TMS 2012
141st Annual Meeting & Exhibition

March 11 - 15, 2012
Walt Disney World
Swan and Dolphin Resort • Orlando, Florida

“Linking Science and Technology for Global Solutions”

www.tms.org/TMS2012

FINAL PROGRAM

LEARN • NETWORK • ADVANCE
Full Speed Ahead: Materials Innovation @ TMS Launches at TMS 2012

Join TMS in celebrating the launch of its new strategic initiative focused on accelerating the discovery, development, and deployment of materials systems and processes: Materials Innovation @ TMS.

What you experience at TMS 2012 is just the beginning of what Materials Innovation @ TMS can offer you. For the latest news on Materials Innovation @ TMS programs, resources, and activities, visit our website at materialsinnovation.tms.org.

Materials Innovation @ TMS Learning and Networking Opportunities

TMS 2012 Annual Meeting of the Membership
“Fueling Growth and Fostering Innovation”
Featuring the Official Membership Introduction of Materials Innovation @ TMS
Sunday, March 11: 7-8 p.m.
Walt Disney World Dolphin Resort—Southern II

Materials Innovation Gallery (See page 9 of this program for details.)
A showcase of ideas, techniques, and principles that can potentially transform the future of materials and manufacturing innovation.
TMS 2012 Exhibition * Booth 441
Open during regular Exhibition hours, starting at noon on Monday, March 12.

Special Plenary Session (See page 14 of this program for details.)
“Reaching New Heights: Materials Innovation in the Aerospace Industry”
Wednesday, March 14, 2-3:45 p.m.
Walt Disney World Dolphin Resort—Northern E2

2012 Federal Funding Workshop and Reception (See page 14 of this program for details.)
“Funding Opportunities to Advance the Materials Genome Initiative”
4 p.m.: Panel Discussion
5:15-6 p.m.: Networking Reception with Panelists
Walt Disney World Dolphin Resort—Northern C

Preview TMS’s New Open Access Journal (See page 9 of this program for details.)
Integrating Materials and Manufacturing Innovation (IMMI).
Opportunities to interact with IMMI editor, Chuck Ward, will be available during the conference.

For more information:
Stop by the Materials Innovation @ TMS Information Center located at the TMS Member Welcome Center.
Dear Colleagues & Friends!

As president of TMS, I offer a warm welcome to our members, society guests, exhibitors, and all other attendees who have gathered here in sunny Orlando, Florida for our 141st annual conference.

While compelling technical programming takes center stage at TMS2012, this meeting will offer a full menu of special events and new incentives for building our future with the TMS Foundation.

We are also introducing a new TMS2012 mobile application for smart phone users that will keep all conference information at your fingertips. See page 2 for more details about this amazing conference tool!

There are also a number of events planned this week to launch our new strategic initiative, Materials Innovation @ TMS, focused on accelerating the discovery, development, and deployment of materials systems and processes. I encourage you to browse the Materials Innovation Gallery at the Exhibition (Page 9), attend the plenary session, “Reaching New Heights: Materials Innovation in the Aerospace Industry,” (Page 20) and participate in the other Materials Innovation @ TMS activities highlighted in this program.

Here is a brief synopsis of the other valuable offerings at TMS2012:

**Technical Program & Poster Session** – Nearly 70 symposia will present the research of some of the world’s most distinguished materials scientists and engineers. Technical areas to be covered include: Advanced Characterization, Modeling and Materials Performance; High Performance Materials; Light Metals: Aluminum, Magnesium, and Titanium; Materials and Society: Energy and Sustainable Production; Materials Processing and Production; and Nanoscale and Amorphous Materials.

**Networking** – Second only to the technical programming offered at TMS2012 are the invaluable networking opportunities. By attending TMS2012 you reap the countless benefits of connecting with colleagues from around the world in person!

**Awards Presentation** – Honoring outstanding colleagues will be even more exciting with the TMS-AIME Awards Banquet at the World ShowPlace Pavilion East Hall in EPCOT. The banquet will conclude with an amazing fireworks display, “Disney IllumiNations: Reflections of Earth.”

**Special Lectures** – Compelling research and food for thought is on the agenda when you choose to attend a luncheon lecture, plenary session or presentation. See page 22 for more information.

**Student Events** – TMS realizes the future of the society and profession lies in its student members. Visit the Student Poster contest or enjoy the spirit of competition at the Materials Bowl, sponsored by Alcoa, all day Sunday. Details on student events are on page 28.

**Continuing Education** – Feel the power of knowledge. TMS2012 features compelling courses and workshops designed to enhance your conference experience.

Welcome to TMS2012 in warm and wonderful Orlando, Florida! Be prepared for the ultimate conference experience.

Sincerely,

Garry Warren

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Full Conference Registration

Your full conference registration includes a collected proceedings CD and your badge ensures admission to each of these events:

- Technical & Poster sessions
- Student Poster Contest
- Women in Science Breakfast Lecture
- Admission to TMS Materials Bowl Championship
- Three-day pass to TMS2012 Exhibition
- President’s Welcoming Reception
- Happy Hour Reception

Internet Options

Free wireless service will be available in the Author’s Coffee area located in Atlantic B Hall in the Dolphin Hotel Monday through Thursday.

Username: TMSWireless
Password: tms2012ame
(case sensitive, use all lower case)

CyberCenter Internet work stations, sponsored by Stellar Materials Inc., will be available in the exhibit hall located in the Pacific Room of the Dolphin Resort during regular show hours.

Policies

Badges

All attendees must wear registration badges at all times during the conference to ensure admission to events included in the paid fee such as technical sessions, exhibition and receptions. “Exhibit Only” badges provide exclusive admittance to the show floor for events in the exhibit hall. “Guest” badges are for spouses or companions of registered attendees and used as identification only. “Guest” and “Exhibit Only” attendees may not attend technical sessions.

Refunds

The deadline for all refunds was February 15, 2012. No refunds will be issued at the conference. Fees and tickets are nonrefundable.

Photography Notice

By registering for this conference, all attendees acknowledge that they may be photographed by TMS personnel while at events and that those photos may be used for promotional purposes.

Audio/Video Recording Policy

TMS reserves the right to all audio and video reproductions of presentations at TMS sponsored meetings. 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. Contact TMS Technical Programming at (724) 776-9000, ext. 212 to obtain a copy of the waiver release form.

