ‘Rolls-Royce plc

2:40 PM Invited
Effects of Stress Ratio on Crack Initiation Mechanism in High-Cycle and Very-High-Cycle Fatigue Regimes of High Strength Alloys: Youshi Hong1; Xiaolong Liu1; Chengqi Sun1; 1Institute of Mechanics, Chinese Academy of Sciences

3:00 PM
The Role of Surface Condition and Thermal Exposure on Fatigue Performance of High and Intermediate Strength Titanium-Aluminum Alloys: Zewen Huang1; 1School of Materials Science and Engineering, Southwest Jiaotong University

3:20 PM Break

3:30 PM
Sensitization Effects on Fracture and Fatigue of Al-Mg Naval Alloys: Mohsen Seifi1; Henry Holroyd1; John Lewandowski1; 1Case Western Reserve University

3:50 PM
Influence of Different Particle Sizes and Volume Fractions on the VHCF- Behavior Of Metal Matrix Composites: Matthias Wolf1; Dietmar Eifler1; Guntram Wagner1; 1University of Kaiserslautern; ‘University of Chemnitz

4:10 PM
Influence of Inclusions on the Very-High-Cycle Fatigue Behavior of H13 Tool Steels: Paolo Matteis1; Donato Firrao1; Giorgio Scavino1; Giorgio Chiandussi1; Davide Salvatore Paolino1; Massimo Rossetto1; Andrea Tridello1; Politecnico di Torino

4:30 PM
Multiscale Model for Predicting Durability under Combined Fatigue and Environmental Loading: Geeta Monpara1; Ray Fergit III1; 1University of Wyoming

Friction Stir Welding and Processing VIII — Friction Stir Related Technologies

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory

Wednesday PM Room: Northern Hemisphere A3
March 18, 2015 Location: Dolphin

Session Chair: Anthony Reynolds, University of South Carolina

2:00 PM Invited
FSW Technology for Marine Applications: Jonathan Martin1; Sam Wei1; 1TWI Technology Centre (Yorkshire)

2:20 PM Invited
Miniaturized FSW Equipment for Manually Operated Welding: Hidetoshi Fuji1; Koki Tamashiro1; Masayoshi Kamai1; Yoshiaki Morisada1; 1Osaka University

2:40 PM
Additive Friction Stir Deposition of Metal Powders: Kumar Kandasamy1; Jacob Calvert1; 1Aeroprobe Corporation

3:00 PM
Analysis of Force Transients for Detecting Discontinuity during Friction Stir Welding: Amber Shirvastava1; Michael Zinn1; Christopher Smith1; Frank Pfefferkorn1; 1University of Wisconsin-Madison; ‘Wolf Robotics LLC

3:20 PM
Semi Stationary Shoulder Bobbin-Tool (S/BT): A New Approach in Friction Stir Welding (FSW): P Scupin1; Jorge dos Santos2; Norbert Huber2; 1Daimler AG; 2Helmholtz-Zentrum Geesthacht

3:40 PM Break

4:00 PM
Evaluation of the Advantages of Rapid Refill FSSW of Aluminium Sheet for Automotive Structures: Basem Mohysen Al-Zubaidy1; Ying-Chun Chen1; Phil Prangnell1; 1The University of Manchester

4:20 PM
Friction Stir Welding: Exploring Advances to Position a Conventional Process in the Future Digital Landscape: Vicki Barbur1; Jay McHenry1; 1Concurrent Technologies Corporation

4:40 PM
Effects of Friction Stir Back Extrusion on the Mechanical Properties and Microstructural Evolution in Magnesium and Aluminium Alloys: Justin Milner1; Zeren Xu1; Fadi Abu-Farha1; 1Clemson University

5:00 PM
Adding a Resistance Heat Source during Friction Stir Welding: Amit Arora1; Pankaj Sahlot1; 1Indian Institute of Technology Gandhinagar
High-Entropy Alloys III — Other Properties II
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside

Wednesday PM  Room: Oceanic 5
March 18, 2015  Location: Dolphin

Session Chairs: Paul Jablonski, US Department of Energy; effrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory

2:00 PM Invited
Manufacturing and Evaluation of High Entropy Alloys: Paul Jablonski1; Joseph Licavoli1; Michael Gao1; Jeffrey Hawk1; ‘US Department of Energy

2:20 PM
Theory of Solid Solution Strengthening in FCC High Entropy Alloys: Céline Varvenne1; Aitor Luque Gomez2; William Curtin2; ‘Swiss Institute of Technology (EPFL)

2:40 PM Invited
High Temperature Properties of Gamma-Prime Bearing High Entropy Superalloys: An-Chou Yeh1; Yao-Jen Chang1; Te-Kang Tsao1; Jien-Wei Yeh1; ‘National Tsing Hua University

3:00 PM Invited
Synthesis and Simulation of High Entropy Alloys: Changming Niu1; Alexander Zaddach1; Tripp Hurt2; Adedapo Oni1; James LeBeau1; Carl Koch1; ‘University Bayreuth

3:20 PM Break

3:35 PM Invited
Atomistic Modeling of Solid-Solution Stability of High Entropy Alloys: Guofeng Wang1; Yinkai Lei1; ‘University of Pittsburgh

3:55 PM
The Epsilon Phase Fission Product - A Hexagonal Structured High Entropy Alloy: Simon Middleburgh1; Daniel King1; Gregory Lumpkin1; ‘Australian Nuclear Science and Technology Organisation

4:15 PM Invited
Compositionally Complex Alloys as High-Temperature Materials: Haneen Daoud1; Uwe Glatzel2; ‘University Bayreuth

4:35 PM
Thermal Conductivity of HEA: Magda Caro1; Alfredo Caro1; ‘Los Alamos National Laboratory

4:55 PM Invited
Effects of Additional Elements on the Mechanical Property of (Ti33Zr33Hf33)-(Ni50Cu50) High Entropy Alloys: Jae In Park1; Ki Buem Kim1; Jin Man Park2; Hyo Soo Lee3; Jin Kyu Lee4; ‘Sejong University; Samsung Electronics; ‘KITECH; ‘Kongju Nat University

5:15 PM
Temperature-Dependent Microstructures in the Al(x)CoCrCuFeNi Alloys: Louis Santodonato1; ‘ORNL and UT

High-Entropy Alloys III — Other Properties II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Amit Shyam, Oak Ridge National Laboratory; Jung Pyung Cho, Pacific Northwest National Laboratory

Wednesday PM  Room: Grand Harbor Salon 1
March 18, 2015  Location: Yacht & Beach

Session Chairs: Soumendra Basu, Boston University; Jung Cho, Pacific Northwest National Laboratory

2:00 PM Introductory Comments

2:10 PM Invited
Gas Separation Technology Development for Severe Service Environments: Bryan Morreale1; ‘US Department of Energy, National Energy Technology Laboratory

2:45 PM Invited
Metal Oxide Based Thin Films for High Temperature Optical Sensing Applications: Paul Ohodnicki1; ‘National Energy Technology Laboratory

3:10 PM Invited
Multiphase Composite Ceramic Membranes for Gas Separation: Kyle Brinkman1; Frank Chen2; Wilson Chiu3; ‘Clemson University; ‘University of South Carolina; ‘University of Connecticut

3:35 PM Break

3:55 PM
Lead Bismuth Eutectic for High-Temperature Thermal Solar Applications: David Frazer1; Miroslav Popovic2; Cristian Cionea3; Manuel Abad1; ‘University of California, Berkeley

4:20 PM Invited
Thermoelectric Study of the Argyrodite Ag8GeTe6 Mixed Electronic Ionic Conductor: the Interplay between the Electron, Ion and Phonon Flow: Jian He1; Dale Hitchcock2; Menghan Zhou1; Yufei Liu1; ‘Clemson University

4:55 PM
Degradation of Sm2Zr2O7 Thermal Barrier Coating Caused by Calcium-Magnesium-Aluminum-Silicon Oxide (CMAS) Deposition: Honglong Wang1; Zhizhi Sheng1; Emily Tarwater1; Xingxing Zhang1; Sudip Dasgupta1; ‘Clemson University

Integrative Materials Design II: Performance and Sustainability — Role of ICME in Design and Manufacturing
Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Materials and Society Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Wednesday PM  Room: Grand Harbor Salon 8
March 18, 2015  Location: Yacht & Beach

Session Chairs: Brad Boyce, Sandia National Laboratories; Michael Sangid, Purdue University

2:00 PM Invited
Incorporating Microstructural Models in the Design of Nanocrystalline Metals: Elizabeth Holm1; Philip Goins2; Brian DeCost3; Jonathan Humberson3; Taichong Ma1; ‘Carnegie Mellon University
2:25 PM Invited
Integration of ICME with Manufacturing Processes for Enhancement of Local Properties in Titanium Alloy Components: Brian Welk1; John Sosa1; Daniel Huber1; Gopal Viswanathan1; Hamish Fraser1; 1The Ohio State University

2:50 PM Invited
Design of Nickel-Base Alloys for High-Temperature Service: Howard Stone2; Nicholas Jones; Bryce Conduit; G. Conduit1; Paul Mignanelli; Katerina Christofidou; Mark Hardy1; 1University of Cambridge

3:15 PM Invited
Design of Self-sensing Alloys and Integration into the Digital Twin Concept: William Leser1; Jacob Hochhalter1; John Newman; James Warner2; Patrick Leser1; 1NASA LaRC; 2NASA Langley Research Center

3:40 PM Break

4:00 PM Invited
Quantifying the Relationship between Microstructure and Springback in Steel Sheet: Mark Stoudt1; Lyle Levine1; Louis Hector1; Li Ma1; 1National Institute of Standards and Technology; 2General Motors R&D Center

4:25 PM Invited
Microstructure-Scale Characterization and Simulation of Metal Deformation: Corbett Battaile1; Brad Boyce1; Jay Carroll1; Hojun Lim1; 1Sandia National Laboratories

4:50 PM Invited
Insights into Multiscale Deformation Phenomena from In Situ TEM Nanomechanical Testing: Andrew Minor1; 1University of California Berkeley & LBL

5:15 PM Invited
A Stochastic Crystal Plasticity Framework for Deformation of Micro-Scale Polycrystalline Materials: Hesam Askari1; Michael Maughan1; Niaz Abdolrahim1; Dinakar Sagapuram2; David Bahr1; Hussein Zbib1; 1University of California Berkeley; 2Western Ontario University

Magnesium Technology 2015 — Casting and Metal Matrix Composites
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday PM Room: Northern Hemisphere E2 March 18, 2015 Location: Dolphin

Session Chairs: Lei Zhang, University of Alaska, Fairbanks; Wim Sillekens, European Space Agency

2:00 PM
Process-Structure-Property Correlations for HPDC AM60B: Pouya Shariati1; Ying Fan1; Kumar Sadayappan1; Gabriel Birsan1; Jeff Wood2; 1Western Ontario University; 2Western Ontario University; 3Camnet Material

2:20 PM
Influence of Alloy Composition on Cast Cracking and Heat Resistance of Mg-Al-Ca Cast Alloy: Hajime Katoh2; Hiroyuki Kawabata1; Shuji Inoue2; Masashi Kondo3; 1Toyota Central R&D Labs., Inc.; 2Aishin Seiki Co., Ltd.; 3Toyota Motor Corporation

2:40 PM
Microstructural Scale Effects on Thermal Expansion Behaviour of Cast AZ91D: Hoda Dini4; Nils-Eric Andersson2; Ehsan Ghasemali3; Anders Jarfors1; 1Jonkoping University, School of Engineering; 2KTH: Royal Institute of Technology; 3University of California Los Angeles; 4University of California Berkeley

3:00 PM
Precipitation Sequence in a Mg-Sm-Zn-Zr Alloy: Xiangyu Xia1; Amirreza Sanaty-Zadeh1; Ran Chen1; Xiaolin Zeng2; Alan A Luo2; Donald Stone3; 1Department of Materials Science and Engineering, University of Wisconsin Madison; 2Department of Materials Science and Engineering, Shanghai Jiaotong University; 3Department of Materials Science and Engineering, Ohio State University

3:20 PM Break

3:40 PM
The ExoMet Project: EU/ESA Research on High-Performance Light-Metal Alloys and Nanocomposites: Wim Sillekens1; 1European Space Agency

4:00 PM
High Performance Mg62Zn Nanocomposites Fabricated Through Semi-Solid Mixing and Friction Stir Processing: Jiaxuan Xu1; Chezheng Cao1; Shamp Hansa2; Lianyi Chen1; Rajiv Mishra3; Xiaoqun Li4; 1University of Wisconsin-Madison; 2University of California, Los Angeles; 3University of Wisconsin-Madison; 4University of North Texas

4:20 PM
Synthesis and Characterization of Novel Magnesium Materials Containing Copper-Titanium Based (Cu50Ti50) Amorphous Alloy Particles: Sankaranarayanan Seetharaman1; Nitesh Agrawal1; Jayalakshmi Subramanian1; Shreyas K. Kim1; Manoj Gupta1; 1National University of Singapore, Singapore; 2National Institute of Technology Rourkela

4:40 PM
Phase Evaluation of Sr and CaO Added Mg-Al-Si Alloys: Young-Gil Jung1; Young-Ok Yoon1; Chao Shi1; Renata Zavadil1; 1CanmetMATERIALS

5:00 PM
Improving the Corrosion Resistance of Biodegradable Magnesium Alloys by Diffusion Coating Process: Galit Katarivas Levy1; Eli Aghion1; 1Ben-Gurion University of the Negev Israel

Magnesium Technology 2015 — Corrosion, Coatings, Fatigue, and Fracture
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Wednesday PM Room: Northern Hemisphere E1 March 18, 2015 Location: Dolphin

Session Chairs: Brian Jordon, University of Alabama; Syamala Pulugurtha, Medtronic

2:00 PM
Fatigue and Corrosion Fatigue of Cold-Drawn WE43 Wires: Adam Griebel1; Jeremy Schaffer1; 1Fort Wayne Metals

2:20 PM
Deformation and Failure Modes of Rapidly Solidified, Ultra-fine Grain, AM602 and ZAXE1711 Magnesium Alloys: John Chinella1; 1U.S. Army Research Laboratory

2:40 PM
Stress Corrosion Cracking of ZEK100 Magnesium Alloy for Automotive Applications: Xin Pang1; Chao Shi1; Renata Zavadil1; 1CanmetMATERIALS

3:00 PM
Effect of Sn/Zn Ratio on Corrosion Behavior of Mg-αSn-bZn Extrusions: Chang Dong Yim1; Sang Kyu Woo1; Bong Sun You1; 1Korea Institute of Materials Science; 2University of Science and Technology
3:20 PM  
Effect of Ca and Y on Corrosion Behavior of Extruded AZ Series Mg Alloys: Sang Kim Woo1; Chang Dong Yim2; Young Min Kim3; Bong Sun Yoo1; 1University of Science and Technology; 2Korea Institute of Materials Science  

3:40 PM  
Break  

4:00 PM  
Characterization of Coatings on Steel Self-Piercing Rivets for Use with Magnesium Alloys: Robert C. McCune1; Joy Forssmark2; Dante Battocchi3; Vinod Upadhyay4; 1Robert C. McCune & Associates LLC; 2Ford Motor Company; 3North Dakota State University  

4:20 PM  
Investigation of Coating and Corrosion Mitigation Strategies in Magnesium/Mixed Metal Assemblies: Joy Forssmark1; Robert McCune2; Terrence Giles3; Michelle Audette4; Jasmine Snowden5; Jeffrey Stalker6; Matthew Morey7; Matt O’Keefe8; Carlos Castano9; 1Robert C. McCune and Associates, LLC; 2Henkel Adhesive Technologies; 3PPG Industries, Inc.; 4Atotech USA, Inc.; 5Missouri S&T  

4:40 PM  
Influence Of Pulse Time On The Structural And Tribological Properties Of Micro Aligned Oxidized AZ91D Magnesium Alloy: Deniz Kilic1; Faiz Mahaffei2; Yakup Yurekturk3; Murat Baydogan4; 1Istanbul Technical University  

5:00 PM  
Electroless Ni-P/NANO-SiO2 Composite Plating on Dual Phase Magnesium-Lithium Alloy: Yun Zhu1; Zongwu Zhang2; Milin Zhang3; 1Harbin Engineering University  

MW - Magnetic Materials for Energy Applications V — Soft Magnetic Materials II  
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee  
Program Organizers: Francis J. Johnson, GE Global Research; Raju Ramanujan, Nanyang Technological University; Paul Ohodnicki, National Energy Technology Laboratory  
Wednesday PM  
Room: Grand Harbor Salon 7  
March 18, 2015  
Location: Yacht & Beach  
Session Chairs: Thomas G. Woodcock, IFW Dresden; Orlando Rios, Oak Ridge National Laboratory  

2:00 PM Invited  
Soft Magnetic Materials for MHz Power Conversion: A Critical Unmet Need for Energy Applications: Charles Sullivan1; 1Thayer School of Engineering at Dartmouth  

2:30 PM  
Integration of Soft Magnetic Thin Films into On-Chip Inductors for Efficient Power Conversion in Circuits Applications: Hongbin Yu1; Hao Wu2; Donald Gardner3; 1Arizona State University; 2Intel Corporation  

2:50 PM  
Highly Efficient Inductor Cores with High Permeability and Low Core Loss at >1MHz: Vincent Harris1; Parisa Andalib2; Vajie Chen3; 1Northern Eastern University  

3:10 PM  
Effect of Sintering Temperature on Magnetic Core-loss Properties of a NiCuZn Ferrite for High-Frequency Power Converters: Yi Yan1; Guo Quan Lu2; Khai Ngo3; Dongbin Hou4; Mingkai Mu5; 1Jiangsu Tech  

3:30 PM  
Break  

3:45 PM  
Tunable Permeability Gapless Inductors for Medium Frequency Applications: Alex Leary1; Vladimir Keylin2; Paul Ohodnicki3; Michael McHenry4; 1Carnegie Mellon University; 2National Energy Technology Laboratory  

4:05 PM  
Soft Magnetic Amorphous and Nanocrystalline Bilayer Ribbons: Effects of Thermal Processing In Magnetic Field: Ivan Skorvanek1; Jozef Marcin1; Marek Capik1; Igor Matko2; Peter Svec3; 1Institute of Experimental Physics; 2Institute of Physics  

4:25 PM  
Atomic Scale Analysis of Rapid Stress Annealing Induced Soft Magnetic Fe-Si Nanocrystallization with Strong Creep Induced Anisotropy: Pradeep Konda Gokaldoss1; 1Materials Chemistry, RWTH Aachen University, Germany  

4:45 PM  
Study of Residual Stresses Induced Due To Manufacturing in Core Laminations Used In Motor Applications: Aroba Saleem1; Dina Goldbaum2; Aniruddha Chatterjee3; Richard Chronik4; David Lowther4; 1McGill University  

5:05 PM Invited  
Magnetostriiction of Co-Fe-Based Amorphous Soft Magnetic Microwires: Arcady Zhukov1; Margarita Churyukanova2; Sergey Kaloshkin3; Viktoriya Sudarchikova4; Sergey Gudoshnikov5; Mikhail Ipatov6; Ahmed Talaat7; Juan Blanco8; Valentina Zhukova9; 1Basque Country University and Ikerbasque; 2National University of Science and Technology «MISIS»; 3Basque Country University UPV/EHU  

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — General  
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee  
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory  
Wednesday PM  
Room: Grand Harbor Salon 2  
March 18, 2015  
Location: Yacht & Beach  
Session Chairs: Walter Luscher, Pacific Northwest National Laboratory; Clarissa Yablinsky, Los Alamos National Laboratory  

2:00 PM  
Assessing and Modelling the Performance of Waste Forms and Container Metals for Long-Term Disposal: Tae Ann1; 1U.S. Nuclear Regulatory Commission  

2:20 PM  
Apatite-Based Ceramic Waste Forms by High Energy Ball Milling and Spark Plasma Sintering for Iodine Confinement: Jie Lian1; Tiankai Yao2; 1Rensselaer Polytechnic Institute  

2:40 PM  
Gradation of Gamma Lithium Aluminate under Simulated Storage Conditions: Walter Luscher1; Larry Bagassen2; Brad Johnson3; Monte Elmorse2; 1Pacific Northwest National Laboratory  

3:00 PM  
In Situ Study of Defect Migration Kinetics in Nanoporous Ag with Enhanced Radiation Tolerance: C. Sun1; 1Los Alamos National Laboratory; 2Argonne National Laboratory; 3Texas A&M University  

3:20 PM  
Density Functional Theory Study on the Behavior of Vanadium Carbide as a Diffusion Barrier within the Fuel/Cladding System of a Fast Reactor: Brian DeManse1; Aleksandr Chernatsynski2; Yong Yang3; Simon Philipott3; 1University of Florida  

3:40 PM  
Break  

4:00 PM  
Computational Study of Energetics and Defect-Ordering Tendencies for Rare Earth Elements in Uranium Dioxide: Jonathan Solomon1; 1Los Alamos National Laboratory; 2Forschungszentrum Juelich; 3RIKEN  

TMS2015 FINAL PROGRAM
Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Structural Materials III
Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Wednesday PM
March 18, 2015
Room: Grand Harbor Salon 6
Location: Yacht & Beach
Session Chair: Stuart Maloy, Los Alamos National Laboratory

2:00 PM
The Role of Stress-State on the Deformation and Fracture Mechanism of Hydride and Non-Hydrided Zircaloy-4: Brian Cockeram1; J. Hollenbeck1; 1Bechtel-Bettis

2:20 PM
Characterization of Delta Hydride Precipitates in Pure Zr and Zr-4: Mark Carroll1; Laura Carroll1; David Swank1; Delon Haggard1; Michael Tonks1; 1Idaho National Laboratory

2:40 PM
Evaluation of the Biaxial Thermal Creep of Hydrided Zircaloy-4 Cladding for Interim Dry Storage of Spent Nuclear Fuel: Kaun-Chie Lai1; Yinbin Miao1; Xiang Liu1; Kun Mo1; Hisao-Ming Tung1; James Stubbins1; 1University of Illinois at Urbana-Champaign

3:00 PM
Solute Distributions in Oxide and Sub-Oxide Layers during Corrosion of Zirconium Alloys: Yan Dong1; Arthur Motta2; Emmanuelle Marquis2; 1University of Michigan; 2Pennsylvania State University

3:20 PM
Investigating the Effect of Oxide Texture on Corrosion Performance and Hydrogen Pickup in Zirconium Alloys: Alistair Garner1; Michael Preuss1; Philipp Frankel1; 1University of Manchester

3:40 PM
Break

4:00 PM
The Effect of Applied Stress on C-Component Dislocation Loops in Zr-Based Alloys: Nesrine Gharbi1; R.M. Hengstler-Eger1; X. Feaugas2; D. Gilboi1; PB Hoffmann1; M.A Kirke1; J.P Mardon1; F. Onimus1; 1CEA; 2AREVA GmbH; 1LaSIE/Université de La Rochelle; 1Argonne National Laboratory; 2AREVA NP

4:20 PM
Mitigation of Oxidation of LWR Zircaloy Cladding in High Temperature Steam via FeCrAl Coatings and Chromium Oxide Buffer Layers: Weicheng Zhong1; Peter Mouche1; Brent Heuser1; 1University of Illinois

4:40 PM
Sample Environment for In Situ Corrosion Studies of Zirconium and Advanced Steel Cladding Alloys in Extreme Environments: Mohamed Elbakshwan1; Simerjeet Gill1; Arthur Motta2; Randy Weidner1; Thomas Anderson1; Lynne Ecker1; 1Department of Nuclear Science and Technology, Brookhaven National Laboratory; 2Los Alamos National Laboratory; 3Department of Mechanical and Nuclear Engineering, The Pennsylvania State University
Anastassiya Suslova 1; Theodore Nivakowski 1; Khalid Hattar 2; Mert Efe 1; Sergei Dudarev 1; 1Culham Centre for Fusion Energy; 2Department of Materials, University of Oxford

**Heavy Ion Irradiation on Ultrafine-and Nanocrystalline-Grained 4:15 PM Helium Ions:**

Initiation of Nanostructure Formation on Tungsten Irradiated with 30 keV Helium Ions: Akira Hasegawa 1; Makoto Fukuda 1; Kiyohiro Yabuuchi 1; Shuhei Nogami 1; Tohoku University

2:30 PM Invited

Direct Observation and Interpretation of Helium Implantation Effect on Microstructure and physical Properties of Plasma-Facing Fusion Materials: Felix Hofmann 1; Duc Nguyen-Manh 1; Christian Beck 1; Alexei Maznev 1; Jeffrey Eliason 1; David Armstrong 1; W Liu 1; Mark Gilbert 1; K Nelson 1; Sergei Dudarev 1; University of Oxford; 2UK Atomic Energy Authority; 3Massachusetts Institute of Technology

3:00 PM

Modeling Radiation Damage in Bulk Tungsten under Fusion Conditions: Wahyu Setyawan 1; Giridhar Nandipati 1; Kenneth Roche 1; Richard Kurtz 1; Brian Wirth 1; Pacific Northwest National Laboratory; University of Tennessee, Knoxville

3:15 PM

Effect of Sinks for Point Defects on Radiation Hardening in Tungsten-Rhenium Alloys: David Armstrong 1; Alan Xu 1; Paul Bagot 1; T Ben Britton 1; University of Oxford; 2Imperial College

3:30 PM

Break

4:00 PM

Anomalous Defect Evolution in Irradiated UHP Tungsten: In Situ TEM Observations and Interpretation: Daniel Mason 1; Xiaou Yi 1; Mark Kirk 1; Sergei Dudarev 1; Culham Centre for Fusion Energy; 2Department of Materials, University of Oxford; Materials Science Division, Argonne National Laboratory

4:15 PM

Heavy Ion Irradiation on Ultrafine-and Nanocrystalline-Grained Tungsten: Effect of 3 MeV Si, Cu and W Ions: Osman El-Atwani 1; Anastassiya Suslova 1; Theodore Nivakowski 1; Khalid Hattar 1; Mert Efe 1; Sivandan Harilal 1; Ahmed Hassanein 1; Purdue University; Sandia National Laboratory

4:30 PM

First-Principles Calculations of Intrinsic and Extrinsic Defects in Dilute W Alloys: Lelli Gharaee 1; Paul Erhart 1; Chalmers University

4:45 PM

Migration Behavior of Rhenium and Osmium in Tungsten: First Principles Study: Tomoaki Suzuki 1; Akira Hasegawa 1; Japan Atomic Energy Agency; Tohoku University

5:00 PM

Measuring and Modeling Defect Formation and Kinetics in Ion Irradiated Mo at 30 K and 300 C in the Recently Reopened IVEM-Tandem Facility: Marquis Kirk 1; Meimei Li 1; Donghua Xu 1; Brian Wirth 1; Argonne National Laboratory; University of Tennessee

5:15 PM

Experimental Approach to Determine the Barrier Strength Factor for Mobile Dislocation against Void and He Bubble in Ion-Irradiated Mo: Uchida Kawase 1; Ken-ichi Fukumoto 1; Takashi Onitsuka 1; Kimihiro Nogawa 1; Univ. of Fukui
**Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Microstructure, Durability, and Other High Temperature Materials/ Applications**

*Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee*

*Program Organizers: Mark Tschopp, Army Research Laboratory; Jeffrey Evans, University of Alabama in Huntsville; Jonathan Cormier, ENSMA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Science and Technology Beijing*

**Wednesday PM**

**Session Chairs:** Mark Tschopp, Army Research Laboratory; Jonathan Cormier, ISAE-ENSMA & Institut Pprime; Qiang Feng, University of Science and Technology Beijing

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**2:00 PM Invited**

**The Effect of Local Texture and Plastic Strain Distribution on the Deformation Micromechanism in RR1000 Nickel-Based Superalloy:** Soran Birosca1; Mark Hardy2; 1Swansea University; 2Rolls-Royce plc

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**2:20 PM**

**Effect of Bi-Crystal Grain Boundary Angle on Stress Rupture Life of a Nickel-Based Superalloy:** Xiangbin Meng1; Qi Lu2; Jingguo Li3; 1Institute of Metal Research; 2Delft University of Technology

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**2:40 PM**

**Experimental Investigation on Plastic Strain and Recrystallization of Single Crystal Nickel Based Superalloy:** Zhonglin Li1; Qingyan Xu1; Baicheng Liu1; 1Tsinghua University

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**3:00 PM Invited**

**Recrystallization in Directionally Solidified Ni Based Superalloys:** Jian Zhang1; Guang Xie2; Li Wang3; 1Institute of Metal Research, Chinese Academy of Sciences

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**3:20 PM**

**The Effects of Local Microstructure on Deformation Mechanism in IN713C Alloy:** Mark Coleman1; Soran Birosca1; 1Swansea University

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**3:40 PM Break**

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**4:00 PM**

**Microstructure Evolution during Al, Ti and Mo Surface Deposition and Volume Diffusion in Ni-20Cr Wires:** Cong Wang1; David Dunand1; 1Northwestern University

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**4:20 PM Invited**

**Revealing the Role of Ternary Additions in High Temperature Shape Memory Phase and Microstructural Stability:** Gregory Thompson1; Suzanne Kornegay1; B. Hornbuckle1; Monica Kapoor1; Anne Coppa1; Glen Bigelow2; Ronald Noebel2; Mark Weaver2; 1University of Alabama; NASA Glenn Research Center

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**4:40 PM**

**Transient Liquid Phase Bonded Ni-Based Woven Superalloys:** Dinc Erdener1; Keith Sharp1; David Dunand1; 1Northwestern University; 2Saertex LLC

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**5:00 PM**

**Microstructural Evolution and Mechanical Behaviour of Ni Based Superalloy under High Temperature Deformation:** Maribel De la Garza Garza1; Adriana Garcia1; Victor Paramo1; 1FIME, UANL; 2FRISA FORJADOS S.A. de C.V.

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**Nano- and Micro-Mechanical Measurements in Harsh Environments — In-Situ Testing at Non-Ambient Conditions**

*Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee*

*Program Organizers: Peter Høsemann, University of California Berkeley; Jeffrey Wheeler, EMPA; Verena Maier, Erich Schmidt Institut; Douglas Stauffer, Hysitron*

**Wednesday PM**

**Session Chair:** Verena Maier, Austrian Academy of Science

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**2:00 PM Invited**

**Cryogenic In Situ Mechanical Testing of Sn Alloys:** A. Lupinarci1; J. Kacher1; A. Eilenberg2; A. Shapiro3; Peter Høsemann4; Andrew Minor5; 1University of California Berkeley & LBL; 2University of California Berkeley; 3JPL

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**2:40 PM**

**Deformation of Diamond and Silicon at High Pressures and Temperatures:** Jeffrey Wheeler1; Rejin Raghavan1; Johann Michler2; 1EMPA - Materials Science & Technology; 2MPIE - Max Planck Institute for Iron Research

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**3:00 PM**

**In Situ TEM Investigation of the Effects of Hydrogen on the Behavior of Dislocation and Cracking in Aluminum:** Degang Xie1; Suzhi Li2; Zhangjie Wang1; Peter Gumbsch1; Ju Li2; Zhiwei Shan3; 1State Key Laboratory for Mechanical Behavior of Materials; 2Karlsruhe Institute of Technology; 3Massachusetts Institute of Technology

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**3:20 PM Break**

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**3:40 PM**

**New Testing and Analysis Strategies for In Situ High Temperature Nanomechanical Testing:** Warren Oliver1; Richard Anthony2; Sudharshan Phani Pardhasaradhi3; Bryan Crawford4; 1Nanomechanics Inc

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**4:00 PM**

**Understanding Erosion Performance of Nanocellular Metal Filled Polymer Composites Using Nano-Indentation:** Michael Birnkrant1; Joseph Bonivel2; Robert Barth2; Wei-Na Li1; 1United Technologies Research Center

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**4:20 PM**

**Deformation Induced Ultrahigh Lattice Rotation through Phase Transitions in Body-Centered Cubic Metals:** Shujuan Wang1; Kui Du2; Hao Wang3; Wei Zhang1; Manling Sun1; Scott Mao2; 1Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; 2Institute of Metal Research, Chinese Academy of Sciences; 3China University of Technology; 4University of Pittsburgh

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**4:40 PM**

**Expanding the Range of Strain Rate Testing with Nanoindentation:** Sudharshan Phani Pardhasaradhi1; Bryan Crawford2; Warren Oliver3; 1Nanomechanics Inc.
Nanocomposites III — Metal Nanocomposites II
Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Muralidharan Paramsothy, National University of Singapore; NanoWorld Innovations (NWI); Meisha Shofner, Georgia Institute of Technology; Changsoo Kim, University of Wisconsin-Milwaukee

Wednesday PM
March 18, 2015
Location: Dolphin

Session Chair: Daneesh Simien, University of Alabama at Birmingham

2:00 PM Invited
Morphological Evolution of Metallic Nanoparticles and the Formation of Core-Shell Structures: A Phase Field Treatment: Fadi Abdeljawad1; Michael Chandross1; 1Sandia National Laboratories

2:40 PM Invited
In-Situ TiB2 Reinforced Aluminum Matrix Nanocomposites: Afseen Dorri Moghadam1; J.B. Ferguson; Pradeep Rohatgi; 1University of Wisconsin-Milwaukee

3:20 PM Break

3:40 PM
The Al-RE-(TM) Nanocrystal/Amorphous Nanocomposites: Mustafacan Kutsal1; Eren Kalay1; 1METU

4:00 PM
Strengthening Efficiency of Al-Based Composites Reinforced with Carbon Nanotubes and Graphene: Seesun Shiu1; Donghyun Bae1; 1Yonsei University

4:20 PM
Dislocation Structure of Cu/Nu (100) Semi-Coherent Interface and Its Role in Lattice Dislocation Nucleation: Firas Akasheh1; Mohammad R. Karim1; Shuai Shao1; 1Tuskegee University; 1Los Alamos National Laboratory

4:40 PM
Optimum Sintering Conditions for Production of Fully Dense Al-Al3Ti Nanocomposite by Mechanical Alloying and Two-Step Hot Pressing: Armin Vahid Mohammadi1; Hamid Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III — Session VII: Advanced Characterization and New Batteries
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Wednesday PM
March 18, 2015
Location: Dolphin

Session Chairs: Jagjit Nanda, Oak Ridge National Laboratory; Yan Yao, University of Houston

2:00 PM Invited
Using Nanomaterials to Control Microstructure and Enhance Performance in Lithium Ion Batteries: Vanessa Wood1; 1ETH Zurich

2:25 PM Invited
Quantifying the Chemical and Morphological Heterogeneities in High Capacity Battery Materials Under Electrochemical Cycling: Jagjit Nanda1; Yijin Liu1; Joy Andrews1; Feifei Wang1; Surendra Martha1; 1Oak Ridge National Laboratory; 1Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory; 1National Synchrotron Radiation Laboratory, China; 4Indian Institute of Technology, Hyderabad

2:50 PM Invited
Stress Evolution and Degradation Mechanisms in the Solid Electrolyte Interphase: Brian Sheldon1; Anton Tokranov1; Ravi Kumar1; Xingcheng Xiao1; 1Brown University; 1General Motors

3:15 PM Invited
Novel Nanostructured Electrode Materials for Lithium-Air Batteries and Sodium-Ion Batteries: Guoxiu Wang1; 1University of Technology, Sydney

3:40 PM Break

3:55 PM Invited
Advanced Redox Flow Battery Technologies: Wei Wang1; 1Pacific Northwest National Laboratory

4:20 PM Invited
Structured Micro-Sized Si-C Composites as Li-Ion Anodes: Donghui Wang1; 1Penn State University

4:45 PM Invited
Hierarchical Nanohybrids with Porous CNT-Networks Decorated Crumpled Graphene Balls for Supercapacitors: Junhong Chen1; Shun Mao1; 1University of Wisconsin-Milwaukee

5:10 PM Invited
Development of Nanoscale Planar Electrochemical Devices and Applications: Liangbing Hu1; 1University of Maryland College Park

Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III — Session VI: Advanced Topics in Batteries
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Wednesday PM
Room: Europe 5
March 18, 2015
Location: Dolphin

Session Chairs: Husnu Unalan, Middle East Technical University; Jinhui Peng, Kumming University of Science and Technology; Reza Shahbazian-Yassar, Michigan Technological University

2:00 PM
Textile Based Ternary Nanocomposite Supercapacitors: Recep Yuksel1; Zeynep Sarıoba1; Husnu Unalan1; 1Middle East Technical University

2:20 PM
Preparation, Process Optimization and Performance of LiNi1/3Mn1/3Co1/3O2 Coin-Type Lithium Ion Battery: Jiang Du1; Zhengfu Zhang1; Jinhui Peng1; Jin Cheng1; Xiaolong Qu1; Xiaoyan Wang1; Hongge Yan1; 1Kumming University of Science and Technology; 1College of Materials Science and Engineering, Hunan University

2:40 PM
Molecular Level Optimization of Polyoxometalates Based Nano-Clusters via Appropriate Organo-Imido Functionalization for their Harnessing as an Efficient Anode Material for Li-Ion Batteries: Rao Naumaan Nasim Khan1; Nasir Mahmood1; Yongge Wei1; Yanglong Hou1; 1Tsinghua University; 1Peking University

2:55 PM
Synthesis of Porous Nb2O5 Polymorphs as Electrodes for Electrochemical Pseudocapacitors: Shaow Li1; Guozhong Cao1; Qian Xu1; 1Evan Uchaker1; 1Northeastern University; 1University of Washington

3:10 PM
Nanocatalyst-Laden Multi-Walled Carbon Nanotubes as Cathode for Lithium-Ion Batteries: Neha Chawla1; Bilal El-Zahab1; 1Florida International University
Neutron and X-Ray Studies of Advanced Materials:
VIII: Diffraction Limit and Beyond — Defects, Stresses II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, UTK; Jaimie Tiley, Air Force Research Laboratory

Wednesday PM, March 18, 2015, Location: Swan

Funding support provided by: Air Force Research Laboratory

Session Chairs: Roger England, Cummins Inc; Jaimie Tiley, Air Force Research Laboratory

2:00 PM Keynote
Structural Evolution of Metals at High Temperature: Complementary Investigations with Neutron and Synchrotron Quantum Beams: Klaus-Dieter List; ‘Australian Nuclear Science and Technology Organisation

