

# TMS2015

## 144<sup>th</sup> Annual Meeting & Exhibition

March 15-19, 2015 • Walt Disney World • Orlando, Florida, USA



*Connecting the global minerals,  
metals, and materials community.*

## **FINAL PROGRAM**



@TMSociety #TMS2015Experience

[www.tms.org/TMS2015](http://www.tms.org/TMS2015)

**AP Technology™**

## Celebrating 1 year anniversary of AP60 potline



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Arvida Aluminium smelter  
20 December 2014

Delivering exceptional results  
at the highest amperage ever achieved  
at an industrial smelter.

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## 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

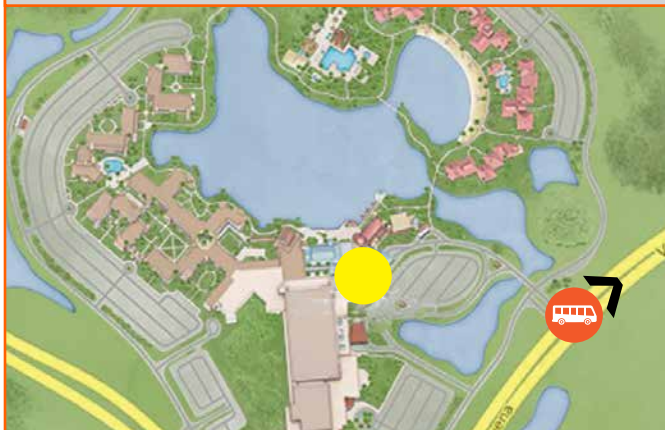


### Shuttle Drop-Off

*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.*



**Disney's Coronado Springs Resort**  
1.5 miles from Meeting Headquarters



**Disney's Caribbean Beach Resort**  
2.6 miles from Meeting Headquarters





Disney's Yacht & Beach Resort  
Convention Center



**Disney's  
Yacht & Beach Resorts**



**Walt Disney World  
Dolphin Resort**



**Walt Disney World  
Swan Resort**



To Disney's Coronado  
Springs Resort



To Disney's Caribbean  
Beach Resort





### 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 @TMSociety 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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**TIME TO TWEET!**  
Follow @TMSociety or tweet  
using #TMS2015Experience.

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## 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  
<https://disneyworld.disney.go.com/resorts/yacht-club-resort/>  
<https://disneyworld.disney.go.com/resorts/beach-club-resort/>



Disney's Caribbean Beach Resort  
<https://disneyworld.disney.go.com/resorts/caribbean-beach-resort/>



Disney's Coronado Springs Resort  
<https://disneyworld.disney.go.com/resorts/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\*

#### Sunday, March 15

6:30 a.m. to 10:00 p.m.

#### Monday, March 16

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

#### Tuesday, March 17

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

*(Shuttles will be available at the Yacht & Beach Convention Center following the TMS & AIME Awards Banquet to return guests to the Caribbean Beach and Coronado Springs Resorts.)*

#### Wednesday, March 18

6:00 a.m. to 7:30 p.m.

#### 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\***

<b>Sunday, March 15</b>
7:00 a.m. to 8:00 p.m.
<b>Monday, March 16</b>
6:00 a.m. to 8:00 p.m.
<b>Tuesday, March 17</b>
6:00 a.m. to 9:00 p.m.
<b>Wednesday, March 18</b>
6:00 a.m. to 8:00 p.m.
<b>Thursday, March 19</b>
7:00 a.m. to 5:00 p.m.

\*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 @TMSociety. 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 @TMSociety 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/](http://11thhourbiz.com/about/locations/). You may also reach them directly by calling (407) 934-4259 or emailing [dolphinbiz@live.com](mailto: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.

## TMS INFORMATION CENTER

### Hours of Operation:

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

Tuesday, March 17, 10:00 a.m. to 5:30 p.m.

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

**Location:** Pacific Hall, Dolphin Hotel

The TMS Information Center is located at Booth #401 in the Exhibit Hall. The center provides information on all TMS offerings in one convenient location. Stop by to pick up your badge ribbons and to learn more about:

- TMS membership
- TMS technical initiatives
- TMS events
- TMS publications
- The TMS Foundation
- TMS volunteer opportunities



## FACES OF THE FOUNDATION BOOTH

### Hours of Operation:

Sunday, March 15, 7:00 a.m. to 5:00 p.m.

Monday, March 16, 7:00 a.m. to 5:00 p.m.

Tuesday, March 17, 7:00 a.m. to 2:00 p.m.

Wednesday, March 18, 7:00 a.m. to 5:00 p.m.

Thursday, March 19, 7:00 a.m. to Noon

**Location:** Convention Foyer, Dolphin Hotel

To raise awareness of the good work that the TMS Foundation does every year, the TMS 2015 Annual Meeting & Exhibition will highlight the donors and recipients who are the "Faces of the Foundation." If you have benefitted from a TMS Foundation scholarship, award, or program OR if you have contributed to the TMS Foundation, stop by the Faces of the Foundation booth located in the Dolphin Hotel to have your picture taken and we'll add your image to the Faces of the Foundation collage that will be compiled over the course of the week. Help us show the entire community what supporting the TMS Foundation looks like.

## NOT A DONOR YET?

Make a donation to the Foundation in any amount at the booth and have your photo added to the collage.

**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.



Function	Date	Time	Facility	Room	Access
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## Saturday, March 14

### Committee and Business Meetings

Professional Registration Item Writers Workshop and Committee	3/14/2015	9:00 a.m. to 5:00 p.m.	Yacht & Beach	Cape Cod C	R
Financial Planning Committee	3/14/2015	2:00 p.m. to 5:00 p.m.	Yacht & Beach	Cape Cod A	R
Professional Registration Committee Dinner	3/14/2015	6:00 p.m. to 8:00 p.m.	Yacht & Beach	Cape Cod B	R

## Sunday, March 15

### All-Conference Events




Registration	3/15/2015	7:00 a.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
Programming Support Desk	3/15/2015	12:00 p.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
General, Symposium, Young Professional, and Student Poster Session Set-up	3/15/2015	2:00 p.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
TMS2015 Opening Celebration	3/15/2015	5:00 p.m. to 6:30 p.m.	Yacht & Beach	Grand Harbor Ballroom North	O

### Exhibition

Exhibit Move-In	3/15/2015	8:00 a.m. to 5:00 p.m.	Dolphin	Pacific Hall	R
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### Professional Development & Special Presentations

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

 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**

LEARN. NETWORK. ADVANCE.

## 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](http://www.tms.org/pd) for a list of upcoming Professional Development events from TMS.

Function	Date	Time	Facility	Room	Access
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**Student Events**



Materials Bowl	3/15/2015	12:00 p.m. to 7:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salons 5-7	O
Elimination Rounds		12:00 p.m. to 4:00 p.m.			
Championship Round		6:30 p.m. to 7:00 p.m.			
Student Networking Mixer	3/15/2015	7:00 p.m. to 9:00 p.m.	Yacht & Beach	Grand Harbor Ballroom South	O

**Social Functions**

Faces of the TMS Foundation	3/15/2015	7:00 a.m. to 5:00 p.m.	Dolphin	Convention Registration Foyer	O
TMS Fellows and Invited Guests Reception	3/15/2015	4:30 p.m. to 6:30 p.m.	Dolphin	Premiere Suite	I