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.

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 in the bins located in the Registration area.

NEW! TMS2012 Mobile Application

TMS is pleased to offer this new mobile application available for the 2012 Annual Meeting and Exhibition. Attendees will be able to easily download this free conference tool from the Apple iTunes Store for your iPhone or iPad and through the Android Marketplace.

Features:
- Latest programming schedule
- Interactive exhibit map
- Hotel information
- Speaker information
- Evaluations
- Schedule changes via Push Notifications
- Much more!

Through the application you will also be able to organize and track those events you wish to attend by building a “My Schedule” list plus quickly narrow current presentations with the “What’s on Now?” feature.

To download the TMS Mobile Application, search “TMS Annual Meeting” in your respective device store.

Join TMS in reducing, reusing and recycling.
### Schedule of Events

**TMS Meetings & Events** are scheduled on the following days, times and locations:

**Key:**
- **D** Dolphin Hotel
- **S** Swan Hotel

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>TIME</th>
<th>LOCATION</th>
<th>ROOM</th>
<th>ACCESS*</th>
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</thead>
<tbody>
<tr>
<td><strong>Saturday, March 10, 2012</strong></td>
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<tr>
<td>Exhibit Move-In</td>
<td>8:00 AM to 5:00 PM</td>
<td><strong>D</strong></td>
<td>Pacific</td>
<td><strong>O</strong></td>
</tr>
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</table>

| **Committee Meetings** | | | | |
|------------------------|----------------|----------------|----------------|
| Professional Registration Writers | 9:00 AM to 5:00 PM | **S** | Peacock 1 | **R** |
| Workshop and Committee Meeting | | | | |
| TMS Foundation Board of Trustees | 2:00 PM to 5:00 PM | **D** | President's Suite #200097 | **R** |
| Meeting | | | | |
| Professional Registration Committee | 6:00 PM to 8:00 PM | **S** | Peacock 2 | **R** |

| **Sunday, March 11, 2012** | | | | |
| All Conference Events | | | | |
| Registration | 7:00 AM to 6:00 PM | **D** | Atlantic | **O** |
| TMS Member Welcome Center | | | | |
| Materials Innovation at TMS Info Center, Visit Orlando, Visit San Antonio, and TMS Housing Representatives available through Thursday, March 15 | 7:00 AM to 6:00 PM | **D** | Atlantic | **O** |
| TMS Foundation Center | 7:00 AM to 6:00 PM | **D** | Atlantic | **O** |
| Exhibit Move-In | 8:00 AM to 5:00 PM | **D** | Pacific | **O** |
| General & Student Poster Sessions Set-Up | 12:00 PM to 5:00 PM | **D** | Atlantic | **O** |
| Young Leader Meet the Candidate Poster Session | 6:30 PM to 8:00 PM | **D** | Southern I | **O** |
| Poster Set-Up | 12:00 PM to 6:00 PM | **D** | Southern I | **O** |
| TMS Programming Support Center | 2:00 PM to 5:00 PM | **D** | Atlantic | **O** |

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* **O** - Open to all attendees
  * **R** - Restrictions Apply
  * **T** - Ticketed Event
  * **T1** - Pre-Registration Ticket Required
  * **T2** - Ticket Required, can be purchased/picked up at door
## Schedule of Events

**as of February 23, 2012**

<table>
<thead>
<tr>
<th>Special Presentations</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Course: Electrowinning and Electrorefining of Copper and Zinc</td>
<td>8:30 AM to 4:00 PM</td>
<td>Europe 2</td>
<td>D T</td>
</tr>
<tr>
<td>Short Course: Integrated Computational Materials Education</td>
<td>8:30 AM to 4:00 PM</td>
<td>Europe 3</td>
<td>T T</td>
</tr>
<tr>
<td>Short Course: Process Energy Modeling: Spreadsheets and Beyond</td>
<td>8:30 AM to 4:00 PM</td>
<td>Europe 6</td>
<td>T T</td>
</tr>
<tr>
<td>Short Course: Estimation of Slag Properties</td>
<td>8:30 AM to 4:30 PM</td>
<td>Europe 10</td>
<td>T T</td>
</tr>
<tr>
<td>Workshop: Lead Free Solders</td>
<td>9:00 AM to 4:30 PM</td>
<td>Asia 3</td>
<td>T1 T</td>
</tr>
<tr>
<td>Short Course/Workshop Breaks, Lunch</td>
<td>10:30 AM to 3:00 PM</td>
<td>Asia 4 &amp; 5</td>
<td>T T</td>
</tr>
<tr>
<td>Volunteer Leadership Program Leadership Materials: Tools to Build Your Career</td>
<td>1:00 PM to 4:00 PM</td>
<td>Northern A4</td>
<td>R</td>
</tr>
<tr>
<td>ABET Refresher Training</td>
<td>3:00 PM to 5:00 PM</td>
<td>Sandpiper</td>
<td>R</td>
</tr>
<tr>
<td>TMS Meeting of the Membership</td>
<td>7:00 PM to 8:00 PM</td>
<td>Southern II</td>
<td>O</td>
</tr>
</tbody>
</table>

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### Meet the Candidate Employment Poster Session

**Sunday, March 11 • 6:30 to 8 p.m. • Dolphin Hotel, Atlantic Room**

Organized by the TMS Young Leaders Committee, this new TMS event is designed to create networking opportunities for young professionals that will allow them to connect with potential employers for post-doctoral, full-time, or faculty positions. Candidates will present a poster to potential employers from various universities, industries, and national labs.