2:40 PM
In-Situ Neutron Reflectometry during Thin Film Growth by Sputter Deposition: Wolfgang Kreuzpaintner; Birgit Wiedemann; Nina Mayer; Jingfan Ye; Andreas Schmelz; Thomas Mairosor; Alexander Hermberger; Jean-Francois Moulin; Jochen Stahn; Panagiotis Korolis; Martin Haese-Seiller; Matthias Pompe; Amitesh Paul; Björgvin Hjörvarsson; Peter Böni; Jochen Mannhart; ‘Technische Universität München; ‘Zentrum für elektronische Korrelation und Magnetismus, Universität Augsburg; ‘Heinrich-Hertz-Zentrum, Geesthacht Zentrum für Material- und Küstenforschung GmbH; ‘Paul Scherrer Institute, Laboratory for Neutron Scattering; ‘Uppsala University; ‘Max-Planck-Institut für Festkörperforschung

3:00 PM
In-Situ Monitoring of Phase Transformation during Isothermal Holding in a 316Nb Type Steel: William Jolly; Caroline Toffolon-Mascelot; Gilles André; Bernard Marin; François Cortial; Philippe Petit; Sylvain Ringeval; ‘Commissariat à l’Energie Atomique et aux Energies Alternatives; ‘DCNS Research; ‘Aubert & Duval

3:20 PM Break

3:40 PM Invited
From Modelling of Plasticity in SX Superalloys to High Resolution X-rays: Alain Jacques; ‘IUL/CNRS, Labex DAMAS

4:10 PM Invited
Complementary Stress Assessment in Nanostructures: From Semiconductors to Metal Alloys: Ralph Spolenak; ‘ETH Zurich

4:40 PM Invited
Neutron Diffraction Residual Stress Measurements as Applied in United States Air Force Foundational Engineering Problem Program on ICME of Bulk Residual Stress in Ni-Based Superalloy Rotors: Julianna Cernatescu; Vasisht Venkatesh; Jamie Glanovsky; Ralph Green; Daniel Gynther; Grant Reinman; ‘Alexandru Stoica; ‘Ke An; ‘Matthew Frost; ‘Todd Turner; ‘Pratt and Whitney; ‘Oak Ridge National Laboratory; ‘Air Force Research Laboratory

5:10 PM
In Situ High Pressure/High Temperature X-ray Diffraction of WN Phases from Novel Precursors: James Wollmershauser; Boris Feigelson; Syed Qadri; M. Imami; Daniel Finkenstadt; Michael Mehl; ‘Naval Research Laboratory; ‘George Washington University; ‘United States Naval Academy

Neutron and X-Ray Studies of Advanced Materials:
VIII: Diffraction Limit and Beyond — General Session

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, UTK; Jaimie Tiley, Air Force Research Laboratory

Wednesday PM, March 18, 2015, Location: Swan

Funding support provided by: Air Force Research Laboratory

Session Chairs: Feng Ye, SNS; Christina Hoffman, ORNL

2:00 PM Invited
Exploring Reciprocal Space through 3-D Volumetric Mapping: Christina Hoffman; ‘Oak Ridge National Laboratory

2:30 PM Invited
SANS Measurements of Hydride Reorientation during Ex Situ Tensile Stress of LWR Cladding: Brent Heuser; ‘University of Illinois

3:00 PM Invited
Zirconium Hydride Phase Transformation in Zircaloy-4: Correlation to Ductility Changes as a Function of Temperature of Hydrided Zr Alloy Cladding: Ken Littrell; ‘Oak Ridge National Laboratory

3:30 PM Break

3:40 PM Invited
Dark Field Transmission X-ray Microscopy Studies of 3D Domain Evolution During Plastic Deformation: Henning Poulsen; ‘Hugh Simons; Wolfgang Ludwig; ‘Wolfgang Pantleon; ‘Sören Schmidt; ‘Yubin Zhang; ‘Frederik Stöhr; ‘Carsten Detlefs; ‘DTU; ‘ESRF

4:10 PM Invited
Residual Stress Modeling of Castover Aluminum Steel Joints: Thomas Watkins; ‘Adrian Sabau; ‘Gerard Lutika; ‘Donald Erdman; ‘Bart Murphy; ‘Timothy Skrzek; ‘Xiaoping Niu; ‘Saptarshi Mitra; ‘Sam Scott; ‘ORNL; ‘Magna; ‘Promatek Research Centre; ‘ESI-NA - Casting

4:40 PM
Enabling Diffraction Contrast Tomography in the Laboratory: Arno Merkle; ‘Christian Holzner; ‘Michael Feser; ‘Kevin Fahay; ‘Erik Lauridsen; ‘Peter Reischig; ‘Henning Friis Poulsen; ‘Leah Lavery; ‘Carl Zeiss X-ray Microscopy, Inc.; ‘Xnovo Technology

5:00 PM
Application of Energy-Dispersive pnCCD Detector in Material Science Using Hard X-rays: Ulrich Pietsch; ‘Sebastian Send; ‘Ali Abboud; ‘Nadja Pashnack; ‘Tuba Conka-Nurdan; ‘Martin Huth; ‘Dieter Schlösser; ‘Lothar Strüder; ‘University of Siegen; ‘Türk-Alman Universitesi; ‘pnSensor GmbH

5:20 PM
CORELLI: The Elastic Diffuse Scattering Spectrometer at SNS: Feng Ye; ‘Oak Ridge National Laboratory
Pb-Free Solders and Emerging Interconnect and Packaging — Electromigration and Thermomigration
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: J. John Elmer, LLNL; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinivas Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher P. Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnique Institute; Fan Gao, U. Massachusetts Lowell

Wednesday PM Room: Lark
March 18, 2015
Location: Swan

Session Chairs: Kyu-Oh Lee, Intel Corporation; Fan-Yi Ouyang, National Tsing Hua University

2:00 PM
Electro-Migration Study in First Level Interconnects: Amaneh Tasooji; Leticia Lara; Kyu-oh Lee; Arizona State University; Honeywell; Intel Corporation

2:25 PM
Heat Flow and Microstructural Evolution Associated with the Use of Self-Propagating Reactive Multilayer Foils on a Tin-Based Alloy Substrate: Ryan Hooper; David Adams; Michele Manuel; University of Florida; Sandia National Laboratories

2:50 PM
Back-Fill Sn Flux Against Current-Stressing at Cathode Micro Cu/Sn Interface: Yi Chun Hsu; Y J Hu; K H Yang; Cheng Yi Liu; National Central University

3:15 PM
The Dissolution and Supersaturation of Zn in the Sn9Zn Solder under Current Stressing: Ting-Hui Wang; Kwang-Lung Lin; Department of Materials Science and Engineering, National Cheng Kung University

3:40 PM
Break

3:55 PM
Evolution of Electromigration Damage in Idealized SnAgCu 305 Interconnects: Xiaoranny Linares; John Morris; University of California Berkeley

4:20 PM
Mechanical Response of Pb-Free Solder Joints after Current Stressing: Yong Zuo; Limin Ma; Fu Guo; Yutian Shu; Andre Lee; K. N. Subramanian; Feng Tai; Beijing University of Technology; Michigan State University

4:45 PM
Effect of Temperature on Thermomigration of Solder Joints: Yi-Shan Yang; Tzu-Yang Lin; Fun-Yi Ouyang; National Tsing Hua University, Taiwan

5:10 PM
Electromigration Failure Mechanism of Cu/SnAg/Ni Microbumps in Three-Dimensional Integral Circuits Using Kelvin Bumps Structure: Wan-Hsuan Liu; Chih Chen; Chau-Jie Zhan; Yu-wei Huang; National Chiao Tung University; Assembly and Reliability Department/EOL/TRI
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XIV — Session II
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; J ae-Ho Lee, Hongik University; Clemens Schmetterer, Forschungszentrum Juelich, Inst. For Energy and Climate Research; Ikou Ohnuma, Tohoku University; Shien Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University; Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan University of Science and Technology

Wednesday PM  Room: Parrot
March 18, 2015  Location: Swan

Session Chairs: Ikou Ohnuma, Tohoku University; Albert T. Wu, National Central University

2:00 PM Invited
Phase Equilibria of Cu-In-Se Ternary System: Wan-ting Chiu1; Sinn-wen Chen1; Ssu-ming Tseng1; 1National Tsing Hua University

2:30 PM
The Effect of Template Geometry on the Eutectic Growth of Directionally Solidified Binary Organic Metamaterials: A Phase-Field Study: Ali Ramazani1; Vladislava Tomeckova1; Larry Aagesen1; Duckhyun Lee1; John Halloran1; Katsuyo Thornton1; 1University of Michigan

2:50 PM
Interfacial Reaction of Zn-Al Based High Temperature Solders: Hsien Chien Hsieh1; Albert T. Wu1; 1National Central University

3:10 PM
Study of Cu-Pd Interdiffusion Bonding: Kun Hui Yang1; Cheng Yi Liu1; 1National Central University

3:30 PM Break

3:50 PM
Thermodynamic Investigation of the Perovskite Electrical Conductivity: Shadi Darvish1; Maria Mora1; Yu Zhong1; 1Florida International University

4:10 PM
Phase Diagrams of Pb-Sb-Se Ternary System: Jui-Shen Chang1; Sinn-wen Chen1; 1National TsingHua University

4:30 PM
Co-relation between the Surface Microstructure of Surface-Deformed Cu Foils and the Soldering Wettability: Yi Chun Hsu1; Cheng Yi Liu1; 1National Central University

4:50 PM
Phase Stability of Sn-Pb, Sn-Cu and Sn-Ag Binary Systems under Current Stressing: Yu-chen Liu1; Shih-kang Lin1; 1National Cheng Kung University

5:10 PM
Effect of Temperature Gradient on the Growth of Ag3Sn Intermetallic Compounds in Pb-Free Solder during Thermo-Compressive Bonding Process: Hsin-Tuan Chen1; Yu-Ping Su1; Chun-Sen Wu1; Kuan-Neng Chen1; Fan-Yi Ouyang1; 1National Tsing Hwa University, Taiwan

Phase Transformations and Microstructural Evolution — Shape Memory Alloys
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarsi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danoix, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

Wednesday PM  Room: Swan 2
March 18, 2015  Location: Swan

Session Chairs: Peter Anderson, The Ohio State University; Gregory Thompson, University of Alabama

2:00 PM
Crystallographic Origin of Dimensional Instability of Shape Memory Alloys: Yipeng Gao1; Matthew Bowers1; Ronald Noebe1; Michael Mills1; Yunzhi Wang1; 1The Ohio State University

2:20 PM Invited
The Interaction between Phase Transformations and Plasticity in Shape Memory Alloys: A Coupled Modeling and Experimental Study: Harshad Paranjape1; Sivom Manchiraju1; Matthew Bowers1; Michael Mills1; Peter Anderson1; 1The Ohio State University

2:50 PM
Phase Transformation in Shape Memory Alloys: From the Macro to the Micro Length Scale: Samantha Daly1; 1University of Michigan

3:10 PM
Investigation of the R-Phase during Stress- and Temperature-Induced Phase Transformations in NiTi: Douglas Nicholson1; Sando Padula2; Othmane Benafan1; Harley Skorpsenske1; Ke An1; Andrew Payzant1; Raj Vasryanathan1; 1University of Central Florida; 2NASA Glenn Research Center; 1Oak Ridge National Laboratory

3:30 PM Break

3:50 PM Invited
Recent Developments in High Temperature Shape Memory Alloys: Ibrahim Karaman1; Ronald Noebe1; 1Texas A&M University; 2NASA Glenn Research Center

4:20 PM
Two Types of Martensitic Phase Transformations in Magnetic Shape Memory Alloys by In-Situ Nanoindentation Studies: Yue Liu1; Ibrahim Karaman1; Haiyan Wang1; Xiongzhong Zhang1; 1Texas A&M University

4:40 PM
Influence of Zr on the H-Phase Precipitation and Mechanical Attributes in Ni-rich Ni-Ti-Zr Shape Memory Alloys: Suzanne Kornegay1; Monica Kapoor1; Billy Hornbuckle1; Glen Bigelow1; Mark Weaver1; Gregory Thompson1; 1The University of Alabama; 2Escola Politécnica of Universidade Federal do Rio de Janeiro; 3University of Alabama; 4The Ohio State University; 5Los Alamos National Laboratory; 6NASA Glenn Research Center

5:00 PM
The Effects of Aging and Precipitation in Ni-Rich Ni-Ti-Hf High Temperature Shape Memory Alloys: Xiang Chen1; Lee Casalena1; Daniel Coughlin1; Fan Yang1; Ronald Noebe1; Michael Mills1; Peter Anderson1; 1The Ohio State University; 2Los Alamos National Laboratory; 3NASA Glenn Research Center

5:20 PM
Role of Precipitate Chemistry and Morphology on the Mechanical and Phase Transformation Behavior in a NiTiHfAl Shape Memory Alloy: Michael Kesler1; Amanda Varela1; Oscar Figueroa1; B. Hornbuckle1; Gregory Thompson1; John Newman1; Michele Manuel1; 1University of Florida; 2Escola Politécnica of Universidade Federal do Rio de Janeiro; 3University of Alabama; 4NASA Langley Research Center

www.tms.org/TMS2015  #TMS2015Experience
5:40 PM  
Transformation and Deformation Mechanisms in High Temperature Shape Memory Alloys with Nanoprecipitates: Lee Casalena; Daniel Coughlin; Fan Yang; Xiang Chen; Matthew Bowers; Harshad Panarajpe; Yipeng Gao; Michael Mills; Peter Anderson; Yuzhi Wang; Ronald Noebe; Glen Bigelow; Darrell Gaydosh; Santo Padula; 1The Ohio State University; 2Los Alamos National Laboratory; 3NASA Glenn Research Center

### Phase Transformations and Microstructural Evolution — Steels II

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

**Program Organizers:** Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danoix, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

**Wednesday PM**  
**Room:** Swan 3  
**Location:** Swan  

**Session Chairs:** Amy Clarke, Los Alamos National Laboratory; Daniel Coughlin, Los Alamos National Laboratory

#### 2:00 PM Invited

**Analysis of Dislocation Structures Caused by Phase Transformations in Nb-Mo Microalloyed Steels Using High Resolution EBSD:** Nerea Isasti; Denis Jorge-Badiola; Pello Uranga; 1CEIT and Tecnun

#### 2:30 PM

**Atom Probe Compositional Analysis of Nanoscale Precipitates in Nb/Ti/Mo Microalloyed Steels:** Monica Kapoor; Gregory Thompson; Ron O’Malley; 1University of Alabama; 3Missouri S & T

#### 2:50 PM

**Importance of Interfacial Energy in Precipitation Modeling Using Computational Thermodynamics Techniques:** Andre Costa E Silva; EEIMVR - Universidade Federal Fluminense - IBQN

#### 3:10 PM

**A Study of Microstructure and Phase Transformations of Medium-Carbon Dual-Phase Steels:** Ersoy Erisir; Oguz Bilir; Meltem Sezen; 1Kocaeli University; 2Sabanci University

#### 3:30 PM Break

#### 3:50 PM

**Effect of Annealing Temperature on Martensite Start Temperature in Intercritical Region:** Ersoy Erisir; Oguz Bilir; 1Kocaeli University

#### 4:10 PM

**Effect of Deformation Temperature and Interpass Time on Microstructure Evolution and Mechanical Properties of Medium Carbon Low Alloy Steel during Ingot Breakdown Process:** Kanwal Chadha; Mohammad Jahazi; Abdelhadi Louie; 1ETS

#### 4:30 PM

**Phase Field Modeling of Microstructural Evolution during Intermediate Quenching and Intercritical Annealing of Medium Carbon Dual Phase Steels:** Ersoy Erisir; Oguz Bilir; 1Kocaeli University

### Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories — Session VI

**Sponsored by:** TMS Functional Materials Division (formerly EMPMD), TMS: Structure Materials Division, TMS: Chemistry and Physics of Materials Committee

**Program Organizers:** Dana Zöllner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

**Wednesday PM**  
**Room:** Oceanic 8  
**Location:** Dolphin  

**Session Chairs:** Dana Zöllner, Otto-von-Guericke-University Magdeburg; Dmitri Molodov, RWTH Aachen; Douglas Medlin, Sandia National Laboratories

#### 2:00 PM

**An Experimental and Numerical Study of Deformation Behavior of Steels in Biaxial Tensile Tests:** Dilip Banerjee; Mark Iadicola; Adam Creuziger; Timothy Foecke; 1NIST

#### 2:20 PM

**Benchmarking Multi-Scale Models with Micro-Mechanical Testing and Characterization of Ni-Based Superalloys:** David Eastman; Zafir Alam; Jessica Krogstad; William Lenthe; Tesa Pollock; Paul Shade; Mike Uchic; Kevin Henker; 1Johns Hopkins University; 3University of Illinois, Urbana Champaign; 4University of California, Santa Barbara; 5Air Force Research Laboratory

#### 2:40 PM

**Stress Induced Grain Boundary Migration: A Perspective from Bi-Crystallographic Analysis and Atomic Simulation:** Liang Wan; Ju Li; Boyu Liu; Zhiwei Shan; 1Xi’an Jiaotong University; 2Massachusetts Institute of Technology

#### 3:00 PM

**Multi-Scale Modeling of Subgrain formation During Cold Rolling Using a Crystal Plasticity Based Element Free Galerkin Model:** Usman Ali; Abhijit Brahme; Raja Mishra; Kaan Inal; 1University of Waterloo; 2GM R&D Center

#### 3:20 PM Concluding Comments

### 6th International Symposium on High Temperature Metallurgical Processing — Coking, New Energy and Environment

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

**Program Organizers:** Tao Jiang, Central South University; Jian-Yang Huang, Michigan Technological University; Gerardo Alvear, XstrataTech; Onuralp Yucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackay, P. J. Mackay Technology; Tom Battle, Midrex Technologies

**Thursday AM**  
**Room:** Peacock  
**Location:** Swan

**Session Chairs:** Naiyang Ma, ArcelorMittal; Jianliang Zhang, University of Science and Technology Beijing

#### 8:30 AM

**The Self-Reducing Pellet Production from Organic Household Waste:** Alberto Eloy Nogueira; Cyro Takano; Marcelo Mourão; Adolfo Zambrano; 1Universidade de São Paulo; 2Pontificia Universidad Católica del Perú

#### 8:50 AM

**The Application of a Recent Thermodynamic Model for Coke Crystallites: Chemisorption of Methyl Groups, Decomposition of Natural Gas, and the Reduction of Metal Oxides:** Halvor Dalaker; Philippe Ouzilleau; Patrice Chartier; 1SINTEF Materials and Chemistry; 2École Polytechnique de Montréal
6th International Symposium on High Temperature Metallurgical Processing — Utilization of Solid Slag/Wastes and Complex Ores

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Huang, Michigan Technological University; Gerardo Alvera, XstrataTech; Öhurulap Yucel, Istanbul Technical University; Xinping Mao, Wuhan Iron and Steel Corporation; Hong Yong Song, University of Utah; Naiyang Ma, ArcelorMittal; Phillip Mackey, P.J. Mackey Technology; Tom Battle, Midrex Technologies

Thursday AM  Room: Swan 5
March 19, 2015  Location: Swan

Session Chairs: Thomas Battle, Midrex Technologies; Guanghui Li, School of Minerals Processing & Bioengineering, Central South University

8:30 AM  Analysis of Sulfidation Routes for Processing Weathered Ilmenite Concentrates Containing Impurities: Sazzad Ahmad; M. Akbar Rahmadni; Mark Pownceby; Warren Bruckard; Swinburne University of Technology; 1CSIRO Mineral Resources Flagship

8:50 AM  Use of Recycled Fluxes Substituting Fluorspar for Refining Operation in a Bof Reactor: Valdeci Paula Alvarenga; Faradaraajan Seshadri; Itaehnh Alves da Silva; Carlos Antonio da Silva; Filipe Bueno Carvalho; Sergio Luiz Costa; Aperam Steel Works; 1Universidade Federal de Minas Gerais; 2Universidade Federal de Ouro Preto; 3Aperam Steel Works; 4Solvi Insumos
Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — Additive Manufacturing of Polymers and Non-metals

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: J John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas

Thursday AM  Room: Northern Hemisphere A1
March 19, 2015  Location: Dolphin

Session Chairs: Kathy Flores, Washington University; Brecht Van Hooreweder, Ku Leuven

8:30 AM Invited
Effect of Greyscale on the Properties of High Speed Sintered Elastomers: Adam Ellis1; Liam Hartley1; Neil Hopkinson1; 1University of Sheffield

9:00 AM
A Quality Control Loop Based on Computer Tomography for Optimization of Laser Sintering Process of PA12 Parts: Michele Pavani1; Sam Coeck1; Piet Van den Ecker1; Jean-Pierre Kruth1; Wim Dewulf1; Tom Craeghs1; 1KU Leuven, Production Engineering, Machine Design and Automation

9:20 AM Invited
On the Fatigue Behavior of Selective Laser Sintered Parts in Nylon 12: Brecht Van Hooreweder1; Jean-Pierre Kruth1; 1KU Leuven

9:50 AM Break

10:10 AM Invited
A Laser Deposition Method to Investigate Glass Formation in Metallic Alloys: Peter Tsai1; Katharine Flores2; 1Washington University

10:40 AM
Multi-objective Optimization of the Mechanical Properties of FDM PLA Components: Jonathan Torres1; Allen Owji1; Zachary DeMastry1; Ali Gordon1; 1University of Central Florida

11:00 AM
Economy of Scales: How Big Area Additive Manufacturing Couples 100X Deposition Rate with a 100X Cost Reduction: Lonnie Love1; Brian Post1; Randall Lind2; Peter Lloyd1; Chad Duty1; Vlastimil Kunc1; Richard Neff1; Orlando Rios1; 1Oak Ridge National Laboratory; 2Cincinnati Incorporated


Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: J John Carpenter, Los Alamos National Laboratory; David Bourell, University of Texas at Austin; Reginald Hamilton, Pennsylvania State University; James Sears, GE Global Research Center; Allison Beese, Pennsylvania State University; Rajiv Mishra, University of North Texas

Thursday AM  Room: Northern Hemisphere A2
March 19, 2015  Location: Dolphin

Session Chairs: Terry Holesinger, Los Alamos National Laboratory; Suman Das, Georgia Tech

8:30 AM Invited
Scanning Laser EPITAXY Process Development for Additive Manufacturing of Turbine Engine Hot-Section Components: Suman Das1; Ranadip Acharya1; Rohan Bansal1; Justin Gambone1; 1Georgia Institute of Technology

9:00 AM
Microstructural Characterization and Modeling of Metal Components Produced by Additive Manufacturing: Lyle Levine1; Caren Campbell1; Eric Lass1; Andrew Allen1; Fan Zhang1; Li Ma1; Ruqing Xu2; Jan Ilavsky2; 1National Institute of Standards and Technology; 2Argonne National Laboratory

9:20 AM
Investigating the Role of Powder Feedstock Recyclability in Electron Beam Melting of Ti-6Al-4V and Inconel 718: Peeyush Nathwani1; Ryan Dehoff1; Larry Lowe2; Francisco Medina2; William Sames2; Michael Kirka1; William Peter1; 1Oak Ridge National Laboratory; 2Arcam AB

9:40 AM
Characterization of Tungsten/Poly carbonate Polymer Matrix Composites for Mechanical, Electromagnetic, and Radiation Shielding Applications: Corey Shemelya1; Armando Rivera1; Angel Torrado Perez1; Carmen Rocha1; Min Liang1; Craig Kief1; Jim Aarestad1; Jim Stegmann1; David Alexander1; Hao Xin2; Ryan Wicker1; Eric MacDonald1; David Roberson1; 1University of Texas at El Paso; 2The University of Arizona; 3COSMIAC; 4NASA Glenn Research Center

10:00 AM Break

10:20 AM
Production and Properties of a Wire-arc Additive Manufacturing Part Made with Friction Extruded Wire: Xiao Li1; Anthony Reynolds1; Baoqiang Cong2; Jialuo Ding2; Stewart Williams2; 1University of South Carolina; 2Cranfield University

10:40 AM
Microstructural Evaluation of an Al Hemisphere Made by Additive Manufacturing: Terry Holesinger1; Pallas Pappin1; Thomas Liener1; John Carpenter1; 1Los Alamos National Laboratory

11:00 AM
Investigating Failure Mechanisms in Additively Manufactured Stainless Steel via In Situ Tensile Tests: Holly Barth1; Gilbert Gallegos1; Alastair MacDowell1; Abdel Haboub1; Wayne King1; 1Lawrence Livermore National Laboratory; 2Lawrence Berkeley National Laboratory

11:20 AM
Phase Transformations and Residual Stress Behavior in Additively Manufactured 316L Stainless Steel and NiTi Alloy: Amanda Wu1; Donald Brown1; Gilbert Gallegos1; Mukul Kumar1; Wayne King1; 1Lawrence Livermore National Laboratory; 2Los Alamos National Laboratory

—— Advances in Solidification of Metallic Alloys under External Fields — Novel Solidification Processes and Applications —

Sponsored by: TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS: Aluminum Committee, TMS: Solidification Committee
Program Organizers: J Jawel Mi, University of Hull; Dmitry Eskin, Brunel University

Thursday AM  Room: Swan 1
March 19, 2015  Location: Swan

Session Chair: J Jawel Mi, University of Hull

8:30 AM
The Solidification Structure Refinement of SWRCH22A Steel Billet Under Pulse Magneto-Oscillation Treatment: Qixin Li1; Dong Liang1; Zhan Zhou1; Yifeng Xu2; Renxing Li1; Yongyong Gong2; Qijie Zhai1; 1Shanghai University; 2National Institute of Standards and Technology

8:50 AM
A Comparative Study on the Single Crystal Growth OF CMSX-4 via Vertical Bridgman and Vertical Bridgman with a Submerged Baffle: Mert Bacak1; Mehdi Montakhbazarlighi1; Erkan Balikci1; 1Bogazici University
Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Novel Casting and Molding Processes

Thursday AM
Room: Swan 6
March 19, 2015
Location: Swan

Session Chair: Laurentiu Nastac, The University of Alabama

8:30 AM Invited
Counter-Gravity Casting: John Campbell
‘University of Birmingham’

8:55 AM Invited
Centrifugal Casting and Solidification in Hyper-Gravity Conditions: Ulrike Hecht; Santhanu Jana; Alexandre Viardin; Julio Aguilar
‘Access e.V.’

9:20 AM Invited
A Numerical Model for Predicting the Gas Evolution in Silica Sand (Furan Binder) Mold Castings: Laurentiu Nastac; Shian Jia; Mihaela Nastac; Robert Wood
‘The University of Alabama’;
‘ExOne’

9:45 AM
Characterization of Centicast Bimetallic Ni-Cr-Mo Alloy 625/X-65 Steel Pipeline: Conrado Afonso; João Guilerme Dessi; Antonio Andrade
‘Federal University of São Carlos (UFSCar)’;
‘ENGEMASA - Materials and Engineering Ltda’

10:05 AM Break

10:25 AM
Overcasting Process Development for Multi-Material Manufacturing: Alan Luo; Andrew Klarner; Bingbo Chen; Hui Zhang; Anil Sachdev
‘The Ohio State University’;
‘Hefei University of Technology’;
‘General Motors Global Research and Development’

10:45 AM
Wetting Behavior of CMSX-4 in Grooved Channels for Investment Casting of Fine Features in Single Crystal Turbine Blades: Logan Kroneman; Kevin Trumble; Matthew Krane
‘Purdue University’

11:05 AM
Investigation of New Binder System for Ceramic Casting Molds: Huseyin Lus; Habib Saridikmen; Nilgun Kuskonmaz
‘Yildiz Technical University’

11:25 AM
Effect of Iron Ore Addition in Vessel as Coolant on Sticking Behaviour during Continuous Casting of Slab: PP Sahoo; Pabitra Palai; ‘Tata Steel Ltd.’

Advances in the Science and Engineering of Casting Solidification: An MPMD Symposium Honoring Doru Michael Stefanescu — Solidification Processing V

Thursday AM
Room: Swan 7
March 19, 2015
Location: Swan

Session Chair: Afinu Lupulescu, ASM International

8:30 AM
Integrated Computational Materials Engineering for Advanced High-Strength Cast Iron: Nicholas Hatcher; James Sade; David Snyder; Jiadong Song; Jason Sebastian; Greg Olson; Richard Huff
‘QuesTek Innovations’;
‘Dartmouth College’;
‘Caterpillar, Inc’

9:10 AM
Dependence of Hardness and Microstructure in the Directionally Solidified Sn-40wt.%Bi-0.7wt.%Cu Alloy: Bismarck Silva; José Spinelli
‘Federal University of São Carlos’

9:30 AM
Investigation of Thin-Walled IN718 Castings by Counter-Gravity Investment Casting: Aiping Dong; Naishun Yan; Jiao Zhang; Jun Wang; Baode Sun; Haiyan Gao; Da Shu
‘Shanghai Jiao Tong University’

9:50 AM
High Strain Processing of Rapidly Solidified Metallic Composites: Sundee Makherjee
‘University of North Texas’

10:10 AM Break

10:30 AM
Numerical Simulation on the Macro-Segregation Formation in the Bloom Round Casting: Haibo Suo; Lijun Li; Xiaowen Cheng; Wensheng Qiu; Lingyu Zeng
‘School of Mechanical & Automotive Engineering, South China University of Technology’;
‘Baosteel Group Guangdong Shagou Iron & Steel Co., Ltd.’

10:50 AM
Use of X-ray Tomography for Characterizing Graphite Morphology in High Strength Cast Iron: Dileep Singh
‘Argonne National Laboratory’

11:10 AM
Thermal Test of Nodular Cast Iron Cooling Stave: Jin Zheng; Hai-bin Zuo; Feng-guang Li; Jian-liang Zhang
‘University of Science & Technology Beijing’

11:30 AM
Shrinkage Porosity of Gray, Ductile and Compacted Graphite Iron and Its Relationship with Solidification Structures: Juan Massone; Marcos Lopez; Graciela Rivera; Roberto Boeri; ‘National University of Mar del Plata’
Advances in Thin Films for Electronics and Photonics — Multifunctional Materials for Sensing and Electronics

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee

Program Organizers: Federico Rosell, INRS; Nuggehalli Ravindra, New Jersey Institute of Technology; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Terry Alford, Arizona State University

Thursday AM  Room: Europe 7
March 19, 2015  Location: Dolphin

Session Chair: Nate Quitoriano, McGill

8:30 AM Invited
Additive Integration of Advanced Sensors for Multifunctional Applications: Pooran Joshi; ORNL

9:00 AM Invited
Analyzing Bulk Oxide and Oxide/Semiconductor Interface Properties in Thermally Grown Oxides on Si and Si by Means of D2O Vapors Absorption: Joseph Bloch; Gang Liu; Boris Yakshinskiy; Leszek Wielunski; Can Xu; Torgny Gustafsson; Leonard Feldman; Rutgers University

9:30 AM Invited
Complex Oxides on Semiconductors for Nanoelectronic Applications: Lucie Mazet; Romain Bachelet; Guillaume Saint-Girons; M Hytch; S. Schamm-Chardon; Catherine Dubourdieu; Institut des Nanotechnologies de Lyon, CNRS; CEMES, CNRS, Université de Toulouse; CNRS-INL

9:55 AM Break

10:15 AM Invited
Effect of Antiferromagnetic Film Thickness on Exchange Bias Field in SFMO/SFWO Multilayers: Deepak Kumar; Davinder Kaur; Graphic Era University Dehradun; IIT Roorkee

10:40 AM Invited
High Mobility Conducting Metal Oxides - Gateway Materials for Mid-IR Plasmonics: Jon-Paul Maria; Edward Sachet; Joshua Harris; Douglas Irving; Benjamin Gaddy; Brian Donovan; Patrick Hopkins; North Carolina State University; University of Virginia

11:05 AM Invited
Investigation into the Surface Stress Variation as a Function of Applied Compressive Stress and Temperature in Microscale Silicon: Ming Gan; Vikas Tomar; Purdue University

11:30 AM Invited
PV Optics-cigs: Optical Software for Design and Analysis of Cu(InGa)Se2-Based Solar Cells: Bhushan Sopori; Peter Rupnowski; James Mutitu; William Shafarman; National Renewable Energy Laboratory; University of Delaware

Aluminum Alloys: Development, Characterization, and Applications — Corrosion Resistance and Emerging Technologies

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee

Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky

Thursday AM  Room: Northern Hemisphere E4
March 19, 2015  Location: Dolphin

Session Chair: William Golumbfskie, Naval Surface Warfare Center

8:30 AM Invited
The Effects of Processing and External Conditions on the Sensitization of Marine Aluminum Alloys: William Golumbfskie; Jennifer Gaies; Nicholas Jones; Mitra Taheri; Naval Surface Warfare Center, Carderock Division; Drexel University

8:55 AM
Roll-bonded Al-Si/Al-Mn-Zn-X/Al-Si Clad Sheets Fabricated from Twin-Roll-Cast Bare Alloys: Kwangjun Euh; Hyoung Wook Kim; Yun Soo Lee; Su Hyeon Kim; Korea Institute of Materials Science

9:15 AM
Aluminum Extrusion Susceptibility to Sensitization: William Golumbfskie; Naval Surface Warfare Center, Carderock Division

9:35 AM
In-situ Elevated Temperature Transmission Electron Microscopy of Sensitized Aluminum-Magnesium Alloy Treated by Ultrasonic Impact Treatment: Kim Ngoc Tran; Lourdes Salamanca-Riba; Wen-An Chiu; Naval Surface Warfare Carderock Division; University of Maryland

9:55 AM
The Role of Hydrogen Embrittlement in Intergranular Stress Corrosion Cracking of Aluminum-Magnesium Alloys: Cortney Crane; Richard Gangloff; Exponent; University of Virginia

10:15 AM Break

10:30 AM
Formation of Intermetallic Phases in Al-Sc-Zr Alloys Prepared by Electrolytic Deposition in Na3AlF6 Melts: Zengjie Wang; Jiilai Xue; Beijing University of Technology; University of Science and Technology

10:50 AM
Use of Nano-Structured Silanols on the Solidification Aluminum-Silicon Based Casting Alloys: Yang Lu; Andre Lee; Allen Rocche; Tsung-Yu Pan; Michigan State University; Vinci Technology Corporation

11:10 AM
Influence of Intermetallic Particles on Fracture Behaviors of Al-Zn-Mg-Cu Alloys: Hang Su; Hiroyuki Toda; Takuro Yoshimura; Kentaro Uesugi; Akihisa Takeuchi; Yoshio Suzuki; Nobuto Sakaguchi; Yoshiho Watanabe; Kyushu University; Japan Synchrotron Radiation Research Institute; UACJ Corporation

Aluminum Alloys: Development, Characterization, and Applications — Precipitation Behaviors

Sponsored by: TMS Functional Materials Division, TMS: Aluminum Processing Committee

Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Phinix,LLC; Tongguang Zhai, University of Kentucky

Thursday AM  Room: Northern Hemisphere E3
March 19, 2015  Location: Dolphin

Session Chair: Tongguang Zhai, University of Kentucky

8:30 AM Keynote
Studies of Precipitation in 6000 Al-Mg-Si Alloys by HRTEM: Kenji Matsuda; University of Toyama

9:00 AM Invited
Microstructure and Interfaces of Grain Boundary Al2CuLi Plates of Al-3Cu-2Li: Ramasis Goswami; Noam Bernstein; Naval Research Laboratory

9:20 AM
Effects of Temper and Aging Temperature on Precipitation in Al-5xxx Alloys: Gossong Yi; David Cullen; Alexander Derrick; Michael Free; University of Utah; Oak Ridge National Lab

9:40 AM Invited
A Study of Formation Mechanism and Recrystallization Behavior of Mn Containing Precipitates during Homogenization in 6xxx Series Aluminum Alloys: Gongwang Zhang; Yi Han; Yi Xu; Hiromi Nagami; Gang Sha; Chad Parish; Tongguang Zhai; University of Kentucky; Suzhou Research Institute for Nonferrous Metals; Nanjing University of Science and Technology; Oak Ridge National Laboratory
Penetration
The Resistibility of Semi-graphitic Cathode to Alkali Metal (K and Na)

11:00 AM
Bringing the Science of Precipitation in Aluminum Alloys to the Shop
Floor: Babak Raeisinia1; Tudor Pitoea1; Paul Nolan1; Ernst Kozeschnik1;
Novelis Global R&T Center; 2Vienna University of Technology

11:20 AM
Invited Producing Nanostructured Aluminum Alloys for Advanced
Electrochemical Application Using Severe Plastic Deformation: Ruslan
Valiev1; M.Yu. Murashkin1; G.I. Raab1; Alexandr Krokhin1;
Institute of Physics of Advanced Materials, Ufa State Aviation Technical University;
Rusal GM

11:40 AM
Influence of Plastic Deformation on the Precipitation Sequence in a
AA6061 Aluminum Alloy: Chibihi Abdelahad1; Vincent Sébastien1; Ribis
Joel1; Toffolon-Masclet Caroline1; Garnier Jerome1;
CEA/DEN/DANS/DMN/DMN/DMN/SRMA/LA2M

11:55 AM
Aluminum Reduction Technology — Joint Session on
Electrodes and Operations (with Electrode Technology)
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Lavoie, LMRC
Thursday AM
March 19, 2015
Room: Southern Hemisphere V
Location: Dolphin

Session Chair: Xianan Liao, Elkem Carbon

8:30 AM Introductory Comments

8:35 AM
In-Situ Formation of Slots in Soderberg Anodes: Alton Tabereaux1;
Xiangwen Wang1; 1Consultant; 2Alcoa Inc.