**Committee & Business Meetings**

Professional Registration Leadership Committee	3/15/2015	8:00 a.m. to 11:00 a.m.	Yacht & Beach	Stonington	R
New Board Member Orientation	3/15/2015	8:30 a.m. to 10:00 a.m.	Yacht & Beach	Cape Cod A&B	I
TMS Board of Directors Meeting	3/15/2015	10:00 a.m. to 12:00 p.m.	Yacht & Beach	Cape Cod A&B	R
Recycling and Environmental Technologies Committee	3/15/2015	12:00 p.m. to 1:30 p.m.	Yacht & Beach	Saybrook	O
Accreditation Committee	3/15/2015	12:30 p.m. to 2:30 p.m.	Yacht & Beach	Cape Cod C	O
Program Committee	3/15/2015	1:00 p.m. to 2:00 p.m.	Yacht & Beach	Asbury B	R
Web User Testing	3/15/2015	1:00 p.m. to 4:00 p.m.	Dolphin	Oceanic 4	R
Magnesium Committee	3/15/2015	1:30 p.m. to 3:00 p.m.	Yacht & Beach	Asbury A	O
TMS Nominating Committee	3/15/2015	2:00 p.m. to 3:00 p.m.	Yacht & Beach	Stonington	I
Aluminum Committee	3/15/2015	2:00 p.m. to 4:00 p.m.	Yacht & Beach	Asbury B	O
Materials Characterization Committee	3/15/2015	2:30 p.m. to 4:00 p.m.	Yacht & Beach	Saybrook	O
JOM Advisor Orientation	3/15/2015	3:00 p.m. to 4:00 p.m.	Yacht & Beach	Cape Cod D	R
PRICM-9 International Organizing Committee	3/15/2015	3:00 p.m. to 5:00 p.m.	Dolphin	Oceanic 7	I
ABET Refresher Training	3/15/2015	3:00 p.m. to 6:00 p.m.	Yacht & Beach	Cape Cod B	O
Public & Governmental Affairs Committee	3/15/2015	3:30 p.m. to 5:00 p.m.	Yacht & Beach	Cape Cod C	O
Hydrometallurgy and Electrometallurgy Committee	3/15/2015	4:00 p.m. to 5:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 1	O
Nanomaterials Committee	3/15/2015	4:00 p.m. to 5:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 2	O
Thin Films and Interfaces Committee	3/15/2015	4:00 p.m. to 5:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 3	O
Women in Materials Science & Engineering Committee	3/15/2015	4:30 p.m. to 5:30 p.m.	Yacht & Beach	Asbury B	O
Materials Innovation Committee	3/15/2015	5:30 p.m. to 7:00 p.m.	Yacht & Beach	Cape Cod A	O
Nanomechanical Materials Behavior Committee	3/15/2015	5:45 p.m. to 6:45 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 1	O
Process Technology and Modeling Committee	3/15/2015	6:00 p.m. to 7:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 3	O

 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



Function	Date	Time	Facility	Room	Access
Pyrometallurgy Committee	3/15/2015	6:00 p.m. to 7:30 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 2	O
Professional Development Committee	3/15/2015	6:00 p.m. to 8:00 p.m.	Yacht & Beach	Asbury A	R
Content Development and Dissemination Committee	3/15/2015	6:00 p.m. to 8:00 p.m.	Yacht & Beach	Cape Cod C	I
Mechanical Behavior of Materials Committee	3/15/2015	7:00 p.m. to 8:30 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 8	O
Alloy Phases Committee	3/15/2015	7:30 p.m. to 9:30 p.m.	Yacht & Beach	Cape Cod D	O
Phase Transformation Committee	3/15/2015	7:30 p.m. to 9:30 p.m.	Yacht & Beach	Cape Cod A	O

## Monday, March 16

### All-Conference Events

Registration	3/16/2015	7:00 a.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
Programming Support Desk	3/16/2015	7:00 a.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
Presenters' Coffee	3/16/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Atlantic Hall	R
General, Symposium, Young Professional, and Student Poster Session Set-up	3/16/2015	8:00 a.m. to 12:00 p.m.	Dolphin	Atlantic Hall	O
Technical Programming	3/16/2015	8:30 a.m. to 5:30 p.m.	See Technical Program section for complete schedule and locations		O
Morning Break	3/16/2015	9:50 a.m. to 10:30 a.m.			O
Afternoon Break	3/16/2015	3:20 p.m. to 4:00 p.m.			O
Poster Session Presentations and Reception	3/16/2015	6:30 p.m. to 8:30 p.m.	Dolphin	Atlantic Hall	O
Young Professional Meet the Candidate Poster Session	3/16/2015	6:30 p.m. to 8:30 p.m.	Dolphin	Atlantic Hall	O

### Exhibition

TMS2015 Exhibition	3/16/2015	4:00 p.m. to 6:30 p.m.	Dolphin	Pacific Hall	O
TMS Information Center	3/16/2015	4:00 p.m. to 6:30 p.m.	Dolphin	Booth 401	O
Bladesmithing Competition	3/16/2015	4:00 p.m. to 6:30 p.m.	Dolphin	Booth 235	O
President's Welcoming Reception	3/16/2015	5:00 p.m. to 6:30 p.m.	Dolphin	Atlantic/Pacific Halls	O

### Special Presentations

EPD Distinguished Lecture	3/16/2015	8:30 a.m. to 9:10 a.m.	Yacht & Beach	Grand Harbor Ballroom Salon 2	O
Magnesium Technology 2015 Keynote Session	3/16/2015	8:30 a.m. to 10:50 a.m.	Dolphin	Northern Hemisphere E1	O
Light Metals Keynote Session: Latest Developments in Smelting of Light Metals	3/16/2015	8:30 a.m. to 12:00 p.m.	Dolphin	Southern Hemisphere I, II, III	O

### Student Events

Technical Division Student Poster Contest	3/16/2015	3:30 p.m. to 5:30 p.m.	Dolphin	Atlantic Hall	O
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### Social Functions

Women in Materials Science & Engineering Breakfast	3/16/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Americas Seminar	T
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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



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

**Committee & Business Meetings**

<i>Metallurgical and Materials Transactions A Board of Review</i>	3/16/2015	7:00 a.m. to 8:00 a.m.	Yacht & Beach	Saybrook	I
Membership & Student Development Committee	3/16/2015	8:45 a.m. to 10:00 a.m.	Dolphin	Europe 4	R
TMS Executive Committee	3/16/2015	10:00 a.m. to 11:00 a.m.	Yacht & Beach	Stonington	R
TMS Past Presidents Meeting	3/16/2015	11:30 a.m. to 1:00 p.m.	Dolphin	Europe 6	I
Superalloys 2016 Program Committee	3/16/2015	12:00 p.m. to 2:00 p.m.	Yacht & Beach	Cape Cod B	I
Integrated Computational Materials Engineering Committee	3/16/2015	12:15 p.m. to 1:45 p.m.	Dolphin	Europe 4	O
Powder Materials Committee	3/16/2015	12:30 p.m. to 2:00 p.m.	Swan	Lark	O
Superalloys 2016 Organizing Committee	3/16/2015	5:00 p.m. to 7:00 p.m.	Yacht & Beach	Hampton	I
Composite Materials Committee	3/16/2015	5:45 p.m. to 6:45 p.m.	Dolphin	Asia 5	O
Advanced Characterization, Testing and Simulation Committee	3/16/2015	5:45 p.m. to 6:45 p.m.	Swan	Pelican 2	O
Solidification Committee	3/16/2015	6:00 p.m. to 7:00 p.m.	Swan	Swan Ballroom Salon 1	O
Biomaterials Committee	3/16/2015	6:00 p.m. to 7:00 p.m.	Swan	Swan Ballroom Salon 9	O
Energy Conversion and Storage Committee	3/16/2015	6:00 p.m. to 7:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 1	O
Chemistry and Physics of Materials Committee	3/16/2015	6:00 p.m. to 7:30 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 4	O
Nuclear Materials Committee	3/16/2015	6:00 p.m. to 7:30 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 2	O
Materials & Society Committee	3/16/2015	6:00 p.m. to 8:00 p.m.	Yacht & Beach	Cape Cod B	I
Magnetic Materials Committee	3/16/2015	7:00 p.m. to 8:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Salon 7	O

**Tuesday, March 17**
**All-Conference Events**

Registration	3/17/2015	7:00 a.m. to 5:30 p.m.	Dolphin	Atlantic Hall	O
Programming Support Desk	3/17/2015	7:00 a.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O

 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



Function	Date	Time	Facility	Room	Access
Presenters' Coffee	3/17/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Atlantic Hall	R
Poster Gallery	3/17/2015	8:30 a.m. to 5:30 p.m.	Dolphin	Atlantic Hall	O
Technical Programming	3/17/2015	8:30 a.m. to 5:30 p.m.	See Technical Program section for complete schedule and locations		
Morning Break	3/17/2015	9:50 a.m. to 10:30 a.m.			
Afternoon Break	3/17/2015	3:20 p.m. to 4:00 p.m.			