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### Visit the San Antonio, Texas Booth...site of TMS2013

Next to the Visit Orlando Concierge booth in the TMS Member Welcome Center located in the Dolphin Hotel Atlantic Hall
## Schedule of Events

<table>
<thead>
<tr>
<th>Committee Meetings</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMS Financial Planning Committee</td>
<td>7:00 AM to 9:30 AM</td>
<td>Parrot 1</td>
<td>S</td>
</tr>
<tr>
<td>Professional Registration Leadership Committee</td>
<td>8:00 AM to 10:00 AM</td>
<td>Teal</td>
<td>S</td>
</tr>
<tr>
<td>TMS Board of Directors Meeting</td>
<td>9:30 AM to 1:30 PM</td>
<td>Lark</td>
<td>S</td>
</tr>
<tr>
<td>REWAS Organizing Committee</td>
<td>10:00 AM to 11:30 AM</td>
<td>Peacock 1</td>
<td>S</td>
</tr>
<tr>
<td>Recycling and Environmental Technologies Committee</td>
<td>12:00 PM to 1:30 PM</td>
<td>Toucan 1</td>
<td>S</td>
</tr>
<tr>
<td>Accreditation Committee</td>
<td>12:30 PM to 2:30 PM</td>
<td>Toucan 2</td>
<td>S</td>
</tr>
<tr>
<td>Aluminum Processing Committee</td>
<td>1:30 PM to 2:30 PM</td>
<td>Parrot 1</td>
<td>S</td>
</tr>
<tr>
<td>Magnesium Committee</td>
<td>1:30 PM to 3:00 PM</td>
<td>Pelican 2</td>
<td>S</td>
</tr>
<tr>
<td>TMS Nominating Committee</td>
<td>2:00 PM to 3:00 PM</td>
<td>Parrot 2</td>
<td>S</td>
</tr>
<tr>
<td>Aluminum Committee</td>
<td>2:00 PM to 4:00 PM</td>
<td>Lark</td>
<td>S</td>
</tr>
<tr>
<td>Materials Characterization Committee</td>
<td>3:00 PM to 5:00 PM</td>
<td>Macaw 1</td>
<td>S</td>
</tr>
<tr>
<td>Program Committee</td>
<td>3:00 PM to 5:00 PM</td>
<td>Heron</td>
<td>S</td>
</tr>
<tr>
<td>Public and Governmental Affairs Committee</td>
<td>3:30 PM to 5:00 PM</td>
<td>Macaw 2</td>
<td>S</td>
</tr>
<tr>
<td>Nanomaterials Committee</td>
<td>4:00 PM to 5:00 PM</td>
<td>Europe 4</td>
<td>D</td>
</tr>
<tr>
<td>Thin Films and Interfaces Committee</td>
<td>4:00 PM to 5:00 PM</td>
<td>Pelican 2</td>
<td>S</td>
</tr>
<tr>
<td>PRICM 8 International Organizing Committee</td>
<td>4:00 PM to 6:00 PM</td>
<td>Parrot 2</td>
<td>S</td>
</tr>
<tr>
<td>LMD Council</td>
<td>4:30 PM to 6:00 PM</td>
<td>Ibis</td>
<td>S</td>
</tr>
<tr>
<td>Pyrometallurgy Committee</td>
<td>4:30 PM to 6:00 PM</td>
<td>Toucan 1</td>
<td>S</td>
</tr>
<tr>
<td>Content Development and Dissemination Committee</td>
<td>5:00 PM to 7:00 PM</td>
<td>Parrot 1</td>
<td>S</td>
</tr>
<tr>
<td>Nanomechanical Behaviors Materials Behavior Committee</td>
<td>5:45 PM to 6:45 PM</td>
<td>Toucan 2</td>
<td>S</td>
</tr>
<tr>
<td>Mechanical Behaviors of Materials Committee</td>
<td>7:00 PM to 8:30 PM</td>
<td>Toucan 2</td>
<td>S</td>
</tr>
<tr>
<td>Alloy Phases Committee</td>
<td>7:30 PM to 9:30 PM</td>
<td>Mockingbird</td>
<td>S</td>
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<tr>
<td>Phase Transformations Committee</td>
<td>7:30 PM to 9:30 PM</td>
<td>Toucan 1</td>
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</tbody>
</table>

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As of February 23, 2012
MEETING INFORMATION

**TMS ANNUAL MEETING OF THE MEMBERSHIP**

Sunday, March 11 • 7 to 8 p.m. • Dolphin Southern II

Don’t miss this important membership engagement opportunity—highlighted by the official introduction of **Materials Innovation @ TMS**, the society’s newest strategic initiative.

Also planned:

- Preview of new projects and programs for 2012
- TMS’s most recent accomplishments — including publication of its latest energy materials report on behalf of the U.S. Department of Energy
- TMS’s recent and expected financial performance

**Speakers:**

- Garry Warren........................2011 TMS President
- Wolfgang Schneider.............2012 TMS President
- Stanley M. Howard...............TMS Financial Planning Officer
- Warren H. Hunt ....................TMS Executive Director

**Member Welcome Center**

Dolphin Hotel, Atlantic Hall • Daily

Sunday: 7 a.m. to 6 p.m. • Monday: 7 a.m. to 6 p.m. • Tuesday: 7 a.m. to 5:30 p.m.
Wednesday: 7 a.m. to 5:00 p.m. • Thursday: 7 a.m. to 3:30 p.m.

Learn and gather information about your membership, volunteering with TMS, the TMS Foundation, and all of our upcoming events and activities! Discover all TMS can offer as, “Your Professional Partner for Career Advancement”.

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**Schedule of Events**

**Student Events**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
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</thead>
<tbody>
<tr>
<td>Materials Bowl</td>
<td>12:00 PM to 8:30 PM</td>
<td>Southern V</td>
<td>O</td>
</tr>
<tr>
<td>Elimination Rounds</td>
<td>12:00 PM to 3:00 PM</td>
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</tr>
<tr>
<td>Championship Round</td>
<td>8:00 PM to 8:30 PM</td>
<td>Southern III</td>
<td>T2</td>
</tr>
<tr>
<td>Student Network Mixer</td>
<td>8:30 PM to 10:30 PM</td>
<td>Southern III</td>
<td></td>
</tr>
</tbody>
</table>

**Social Functions**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellows and Invited Guests Reception</td>
<td>4:30 PM to 6:30 PM</td>
<td>Northern C</td>
<td>R</td>
</tr>
<tr>
<td>New Member/Young Leader Reception</td>
<td>5:00 PM to 6:00 PM</td>
<td>Southern IV</td>
<td>T2</td>
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</tbody>
</table>