9:00 AM
Non-Linear Stability Analysis of Cells Having Different Types of Cathode
Surface Geometry: Marc Dupuis1; Valdis Bojarevics2; 1GéniSim Inc.;
Greenwich University

9:25 AM
The influence of Cathode Shape on Current Density and Metal Heave in
300 kA Aluminum Reduction Cell: Yong Song1; Naixiang Feng1; Jianping
Peng1; Baokuan Li1; Qiang Wang1; 1Northeastern University

10:05 AM Break

10:30 AM
Electroslag Welding(ESW): A New Option for Smelters to Weld Aluminum
Bus Bars: Bertrand Leroux1; 1Canmec Ind

10:55 AM
The Resistibility of Semi-graphitic Cathode to Alkali Metal (K and Na)
Penetration: Fang Zhao1; Hai-lin Kong1; Lin-bo Li1; Tao Hong1;
School of Metallurgical Engineering, Xi’an University of Architecture and Technology

11:20 AM
The Status and Development Trends of Carbon Cathode Materials in China:
Shuchao Zhang1; Zhongming Zhao2; Baoguo Chen1; 1Zhengzhou
Research Institute of Chalco; 2Shanxi Shanjin Carbon Co., Ltd.;
Henan Luoyang Wanji Aluminium Co., Ltd.

Aluminum Reduction Technology — Modelling
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pascal Lavoie, LMRC
Thursday AM
Room: Southern Hemisphere III
March 19, 2015
Location: Dolphin

Session Chair: Mark Cooksey, CSIRO

8:30 AM Introductory Comments

8:35 AM
3D Coupled MHD and Thermoelectrical Modelling Applied to AP
Technology Pots: Steve Langlois1; Jacques Rappaz2; Olivier Martin1;
Yves Caratini1; Michel Flueck1; Alexandre Masserey1; Gilles Steiner1;
1Rio Tinto Alcan; 2EPFL; 3Ycoor Systems

9:00 AM
A Model Based Study of Cell Electrical Preheating Practices At DUBAL:
Alexander Arkhipov1; Abdalla Zarouni1; Sergey Akhmetov1; Lalit Mishra1;
Amal Al Jasmi1; 1Emirates Global Aluminium (EGA)

9:25 AM
Mathematical Modelling of Hall-Héroult Pot Instability and Verification
by Measurements of Anode Current Distribution: Valdas Bojarevics1; James
Evans1; 1University of Greenwich; 2University of California Berkeley and
Wireless Industrial Technologies, Inc.

9:50 AM
Bubble Flow in a Static Magnetic Field: Subrata Das1; Dinushke Weerasiri1;
Veeriah Jegatheesan1; 1Deakin University

10:15 AM Break

10:30 AM
The Impact of Bubble-Bubble Interaction on Anodic Gas Release; A Water
Model Analysis: Are Simonsen1; Kristian Einarsrud1; Ingo Eick1; 1SIENTEF;
1HIST; 2Hydro Aluminium Deutcheand GmbH

10:55 AM
Observation of Anodic Bubble Behaviors on Unslotted Anode and Slotted
Anode in a Laboratory Scale Transparent Aluminium Electrolysis Cell:
Zhao Zhibin1; Yuqing Feng1; Bingliang Gao1; Zhaowen Wang1; Zhongning
Shi1; Xianwei Hu1; 1Northeastern University; 2CSIRO

11:20 AM
Impact of Copper Inserts in Collector Bars: René von Kaenel1; Jacques
Antille1; Louis Bugnion1; 1KAN-NAK SA

Biological Materials Science Symposium —
Biomimetic Systems IV
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Kalpana Katti, North Dakota State University;
Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter,
Clemson University; Francois Barthelat, McGill University
Thursday AM
March 19, 2015
Room: Swan 9
Location: Swan

Session Chairs: Candan Tamerler, University of Kansas; Michael
Porter, Clemson University

8:30 AM
4-D Imaging by X-ray Microtomography of the Failure Behaviour in
Cuttlebone: Laura North1; Ed Pope1; Ching Wong1; Richard Johnston1;
1Swansea University
8:50 AM  Characterization of the Degradation Behavior of Mg-Zr-Sr Alloys for Biomedical Applications: Yunfei Ding; Jixing Lin; Cuie Wen; Peter Hodgson; Yuncang Li; 'Deakin University; 'Zhejiang Industry & Trade Vocational College; 'Swinburne University of Technology

9:10 AM  Cold Working Commercially Pure Ti for Dental Implants Applications: Carlos Elias; Celso Resende; Jochen Roestel; 'Instituto Militar de Engenharia; 'Conexão Sistemas de Prótese

9:30 AM  Injectable Solids: Hydrogel Property and Nanostructure Control Through Peptide Design and Solution Assembly: Darrin Pochan; 'University of Delaware

9:50 AM  Break

10:10 AM  Inspirations from Reptilian Eggshells for Novel Polymer-Based Composites: Yin Chang; Po-Yu Chen; 'National Tsing Hua University

10:30 AM  Nano-Film Polymerization Process by Plasma-Deposited SnO2 for Biomaterial Applications: Study on Electrical Properties of Capacitor and Thin-Film Transistor: Mei-Chen Liu; 'Ming Chi University of Technology

10:50 AM  New Lessons from Nature by Revisiting Seashell's Multiscale Architectures: Xiaodong Li; 'San Diego; 2ETH Zurich

11:10 AM  Phase Transforming Cellular Materials: Pablo Zavattieri; David Restrepo; Nilesh Mankame; 'Purdue University; 'General Motors Research and Development

11:30 AM  Protective Function of Pangolin Scales: Structure and Mechanical Properties: Bin Wang; Wen Yang; Marc Meyers; 'University of California, San Diego; 'ETH Zurich

8:30 AM  Invited  Fabrication and Properties of Amorphous Alloy Surface by Laser Surface Treatment: Shujie Pang; Ying Liu; Qi Zhang; Tao Zhang; 'Beihang University

8:50 AM  Atomic Structural Evolution of Metallic Glass at Cryogenic Temperatures: Xilei Bian; G. Wang; Z.Y. Liu; J. Bednarčík; M.B. Tang; Y.L. Gao; Q.J. Zhai; Norbert Mattmen; Jurgen Eckert; Takeshi Egami; 'Shanghai University; 'Hasylab at Desy; 'Shanghai Institute of Ceramics; 'IFW Dresden; 'IFW Dresden and TU Dresden; 'University of Tennessee

9:10 AM  On the Short-Range Orders in Spinodal Pd–Ni–P Bulk Metallic Glasses: Zhenduo Wu; Wenzhao Zhou; Yin Fung Lo; Si Lan; Hin Wing Kui; 'CUHK; 'City University of Hong Kong

9:30 AM  Invited  Structural and Mechanical Properties of Rejuvenated Amorphous Metals: Shigenobu Ogata; Masato Wakeda; 'Osaka University

9:50 AM  Processing of Bulk Metallic Glass-Forming Liquids Monitored via High-Speed Thermography: Fabian Haug; Jörg Löffler; 'ETH Zurich

10:10 AM  Break

10:25 AM  Invited  Work-Hardening and Plastic Deformation Behavior of TiCu-Based Bulk Metallic Glass Composites: Sung Hwan Hong; Ki Buem Kim; Jin Man Park; Young Sang Na; Ka Ram Lim; 'Sejong University; 'Samsung Electronics; 'KIMS

10:45 AM  Spatially-Resolved Mechanical and Compositional Characterization of Metallic Glass Matrix Composites: Kelly Kranje; Allen Hunter; Vicente Araullo-Peters; Emmanuelle Marquis; Douglas Hofmann; Wolfgang Windl; Katharine Flores; 'Washington University; 'University of Michigan; 'NASA Jet Propulsion Laboratory; 'Ohio State University

11:05 AM  Intrinsic Size Effect in Metallic Glass Nanowires: Qi Zhang; Qi-Kai Li; 'Georgia Institute of Technology; 'Tsinghua University

11:25 AM  Invited  Hidden Order in Disordered Metallic Glasses: Akihiko Hirata; Mingwei Chen; 'Tohoku University

11:45 AM  Invited  Electrochemical Micromachining of Passive Fe-Based Bulk Metallic Glasses: Annett Geber; Sylvia Horn; Ralph Suepitz; Mihai Stoica; Jurgen Eckert; Margitta Uhrlemann; 'Leibniz-Institute for Solid State and Materials Research IFW Dresden

12:05 PM  Invited  Evaluating a Commercial Bulk Metallic Glass Casting Process: Stephanie O’Keeffe; Sean O’Keeffe; Adam Verreault; Joseph Stevick; Glenton Jelbert; 'Liquidmetal Technologies

CALPHAD-Based ICME Research for Materials Genomic Design — Materials Genome: ICME and CALPHAD-Based Materials Design 5

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Wei Xiong, Northwestern University; Shih-kang Lin, National Cheng Kung University; Chao Jiang, Thermo-Calc Software Inc; Shenyang Hu, Pacific Northwest National Laboratory; Wen-dung Hsu, National Cheng Kung University; Sinn-wen Chen, National Tsinghua University; Shuanglin Chen, CompuTherm LLC

8:30 AM  Keynote  CALPHAD Based Design of Creep Resistant Steels with Superior Properties: Sybrand Van Der Zwaag; Qi Lu; Wei Xu; 'Technical University Delft

9:05 AM  Keynote  Physical Properties by CALPHAD Modelling: Xiao-Gang Lu; 'Shanghai University

9:40 AM  Development and Application of a Magnesium Alloy Atomic Mobility Database: Philipp Alleninov; Zachary Bryan; Michele Manuel; 'University of Florida
10:10 AM Break

10:20 AM
Structural and Magnetic Characterization of Soft-Magnetic Alloy (Fe-Co and Ni-Fe) Gas Atomized, Prealloyed Powders: Tanjore Jayaraman1; Gregory Del Corso2; David Novotnak3; Michael Schmidt4; 1Carpenter Technology Corporation

10:40 AM
Temperature Dependence of Magnetic Properties of Er-Substituted Cobalt-Ferrites Synthesized by Sol-Gel Assisted Auto-Combustion Method: Sateesh Prathapan1; Monaji Reddy2; Tanjore Jayaraman3; Dibakar Das4; 1Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology-Bombay; 2School of Engineering Sciences and Technology, University of Hyderabad; 3Department of Mechanical and Materials Engineering, University of Nebraska - Lincoln

11:00 AM
Characterization of MnAl Magnetic Alloys: Ozcan Acar1; Merve Genc2; Ilkay Kalay3; Eren Kalay4; 1METU; 2Cankaya University

11:20 AM
Magnetic Data Storage on Thermal Spray Coatings (WCCoCr): Gian Luigi Angrisani1; Patrick Knödler2; Kai Möhwald3; 1Leibniz Universität Hannover

11:40 AM
Pulsed Electrodeposition of Nano-Crystalline Ni with Uniform Co-Deposition of Micron Sized Diamond Particles on Annealed Copper Substrate: Prashant Kumar1; 1Indian Institute of Technology Banaras Hindu University Varanasi

Computational Thermodynamics and Kinetics — Models and Methods
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Francesca Tavazza, National Institute of Standards and Technology; Maryam Ghazisaeidi, The Ohio-State University; Vidvuds Ozolins, University of California Los Angeles

Thursday AM Room: Oceanic 3
March 19, 2015 Location: Dolphin
Session Chairs: Blazej Grabowski, Max-Planck-Institut für Eisenforschung; David Landau, University of Georgia

8:30 AM Invited
Importance of Anharmonicity in fcc Metals: An Ab Initio Study: Blazej Grabowski1; Albert Glenski2; Tilman Hackl3; Jörg Neugebauer4; 1Max-Planck-Institut für Eisenforschung

9:00 AM
Step Free Energies Calculated in Atomistic Simulations by Thermodynamic Integration and Capillary Fluctuation Methods: Rodrigo Freitas1; Timofey Frolov2; Asta Mark3; 1UC Berkeley

9:20 AM
VASPspol: An Implicit Solvation Model for Density-Functional Calculations: Richard Hennig1; Kiran Mathew2; 1University of Florida; 2Cornell University

9:40 AM Invited
Recording Exchange Wang-Landau Sampling: Pushing the Limits of Monte Carlo Simulations for Materials Science: David Landau1; Thomas Vogel2; Ying Wai Li3; Dilina Perera4; Markus Eisenbach5; 1Oak Ridge National Laboratory

10:10 AM Break

10:25 AM
A Dynamic Random Lattice Potts Model for Grain Growth and the Elimination of Lattice Anisotropy Effects: Philip Goins1; Elizabeth Holm2; 1Brigham Young University

10:45 AM Invited
Ten-Fold Speed Up of DFT: Improving k-point Integration: Gasp Hart1; 1Brigham Young University

11:15 AM
Predicting Low Thermal Conductivity Si-Ge Nanowires: Jesper Kristensen1; Nicholas Zaharan2; 1Cornell University; 2University of Warwick

11:35 AM
Mathematical Simulation of Temperature and Stress History for Additive Manufacturing: Hyung Chae1; Jytotirmoy Mazumder2; 1University of Michigan

8:30 AM
A Simple Two-Mode Phase-Field Crystal Model for Solid-Liquid Equilibrium: Ebrahim Asadi1; Moisen Asle Zaeem2; 1Missouri University of Science and Technology

8:50 AM
A Phase Field Crystal Approach to Magnetism: Matthew Seymour1; Nikolas Provatas2; 1McGill

9:10 AM
Amending the Theory of Non-Cooperative Eutectoid Transformation: Insights from Phase-Field Simulations: Kumar Ankit1; Britta Nestler2; 1Institute of Applied Materials-Reliability of Components and Systems, Karlsruhe Institute of Technology

9:30 AM
Phase Field Crystal Modeling as a Unified Atomistic Approach to Defect Dynamics: Joel Berry1; Nikolas Provatas2; Joerg Rottler3; Chad Sinclair4; 1Princeton University; 2McGill University; 3University of British Columbia

9:50 AM Break

10:05 AM
Rapid Model Development in Phase Field Simulation: Daniel Schwen1; Michael Tonks2; 1Idaho National Laboratory

10:25 AM
Simulation of LiFePO4 Nanoparticle Microstructure with a Coupled Phase-Field, Elastomechanics and Surface Tension Model: Michael Welland1; Devin O’Connor2; Olle Heinonen3; Peter Voorhees4; Dieter Wolf5; 1Argonne National Laboratory; 2Northwestern University

10:45 AM
Optimized Phase Field Modeling for Concurrent Nucleation and Growth: Ramanarayanan Hariragharaman1; Pavlo Rutkevych2; David T Wu3; 1Institute of High Performance Computing, Agency for Science, Technology and Research, Singapore

11:05 AM
Phase Field Microelasticity Model of Dislocation Climb – Methodology and Applications: Jia-Hong Ke1; Andrew Boyne2; C. Robert Kao3; Yunzhi Wang4; 1National Taiwan University; 2Cornell University
Drying, Roasting, and Calcining of Minerals — Induration and Sintering

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

**Program Organizer:** Thomas Battle, Midrex Technologies

Thursday AM  Room: Grand Harbor Salon 3  March 19, 2015  Location: Yacht & Beach

**Session Chairs:** Thomas Battle, Midrex Technologies; P. Chris Pistorius, Carnegie Mellon University

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**8:30 AM**

**Prediction of Non-Isothermal Oxidation of Magnetite Pellets:** P. Chris Pistorius; Ming Tang; 'Carnegie Mellon University

**8:50 AM**

**Monitoring the Ring Formation in Rotary Kiln for Pellet Firing:** Deqing Zhu1; Xianlin Zhou1; Yanhong Luo1; Jian Pan1; Cailing Zhen1; Guixiang Huang2; 'Central South University; 'WISCO Minerals

**9:10 AM**

**Study On The Improvement Of Preheating And Roasting Characteristics Of Pellet Made By Organic-Bentonite Compound Binder:** YuFeng Guo; Ting Duan1; Andrew Yakovlevich Travyanov2; Tao Jiang1; Shuai Wang1; FuQiang Zheng1; 'Central South University, Hunan; 'National University of Science and Technology “MISIS”

**9:30 AM**

**Effects of Anthracite on Pelletization of Hematite Ore:** Zhaokun Tang1; Mingjun Rao1; Yuabo Zhang1; Guanghui Li1; 'School of Minerals Processing and Bioengineering, Central South University

**9:50 AM**  Break

**10:10 AM**

**Thermal Decomposition Behavior and Kinetics of Siderite Ore:** Deqing Zhu1; Yanhong Luo1; Jian Pan1; Xianlin Zhou1; 'Central South University

**10:30 AM**

**Preparation of Straw Char by Preformation-Carbonization Process and Its Application in Iron Ore Sintering:** Xiaohui Fan1; Zhiyun Ji2; Min Gan1; Xuling Chen1; Liang Yin1; Tao Jiang1; 'Central South University

**10:50 AM**

**Influence of Modified Biomass Fuel on Iron Ore Sintering:** Min Gan1; Xiaohui Fan1; Zhiyun Ji2; Xuling Chen1; Tao Jiang1; Guanghui Li1; Zhiyuan Yu1; 'Central South University

**11:10 AM**

**Gas and Liquid Permeability of Tuyere Coke in COREX Melter Gasifier:** Wenlong Zhan1; Keng Wu1; Yong Zhao1; Xiao Liu1; Qihang Liu1; 'University of Science and Technology Beijing

**11:30 AM**

**The Phase Transformation of Baiyunebo Iron Ore Treated with Reductant Sintering:** Bingyi Bai1; Jieyu Zhang1; Lifeng Yang1; 'Shanghai University

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**Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Plenary Session II**

**Sponsored by:** American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

**Program Organizers:** Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); J effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Thursday AM  Room: Asbury A  March 19, 2015  Location: Yacht & Beach

**Session Chair:** Diran Apelian, Worcester Polytechnic Institute

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**8:30 AM**  Introductory Comments

**8:40 AM**  Plenary

**A Healthy Home is a Fractal Home:** Matthew Grocock1; 'THRIVE Net Zero Energy Collaborative

**9:10 AM**  Plenary

**Sustainable Development Practices and the Minerals Industry:** Jessica Elzea Kogel1; 'Imerys

**9:40 AM**  Plenary

**Sustainable Policy from Washington and the States: A Role For the Engineer:** Mark Bartscht1; 'ArcelorMittal USA

**10:10 AM**  Break

**Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Alloys for the Future**

**Sponsored by:** American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

**Program Organizers:** Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); J effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Thursday AM  Room: Asbury A  March 19, 2015  Location: Yacht & Beach

**Funding support provided by:** American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

**Session Chair:** Iver Anderson, Ames Laboratory

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**10:30 AM**  Introductory Comments

**10:35 AM**  Application of MIVM for Cu-Ni Alloy in Vacuum Distillation:** Lingxin Kong1; Bin Yang1; Baoqiang Xu1; Yifu Li1; Daohun Liu1; 'The National Engineering Laboratory for Vacuum Metallurgy, Kunming University of Science and Technology; State Key Laboratory of Complex Nonferrous Metal Resources Clear Utilization; Key Laboratory for Nonferrous Vacuum Metallurgy of Yunnan Province
11:00 AM
Effect of Continuous and Pulsed Current Tungsten Inert Gas Welding of Cast Aluminum-Magnesium-Scandium Alloy: \textit{K Subbaiah}; \textit{SSN College of Engineering}

11:25 AM
Improvement of Low Temperature Formability of AZ31 Magnesium Alloy by High Speed Rolling: \textit{Jing Su}; \textit{Mehdi Sanjari}; \textit{Abu Syed Humanaar Kabir}; \textit{In-ho Jung}; \textit{Steve Yue}; \textit{McGill}

Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — Fatigue Behaviors of Engineering Alloys

\textbf{Sponsored by:} TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

\textbf{Program Organizers:} Tongtuan Zhai, University of Kentucky; Antonios Kontsos, Drexel University

\textbf{Thursday AM} \textbf{Room:} Australia 3
\textbf{March 19, 2015} \textbf{Location:} Dolphin

\textbf{Session Chairs:} Antonios Kontsos, Drexel University; Brian Jordon, University of Alabama

8:30 AM Invited
Fatigue Deformation Behavior and Performance of a High Strength and Ductility Mg-Zn-Al-Cu-Mn Magnesium Alloy and Its Friction Stir Welded Joints: \textit{Yuansheng Yang}; \textit{Tianjiao Luo}; \textit{Institute of Metal Research, Chinese Academy of Sciences}

8:55 AM

9:20 AM Invited

9:45 AM Invited
Elucidating the Effect of Residual Stresses on Fatigue Damage in Self-Pierce Riveting: \textit{J Jordan}; \textit{Joao Moraes}; \textit{Harish Rao}; \textit{T Rushing}; \textit{University of Alabama}; \textit{US Army Corps of Engineers}

10:10 AM Break

10:20 AM

10:40 AM
Fatigue Early Damage State Detection for Helicopter Gear Using Acoustic Emission and Neural Networks: \textit{Fady Barsoum}; \textit{Embry-Riddle Aeronautural University}

11:00 AM
Crack Incubation and Small Fatigue Crack Growth for AZ31 Magnesium Alloy: \textit{Jonathan Pegues}; \textit{Marcos Lugo}; \textit{Nima Shamsaei}; \textit{Mississippi State University}

11:20 AM
Fatigue Life Predictions for Irradiated Stainless Steels: \textit{Robert Fuller}; \textit{Nima Shamsaei}; \textit{Entergy Operations}; \textit{Mississippi State University}

11:40 AM
The Effect of Scratch Damage on the Fatigue Performance of a Nickel-Based Superalloy for Aerospace Applications: \textit{Jonathan Boskhohzeh}; \textit{Hanguye Li}; \textit{Paul Bowen}; \textit{Julian Clark}; \textit{University of Birmingham}; \textit{Rolls-Royce plc}

\textbf{Friction Stir Welding and Processing VIII — Simulations and Measurements}

\textbf{Sponsored by:} TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

\textbf{Program Organizers:} Rajiv Mishra, University of North Texas; Murray Mahoney, retired from Rockwell Scientific; Yutaka Satlo, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory

\textbf{Thursday AM} \textbf{Room:} Northern Hemisphere A3
\textbf{March 19, 2015} \textbf{Location:} Dolphin

\textbf{Session Chair:} Judith Schneider, Mississippi State University

8:30 AM Invited

8:50 AM Invited

9:10 AM
Application of Acoustic Emission as an Effective Tool to Monitor FSW of AA2024-T3 Aluminum Alloy: \textit{B M Rajapakrash}; \textit{Sureshha C N}; \textit{Sarala Upadhyya}; \textit{University Visvesvaraya College of Engineering}; \textit{Ivytho Institute of Technology}

9:30 AM
Development of Processing Maps for Friction-Stir Welding (FSW) of Aluminum Using a Phenomenological Based Semi-Physical Model: \textit{Elizabeth Hoyos}; \textit{Diana Maria Lopez Ochoa}; \textit{Hernán Alvarez}; \textit{Escuela de Ingeniería de Antioquia}; \textit{Universidad Nacional de Colombia}

9:50 AM Break

10:10 AM
On the Material Behavior at Tool/Workpiece Interface during Friction Stir Welding: A CFD Based Numerical Study: \textit{Gaoqiang Chen}; \textit{Qingyu Shi}; \textit{Zhihui Feng}; \textit{Tsinghua University}; \textit{Oak Ridge National Laboratory}

10:30 AM

10:50 AM
Friction Stir Welding of AZ31B Magnesium Alloy with 6061-T6 Aluminum Alloy: Influence of Processing Parameters on Microstructure and Mechanical Properties: \textit{Bilal Mansoor}; \textit{Abdelhakim Darbarie}; \textit{G. Ayoub}; \textit{A. Imad}; \textit{Texas A&M University at Qatar}; \textit{American University of Beirut}; \textit{University of Lille}

11:10 AM
Simulation of Thin Friction Stir Welding (FSW) on Dissimilar Materials: \textit{Mohit Awang}; \textit{Sattar Enamian}; \textit{Farzali Yusof}; \textit{Patthi Hussain}; \textit{Universiti Teknologi Petronas}; \textit{Universiti Malaya}
### High-Entropy Alloys III — General Session

**Sponsored by:** TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee  
**Program Organizers:** Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside  
**Thursday AM**  
**Room: Oceanic B**  
March 19, 2015  
**Location: Dolphin**  
**Session Chairs:** Xie Xie, University of Tennessee; Gong Li, The University of Tennessee

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<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
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| 8:30 AM | Invited | Deformation Twinning in the High-Entropy Alloy Induced by High Pressure Torsion at Room Temperature | Gong Li, P.F. Yu, P.K. Liaw, R.P. Liu  
University of Tennessee  
Yanshan University |
| 8:50 AM | Microstructures and Mechanical Behavior of Multi-Component Alloys and High-Entropy Alloys | Juan Cornide, Ulf Dahlborg, Zhao Leong, Laura Asensio Dominguez, Jean Jurasek, Samuel Jouen, Thomas Hansen, Rainer Wunderlich, Sylvain Chambrelaud, Ian Todd, Russell Goodall, Monique Calvo-Dahlborg  
University of Rouen  
University of Kentucky  
University of Tennessee, Knoxville  
CompuTherm, LLC  
University of Kentucky  
University of Illinois at Urbana-Champaign |
| 9:10 AM | Structure and Properties of Some CoCrFeNi-Based High Entropy Alloys | Isaac Toda-Caraballo, Pedro Rivera-Diaz-del-Castillo  
University of Cambridge |
| 9:30 AM | The Characterization of Serrated Plastic Flow in High Entropy Alloys | Mohsen Beyramali Kivy, Mohsen Asle Zaeem  
University of Tennessee  
Missouri University of Science and Technology  
Force research laboratory  
EPFL |
| 9:50 AM | On the Grain Boundary Engineering of CrMnFeCoNi High Entropy Alloy | Bo-Ru Chen, Chi Lee, An-Chou Yeh, Jien-Wei Yeh  
National Tsing Hua University |

### High-Entropy Alloys III — Modeling and Mechanical Properties

**Sponsored by:** TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee  
**Program Organizers:** Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside  
**Thursday AM**  
**Room: Oceanic 5**  
March 19, 2015  
**Location: Dolphin**  
**Session Chairs:** Karin Dahmen, University of Illinois at Urbana-Champaign; Michael Gao, National Energy Technology Lab

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<th>Speaker(s)</th>
<th>Institution(s)</th>
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| 8:30 AM | Invited | A Model for the Deformation Mechanisms and the Serration Statistics of High Entropy Alloys | Karin Dahmen, Bobby Carroll, Xie Xie  
University of Rouen  
University of Tennessee  
University of Illinois at Urbana-Champaign |
| 8:50 AM | In-Situ Neutron Diffraction and Elastic-Viscoplastic Self-Consistent (EVPSC) Modeling Study of Deformation Behavior of a High-Entropy Alloy | Shang-Yi Tu, Huamiao Wang, Junji Yu, Soo Yool Lee, Ke An  
Tohoku University  
IFW Dresden  
Gakushuin University  
University of Tennessee |
| 9:10 AM | Segregation and Ti-Zr-Hf-Ni-Pd-Pt High Entropy Alloy under Liquid State | Y. Yokoyama, Norbert Mattern, Akitoshi Mizuno, Gongyao Wang, Peter Liaw  
Tokohk University  
IFW Dresden  
Gakushuin University  
University of Tennessee |
| 9:30 AM | Computational-Thermodynamics-Aided Development of Multiple-Principal-Component Alloys | Chuan Zhang, Fan Zhang, Shuanglin Chen, Weisheng Cao, Jun Zhu, Zhi Tang, Haoyan Diao, Peter K. Liaw  
CompuTherm LLC  
University of Tennessee |
| 9:50 AM | Break | |
| 10:05 AM | First-Principles Studies of NiFeCrCoMn High Entropy Alloys | Changning Niu, Alex Zaddach, Tripp Hurt, Adedapo Oni, James LaBeau, Carl Koch, Douglas Irving  
NC State University |
| 10:25 AM | On the Entropy Sources of High-Entropy Alloys | Michael Gao, Mike Widom, Jeff Hawk, David Alman  
NETL/URS  
Carnegie Mellon University  
NETL |
| 10:45 AM | Molecular Statics and Molecular Dynamics Simulations of Dislocation Behavior in Model FCC and BCC Multicomponent Concentrated Solid Solution Alloys | Satish Rao, Christopher Woodward, Dennis Dimiduk, Triplicane Parthasarathy, Daniel Miracle, William Curtin  
UES Inc.  
Air Force research laboratory  
EPFL |
| 11:05 AM | Phase Diagram Calculations, Ab Initio Molecular Dynamic Simulations, and Experimental Characterizations of Cast AlCoFeCuNi High Entropy Alloy | Mohsen Beyramali Kivy, Mohsen Asle Zaeem  
Missouri University of Science and Technology |

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**www.tms.org/TMS2015**
High-Temperature Systems for Energy Conversion and Storage — Innovation in Energy Conversion and Storage II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Amit Shyam, Oak Ridge National Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Thursday AM
March 19, 2015
Room: Grand Harbor Salon 1
Location: Yacht & Beach
Session Chairs: Amit Shyam, Oak Ridge National Laboratory; Ryan Cooper, Oak Ridge National Laboratory

8:30 AM Introductory Comments

8:40 AM Invited
Role of Length Scale and Temperature in Ultra High Temperature Properties of Materials Examined Using Nanoindentation: Yang Zhang1; Sudipta Biswas1; Jonathan Marsh1; Vikas Tomar1; ‘Purdue University

9:15 AM
Effect of Scandium and Hafnium on High Temperature Oxidation Performance of Single and Co-Doped CoNiCrAl Alloys: H-F Wang1; Y-D Zhang1; S Salam2; W-X Fu3; C Zhang2; Z-G Yang2; ‘Tsinghua University

9:40 AM Invited
Interfacial Reactions between Transition Metal Spinel Oxide Coatings and Solid Oxide Fuel Cell Interconnects: Jeffrey Fergus1; Kangli Wang1; Dileep Kumar C.J.2; Yingjia Liu1; Honglong Wang1; ‘Auburn University

10:15 AM Break

10:35 AM
Experimental Phase Stability of LSCF Perovskite and Stabilized Zirconia (MSZ, M=Y,Sc) for Oxygen Membranes: Maria Mora Tovar1; Shadi Darvish1; Vadym Drozd1; Sureandra Saxena1; Yu Zhong1; ‘Florida International University. CesMEC

11:00 AM
The Application of Thermal Barrier Coatings on Metallic Foam Core Sandwich Structures for High Temperature Applications: Saeid Salavati1; Thomas Coyle1; Javad Mostaghimi1; ‘University of Toronto

11:25 AM Invited
Dip Coating Process Application for Reactive Air Aluminization for Planar SOFC Stacks: Jung Pyung Choi1; Jeffrey Stevenson1; Diana Tran1; Jeff Bonnet1; Matt Chou1; ‘Pacific Northwest National Laboratory

Integrative Materials Design II: Performance and Sustainability — Advanced Materials Characterization and Modeling for Integrated Design
Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Materials and Society Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Thursday AM
March 19, 2015
Room: Grand Harbor Salon 8
Location: Yacht & Beach
Session Chairs: Michael Sangid, Purdue University; Paul Shade, Air Force Research Laboratory

8:30 AM Invited
Changing the Paradigm for Engineering Design by Merging High Energy X-ray Data with Materials Modeling: Paul Shade1; Jay Schuren1; Joel Bernier1; Shiu Li1; Basil Blank1; Jonathan Lind1; Peter Knesel1; Ulrich Lienert1; Robert Suter1; Todd Turner1; Dennis Dimiduk1; Jonathan Almer1; ‘Air Force Research Laboratory; ’Lawrence Livermore National Laboratory; PulseRay; ‘Carnegie Mellon University; ‘Argonne National Laboratory; ‘DESY-Petra III

8:55 AM Invited
Towards The Computational Design of Damage-Tolerant Materials: Characterization and Modeling of Microstructural Effects on Porosity Evolution of Polycrystalline Metals: Ricardo Lebensohn1; Reeju Pohkarel1; Bjorn Clausen1; Rick Chartrand1; Chris Chen1; Brian Patterson1; David Menasche1; Robert Suter1; Paul Shade1; Jay Schuren1; ‘Los Alamos National Laboratory; ‘Carnegie-Mellon University; ‘Air Force Research Laboratory

9:20 AM Invited
Brittle to Ductile to Anomalously Ductile! Predictive Computational Materials Discovery: Duane Johnson1; ‘Ames Laboratory/Iowa State University

9:45 AM Invited
4D Measurements of Microstructural Evolution: J.W. Gibbs1; K.A. Mohan1; E.B. Gulsoy1; A. Shahaini1; X. Xiao1; C. Bouman1; M. DeGraef4; Peter Voorhees1; ‘Northwestern University; ‘Purdue University; ‘Argonne National Laboratory; ‘Carnegie Mellon University

10:10 AM Break

10:30 AM Invited
A Combined Experimental-Simulation Study Of Temperature Effects on the Deformation Response of Polycrystalline Materials: Diana Farkas1; Ian Robertson1; Gary Was1; ‘Virginia Tech; ‘University of Wisconsin; ‘University of Michigan

10:55 AM Invited
Prediction of Effects of Grain Boundaries and Interfaces on Slip Transfer and Damage Nucleation: Thomas Bieler1; Philip Eisenlohr1; Yang Su1; Harsha Phukan1; Chen Zhang1; ‘Virginia Tech; ‘Michigan State University

11:20 AM Invited
Grain Boundary Network Design: Oliver Johnson1; Christopher Schuh1; ‘Massachusetts Institute of Technology

11:45 AM Invited
Application of High Resolution Electron Backscatter Diffraction Technique in Measuring Local Elastic Strains: Hamidreza Abdolvand1; Angus Wilkinson1; ‘The University of Oxford; ‘The University of Oxford
Integrative Materials Design II: Performance and Sustainability — Linkages between Processing, Microstructure, and Performance
Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Materials and Society Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Labs; Michael Sangid, Purdue University; Weizhou Li, Caterpillar Inc

Thursday AM  March 19, 2015
Room: Grand Harbor Salon 5
Location: Yacht & Beach
Session Chairs: Diana Lados, Worcester Polytechnic Institute; Weizhou Li, Caterpillar Inc.