## Exhibition

TMS2015 Exhibition	3/17/2015	10:00 a.m. to 5:30 p.m.	Dolphin	Pacific Hall	O
TMS Information Center	3/17/2015	10:00 a.m. to 5:30 p.m.	Dolphin	Booth 401	O
Bladesmithing Competition	3/17/2015	10:00 a.m. to 5:30 p.m.	Dolphin	Booth 235	O
Bladesmithing Awards Presentation	3/17/2015	1:30 p.m. to 2:00 p.m.	Dolphin	Booth 235	O
Happy Hour Reception	3/17/2015	4:30 p.m. to 5:30 p.m.	Dolphin	Pacific Hall	O

## Special Presentations

Young Professional Tutorial Luncheon & Lecture	3/17/2015	12:00 p.m. to 2:00 p.m.	Dolphin	Northern Hemisphere D	T
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## Student Events

Student Career Forum	3/17/2015	2:30 p.m. to 4:30 p.m.	Dolphin	Northern Hemisphere D	O
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## Social Functions

Faces of the TMS Foundation	3/17/2015	7:00 a.m. to 5:00 p.m.	Dolphin	Convention Registration Foyer	O
Connect Zone	3/17/2015	8:30 a.m. to 4:00 p.m.	Dolphin	Atlantic Hall	O
EPD/MPMD Joint Luncheon Lecture	3/17/2015	12:00 p.m. to 2:00 p.m.	Dolphin	Americas Seminar	T
TMS Foundation Silent Auction	3/17/2015	4:00 p.m. to 10:00 p.m.	Yacht & Beach	Grand Harbor Ballroom Lobby	O
TMS & AIME Awards Reception	3/17/2015	5:30 p.m. to 6:30 p.m.	Yacht & Beach	Grand Harbor Ballroom Lobby	O
TMS & AIME Awards Ceremony	3/17/2015	6:30 p.m. to 7:45 p.m.	Yacht & Beach	Grand Harbor Ballroom North	O
TMS & AIME Awards Banquet	3/17/2015	7:45 p.m. to 9:30 p.m.	Yacht & Beach	Grand Harbor Ballroom South	T

## Committee & Business Meetings

Electronic Packaging and Interconnection Materials Committee	3/17/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Europe 4	O
<i>Metallurgical and Materials Transactions B</i> Board of Review	3/17/2015	7:00 a.m. to 8:00 a.m.	Yacht & Beach	Saybrook	I
Fellows Award Committee	3/17/2015	7:30 a.m. to 8:30 a.m.	Yacht & Beach	Cape Cod D	R
Pan American Conference Planning Meeting	3/17/2015	7:30 a.m. to 9:30 a.m.	Yacht & Beach	Cape Cod B	I
Young Professionals Committee	3/17/2015	8:15 a.m. to 9:45 a.m.	Dolphin	Northern Hemisphere D	O
Honors & Professional Recognition Committee	3/17/2015	8:30 a.m. to 9:30 a.m.	Yacht & Beach	Cape Cod D	R

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

**Wednesday, March 18**
**All-Conference Events**

Registration	3/18/2015	7:00 a.m. to 5:00 p.m.	Dolphin	Atlantic Hall	O
Programming Support Desk	3/18/2015	7:00 a.m. to 6:00 p.m.	Dolphin	Atlantic Hall	O
Presenters' Coffee	3/18/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Atlantic Hall	R
Poster Gallery	3/18/2015	8:30 a.m. to 12:00 p.m.	Dolphin	Atlantic Hall	O
Technical Programming	3/18/2015	8:30 a.m. to 5:30 p.m.	See Technical Program section for complete schedule and locations		O
Morning Break	3/18/2015	9:50 a.m. to 10:30 a.m.			O
Afternoon Break	3/18/2015	3:20 p.m. to 4:00 p.m.			O
Poster Session - Tear Down	3/18/2015	12:00 p.m. to 5:00 p.m.	Dolphin	Atlantic Hall	O

**Exhibition**

TMS2015 Exhibition	3/18/2015	10:00 a.m. to 2:00 p.m.	Dolphin	Pacific Hall	O
TMS Information Center	3/18/2015	10:00 a.m. to 2:00 p.m.	Dolphin	Booth 401	O
Bladesmithing Competition	3/18/2015	10:00 a.m. to 2:00 p.m.	Dolphin	Booth 235	O
Lunch in Exhibition Hall	3/18/2015	11:30 a.m. to 1:30 p.m.	Dolphin	Pacific Hall	O

**Special Presentations**




Engineering Solutions for Sustainability Plenary I	3/18/2015	8:30 a.m. to 10:10 a.m.	Yacht & Beach	Grand Harbor Ballroom North	O
Engineering Solutions for Sustainability Poster Set-up	3/18/2015	10:00 a.m. to 5:00 p.m.	Yacht & Beach	Asbury Lobby	O

**Student Functions**

Student Send-off Lunch	3/18/2015	11:30 a.m. to 1:30 p.m.	Dolphin	Atlantic Hall	T
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**Social Functions**

Faces of the TMS Foundation	3/18/2015	7:00 a.m. to 5:00 p.m.	Dolphin	Convention Registration Foyer	O
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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



Function	Date	Time	Facility	Room	Access
Connect Zone	3/18/2015	8:30 a.m. to 11:30 a.m.	Dolphin	Atlantic Hall	O
LMD Luncheon	3/18/2015	12:00 p.m. to 2:00 p.m.	Dolphin	Southern Hemisphere 1	T
Connect Zone	3/18/2015	2:00 p.m. to 4:00 p.m.	Dolphin	Atlantic Hall	O
Engineering Solutions for Sustainability Reception	3/18/2015	5:30 p.m. to 7:30 p.m.	Yacht & Beach	Asbury Lobby	I

## Committee & Business Meetings

Audit Committee	3/18/2015	7:30 a.m. to 8:00 a.m.	Yacht & Beach	Stonington	R
Light Metals 2016 Subject Chairs Breakfast	3/18/2015	7:30 a.m. to 8:30 a.m.	Dolphin	Europe 1	R
TMS Board of Directors Meeting	3/18/2015	8:15 a.m. to 11:40 a.m.	Yacht & Beach	Cape Cod AB	I
TMS Annual Business Meeting	3/18/2015	8:25 a.m. to 8:30 a.m.	Yacht & Beach	Cape Cod AB	O
Graduate Student Advisory Council Recruitment Session	3/18/2015	9:00 a.m. to 10:00 a.m.	Dolphin	Europe 6	O
TMS Foundation Board of Trustees Meeting	3/18/2015	2:00 p.m. to 5:00 p.m.	Yacht & Beach	Cape Cod A	R
Programming Reception	3/18/2015	5:30 p.m. to 7:00 p.m.	Swan	Osprey 1	I

## Thursday, March 19

## All-Conference Events




Registration	3/19/2015	7:00 a.m. to 12:00 p.m.	Dolphin	Atlantic Hall	O
Programming Support Desk	3/19/2015	7:00 a.m. to 5:00 p.m.	Dolphin	Atlantic Hall	O
Presenters' Coffee	3/19/2015	7:00 a.m. to 8:00 a.m.	Dolphin	Atlantic Hall	R
Technical Programming	3/19/2015	8:30 a.m. to 5:30 p.m.	See Technical Program section for complete schedule and locations		O
Morning Break	3/19/2015	9:50 a.m. to 10:30 a.m.			O
Afternoon Break	3/19/2015	3:20 p.m. to 4:00 p.m.	Yacht & Beach		O

## Special Presentations

Engineering Solutions for Sustainability Poster Tear-down	3/19/2015	8:00 a.m. to 10:30 a.m.	Yacht & Beach	Asbury Lobby	O
Engineering Solutions for Sustainability Plenary II	3/19/2015	8:30 a.m. to 10:00 a.m.	Yacht & Beach	Asbury ABC	O