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<tr>
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<th>ROOM</th>
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<tbody>
<tr>
<td><strong>All Conference Events</strong></td>
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<tr>
<td>Exhibit Move-In</td>
<td>7:00 AM to 11:00 AM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
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<tr>
<td>Author’s Coffee</td>
<td>7:00 AM to 8:00 AM</td>
<td>D</td>
<td>Atlantic</td>
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<tr>
<td>Registration</td>
<td>7:00 AM to 6:00 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Member Welcome Center</td>
<td>7:00 AM to 6:00 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Foundation Center</td>
<td>7:00 AM to 6:00 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Programming Support Center</td>
<td>7:00 AM to 5:00 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Technical Symposia</td>
<td>8:30 AM to 6:00 PM</td>
<td>See Technical Program for complete schedule and symposia locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Poster Session (Authors Present)</td>
<td>5:00 PM to 6:30 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td><strong>Poster Set Up</strong></td>
<td>7:00 AM to 8:00 AM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
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<tr>
<td>Materials Innovation at TMS Gallery</td>
<td>12:00 PM to 6:30 PM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
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<tr>
<td>TMS 2012 Exhibition</td>
<td>12:00 PM to 6:30 PM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
</tr>
<tr>
<td>President’s Welcoming Reception</td>
<td>5:00 PM to 6:30 PM</td>
<td>D</td>
<td>Pacific</td>
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**Special Presentations**

| | | | | |
|---|---|---|---|
| 2012 Aluminum Plenary: “Aluminum Technology 2020: A Look Ahead” | 8:00 AM to 12:00 PM | D | Southern III | O |
| Congressional Fellow Informational Meeting | 1:00 PM to 2:00 PM | S | Parrot 2 | O |
| IOMMMS Global Materials Forum: Materials In a Green Economy: An International Perspective | 2:00 PM to 6:30 PM | D | Northern A4 | O |
| Emeritus Professor George D.W. Smith Honorary Dinner | 6:30 PM to 8:00 PM | S | Lark | T |
| Randall M. German Honorary Dinner | 6:30 PM to 8:00 PM | S | Toucan | T |
| Rob Ritchie Honorary Dinner | 6:30 PM to 8:00 PM | S | Osprey 1 | T |
| Dinner in Memory of Patrick Veyssiere | 6:30 PM to 8:00 PM | S | Osprey 2 | T |
| T.T. Chen Honorary Dinner | 6:30 PM to 8:00 PM | D | Northern B | T |

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</thead>
<tbody>
<tr>
<td>MetTrans A Board of Review</td>
<td>7:00 AM to 8:00 AM</td>
<td>S</td>
<td>Toucan R</td>
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<tr>
<td>Process Technology &amp; Modeling Committee</td>
<td>7:00 AM to 8:00 AM</td>
<td>D</td>
<td>Europe 8 O</td>
</tr>
<tr>
<td>Membership and Student Development Committee</td>
<td>8:45 AM to 10:00 AM</td>
<td>D</td>
<td>Europe 4 R</td>
</tr>
<tr>
<td>TMS Past Presidents</td>
<td>11:00 AM to 1:00 PM</td>
<td>S</td>
<td>Teal R</td>
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<tr>
<td>EPD Council</td>
<td>12:00 PM to 2:00 PM</td>
<td>D</td>
<td>Asia 5 R</td>
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<tr>
<td>Superalloys Programming Committee</td>
<td>12:00 PM to 2:00 PM</td>
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<td>Heron R</td>
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<tr>
<td>ICME Committee</td>
<td>12:30 PM to 2:00 PM</td>
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<td>Peacock O</td>
</tr>
<tr>
<td>EMPMD Council</td>
<td>12:30 PM to 2:00 PM</td>
<td>D</td>
<td>Europe 7 R</td>
</tr>
<tr>
<td>Powder Materials Committee</td>
<td>12:30 PM to 2:00 PM</td>
<td>D</td>
<td>Europe 4 O</td>
</tr>
<tr>
<td>Springer TMS-ASM Strategic Planning</td>
<td>2:00 PM to 5:00 PM</td>
<td>S</td>
<td>Egret R</td>
</tr>
<tr>
<td>TMS-ASM Leadership Meeting</td>
<td>3:45 PM to 4:45 PM</td>
<td>D</td>
<td>President's Suite #200097 R</td>
</tr>
<tr>
<td>REWAS Committee</td>
<td>4:30 PM to 6:00 PM</td>
<td>D</td>
<td>Peacock R</td>
</tr>
<tr>
<td>Energy Conversion and Storage Committee</td>
<td>5:00 PM to 6:00 PM</td>
<td>D</td>
<td>Europe 7 O</td>
</tr>
<tr>
<td>Superalloys Organizing Committee</td>
<td>5:00 PM to 7:00 pm</td>
<td>S</td>
<td>Heron R</td>
</tr>
<tr>
<td>Chemistry and Physics of Materials Committee</td>
<td>5:30 PM to 6:30 PM</td>
<td>D</td>
<td>Europe 8 O</td>
</tr>
<tr>
<td>IOMMMS Committee</td>
<td>5:30 PM to 6:30 PM</td>
<td>D</td>
<td>Northern A4 O</td>
</tr>
<tr>
<td>Nuclear Materials Committee</td>
<td>5:30 PM to 7:00 PM</td>
<td>S</td>
<td>Swan 1 O</td>
</tr>
<tr>
<td>Advanced Characterization Testing and Simulation Committee</td>
<td>5:45 PM to 6:45 PM</td>
<td>S</td>
<td>Parrot 1 O</td>
</tr>
<tr>
<td>Composite Materials Committee</td>
<td>5:45 PM to 6:45 PM</td>
<td>S</td>
<td>Parrot 2 O</td>
</tr>
<tr>
<td>Surface Engineering Committee</td>
<td>6:00 PM to 7:00 PM</td>
<td>S</td>
<td>Macaw 1 O</td>
</tr>
<tr>
<td>Biomaterials Committee</td>
<td>6:00 PM to 7:00 PM</td>
<td>D</td>
<td>Europe 4 O</td>
</tr>
<tr>
<td>Hydrometallurgy and Electrometallurgy Committee</td>
<td>6:00 PM to 7:00 PM</td>
<td>D</td>
<td>Oceanic 5 O</td>
</tr>
<tr>
<td>Materials and Society Committee</td>
<td>6:00 PM to 8:00 PM</td>
<td>S</td>
<td>Peacock O</td>
</tr>
<tr>
<td>Technical Division Chairs Meeting</td>
<td>6:30 PM to 8:30 PM</td>
<td>S</td>
<td>Teal R</td>
</tr>
<tr>
<td>Magnetic Materials Committee</td>
<td>8:00 PM to 9:00 PM</td>
<td>D</td>
<td>Europe 10 O</td>
</tr>
</tbody>
</table>