8:30 AM Invited
Characterization and Integration of Experimentally Measured 3D Grain Boundary Networks with Modeling: Amanda Levinson; David Rowenhorst; Alexis Lewis; National Research Council Fellow, Naval Research Lab; Formerly Naval Research Lab

8:55 AM Invited
Ultrafine Grained Processing of 9310 Steel: Sammy Tiu; Tom Kozmel; David Snyder; Edward Chen; Charlie Chen; Illinois Institute of Technology; Questek; Transition 45 Technologies

9:20 AM Invited
Unusual Applications of Cutting and Sliding: Metals Manufacturing: James Mann; Kevin Trumble; W Compton; Srinivasan Chandrasekar; M4 Sciences LLC; Purdue University

9:45 AM Effect of Processing Route on the Microstructure and Residual Stresses within Shipbuilding Steel Plates: Md Shamsuzzoha; Sean Agnew; James Fitz-Gerald; Christopher Story; University of Virginia; Newport News Shipbuilding

10:05 AM Break

10:25 AM Strength and Stability in Ultrafinagrainned and Nanotwinned Carbonyl Nickel: Heather Murdoch; Kristopher Darling; A J Roberts; Laszlo Keckses; Eric Klier; Joseph Pickens; Army Research Lab; Periodic Innovation

10:45 AM Fatigue Crack Growth in Structural Aluminum Alloys: Microstructural Mechanisms, Modeling Strategies, and Integrated Design: Anthony Spangenberger; Diana Lados; Worcester Polytechnic Institute, Integrative Materials Design Center

11:05 AM Invited
Investigating the Fatigue Behavior of Aluminum-Based Shape Memory Alloy Self-Healing (SMASH) Technology: Hunter Henderson; Oscar Figueroa; Michael Kesler; Pininging Zhu; Maria Wright; John Newman; L Brinson; Terry Wallace; Michele Manuel; University of Florida; Northwestern University; NASA Kennedy Space Center; NASA Langley Research Center

11:20 AM Fatigue Crack Growth Modeling and Mechanisms in Engine Materials under Hot Compressive Dwell Conditions: Xiang Chen; Diana Lados; Richard Pettit; Worcester Polytechnic Institute; FractureLab

Magnesium Technology 2015 — Biomedical Applications
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC

Thursday AM  March 19, 2015
Room: Northern Hemisphere E1
Location: Dolphin
Session Chairs: Raymond Decker, Nanomag; Norbert Hort; MagIC-Magnesium Innovation Center

8:30 AM Mechanical and Corrosive Properties of Two Magnesium Wires: Mg4Gd and Mg6Ag: Petra Maier; Gabor Szakacs; Marcin Wala; Norbert Hort; University of Applied Sciences Stralsund; Helmholtz-Zentrum Geesthacht; Helmholtz-Zentrum Geesthacht

8:50 AM Degradation Behavior of Mg-Ca Nail after Penetration into Artificial Bone: Naoko Boku; Junichi Shimizu; Chihiro Ishigaki; Yaya Sano; Yoshinaka Shimizu; Toshihji Mukai; Kobe University; Tohoku University

9:10 AM Effects of Ti and TiB Nanoparticles on Room Temperature Mechanical Properties and In Vitro Degradation of Pure Mg: Ganesh Kumar Meenashisundaram; Mui Hoon Nai; Manoj Gupta; National University of Singapore

9:30 AM Effects of Heat Treatment on Bio-Corrosion Properties of Mg-Zn-xMn(x=0.5, 1.0, and 1.5 wt.%) Alloys as Biodegradable Materials: Wonseok Yang; Young-Ok Yoon; Shae K. Kim; Hyunkyu Lim; Do Hyang Kim; KITECH; Yonsei university

9:50 AM Break

10:10 AM Microstructure and Properties of Magnesium Alloy Mg-IzN-1Ca (ZX11): Lydia Katsarou; Kalidass Suresh; Kamineni Rao; Norbert Hort; Carsten Blawert; Chamini Mendis; Hajo Dieringa; Helmholtz-Zentrum Geesthacht; City University of Hong Kong

10:30 AM Powder Metallurgical Synthesis of Mg-Hydroxyapatite Biodegradable Composites for Biomedical Applications: Cesar Stüpp; Chamini Mendis; Gabor Szakacs; Felix Gesch; Sören Müller; Frank Feyerabend; Dachamir Hotza; Marcio Fredel; Norbert Hort; Helmholtz-Zentrum Geesthacht; Forschungszentrum Strangpressen, TU Berlin; Universidade Federal de Santa Catarina, Brazil

10:50 AM Correlation between Mechanical Behaviour and Microstructure in the Mg-Ca-Sr System for Degradeable Biomaterials Based On Thermodynamic Calculations: Andrea Gil Santos; Gabor Szakacs; Nele Moelans; Norbert Hort; Omer Van der Biest; KU Leuven; Helmholtz-Zentrum Geesthacht

11:10 AM Investigation of Al Coated Mg for Biomedical Applications: Nabila Elhirbat; Martin Roe; Nigel Neate; David Grant; Paul Brown; University of Nottingham
8:30 AM

Microstructure and Mechanical Properties of a Magnesium-Aluminium-Erbium Alloy: Sankaranarayanan Sreetharan; Baushu Milton Ng; Juyalakshmi Subramanian; Ganesh Kumar Meenashisundaram; Nguyen Quybau; Manoj Gupta; National University of Singapore, Singapore

9:30 AM

Deformation Response of Mg-Y Alloys under Dynamic Loading: Toshiji Mukai; Masaki Nagao; Tomofumi Terada; Hitoshi Somekawa; Alok Singh; Kobe University; National Institute for Materials Science

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Structural Materials IV

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Rampresh Prabaharan, Pacific Northwest National Laboratory; Dennis Kreiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday AM

Room: Grand Harbor Salon 6

March 19, 2015

Location: Yacht & Beach

Session Chair: Kumar Sridharan, University of Wisconsin, Madison

8:30 AM

Synchrotron X-Ray Diffraction Characterization to Elucidate Oxidation of Advanced Steel Cladding Alloys; APMT and Alloy-33: Mohamed Elbakshawan; Simerjeet Gill; Raul Rebak; Lynne Ecker; Department on Nuclear Science and Technology, Brookhaven National Laboratory; General Electric Global Research

8:50 AM

Supercritical Carbon-Dioxide System for Materials Corrosion Testing: Lucas Teeter; Fei Teng; Wade Marcum; Jay Kruzic; Mark Anderson; Julie Tucker; Oregon State University; University of Wisconsin - Madison

9:10 AM

Thermal Degradation of Cast Duplex Stainless Steels: Sarah Mbaru; R. Prakash Kolli; Daniel Perea; Sreenanamurthy Ankem; University of Maryland; Pacific Northwest National Laboratory

9:30 AM

Effects of Alloying and Processing Modifications on Precipitation and Strength in P92-like Alloys: Kristin Tipple; Kip Findley; John Speer; Kester Clarke; Amy Clarke; Paul Jablonski; Omer Dogan; Colorado School of Mines; Los Alamos National Laboratory; National Energy Technology Laboratory

9:50 AM

Radiation-Tolerant Nanoceramic Coatings for Next Generation Nuclear Systems: Francisco Garcia Ferre; Alexander Mairov; Luca Cesarecchi; Cédric Baumier; Odile Kaitassov; Yves Serruya; Lucile Beck; Marco Beghi; Kumar Sridharan; Fabio Di Fonzo; Istituto Italiano di Tecnologia; University of Wisconsin-Madison; CNRS/IN2P3/CSNSM/SEMIRAMIS, Université Paris Sud; Laboratoire JANNUS; Politecnico di Milano

10:10 AM Break

10:30 AM

The Deformation Behaviours of Long-Term Thermal Aged Duplex Stainless Steels Studied By In-Situ High-Energy X-ray Diffraction and In-Situ Scanning Electron Microscope: Shilei Li; Xiatao Wang; University of Science and Technology Beijing

10:50 AM

A Comparison of High-Intensity Neutron Sources for Fusion Materials Development: Zehui Wang; Richard Shepherd; Houyang Guo; C. Barnes; Stuart Maloy; C. Morris; D. Rej; Kurt Schoenberg; Susan Seestrom; J. Shlachter; Yongqiang Wang; Los Alamos National Laboratory; General Atomics

11:10 AM

Creep Resistance and Material Degradation of a Candidate Ni-Mo-Cr Corrosion Resistant Alloy for Application in a Molten Salt Nuclear Reactor: Sachin Shrestha; Dhriti Bhattacharyya; Rohan Holmes; Dorji Chavara; Tim Nicholls; Elizabeth Budzakoska-Testone; Massey De Los Reyes; Roman Voskoboynikov; Zhijun Li; Guangzhou Yuan; Michael Drew; Lyndon Edwards; Australian Nuclear Science and Technology Organization (ANSTO); Shanghai Institute of Applied Physics

11:30 AM

Ni2Cr-Type Long-Range Ordering in IN690 and Ni-Cr Binary Alloys: Bharat Gwalani; Tahukder Alam; Tanapon Rojhirunsakol; Soumya Nag; Cody Miller; Michael Kaufman; Wenjun Kuang; G. S. Was; Kim Suk Young; Rajarsi Banerjee; University of North Texas; GE Global Research; Colorado School of Mines; University of Michigan, Michigan; Nuclear Materials Research Department, KAERI

Microstructural Processes in Irradiated Materials — Novel Modeling, Methods, and Phenomena

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Dane Morgan, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin - Madison; Thak Sang Byun, Oak Ridge National Laboratory; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan; Kai Nordlund, University of Helsinki; Ming-Jie Zheng, University of Wisconsin - Madison

Thursday AM

Room: Asia 1

March 19, 2015

Location: Dolphin

Funding support provided by: Idaho National Laboratory and Oak Ridge National Laboratory

Session Chair: Dane Morgan, University of Wisconsin - Madison

8:30 AM

Modeling Gas Bubble Evolution on Grain Boundaries under Irradiation: Stanislav Golubov; Alexander Barashev; Roger Stoller; ORNL

8:45 AM

An Investigation of the Applied Stress Effect on Void Swelling Behavior of Polycrystalline Stainless Steel Using Phase-Field Method: Kanok Chong; Gyeong-geom Lee; Junhyun Kwon; Korea Atomic Energy Research Institute
Nano- and Micro-Mechanical Measurements in Harsh Environments — Small Scale Testing at Non-Ambient Temperature

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee

Program Organizers: Peter Hosemann, UC Berkeley; Jeffrey Wheeler, EMPA; Verena Maier, Erich Schmidt Institut; Douglas Stauffer, Hysitron

Thursday AM

Room: Oceanic 4

Location: Dolphin

Session Chair: Douglas Stauffer, Hysitron Inc.

8:30 AM Invited
Nano-Mechanical Testing in Various Conditions for Further Understanding of Materials: Takahito Ohmura; Ling Zhang; National Institute for Materials Science

9:10 AM
Elevated Temperature Nanomechanical Testing for Late Transition Metals: Michael Maughan; Samantha Lawrence; Douglas Stauffer; David Bahr; Purdue University; Hysitron Incorporated

9:30 AM
Small Scale Mechanical Testing of Cu Structures at Variable Temperature: Alexander Wimmer; Christoph Kirchlechner; Alexander Leitner; Thomas Detzel; Werner Roh; Walther Heinz; Gerhard Dehm; Kompetenzzentrum Automobil- und Industrie-Elektronik GmbH; Max-Planck-Institut für Eisenforschung; Department Materials Physics, University of Leoben; Infineon

9:50 AM Break

10:10 AM
The Influence of High Current Densities on the Electro-Mechanical Behavior of Thin Gold Films on Polyimide: Megan Cordill; Barbara Putz; Oleksandr Glushko; Erich Schmid Institute of Materials Science

10:30 AM
Design of Online, Real-Time, Non-Invasive Strain and Radiation Sensing Devices Using Novel Composite Nanomaterials: Thor Radelenko; Arije Badman; Lucas Berla; Nobumichi Tamura; Jian Wang; William Nix; Amit Misra; Singapore University of Technology and Design; Stanford University; Lawrence Berkeley National Laboratory; Los Alamos National Laboratory

10:50 AM
Hot Microhardness Testing for Rapid Assessment of Mechanical Behavior, Microstructure Evolution, and Processing Windows: John Lewandowski; Case Western Reserve University

11:10 AM
Potentials Energy Surfaces for Broad Ranges of Environments: Steven Valone; Ganshyam Pilania; Xiang-Yang Liu; Michael Baskes; Los Alamos National Laboratory

11:30 AM
The Superelastic Response of Ni2FeGa Shape Memory Alloy Pillar: Weizhong Han; Lan Lv; Wenhong Wang; Zhwei Shan; CAMP-Nano, School of Materials Science and Engineering, Xi’an Jiaotong University; Institute of Physics, Chinese Academy of Sciences

11:50 AM
Localized Mechanical Property Measurement of Pt and Pt-Ir-Diffusion Coatings at High Temperature: Kazuki Kasai; Dao Tue; Hideyuki Murakami; Douglas Stauffer; Shibaura Institute of Technology; National Institute for Materials Science; Hysitron, Inc.

12:10 PM
Microindentation Experimental Setup for Testing Thermal Barrier Coating (TBC) at 1200°C: Jafar Albinmousa; Lalit Anand; Massachusetts Institute of Technology

Nanostructured Materials for Rechargeable Batteries and for Supercapacitors III — Session IX: Batteries and Supercapacitors

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Yan Yao, University of Houston; David Mitlin, Clarkson University

Thursday AM

Room: Europe 5

Location: Dolphin

Session Chairs: Nikhil Medhekar, Monash University; Leon Shaw, Illinois Institute of Technology

8:30 AM Invited
Computational Materials Design for Next Generation Rechargeable Batteries: Nikhil Medhekar; Monash University

8:55 AM
Free-Standing Flexible Polymer Composite Electrolyte for Li-Ion Batteries: Amir Chamaani; Meer Safa; Bilal El-Zahab; Florida International University

9:10 AM
High Yield of Well-Ordered Polymer Nanopillars for Supercapacitor Applications: Zanen Yu; Jayan Thomas; University of Central Florida

9:25 AM Invited
Revealing Nanoscale Heterogeneities in Phase-Separating Battery Electrodes through Operando Imaging and Phase-Field Modeling: Hyung Li; Johanna Nelson Weker; Farid El Gabaly; Todd Ferguson; Raymond Smith; Joshua Sugar; Norman Bartelt; Kyle Fenton; Daniel Cogswell; William Gent; David Kilkoyne; Tolek Tyliszczak; Martin Bazant; William Chueh; Stanford University; SLAC National Accelerator Laboratory; Sandia National Laboratories; Massachusetts Institute of Technology; Samsung Advanced Institute of Technology, America; Lawrence Berkeley National Laboratory

9:50 AM Break

10:20 AM
Studies of Carbon-Encapsulated Li,S Cathodes for Lithium Sulfur Batteries: Lin Chen; Leon Shaw; Illinois Institute of Technology
10:35 AM
Study on Preparation of LiNi$_{0.5}$Co$_{0.2}$Mn$_{0.3}$O$_2$ Precursor-Spherical Ni$_{0.5}$Co$_{0.2}$Mn$_{0.3}$(OH)$_2$: Xiaolong Qu; Zhengfu Zhang; Hongying Hou; Jin Cheng; Xiaoyan Wang; Kunming University of Science and Technology

10:50 AM
Nanostructured Materials for Rechargeable Batteries: Zhen Li; Tongji University

11:05 AM
Activated Carbon-Tungsten Oxide Hybrid Nanocomposite Electrodes for Supercapacitors: Aysegul Afal; Recep Yuksel; H. Emrah Unalan; Department of Metallurgical and Materials Engineering, Middle East Technical University; Department of Micro and Nanotechnology, Middle East Technical University
Pb-Free Solders and Emerging Interconnect and Packaging — High Temperature Lead-Free Solder and Applications
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: John Elmer, LLNL; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinidhi Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnic Institute; Fan Gao, U. Massachusetts Lowell

Thursday AM
March 19, 2015

Session Chairs: Iver Anderson, Ames Laboratory; John Elmer, Lawrence Livermore National Laboratory

8:30 AM
Development of Pb-Free Composite Solder Paste by Liquid-Phase Diffusion Bonding for High Temperature Applications: Stephanie Choquette1; Iver Anderson1; 1Ames Lab

8:55 AM
Development of Interconnection Technology for Double Side Power IC Module: Zhu Zixuan1; Li C.C.2; Liao L.L.; 2Dai M.J.; Kao C.Robert1; 1Department of Materials Science and Engineering, National Taiwan University; 2Electronic and Optoelectronics Research Laboratories, Industrial Technology Research Institute

9:20 AM
Investigating the Influence of Process and Service Conditions on the Microstructure of TLP Bonded Si/SiC Chips Using (Ag,Ni-)Sn Interlayers: Adrian Lis1; Christian Leinebach1; 1Empa-Swiss Federal Laboratories for Materials Science and Technology

9:45 AM
The Performance of Solid Solution Strengthened no Silver Lead Free Solder in Elevated Temperature Service: Takatoshi Nishimura1; Keith Sweatman1; Shuhei Sawada1; Mu Dekui1; Kazuhiro Nogita1; Guang Zeng1; 1Nihon Superior; 2Nihon Superior Centre for Manufacture of Electronic Materials

10:10 AM Break

10:25 AM
Al, Si Alloying Effect on Solder Joint Reliability in Sn-0.5Cu for Automotive Electronics: Won Sik Hong1; A Young Kim1; 1Korea Electronics Technology Institute(KETI)

10:50 AM
Sinter Joining with Shape-Controlled Silver Particles for Low Pressure-Low Temperature Die-Attach: Shunsuke Koga1; Shijo Nagao1; Jin-Ting Jiu1; Tohru Sugahara1; Katsuki Suganuma1; 1Osaka University

11:15 AM
Ag Stress Migration Bonding: Oh Chulmin1; Shijo Nagao1; Tohru Sugahara1; Katsuki Suganuma1; 1ISIR, Osaka University

11:40 AM
Mechanical Properties after Ageing of Sintered Ag as a New Material for Die Bonding: Influence of the Microstructure Evolution: Vincenzo Caccuri1; Xavieer Filhote1; Pascal Gadaud1; Denis Bertheau1; Michel Gerland1; 1Prime Institute UPR CNRS 3346

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; J ae-Ho Lee, Hongik University; Clemens Schmelter, Forschungszentrum Juelich, Inst. For Energy and Climate Research - ZfE; Ikuo Ohnuma, Tohoku University; Shien Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University; Chi-Hung Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan University of Science and Technology

Thursday AM
March 19, 2015

Session Chairs: J ae-Ho Lee, Hongik University; Shien Ping Feng, The University of Hong Kong

8:30 AM Invited
Nb-Doped TiO2 Mesoporous Film and Its Application in DSSCs: Shien Ping Feng1; 1The University of Hong Kong

9:00 AM
Investigation of Pt-Based Sensor Failure Induced by Phosphorous Gases: Anna Nakano1; James Bennett1; Jinichiro Nakano1; 1NETL

9:20 AM
Effects of Complexing Reagent on Electroless Nickel Iron Alloy Plating for the Diffusion Barrier of UBM: Ja-Kyung Koo1; Sung Kang1; Jae-Ho Lee1; 1Hongik University; 2IBM Watson Research Center

9:40 AM
A Comparison of Solid State Reaction, Electrical Performance and Failure Mechanism of Ruthenium Schottky Contacts on 6H-SiC and 4H-SiC after Air Annealing: Kinnock Munthali1; Chris Theron1; F. Danie Auret1; Sergio Coelho1; 1University of Namibia; 2University of Pretoria

10:00 AM Break

10:20 AM
Interfacial Reactions of the Au/Sn-xZn/Cu Sandwich Structure Couples: Yi-Pin Wu1; Jia-Xiao Dai1; Yee-Wen Yen1; 1National Taiwan University of Science and Technology

10:40 AM Invited
Effects of Additives on Electroplating of Copper in High Aspect Ratio Via Filling: Jin-Ho Rhee1; Se-Hyun Jang1; TaiHong Yim2; Jae-Ho Lee1; 1Hongik University; 2Korea Institute of Industrial Technology

11:10 AM
Synthesis and Characterization of Electroless Silver Plating on Multiwall Carbon Nanotube: Ting-Chun Su1; Kwang-Lung Lin1; 1Department of Materials Science and Engineering, National Cheng Kung University

11:30 AM
Role of Interfacial Structure on the Intrinsic Growth Stresses in Metallic Thin Film Multilayers: Li Wan1; Xiao-xiang Yu1; Gregory Thompson1; 1The University of Alabama

11:50 AM
Ab Initio Physical and Electrochemical Properties of Kröhnkite-Type NaFe(SO4)2·3H2O Sulfate as Cathode for Na Ion Batteries: Ping-chun Tsai1; Shih-kang Lin1; Wen-Dung Hsu1; 1National Cheng Kung University (NCKU)
### Phase Transformations and Microstructural Evolution — Thermal and Deformation Processing

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

**Program Organizers:** Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danois, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

**Thursday AM**

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<td>8:30 AM</td>
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<tr>
<td>9:00 AM</td>
<td>Invited</td>
<td>Swan 3</td>
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</tbody>
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**Session Chairs:** Kester Clarke, Los Alamos National Laboratory; Paul Gibbs, Los Alamos National Laboratory

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### Phase Transformations and Microstructural Evolution — Titanium Alloys

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

**Program Organizers:** Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danois, CNRS - Université de Rouen; Emmanuelle Marquis, University of Michigan

**Thursday AM**

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**Session Chairs:** Soumya Nag, GE Global Research Center; Rajarshi Banerjee, University of North Texas

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### Drying, Roasting, and Calcining of Minerals — Sintering and Energy Use

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

**Program Organizer:** Thomas Battle, Midrex Technologies

**Thursday PM**

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<th>Time</th>
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<td>2:00 PM</td>
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<td>Grand Harbor Salon 3</td>
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<td>2:20 PM</td>
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<td>Yacht &amp; Beach</td>
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**Session Chairs:** Mingming Zhang, ArcelorMittal Global R&D; Dean Gregurek, RHI AG

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### Additional Sessions

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<th>Time</th>
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<td>3:00 PM</td>
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<td>Yacht &amp; Beach</td>
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</table>

**Session Chairs:** Soumya Nag, GE Global Research Center; Rajarshi Banerjee, University of North Texas

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**Notable Sessions:**

- **8:30 AM Invited**
  - Super-refined Alpha Microstructure in Beta Titanium Alloys: Yufeng Zheng; Robert Williams; Soumya Nag; Dong Wang; Rongpei Shi; Yunzhi Wang; Rajarshi Banerjee; Hamish Fraser; The Ohio State University; University of North Texas

- **9:00 AM Invited**
  - Effects of Heat Treatment Conditions on Mechanical Behavior in New Nb Modified Beta Ti-5553 Alloy: Victor Opini; Denis Andrade; Camilo Salvador; Eder Lopes; Rubens Caram; University of Campinas

- **9:30 AM**
  - The Role of β-phase Stability on the Microstructure Evolution of an α+β Titanium Alloy: Jing Chen; Chao Li; Beihang University

- **9:50 AM**
  - Experimental Study and Modeling on the Grain Growth of Annealing Process in Fe-50%Ni Alloy: Zhenguo Nie; Gang Wang; Yingtao Zhang; Yiming (Kevin) Rong; 1; Virginia Tech

- **10:10 AM Break**

- **10:30 AM**
  - Phase Transition Research on Fe-2Mn Alloy Powders Prepared by Gas Atomization: Yang Yang; Zhengyan Shen; Libing Liu; Jianxun Fu; Yunhu Zhang; Changjiang Song; Qijie Zhai; Shanghai University; Helmholz-Zentrum Dresden-Rossendorf

- **11:00 AM**
  - Characterization of a Superplastic Forming Process with Fast Preforming: Arnaud Giraudet; Franck Tancret; IRT Jules Verne; Institut des Matériaux Jean Rouxel

- **11:10 AM**
  - Lamellae Refining in Ti-40 at%Al by Dislocations Introduced by Hot Forging: Wei Daisiu; Koizumi Yuichiro; Chiba Akihiko; Tohoku University

- **11:30 AM**
  - Peritectoid Phase Transformations in Ni3Mo Alloy: Ibrahim Khalfallah; Alex Aning; 1; Virginia Tech

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**Notable Presentations:**

- **Process in Fe-50%Ni Alloy:** Zhenguo Nie; Gang Wang; Yingtao Zhang; Experimental Study and Modeling on the Grain Growth of Annealing
  - Yiming (Kevin) Rong; Alex Aning
  - 1Virginia Tech
  - Yu-wei Huang; Chih Chen; 1National Chiao Tung University; 2Assembly and Reliability Department/EOL/ITRI

- **Metallurgical Evolution of a Highly Hydrided Zirconium Alloy Upon Cooling from High Temperature:** Isabelle Turque; Matthieu Le Saux; Jean-Christophe Brachet; Jérôme Crépin; Gilles André; Caroline Toffolon-Masclet; CEA; Mines ParisTech, Centre des Matériaux

- **The Effect of Grain Orientation on Dissolution of Intermetallic Compounds during Electromigration in Microbumps:** Won-Lin Hsieh; Chau-Jie Zhan; Yu-wei Huang; Chih Chen; National Chiao Tung University; Assembly and Reliability Department/EOL/ITRI

- **The Generation Ability of Liquid Phase for Mixture of Iron Ore Powders and Lime: Prediction, Characterization and Influencing Factors:** Ji Changyang; Lv Xuewei; Zheng Xiangwei; Ding Chengyi; Chongqing University

- **Temperature-Rise Characteristics of Silicon-Containing Chromite Ore Fines Heated by Microwave:** Kuitin Wu; Kunming University of Science and Technology
Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Ensuring Resource Supplies with Smarter Technology

Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); J effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, J onathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Thursday PM Room: Asbury A
March 19, 2015 Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chairs: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory

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2:00 PM Introductory Comments

2:10 PM Invited

Energy-Efficient Sustainable Processes by “Thiometallurgy”: Neale Neelameggham1; Robert Brown2; Brian Davis3; 1Ind LLC; 2Magnesium Assistance Group; 3Brian Davis Consultant Associates

3:00 PM

Polytetrafluoroethylene/TiO2 Composite Pellets as Efficient Reusable Sulfur Adsorbents for Environmentally Friendly Pressure Oxidization Leaching Of Chalcopyrite: Patakamuri Govindaiah1; Eduard Guerra2; Yeonuk Choi3; Zhbin Ye4; 1Laurentian University

3:25 PM

Removing Tin from Tin-Bearing Iron Concentrates with Sulfidation-Magnetizing Complex Roasting Process: Sang Xiuli1; Li Lei1; Wang Hua1; 1Kuming University of Science and Technology

3:50 PM Break

4:05 PM

Dynamic Thermal Simulation Study of Copper Slag Dilution in Direct Current Field: Zhang Jing1; 1Shanghai University

4:30 PM

Production of (Mn,Fe)-Carbide Containing Low Phosphorus by Carbothermic Reduction of Mn Oxide and Fe Oxide: Dong-yuk Kim1; Hyun-soo Kim1; Sung-Mo Jung1; 1POSTECH, GIFT, 2POSCO

4:55 PM

Investigating Solanum Aethiopicum Leaf-Extract and Sodium-Dichromate Effects on Steel-Rebar Corrosion in Saline/Marine Simulating-Environment: Implications on Sustainable Alternative for Environmentally Hazardous Inhibitors: Joshua Okeniyi1; Adebanji Ogbiye2; Olubankan Ogungbala1; Elizabeth Okeniyi1; Otuseyi Ogungbala1; 1Covenant University, Ota, Nigeria; 2Crawford University, Igbesa, Nigeria

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Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Innovations in Processing to Meet Emerging Demands

Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); Jeffrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathan Motherwell, Jonathan T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE’s Institute for Sustainability; Deborah Shields, Colorado State University

Thursday PM Room: Asbury B
March 19, 2015 Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chair: John Craynon, Virginia Tech

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2:00 PM Introductory Comments

2:10 PM

Molecular Pump Methodology for Preparation of a Binder for Ceramic Shell Molding Process: Bijoy Chakrabarti1; 1National Institue of Foundry & Forge Technology

2:35 PM

Recycling of Molybdenum Waste Catalyst for Development of Possible Sensor Materials: Rasmita Barik1; Mamata Mohapatra2; B. Bag1; K Sanjay1; B. Mishra1; 1Institute of Minerals and Materials Technology

3:00 PM

Rare-Earth Free Permanent Magnets Sustainable for Next Generations: Takao Suzuki1; Toshiya Hozumi1; Siqian Zhao2; Anurag Chaturvedi1; 1University of Alabama

3:25 PM

Removal of F and Cl from Zinc Oxide Dust by Microwave Chlorination Roasting: Zhan’yong Guo1; 1Kuming University of Science and Technology

3:50 PM Break

4:05 PM

Wet Chemical Metallization of Aerospace Composites as a Lightning Protection Strategy: Rajesh P S M1; Xavier Cauchy1; Martin Gagne1; Jolanta Klemberg-Sapieha1; Frederic Siros1; Daniel Therriault1; 1Ecole Polytechnique de Montreal

4:30 PM

Photo-assisted Annealing Process of Gd-doped BiFeO3(BGFO) Thin Film: Po-Chun Lai1; Chen-Ti Hu1; Ching-Chich Leu2; 1National Tsing Hua University

4:55 PM

preparation and Characterization of Nanoporous Alumina Membranes: Randa Abdel-karim1; Asaa Faid1; Alyaa Mohamed1; Hadeer Abdelhameed1; Saad El-Raghy4; 1Cairo University, Faculty of Engineering

5:20 PM

Paratungstate Microwave Pyrolysis Characteristics and Characterization: Cheng Fang1; 1Kun Ming University of Science and Technology
Thursday PM | Room: Asbury C
March 19, 2015 | Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

Session Chair: Jeffrey Fergus, Auburn University

2:00 PM Introductory Comments Session Chair

2:10 PM
Green Development—The Future Direction of Chinese Steel Industry: Chunxia Zhang1; Xiuping Li1; ‘Central Iron & Steel Research Institute

2:35 PM
Optimization of Processing Conditions Leading to Dangerous Emissions in Steelmaking Plants: Pasquale Cavaliere1; ‘University of Salento

3:00 PM
Review on Grain Refinement of Interstitial-Free Steel by Severe Plastic Deformation Techniques: Uma Gupta1; Vishnu Sharma1; Malay Banerjee1; ‘MNIT Jaipur

3:25 PM
Engineering of Biodegradable Boron-Based, Carbon Enriched Nano Fiber and FGM Hybrid Composite Via DIMOX, Rheocasting and Thixocasting: Bakr Rabeeh1; ‘German University in Cairo, GUC

3:50 PM Break

4:05 PM
Ultra-Fast Boriding and Surface Hardening of Low Carbon Steel: Bakr Rabeeh1; ‘German University in Cairo, GUC

4:30 PM
Evaluating the Accuracy of Constitutive Models for 2.25Cr-1Mo Under Creep, Plasticity, and Thermo-Mechanical Fatigue: Bassem Felemban1; Ali Gordon1; Zachary Dyer1; ‘University of Central Florida; ‘Siemens

4:55 PM
Reaction between Carbonaceous Materials Containing HDPE and Steel-Making Slag: Lan Hong1; Huihua Wang1; Binna Song1; Dong Chen1; ‘Soochow University

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Modeling

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday PM | Room: Grand Harbor Salon 6
March 19, 2015 | Location: Yacht & Beach

Session Chair: Mike Tonks, Idaho National Laboratory

2:00 PM
A Unified Microstructurally-Based Physical Model of Low Flux-High Fluence Irradiation Embrittlement of Reactor Pressure Steels: G. Robert Odette1; Takuya Yamamoto1; Peter Wells1; ‘University of California Santa Barbara

2:20 PM
Atomistic-Informed Phase Field Model for Predicting Cr Segregation to Sinks in Irradiated Fe-Cr Alloys: Samrat Choudhury1; Enrique Martinez1; David Anderson1; Alfredo Caro1; Blas Uberuaga1; Daniel Schwen1; ‘Los Alamos National Laboratory; ‘Idaho National Laboratory

2:40 PM
Molecular Dynamics Simulations of Zirconium/Zirconium-Hydride Interface with the Charge Optimized Many Body (COMB) Potential: Yongfeng Zhang1; Xianming Bai1; Mark Noordhoek1; Simon Philippot1; ‘Idaho National Lab; ‘University of Florida

3:00 PM
Microstructure Evolution and Microstructure-Strength Correlation Predictions in Nuclear Materials Based on Grain Boundary Structure-Fractal Dimension Correlations: YouSung Han1; Vikas Tomar2; ‘Purdue University

3:20 PM
Modelling Silicide Fuel for Improved Accident Tolerance in Current and Next Generation Light Water Reactors: Simon Middleburgh1; Robin Grimes1; Lars Hallstadius1; Gregory Lumpkin1; ‘Australian Nuclear Science and Technology Organisation; ‘Imperial College London; ‘Westinghouse Electric AB

3:40 PM Break

4:00 PM
Energetics Associated With the Interaction between Embrittlement Species and Grain Boundaries in Alpha-Iron: Mansa Rajagopalan1; Ilakash Adhakha1; Nitin Methugowda1; Kiran Solanki1; Mark Tschopp1; ‘Arizona State University; ‘Army Research Laboratory

4:20 PM
Fully Coupled Multiphysics Simulation of Fast Reactor Mixed Oxide Fuels Performance under Extreme Conditions: Rong Liu1; Wenzhong Zhou1; ‘City University of Hong Kong

4:40 PM
Phase-field Modelling of Gas Bubble Swelling and Its Impact on Thermo-mechanic Properties in UMo Metal Fuels: Shenyang Hu1; Zhijie Xu1; Andrew M. Casella1; Curt A. Lavender1; David J. Senor1; Dean M. Paxton1; Douglas E. Burkes1; ‘Pacific Northwest National Laboratory

5:00 PM
Modeling the Homogenization Process for As-Cast U-10Mo: Zhijie Xu1; Virend Joshi1; Shengyang Hu1; Curt Lavender1; Dean Paxton1; Doug Burkes1; ‘Pacific Northwest National Laboratory (PNNL)
F6: Flame Synthesis of Nanocrystalline Indium Doped Tin Oxide Powder

Nitin Chopra

Najeh Mliki

Mingli Xu1; Hongying Hou 1; Jinhui Peng 1; 1Kunming University of Science and Technology

Template-Assisted AC Electrodeposition

F9: Preparation and Characterization of Platinum Nanoarrays by

Subramshu Bhattacharya1; 1Indian Institute of Technology Madras

Qu Xiaolong1; 1Kunming University of Science and Technology

F5: Effects of Porous Carbon and CNTs on the Discharge Performance of

Youngsoo Jung

Jinming Zhu; 1University of Science and Technology Beijing

Titanium Load Foundation

F1: Quantum Oscillations from Surface State in a Topological Insulator

Bi1-xSbx Nanowires: Albina Nikolaeva1; Leonid Konopko1; Tito Huber2; 'd. Ghitu IIEEN; 'Howard University

F2: Contribution to the Study of Dielectric Properties of Thin Tungsten Trioxide: Effect of Oxygen Adsorption: Marwen Hannachi1; Mehdi Othmani1; Wajdi Belkacemi1; Fathi Joumi1; Khalifa Aguir1; Najeh Mliki1; 'LMOP, Faculté des Sciences de Tunis, Université de Tunis El Manar; 'Aix-Marseille Université, CNRS, IM2NP (UMR 6242), France

F7: Microwave-Assisted One Step Synthesis of Graphite-Supported

Metallic Aluminum Rods: Kei Ishizuka1; Yu Zenimoto1; Takeshi Ohgai1; 'Nagasaki University

F4: Effects of the Additive on Performance of Alkali Electrolyte Solution: Cheng Jin1; Zhang Zhengfu1; Hou Hongying1; Peng Jinhu1; Wang Xiaoyan1; Xu Xiaolong1; 'Kunming University of Science and Technology

F5: Effects of Porous Carbon and CNTs on the Discharge Performance of Li-Air Batteries: Xuying Yan1; Yingjie Zhang1; Zhengwei Xiao1; Mingming Li1; 'Kunming University of Science and Technology

F6: Flame Synthesis of Nanocrystalline Indium Doped Tin Oxide Powder and Its Characterisation: John Silvester Magura1; Syamantak Basu1; Subramshu Bhattacharya1; 'Indian Institute of Technology Madras

F7: Microwave-Assisted One Step Synthesis of Graphite-Supported Molybdenum Carbide Nanoparticles and Their Application to Electrochemical Cell: Youngsoo Jung1; Bo Ding1; Sun-Dong Kim1; Sang-Kuk Goo1; 'University of Science and Technology Beijing

F8: Plasmonic Nanoparticles for Solar Energy Conversion: Salim Caliskan1; Jung Kun Lee1; Hyun Soo Han1; 'University of Pittsburgh; 'Seoul National University

F9: Preparation and Characterization of Platinum Nanoarrays by Template-Assisted AC Electrodeposition: Xu Xiaolong1; Zhengfu Zhang1; Mingli Xu1; Hongying Hou1; Jinhu Peng1; 'Kunming University of Science and Technology

F10: Semiconductor Properties of ZnTe Thin Films Electrodeposited from Aqueous Solutions: Yasaku Sugawa1; Jun Ohta1; Takeshi Ohgai1; 'Nagasaki University

F11: Cobalt Ferrite Nanoparticles Investigated by 57Fe Mössbauer Spectrometry: Mohamed Saidani1; Wajdi Belkacemi1; Jean Marc Grenche2; Najeh Mliki1; 'LMOP, Faculté des Sciences de Tunis, Université de Tunis El Manar; 'IMM, CNRS, UMR 6263

F12: SERS Sensing Using Si-Au Nanowire Heterostructures: Yuan Li1; Nitin Chopra1; 'The University of Alabama

F2: Contribution to the Study of Dielectric Properties of Thin Tungsten Trioxide: Effect of Oxygen Adsorption: Marwen Hannachi1; Mehdi Othmani1; Wajdi Belkacemi1; Fathi Joumi1; Khalifa Aguir1; Najeh Mliki1; 'LMOP, Faculté des Sciences de Tunis, Université de Tunis El Manar; 'Aix-Marseille Université, CNRS, IM2NP (UMR 6242), France

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F5: Effects of Porous Carbon and CNTs on the Discharge Performance of Li-Air Batteries: Xuying Yan1; Yingjie Zhang1; Zhengwei Xiao1; Mingming Li1; 'Kunming University of Science and Technology

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F12: SERS Sensing Using Si-Au Nanowire Heterostructures: Yuan Li1; Nitin Chopra1; 'The University of Alabama

F13: Modulated Thermal Conductivity of Carbon Nanotube Films: Yuan Li1; Michael Gamble1; Nitin Chopra1; 'The University of Alabama; 'Northbridge High School

F14: Heterostructures Based on Co3O4 Nanowires for Efficient Photocatalytic Organic Degradation: Yuan Li1; Kassandra Keith1; Nitin Chopra1; 'The University of Alabama

2015 Functional Nanomaterials: Energy and Sensing — Poster Session

Monday P M March 16, 2015 Location: Atlantic Hall

D1: Apparent Viscosity Measurement of Iron Particles: Yanling Zhang1; Zheqing An1; Qi Li1; Zhencheng Guo1; 'University of Science and Technology Beijing

D2: The Phase Transformation of Bayan Obo Ore Treated with Insufficient Reductant: GuoDing Gao1; Yanling Guo1; Bengyi Bai1; Wangjun Peng1; Jieyu Zhang1; 'Shanghai University

D3: Control of the Forming Behavior of Anosovite in the Reduction of Ilmenite by Hydrogen: Yufeng Guo1; Pengfei Li1; Tao Jiang1; Andrew Yakovlevich Travyanov1; Fuqiang Zheng1; Guanzhou Qiu1; 'Central South University; 'National University of Science and Technology " MISIS"

D4: Research on Deep Reduction and Magnetic Separation of Marine Placer Based on Carbon Composite Pellet: Liu Yiran1; 'University of Science and Technology Beijing

D5: High Temperature Interaction Between Sinter and Lump Ores/Pellet in Cosehensive Zone of Blast Furnace: Xinliang Lin1; Shengli Wu1; Wei Huang1; Jinming Zhu1; 'University of Science and Technology Beijing

D6: Fabrication of Diamond-Cu Composites by Microwave Sintering Process: Chen-long Wei1; 'Kunming University of Science and Technology

D7: Characteristic and Kinetics of Oxidation of Coke by CO2 Based On Isothermal Method: Jian Gao1; Jian-liang Zhang1; Guangwei Wang1; Weirui Geng1; Yifan Chai1; Bingyi Yan1; 'University of Science and Technology Beijing

D8: Thermodynamic Analysis of Titanium Behavior in Hot Metal and Titanium Load Foundation: Wang Zhenyang1; 'University of Science and Technology Beijing

D9: Economical Research of Dephyosphorization in Single Slag Melting Process: Lu Lin1; Yan-ping Bao1; Min Wang1; 'University of Science and Technology Beijing

D10: Effect of Al2O3 on Precipitation Behavior Of Phosphorus Enrichment Phase In Dephosphorization Slag: Lu Jiang1; Jiang Diao1; Xiao-Man Yan1; Zhen Zhang1; Bing Xie1; Yi Ren1; Tao Zhang1; 'Chongqing University

D11: Fundamental Study of High Al2O3 Sinter Softening and Melting Behavior: Fanyi Meng1; Wang Zhe1; Haibin Zuo1; 'University of Science and Technology Beijing

D12: Gas and Liquid Permeability of Tuyere Coke in COREX Melter Gasifier: Wenlong Zhan1; Keng Wu1; Yuan She1; Jiazi Zhang1; 'University of Science and Technology Liaoning; 'University of Science and Technology Beijing

D13: Investigation of the Slag Forming Path on Medium Phosphorus Hot Metal Refining in BOF: Tiancheng Liu1; Mingmei Zhu1; Xiaoqie Dou1; Yu Wang1; Bin Xie1; Bin Zhu1; Hong Zhou1; 'College of Materials Science and Engineering, Chongqing University; 'Chongqing Iron and Steel Group Corporation

D14: Research Progress of Iron Carburization in Blast Furnace: Zhijia Zhang1; Jianliang Zhang1; Kexin Jiao1; 'University of Science and Technology Beijing

6th International Symposium on High Temperature Metallurgical Processing — Poster Session

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

Program Organizers: Tao Jiang, Central South University; Jia-yan Yang Hwang, Michigan Technological University; Gerardo Alvear, Xstrata; Onuralp Yucel, Istanbul Technical University; Xiping Mao, Wuhan Iron and Steel Corporation; Hong Yong Sohn, University of Utah; Naiyang Ma, AcelorMittal; Phillip Mackey, P. J. Mackey Technology; Tom Battle, Midrex Technologies