## Social Functions

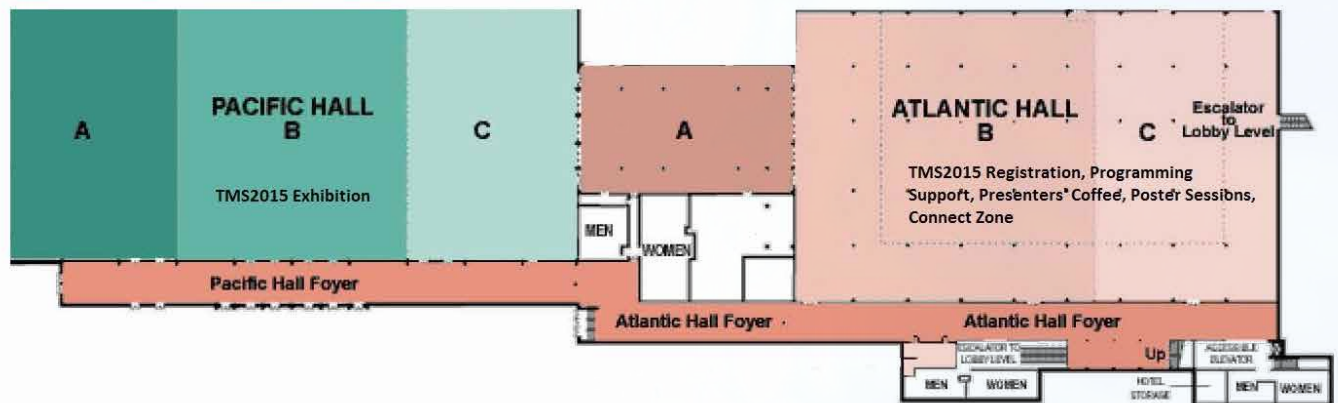
Faces of the TMS Foundation	3/19/2015	7:00 a.m. to 12:00 p.m.	Dolphin	Convention Registration Foyer	O
Connect Zone	3/19/2015	8:30 a.m. to 12:00 p.m.	Dolphin	Atlantic Hall	O
Repeat Attendee Luncheon	3/19/2015	11:30 a.m. to 1:30 p.m.	Yacht & Beach	Cape Cod ABC	I

 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

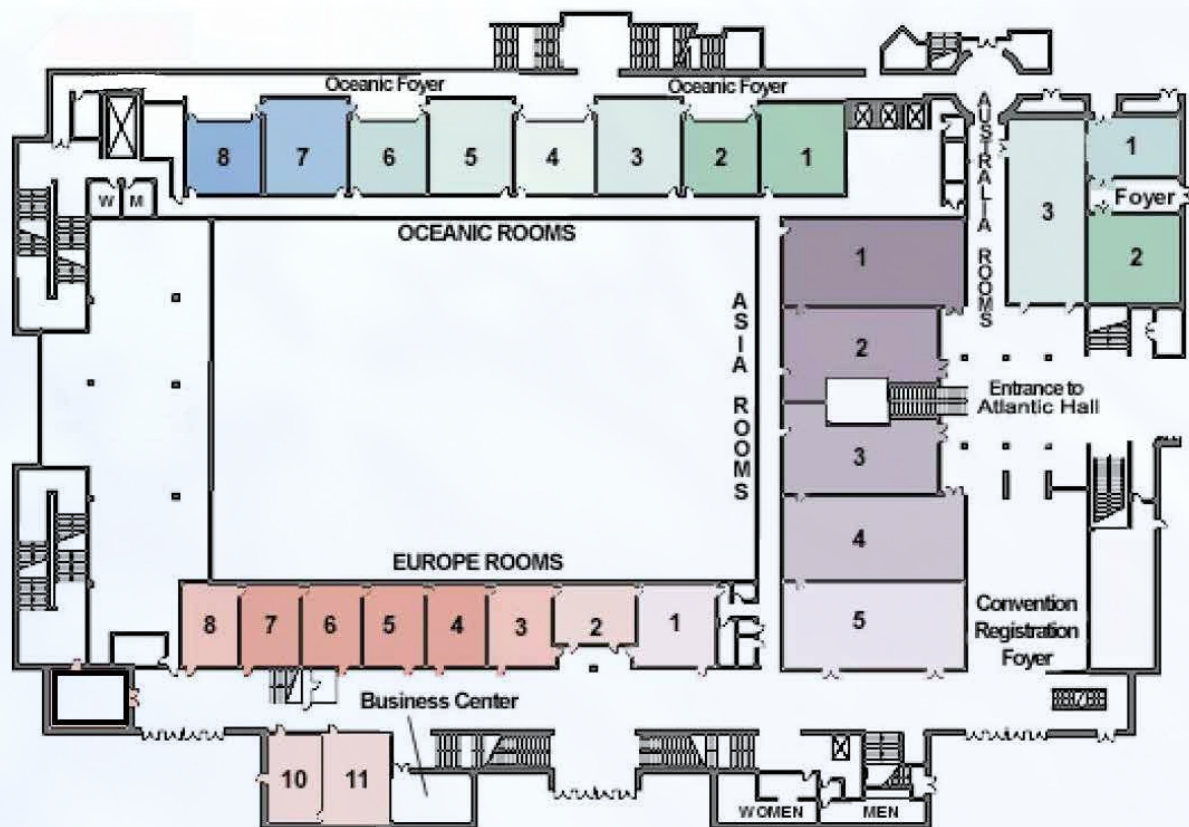
## Want to Get Involved?