* O - Open to all attendees  
** R - Restrictions Apply  
[ ] T - Ticketed Event  
[ ] T1 - Pre-Registration Ticket Required  
[ ] T2 - Ticket Required, can be purchased/picked up at door

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### 2012 Aluminum Plenary:
Aluminum Industry Technology 2020, A Look Ahead

Monday, March 12 • 8:30 a.m. to Noon • Dolphin Hotel, Southern III
**Schedule of Events**

**Student Events**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Open to All Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Poster Contest — Preliminary Judging</td>
<td>5:00 PM to 6:30 PM</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Poster Set Up</td>
<td>7:00 AM to 8:00 AM</td>
<td>Atlantic</td>
<td>O</td>
</tr>
</tbody>
</table>

**Social Functions**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Open to All Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women in Science Breakfast</td>
<td>7:00 AM to 8:00 AM</td>
<td>Northern B</td>
<td>T</td>
</tr>
<tr>
<td>TMS &amp; ASM Board of Trustees Social</td>
<td>8:30 PM to 9:30 PM</td>
<td>Northern E4</td>
<td>R</td>
</tr>
</tbody>
</table>

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**IOMMMS Global Materials Forum:**

**Materials in a Green Economy: An International Perspective,**

**Monday, March 12 • 2 p.m. • Dolphin Hotel, Northern A4**

Ten presentations, including an invited talk by AIME President Brajendra Mishra, “The Role of Materials Recycling in Economic Sustainability”, will be offered.

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**MATERIALS INNOVATION GALLERY**

**Monday, March 12 through Wednesday, March 14**

**TMS2012 Exhibition Hall - Dolphin Hotel, Pacific Room**

Welcome to TMS’s showcase of ideas on how the techniques and principles that form the foundation for Materials Innovation @ TMS can potentially transform the development and deployment of advanced materials. A special feature of the TMS 2012 Exhibition, the Gallery has been designed to provide a visually compelling glimpse of how these concepts can potentially transform the future of materials and manufacturing innovation. You’ll also have the opportunity to learn about the array of resources that are being offered as part of Materials Innovation @ TMS — highlighted by a preview of *Integrating Materials and Manufacturing Innovation (IMMI)*, TMS’s new, peer-reviewed Open Access publication.

**The Materials Innovation Gallery will be open throughout the conference during regular exhibition hours, so stop by often!**
### Schedule of Events

#### Tuesday, March 13, 2012

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>TIME</th>
<th>LOCATION</th>
<th>ROOM</th>
<th>ACCESS*</th>
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</thead>
<tbody>
<tr>
<td><strong>All Conference Events</strong></td>
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</tr>
<tr>
<td>Author’s Coffee</td>
<td>7:00 AM to 8:00 AM</td>
<td>D</td>
<td>Atlantic</td>
<td>R</td>
</tr>
<tr>
<td>Registration</td>
<td>7:00 AM to 5:30 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Member Welcome Center</td>
<td>7:00 AM to 5:30 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Foundation Center</td>
<td>7:00 AM to 5:30 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>General Poster Session Gallery</td>
<td>7:00 AM to 5:30 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>TMS Programming Support Center</td>
<td>7:00 AM to 5:00 PM</td>
<td>D</td>
<td>Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Technical Symposia</td>
<td>8:30 AM to 6:00 PM</td>
<td>See Technical Program for complete schedule and symposia locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS 2012 Exhibition</td>
<td>10:30 AM to 6:00 PM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
</tr>
<tr>
<td>Materials Innovation at TMS Gallery</td>
<td>10:30 AM to 6:00 PM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
</tr>
<tr>
<td>Happy Hour Reception</td>
<td>5:00 PM to 6:00 PM</td>
<td>D</td>
<td>Pacific</td>
<td>O</td>
</tr>
<tr>
<td><strong>Special Presentations</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Young Leaders Tutorial Luncheon</td>
<td>12:00 PM to 2:00 PM</td>
<td>S</td>
<td>Osprey 1</td>
<td>T</td>
</tr>
<tr>
<td>EPD/MPMD Luncheon: Institute of Metals/ Robert Franklin Mehl Award featuring Subra Suresh</td>
<td>12:00 PM to 2:15 PM</td>
<td>D</td>
<td>Northern C</td>
<td>T</td>
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<tr>
<td><strong>Committee Meetings</strong></td>
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<td></td>
</tr>
<tr>
<td>Electronic Packaging and Interconnection Materials Committee</td>
<td>7:00 AM to 8:00 AM</td>
<td>S</td>
<td>Parrott</td>
<td>O</td>
</tr>
<tr>
<td>MetTrans B Board of Review</td>
<td>7:00 AM to 8:00 AM</td>
<td>S</td>
<td>Toucan</td>
<td>R</td>
</tr>
<tr>
<td>MPMD Council</td>
<td>7:00 AM to 9:00 AM</td>
<td>S</td>
<td>Peacock</td>
<td>R</td>
</tr>
<tr>
<td>Honors and Professional Recognition Committee</td>
<td>7:30 AM to 8:30 AM</td>
<td>S</td>
<td>Teal</td>
<td>R</td>
</tr>
<tr>
<td>Young Leaders Business Committee</td>
<td>9:00 AM to 10:30 AM</td>
<td>S</td>
<td>Toucan</td>
<td>R</td>
</tr>
<tr>
<td>TMS-FEMS Leadership Meeting</td>
<td>9:00 AM to 10:00 AM</td>
<td>D</td>
<td>President’s Suite #200097</td>
<td>R</td>
</tr>
<tr>
<td>Springer Editorial Manager Orientation</td>
<td>12:00 PM to 1:00 PM</td>
<td>S</td>
<td>Peacock</td>
<td>R</td>
</tr>
<tr>
<td>SMD Council</td>
<td>12:00 PM to 2:00 PM</td>
<td>S</td>
<td>Parrott</td>
<td>R</td>
</tr>
<tr>
<td>Education Committee</td>
<td>12:30 PM to 2:00 PM</td>
<td>S</td>
<td>Toucan</td>
<td>R</td>
</tr>
</tbody>
</table>