Monday P M March 16, 2015 Location: Dolphin

www.tms.org/TMS2015 #TMS2015Experience
D15: Study on Arsenic Removal in Molten Steel: Luo Lingen1; Wang Jianjun2; Wang Lei3; Li Zhengbang3; ‘China Iron & Steel Research Institute Group; 2Anhui University of Technology; 3University of Science and Technology Beijing

D16: Study on Crystallization Properties of Mold Flux in Magnetic Field: Congjing Zhang1; Yu Wang2; Lang Hu1; Mingmei Zhu1; Hongpo Wang1; ‘Chongqing University

D17: Activities of Titanium Ions in Molten Calcium Chloride: Jianxun Song1; Liwen Hu1; Qiuwu Wang2; Shuaiqiang Jiao1; Hongmin Zhu1; ‘University of Science and Technology Beijing

D18: The Slagging Behavior of Single Furnace Burden: Kaifa Zhang1; Shengli Wu1; Wei Huang1; Xingliang Liu1; ‘School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

D19: Sulfur’s Existence Form and Sulf-Phase Forming Mechanism in LF Refining Waste Slag: Fang Hu1; GuangLiang Wu1; ‘Center South University

D20: Study on the Evolution of Nonmetallic Inclusions in N510L Beam Plate during Production Process: Xiang Li1; Yanping Bao1; Linzhu Wang1; Xiaobai Yan1; ‘University of Science and Technology Beijing

D21: The Study on Vacuum Degasging Process of AlV55 Alloy: Jie Sun1; Honggang Zhong1; Qiqie Zhai1; Yong Xian1; Zhaohui Sun2; ‘Shanghai University; Pangang Group Research Institute Co., Ltd., State Key Laboratory of Vanadium and Titanium Resources Comprehensive Utilization

D22: Deoxidization Study on V-Ti-Fe as Hydrogen Storage Alloy: Bin Wang1; Jinjing Du1; Kuiren Liu1; Jun Zhu1; Xiaolei Wu1; ‘Xi’an University of Architecture and Technology

D23: Study on Damage Mechanism of Ductile Cast Iron Cooling Stave: Cui Wang1; ‘University of Science and Technology Beijing

D24: Oxidation Character of Carbon Composite Bricks Used in Blast Furnace: Haibin Zuo1; Cong Wang1; Jianliang Zhang2; Kexin Jiao3; Yonggan Zhao1; ‘State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing; Henan Winna Industrial Group Co. Ltd

D25: Application of Carbon Composite Bricks for Blast Furnace Hearth: Haibin Zuo1; Cong Wang1; Jianliang Zhang2; Yonggan Zhao1; Kexin Jiao3; ‘State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; Henan Winna Industrial Group Co. Ltd; University of Science and Technology Beijing

D26: The Latest Developments of the Continuous Bottom-Blowing Matte Converting Process: Li Bing1; ‘ENFI

D27: Study on the Influence of Rich Oxygen for the Properties and Structure of Castables Used in Hot Wind Pipe of Blast Furnaces: Guotao Xu1; ‘Wuhan Iron and Steel Group Company

D28: Suitable Water Flow and Water Temperature Difference of Blast Furnace: Haibin Zuo1; Qian Li1; Jianliang Zhang2; Meng Shen3; Jinyan Tie4; ‘University of Science and Technology Beijing

D29: Study on Heat Transfer of the Miniature Cooling Stave: Fengguang Li1; ‘University of Science and Technology Beijing

D30: Thermal Design Method for Strutces of Microwave Hot Air Reactor: Guo Chen1; Jin Chen1; Jinhui Peng1; ‘Kunning University of Science and Technology

D31: Expert System For Grate-Kiln Oxide Pellet Thermal Process Status Control: Xi Li1; Xiaohui Fan1; Xuling Chen1; Guiming Yang1; ‘Center South University

D32: Influence of Coke Breeze Combustion Conditions on the Emission of NOX in Sintering Process: Bo Su1; Sheng-li Wu2; Guo-liang Zhang1; Zhi-gang Que1; Chao-gang Hou1; ‘School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

Additive Manufacturing: Interrelationships of Fabrication, Constitutive Relationships Targeting Performance, and Feedback to Process Control — Poster Session

A1: Finite Element Modeling of Selective Laser Melting Process Using Lattice Boltzmann Method: Mohsen Badrossamay1; Abbas Ghai1; ‘Isfahan University of Technology

A2: Microstructures of Inconel 718 Produced by Selective Laser Melting: Xhong Gong1; Kevin Choi1; ‘The University of Alabama

A3: Out of the Box Printing Compared to Conventional Powder Method Printing of Inconel 718: Taylor Waters1; ‘Mississippi State University

A4: Studies on Temperatures Involved in Multi Layered Friction Assisted Additive Manufacturing Method: Javed Akram1; James Samuel1; Sekhar Rakurty1; Prasad Kalvala1; Mano Misra1; ‘University of Utah

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

B1: A Statistical Dislocation Source Model to Study the Deformation Behavior of Nanocrystalline Ni: Caizhi Zhou1; Rui Yuan1; Irey Beyelein1; ‘Missouri University of Science and Technology; 2Los Alamos National Laboratory

B2: An In-Situ Transmission Electron Microscopy Study of TiNi-(Hf) Alloys with Precipitates: Seong-Woong Kim1; Chan Hee Park1; R.V.S. Prasad1; Jae Keun Hong1; Jong Taek Yeon1; Hyun-Gyu Kim1; ‘Korea Institute of Materials Science (KIMS); 2Seoul National University of Science and Technology; 3School of Metallurgical Engineering, Kharagpur, India; 4Chemnitz University of Technology, Germany

B3: Characterizing Pseudoelasticity of NiTi Based SMA by Nanoindentation: Indrani Sen1; Martin Wagner1; ‘Indian Institute of Technology, Kharagpur, India; ‘Chemnitz University of Technology, Germany

B4: Construction of Representative Volume Element for FE Simulation of Bulk Deformation of Stainless Steel Using X-ray Computed Tomography Approach: Xian Zheng Lu1; Luen Chow Chan1; ‘The Hong Kong Polytechnic University
B6: Deformation and Tearing of Large Two-Dimensional Nanosheets: Deformation Twinning Behavior in Precipitate Strengthened Cu-Ni-Alloys: Indrani Sen 1; Philip Lavandera 1; Ali Gordon 1; Ravi Penmetsa 2; 1University Of Titanium Technology, Bombay, Mumbai

B7: Deformation Twinning Behavior in Precipitate Strengthened Cu-Ni-Alloys: Indrani Sen 1; Equo Kobayashi; Tatsuo Sato; Warren Poole; 1Tokyo Institute of Technology; The University of British Columbia

B8: Estimation of Strain-Hardening Characteristics of Electro-Plated Copper Film Using Nanoindentation: Si-Hoon Kim 1; Young-Cheon Kim 1; Ju-Young Kim 1; 'UNIST (Ulsan National Institute of Science and Technology)

B9: Indentation Response and Structure-Property Correlations for Primary and Secondary A Phases in Bimodal Ti-6Al-4V: Indrani Sen; Shibayan Roy; Martin Wagner; 1Indian Institute of Technology Kharagpur, India; Chemnitz University of Technology

B10: Quantifying Nanoindentation Deformation Processes Near Grain Boundaries in Alpha-Titanium Using Microscopic Characterization and Crystal Plasticity Modeling: Yang Su1; Claudio Zambaldi; David Mercier; Philip Eisenlohr; Thomas Bieler; Martin Crimp; 1Michigan State University; Max Plank institute for iron research

B11: The Effect of Thickness on Flow Properties of Monocrystalline Au Film Measured by In-Situ Nano-Tensile Testing: Young-Cheon Kim 1; Ju-Young Kim 1; 'UNIST (Ulsan National Institute of Science and Technology)

B12: Deformation Evolution in a Polycrystalline Nickel Superalloy Under Cyclic Loading by High Resolution EBSD and Digital Image Correlation: Tianjian Zhang1; Jun Jiang2; Ben Britton1; Barbara Shollock1; Fionn Dunne1; 1Imperial College London; 2University of Warwick

B13: Residual Stress Determination and Flow Detection Using Electronic Speckle Pattern Interferometry: Pawan Maharjan1; Jahan Rasty1; Mike Steinzig1; 1Texas Tech University; 'Los Alamos National Laboratory

B14: Stress-Strain Behavior of Elevated Temperature Using Instrumented Indentation and the Finite Element Method: Jae Ik Yoon1; Hyeok Jae Jeong2; Seong-Hoon Kang1; Ho Lee1; Hyoung Seop Kim1; 'Korea Institute of Materials Science (KIMS); POSTECH

B15: The Effect of Grain Size of Precursor Alloy on Mechanical Behavior of Nanoporous Gold: Eun-Ji Gwak1; Ja-Young Kim 1; 'UNIST

B16: A Model Correlating Deformation and Crystallographic Orientations of Titanium: Ashish Kumar1; Prita Pant1; Asim Tewari1; 1Indian Institute of Technology, Bombay, Mumbai

B17: Design and Assessment of a Test Platform for Advanced Simulation of Cyclic Thermo-Acousto-Mechanical Loading: Abdi Bashir1; Michael Seddack1; Philip Lavandera1; Ali Gordon1; Ravi Pennetsa2; 1University Of Central Florida; 2United States Air Force Research Laboratory

B18: Hot Rolling Simulation of Steel Long Products: Karina Montemayor; Patricia Zambrano1; Luís Leduc1; Oscar Zapata1; 1IME

B19: Predicted Composition and Structural Effects on the Mechanical Responses of Aluminum Based Systems: Kamal Choudhary1; Tao Liang1; Aleksandr Chernyatynskiy2; Zizhe Lu1; Simon Philip1; Susan Sinnott1; 1University of Orlando

B20: B20: Prospects for Single Vacancy Detection in Bulk Material by Scanning Transmission Electron Microscopy: Jie Feng1; Andrew Yankovich1; Dane Morgan1; Paul Voyles1; 1University of Wisconsin Madison

B21: Study on Tensile Behaviors of AI-Killed Steel Under Batch-Annealed and Continuous-Annealed Conditions: Zhengyan Shen1; Liling Liu1; Yang Yang1; Yunnan Zhang1; Changjiang Song1; Jianxin Fu1; Qijie Zhai1; 1Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University; 2Helmholtz-Zentrum Dresden-Rossendorf

B22: TEM Characterization of Impact-Induced Microstructural Features in Boron Carbide: Jerry LauSativa1; Scott Walck1; Kelvin Xie1; Vladislav Domnich1; 1U.S. Army Research Laboratory; 2Johns Hopkins University; 3Rutgers University
J8: Formation of Hierarchically Structured Macroporous Hydroxyapatite Scaffolds via Polystyrene Particle Templates for Bone Grafting: Shannon Oscher; Tara Nylese; Travis Rampton; Matt Noell; ‘EDAX

J9: Evolution of Cold-rolled Microstructure and Mechanical Properties of Biomedical Co-Cr Alloys: Manami Mori; Kenta Yamanaka; Akihiko Chiba; ‘Sendai National College of Technology; Tohoku University

J10: The Effect of Heat Treatments on the Mechanical Properties of Chill Cast Co-20 wt. %Cr Alloy: Marco Aguilar-Mendez; Ana Ramirez-Ledesma; Julio Juarez-Islas; ‘Universidad Nacional Autonoma de Mexico

J11: Elastic Modulus of Oxidized Ti-Nb Alloys: Neide Kuramoto; Hebert Sato; Douglas Valerio; Pedro Bazzaglia; Carlos Lepienski; Adriano Scheid; Carlos Grandini; ‘Universidade Federal do Paraná

J12: Effect of Aging on the Microstructure and Selected Mechanical Properties of Ti-15Zr-Mo Alloys for Use as Biomaterial: Diego Correa; Mariana Lourenço; Pedro Kuroda; Carlos Grandini; ‘UNESP – Univ Estadual Paulista, Laboratório de Anelasticidade e Biomateriais

J13: Effect of Aging Heat Treatment on the Mechanical Behavior of Beta Ti-Mo Alloys: Mariana Mello; Flavia Cardoso; Alessandra Cremasco; Eder Lopes; Rubens Caram; ‘University of Campinas

F15: Effect of Cr Doping on the Structural, Morphological, Optical and Electrical Properties of Indium Tin Oxide Films: Majid Mirzaei; Abolghasem Dolati; ‘Sharif University of Technology

F16: Effect of Different Substrates on the Morphology and Stability of the Au Thin Films Deposited by Sputtering: Aritra Dhar; Zhao Zhao; Terry Alford; ‘Arizona State University

F17: Effect of Electric Field Density on Atom Diffusion in Cu/Ta/Si Stacks: Lei Wang; Jun hua Xu; Li hua Yu; Song tao Dong; ‘Jiangsu University of Science and Technology

F18: Effect of Gold Thickness and Annealing on Optical and Electrical Properties of TiO/Al/TiO3 Multilayers as Transparent Composite Electrode on Flexible Substrate: Aritra Dhar; Zhao Zhao; Terry Alford; ‘Arizona State University

F19: HMDS Modified ITO in P3HT:PC61BM Bulk Heterojunction Organic Solar Cells: Sayantan Das; Joseph Joslin; Terry Alford; ‘Arizona State University

F20: Investigation of Ag Mid-Layer Thickness on the Optoelectrical Properties of ZnO/Ag/MoX Transparent Composite Electrodes and their Use in P3HT:PC61BM Based Organic Solar Cells: Sayantan Das; Hyung Choi; Terry Alford; ‘Arizona State University

F21: Nanoarchitected Tin-Oxide Arrays Enhance Hydrogen Sensing at Room Temperature: Ramneek McCormack; Nozomi Shirato; Umesh Singh; Soumen Das; Amit Kumar; Hyung J. Cho; Ramki Kalyanaraman; Sudipta Seal; ‘UCF/AMPAC; ‘MSE/UTK; ‘UCF/MMAE; ‘UCF/NSTC; ‘UTK/SEERC/MSE; ‘UCF/NSTC/AMPAC

F22: Mechanical Properties of Graphene Nanosheets and Nanoribbons: Biao Leng; Sarung Misley; Yan Liu; Nuggehalli Ravindra; ‘New Jersey Institute of Technology

F23: Optimization of Different Thickness and Annealing of Amorphous Indium Gallium Zinc Oxide Transparent Thin Films on Flexible Substrates: Aritra Dhar; Zhao Zhao; Terry Alford; ‘Arizona State University

Aluminum Alloys: Development, Characterization, and Applications — Poster Session
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix,LLC; Tongguang Zhai, University of Kentucky

Monday PM

H1: A Study on Anisotropy Behavior of AA6K21/AA7075/AA6K21 Composite Sheet Metals: Min-Seong Kim; SooHyun Kim; Hyung-Wook Kim; Shi-Hoon Choi; ‘Suncheon National University; ‘Korea Institute of Materials Science

H2: Effect of Al-Ti-B Grain Refiners on the Microstructure and Mechanical Properties of Al-Mg-Si Alloys with Zr Addition: Matej Steinaicher; Peter Cvahte; Franc Zupaniec; ‘University of Maribor, Faculty of Mechanical Engineering; ‘Impol Aluminium Industry

H3: Effect of Titanium on Dross Formation in Hot-Dip 55%Al-Zn-Si-La Bath: Qian Li; Qian Li; Kuo Chou; ‘Shanghai University

H4: Effects of Pouring Rate and Melt Temperature on the Shrinkage of an A356.2 Alloy Casting: Kyeong-Wook Min; Ki-Young Kim; ‘Korea University of Technology and Education

H5: Influence of Retrogression and Reaging Treatment on Stress Corrosion Cracking Behaviour of 8090 Al-Li-Cu-Mg and 7150 Al-Zn-Mg-Cu Alloys: K S Ghosh; M M Ghosh; Prasanta Rout; ‘National Institute of Technology (NIT) Durgapur, India

H6: Measurement of Elastic Stress and Plastic Strain from Ultrasonic Impact Treatment of Aluminum-Magnesium Alloys: Luke Brewer; Eid Fakhouri; Kim Tran; ‘Naval Postgraduate School; ‘Naval Surface Warfare Center Carderock Division

H7: Microstructure Evolution of Aluminum Alloys Enhanced by Zirconium Addition Studied by Electron Microscopy: Michaela Poková; Miroslav Cieslar; Mariia Zimina; ‘Charles University in Prague, Faculty of Mathematics and Physics

H8: Nanoscale Precipitation-Strengthened Al-Se-(V,Nb,Ta) Alloys: Keith Koopling; Nhon Vo; David Dunand; David Seidman; ‘Naval Research Laboratory; ‘NanoAl LLC; ‘Northwestern University

H9: Nickel Coatings with Submicrometric Hard Ceramic Particles on Aluminum Alloys: Marek Nowak; Anna Kozik; Michal Karas; Sonia Boczkal; Maciej Gawlik; ‘Institute of Non Ferrous Metals in Gliwice

H10: Study on Microstructure and Mechanical Properties of High Mg Content Al-Si Alloy as an In-Situ Composite: Azin Akbari; Henadzy Zak; Olga Zak; Babette Tonn; ‘Case Western Reserve Univ; ‘Clausthal University of Technology

H11: The Effect of Cooling Rate and Cerium Melt Treatment on Thermal Analysis Parameters and Microstructure of Hypoeutectic Al-Si Alloy: Vijeesh Vijayan; ‘K Prabhu; ‘NITK; ‘NITK

H12: The Effect of Cryogenic Treatment on the Surface Roughness of Age Hardenable Aluminum Alloys and Die Materials: Chandrasekhar Gogte; Aziz Likhite; Milind Dhobe; Sachin Lomte; Dilip Peshwe; ‘Marathwada Institute of Technology; ‘Visvesvaraya National Institute of Technology; ‘PES College of Engineering
H13: The Effect of TiH2 Oxidation Treatment on Preparing Aluminum Foam Sandwiches: Binnia Song1; Shaulhu Zhang1; Lan Hong1; Jixin Hou1; Guoyin Zu2; 1Soochow University; 2Northeastern University

H14: The Effects of Various T4 Temperatures on Microstructures and Tensile Properties of 7001 Aluminum Alloy: Yu Ting Li1; 1National Chang Kung University

H15: The Influence of Alloying Additions on Interaction of Aluminum Alloys with Aqueous Media: Alexander Baimakov1; Sergey Petrovich1; Vadim Lipin2; Alexander Shamlin3; Rustam Seytenov3; 1Saint Petersburg State Polytechnical University; 2Saint Petersburg State Polytechnical University; 3Outotec CIS

H16: Study on Initiators of Copper and Copper-Nickel Alloy in LiBr Solution: Xinglan Hu1; 1Tianjin Vocational Institute

H17: Optimization of Casting Conditions in Twin-Roll Casting of Al-Mg Alloys using Finite Element Modelling: Min-Seok Kim1; Y. Lee1; J. Cho1; H. Kim1; C. Lim1; 1Kyonggi University; 2Korea Institute of Materials Science (KIMS)

H18: Influence of Process Parameters on Localized Corrosion of Al 7075 Alloy during the Production of Aeronautical Components: Maria Ismenia Faria1; Alain Robin1; Luciana Prisco2; Julio César Lourenço2; Mário Coelho2; 1EEL-USP; 2PUC-Rio; 3Liebherr-Aerospace Brasil

Biological Materials Science Symposium — Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes Products, LLC; Michael Porter, Clemson University; Francois Barthelat, McGill University

Monday PM Room: Atlantic Hall
March 16, 2015 Location: Dolphin

Session Chairs: Francois Barthelat, McGill University; Rajendra Kasinath, DePuy

F24: The Investigation of Wear Resistance of Hydroxyapatite-chitosan Bio Composite Coating on Stainless Steel 316L: Sajjad Falaki1; Rana Sabouni Tabari1; Seyyed Khatiboleslam Sadreza1; 1Sharif University of Technology

F25: Toughening Mechanisms in Nacre: Sina Askarinejad1; Nima Rahbar1; 1Worcester Polytechnic Institute

F26: Microstructural Analysis of Aristotle’s Lantern in Sea Urchins: Michael Frank1; Kirk Sato1; Jennifer Taylor2; Lisa Levin3; Joanna McKittrick1; 1University of California San Diego

F27: Surface Magnetized Colloidal Particles Aligned by Magnetic Freeze Casting: Michael Frank1; Michael Porter1; Steven Naleeway1; Tsuk Haroush1; Joanna McKittrick1; 1University of California San Diego

F28: MoS2-Ceria Hybrid Nano-composite Based Electrochemical Biosensor: Askar Gupta1; Soumen Das1; Sudipta Seal1; 1University of Central Florida

F29: Advances in the Understanding of the Effects of External Treatments on the Subcellular Structure and Composition of Plant Cell Walls: Mikhail Solliman1; Laurene Tetard1; 1University of Central Florida

F30: Amperometric Detection of Hydrogen Peroxide by Ceria Nanoparticle-Functionalized Self-Assembled Monolayer Biosensor: Craig Neal1; Shashank Saraf1; Sanghoon Park2; Soumen Das1; Hyoung Cho2; Sudipta Seal1; 1AMPAC; 2University of Central Florida

F31: Regenerable Nanoporous Gold Biosensor in Harsh Biofouling Conditions: Shashank Saraf1; Craig Neal1; Sanghoon Park2; Soumen Das1; Sudipta Seal1; Hyoung Cho2; 1University of Central Florida; 2University of Central Florida

F32: Dynamic Modeling Approach to Follow Adsorption Kinetics of Engineered Proteins that Self-assembles Through Biomolecular Recognition: James Meyer1; Viraj Singh1; Banu Taktak Karaca2; Paullette Spencer2; Anil Misra1; Candan Tamerler3; 1University of Kansas

F33: Single Step Biofabrication of Self-Organized Hybrid Molecular Assemblies: Banu Taktak Karaca1; Ryan Maloney1; Dwigh Deay1; Brandon Tomas1; Mark Richter1; Candan Tamerler3; 1University of Kansas

F34: Towards Amperometric Sensors via Self Assembled Metal-specific Enzymes: Dwigh Deay1; Brandon Tomas1; Ryan Maloney1; Candan Tamerler3; Mark Richter1; 1University of Kansas

F35: Easing the Fabrication of Bioinspired Composites Through the use of Clathrate Hydrates in Freeze Casting: Steven Naleeway1; Yi-Husan Hsiao1; Michael Porter1; Marc Meyers1; Joanna McKittrick1; 1University of California, San Diego

F36: Microstructure, Mechanical Property of Porous Hydroxyapatite-ß TCP Biomaterial Consolidated by Rapid Sintering using Space Holder: Kee-Do Woo1; Tack Lee1; Hae-Cheol Lee1; Seong-Tak Oh1; 1Chonbuk National University

F37: Silk Fibroin Bio-Polymer Integrated Nanostructures for Energy Sensing Applications: Swetha Barkam1; Corey Rodas1; Anh Ly1; Rameech McCormack1; Sudipta Seal1; 1University of Central Florida

F38: The Granoid Scales of Atractosteus spatula: Potential for Bioinspired Flexible Armor: Vincent Sherman1; Wen Yang2; Robert Ritchie3; Marc Meyers4; 1Materials Science and Engineering Program, University of California, San Diego; 2Complex Materials, ETH Zürich; 3Lawrence Berkeley National Laboratory

F39: The Influence of Alloying Additions on Interaction of Aluminum Alloys using Finite Element Modelling: Dongmei Zhang1; Alain Robin1; Luciana Prisco2; Julio César Lourenço2; Mário Coelho2; 1EEL-USP; 2PUC-Rio; 3Liebherr-Aerospace Brasil

Bulk Metallic Glasses XII — Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfel Gao, Univ of Tennessee

Monday PM Room: Atlantic Hall
March 16, 2015 Location: Dolphin

F56: Bending Fracture Behavior of an As-Spun Al-Based Partial Amorphous Thick Ribbon: Hongwang Yang1; 1Shenyang University of Technology

F57: Brazing and Interfacial Reaction of Titanium Using Zr-Ti-Cu-Ni Bulk Metallic Glass Fillers: Jun Hyeok Lee1; Min Hong1; Chae Hong Lee1; Jin Kyu Lee4; 1Kongju National University; 2IFW Dresden; 3 Cheongju University; 4Yonsei University

F58: Characterization and Electrical Properties of Pulverized Al-Based Metallic Glass Powder Included Ag Electrode: Jun Hyeok Lee1; Min Hong1; Chae Hong Lee1; Jin Kyu Lee4; 1Kongju National University; 2IFW Dresden; 3 Cheongju University; 4Yonsei University

F59: The Kinetic Behavior of Metallic Glass Suppercooled Liquid in the High Temperature Region: Jiahao Yao1; Yi Li1; Fengxia Bai1; 1Institute of Metal Research, Chinese Academy of Sciences

F60: Correlations between Dynamics and Atomic Structures in Cu-Zr Metallic Glass: Yue Zhang1; Caizhuang Wang1; Feng Zhang1; M. I. Mendeleev1; M. J. Kramer1; K. M. Ho1; 1Ames Laboratory
F61: Development of Cu-Zr-Al-RE (Rare-Earth) Bulk Metallic Glasses: Ilkay Kalayi; Fatih Sikand; Eren Kalayi; Cankaya University; METU

F62: Effect of Load and Annealing Temperature on the Deformation in Al-Based Metallic Glass: Rina Sahu; Kanai Sahoo; NIT JAMSHEDPUR; CSIR-NML Jamsedpur

F63: Excellent Mechanical and Magnetic Properties of Cobalt-Iron Metallic Glasses: Santanu Das; Harpreet Aroa; Sundeep Mukherjee; Medha Veligatla; German Aerospace Center, Ruhr University Bochum; Friedrich-Schiller-University Jena

F64: Experimental Determination of TTT Diagrams of Zr-Based Glass Forming Alloys: Stefanie Koch; Dieter M. Herlach; Peter Galenko; Markus Rettenmayr; German Aerospace Center, Ruhr University Bochum; Friedrich-Schiller-University Jena

F65: In-Situ Electrochemical Testing during Deformation of Bulk Glassy Zr52Cu17.9Al10Ni14.6Ti5 Alloy: A Sensitive Tool Revealing Early Shear Banding: Daniel Grell; Petre Gostin; Annett Gebert; Eberhard Kerscher; TU Kaiserslautern; IWF Dresden

F66: In Situ Neutron Diffraction Studies of the Deformation-Induced Phase Transformation in Ti-Based Amorphous Alloy Composites: Juan Mu; Yandong Wang; Haifeng Zhang; Northeastern University; Institute of Metal Research

F67: Influence of Chemical Composition and Thermal Treatments on the Mechanical Properties of Bulk Metallic Glasses Based on Precious Metals: Sandrine Cardinal; Jean-Marc Pelletier; Jichao Qiao; INSA

F68: Influence of Pd Addition on the Wettability of Amorphous TiCuZrPd Alloys Used as a Filler during the Brazing Process: Anna Spyien; Pzemeslaw Fima; Institute of Metallurgy and Materials Science

F69: Mechanical Behavior of an Fe-Based Structural Amorphous Metal with W Nanoparticle Additions: J-Chung Cheng; James Kelly; Olivia Graeve; Andrea Hodge; University of Southern California; University of California, San Diego

F70: Refining the Predictions for Glass Forming Ability in the Ni-Nb-Zr System by Characterization of Metastable Crystalline Phases: Leonardo Deo; Michael Kaufman; M. F. de Oliveira; University of de Sao Paulo; Colorado School of Mines

F71: Rejuvenation of Metallic Glasses Induced by Thermal and Pressure Loading: Masato Wakeda; Narumasa Miyazaki; Shigenobu Ogata; Osaka University

F72: Ti-Based Ti-Cu-Zr-Fe-Sn-Si-Ag Bulk Metallic Glasses as Potential Biomaterials: Ying Liu; Shujie Pang; Tao Zhang; Beihang University

Bulk Metallic Glasses XII — Student Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Monday PM Room: Atlantic Hall Location: Dolphin

F41: A Simple Parameter for Evaluating Thermoplastic Formability in the Newtonian Viscous Flow Regime: Hyun Seok Oh; Chae Woo Ryu; Eun Soo Park; Juil Yoon; Seoul National University; Hanyang University

F42: Atomic Scale Characterization of Shock-Induced Changes in Ceramic Metallic Glass: Alex Bryant; Faisal Alamgir; Jonathan Poplawsky; Christopher Wohrenberg; Erik Farquhar; Wenqian Xu; Michael Miller; Bruce Remington; Naresh Thadhani; Georgia Institute of Technology; Oak Ridge National Laboratory; Lawrence Livermore National Laboratory; Brookhaven National Laboratory

F43: Connecting Liquid Structure and Glass Forming Ability with Molecular Dynamics Simulations: David Riegner; Logan Ward; Kathy Flores; Wolfgang Windi; The Ohio State University; Northwestern University; Washington University in St. Louis

F44: Cyclic Hardening in Metallic Glasses: A Study Based on Shear Transformation Zone Dynamics Simulations: Neng Wang; Lin Li; University of Alabama

F45: Dendrite Size and Tensile Ductility in Ti-Based Dendrite-Containing Amorphous Alloys Modified from Ti-6Al-4V Alloy: Hyungsoo Lee; Changwoo Jeon; Choongyynn Kim; Soo-Hyun Joo; Hyoung Seop Kim; Sungak Lee; Center for Advanced Aerospace Materials, POSTECH

F46: Dynamic Mechanical Behavior of Titanium-Based Bulk Metallic Glass Composites: Rene Diaz; Manny Gonzales; Christopher Lo; Greg Kennedy; Douglas Hofmann; Naresh Thadhani; Georgia Institute of Technology; NASA Jet Propulsion Laboratory/Calfornia Institute of Technology

F47: FFT Modeling of Deformation Behavior in Metallic Glass Matrix Composites: Michael Gibbons; David Riegner; Kelly Kranjic; Nicholas Hutchinson; Allen Hunter; Douglas Hofmann; Jennifer Carter; Emmanuel Marquis; Katherine Flores; Stephen Niezgoda; Wolfgang Windi; The Ohio State University; Washington University in St. Louis; University of Michigan; Jet Propulsion Laboratory; Case Western Reserve University

F48: Fracture Toughness of Thermoplastically Formed Metallic Glasses: Wen Chen; Jittisa Ketkaew; Ze Liu; Ian Schroers; Yale University

F49: High-Throughput Characterization of the Formability of Metallic Glass Composites: Yanglin Li; Yanhui Liu; Ze Liu; Ellen Scanley; Christine Broadbridge; Ian Schroers; Yale University; Southern Connecticut State University

F50: High Density Ni-Based Metallic Glasses Formed by Spark Plasma Sintering: Henry Nelson; G Shiffer; Alex Peterson; S Poon; John Lewandowski; Case Western Reserve University; Carnegie Mellon University; University of Virginia

F51: Mechanical Rejuvenation in a Zr-Based Bulk Metallic Glass Induced by Thermo-Creep: Yang Tong; W Dmowski; Tsetsunya; T Egami; The University of Tennessee-Knoxville; Tokohu University

F52: Novel Biodegradable Mg-Based Bulk Metallic Glasses for Biomedical Applications: Huijie Li; Shujie Pang; Peter Liaw; Tao Zhang; Beihang University; The University of Tennessee, Knoxville

F53: Study on Crystallization Pathways in Zr60Cu10Al15Ni15 Bulk Metallic Glass Forming Alloy: S. Vincent; Joysurya Basu; B. S. Murty; M. J. Kramer; Jatin Bhatt; Visvesvaraya National Institute of Technology, Nagpur; Indira Gandhi Center for Atomic Research; Indian Institute of Technology Madras; Ames Laboratory, Iowa State University

F54: The Effect of Silicon Addition on the Synthesis of the Zr-Fe-Al Metallic Glass Alloys: Talibeshian; Huehui Maob; Lars Armb; Raghild Aune; Norwegian University of Science and Technology; Royal Institute of Technology

F55: Thermodynamic Prediction and Copper-Mold Method for Bulk Metallic Glass Formation of the Ag-Cu-Zr ternary System: Hsiuen-Ming Hsiao; Chao-Wei Chiu; Mei-Ting Lii; Tzu-Ting Huang; Song-Mao Liang; Rainer Schmid-Fetzet; Yee-Wen Yen; National Taiwan University of Science and Technology; Clausthal University of Technology
B23: A Generalized Convolution Theorem for Bulk Cubic Texture Determination from Ultrasonic Wave Speed: Bo Lan¹; Michael Lowe²; Fionn Dunne¹; ¹Oxford University, ²Imperial College London

B24: A New Instrument for the Measurement of Seebeck-Coefficients and Electrical Conductivities for Thin Thermoelectric Materials: Rebekka Taubmann¹; Juergen Blum²; Reinhard Gscheidwender³; Ekkehard Post¹; Bob Fidler²; ¹NETZSCH-Gerätebau GmbH, ²NETZSCH-Gerätebau GmbH, ³NETZSCH Instruments N.A. LLC

B25: A Study on the Structural Design of Railway Vehicles: Sung Cheol Yoon¹; Jeongguk Kim¹; Sung Il Seo¹; ¹Korea Railroad Research Institute/New Transportation Systems Research Center

B26: Adsorption Properties of Cetyltrimethylammonium Bromide Bentonite for Heavy Metals: Chao Liu¹; ¹Development & Research Center of WISCO

B27: Advanced Ceramic Materials Applied in the Production of H2 Flow: Evaluation of Performance in the PROX Reaction: Laédna Neiva¹; Carla Piazzarollo¹; ¹Federal University of Campina Grande; ²Federal University of Bahia

B28: Analysis of Porosity and Flexural Strength Changes of Red Ceramic Pieces Incorporated with Ornamental Rock Waste: Yong Ma¹; ¹Heifei University of Technology

B29: Analysis of the Feasibility of Using Soil from the Municipality of Chongming Island in Mortar: Gui¹; Wenlin Chen¹; Chengsheng Chu; ¹Heifei University of Technology

B30: Anomalous Nanocrystallization Behavior in Marginal Glass Forming Alloys: Mustafacan Katsal¹; Fatih Sikan¹; Mert Ovun¹; Eren Kalay¹; ¹METU

B31: Ball Indentation Test: The Effect of Test Parameters on Tensile Properties of P92 Steel: Dipika Barbadikar¹; A. R. Ballal¹; D.R. Peshe²; J. Ganeshkumar³; M.D. Mathew²; ¹VNIT Nagpur, ²igCARD Kalpakam

B32: Biodegradable Starch/Copolyesters Film Reinforced with Silica Nanoparticles – Preparation and Characterization: Roberto Lima¹; Rene Oliveira¹; Celio Wataya¹; Esperidiana Moura¹; ¹Instituto de Pesquisas Energéticas e Nucleares

B33: Carbonization of Coals Mixed Iron Ore Fines and Gasification of Resulting Iron Coke with CO2: Transformation of Iron Minerals and Coke Properties: Shengfa Zhang¹; Wei Liu¹; Shuxing Qiu¹; Mingrui Yang¹; Manjie Li¹; Haijun Peng¹; ¹Chongqing University

B34: Cause Analysis on Buildup Formation of Carbon Sleeve in Continuous Annealing Furnace for Non-Oriented Silicon Steel Produced by CSP Process: Mingsheng He¹; Laifang He¹; Shoujun Peng¹; Jing Zhang¹; Meng Liu¹; Hausheng Chen¹; ¹Research and Development Center of WISCO

B35: Characterization and Evaluation of Incorporation the Casting Sand in Mortar: Afonso Azevedo¹; Jonas Alexandre¹; Ezebio Zanellato¹; Sergio Monteiro¹; Gustavo Xavier¹; Thales Mendonça²; ¹IFF, ²UFPE

B36: Characterization of Co-Gd-Ni Alloys: Tim Prost¹; Scott Chumbley¹; Yaroslav Mudryk¹; Vitalij Pecharsky¹; ¹Iowa State University/Ames Lab

B37: Characterization of Corrosion Products of Painted Galvanized Steel Under Different Atmospheric Conditions: Maribel De la Garza Garza¹; Carlos Vazquez¹; Facundo Almeraya¹; Omar Garcia¹; ¹FIME, UANL; ²Ternium

B38: Characterization of Formulation with Ornamental Rock Waste and Clays to Produce Ceramic Paver: Carlos Mauricio Viera¹; Thiago Motta¹; Sergio Neves Monteiro¹; ¹State University of the North Fluminense

B39: Characterization of Grain Structure of Al Containing Mg Alloys Without Solution Heat Treatment: Jung Won Sim¹; Young Cheol Lee¹; Bo Young Hur¹; ¹Gyeongsang National University / Metallurgical Engineering; ²Korea Institute of Industrial Technology; ³Gyeongsang National University / Metallurgical Engineering

B40: Characterization of Mechanical Properties of PP/HMSP Blends with Natural and Synthetic Polymers Subjected to Gamma-Irradiation: Elizabeth Cardoso¹; Sandra Scagliusi¹; Ademar Lugão¹; ¹IPEN - Instituto de Pesquisas Energéticas e Nucleares

B41: Characterization of Polyester Matrix Reinforced with Banana Fibers Thermal Properties by Photoacoustic Technique: Foluke Salgado¹; Pedro Netto¹; Frederico Margemi¹; Sergio Monteiro¹; Romulo Loiola¹; Artur Junior¹; Mariana Barcelos¹; ¹State University of the Northern Rio de Janeiro; ²Military Institute of Engineering; ³Redentor

B42: Composites with Halogen Free Flame Retardant in ABS Matrix: Flame Retardance and Stability Thermal: Priscila Martins¹; Ticiane Valera¹; Elisabeth Fernandes¹; Jorge Tenório¹; ¹Polytechnic School, São Paulo University

B43: Cyanidation Study of Slag Rich in Silver: Miguel Perez-Labra¹; J.Antonio Romero-Serrano¹; E. O. Avila-Davila¹; Martin Reyes-Pérez¹; F. R. Barrientos-Hernández¹; I. A. Lira-Hernández¹; ¹UAEH MEXICO; ²IPN ESQIE; ³Instituto Tecnológico de Pachuca

B44: Deformation Mechanisms in Magnesium Alloy WE43: Alan Githens¹; John Allison¹; Samantha Daly¹; ¹University of Michigan