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**

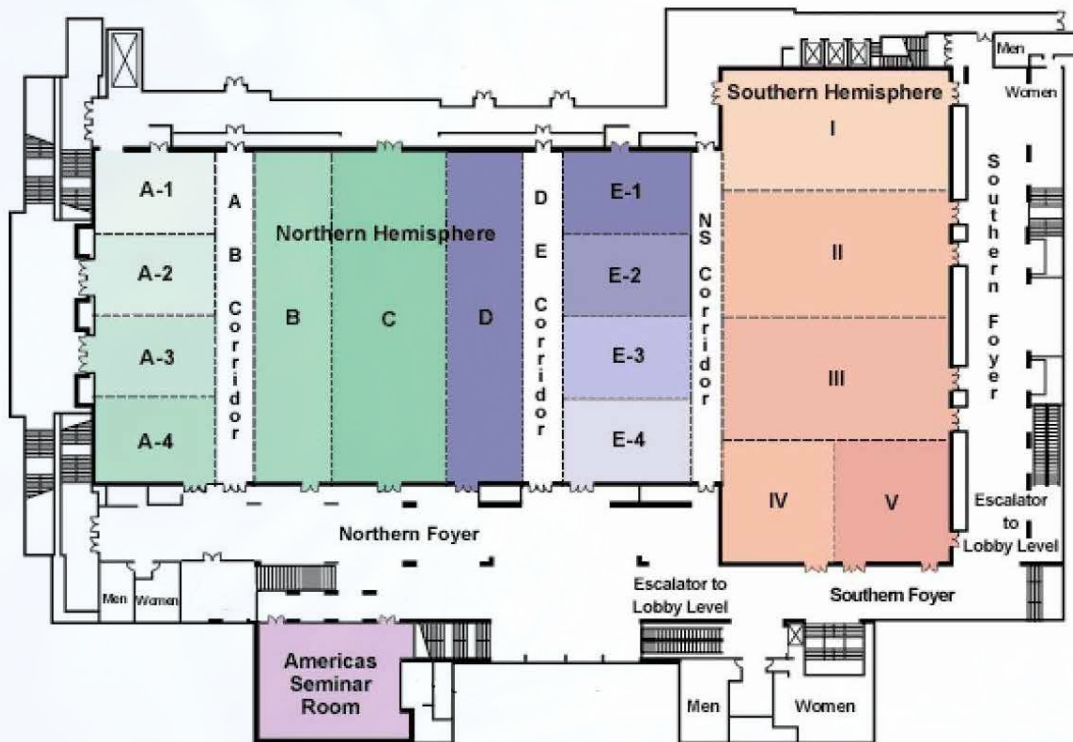


**Dolphin Lobby Level**

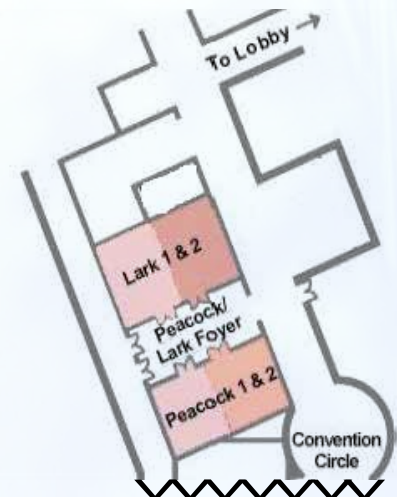
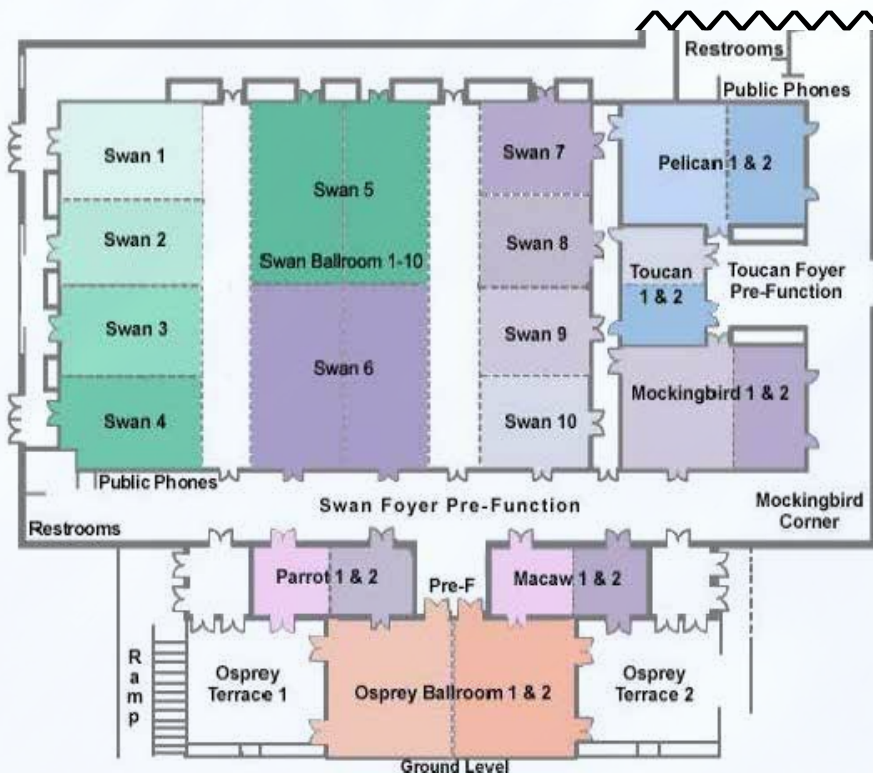




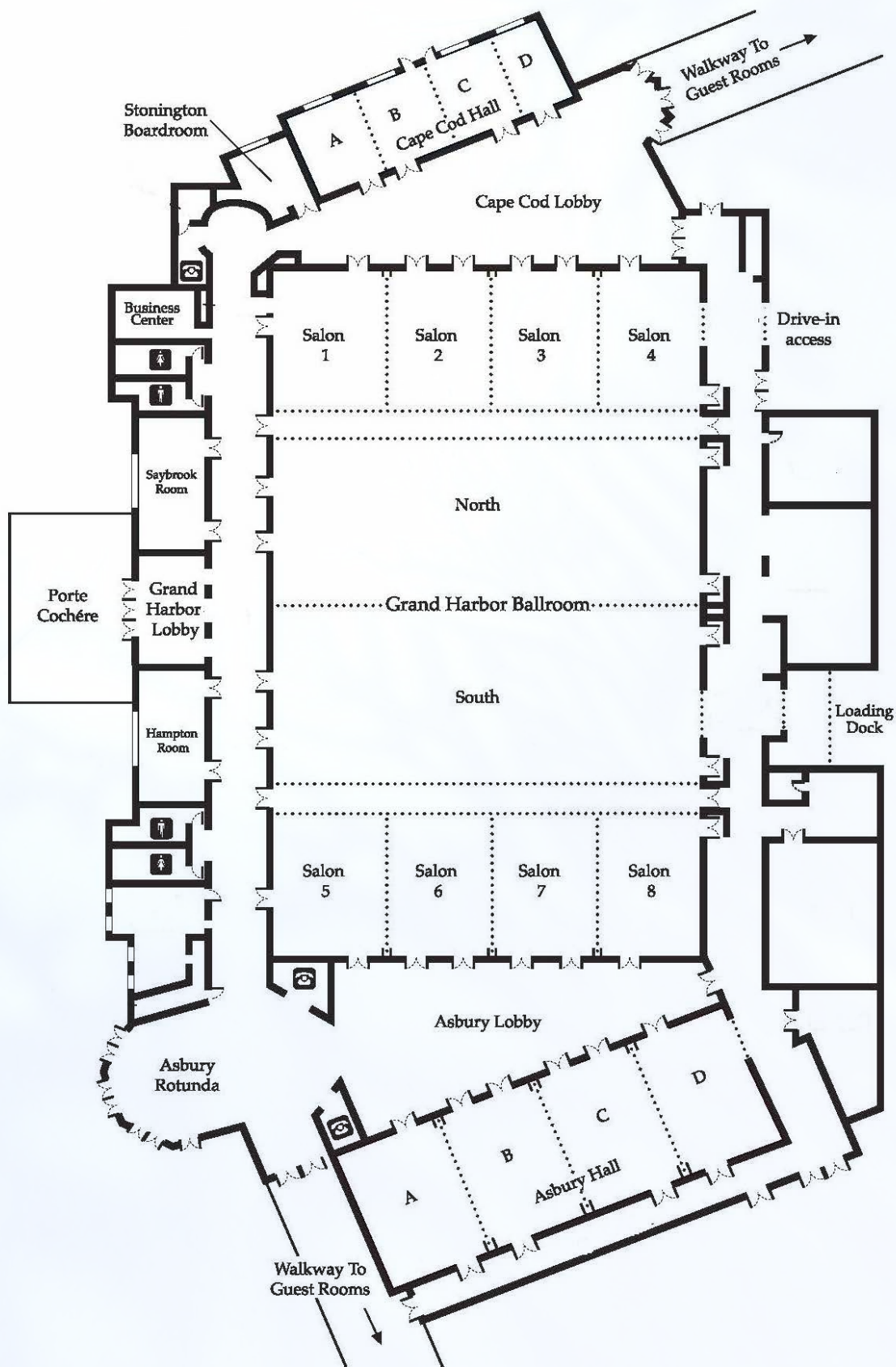
**Dolphin Hemispheres Ballroom**



**Swan Ballroom**



**Yacht & Beach Convention Center**





# JOM MATERIALS

## FICTION COUNTDOWN

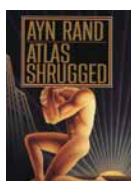
### WILL YOUR FAVORITE WIN?

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

TMS2015 attendees can vote  
using the convenient mobile form  
at [www.tms.org/vote](http://www.tms.org/vote)



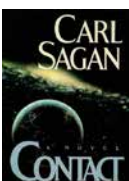
### The nominees for the Top Ten Greatest Works of Materials Fiction are:



Atlas Shrugged:  
Ayn Rand



Cat's Cradle:  
Kurt Vonnegut



Contact:  
Carl Sagan



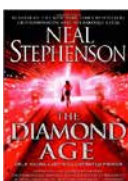
The Cross-Time  
Engineer:  
Leo Frankowski



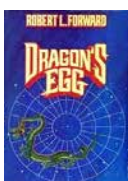
The Dark Knight  
Returns:  
Frank Miller



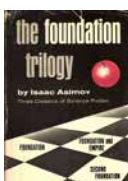
Days of Future  
Past:  
Chris Claremont  
and John Byrne



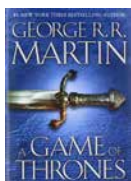
The Diamond Age:  
Neal Stephenson



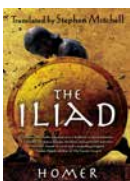
Dragon's Egg/  
Starquake:  
Robert L. Forward



Foundation  
(trilogy):  
Isaac Asimov



Game of Thrones  
(Song of Ice  
and Fire series):  
George R.R. Martin



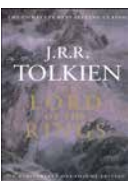
The Iliad:  
Homer



The Iron Giant:  
Ted Hughes



The Kalevala:  
Elias Lönnrot



Lord of the Rings  
(trilogy):  
J.R.R. Tolkien



The Magic  
Engineer:  
L.E. Modesitt, Jr.



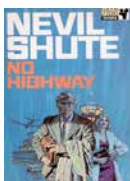
Mars (trilogy):  
Kim Stanley  
Robinson



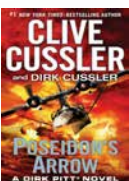
Merchant of  
Venice:  
William  
Shakespeare



Mysterious Island:  
Jules Verne



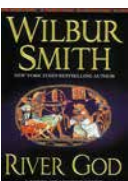
No Highway:  
Nevil Shute



Poseidon's Arrow:  
Clive Cussler and  
Dirk Cussler



"Profession":  
Isaac Asimov



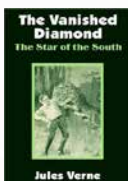
River God:  
Wilbur Smith



Sinclair, Wonder  
Bear:  
Malorie Blackman



Sublimation:  
W.M. Goldberger



The Vanished  
Diamond: Star of  
the South:  
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](http://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.