* O - Open to all attendees  
  R - Restrictions Apply  
  T - Ticketed Event  
  T1 - Pre-Registration Ticket Required  
  T2 - Ticket Required, can be purchased/picked up at door
**Schedule of Events**

* as of February 23, 2012

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
<th>Restrictions</th>
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<tbody>
<tr>
<td>TMS-MetSoc Leadership Meeting</td>
<td>2:00 PM to 3:00 PM</td>
<td>President's Suite #200097</td>
<td>D</td>
<td>R</td>
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<tr>
<td>TMS Executive Committee</td>
<td>3:00 PM to 4:00 PM</td>
<td>President's Suite #200097</td>
<td>D</td>
<td>R</td>
</tr>
<tr>
<td>Energy Committee</td>
<td>5:00 PM to 6:00 PM</td>
<td>Parrott</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Computational Materials Science and Engineering Committee</td>
<td>5:30 PM to 6:30 PM</td>
<td>Lark</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Refractory Metals Committee</td>
<td>5:30 PM to 6:30 PM</td>
<td>Sandpiper</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>High Temperature Alloys Committee</td>
<td>5:30 PM to 7:00 PM</td>
<td>Peacock</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Solidification Committee</td>
<td>6:00 PM to 7:00 PM</td>
<td>Teal</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Titanium Committee</td>
<td>6:00 PM to 7:00 PM</td>
<td>Oceanic 3</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td>Shaping and Forming Committee</td>
<td>6:00 PM to 8:00 PM</td>
<td>Oceanic 8</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td>Corrosion and Environmental Effects Committee</td>
<td>6:30 PM to 7:30 PM</td>
<td>Lark</td>
<td>S</td>
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</table>

**Student Events**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Poster Contest- Best of Show Judging</td>
<td>10:30 AM to 11:30 AM</td>
<td>Atlantic</td>
<td>D</td>
</tr>
<tr>
<td>Student Career Forum</td>
<td>3:00 PM to 5:00 PM</td>
<td>Osprey 2</td>
<td>S</td>
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**Social Functions**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMS-AIME Awards Reception</td>
<td>6:00 PM to 6:45 PM</td>
<td>EPCOT</td>
<td>T1</td>
</tr>
<tr>
<td>Shuttles will transport ticketed attendees to EPCOT</td>
<td>5:30 PM to 6:30 PM</td>
<td>Europe Foyer</td>
<td>T1</td>
</tr>
<tr>
<td>TMS-AIME Awards Banquet</td>
<td>6:45 PM to 10:00 PM</td>
<td>EPCOT</td>
<td>T1</td>
</tr>
<tr>
<td>Shuttles will transport attendees to Swan, Dolphin, Caribbean Beach, and Coronado Springs Resorts</td>
<td>9:15 PM to 9:45 PM</td>
<td>EPCOT</td>
<td>T1</td>
</tr>
</tbody>
</table>

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**PREMIUM ITEMS DONATION PROGRAM***

Help the TMS Foundation continue to support these society-building initiatives:

- **Young Leaders Program**
- **Materials & Society** (Past projects include: TMS- Engineers Without Borders-USA Mali, Africa Project Partnership)
- **Vittorio DeNora Prize for Environmental Improvements in Metallurgical Industries**
- **TMS Scholarship Program**

Receive these items for donations of the following correlating amounts:

- **$10** – TMS Pin
- **$25** – TMS Umbrella
- **$50** – Periodic Table Mug
- **$250** – Apple TV
- **$500** – Kindle Fire
- **$1,000** – iPad

*The Premium Item Donation Program will run through April 15.

**Disney Drawings**

Enter to win Disney Park Hopper passes through a daily drawing held for the duration of the conference. Simply drop your business card off at the Foundation Booth.
## MEETING INFORMATION

### FUNCTION TIME LOCATION ROOM ACCESS*

**Wednesday, March 14, 2012**

### All Conference Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Room Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author's Coffee</td>
<td>7:00 AM to 8:00 AM</td>
<td>D Atlantic</td>
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<tr>
<td>Registration</td>
<td>7:00 AM to 5:00 PM</td>
<td>D Atlantic</td>
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<tr>
<td>TMS Member Welcome Center</td>
<td>7:00 AM to 5:00 PM</td>
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<tr>
<td>TMS Foundation Center</td>
<td>7:00 AM to 5:00 PM</td>
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<tr>
<td>TMS Programming Support Center</td>
<td>7:00 AM to 5:00 PM</td>
<td>D Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Poster Tear Down</td>
<td>3:00 PM to 5:00 PM</td>
<td>D Atlantic</td>
<td>O</td>
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<tr>
<td>General Poster Session</td>
<td>7:00 AM to 3:00 PM</td>
<td>D Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Poster Session Tear Down</td>
<td>3:00 PM to 5:00 PM</td>
<td>D Atlantic</td>
<td>O</td>
</tr>
<tr>
<td>Technical Symposia</td>
<td>8:30 AM to 6:00 PM</td>
<td>See Technical Program for complete schedule and symposia locations</td>
<td></td>
</tr>
<tr>
<td>Materials Innovation at TMS Gallery</td>
<td>10:30 AM to 3:30 PM</td>
<td>D Pacific</td>
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</tr>
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<td>TMS 2012 Exhibition</td>
<td>10:30 AM to 3:00 PM</td>
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### Special Presentations

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td>LMD Luncheon</td>
<td>12:00 PM to 2:00 PM</td>
<td>S Osprey</td>
<td>T</td>
</tr>
<tr>
<td>Materials Innovation Plenary Session</td>
<td>2:00 PM to 3:45 PM</td>
<td>D Northern E2</td>
<td>O</td>
</tr>
<tr>
<td>Federal Funding Workshop &amp; Reception</td>
<td>4:00 PM to 6:00 PM</td>
<td>D Northern C</td>
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</table>

### Special Plenary Session:

**Reaching New Heights: Materials Innovation in the Aerospace Industry**

Wednesday, March 14 • Dolphin Hotel, Northern E2

New materials development is at a crucial stage of evolution, with Integrated Computational Materials Engineering (ICME) and new data sharing breakthroughs paving the way to remarkable time and cost reductions in product deployment. Through a series of compelling case studies, this program offers insights that can be applied to many aspects of product manufacturing, with significant impact on economic security and the race to heightened competitiveness.