B45: Diffraction Contrast Tomography on a Laboratory X-ray Microscope: Arno Merkle¹; Christian Holzner¹; Michael Feser¹; Kevin Fahey¹; Erik Lauridsen¹; Peter Reischig¹; Henning Friis Poulsen¹; Leah Lavery¹; ¹Carl Zeiss X-ray Microscopy, Inc.; ²Xnovo Technology

B46: Discussion and Analysis on Measurement Methods for Mould Friction during High Efficiency Continuous Casting: Yong Ma¹; Cheng Peng¹; Wei Gui¹; Weilin Chen¹; Chengsheng Chu¹; ¹Heifei University of Technology

B47: Effect of Applied Pressure on the Tribological Behaviour of Dual Particle Size Rutile Reinforced L13 Alloy Composite: Rama Arora¹; Suresh Kumar¹; Gurmel Singh¹; Om Pandey¹; ¹Post Graduate Govt.College for Girls, Sector 11, Chandigarh; ²Thapar University; ³Punjabi University, Patiala

B48: Effect of Cooling Rate during and after Solidification on Microstructure of a PREN 50 Grade Super Duplex Stainless Steel: Eun-Seok Jung¹; Ki-Young Kim¹; ¹Korea University of Technology and Education

B49: Effect of Manganese on the Formation Mechanisms of Silico-ferrite of Calcium and Aluminum (SFCA): Leige Xia¹; Xinyu Li¹; Jianliang Zhang¹; Chaoquan Yao¹; Jian Guo¹; Chao Zhang¹; ¹University of Science and Technology, Beijing

B50: Effect of Mercercization and Electron-Beam Irradiation on Mechanical Properties of High Density Polyethylene (HDPE)/Brazil Nut Pod Fiber (BNPF) Bio-Composites: Rejane de Campos¹; Maria Sotenko¹; Mahesh Hosur¹; Shaik Jeelani¹; Francisco Diaz¹; Esperidiana Moura¹; Kerry Kirwan¹; Emilia Seo¹; ¹University of Science and Technology, Beijing; ²University of Warwick; ³Tuskegee University; ⁴University of São Paulo
B51: Effect of Microwave Sintering on Piezoelectric and Magnetoelectric Properties of BCZT- CFO Particulate Multiferroic Composites: Paul Praween; Vinitha Monaji; Dibakar Das; ‘University of Hyderabad, EST

B52: Effect of Mineral Powder Particle Size on the Preparation of Iron Carbide from High Phosphorus Oillitic Hematite: Jianghua Ma; Guang-qiang Li; Heng-hui Wang; Jian Yang; ‘Wuhan University of Science and Technology

B53: Effect of Nitridation Temperature on the Formation of Carbon Fiber Reinforced Reaction Bonded Silicon Nitride Composites: Logesh Govindasamy; Balasubramanian Mathiiah; ‘Indian Institute of Technology; ‘Indian Institute of Technology-Madras, India

B54: Effect of Phosphorus on Phase Transformation, Microstructure and Mechanical Properties in Weathering Resistance Steel: Li Yan; Zhao zengwu; Ding Wei; ‘Inner Mongolia University of Science and Technology

B55: Effect of Potential On The Characteristics Of Oxide Product Layers On Chalcopyrite: Juan Hu; Hongying Yang; ‘Xi’an University of Architecture and Technology; ‘Northeastern University

B56: Effect of Pre-Existing Texture on Mechanical Properties of Cold Drawn Pearlitic Wire: Feng Fang; ‘Southeast University

B57: Effect of the Firing Temperature on the Properties of Red Ceramic Incorporated with MSWI Ash: Nicolle Coutinho; Carlos Mauricio Vieira; Sérgio Monteiro; ‘Universidade Estadual do Norte Fluminense; ‘Military Institute of Engineering

B58: Sintering and Performance of High Alumina Refractory with ZrO2: Additon: Lei Xu; Min Chen; ‘School of Materials and Metallurgy, Northeastern University

B59: Effects of Accelerated Thermal Aging on Polypropylene Modified by Irradiation Process: Washington Oliani; Danilo Fermino; Luis Filipe Carvalho Lima; Ademar Lugaú; Duclerce Parra; ‘Nuclear and Energy Research Institute, IPEN/USP; ‘EPUSP/POLI

B60: Effects of Heat Treatment on Microstructure and Properties of a Precipitation Hardened CuCrZr Alloy: Seyda Polat; Gozde Altug; ‘Kocaeli University; ‘Gedik University

B61: Effects of High Magnetic Field Annealing on Microstructure and Texture at the Initial Stage of Recrystallization in a Cold-Rolled Pure Copper Sheets: Tong He; Zhang Guojin; Sun Wei; Zhao Xiang; ‘Northeastern University

B62: Electrochemical Properties of Al-Cu Alloys in 1M NaCl Solution: Alejandra Silvina Román; Claudia Marcela Méndez; Carlos Enrique Schwezov; Alicia Ares; ‘IMAM (CONICET-UNaM); ‘CONICET/FCEQuy-UNaM

B63: Thermoceramic Properties of Modified Ti-Bearing Blast Furnace Slag: Yongqi Sun; Zuotai Zhang; ‘Peking University

B64: Evaluation of Mild Acid Treatment on Brown Bentonite: Christiano Giansi Bastos Andrade; Valquiria F. Justo; Camila Martini Matos; Maria da Graça Silva Valenzuela; Cristina Volzone; Francisco Rolando Valenzuela Diaz; ‘USP POLI; ‘CETMIC

B65: Evaluation of Palf Fibers Elasticity Modulus with Different Dimensions by Weibull Analysis: Gabriel Glória; Giulio Altoé; Frederico Margem; Sérgio Monteiro; Ygor Moraes; Pedro Netto; ‘State University of the Northern Rio de Janeiro; ‘Instituto Militar de Engenharia


B67: Experimental Investigation on High Temperature Roasting of Basic Oxygen Furnace Slag: Ruirui Wei; Meilong Hu; Fangqing Yin; Yanhui Liu; ‘Chongqing University

B68: Experimental Study of Advanced Treatment of Coking Wastewater Using PFS Coagulation-Photocatalytic Oxidation Technology: Lei Zhang; ‘WISCO

B69: Experimental Study on Half Dry Flue Gas Desulfurization Ash Used in Steel Slag Composite Material: Lu Li; ‘WISCO

B70: Experimental Study on Oxidation Resistance of Improvement of Iron Based High Temperature Alloy: Chen Chen; ‘Shanghai University

B71: Fabrication of Nanofibers Using Focused Ion Beam (FIB) and Photolithography Methods: Paniz Foroughi; Ali Hadjikiani; Neil Rickis; ‘Florida International University

B72: PHYBAL - Fatigue Assessment and Life Time Calculation of the Ductile Cast Iron EN-GJS-600 at Ambient and Elevated Temperatures: Marcus Klein; Benjamin Jost; Dietmar Eißer; ‘TU Kaiserslautern

B73: Ferronickel Polymerization Behavior of Reduction Roasting High-Magnesium Low-Nickel Oxide Ores in Using Accelerators: Yonggang Wei; Bo Li; Qian Li; Shiewei Zhou; Baozhong Ma; Chengyan Wang; ‘Kunming University of Science and Technology

B74: Gold Leaching Characteristics and Intensification of a High S and As-Bearing Gold Concentrate: Tong-bin Yang; Xiao-liang Liu; Qian Li; Tao Jiang; ‘Bin Xu; Yan Zhang; ‘Central South University

B75: Hardness and Decomposition of (Ti,Zr): Taoran Ma; Peter Hedström; Ida Borgh; Joakim Odqvist; ‘KTH-Royal Institute of Technology, Sweden; ‘Sandvik Mining AB, R&D Rock Tools, Sweden

B76: Hot-Pressing and Mechanical Properties of BN Based Composites: Meng Liu; Yijie Song; Xiaohong Xu; Guotao Xu; Gaifeng Xue; Jixiong Liu; ‘Research and Development Center of Wuhan Iron and Steel (group) Corporation; ‘Advanced Materials R&D Center of Wuhan Iron and Steel (group) Corporation; ‘State Key Laboratory of Silicate Materials for Architectures

B77: Identification of Chemical Reactions and Physical-Chemical Principles of Ag8XSe6 (X = Si, Ge, Sn) Argyrodites Synthesis: Mykola Chekaylo; V Ukrainets; Gryhorij Il’chuk; Natalia Ukrainets; Yuriy Plevachuk; I Semkiv; Andriy Yakymovych; ‘Lviv Polytechnical National University; ‘Ivan Franko National University; ‘University of Vienna

B78: In Situ Electron Microscope Characterization on Deformation Mechanisms and Size-Related Mechanical Properties of Ti: qian Yu; Andrew Minor; ‘Zhejiang University; ‘University of California Berkeley

B79: Increasing the Life of Concrete Through Microstructural Changes-Nanosilica as the Concrete Pores Nanofiller to Reduce the Permeability to Moisture: Robert Miner; Robert Blair; Qasem AlNasser; Yongfeng Chang; Batric Pesic; ‘University of Idaho

B80: Influence of Cu2+ and Zn2+ on the Dissolution of Ag in S2O32- Medium: Julio Cesar; Isaooru Rivera; Francisco Patiño; Miguel Perez; Juan Hernández; Martin Reyes; ‘Universidad Autónoma del Estado diHidalgo

B81: Influence of Gas Nitriding Parameters on the Wear Resistance of AISI 430 Stainless Steels: Kyu-Sik Kim; Sung-Bo Heo; In-Wook Park; Byung-Chul Cha; Jun-Ho Kim; ‘Korea Institute of Industrial Technology

B82: Influence of Pulverized Coal Devolatilization in Tuyere on the Total Burnout Percentage: Yan Chen; ‘Purdue CIVS

B83: Investigation on Mechanical and Thermal Behaviours of Copolyester/pla Blend Reinforced with TiO2 Nanoparticle: Messias Machado; Roberta Lima; Rene Oliveira; Esperidiana Moura; Hélio Wiebeck; Vijaya Rangari; Shaik Jeelani; ‘University of São Paulo; ‘Instituto de Pesquisas Energéticas e Nucleares; ‘University of São Paulo; ‘Tuskegee University; ‘Tuskegee University

B84: Iron Recovery from Copper Slag Through Oxidation-Reduction Magnetic Concentration at Intermediate Temperature: Zhiwen Wu; ‘Shanghai University

B85: Ioz Impact Test in Epoxy Matrix Composites Reinforced with Hemp Fiber: Lázaro Rothen; Sérgio Monteiro; Frederico Margem; Carlos Mauricio Vieira; Rafael de Castro; Fernanda de Paula; Maycon Gomes; Anna Carolina Neves; ‘State University of Northern of Rio de Janeiro; ‘Instituto Militar de Engenharia; ‘Ise census; ‘Redentor; ‘Instituto Federal Fluminense

B86: Mechanical Behavior of Single Phase Ti-7Al Alloy under Dynamic Compression: Alexandria Will-Cole; Emily Huskins; Adam Pilchak; Brian Schuster; ‘University of Arizona; ‘US Army Research Laboratory; ‘Air Force Research Laboratory
B122: Site Specific Three-Dimensional Structural Analysis Using Focused Ion Beam for Nuclear Materials Forensics: Brandon Chang1; Robert Erlen1; 1Lawrence Livermore National Laboratory

B123: Study of Wettability of Clayey Ceramic and Fluorescent Lamp Glass Waste Powders: Alline Morais1; Sergio Monteiro2; Sebastião Ribeiro3; Leonardo Sardinha1; Carlos Mauricio Vieira1; Instituto Federal Fluminense - IFF; 3Military Institute of Engineering, IME, Materials Science Department; 4University of São Paulo; 3State University of the North Fluminense Darcy Ribeiro – UENF

B124: Study on Raw Sea Sand Iron Ore and Its Beneficiation: Wen-guang Dai1; Shaobo Zheng1; Huigui Li2; Zemin Zhuang2; 1School of Material Science and Engineering, Shanghai University

B125: Taper and Aspect Ratio Calibration in FIB Milling: Ali Hadjikhani1; Paniz Foroughi1; 1FIU

B126: Tensile Strength of Polyester Composites Reinforced with Fique Fibers: Giulio Aito1; Sérgio Monteiro1; Frederico Margem1; Pedro Netto2; Gilêno Daniel1; Maria Carolina Teles2; 1State University of the Northern Rio de Janeiro - UENF; 2IME; FACREDENTOR

B127: The Chemical Composition and Micro-Mechanical Properties of Cooling γ’ Precipitates in a Polycrystalline Nickel Alloy B127: The Chemical Composition and Micro-Mechanical Properties of Cooling γ’ Precipitates in a Polycrystalline Nickel Alloy: Azmi Seyhun Kipcak1; Meral Yildirim1; Tugce Senberber1; Nurcan Tugrul1; Yuji Ohishi1; Hiroaki Muta1; Ken Kurosaki1; Shinsuke Yamanaka1; 1Osaka University; 1State University of the North Fluminense; 2Military Institute of Engineering

B129: The Effects of High Al2O3 on the Metallurgical Properties of Sinter: Yu Wentao1; Zuo Haibin1; Zhang Jiang liang1; 1University of Science and Technology Beijing

B130: Thermal and Mechanical Properties of Bulk ZrB2: Fumihiro Nakamori1; Yuji Ohishi1; Hiroaki Muta1; Ken Kurosaki1; Shinsuke Yamanaka1; 1Osaka University

B131: Thermal Conductivity of Liquid Sn-Bi Alloy: Toshiki Kondo1; Yuji Ohishi1; Hiroaki Muta1; Ken Kurosaki1; Shinsuke Yamanaka1; 1Osaka University

B132: Thermographic Characterization of Electrical Units in Diesel Electric Locomotive for Effective Maintenance: Jeongguk Kim1; Chang-Young Lee1; 1Korea Railroad Research Institute

B133: Thermophysical Properties of Molten Zr-Fe Alloys Measured by Electrostatic Levitation: Yuji Ohishi1; Toshiki Kondo1; Hiroaki Muta1; Ken Kurosaki1; Shinsuke Yamanaka1; Junpei Okada1; Takehiko Ishikawa1; 1Osaka University; 1Japan Aerospace Exploration Agency

B134: Very High Cycle Fatigue Behavior of Magnesium Alloy WE43: Jacob Adams1; J. Wayne Jones1; John Allison1; 1University of Michigan

B135: Automated Orientation and Strain Mapping using Nanobeam Coupled with Precession Electron Diffraction: Xuan Liu1; Amith Darbal1; R. Narayan1; J. Mardini1; S. Nicolopoulos1; J. Weiss1; 1AppFive; 2AppFive LLC; 2University of California, San Diego; 1University of Cambridge; 1Johns Hopkins University

B136: Ti-Cu Alloys in the Semisolid State: Phase Diagram and Determination for the Production of Zinc Borates: SeonHyo Kim1; 1POSTECH

B137: Viscoelastic Property of CaO-SiO2-Al2O3-Na2O-F Based System: Seungho Shin1; JungWook Cho1; DaeWoo Yoon1; JiYeong Baek1; SoonHyo Kim1; 1POSTECH

B138: Zinc Chloride, Sodium Hydroxide and Boric Acid Molar Ratio Determination for the Production of Zinc Borates: Mehmet Burcuin Piskin1; Azmi Seyhun Kipcak1; Meral Yildirim1; Tugce Semberber1; Nurcan Tugrul1; Emek Moroypod Derun1; 1Yildiz Technical University

B139: Zinc Recovery from Zinc Oxide Flue Dust during the Neutral Leaching Process by Ultrasound: Zheng Xiemer1; Li Jing1; Ma Aiyuan1; Peng Jinhu1; Zhang Libo1; Yin Shaohua1; 1Yunnan Provincial Key Laboratory of Intensification Metallurgy, Key Laboratory of Unconventional Metallurgy, Ministry of Education, Kunming University of Science and Technology

B140: Mechanical Performance, Constitutive Response and Fragmentation of Tailored Mesosstructured Aluminum-Based Composites: Andrew Marquez1; Marc Meyers1; Christopher Braithwaite1; Timothy Weh1; Kenneth Vecchio1; David Benson1; Nick Krywopusk1; Melissa Ribero1; 1University of California, San Diego; 2University of Cambridge; 3Johns Hopkins University

B141: Clinker Production from Waste: From Cellulose Industry and Processing Marble and Granite Industry: Leonardo Pedrotti1; Carlos Fontes Vieira1; Jonas Alexandre1; Sergio Monteiro1; Larice Justino1; Gustavo Xavier1; 1Universidade Federal de Viçosa; 2Universidade Estadual Norte Fluminense; 1Instituto Militar de Engenharia

Characterization of Nuclear Reactor Materials and Fuels with Neutron and Synchrotron Radiation — Poster Session

K1: Behavior of Deutride Particle in Zircaloy under Thermal Cycles and Stress Investigated by In-Situ Neutron Diffraction: Jun-ji Liu1; Brent Heuser1; Ke An2; 1University of Illinois at Urbana Champaign; 2Oak Ridge National Laboratory

K2: Characterization of Internal Strain During Incremental Loading of Zircaloy-2: Travis Skippon1; Christopher Cochrane1; Mark Daymond1; 1Queen’s University

K3: High Energy X-ray Diffraction Study of Deformation Behavior of Alloy HT-9: Carolyn Tomchik1; Kun Mo1; Jun-Li Lin1; Yinbin Miao1; Di Yun1; Abdellatif Yacoub1; Jeff Terry1; Jonathan Almer2; Stuart Maloy3; James Stubbins4; 1University of Illinois at Urbana-Champaign; 2Argonne National Laboratory; 3Los Alamos National Laboratory; 4Argonne National Laboratory

K4: In-Situ Synchrotron Investigations on the Deformation-induced Martensitic Transformation in Metastable Austenitic Steels with and without Oxygen-Encrusted Nanoparticles: Yinbin Miao1; Kun Mo1; Zhijian Zhou1; Xiang Liu1; Kuan-Che Lan1; Jonathan Almer2; James Stubbins4; 1University of Illinois at Urbana-Champaign; 2Argonne National Laboratory; 3Los Alamos National Laboratory; 4Argonne National Laboratory

K5: Influence of Thermal Aging on the Tensile Properties of Alloy 617: An In-Situ Synchrotron X-ray Diffraction Investigation: Xiang Liu1; Kun Mo1; Yinbin Miao1; Kuan-Che Lan1; Wei-Ying Chen1; Carolyn Tomchik1; Guangming Zhang1; Rachel Seibert1; Jeff Terry1; James Stubbins1; 1University of Illinois at Urbana-Champaign; 2Argonne National Laboratory; 3University of Science and Technology Beijing; 4Institute of Nuclear Technology

K6: Investigation on Hydride Particle in Zircaloy-4 by Utilizing High Energy Synchrotron X-ray: Jun-ji Liu1; Brent Heuser1; Jonathan Almer2; 1University of Illinois at Urbana-Champaign; 2Argonne National Laboratory

K7: Microbeam X-ray Diffraction and TEM Characterization of Irradiation Effects by Fission Fragment Energy Xe Ion Beam: Di Hua1; Kun Mo1; Ruqing Xu1; Yinbin Miao1; Sumit Bhattacharya1; Walid Mohamed1; Bei Ye1; Michael Pellin1; Abdellatif Yacoub1; 1Argonne National Laboratory; 2University of Illinois at Urbana-Champaign; 1Northwestern University

K8: Structural Investigation of UO2+x at Extreme Conditions by Synchrotron XRD Measurements: Faxiang Zhang1; 1University of Michigan
G1: Atomic Simulations of Deformation of Nanocrystalline Mg-Li Alloys: Shiraj Karewar1; Niraj Gupta1; Sébastien Groh2; Alfredo Caro3; Sriniwasan Sriniviputhur4; Enrique Martinez1; 1University of North Texas; 2TU Bergakademie Freiberg; 3LANL, NM

G2: Computational Modeling Studies of the Minerals Sulphides with Conductivity of Ge/Si Core/Shell Nanowires: Nadezhda Medvedeva 2;  1Missouri University of Science and Technology; Alper Kinaci 3; Justin Huskins 4; Tahir Cagin 5;  1Dokuz Eylul University; 2Institute of Solid State Chemistry Bergakademie Freiberg; 3LANL, NM

G3: Cross-Sectional Size and Interface Roughness Effects on Thermal Conductivity of Ge/Si Core/Shell Nanowires: Sevil Sarikert1; Cem Sevik2; Alper Kinaci3; Justin Huskins4; Tahir Cagin5; 1Dokuz Eylul University; 2Anadolu University; 3LANL, NM


G5: First-Principles Investigation of d-Impurity Effect on Stacking Fault Energy of fcc Iron: Krista Limmer1; Julia Medvedeva1; David van Aken2; Nadezhda Medvedeva2; 1University of North Texas; 2Washington University at St. Louis

G6: Indentation of Zirconium and Zirconia by Atomic Simulation: Zizhe Lu1; Mark Noordhoek1; Aleksandr Chernatynskiy1; Susan Sinnott1; Simon Phillpot1; 1University of Florida

G7: Modelling Rhizophora Mangle L Bark-Extract Effects on Concrete Steel-Rebar in 0.5 M H2SO4: Implications on Concentration for Effective Corrosion Inhibition: Joshua Okenyi1; Cleophus Loto1; Abimbola Popoola2; 1Covenant University, Ota, Nigeria; 2University of Lagos, Nigeria

G8: Numerical Analysis for Thermal Stress of Side Wall with Composite Structure on Twin Roll Strip Casting: Jiang-hong Dong1; Min Chen1; Nan Wang1; 1Northwestern Polytechnical University

G9: Numerical Simulation for the Mixing Process of Converter with Preheating Oxygen: Fuhai Liu1; Rong Zhu1; Kai Dong1; 1University of Science & Technology Beijing

G10: Quantitative Atomic Modeling of Metals at Melting Point Using Phase-Field Crystals: Ebrahim Asadi1; Mohsen Asle Zaeem2; Sasan Nouranian2; Michael Baskes1; 1Missouri University of Science and Technology; 2University of California, San Diego

G11: Energetics for Lead Migration Across Pt/Pb(Zr,Ti)O3 and Pt3Pb/Pb(Zr,Ti)O3 Interfaces: A Computational Study: Fang-Yin Lin1; Aleksandr Chernatynskiy1; Simon Phillpot1; Juan Nino1; Jacob Jones2; Susan Sinnott1; 1University of Florida; 2North Carolina State University

G12: First-Principle Study of Vacancy-Mediated Diffusion of Poor Metals in hcp-Ti: Lucia Scotti1; Alessandro Mottura1; 1University of Birmingham

G13: He Diffusion in Pure and Defected MgO Under High Pressure in Lower Mantle: Zhewen Song1; Henry Wu1; Sujoy Mukhopadhyay2; James Van Orman2; Jane Morgan1; 1University of Wisconsin - Madison; 2Harvard University

G14: High-Throughput Ab-Initio Diffusion with the MAterials Simulation Toolkit (MAST): Henry Wu1; Tam Mayeshiba1; Jane Morgan1; 1University of Wisconsin-Madison

G15: Electro-Thermo-Mechanical Properties and Defect Kinetics in [AxA’(1-x)](ByB’(1-y))O3 Ceramics: Berna Akgezen1; Çetin Tasseven1; Tahir Çağın1; 1Kirikkale University; 2Yıldız Technical University; 3University of Texas A&M University

G16: First Principle Study on Energetic Stability for Mg-Based Long-Period Stacking Ordered Structures: Ryohei Tanaka1; Koretaka Yuge1; 1Kyoto University

G17: Molecular Dynamics Study of Structural and Transport Properties of FeO-SiO2-V2O3 System: Zhen Zhang1; Bing Xie1; Jiang Diao1; Lu Jiang1; Hongyi Li1; 1Chongqing University

G18: Ab Initio Calculation of the Effect of Impurities on Antiphase Boundaries in Ni,Al: Ruoshi Sun1; Christopher Woodward1; Axel van de Walle1; 1Brown University; 2Air Force Research Laboratory

G19: Non-Random Topology of Grain Boundary Network and Its Effect on Grain Boundary Diffusivity: Sharniece Holland1; Lin Li1; 1The University of Alabama

G20: Variant Selection of Grain Boundary: 945 in Bi-Crystalline: The University of Alabama

G21: Non-Destructive Boundary Migration Tracking during Coarsening and Subsequent Quantification of Boundary Dynamics: Siddharth Maddali1; Shilomo Tal’asan1; Robert Suter1; 1Carnegie Mellon University

G22: First-Principles Study on Interface Cohesive Energy for Mo-Based Alloys: Koretaka Yuge1; Yuichiro Koizumi1; Koji Hagihara1; Takayoshi Nakano1; Kyosuke Kishida1; Haruyuki Inui1; 1Kyoto University; 2Tohoku University; 3Osaka University

G23: First-Principles Calculations of Mg/MgO Interfacial Free Energies: Wenwu Xu1; Andrew Horsfield1; David Wearing1; Peter Lee1; 1The University of Manchester; 2Imperial College London

G24: Simulation of Natural Gas Combustion Liftoff and Blowout Phenomenon in Blast Furnace: Yan Chen1; 1Center for Innovation through Visualization and Simulation

Monday PM Room: Atlantic Hall Location: Dolphin

March 16, 2015
G25: Computational Modeling of Mixed Ionic Electronic Conducting (MIEC) Oxygen Separation Membrane: Faile Rabbi1; 1University of South Carolina

G26: Multiscale Modeling for Electrocatalytic Systems: Andrew Antony1; Tao Lian1; Michael Janik1; Janna Maramis1; Susan Sinnott1; Sneha Akhade1; 1University of Florida; 2Pennsylvania State University

G27: Catalytic Effect of Fe2O3, MnO2, and MgO on the Gasification Reaction of Biomass Char: Hai-bin Zuo1; Wei wei Geng1; Guang-wei Wang1; Jian-liang Zhang1; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; 2School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing.

G28: Microstructural Modelling of Dynamic Recrystallization during Friction Suracing: Javed Akram1; Prasad Kalvala1; Mano Misra1; 1University of Utah

G29: The Kinetics Test of Vanadium-Titanium Magnetite Iron Ore in Smelting Reduction: Zemin Zhuang1; Jieyuan Chen1; Bo Meng1; Shaobo Zheng1; 1Shanghai University

G30: Dissipative Particle Dynamics Simulation of the Rheology of Solid-Liquid Coexistence System in BF Slag: Jiujia Tu1; Liangying Wen1; Shengfu Zhang1; Guibao Qiu1; Danyang Zhang1; 1ChongQing University

G31: Study of Combustion Property of Biomass Char/Coal Char Blended Char Based on Isothermal Thermogravimetry in O2/N2 Atmospheres: Haibin Zuo1; Pengchong Zhang1; Guangwei Wang1; Weiwei Geng1; Jianliang Zhang1; 1University of Science and Technology Beijing

G32: Strengthen Reduction Process of Vanadium Titanio-Magnetite Adding NaF under High Temperature: Xu Jiang1; 1Xianyang Vocational Technical College

G33: Thermodynamic Analysis for Formation of Ti(C,N) in Blast Furnace and Factors Affecting TiO2 Activity: Chaoquan Yao1; Jianliang Zhang1; Xinyu Li1; Yapeng Zhang1; Chao Zhang1; 1University of Science and Technology Beijing

G34: A Modified Random Pore Model for Gasification Kinetics of Coal Char and Biomass Char: Guang wei Wang1; Jian liang Zhang1; Wei wei Geng1; Jiu gang Shao1; 1School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

G35: Application of MIVM for Cu-Ni Alloy in Vacuum Distillation: Lingxin Kong1; Anxiang Wang1; Bin Yang1; Baoqiang Xu1; Yifa Li1; Duchun Liu1; 1Kunming University of Science and Technology

G36: Thermodynamic Assessment of Ag-Zr and Cu-Zr Binary Systems: Hsien-Ming Hsiao1; Jia-Ying Dai1; Tzu-Ting Huang1; Song-Mao Liang1; Rainer Schmid-Fetzer1; Yee-Wen Yen1; 1National Taiwan University of Science and Technology; 2Clausthal University of Technology

G37: Crystallization in Supercooled BCC-Vanadium, HCP-Zinc and FCC-Aluminum: Yongquan Wu1; Rong Li1; Junjiang Xiao1; Yewei Jiang1; 1Shanghai University

G38: Portland Cement Clinker Formation: High Temperature Equilibria and Phase Composition Prediction Using a Computational Tool: Daniel Jiménez1; Oscar Restrepo Baena1; 1Universidad Nacional de Colombia

G39: Solid-Like Clusters in Supercooled Liquid Fe: A Study of Molecular Dynamics Simulation: Rong Li1; Junjiang Xiao1; Yongquan Wu1; 1Shanghai University

B142: Fabrication and Characterization of (100)-Oriented Single Crystalline Cu Pads and Lines: Tien-Lin Lu1; Wei-Lan Chu1; Yi-Sa Huang1; Chiu-Ling Lu1; Han-wen Lin1; Chih Chen1; 1National Chiao Tung University

B143: Crystal Plasticity Analysis of Deformation Behavior of Nanocrystalline Nickel: Rai Yuan1; Irene Beyerlein1; Caizhi Zhou1; 1Missouri University of Science and Technology; 2Los Alamos National Laboratory

B144: Deformation Mechanisms in Cu/Nb Nano Layers as Revealed by Synchrotron X-ray Micro Diffraction and In Situ Nano Mechanical Testing Inside an SEM: Karthic Rengarajan1; Lucas Berla1; Nan Li1; Patricia Dickerson1; Jian Wang1; Nobumichi Tamura1; Martin Kunz1; William Nix1; Amit Misra1; Arief Budiman1; 1Singapore University of Technology & Design; 2Stanford University; 3Los Alamos National Laboratory; 4Lawrence Berkeley National Laboratory

B145: Understanding the Strength and Plastic Deformation of Al-Ti Nanolayered Composites by 3-D Dislocation Dynamics Simulations: Sixie Huang1; Caizhi Zhou1; 1Missouri University of Science and Technology
C8: Fatigue Behavior of an X70 Pipeline Steel Functionalized with TiO2
Faïçal Larachi 1; Sébastien Royer 2; Isabelle Batonneau-Gener 2; 1Laval; Engineering Department, University of Puerto Rico, Mayagüez; 2Université de Poitiers; 1March 16, 2015 Monday PM

Fatigue in Materials: Fundamentals, Multiscale Modeling, Life Prediction and Prevention — Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee; Program Organizers: Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Monday PM
March 16, 2015
Room: Atlantic Hall
Location: Dolphin

Session Chair: Antonio Kontsos, Drexel University

C6: Evaluation of Fatigue Strength of the Bogie for Railway: Sung Cheol Yoon1; 1Korea Railroad Research Institute/New Transportation Systems Research Center

C7: Evolution of Welding Residual Stress under Cyclic Loadings: Zhongyuan Qian1; Scott Chumbley; Eric Johnson; 1Invetech LLC; 1Iowa State University; 1John Deere

C8: Fatigue Behavior of an X70 Pipeline Steel: Bilin Chen1; Gongyao Wang; Ke An; Yanli Wang; Peter Liaw1; 1University of Tennessee; 1Oak Ridge National Laboratory

C9: High-Temperature-High Pressure Stress-Strain Testing of Materials in CO2-Containing Saline Solutions: Anja Pfennig1; 1HTW Berlin

C10: Linkage Between Ductile Fracture and Extremely Low Cycle Fatigue of Inconel 718 under Multiaxial Loading Conditions: Mohammed Algarni1; Yuantai Bai1; Yueqian Jia1; Ali Gordon1; Justin Karl1; 1University of Central Florida

C11: The Effect of Galvanically Induced Corrosion Damage on the Fatigue Crack Formation Behavior of Al 7050-T7451: Noelle Easter Co1; James1; 1University of Virginia

C12: Variable Amplitude Loading Effects on a Carbon Filled Styrene Butadiene Rubber: Nicholas Usry1; Marcos Lugó1; Nima Shamsaei1; 1Mississippi State University; 1Center for Advanced Vehicular Systems

C13: Preliminary Investigation of the Influence of Hydrogen on the Fatigue Crack Nucleation of Ti6AI-4V: Leonardo Campanelli1; Claudemiro Bolfarini1; 1Federal University of São Carlos

SPG-6: An Ab Initio-Aided Experimental Investigation on W-Doped Li4Ti5O12 Defect Spinel as Anodes for Li Ion Batteries: Ping-chun Tsai1; Shih-kang Lin1; Wen-Dung Hsu1; 1National Cheng Kung University (NCKU)

SPG-7: Effect of Joint Length on Void Formation and Intermetallic Compound Dissolution for Pb-Free Solders during Electromigration: Tzu-Yu Hsa1; Chung-hsun Tsai1; Fan-Yi Ouyang1; 1National Tsing-Hua University

SPG-8: Effect of Temperature Gradient on the Growth of Ag3Sn Intermetallic Compounds in Sn3.5Ag Solder during Thermo-Compressive Bonding Process: Chieh-Fu Chen1; Yu-Ping Su1; Fan-Yi Ouyang1; 1National Tsing Hua University

SPG-9: Interfacial Effects on MoS2, Electrical Performance: Philip Campbell1; Alexey Tarasov1; Meng-Yen Tsai1; Zohreh Hesabi1; Janine Feirer1; Samuel Graham1; W. Jud Ready1; Eric Vogel1; 1Georgia Institute of Technology

SPG-10: Phase Equilibria of Pb-Sb-Se Ternary Thermoelectric Material System: Jui-Shen Chang1; Sinn-wen Chen1; 1National TsingHua University

SPG-11: Role of Defects on the Electrochemical Performance of Vanadium Oxide for Sodium-Ion Battery: Evan Uchaker1; 1University of Washington

SPG-12: Soft Magnetic Composites of Alumina Coated, Ball Millered Powders Reduce Eddy Current Losses for Electromagnetic Devices: Katie Jo Sunday1; Adam Falcone1; Bill Nguyen1; Eric Angell1; Mitra Taheri1; 1Drexel University

SPG-13: The Influence of Thermal Cycling on the Phase Transformation Temperatures, Structure and Mechanical Properties of Ti50,0Ni50,0 Alloy: Anna Churakova1; Dmitry Guderov1; 1Institute Physics of Advanced Materials

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YP-1: Behavior Training of Actuator Wire with Shape Memory Submitted to Different Amplitude of Electric Current Waves: Cicero Souto1; Evandro Alves Torquato Filho1; Simplicio de Araujo Silva1; Daniel Nicolau Lima1; Juliana Maria de Medeiros Quirino1; 1Federal University of Paraiba

YP-2: Electrochemistry and Materials Chemistry in Service of Extractive Metallurgy and Environmental Issues: Fariba Safizadeh1; Edward Ghal1; Faïcal Larachi1; Sébastien Royer1; Isabelle Batonneau-Gener1; 1Université de Poitiers

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SPG-9: Interfacial Effects on MoS2, Electrical Performance: Philip Campbell1; Alexey Tarasov1; Meng-Yen Tsai1; Zohreh Hesabi1; Janine Feirer1; Samuel Graham1; W. Jud Ready1; Eric Vogel1; 1Georgia Institute of Technology

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FMD 2015 Technical Division Student Poster Contest — Graduate
Sponsored by: TMS Functional Materials Division (formerly EMPMD)

Monday PM
March 16, 2015
Room: Atlantic Hall
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FMD 2015 Technical Division Student Poster Contest — Undergraduate
Sponsored by: TMS Functional Materials Division (formerly EMPMD)

Monday PM
March 16, 2015
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Location: Dolphin

SPU-3: Development of Circuit Integrated Carbon Nanotube Supercapacitors within Doped Silicon Wafers: Ravi Konjeti1; Jud Ready1; Stephan Turano1; 1GTRI

SPU-4: Effect of Temperature on Thermomigration of Solder Joints: Yi-Shan Yang1; Fan-Yi Ouyang1; Tzu-Yang Lin1; 1National Tsing Hua University, Taiwan
A1: Fatigue Life of Friction Stir Welded-Aluminum Alloy 7010 Joints: Mahdy El-Rayess1; Elab El-Dana1; Mahmoud Soliman1; 1King Saud University

A2: Fatigue Performance of Dissimilar Friction Stir Welded Aluminum Alloys 5754—6082: Elab El-Dana1; Mahdy El-Rayess1; 1King Saud University

A3: Effect of Friction Stir Processing on the Damage Resistance of 6xxx Series Aluminum Alloys: Aude Simar1; Florent Hannard; Sidney Castin2; Eric Maire3; Thomas Pardozen1; 1Université catholique de Louvain; 2Université de Technologie de Compiègne; 3Université de Savoie

A4: Temperature Distribution and Welding Distortion Measurements after FSW of Al 6082-T6 Sheets: Iuri Golubev; Evgeni Chernikov; Anton Naumov; Vesselin Michailov; 1St.Petersburg State Polytechnic University; 2National Sun Yat-sen University; 3Instituto Politécnico Nacional

A5: Monitoring of the Quality of AA 6082 — T4 Friction Stir Welded Joints by Acoustic Emission Technique: B M Rajapakshr; Susrasha C N2; Sarala Upadhyya1; 1University Visvesvaraya College of Engineering; 2Jyothy Institute of Technology

A6: Assessment of Friction Stir Weld Quality by Analyzing the Weld Bead Surface Using Both Digital Image Processing and Acoustic Emission Techniques: Rajashekar R1; Rajapaksha B M1; Sarala Upadhyya1; 1University Visvesvaraya College of Engineering

A7: Development of FSW Simulation Model-Effect of Tool Shape on Plastic Flow: Jurika Miyake1; Fumikazu Miyasaka1; Shuhei Matsuzawa1; Shunta Murao1; Kenta Mitsufuji1; Shinnosuke Ogawa1; 1Osaka University

A8: Effect of Rotational Speed on the Microstructure of Friction Stir welded AA 7075-T6 Age Hardenable Aluminum Alloy: Chandrashekhar Gogte1; Ajay Likhite1; Sandip Patil1; Dilip Peshwe1; 1Marathwada Institute of Technology; 2Visvesvaraya National Institute of Technology

A9: Fabrication and Mechanical Properties of Graphite/Aluminum Composite Joints Using Friction Stir Spot Welding: Hyun-Seok Oh1; Yong-Ha Jeong1; Young-Jin Yum1; Doo-Man Chun1; Sung-Tae Hong1; 1University of Ulsan