The books will be on display all week  
near the Faces of the Foundation booth.

OWN THE COMPLETE LIBRARY  
**JOM MATERIALS**  
FICTION COUNTDOWN

# 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, SiO<sub>2</sub>, and Al<sub>2</sub>O<sub>3</sub> 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 CO<sub>2</sub> Utilization"

**Asuncion Aranda**, Institute for Energy Technology-IFE, Norway



# Mg 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

“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

“The Application of Magnesium Alloys in Aircraft Interiors—Changing the Rules”

**Bruce Davis**, Magnesium Elektron North America, USA

“Solute Segregation and Aggregation in Mg Alloys”

**Jian-Feng Nie**, Monash University, Australia

## TMS SAVE THE DATES!

Mark your calendars now for these upcoming annual meetings with TMS:

### TMS Annual Meeting & Exhibition

2016	Nashville, Tennessee	February 14-18	Music City Center
2017	San Diego, California	February 26-March 2	San Diego Convention Center
2018	Phoenix, Arizona	March 11-15	Phoenix Convention Center
2019	San Antonio, Texas	March 10-14	Henry B. Gonzalez Convention Center
2020	San Diego, California	February 23-27	San Diego Convention Center
2021	Orlando, Florida	March 7-11	Marriott World Center

### Materials Science & Technology (MS&T)

2015	Columbus, Ohio	October 4-8	Greater Columbus Convention Center
2016	Salt Lake City, Utah	October 24-27	Salt Palace Convention Center

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

*A Special Symposium Planned as Part of the TMS 2015 Annual Meeting & Exhibition*



**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.

“Design of New Co-base Alloy Single Crystals: The Impact of an MGI Approach”



**Tresa Pollock**, University of California Santa Barbara, USA

The existence of the ordered L12 Co<sub>3</sub>(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.

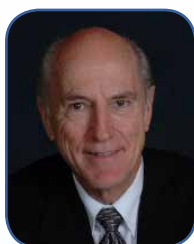


At the TMS 2015 Annual Meeting & Exhibition, three technical symposia will be held in honor of leaders in the minerals, metals, and materials community, and a fourth will be held in memory of Nagy El-Kaddah. The following symposia are planned:

### 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

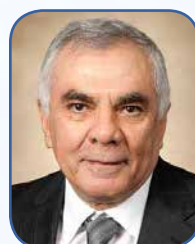


This symposium will discuss the current status and recent advances in research areas in which Armen Khachaturyan has made seminal contributions, including theory of phase transformations in metal and ceramic systems; thermodynamics and kinetics of alloy phase decomposition and ordering, martensitic and 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.*

## 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."



## 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 demonstrateproduction 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.***Help Build the Future Leaders of the  
Minerals, Metals, and Materials Community:****CONTRIBUTE TODAY!**[www.TMSFoundation.org](http://www.TMSFoundation.org)



## TUESDAY, MARCH 17

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.

## TMS Member Benefit #2

Discover new U.S. federal funding opportunities every week. Log in to **[members.tms.org](http://members.tms.org)** for a regularly updated listing of funding sources related to minerals, metals, and materials.

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.*



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Get Involved: Visit [volunteer.tms.org](http://volunteer.tms.org).

### Institute of Metals/Robert Franklin Mehl Award

**Date:** Tuesday, March 17 • 2:00 p.m. to 2:40 p.m.

**Location:** Swan Ballroom Salon 4, Swan Hotel



**Speaker:** Subhash Mahajan, University of California, Davis

**Lecture Title:** "The Role of Materials Science in Microelectronics: Past, Present, and Future"

**About the Topic:** Every leap in human civilization is associated with a material—think of the stone-, bronze-, and steel-ages. Even though the current era is referred to as the information age, it would be apt to call it the Materials Age because materials have played a crucial role without which the information age may not have been feasible. To illustrate the role of materials science in microelectronics, we have chosen the following examples:

- **Past Role:** Zone refining; growth of bulk silicon crystals
- **Present Role:** Reduction of dislocations in III-V crystals; degradation behavior of light emitting devices
- **Future Role:** Integration of dissimilar materials: two step-step epitaxy of GaN (0001) sapphire; high-temperature electronics

### TMS Member Benefit #3

Access *Metallurgical and Materials Transactions*, *Journal of Electronic Materials*, and more than 20 additional journals online by logging in to [members.tms.org](http://members.tms.org).



## 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.*

## TMS Member Benefit #4

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

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## 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

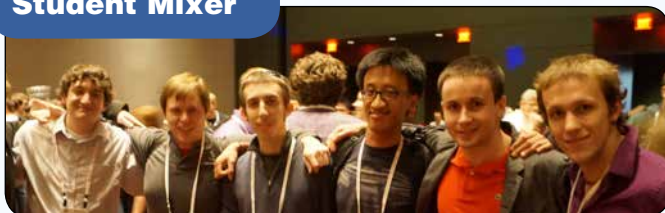
**Time:** 5:00 p.m. to 6:30 p.m.

**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

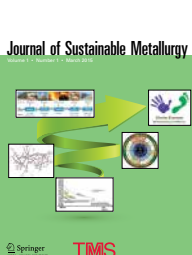
**Date:** Monday, March 16

**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.

	<p><b>Available Now:</b></p> <p><b><i>Journal of Sustainable Metallurgy</i></b> A new quarterly journal dedicated to presenting metallurgical processes and related research aimed at improving the sustainability of metal-producing industries.</p> <p>Pick up a copy today at the TMS Information Center in the Exhibit Hall, or at the Springer Booth, Atlantic Hall, Dolphin Hotel.</p>
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## 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

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)



TMS2015



March 17, 2015

Grand Harbor Ballroom, Yacht & Beach  
Convention Center

## Schedule of Events: \*

Reception: 5:30 p.m. to 6:30 p.m.

Awards Ceremony: 6:30 p.m. to 7:45 p.m.

Dinner: 7:45 p.m.

Entertainment: 8:30 p.m.

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

### 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.

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.



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

#### Fellow Award – Class of 2015

##### Iver Anderson

Senior Metallurgist, Iowa  
State University

##### Surya Kalidindi

Materials Science Professor,  
Georgia Institute of  
Technology

##### David Matlock

Professor, Colorado School  
of Mines

##### Michael Mills

Professor, Ohio State  
University

##### Christopher Schuh

Professor and Department  
Head, Massachusetts  
Institute of Technology

##### Barry Welch

Emeritus Professor,  
University of Auckland, and  
Director, Welbank Consulting  
Ltd.

##### Brimacombe

Medalist – Class of 2015

##### Michael Brady

Senior Research and  
Development Staff, Oak  
Ridge National Laboratory

##### W. Jud Ready

Principal Research Engineer,  
Georgia Institute of  
Technology

##### Michael Uchic

Materials Research  
Engineer, Air Force  
Research Laboratory

##### Matthew Willard

Associate Professor, Case  
Western Reserve University

#### Bruce Chalmers Award

##### Carl Koch

Professor, North Carolina  
State University

#### Cyril Stanley Smith Award

##### Michael Loretto

Emeritus Professor of  
Materials, University of  
Birmingham

#### Early Career Faculty Fellow Award

##### Antoine Allanore

Professor, Massachusetts  
Institute of Technology

##### Peter Hosemann

Professor, University of  
California

#### Institute of Metals & Robert Franklin Mehl Award

##### Subhash Mahajan

Distinguished Professor  
and Special Advisor to the  
Chancellor, University of  
California

#### Educator Award

##### Guenter Gottstein

Director of Institute, RWTH  
Aachen

#### Leadership Award

##### Yuntian Zhu

Distinguished Professor,  
North Carolina State  
University

##### William

Hume-Rothery Award

##### William Boettinger

Metallurgist-NIST Fellow,  
National Institute of Standards  
& Technology (NIST)

#### Morris Cohen Award

##### Marc André Meyers

Professor, University of  
California

#### Ellen Swallow Richards Diversity Award

##### Julia Weertman

Walter P. Murphy Professor  
Emerita of Materials  
Science and Engineering,  
Northwestern University