### Federal Funding Workshop and Reception

**“Funding Opportunities to Advance the Materials Genome Initiative”**

Panel Discussion: 4 p.m. • Reception: 5:15 to 6 p.m.
Wednesday, March 14 • Dolphin Hotel, Northern C

Don’t miss this highly interactive session on funding opportunities related to the U.S. Materials Genome Initiative (MGI), as presented by program leaders from an array of federal funding agencies. Networking reception sponsored by the Georgia Institute of Technology.
### Schedule of Events

**as of February 23, 2012**

<table>
<thead>
<tr>
<th>Committee Meetings</th>
<th>Time</th>
<th>Hotel</th>
<th>Location</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMS Board of Directors</td>
<td>8:00 AM to 11:30 AM</td>
<td>S</td>
<td>Lark</td>
<td>O</td>
</tr>
<tr>
<td>Graduate Student Advisory Council</td>
<td>9:00 AM to 10:00 AM</td>
<td>S</td>
<td>Toucan</td>
<td>R</td>
</tr>
<tr>
<td>Ni-Co 2013 Organizing Committee</td>
<td>12:00 PM to 1:30 PM</td>
<td>S</td>
<td>Sandpiper</td>
<td>R</td>
</tr>
<tr>
<td>Met Trans B Editorial Meeting</td>
<td>1:00 PM to 3:00 PM</td>
<td>S</td>
<td>Parrot 2</td>
<td>R</td>
</tr>
<tr>
<td>TMS-SME Leadership Meeting</td>
<td>3:30 PM to 4:30 PM</td>
<td>D</td>
<td>President's Suite #200097</td>
<td>R</td>
</tr>
<tr>
<td>Women in Materials Science and Engineering Committee</td>
<td>4:00 PM to 5:00 PM</td>
<td>D</td>
<td>Asia 5</td>
<td>R</td>
</tr>
<tr>
<td>Materials and Manufacturing Leaders Summit Reception &amp; Dinner</td>
<td>6:00 PM to 9:00 PM</td>
<td>D</td>
<td>Northern D</td>
<td>R</td>
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</tbody>
</table>

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**Bechtel is proud to support TMS 2012:**

TMS’s 141st Annual Meeting and Exhibition

With a ‘can-do’ attitude, Bechtel achieves what others don’t even attempt, and we proudly stand by everything we do.

For more information on Bechtel, visit bechtel.com

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**A history of delivering ground breaking projects**

**Shaping tomorrow together**
### Schedule of Events

**Thursday, March 15, 2012**

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>TIME</th>
<th>LOCATION</th>
<th>ROOM</th>
<th>ACCESS*</th>
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<tr>
<td><strong>All Conference Events</strong></td>
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<tr>
<td>Registration Satellite Desk</td>
<td>3:30 PM to 5:00 PM</td>
<td>D</td>
<td>Convention Foyer</td>
<td>O</td>
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<tr>
<td>TMS Programming Support Center</td>
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<tr>
<th><strong>Committee Meetings</strong></th>
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<td>Materials and Manufacturing Leaders Summit</td>
<td>8:00 AM to 4:30 PM</td>
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<tr>
<td>Materials and Manufacturing Leaders Summit Lunch</td>
<td>12:00 PM to 1:00 PM</td>
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* O - Open to all attendees
R - Restrictions Apply
T - Ticketed Event
T1 - Pre-Registration Ticket Required
T2 - Ticket Required, can be purchased/picked up at door

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**TAR ALLIANCE LLC**

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Fax: +380 (62) 206-78-15
e-mail: info@taralliance.com
http://www.taralliance.com

TAR ALLIANCE LLC is the largest processor of Coal Tar in Ukraine. We supply binder pitch and various coal tar distillates to customers in Europe, Asia, Africa and the Americas.
Please note, colors indicated above represent the primary functions scheduled in rooms. However, many rooms are in use for multiple events and function types. Please refer to the Schedule of Events for detailed locations and times.
MEETING INFORMATION

Swan Hotel Map

- Committees and Special Events: Toucan, Pelican, Peacock, Lark Suites
- Committee Meetings: Swan Hospitality Sweets
  Second Floor
- Programming: Swan Ballroom and Meeting Spaces
- Programming: Mockingbird and Macaw Ballroom and Meeting Spaces
- Committees and Special Events: Osprey and Parrot Ballroom and Meeting space

Please note, colors indicated above represent the primary functions scheduled in rooms. However, many rooms are in use for multiple events and function types. Please refer to the Schedule of Events for detailed locations and times.
The aerospace industry is a demonstrated leader in materials innovation and acceleration. Through a series of compelling case studies, this program offers insights that can be applied to many aspects of product manufacturing, with significant impact on economic security and the race to heightened competitiveness. (Presented in cooperation with Integrating Materials and Manufacturing Innovation (IMMI) TMS’s new Open Access journal.)

**Moderator:** Charles Ward, Chief, Metals, Ceramics, & Nondestructive Evaluation Division, U.S. Air Force Research Laboratory; Editor, Integrating Materials and Manufacturing Innovation

**TOPICS AND SPEAKERS:**

**James Warren**
Leader, Thermodynamics and Kinetics Group, Metallurgy Division National Institute of Standards and Technology; Technology Advisor to the Director on the Materials Genome Initiative
**Topic:** Materials Genome Initiative

The Materials Genome Initiative (MGI) is a new, multi-stakeholder effort to develop an infrastructure for accelerating advanced materials discovery and deployment in the United States. This talk will provide a brief introduction to the MGI, and set the stage for the case studies discussed in this session.

**Robert E. Schafrik**
General Manager, Materials and Process Engineering Department GE Aviation
**Topic:** ICME: Promise and Future Directions

GE Aviation has been engaged in various aspects of integrated computational materials engineering (ICME) for 10 years, driven primarily by the desire to implement new materials development within half the standard time. To accomplish this, a close relationship with design engineering and supply chain has been established.