A10: Fatigue of Life of Friction Stir Welded-Aluminum Alloy 7010 Joints: Magdy El Rayess1; Elab El-Dana1; Mahmoud Soliman1; 1King Saud University

A11: Fatigue Performance of Dissimilar Friction Stir Welded Aluminum Alloys 5754—6082: Elab El-Dana1; Magdy El-Rayess1; 1King Saud University

A12: Improving Heat-Affected Zone Liqueation Cracking Resistance of Magnesium Alloy AZ91E by Friction Stir Processing: G.M. Karthik1; G.D. Janaki Ram1; Ravi Sankar Kottada1; 1Indian Institute of Technology Madras

A13: Effect of Friction Stir Processing on the Damage Resistance of 6xxx Series Aluminium Alloys: Aude Simar1; Florent Hannard; Sidney Castin2; Eric Maire3; Thomas Pardozen1; 1Université catholique de Louvain; 2Université de Technologie de Compiègne; 3Université de Savoie

A14: Temperature Distribution and Welding Distortion Measurements after FSW OF Al 6082-T6 Sheets: Iuri Golubev; Evgeni Chernikov; Anton Naumov; Vesselin Michailov; 1St.Petersburg State Polytechnic University; 2National Sun Yat-sen University; 3Instituto Politécnico Nacional

A15: An Assessment on Mechanical and Microstructural Properties of Underwater Friction Stir Welding of 316 L Austenitic Stainless Steel: Shashi Kumar1; Murugan2; 1Coimbatore Institute of Technology

L1: Solution and Aging of the MAR-M246 Nickel-Based Superalloy: Renato Baldan1; Antonio Augusto Araújo da Silva2; Carlos Nunes1; Antonio Couto1; Sinara Gabriel2; 1IPEN - Nuclear Energy Research Institute; 2USP - University of São Paulo; 3UFRJ - Universidade Federal do Rio de Janeiro

L2: Microstructure and Corrosion Resistance of Laser Welded TP347HFG and VM12-SHC Stainless Steels: Agnieszka Radziszewska1; Mieczyslaw Scendo2; Bogdan Antoszewsic2; 1AGH University of Science and Technology; 2Jan Kochanowski University in Kielce; 3University of Technology in Kielce

L3: Effect of Low Temperature Thermal Treatment on Mechanical Properties of Electrodepositd Bulk Nanocrystalline Fe-Ni Alloys: Isao Matsui1; Hiroki Mor1; Yorinobu Takigawa1; Takutera Uesugi1; Kenji Higashi1; 1National Institute of Advanced Industrial Science and Technology (AIST); 2Osaka Prefecture University

L4: Microstructure and Mechanical Behavior of the A931 Alloy with Fe Addition: Renato Baldan1; Antonio Couto1; Jefferson Malavazi2; 1IPEN - Nuclear Energy Research Institute; 2Escola SENAI Nadir Dias de Figueiredo

L5: Effect of Cu Addition on Microstructures for Ti(C,N)-Mo2C-Ni: Hiroyuki Hosokawa1; Kiyotaka Katou1; Koji Shimojima1; Ryochi Furushima1; Akhiro Matsumoto1; 1National Institute of Advanced Industrial Science and Technology

L6: Study of Behavioral About the Decomposition Reaction of the Solution KFe3(6SO4)2-x(OH)y[OH0.5] in Ca(OH)2 Media: Ister Mireles1; Iván Reyes2; Francisco Patiño3; Mizzain Flores4; Juan Hernández5; Sayra Ordoñez1; Martin1; 1Universidad Autónoma de San Luis Potosí; 2Instituto de Metalurgia, Universidad Autónoma de San Luis Potosí; 3Escuela Superior de Ingeniería Química e Industrias Extractivas, Instituto Politécnico Nacional

L7: Alkaline Reactivity of Solid Solution of NH4-Na Jarosite with Arsenic: Víctor Flores1; Francisco Patiño2; Elia Palacios2; Mizzain Flores2; Iván Reyes2; Martin2; Ister Mireles1; Julio Juárez1; 1Escuela Superior de Ingeniería Química e Industrias Extractivas, Instituto Politécnico Nacional; 2Universidad Autónoma de San Luis Potosí

L8: Studies on Ti-Bearing Blast Furnace Slag Remelting to Extract Alumina: Songli Liu1; 1Panzhihua University of China

L9: The Evolutions of Aluminum Hydroxide Growth Unit Revealed by Lyophilization Method: LiJiao Zhou1; Zhoulan Yin1; Zhiying Ding1; Jun Li1; Jing Hung1; 1Central South University

L10: Coercivity Enhancement of Nd-Fe-B Sintered Magnet by Mo Addition: Jin Woo Kim1; Won Suk Lee1; Jong Min Byun1; Se Hoon Kim1; Young Do Kim1; 1Hanyang University; 2Korea Automotive Technology Institute

L11: Structural and Optical Properties of Ag-Doped Copper Oxide Thin Films on Polyethylene Naphthalate (PEN) Substrate: Sayantan Das1; Zhao Zhao1; Terry Alford1; 1Arizona State University

L12: Hydrogen Absorption-Desorption Properties of Mg/Ti Multi-Layer: Takuma Hashimoto1; Mitsuotu Notomi1; 1Graduate Meiji University; 2Meiji University
C19: Temperature Dependence of the Mechanical Properties of Equiatomic Solid Solution Alloys with FCC Crystal Structures: Zhenggang Wu1; Hongbin Bi1; George Pharr2; Easo George2; 1Oak Ridge National Laboratory

C20: The Influence of Alloy Composition on Phase Stability and Mechanical Properties of Laser Deposited AlTiFeCrCu Alloys: Kyle Johnson1; Mark Horstemeyer2; Cassie Bennett1; Denver Seely2; 1Mississippi State University

Hume-Rothery Award Symposium: Multicomponent Alloy Metallurgy, the Bridge from Materials Science to Materials Engineering — Poster Session

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Alloy Phases Committee

Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Mark Asta, University of California at Berkeley; Raymundo Arroyave, Texas A&M University

Monday PM Room: Atlantic Hall Location: Dolphin

G40: CALPHAD Thermodynamics, Phase Stability and Phase Transformations in Complex Actinide-Based Alloys: Aurelien Perron1; Patrice Turchi1; Alexander Landalda1; Benoît Oudot1; Brice Ravat1; François Delaunay1; Lawrence Livermore National Laboratory; 1CEA-Centre de Valduc

G41: Interdiffusion and Reaction in Binary Al vs. Zr and Ternary Al-Si vs. Zr Diffusion Couples: Abhishek Mehta1; Dennis Keiser1; Yongho Sohn1; 1University of Central Florida; 2Idaho National Laboratory

G42: Interdiffusion in Ni-Mn-Ga Alloys: Le Zhou1; Anit Giri1; Kyo Cho1; Yongho Sohn1; 1University of Central Florida; 2TKC Global; 3US Army Research Laboratory

G43: Interdiffusion in Ternary Magnesium Solid Solutions of Aluminum and Zinc: Catherine Kammerser1; Nagaraj Kulkarni1; Bruce Warmack1; Yongho Sohn1; 1University of Central Florida; 2Oak Ridge National Laboratory

G44: Investigating Pattern Formation during Three-Phase Eutectic Solidification in Three Dimensions Using Experiments and Phase-Field Simulations: Abhik Choudhury1; 1Institute of Materials and Processes

G45: Multicomponent Manganese Silicides in a General Calphad Approach: Jean Claude Tedenac1; Alexandre Berche1; Philippe Jund1; 1University Montpellier

G46: Simulation of Fe-Cr-X Alloys Exposed to Oxyfuel Combustion Atmospheres at 600°C: Andre Costa E Silva1; Daniel Coelho1; Axel Kranzmann1; Fernando Rizzo Assuncao1; 1EEMVR - Universidade Federal Fluminense - IBQn; 2PUC Rio; 3BAM Berlin

G47: Random Walk of a Solute Loaded Grain Boundary: Monesheh Upmanyu1; Changjiang Wang1; 1Northeastern University

G48: Revisiting Boron-Carbon-Hafnium-Zirconium Thermodynamics: Theresa Davie1; Suzana Fries1; Michael Finnis1; Alan Dinsdale1; 1Imperial College London; 2Ruhr-Universität Bochum; 3National University of Science and Technology “MISIS”

G49: The Itinerant Coherent Potential Approximation for Phonons: Role of Fluctuations for Systems with Magnetic Disorder: Biswanath Dutta1; Fritz Körnmann1; Tilman Hickel1; Subhradip Ghosh1; Biplab Sanyal1; Jörg Neugebauer1; 1Max-Planck-Institut für Eisenforschung GmbH; 2Indian Institute of Technology Guwahati; 3Angstromlaboratoriet, Uppsala University

High-Entropy Alloys III — HEAs Special Poster

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

Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside

Monday PM Room: Atlantic Hall Location: Dolphin

C14: Characterization of a High Strength, Refractory High Entropy Alloy, AlMn$_3$NbTa$_2$TiZr$_2$: Utilizing Spatially Resolved Energy Dispersive X-ray (EDX) Spectroscopy and STEM-HAADF 3D Tomography: Jacob Jensen1; John Sosa1; Gopal Viswanathan1; Daniel Huber1; Robert Williams1; Oleg Senkov2; Hamish Fraser1; 1The Ohio State University; 2Air Force Research Laboratory

C15: Effect of Annealing on Phase Composition and Microstructure of the CoCrFeNiMnV$_x$ (x = 0.25, 0.5, 0.75, 1) High Entropy Alloys: Nikita Stupanov1; Dmitry Shaysultanov1; Gennyadi Salishchev1; Mikhail Tikhonovskiy1; Oleg Senkov2; 1Belgorod State University; 2National Science Center “Kharkov Institute of Physics and Technology” NAS of Ukraine; 3UES, Inc.

C16: High Temperature Mechanical Properties of High Entropy Alloys Evaluated by Instrumented Indentation Test: Hyun Seok Oh1; Jin Yeeon Kim1; Jong Hyoun Kim1; Dong Il Kwon1; Eun Soo Park1; 1Seoul National University

C17: Microstructural Evaluation of Ni-Superalloy Based High Entropy Systems: Joseph Licavoli1; Paul Jablonski1; John Sears1; Jeffrey Hawk1; 1Department of Energy

C18: Microstructural Evolution of Cu/CoCrFeNi High Entropy Alloy Composite under Electron Irradiation: Jinyeon Kim1; Hyunseok Oh1; Seung Jo Yoo1; Jonghan Won1; Eun Soo Park1; Hye Jeong Chang1; 1Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University; 2Korea Basic Science Institute; 3Advanced Analysis Center, Korea Institute of Science and Technology

L51: Increasing of Productivity by Optimization of Alumina Feeding System at PT Inalum, Indonesia: Muhammad Syafiri Sanardi1; S. Sijabat1; E. Ivan1; Ade Buandra; D Kusnandar2; 1PT. Indonesia Asahan Aluminium (INALUM); 2PT Indonesia Asahan Aluminium

L52: Dynamic Mechanical and Optical Response of Dielectric Mirrors and Optical Microcavities: David Scripka1; Garrett Lecroy1; Christopher Summers1; Naresh Thadham1; 1Georgia Institute of Technology

L53: Plasma Spray-deposited Graphene Oxide Reinforced Nano-alumina Composite Coatings for Anti-Corrosion Applications: Shashank Saraf1; Ankur Gupta1; David Ward1; Swetha Barkani1; Jeff Bullington1; Sudipta Seal1; 1University of Central Florida; 2Garmor Tech

L54: Formation of MnCr2O4 Spinel Oxide in a 9Cr Oxide Dispersion Strengthened Steel: Xue Hu1; Wei Yan1; Wei Wang1; Yiyin Shao1; Ke Yang1; 1Institute of Metal Research, Chinese Academy of Sciences

L55: Synthesis of Metastable NiGe2 by Mechanical Alloying: Ahmed Al-Jaabour1; C. Suryanarayana1; 1University of Engineering and Technology; 2Indian Institute of Technology Guwahati; 3Angstromlaboratoriet, Uppsala University

L56: Behavior of Swelling Elastomers in Water, Oil, and Acid: Sayyad Qamar1; M. Akhtar1; Tasneem Pervez1; 1Sultan Qaboos University; 2NED University of Engineering and Technology

L57: Performance Improvement of Metal Extrusion Dies: Sayyad Qamar1; 1Sultan Qaboos University

L58: Identification of Cr-Y-O Nano-Cluster in a 14Cr Oxide Dispersion Strengthened Steel: Xue Hu1; Wei Yan1; Wei Wang1; Yiyin Shao1; Ke Yang1; 1Institute of Metal Research, Chinese Academy of Sciences
Magnesium Technology 2015 — Poster Session
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Michele Manuel, University of Florida; Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science; Neale Neelameggham, Ind LLC
Monday PM Room: Atlantic Hall Location: Dolphin

H19: Effect of Shear Rate on Shape and Size of Solid Particles in AZ91Ca Magnesium Alloy Semi-Solid Slurry: Yuichiro Murakami1; Naoki Omura2; Mingjun Li1; Isao Matsui1; Shuji Tada1; 1Advanced Industrial Science and Technology

H20: Effects of Alloying Addition on the Incipient Plasticity and Deformation Behavior of Magnesium Alloys by Spherical Indentation: Ghazal Nayyer1; Warren J. Poole1; Chad W. Sinclair1; 1University of British Columbia

H21: Formation of ZrO2 in Coating on AZ31 Mg Alloy Processed by Plasma Electrolytic Oxidation: Kang Min Lee1; Yeon Sung Kim1; Ki Ryong Shin1; Young Gun Ko1; Dong Hyuk Shin1; 1Hanyang University; 2Yeungnam University

H22: Effects of Trace Elements on Microstructure, Mechanical Properties and Formability of Mg-Li Based Alloys: Hyeon-Taek Son1; Yong-Ho Kim1; Jung-Han Kim1; Hyo-Sang Yu1; 1Korea Institute of Industrial Technology

H23: Role of Yttrium Solute on Compression Behavior of Mg-Y Alloy: Tetsuya Ueda1; Masaki Nagao2; Hitoshida Somekawa2; Alok Singh2; Toshihi Mukai1; 1Kobe University; 2National Institute for Materials Science

H24: Study of Extrude-Ability on Different Extrusion Speed and Temperature of Mg-11Li-6Zn-0.6Zr-0.4Ag-0.2Ca Alloy: Yong-Ho Kim1; Jung-Han Kim1; Hyeon-Taek Son1; 1Korea Institute of Industrial Technology

H25: Analysis of Dislocation Mediated Precipitation in an Mg-Y-Nd Alloy: Sivanesh Palanivel1; Rajiv Mishra1; Raymond Brennan1; Kyu Cho2; 1University of North Texas; 2US Army Research Laboratory

H26: Characterization of Interdiffusion and Reaction Products in the Mg-Gd System: Catherine Kammerer1; Kyu Cho1; Yongho Sohn1; 1University of Central Florida; 2US Army Research Laboratory

H27: Polycrystalline Modelling of Extruded Magnesium Mechanical Responses during Dynamic Loading: Farhoud Kabir1; Akhtar Khan1; 1University of Maryland, Baltimore County

H28: The Development Manufacturing Process for the Commercial Vehicle’s Arm-Rest with the High-Vacuum High-Pressure Die-Casting Process: Min Seok Moon1; Myeong Han Yoo1; Sang Yoap Oh1; Je Ha Oh1; Shin Jae Kang1; 1Korea Institute of Carbon Convergence Technology; 2Jeonbuk National University

H29: High Temperature Deformation Behaviour of AZ31 Alloy in Tension and Compression: K. F. Rao1; K. Suresh1; Y.V.R.K. Prasad2; 1City University of Hong Kong; 2processingmaps.com

H30: The Effect of Micro and Macro Galvanic Current on Cerium Conversion Coatings: Surender Maddela1; Matt O’Keefe1; 1Missouri University of Science and Technology

H31: Plasma Electrolytic Oxidation Coating of 1000HV Hardness on Mg Alloys: Yonghwan Kim1; Eunsol An1; Eunyoung Choi1; Uoochang Jung1; 1Korea Institute of Industrial Technology

H32: Investigating Reversible Hysteresis In Magnesium Single Crystals Using A Spherical Tip Under Nanoindentation: Justin Griggs1; 1Drexel University

H33: Squeeze Casting of Magnesium Alloy AM60 Refined by C2Cl6: Yanda Zou1; Xuezhi Zhang1; Henry Hu1; Li Fang1; 1University of Windsor

LMD 2015 Technical Division Student Poster Contest — LMD 2015 Student Poster Contest - Graduate
Sponsored by: TMS Light Metals Division
Monday PM Room: Atlantic Hall Location: Dolphin

SPG-15: Texture Weakening of AZ31 Mg Alloy Sheet by Low Temperature Rolling and Subsequent Annealing: Jing Su1; Abu Syed Humananur Kabir1; Mehdi Sanjari1; In-ho Jung1; Steve Yue1; Hiroshi Utsumoniya1; 1McGill; 2Osaka University

SPG-14: Study of Aluminium Matrix Composite (AMC) Used in the Deposition of Thin Films by RF Sputtering Magnetron: Ulises Barajas1; Anthony Rivera1; Marcelo Suárez1; 1University of Puerto Rico

YP-7: DC Casting of 3003 Alloy Clad by 4045 Alloy: Jianzhong Cui1; Philip Achuzia1; 1University of Lagos

YP-6: A Study on Mechanical Properties of Particulate Reinforced 6063 Aluminium Alloy: Osoba Lawrence1; Philip Achuzia1; 1University of Lagos

YP-8: Formation of Long Periodic Stacking Ordered Structures (LPSOs) in Mg-Zn-Y Alloys Through Inversed Martensite Transformation: William Wang1; Shunli Shang1; Yi Wang1; Hongyueun Kim1; Kristopher Darling2; Laszlo Sabbaghianrad1; Terence Langdon1; 1University of Southern California

YP-9: Microstructural Evaluation and Mechanical Properties of a Spray-Coated Magnesium Alloy: Sivanesh Palanivel1; Rajiv Mishra1; Raymond Brennan1; Kyu Cho2; 1University of North Texas; 2US Army Research Laboratory

LMD 2015 Technical Division Young Professional Poster Contest
Sponsored by: TMS Light Metals Division, TMS: Young Professionals Committee
Monday PM Room: Atlantic Hall Location: Dolphin

YP-5: Study on Mechanical Properties of Particulate Reinforced 6063 Aluminium Alloy: Osoba Lawrence1; Philip Achuzia1; 1University of Lagos

YP-1: DC Casting of 3003 Alloy Clad by 4045 Alloy: Jianzhong Cui1; Key lab. of EPM, Northeastern University

YP-3: Characterization of Interdiffusion and Reaction Products in the Mg-Gd System: Catherine Kammerer1; Kyu Cho1; Yongho Sohn1; 1University of Central Florida; 2US Army Research Laboratory

YP-4: Study of Extrude-Ability on Different Extrusion Speed and Temperature of Mg-11Li-6Zn-0.6Zr-0.4Ag-0.2Ca Alloy: Yong-Ho Kim1; Jung-Han Kim1; Hyeon-Taek Son1; 1Korea Institute of Industrial Technology

YP-2: The Development Manufacturing Process for the Commercial Vehicle’s Arm-Rest with the High-Vacuum High-Pressure Die-Casting Process: Min Seok Moon1; Myeong Han Yoo1; Sang Yoap Oh1; Je Ha Oh1; Shin Jae Kang1; 1Korea Institute of Carbon Convergence Technology; 2Jeonbuk National University

YP-1: High Temperature Deformation Behaviour of AZ31 Alloy in Tension and Compression: K. F. Rao1; K. Suresh1; Y.V.R.K. Prasad2; 1City University of Hong Kong; 2processingmaps.com

YP-3: Plasma Electrolytic Oxidation Coating of 1000HV Hardness on Mg Alloys: Yonghwan Kim1; Eunsol An1; Eunyoung Choi1; Uoochang Jung1; 1Korea Institute of Industrial Technology

YP-4: Investigating Reversible Hysteresis In Magnesium Single Crystals Using A Spherical Tip Under Nanoindentation: Justin Griggs1; 1Drexel University

YP-5: Squeeze Casting of Magnesium Alloy AM60 Refined by C2Cl6: Yanda Zou1; Xuezhi Zhang1; Henry Hu1; Li Fang1; 1University of Windsor

H35: Reversible Plastic Deformation Through Unit-Cell-Reconstruction in Magnesium: Boyou Liu1; Zhi-Wei Shan1; ‘Xi’an Jiaotong University

H36: Microstructure Evolution of Magnesium Alloys at High Temperature and on Plastic Deformation – In-Situ Quantum Beam Studies in a Materials Oscilloscope: Klaus-Dieter Liss1; Pingguang Xu2; Kun Yan3; Mark Reid4; Takahisa Shobu5; Ayumi Shirou6; Shuoyuan Zhang7; Hiroshi Suzuki8; Eitaro Yukutake9; Stefanus Harjo9; Takuro Kawasaki9; Kazuya Aizawa9; Koichi Akita10; ‘Australian Nuclear Science and Technology Organisation; ‘Japan Atomic Energy Agency; ‘University of Manchester; ‘University of Wollongong; and ‘Australian Nuclear Science and Technology Organisation; ‘Comprehensive Research Institute for Advanced Petrochemicals

H37: Deformation Behavior of Twin-Roll Strip-cast Mg-Zn-Al-Mn Alloys: Sang Jun Park1; Hwa Chul Jung2; Kyung Hoon Lee3; Kwang Seon Shin4; ‘Magnesium Technology Innovation Centre / Seoul National University; ‘Solution Lab

H38: Anisotropy Investigation of Strips from Twin-Roll Cast AZ31 Magnesium Alloy during Tensile Tests: Mariia Zimina1; Jan Bohlen2; Gerrit Kurz2; Dietmar Letzig2; Michaela Poková1; Premysl Malek1; Miroslav Cieslar1; ‘Charles University in Prague; ‘Magnesium Innovation Centre (MagIC) Helmholtz Zentrum Geesthacht

H39: The Processing-Structure-Properties Relationships for Magnesium Alloys during Shear Assisted Indirect Extrusion: Vinmeet Joshi1; Saumyadeep Jana1; Arun Devaraj1; Eric Nyberg1; Curt Lavender1; ‘Pacific Northwest National Laboratory

Magnetic Materials for Energy Applications V — Poster Session

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Francis Johnson, GE Global Research; Raju Ramanujan, Nanyang Technological University; Paul Ohodnicki, National Energy Technology Laboratory

Monday PM
Room: Atlantic Hall
Location: Dolphin

Session Chairs: Huseyin Ucar, Oak Ridge National Laboratory; Xiujuan Jiang, Pacific Northwest National Laboratory

J14: Bulk Combinatorial Assessment of Permanent Magnet Alloys: Ryan Ott1; Jie Geng2; Matthew Bessert3; Emrah Simsek3; Matthew Kramer3; ‘Ames Laboratory (USDOE); ‘Ames Laboratory (USDOE)

J15: Compression Molding Processing of Alnico-based Permanent Magnets: Aaron Kassen1; Emma White1; Andriy Palasyuk1; Lin Zhou1; William McCullam1; Iver Anderson1; ‘Ames Laboratory

J16: Effect of Atomic Order on the Phase Transitions of Melt-Spun Ni43.5Mn56.5In6 Ribbons: Feng Xu1; Zhiqin Liao1; Xiaoping Bao1; ‘Nanjing University of Science and Technology

J17: Exchange Bias and Magnetic Hardening in Mn65Fe20Ru15Sn: Jason Douglas1; Juan Castillo1; Tresa Pollock1; Ram Seshadri1; ‘University of California Santa Barbara

J18: Magnetic Properties of Nanocrystalline Microwires: Ahmed Talatt1; Valentina Zhukova2; Mihail Ipatov2; Juan Blanco3; Rastislav Varga3; Peter Klein3; Blanca Hernandez2; Lorena Gonzalez-Legarreta2; Arcady Zhukov3; ‘Basque Country University, UPV/EHU; ‘Institute of Sciences, Faculty of Science, University of Pavol Jozef Safarik.; ‘Oviedo University; ‘Basque Country University and Ikerbasque

J19: Magnetostuctural Transition in Heusler Mn-Ni-In Melt-Spun Rubbons: Hongwei Li1; Jian Ren2; Jinke Yu2; Hongxing Zheng2; ‘Laboratory for Microstructures, Shanghai University

J20: On Magnetocaloric Properties of (Pr, Dy)Fe9 Alloys: Rim Guetari1; Corneliu Bazil Cimzas1; Lotfi Bassaas2; Najeh Milik3; ‘LMOP, Faculty des Sciences de Tunis, Université de Tunis El Manar; ‘Transilvania University of Brasov; ‘ICMPE, UMR7182 CNRS-UPMC

J21: Sintering and Characterization of Ni-Mn-Ga Alloy via Spark Plasma Sintering (SPS) and Conventional Routes: Roobzeh Nikkhah Moshaie1; Benjamin Boes1; Selva Venilla Raju1; ‘Florida International University

J22: Magnetization Density Distribution Studies Using the HYSPEC Spectrometer at the Spallation Neutron Source: Ovidiu Garlea1; Barry Wimm1; Melissa Graves-Brook1; ‘Oak Ridge National Laboratory

Materials and Fuels for the Current and Advanced Nuclear Reactors IV — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday PM
Room: Atlantic Hall
Location: Dolphin

Session Chair: Ramprashad Prabhakaran, Pacific Northwest National Laboratory

K9: Validation and Numerical Simulation for Shrinkage Porosity of an X12 Steel Ingot: Zheng Chen1; Qijie Zhai2; Jieyu Zhang2; ‘Shanghai University, Tongling University; ‘Shanghai University

K10: Reactivity Suppression of Liquid Sodium by Suspended Nanoparticles: Jun-ichi Saito1; Keiichi Nagai2; Kuniai Ara2; ‘Japan Atomic Energy Agency

K11: Irradiation-Induced Microstructural Evolution and Hardening in Grade 92 Steel under the Influence of Fe-ion Irradiation: Sultan Alsagabi1; Indraajit Chari1; ‘KACST; ‘University of Idaho

K12: The Effects of Irradiation on China RPV Steel Cleavage Fracture Behavior: Zhen feng Tong1; Guang sheng Ning1; Chang yi Zhang1; Wen Yang1; ‘China Institute of Atomic Energy

K13: Irradiation Damage in Ultra-Fine and Large Grain Zirconium Materials: Sean Gonderman1; TJ Novakovski1; Osman El-Atwani1; Sudipta Biswas1; Vikas Tomar1; Sivanandan Harilal2; ‘School of Nuclear Engineering, Purdue University; ‘School of Aeronautics and Astronautics, Purdue University

K14: Enhanced Irradiation Tolerance of Ultrafine Grained T91 Steel Processed by Equal Channel Angular Extrusion: Miao Song1; Karl Hartwig1; Xianghang Zhang1; ‘Texas A&M University

K15: Serrated Flow in 9-11Cr Ferritic/Martensitic Steels: Yanzhong Shen1; Zhiqiang Xu1; Jianru Li1; ‘Shanghai Jiao Tong University

K16: Microstructural Study of Disperosids in Fe-14Cr-0.25Hf and Fe-14Cr-0.25Hf-0.25Y2O3 Spark-Plasma Sintered ODS Alloys: Tian Huang1; Mike Gorley1; Steve Roberts1; ‘University of Oxford

K17: Development of Nuclear Quality Components Using Metal Additive Manufacturing: Pedro Frigola1; Peter Hosemann1; Sara Gaytan1; Ryan Wicker1; Alejandro Hinojos1; ‘RadiBeam Technologies; ‘UC Berkeley Department of Nuclear Engineering; ‘UTEP, W.M. Keck Center for 3-D Innovation

K18: Effect of Strain and Degree of Sensitization in TGSSC Susceptibility of Stainless Steel in High Temperature: Carlos Aragon1; Jose Malo1; ‘Instituto Nacional de Investigaciones Nucleares

K19: Interaction of Selected MAX Phases with Pure Sodium: Grady Bentzel1; Michel Barmeau1; ‘Drexel University

K20: Interaction of Selected MAX Phases with Pyrolytic Carbon and Silicon Carbide: Grady Bentzel1; Michel Barmeau1; ‘Drexel University
K21: Physical Properties and Corrosion Studies of Titanium Aluminum Carbide Coatings: Devin Roberts1; Yueying Wu2; Philip Rack3; Mauilok Patel1; Joanna Partezana1; Robert Comstock1; Kurt Sickafus1; ‘University of Tennessee; ‘Westinghouse Electric Co.

K22: Ductile-Phase-Toughened Tungsten Laminates for Plasma-Facing Materials: Kevin Cunningham1; G. Robert Odette2; Kirk Fields2; David Gragg1; Frank Zok1; Charles Henager2; Richard Kurtz3; ‘University of California, Santa Barbara; ‘Pacific Northwest National Laboratory

K23: Influence of Grain Boundary Character on the Accumulation of Irradiation Damage: Daniel Foley1; Yongqiang Wang2; Jon Baldwin1; Mitra Taheri1; Garrit Tucker1; ‘Drexel University; ‘Los Alamos National Laboratory

K24: Early Stage Corrosion Study of Zircaloy-4 Inside a Transmission Electron Microscope: Wayne Harlow1; Hessam Ghassemi1; Mitra Taheri1; ‘Drexel University

K25: Damage Evolution in Irradiated SiC: Modeling and Experimental Study: Hao Jiang1; Xing Wang1; Dane Morgan1; Paul Voyles1; Izabela Szulraszka1; ‘University of Wisconsin - Madison

K26: Characterization of a Bending Fatigue Mini-Specimen Technique (Krouse Type) of Nuclear Materials: Ahmed Haidyrah1; Carlos Castano1; Joseph Newkirk1; ‘MST

K27: Corrosion Studies on U-Mo Fuel for Research Reactor Applications: Ramprashad Prabhakaran1; Laravel Garden2; Curt Lavender1; Vineet Joshi2; Douglas Burkes1; ‘Pacific Northwest National Laboratory; ‘Utah State University

K28: Investigation of Tungsten-Yttrium Based Structural Materials for Nuclear Reactor Applications: Gustavo Martinez1; Ramana Chintalapalle1; ‘University of Texas at El Paso

Materials Processing Fundamentals — Poster Session
Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: James Yurko, Materion Brush Beryllium and Composites; Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Jonghyun Lee, University of Massachusetts; Laura Bartlett, Texas State University

Monday PM
March 16, 2015
Room: Atlantic Hall
Location: Dolphin

E1: A Technique to Quantify Recrystallization: Panthea Sepehrband1; Bersabe Morales1; Andres Maldonado-Liu1; ‘Santa Clara University

E2: Application of Computational Thermodynamics to Steel Processing – The Case of Steel Cleanliness: Andre Costa E Silva1; Livia Goulart1; Ely Araujo1; Rafaela Batista1; Augusto Martins1; ‘EEIMVR - Universidade Federal Fluminense - IBQN; ‘VSBM; ‘CSN

E3: Characterization of Hot Deformation of 690MPa HSLA Steel for Shipbuilding: Yong Shuai1; Lefei Sun1; ‘China Iron & Steel Research Institute Group; ‘Xinyu Iron and Steel Company

E4: CO2 Capture and Conversion Using a Cobalt(III) Schiff Base Complex as a Catalyst at Ambient Conditions: Jun Miao1; Jilai Xue1; Jun Zhu1; Kang Liu1; Feng Chang1; ‘University of Science and Technology Beijing

E5: Combined Effects of Silicon (Si) and Low Temperature Annealing on the Tensile Properties of Cartridge (70/30) Brass with Nickel (Ni) and Iron (Fe) Contaminants: Adebukola Adegbola1; Adeyemi Adeyemo1; Simeon Ibiron1; Taiwo Adeboje1; Olausamkumi Raji1; Olufemi Ladipos1; ‘The Polytechnic, Ibadan; ‘University of Pretoria; ‘Obafemi Awolowo University

E6: Correlation of Interfacial Microstructure and Bonding Strength in Roll-Bonded Two-Ply Mg/Al Clad Sheets: Hyejin Song1; Jung-Su Kim1; Kwang Seok Lee1; Yong Nam Kwon2; Young Won Chang3; Sungkuk Lee3; ‘Center for Advanced Aerospace Materials/POSTECH; ‘Korea Institute of Materials Science; ‘Graduate Institute of Ferrous Technology/POSTECH

E7: Effect of Lime on Alumina Extracting Property of Calcium Aluminate Slag: Bo Wang1; Yubing Zhang1; Lijuan Ma1; Huilan Sun1; ‘Hebei University of Science and Technology; ‘Zhengzhou Railway Vocational and Technical College

E8: Effect of Laminar Cooling Parameters On Martensite Volume Fraction and Mechanical Properties of Hot Rolled Dual Phase Steel: Sibel Dagil1; Isil Kerti1; Sinem Yildirim1; ‘Yildiz Technical University

E9: Effect of Oxide Film at Bubble Surface on Stability of Aluminum Foams in Gas Injection Process: Yanxiang Li1; Yutong Zhou1; ‘Tsinghua University

E10: Effect of Run Parameters on Force, Slip and Crown in Cold Strip Rolling: Ahmed Elkholty1; A.H. Falah1; ‘Kuwait University

E11: Effects of Power Ultrasound on Precipitating Process of Silica Particles from Sodium Silicate Solutions: Tiepeng Li1; Jilai Xue1; Jun Zhu1; Wenbo Luo1; ‘University of Science and Technology Beijing

E12: Extraordinary Strain Hardening by Gradient Structure: Xiaolei Wu1; Yuntian Zhu1; ‘Institute of Mechanics, Chinese Academy of Sciences; ‘North Carolina State University

E13: Nucleation and Growth in the Equiaxed Zone of Metal Matrix Composites: Alicia Ares1; Carlos Enrique Schvezov2; ‘CONICET/FCEQyN-UnNaM; ‘IMAM (CONICET-UnNaM)

E14: Numerical and Experimental Studies of Residual Stresses and Eccentricity of Drawn Copper Tubes with Tilted and Shifted Die: Farzad Foudian1; Adele Carrado1; Heinz Palkowski1; ‘Clausthal University of Technology; ‘Institut de Physique et Chimie des Matériaux de Strasbourg

E15: Numerical Investigation on Breakup of Steel-Slag Interface during Ladle Change-Over Process: Md Irfanul Siddiqui1; Pradeep Jha1; ‘Indian Institute of Technology, Roorkee

E16: Reaction between MnO-SiO2-FeO Oxides with Low FeO Content and Solid Steel Oxidized by Si and Mn during Heat Treatment: Chengsong Lin1; Jingshe Li1; Shufeng Yang1; ‘University of Science and Technology Beijing

E17: Thermodynamic Study on Vanadium Extraction with CO2 and O2 Mixed Blowing: Wei-Tong Du1; Yu Wang1; Gang Wen1; ‘Chongqing University

E18: The Effect of Graphene on the Microstructure and Mechanical Properties of Aluminum/Graphene Produced by HFT: Liyuan Zhao1; Huijin Lu1; Zhijiang Gao1; ‘Beihang University

E19: The Extent of Dopant Activation after Microwave and Rapid Thermal Annealing Using Similar Heating Profiles: Taliya Gunawan1; Zhao Zhao1; N. Theodore1; Apriliya Lanz2; Terry Alford1; ‘Arizona State University; ‘Norfolk State University

E20: Prepare for U3O8 from Ammonium Uranil Carbonate Using Microwave Calcination: Bingguo Liu1; Jinhui Peng1; ‘Kunming University of Science and Technology
C21: Charged Particle Irradiation Studies of High Dose Precipitation in Reactor Pressure Vessel Steels: Nathan Almirall1; Peter Wells1; Takuya Yamamoto1; G. Robert Odette2; Keith Wilford3; Tim Williams2; Kenta Murakami4; Sosuke Kondo5; Akihiko Kimura5; University of California Santa Barbara; Rolls-Royce; 1The University of Tokyo; 2Kyoto University

C22: Low Dose Proton Irradiation Creep of FM Steel T91: Cheng Xu1; Gary Was1; University of Michigan

C23: Modeling of Tensile Deformation and Ductile Damage Evolution in Irradiated Ferritic/Martensitic Steels: Pritam Chakraborty1; S. Bulent Biner1; 1Idaho National Laboratory

C24: A Hierarchical Model for Radiation Defect Accumulation and Hardening: Aaron Dunn1; Laurent Capulong1; Remi Dingreville1; 2Georgia Institute of Technology; 2Sandia National Laboratory

C25: Segregation Behaviour of Transmutation Elements Ca, Ti, Sc in the F82H Steel Irradiated under Mixed Spectrum Irradiation of High Energy Protons and Spallation Neutrons: Cristelle Pareige1; Viacheslav Kuksenko2; Philippe Pareige1; Yong Dai1; University of Rouen; 2PSI

C26: Swelling, Grain Stability and Hardness Changes of Several Variants of Ferritic Alloy: Oak Ridge National Laboratory

C27: Microstructure and Mechanical Property Evolution during Tube Processing of Oxide Dispersion Strengthened (ODS) Ferritic Steels: Eda Aydogan1; T. Chen1; D. Chen1; J. Gigax1; X. Wang1; C.C. Wei1; L. Shao1; P.S. Dzhumaev1; O.V. Emelyanova1; M.G. Ganchenkova1; B.A. Kalin1; M. Leonitva-Smirnova1; R. Valley1; N. Enikeev1; M. Abramova1; Y. Wu1; W.Y Lo1; Y. Yang1; M. Short1; F.A. Garner1; Texas A&M University; 1Moscow Engineering and Physics Institute; 2Bochvar Institute of Inorganic Chemistry; 3Institute of Physics of Advanced Materials and Nanocenter; Massachusetts Institute of Technology; 1University of Illinois, Urbana-Champaign; 2Radiation Effects Consulting

C28: Swelling. Grain Stability and Hardness Changes of Several Variants of Ferritic Alloy: Oak Ridge National Laboratory

C29: Effects of Co-Injected Helium on the Irradiated Microstructure in Ion-Irradiated T91 Steel: Stephen Fuller1; Zhijie Jiao1; Gary Was1; University of Michigan