**AIME Awards**

**AIME Honorary  
Membership**

**Thaddeus Massalski**  
*Professor Emeritus, Carnegie  
Mellon University*

**AIME Champion  
H. Mathewson Award**

**Jian-Feng Nie**  
*Professor, Monash University*

**AIME Robert Lansing  
Hardy Award**

**Peter Hosemann**  
*Professor, University of  
California*

**AIME-EPD James  
Douglas Gold Medal**

**Uday B. Pal**  
*Professor, Boston University*

**AIME Presidential  
Citation**

**Brajendra Mishra**  
*Professor, Colorado School  
of Mines*

**AIME Henry deWitt  
Smith Scholarship**

**Alexandra Anderson**  
*Student, Colorado School of  
Mines*

**Mohsen Seifi**  
*Student, Case Western  
Reserve University*

**Additional Awards**

**Acta Materialia Gold  
Medal Award**

**David Embury**  
*Professor, McMaster  
University*

**Acta Materialia  
Hollomon Materials &  
Society Award**

**Tresa Pollock**  
*Alcoa Professor of Materials,  
University of California*

**Brimacombe Prize**

**Michel Rappaz**  
*Professor, École  
Polytechnique Fédérale de  
Lausanne*

**Division Awards**
**EXTRACTION &  
PROCESSING DIVISION  
(EPD)**

**Distinguished  
Lecturer Award**

**Uday B. Pal**  
*Professor, Boston University*

**Distinguished  
Service Award**

**Adrian Deneys**  
*Business Development  
Manager, Praxair Inc.  
Science Award*

**Tai Xi Zhu**  
*Ph.D. Candidate,  
McMaster University*

**Kenneth S. Coley**  
*Professor and Associate  
Dean, McMaster University*

**Gordon A. Irons**  
*Dofasco Professor, McMaster  
University*

**Matthew Peter King**  
*ArcelorMittal Dofasco*

**Technology Award**

**Katsutoshi Inoue**  
*Professor, Saga University*

**Shafiq Alam**  
*Associate Professor,  
University of Saskatchewan*

**Pyrometallurgy Best  
Paper Award**

**Lloyd Robert Nelson**  
*Head, Smelting and Refining  
Technology, Anglo American  
Platinum*

**FUNCTIONAL  
MATERIALS  
DIVISION (FMD)**

*Formerly Electronic, Magnetic &  
Photonic Materials Division*

**Distinguished  
Service Award**

**Sungho Jin**  
*Professor of Materials  
Science, University of  
California*

**Distinguished Scientist/  
Engineer Award**

**Kannan Krishnan**  
*Professor, University of  
Washington*

**John Bardeen Award**

**Chris Van de Walle**  
*Professor of Materials and  
Herbert Kroemer Endowed  
Chair in Materials Science,  
University of California*

**JEM Best Paper Award**

**MinSoo Park**  
*Senior Engineer, SK Hynix*

**Sean L. Gibbons**  
*Student, Naval Post-Graduate  
School*

**Raymundo Arroyave**  
*Assistant Professor, Texas  
A&M University*

**LIGHT METALS  
DIVISION (LMD)**

**Distinguished  
Service Award**

**Geoffrey Bearne**  
*General Manager, Rio Tinto*

**Technology Award**

**Jomar Thonstad**  
*Professor Emeritus,  
Norwegian University of  
Science and Technology*

**Light Metals Award**

**Jean-Marie Drezet**  
*Senior Scientist, École  
Polytechnique Fédérale de  
Lausanne*

**Pierre Celle**  
*R&D Process Engineer,  
Constellium, Centre de  
Recherches de Voreppe  
(CRV)*

**Olivier Ribaud**  
*Projects Manager,  
Constellium, CRV*

**Thilo Pirling**  
*Institut Laue Langevin*  
**Light Metals Subject  
Award - Aluminum  
Reduction Technology**

**Lukas Dion**  
*Student, University of Quebec*

**Laszlo Kiss**  
*University of Quebec*

**Dany Lavoie**  
*Technical Superintendent-  
Reduction, Aluminerie  
Alouette Inc.*

**Jean-Paul Arvisais**  
*Process Chemist,  
Aluminerie Alouette, Inc.*

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

**Rebecca Jayne Thorne**  
*Norwegian University of  
Science and Technology*

**Camilla Sommerseth**  
*Ph.D. Fellow, Norwegian  
University of Science and  
Technology*

**Ann Mari Svensson**  
*Norwegian University of  
Science and Technology*

**Espen Sandnes**  
*Hydro Aluminium a.s. Ardal*

**Lorentz Petter Lossius**  
*Principal Engineer, Hydro  
Aluminium a.s. Ardal*

**Hogne Linga**  
*Manager Carbon R&D, Hydro  
Aluminium a.s. Ardal*

**Arne Petter Ratvik**  
*Senior Scientist, Sintef*



Light Metals Subject  
Award – Aluminum  
Alloys

**Werner Fragner**

Head of Corporate  
Technology, Austria Metall  
GmbH

**Helmut Suppan**

Managing Director, AMAG  
Casting GmbH

**Marc Hummel**

Audi AG

**Dominik Bosch**

Friedrich-Alexander-  
Universität Erlangen-  
Nürnberg

**Peter Uggowitzer**

ETH Zurich

Light Metals Subject  
Award – Warren  
Peterson Cast Shop for  
Aluminum Production  
(See overall Light Metals Award)

Light Metals Subject  
Award – Recycling

**Amund Nordli Lovik**

Student, Norwegian  
University of Science and  
Technology

**Daniel B. Müller**

Norwegian University of  
Science and Technology

Energy Best Paper  
Award – Professional

**Ting-an Zhang**

Northeastern University

**Hongliang Zaho**

Northeastern University

**Yan Liu**

Northeastern University

**Zhihe Dou**

Northeastern University

**Guozhi Lv**

Northeastern University

**Qiuyue Zhao**

Northeastern University

**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

Magnesium Technology  
Best Poster

**Christian Klose**

Vice President Biomedical  
Technology and Lightweight  
Construction, Leibniz  
Universität Hannover

**Christian Demminger**

Researcher, Leibniz  
Universität Hannover

**Hans Jürgen Maier**

Director, Leibniz Universität  
Hannover

**JOM Best Paper Award**

**Thomas Eglinton**

Assets and Projects Manager,  
BP Castrol

**Jim Hinkley**

Research Scientist, CSIRO  
Energy Technology

**Andrew Beath**

Principal Research Engineer,  
CSIRO Energy Technology

**Mark Dell'Amico**

Consultant

**MATERIALS  
PROCESSING &  
MANUFACTURING  
DIVISION (MPMD)**

Distinguished  
Service Award

**Katsuyo Thornton**

Associate Professor,  
University of Michigan

Distinguished Scientist/  
Engineer Award

**Xiaodong (Chris) Li**

Professor, University of  
Virginia

**STRUCTURAL  
MATERIALS DIVISION  
(SMD)**

Distinguished  
Service Award

**Judy Schneider**

Professor, Mississippi State  
University

Distinguished Scientist/  
Engineer Award

**Michael Kassner**

Professor, University of  
Southern California

**JOM Best  
Paper Award**

**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**

### Xioafei Guan

Postdoctoral Research Associate, Boston University

### John Howarter

Assistant Professor, Purdue University

### Guillame 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 Brinacombe 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

**LMD Scholarships**

### Taylor Brown

Student, University of Alabama at Birmingham

### Douglas Fraser

Student, University of Wisconsin—Madison

### Aaron Kelley

Student, University of Alabama at Birmingham

**MPMD Scholarships**

### Alexandra Glover

Student, Michigan Technological University

### Alyx Kahn

Student, Clemson University

**SMD Scholarships**

### 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

### OFFICERS:

#### EXECUTIVE COMMITTEE

##### 2014 President

**Hani Henein**

Professor and Director of the Advanced Materials and Processing Laboratory, University of Alberta

##### 2014 Vice President/Incoming 2015 President

**Patrice Turchi**

Scientific Capability and Group Leader, Lawrence Livermore National Laboratory

##### Incoming 2015 Vice President

**Stanley M. Howard**

Materials and Metallurgical Engineering Professor, South Dakota School of Mines and Technology