C30: Issues Concerning Neutron-Atypical Artifacts Introduced by Ion Irradiation Experiments for Simulation of Neutron Irradiation of Pure Iron: Liu Shao1; Jonathan Gigax1; Di Chen1; Tianyi Chen1; Frank Garner1; Texas A&M University; Radiation Effects Consulting

C31: The Strengthening Mechanism Transition in Nanostructured Ferritic-Martensitic Alloys: Matthew Svenson1; Corey Dolph1; Janelle Wharry1; Boise State University

C32: Incubation Dose for Void Swelling in Ferritic-Martensitic Steels: Anthony Monterrosa1; Elizabeth Getto1; Zhijie Jiao1; Gary Was1; University of Michigan

C33: APT and TEM Investigation of the Evolution of the Microstructure of Ion Irradiated ODS Ferritic Steels: Constantinios Hatzoglou1; Auriane Etienne1; Bertrand Radigue1; Philippe Pareige1; 1GPM UMR CNRS 6634 - Université et INSA de Rouen

C34: Characterization of Developed Microstructure of Nanocrystalline Copper Post Neutron and Ion Irradiation: Walid Mohamed1; Marquis Kirk1; Di Yun1; Sumit Bhattacharya1; Kun Mo1; Khaled Youssef1; K.L. Murty1; A.M. Yacout1; 1Argonne National Laboratory; 2Northwestern University; 3NC State University

C35: Boundary Character Effect on Void Denuded Zones in Nickel-Chromium: James Nanthaniel1; Christopher Barr1; Khalid Hattar2; Mitra Taheri1; 1Drexel University; 2Sandia National Laboratory

C36: Evaluation of Radiation Effects in FeMnNiCr High Entropy Alloy: Congyi Li1; Anantha Phani Kiran Kumar Nimishakavi1; Hongbin Be1; Yanwen Zhang1; Brian Wirth1; Steve Zinkle1; 1University of Tennessee; Oak Ridge National Laboratory

C37: Analysis of Stress Corrosion Crack Initiation in Neutron-Irradiated 304 Stainless Steel Tested in Simulated PWR Environment: Maxim Gassev1; Kevin Field1; Jeremy Busby1; Kale Stephenson1; Gary Was1; Oak Ridge National Laboratory; University of Michigan

C38: Irradiation-Induced Nanoprecipitation in Ni-W Alloys: Jae Yel Lee1; Calvin Lear1; Xuan Zhang1; Pascal Bellon1; Robert Averback1; University of Illinois at Urbana-Champaign

C39: Temperature and Irradiation Species Dependence of Radiation Response of Nanocrystalline Silicon Carbide: Laura Jamison1; Kumar Sridharan1; Steven Shannon1; Izabela Szuflarska1; University of Wisconsin-Madison; North Carolina State University

C40: Damage Evolution in Irradiated SiC: Modeling and Experimental Study: Hao Jiang1; Xing Wang1; Jane Morgan1; Paul Voyles1; Izabela Szuflarska1; University of Wisconsin - Madison

C41: Evolution of Black Spots Defects and Small Clusters in Irradiated 3C-SiC: Cheng Liu1; Yizhang Zhai1; Li He1; Beata Tyburska-Puschel1; Paul Voyles1; Kumar Sridharan1; Jane Morgan1; Izabela Szuflarska1; Department of Engineering Physics, University of Wisconsin – Madison; Department of Materials Science and Engineering, University of Wisconsin – Madison

C42: Irradiation Effects on Fission Product Diffusion in SiC: Shyam Dwarkanath1; Gary Was1; University of Michigan

C43: Radiation-Enhanced Impurity and Self-Diffusion in Nitrides by Atomic Monte Carlo Simulation: Zhi-Gang Mei1; Abdullahi Yacout1; Bei Ye1; Yeon Soo Kim1; Gerard Hofman1; Marius Stan1; Argonne National Laboratory

C44: Ion Irradiation Induced Defects in Boron Carbide: Feifei Zhang1; Lumin Wang1; University of Michigan

C45: Atomic Characterization of Uranium Vacuum Interactions with External Strains and Dislocations in Uranium Dioxide: Anuj Goyal1; Gopinath Subramanian1; David A. Andersson1; Chris R. Stanek1; Simon R. Phillip1; Blas P. Uberuaga1; University of Florida; Los Alamos National Laboratory

C46: Boundary Resistance and Irradiation Effects of the Grain Boundaries in Ceria: Aleksandr Chernatsnynskiy1; Xianming Bai1; Jian Gan1; University of Florida; TNL

C47: Short-Range Atomic Order in Ion-Tracks in Pyrochlores: Ritesh Sachot1; Yanwen Zhang1; M. F. Chisholm1; W.J. Weber1; Oak Ridge National Laboratory; University of Tennessee

C48: Investigations on Radiation Tolerance of Mn+1AXn Phases: Study of T3SIC2, T3AI2C, Cr2AI, Cr2GeC, T2AI and T2AIN: Jingren Xiao1; State Key Lab. of Nuclear Physics & Technology Institute of Nuclear Science and Technology School of Physics, Peking University
MPMD 2015 Technical Division Student Poster Contest — Graduate
Sponsored by: TMS Materials Processing and Manufacturing Division

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MPMD 2015 Technical Division Young Professional Poster Contest
Sponsored by: TMS Materials Processing and Manufacturing Division and TMS: Young Professionals Committee

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SPG-16: Controlling the Orientation of Nano-twinned Cu Thin Film Deposited by Unbalanced Magnetron (UBM) Sputtering: Hsin-Yuan Chen; Kai-Hung Yang; Fan-Yi Ouyang; National Tsing Hwa University, Taiwan

SPG-17: A Novel Sin-Hyperbolic Multistage Creep Deformation and Damage Model Analysis: Mohammad Shafinul Haque; Calvin Stewart; University of Texas El Paso

SPG-18: Ab-initio Simulations of Al-Si based Alloys in the Liquid State: Tara Power; Jeffrey Hoft; Sumanth Shankar; McMaster University

SPG-19: Microstructure of Infiltrated Ceramics in Tungsten Matrix by Infiltration Molding of Ceramic Suspension Gels (CeraSGels) at Room Temperature: Lisa Rueschhoff; Rodney Trice; Jeffrey Youngblood; Purdue University

SPG-20: Characterizing Grain Boundary Networks by Algebraic Topology: Brian Lin; Anthony Rollett; Gregory Rohrer; Carnegie Mellon University

SPG-21: Fabrication and High Temperature Storage of Ge, Ag/Ge and Cu/Ge with PbTe Thermoelectric Materials by Rapid Hot-Pressing Method: Yan-Bin Chen; C. C. Li; F. Drymiotis; L. Liao; M. J. Dai; C. K. Liu; C. R. Kao; G. J. Snyder; National Taiwan University; California Institute of Technology; Industrial Technology Research Institute

SPG-22: Interfacial Reaction of Cu and Ag Foil with PbTe and (Pb,Sn) Te for Mid-Temperature Thermoelectric Power Generation Module: H. T. Hung; C. C. Li; F. Drymiotis; L. Liao; M. J. Dai; C. K. Liu; C. R. Kao; G. J. Snyder; National Taiwan University; California Institute of Technology; Industrial Technology Research Institute

SPU-9: Characterization of Ni2TiSn Full-Heusler Precipitates in NiTi Based Shape-Memory Alloys for Actuator Applications: Nicholas Suhar; Oscar Figueira III; Michele Manuel; University of Florida

SPU-10: Interfacial Reaction of the Ni/Sn-xZn/Cu Sandwich Couples: Yi-Pin Wu; Mei-Ting Lai; Yee-Wen Yen; National Taiwan University of Science and Technology

SPU-11: Interfacial Reactions of the Au/Sn-xZn/Cu Sandwich Structure Couples: Jiwon Park; Richard Fruehan; Seetharaman Sridhar; Korea Institute of Materials Science; Carnegie Mellon University; University of Warwick

SPU-12: Precipitation Modeling of Mg,Al, in Mg-Al Alloys Using TPSKsma: Joshua Wagner; Philipp Alieninov; Michele Manuel; University of Florida

SPU-13: Study of the Electrical Properties of Biopolymer-Based Composite Containing Ferroelectric Nanoparticles: Nelson Sepulveda Ramos; Amarilis DeClet; Javier Martinez; Oscar Marcelo Suarez; UPR Mayaguez
Multiscale Microstructure, Mechanics and Prognosis of High Temperature Alloys — Poster Session
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Mark Tschopp, Army Research Laboratory; J effrey Evans, University of Alabama in Huntsville; J onathan Cormier, ENSMA / Institut Pprime - UPR CNRS 3346; Qiang Feng, University of Technology and Science Beijing

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C59: Experimental Study on the Behaviour of Welding Joints in Uniaxial Tension Using Digital Image Correlation: Rodrigo de Cedes; Pedro Henrique de Mesquita; UFERSA - Universidade Federal Rural do Semi-Arido; IFRN - Instituto Federal do Rio Grande do Norte

C60: Influence of Heat Treatment on γ/Phase and Property of a Directionally Solidified Superalloy: Pengcheng Xia; Kun Xie; Jinjiang Yu; Shandong University of Science and Technology; Institute of Metal Research

Nano- and Micro-Mechanical Measurements in Harsh Environments — Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Nuclear Materials Committee
Program Organizers: Peter Hosemann, University of California Berkeley; J effrey Wheeler, EMPA; Verena Maier, Erich Schmidt Institut; Douglas Stauffer, Hysitron

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C61: Electrical Property Tuning via Defect Engineering of Single Layer MoS₂ by Oxygen Plasma: Muhammad Islam; Naree Kang; Udai Bhana; Hari Paudel; Mikhail Erementchouk; Laurence Tchet; Michael Leuenberger; Saiful Khodaker; University of Central Florida

Neutron and X-Ray Studies of Advanced Materials VIII: Diffraction Limit and Beyond — Poster Session
Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, UTK; Jamie Tiley, Air Force Research Laboratory

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Funding support provided by: Air Force Research Laboratory

B146: Spectral Full-Field Deformation Modeling of Polycrystalline Materials: Taege Ozturk; Clayton Stein; Receu Pokharel; Thom Popovic; Robert Suter; Franz Franchetti; Anthony Rollett; Carnegie Mellon University; Los Alamos National Laboratory

B147: Investigation of Microstructure and Texture Evolution of ODS Steel at Elevated Temperatures: Young-Bum Chun; Suk-Hoon Kang; Sanghoon Noh; Tae Kyu Kim; Korea Atomic Energy Research Institute

B148: Residual Stress Determination in Simulated Plant Weldments: Thomas Watkins; C.avin; Paris Cornell; John Sieffert; ORNL; EPRI

B149: Synchrotron X-Ray Powder Diffraction Study of Nanocrystalline Tungsten, Tungsten-Nickel, and Tungsten-Chromium Alloys: Mohamed Elbakshwan; Simerjeet Gill; Olivia Donaldson; Jason Trelewine; Lynne Ecker; Department of Nuclear Science and Technology, Brookhaven National Laboratory; Department of Materials Science and Engineering, Stony Brook University

B150: Early Stage of Precipitation in Al-Mg-Si and Related Alloys Examined by Small-Angle Scattering: Hiroshi Okuda; Yuki Nishizawa; Tatsuho Sato; Yoshihito Kitajima; Kyoto University; Tokyo Inst. Technol.; KEK-PF

B151: Atomic/Vacancy Intermixing and Clustering in U(1-y)Nd(y) O(2.00-x) Alloys: Rozaliya Barabash; Stewart Voiit; Seung Min Lee; Travis Knight; Oak Ridge National Laboratory; The University of South Carolina

B152: Recrystallization Texture and Magnetic Properties of Two-Stage Cold Rolled Fe-6.5wt.%Si Thin Sheets: Yongchuan Yao; Yuhui Sha; Jinlong Liu; Fang Zhang; Liang Zuo; Northeastern University

B153: Recrystallization Texture Transition in Fe-2.1wt.%Si Steel by Different Cold Rolling Reduction: Nian Shan; Yuhui Sha; Jinlong Liu; Fang Zhang; Liang Zuo; Northeastern University

B154: Studies of the Amorphous-Crystalline Phase Transition in Metallic Glass Composites Using Synchrotron X-ray and Phase Field Crystal Modelling: Wei Zhang; Jia Chuan Khong; Jiawei Mi; University of Hull

B155: A Study of Stress Gradients in a Titanium Alloy Using High Energy Diffraction Microscopy: Kamalika Chatterjee; Armand Beaudoin; Jonathan Ling; Robert Suter; Peter Kenesei; Jun-Sang Park; University of Illinois at Urbana-Champaign; Lawrence Livermore National Laboratory; Carnegie Mellon University; Argonne National Laboratory

B156: High-Energy X-ray Diffraction Studies on Ni-Zr Using Electrostatic Levitation: Dante Quirinale; Alan Goldman; Matthew Kramer; Mikhail Mendelev; Ames Laboratory; Iowa State University

B157: In Situ Observation of Phase Transformation of a Laser-Beam Welded TiAl Alloy during Solidification: Jie Liu; Peter Staron; Stefan Riekehr; Andreas Stark; Norbert Schell; Norbert Huber; Andreas Schreyer; Martin Müller; Nikolai Kashew; Helmholtz-Zentrum Geesthacht, Germany

B158: Micro-XAS Investigation of Interdiffusion and Compound Formation at Buried Al2O3/Ti/W Interfaces for Joining Applications: Nico Weyrich; Alessandra Beni; Mirco Chioldi; Sakura Pascarelli; Christian Leinenbach; Lars Jeurgens; EMPA - Swiss Federal Laboratories for Materials Science and Technology; ESRF - European Synchrotron Radiation Facility
B159: Microstructural Evolution of the Weld and Heat-Affected Zone in a Laser Beam Welded TiAl-Based Alloy: Jie Liu; Peter Staron; Stefan Riekert; Andreas Stark; Norbert Schell; Norbert Huber; Andreas Schreyer; Martin Müller; Nikolai Kashavyev; ‘Helmholtz-Zentrum Geesthacht, Germany

B160: Investigation on Creep Deformation of Ferritic Superalloys with a New Hierarchical Structure Using In-Situ Neutron Diffraction: Gian Song; Mark Asta; BjØrn Clausen; David Dunand; Donovan Leonard; Christian Liebscher; Michael Rawlings; Zhiquan Sun; Gongyao Wang; Nhon Vo; Peter Liaw; ‘University of Tennessee, Knoxville; ‘University of California Berkeley; ‘Los Alamos National Laboratory; ‘Northwestern University; ‘Oak Ridge National Laboratory

B161: Phase Transformation in a High Flux Magnetic Field: Roger England; Gerard Lutkja; Peter Kali; Thomas Watkins; ‘Oak Ridge National Laboratory

Novel Synthesis and Consolidation of Powder Materials — Poster Session
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Iver E Anderson, The Ames Laboratory

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D34: The Combined Effects of Alloy Composition and Porosity on Phase Transformation and Mechanical Behaviors of Powder Metallurgy Fe-Cr-Mo Steels: Jooyoun Park; Jonggyu Jeon; Gowoon Jeong; Singon Kang; Seokjae Lee; Hyunjoo Choi; ‘Kookmin University; ‘Chonbuk National University

D35: Preparation of Hexagonal Plate-Like Hematite Particles by Hydrothermal Synthesis and Reduction to Plate-Like Iron Particles: Shusuke Okada; Kenta Takagi; Kimihito Ozaki; ‘National Institute of Advanced Industrial Science and Technology (AIST)

Pb-Free Solders and Emerging Interconnect and Packaging — Poster Session
Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: John Elmer, LLNL; Yan Li, Intel Corp.; Andre Lee, Michigan State University; Fan-Yi Ouyang, National Tsing Hua University; Srinu Chada, Schlumberger; Kyu-Oh Lee, Intel Corp.; Kwang-Lung Lin, National Cheng Kung University; Christopher Gourlay, Imperial College; Daniel Lewis, Rensselaer Polytechnic Institute; Fan Gao, U. Massachusetts Lowell

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Session Chair: Andre Lee, Michigan State University

F76: On the Melting Temperature and Phase Diagram Prediction in the Sn-Rich Corner of Sn-Ag-Cu Nano Alloys: Ali Roshanghiasl; Jan Vrestal; Andriy Yakymovych; Herbert Ipser; ‘University of Vienna; ‘Masaryk University

F77: 3D Structure of Nanoporous Sintered Silver: James Carr; Vincenzo Caccarelli; Teruo Hashimoto; Séverine Boyer; Pascal Gadaud; Michel Gerland; Peter D Lee; George Thompson; Xavier Milher; ‘The Manchester University; ‘Prime Institute UPR CNRS 3346

F78: A First-Principles Investigation of Dislocation Core Properties of β-Sn: Mohammad Azarnoush; Mehul Bhatia; Gang Lu; Kiran Solanki; ‘Arizona State University; ‘California State University Northridge

F79: Anisotropic Thermal Expansion of Ni₃Sn₄, Cu₅Sn₆ and Beta-Sn: A Powder XRD Study: Jingwei Xian; Guang Zeng; Sergey Belyakov; Ben Britton; Kazuhiro Nogita; Christopher Gourlay; ‘Imperial College London; ‘University of Queensland

F80: Characterization of Tin Whiskering and Influence of Microstructure on Its Formation: Irene Lujan Regalado; Sudhanshu Shekhar Singh; Antony Kirubanandham; Jason Williams; Nikhilseh Chawla; ‘Arizona State University

F81: Combined Effects of Solidification Thermal Parameters and Microstructural Features on Mechanical Properties of Directionally Solidified Sn-Sb Lead-Free Solder Alloys: José Marcelino da Silva Dias; Thiago Costa; Otávio Rocha; Noé Cheung; Amauri Garcia; ‘UNICAMP; ‘IFPA

F82: Cu-Al Intermetallics for Grain Refinement of Primary Cu₅Sn₅ in Sn-xCu (x=0.7 to 7.6wt%) Solders: Kazuhiro Nogita; Guang Zeng; Stuart McDonald; Jonathan Read; Selena Smith; Takatoshi Nishimura; ‘The University of Queensland; ‘Nihon Superior Co. Ltd.

F83: Effect of Joint Length on Void Formation and Intermetallic Compound Dissolution for Pb-Free Solders during Electromigration: Chunsun Tsai; Tzu-Yu Hsu; Fan-Yi Ouyang; ‘National Tsing-Hua University

F84: Effect of Temperature Gradient on the Growth of Ag₃Sn Intermetallic Compounds in Pb-Free Solder during Thermo-Compressive Bonding Process: Hsin-Yuan Chen; Yu-Ping Su; Chun-Sen Wu; Kuan-Neng Chen; Fan-Yi Ouyang; ‘National Tsing-Hua University

F85: Effect of Volume Confinement on the Formation of Void in Solder Joint: Minyoung Kim; Yoonki Sa; Huandi Gu; Choong-un Kim; ‘University of Texas at Arlington

F86: Electromigration Failure Modes of Microbumps with Different Underbump Metallizations in 3D IC Packaging: Shiu-Han Chao; Chi Chien; Chau-Jie Zhan; Yu-wei Huang; ‘National Chiao Tung University; ‘Assembly and Reliability Department/EOL/TRI

F87: Improvement of Thermal Fatigue Property at Bi Based Alloy: Minoru Ueshima; ‘Senju Metal Industry

F88: Influence of Nano-Structured Modifiers on Mechanical Reliability of Sn-Cu Solder Alloys: Yang Lu; KN Subramanian; Andre Lee; ‘Michigan State University

F89: Investigating the Grain Structure of Beta-Tin in Pb-Free Solder Joints with Ni-Based and Cu-Based Substrates via Electron Backscattered Diffraction: Tzu-Ting Chou; Wei-Yu Chen; Cheng-Ying Ho; Hsui-Min Lin; ‘National Tsing Hua University

F90: Joint Property of Sn-Cu-Cr(Ca) Middle Temperature Solder for High Reliability of Automobile ECU: Junghwan Bang; Young-Ho Ko; Chang-Woo Lee; ‘Korea Institute of Industrial Technology(KITECH)

F91: Optimization of AuSn Eutectic Bonding Using Thermal Evaporation Process: Euyup Demir; Inci Donmez; Mustafa Torunbalcı; Tayfun Akın; Eren Kalay; ‘METU

F92: Phase Equilibria in the Bi-Rich Corner of the Ag-Bi-Ni System: Przemyslaw Fimda; Katarzyna Berent; Grzegorz Garzel; Adela Zemanova; ‘Institute of Metallurgy and Materials Science, Polish Academy of Sciences; ‘Institute of Physics of Materials, Academy of Sciences of the Czech Republic

F93: Plasma Organic Surface Finish – Solder Wettability and Multi-Roll Properties of Kyno-Ho Kim; Wonil Seo; Huyen-Hwa Park; Nam-Sun Park; Sehoon Yoo; ‘Advanced Welding & Joining R&D Group, Korea Institute of Industrial Technology; ‘Jesaki Hankook Ltd.

F94: Solder Joint Reliability of Sn-48Bi-2Ag Ribbon for Solar Cell Module: Won Sik Hong; No Chang Park; Cil Min Oh; A Young Kim; Ju Hee Kim; ‘Korea Electronics Technology Institute(KETI)

F95: Study of Low Melting Sn-Bi-xGa Solder Alloy: Zhi-Hao Chen; Albert Wu; ‘National Central University
F96: The Conditional Probabilistic Density Distribution Surface of the Pb-Free Solder Joint Fatigue Properties under Board Level Drop Impact: Jian Gu; Yongping Lei; Hanguang Fu; Jian Lin; Limin Ma; 1Beijing University of Technology

F97: Viscosity Studies of Liquid Nano-Composite Sn-Ag-Cu Alloys: Andriy Yakymovich1; Ali Roshanghias; Herbert Ipser1; 1University of Vienna

F98: Effect of the Addition of Neodymium and Praseodymium in Lead-Free Solder Tin-Silver-Bismuth, on the Microstructure and Growth Kinetics of Intermetallic Layer of the Soldered Joints: Miguel Neri1; Alberto Martinez-Villafane; Caleb Carrelo-Gallardo; 1CIMAV, S.C.

F99: Phase Formation, Transformation and Stability in Micro-Alloyed Sn-Based Lead-Free Solder Alloys and Joints: Guang Zeng1; Stuart McDonald1; Jonathan Read1; Takatoshi Nishimura 2; Keith Sweatman 2; M. Kirk2; S. Maloy1; X. Zhang3; 1Los Alamos National Laboratory; 2Argonne National Laboratory; 3University of Central Florida

Phase Transformations and Microstructural Evolution — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Suresh Babu, University of Tennessee-Knoxville; Soumya Nag, University of North Texas; Rajarshi Banerjee, University of North Texas; Gregory Thompson, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Frederic Danoi, CDR - Université de Rouen; Emmanuelle Marquis, University of Michigan

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B162: Effects of Thermomechanical Treatments on Tensile Properties of Fe-Mn-Cr Based Alloys at Elevated Temperatures: Young-Bum Chun1; Seokmin Hong1; Suk-Hoon Kang1; Tae-Ho Lee1; Jinsung Jang2; 1Korea Atomic Energy Research Institute; 2Korea Institute of Materials Science

B163: Microstructural Evolution of Hydrolysis Products of Reduced Graphene Oxide-Cement Paste Composite Characterized by XRD: Baig Abdullah Al Muhit1; BooHyun Nam1; Lei Zhai1; 1University of Central Florida

B164: In situ Studies on Radiation Resistant Nanocrystalline and Nanoporous Metals for Advanced Nuclear Energy Applications: C Sun1; M. Kirk2; S. Maloy1; X. Zhang1; 1Los Alamos National Laboratory; 2Argonne National Laboratory; 3Texas A&M University

Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories — Poster Session

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Phase Transformations Committee
Program Organizers: Dana Zollner, Otto von Guericke University Magdeburg; Douglas Medlin, Sandia National Laboratories; Dmitri Molodov, RWTH Aachen

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C62: An Open-Source Toolkit for Computing the CSL and the DSC Lattices for Arbitrary Bravais Lattices: Srikanth Patala1; Arash Banadaki1; 1North Carolina State University

C63: Concurrent Atomistic-Continuum Simulation of Dislocation-Interface Reactions in FCC Systems: Liming Xiong1; Xiang Chen1; David McDowell1; Youping Chen1; 1University of Florida; 2Georgia Institute of Technology

C64: Influence of Grain Boundary Structure on Dislocation Nucleation in Bicrystal Copper Interface under Uniaxial Tension: Eun-Young Kim1; Ji-Hwan Shin1; Shi-Hoon Choi1; 1Sunchon National University

C65: Simulations of Forming Limit Diagrams for AA5754 Al Sheet using Fast Fourier Transforms: Kuan Inuk1; Ricardo Lenovo1; Raja Mishra1; 1University of Waterloo; 2Los Alamos National Laboratory; 3General Motors R&D

C66: Grain Boundary Response to External Tensile Loading in a-Titanium using High-Throughput Computation on the Atomic Scale: Hao Wang1; Gang Zhou1; Dongsheng Xu1; Dave Rugg1; Aijun Huang1; Rui Yang1; 1Institute of Metal Research, Chinese Academy of Sciences; 2Rolls-Royce plc; 3Baosteel Co. Ltd

C67: Structure and Energies of 23 Grain Boundaries: Beyond Twists and Tilts: Arash Dehghan Banadaki1; Srikanth Patala1; 1North Carolina State University

C68: Understanding Grain Boundary Embrittlement and Its Correlation with Polycrystalline Tungsten Fracture: Hongsuk Lee1; Vikas Tomar1; 1Purdue University

Rare Metal Extraction & Processing 2015 — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Neale Neelameggham, Ind LLC; Shafiq Alam, University of Saskatchewan; Harald Oosterhof, Umicore; Animesh Jha, University of Leeds; Shijie Wang, Rio Tinto Kennecott Utah Copper

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E21: TGA/DSC of Rare Earth Elements: Katelyn Lyons1; Bryce Ruffier1; Dan Gaede1; Jerome Downey1; 1Montana Tech

E22: Study on Electrolysis for Neodymium Metal Production: Go-Gi Lee1; Sung-Koo Jo1; Chang-Kyu Lee1; Hong Youl Ryu1; Jong Hyeon Lee1; 1RIST; 2Chungnam National University

E23: Experimental Investigation of Recycling Rare Earth Metals from Waste Fluorescent Lamp Phosphors: Patrick Eduafo1; 1Colorado School of Mines

E24: Recovery of Rare Earth Elements from NdFeB Based Magnet Scrap by Pyrometallurgical Processes: Yuyang Bian1; Shaqiang Guo1; Kaig Tang1; Lan Jiang1; Changyuan Lu1; Xionggang Lu1; Weizhong Ding1; 1Shanghai University; 2SINTEF Materials and Chemistry

E25: Research on Quality Improvement of Titanium Sponge By Process Optimization: Liang Li1; 1Panzhihua Iron&Steel Research Institute

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Poster Session

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrad, IP CMS; Heinz Palkowski, Clausthal Univ of Technology; Roger Narayan, University of North Carolina; Niggehalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

Monday PM  Room: Atlantic Hall  Location: Dolphin
March 16, 2015

F100: Effect of K+Na+ Ion Exchange on Soda-Lime Glasses: Ipek Erdem1; Duhyu Guldiren1; Suhelya Aydin1; 1Istanbul Technical University

F101: Boron-Based Carbon Enriched Nano Fiber Towards Biodegradable FGM Via DICOM, Rheocasting and Thixo-casting: Bakr Rabeehi1; 1German University in Cairo, GUC
Unusually Low Temperatures: Sayantan Das1; F103: Microwave-Assisted Growth of Copper Germanide Thin Films at Unusually Low Temperatures: SayantanDas1; A. Lanz2; Zhao Zhao3; Terry Alford4; 1: Arizona State University; 2: Norfolk State University

Substrate – Enamel Interface Relation and Impact on Quality of Enamel: Ozge Iskisacan1; Onuralp Yucel1; Alper Yesilcubuk1; 1: Istanbul Technical University

Preparation of BaCoO0.7Fe0.2NbO0.103-d Asymmetric Tubular Oxygen Permeable Membrane by Dip-Coating and Co-Sintering Process: Yinhe Liu1; Weizhong Ding1; Lan Jiang2; Gonghui Yang3; Xingxing Zhang4; Rong Jin1; He Wang1; 1: Shanghai Key Laboratory of Modern Metallurgy and Materials Processing, Shanghai University

The Influence of Mn on the Interfacial Reaction For Hot-dipping 55Al-Zn-L6Si-Iron: Xuan Dai1; Guangxin Wu1; Wangjun Feng1; Xin Yang1; Jieyu Zhang1; 1: Shanghai University

Two-Way Shape Memory Effect of Ni-Ti Bi-Layer Thin Film: Maryam Mohiri1; Mahmoud Nili-Ahmadabadi1; Horst Hahn2; 1: University of Tehran; 2: Karlsruhe Institute of Technology

Bonding Chitosan to Steel as a Method to Reduce Corrosion: Stephen Cornich1; Holly Martin2; 1: Youngstown State University

Experimental Studies on Investigating Silver Containing Soda-Lime Glasses Prepared by Ion Exchange Process: Duygu Guldiren1; Ipek Erdem1; Sihueyla Aydin1; 1: Istanbul Technical University

Recycling and Sustainability Update — Poster Session
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Jeffrey Spangenberger, Argonne National Laboratory

Monday P M
March 16, 2015
Room: Atlantic Hall
Location: Dolphin
Session Chair: Jeffrey Spangenberger, Argonne National Laboratory


J24: Evaluation of the Silver Recovery from Radiographic Films in a Filter Press Electrochemical Reactor: Pedro Ramirez Ortega1; Victor Reyes Cruz1; Luis Garcia Lechuga1; Diana Arenas Islas2; Mizraim Flores Guerrero3; Laura Garcia Hernandez4; 1: Universidad Tecnologica de Tulancingo; 2: Universidad Autonoma del Estado de Hidalgo

J25: Extraction of Pure Silicon from Aluminum Die Casting Scrap by a Combined Process of Solvent Refining and Centrifugal Separation: Je-Beom Jeon1; Ji-Won Yoon1; Kum-Hee Bang1; Ki-Young Kim2; 1: Korea University of Technology and Education

J26: Indium Recovery from Discarded LCD Screens: Study of the Influence of Acid Concentration, Temperature and Time in the Leaching Process: Hugo Hashimoto1; Laura Hanada1; Denise Espinosa2; Viviane Tavares3; 1: Escola Politecnica da Universidade de Sao Paulo

J27: Recycling Wastes in the Alumina and the Cement Industry: Ilyouka Nikolai1; Valentina Timofeeva1; 1: Academic Ceramic Center

J28: Leaching of Gold from Printed Circuit Boards Scrap of Mobile Phones: Angela Kasper1; Hugo Veit1; 1: UFRGS

J29: Experimental Study on Reduction in Low Grade Lateritic Nickel Ore Mixed with Pickling Sludge: Yahui Feng1; 1: Shanghai University

SMD 2015 Technical Division Student Poster Contest — Graduate
Sponsored by: TMS Structural Materials Division
Monday P M
March 16, 2015
Room: Atlantic Hall
Location: Dolphin

SPG-25: A Study of Reverse Peritectoid Phase Transformation in Co3W Alloy: Shan Zhu1; Alex Aning1; Ibrahim Khajcaffah1; 1: Tianjin University; 2: Virginia Tech

SPG-26: An Automatic Microstructure Recognition System: Brian DeCort1; Elizabeth Holm1; 1: Carnegie Mellon University

SPG-27: Analysis of Mechanical Properties of Concrete Containing Fly Ash and Nanosilica: Hildesix Soto1; O. Marcelo Suarez1; Nitza Garcia1; Carlos Medina1; Elizabeth de la Cruz1; 1: University of Puerto Rico at Mayaguez

SPG-28: Investigating Small Fatigue Crack Growth Behavior in Ti-624S Using Ultrasonic Fatigue and Scanning Electron Microscopy: Jason Geathers1; J. Wayne Jones1; Samantha Daly1; 1: University of Michigan

SPG-29: Mechanical Properties of Thick Coatings Prepared by Advanced Methods of Deposition: Igor Moravec1; Jakub Pino1; Jan Cizek1; Ivo Dluhy1; 1: Brno University of Technology; 2: Institute of Scientific Instruments of the ASCR

SPG-30: Peritectoid Phase Transformations in Ni3Mo Alloy: Ibrahim Khajcaffah1; Alex Aning1; 1: Virginia Tech

SMD 2015 Technical Division Student Poster Contest — Undergraduate
Sponsored by: TMS Structural Materials Division
Monday P M
March 16, 2015
Room: Atlantic Hall
Location: Dolphin

SPU-14: Effects of Heat Treatment on the Microstructural Evolution of a NiTiHAI Shape Memory Alloy: Brandon Saraydar1; Michael Kesler1; Amanda Varela1; John Newman1; Terryl Wallace2; Michele Manuel2; 1: University of Florida; 2: NASA Kennedy Space Center

SPU-15: Ex Situ and In Situ Small Scale Mechanical Testing of 304 Stainless Steel and MA957: Hi Vo1; Manuel Abad2; David Frazer3; Ashley Reichardt1; Nathan Bailey1; Peter Hosemann1; 1: University of California Berkeley

SPU-16: Fabrication and Characterization of Chitin-bamboo Composites: Manny de Jesus1; Sujeily Soto1; O. Marcelo Suarez1; 1: University of Puerto Rico

SPU-17: Healing Optimization in a Self-Healing Composite Metallic Matrix: Alexander Wilson-Heid1; Hunter Henderson1; M. Wright2; Michele Manuel1; 1: University of Florida; 2: NASA Kennedy Space Center

SPU-18: Microstructure, Phase Evolution and Properties of High Entropy Brasses and Bronzes: Aarthi Srividhar1; Cody Crosby1; Kevin Law2; Patrick Conway3; Leah Koloaini4; Mo Zhao1; Shifrah Aron-Dine1; Lori Bassman1; 1: Harvey Mudd College; 2: University of New South Wales

SPU-19: Molecular Dynamics Simulation of Force-Controlled Nanoindentation: Keaton Jaramillo1; Douglas Spearot1; 1: University of Arkansas
SMD 2015 Technical Division Young Professional Poster Contest
Sponsored by: TMS Structural Materials Division, TMS: Young Professionals Committee

Monday PM
March 16, 2015
Room: Atlantic Hall
Location: Dolphin

YP-12: DADI – A New Structural Material: Influence of Austempering on Its High Temperature Properties: Olga Tsurtsumia1; Elguja Kutelia1; Nugzar Khidasheli1; 'Georgian Technical University

YP-13: Modeling of Shear Transformation Induced Deformation Behavior in Crystalline Materials: M. Arul Kumar1; 'Los Alamos National Lab

YP-14: Revisiting Dislocation Annihilation on the Atomic Scale: Hao Wang1; 'Institute of Metal Research, Chinese Academy of Sciences

YP-15: Shedding Some Light on the Early Grain Growth Regime: Dana Zöllner1; Peter Streitenberger1; Paulo Rios2; 'Otto von Guericke University Magdeburg; 'Universidade Federal Fluminense

Engineering Solutions for Sustainability: Materials & Resources (ESS: M&R) — Poster Session
Sponsored by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)
Program Organizers: Brajendra Mishra, Colorado School of Mines; Iver Anderson, Ames Laboratory; Brian Bliss, Association for Iron and Steel Technology (AIST); J effrey Fergus, Auburn University; Ali Memari, Penn State University; Jonathon Motherwell, Jonathon T. Motherwell and Associates, LLC; Carol Russell, Environmental Protection Agency; Emily Sarver, Virginia Tech; Darlene Schuster, AICHE's Institute for Sustainability; Deborah Shields, Colorado State University

Wednesday PM
Room: Asbury Lobby
March 18, 2015
Location: Yacht & Beach

Funding support provided by: American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)

ESS-1: Development of an Electromechanical Prototype for Electricity Generation by the Vibrational Energy Obtained Through Piezoelectric Material: Catia Viana1; Cicero Lobo1; 'Fluminense Federal Institute

ESS-2: Effect of La2O3 on Cu-ZnO-ZrO2 Catalysts for Methanol Synthesis from CO2 Hydrogenation: Wengui Gao1; Hua Wang1; Zhiqiang Qin1; Wei Na1; 'Kunming University of Science and Technology

ESS-3: Influence of the Content of Dimension Stones Solid Waste in the Physical and Mechanical Behavior of Structural Ceramic: Alessandra Savazzini Reis1; Danilo Fermino1; Viviana Della Sagrillo1; Francisco Valenzuela Diaz1; 'USP/IFES; 'USP; 'IFES

ESS-4: The Reuse Technology on the Tri-Methyl Gallium for LED: Jae Sik Yoon1; 'Korea Basic Science Institute

ESS-5: Preparation of Nano Crystalline Forsterite Synthesized by Mechanical Activation to Use Orthopedic and Dental Applications: Hassan Gheisari Dehsheikh1; Ebrahim Karamian1; Farkhonde Zilabi1; Artina Gheisari Dehsheikh1; 'Najafabad University

ESS-6: Development on Cu Smelters in China Today: Yan Jie1; 'China ENFI Engineering Corporation

ESS-7: Multi-Objective Optimization of Membrane Materials Selection for Direct Methanol Fuel Cell System Design: Jimoh Adeyolu2; Abdullah Sultan1; Amir Al-Ahmed1; S. M. Javid Zaidi2; 'King Fahd University of Petroleum & Minerals; 'The University of Queensland, Australia

ESS-8: SrFe12O19 Powders Synthesis from Oily Cold Rolling Mill Sludge by Hydrothermal Process: Bo Liu1; Shengen Zhang1; 'University of Science and Technology Beijing

ESS-9: Synthesis and Characterization of Micaceous Iron Oxide Pigment from Oily Cold Rolling Mill Sludge: Shengen Zhang1; Bo Liu1; 'University of Science & Technology Beijing

ESS-10: Twins Evolution during the Recrystallization Induced by Electric Current: Xiang Zhao1; Xinti Wang2; Wenbin Dai1; Meishuai Liu1; Nan Wu1; 'Northeastern University

ESS-11: Experimental Study on Reduction in Low Grade Lateritic Nickel Ore Mixed with Pickling Sludge: Yahui Feng1; 'Shanghai University
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