##### Past President

**Elizabeth A. Holm**

Professor, Materials Science & Engineering, Carnegie Mellon University

##### Financial Planning Officer

**Robert W. Hyers**

Chief Technology Officer, Boston Electrometallurgical Corporation

##### Incoming Financial Planning Officer

**Joy Forsmark**

Technical Expert, Ford Motor Company

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##### Membership & Student Development

**David F. Bahr**

Professor, Purdue University

##### Incoming Membership & Student Development

**Amy J. Clarke**

Scientist, Los Alamos National Laboratory

##### Programming

**Neville R. Moody**

Manager, Sandia National Laboratories

##### Incoming Programming

**Srinivas Chada**

Component Packaging Engineer, Schlumberger HFE

##### Professional Development

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Professor, Auburn University

##### Content Development and Dissemination

**Eric N. Brown**

Group Leader, Neutron Science & Technology, Physics Division, Los Alamos National Laboratory

##### Public and Governmental Affairs

**Edward D. Herderick**

Additives Technology Leader, GE Corporate

#### TECHNICAL DIVISION DIRECTORS

##### Extraction & Processing Division

**Mark Schlesinger**

Professor, Missouri University of Science and Technology

##### Functional Materials Division (formerly EMPMD)

**Roger Narayan**

Associate Professor, University of North Carolina

##### Light Metals Division

**David H. DeYoung**

Director, GPP Business Technology, Alcoa Inc.

##### Materials Processing & Manufacturing Division

**James C. Foley**

R&D Manager, Los Alamos National Laboratory

##### Structural Materials Division

**Rajiv S. Mishra**

Professor, University of North Texas



## New Resources for Your Bookshelf:

# TMS2015

## ANNUAL MEETING

## PROCEEDINGS

### 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

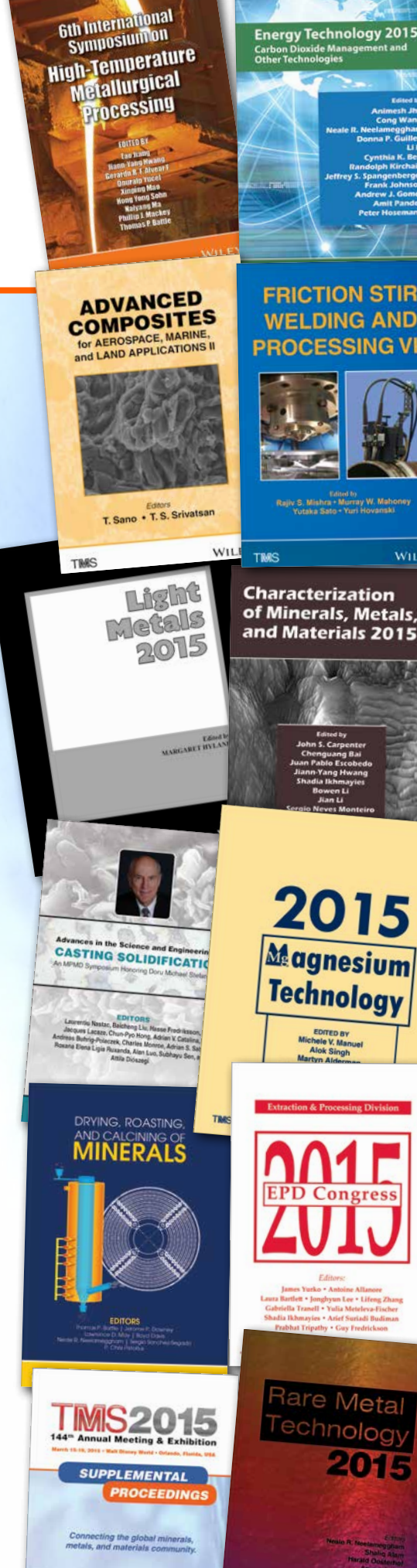
Print editions of the following volumes are also available for purchase at the Wiley booth, located in the registration area in the Dolphin hotel.

- 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
- Characterization of Minerals, Metals, and Materials 2015
- 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

For more information on TMS Publications, visit [www.tms.org/publications](http://www.tms.org/publications).

WILEY

TMS





Email: [info@computherm.com](mailto:info@computherm.com)

# TMS FOUNDATION Silent AUCTION

**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!





# TMS2015

## 144<sup>th</sup> Annual Meeting & Exhibition

March 15-19, 2015 • Walt Disney World • Orlando, Florida, USA

29th

## EXHIBITION

### ***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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MAIN ENTRANCE



**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 TARDIS 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. *Aluminium International Today* is a subscription magazine. For additional information, visit [www.aluminiumtoday.com](http://www.aluminiumtoday.com). Contact: *Aluminium International Today*, Quartz Business Media, Quartz House, 20 Clarendon Road, Redhill, Surrey RH1 1QX, UK; Tel +44 (0)1737 855000; Fax +44 (0)1737 855034; e-mail [aluminium@quartzltd.com](mailto: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](mailto:antonio.pucci@riotinto.com)

*Rio Tinto Alcan Yarwun Alumina Refinery – Queensland, Australia*

*High Temperature Digestion, Commissioned in 2004 and expanded in 2012*

**RioTintoAlcan**



**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

**ALTA 2015**  
23 - 30 May  
Perth, Australia

**Nickel-Cobalt-Copper, Uranium-REE and  
Gold-Precious Metals Conference & Exhibition**

**20<sup>th</sup> Anniversary Event**

**ALTA 2015** is the 20<sup>th</sup> anniversary of one of the world's leading annual metallurgical events. Organised by ALTA Metallurgical Services in cooperation with the International Atomic Energy Agency, the event is a gathering of the global Nickel, Cobalt, Copper, Uranium-REE and Gold-PM industries. ALTA Conferences are renowned for current, topical and high quality programs and 2015 will continue this 20-year track record. The final program typically includes 70+ papers.

PROGRAM OVERVIEW								
Saturday 23 May	Sunday 24 May	Monday 25 May	Tuesday 26 May	Wednesday 27 May	Thursday 28 May	Friday 29 May	Saturday 30 May	
SHORT COURSE	SHORT COURSE	CONFERENCE SESSIONS					SHORT COURSE	
Treatment of Nickel- Cobalt Laterites	Copper SX/EW Basic Principles and Detailed Plant Design	Nickel-Cobalt-Copper <i>Including Pressure Acid Leaching Forum &amp; Panel</i>			Uranium-REE <i>Including Uranium IX Forum &amp; Panel</i>  <i>in parallel with</i> <b>Gold-Precious Metals</b> <i>Including Treatment of Gold/Copper Ores Forum &amp; Panel</i>		Heap Leaching and its Application to Copper, Gold, Uranium and Nickel Ores	
		EXHIBITION						
		Welcome Reception	20 <sup>th</sup> Anniversary Dinner		Happy Hour			

Thank you to our ALTA 2015 Co-Sponsors



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[www.altamet.com.au](http://www.altamet.com.au)

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.

**Elsevier**

**Booth #514**

**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](mailto: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.

Join us in the Exhibit Hall for the



## Exhibit - Booth #235

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](http://www.glama.de)

**GNA alutech****Booth #217**

GNA is a recognized world leader in the design and construction of furnaces and equipment for the aluminum 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—inline 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](http://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.

Aluminium relevant research articles from companies and institutes are also published. The publication is thus of particular interest to smelters and remelters, semis producers, foundries, fabricators and converters, metal traders, semis stock holders, and research facilities. *International ALUMINIUM Journal* is circulated in over 40 countries worldwide—made in Germany and distributed to the world. Articles that are of global interest are published in English or bilingual (German and English).

**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](http://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 mm<sup>2</sup> 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](http://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](http://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](http://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](http://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](http://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!

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\* registered trademarks of SGL CARBON SE. Patent pending.

**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****Booth #208**

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.****Booth #206**

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.****Booth #214**

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****Booth #220**

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****Booth #426****RIEDHAMMER GmbH****Booth #211**

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****Booth #321**

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 AP™ 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)****Booth #202**

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, thermo-physical and physical properties, phase transformations and chemical properties. Data export available to casting, forming, forging and heat-treatment simulation packages. [www.jmatpro.com](http://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****Booth #225**

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****Booth #316**

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****Booth #315**

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/AlF<sub>3</sub> 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****Booth #422**

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****Booth #335****MATERIALS TECHNOLOGY MEETS EXTREME PERFORMANCE.**

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****Booth #200**

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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