**Charles Kuehmann**
President and CEO QuesTek Innovations LLC
**Topic:** Lessons Learned from the Trenches and Implications on ICME and the MGI

The Materials Genome Initiative challenges innovation in materials modeling and engineering methods, enabling new materials to reach commercial application in half the time of current capabilities. In this new paradigm, a specific engineering problem must dictate the priorities for developing MGI-and ICME-related modeling, tools and data, not the other way around.

**Michael Dudzik**
Vice President Science & Technology, Washington Operations, Lockheed Martin Corporation
**Topic:** Enabling the Era of Hybrid Materials – A Tipping Point of Change

The ongoing state-of-the-art transition in the field of materials science, from metal alloys to composites to hybrid materials, offers the aerospace market unique design solutions to meet ever demanding requirements in product manufacturing cost reduction, system performance enhancement, and total lifecycle sustainability. A review of recent successes achieved through better utilization of computational physics, material data management, certification, and the manufacturing supply chain will be presented.

**Rick Barto**
Program Manager, Advanced Technology Laboratory, Lockheed Martin Corporation
**Topic:** Enabling the Era of Hybrid Materials – A Tipping Point of Change

The ongoing state-of-the-art transition in the field of materials science, from metal alloys to composites to hybrid materials, offers the aerospace market unique design solutions to meet ever demanding requirements in product manufacturing cost reduction, system performance enhancement, and total lifecycle sustainability. A review of recent successes achieved through better utilization of computational physics, material data management, certification, and the manufacturing supply chain will be presented.
Materials Innovation @ TMS is TMS’s new strategic initiative. The following programs have been developed as part of this effort.

Federal Funding Workshop & Reception

Funding Opportunities to Advance the Materials Genome Initiative

(Organized by the TMS Public and Governmental Affairs Committee)

Wednesday, March 14

Panel Discussion: 4 p.m. • Reception: 5:15 p.m.

Dolphin Hotel, Northern C

This highly interactive session will examine funding opportunities related to the Materials Genome Initiative (MGI), as presented by program leaders from an array of federal funding agencies. Panelists will provide an overview of current MGI activities in their agencies and present a look to the future, with significant time for questions from the audience. Continue the dialogue during the networking reception, sponsored by the Georgia Institute of Technology, designed to promote one-on-one conversation with the panelists.

TOPICS AND SPEAKERS

Diana Farkas, Program Director, Condensed Matter and Materials Theory, Division of Materials Research National Science Foundation

Topic: Looking for Transformative Approaches for the Materials Genome Initiative

Julie Christodoulou, Director, Naval Materials Division Office of Naval Research

Topic: Basic Research Challenge in Materials

Diana Bauer, Director of the Office of Economic Analysis U.S. Department of Energy

Topic: New Efforts on Computational Materials

Michael Caton, Senior Materials Research Engineer Materials & Manufacturing Directorate Air Force Research Laboratory

Topic: Advancing Superalloys

Don’t Miss These Other Materials Innovation @ TMS Opportunities

Materials Innovation Gallery: Browse a visually compelling showcase of ideas—developed as a special feature of the TMS 2012 Exhibition—on implementing materials innovation principles, techniques, and concepts. (See page 9 for details.)

Preview of Integrating Materials and Manufacturing Innovation (IMMI): Learn more about TMS’s new Open Access journal that combines peer review rigor with enhanced digital content to rapidly share knowledge and learning on innovations, from materials discovery through manufacturing. Opportunities to interact with the IMMI editor, Chuck Ward, will be presented throughout the conference.

Annual Meeting of the Membership: Start your conference by attending this important membership engagement opportunity—highlighted by the official introduction of Materials Innovation @ TMS. (See page 6 for details.)

For additional information, stop by the Materials Innovation @ TMS Information Center at the TMS Member Welcome Center or visit our website at materialsinnovation.tms.org.
**Extraction & Processing Division Distinguished Lecturer-Plenary Session**

**International Smelting Technology Symposium**
(Incorporating the 6th Advances in Sulfide Smelting Symposium)

**Monday, March 12 • 8:40 a.m.**
**Dolphin Hotel, Northern A3**

**Speaker:** Theo Lehner, Boliden Mineral AB, Sweden

**Topic:** Conservation & Development: Industrial Learning in Non-Ferrous Smelting

**About the Topic:** This lecture will present thoughts and experience on the following issues in Non-Ferrous Smelting: conservation and its corollary waste; development; industrial learning curves. Waste occurs in many shapes, be it losses of material, loss of health, loss of ability or knowledge. Development in non-ferrous smelting over the last decades has changed many a flow sheet, but also ended many projects. Operations have adapted to new processes and new conditions.

---

**Young Leaders Tutorial Luncheon Lecture**

**Tuesday, March 13 • Noon**
**Swan Hotel, Northern C**

**Speaker:** Michael Demkowicz, Massachusetts Institute of Technology, USA

**Topic:** Becoming a Better Scientist by Learning the History of Science

**About the Topic:** A scientist educated in the current curricula finds it difficult to defend scientific perspectives to skeptical non-scientists. He will propose that this educational gap be filled by making the history of science part of the typical science curriculum. In this talk, Demkowicz will present several topics from the history of science that could serve as case studies to be incorporated into such a class.

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**Light Metals Division Luncheon Lecture**

**Wednesday, March 14 • Noon**
**Swan Hotel, Osprey**

**Speaker:** Diana Bauer, Director of the Office of Economic Analysis, U.S. Department of Energy’s Office of Policy and International Affairs.

**Topic:** The Department of Energy’s 2011 Critical Materials Strategy

**About the Topic:** Bauer will present an overview of the DOE’s Critical Materials Strategy.

---

**Invited Talks**

**Speaker:** Brajendra Mishra, AIME President, a professor at the Colorado School of Mines and 2006 TMS President

**Brajendra Mishra will present two talks:**

  **Monday, March 12 • 2:10 to 2:30 p.m.**
  **Dolphin Hotel North A4**
  **Presentation Title:** The Role of Materials Recycling in Economic Sustainability.

- **Integrative Materials Design: Performance and Sustainability Symposium**
  **Tuesday, March 13 • 11:05 a.m.**
  **Dolphin Hotel Europe 2**
Award-Winning Speakers

**Extraction & Processing Division/Materials Processing & Manufacturing Joint Division Luncheon and Institute of Metals/Robert Franklin Mehl Award Lecture**

**Tuesday, March 13 • Noon**
**Swan Hotel, Northern C**

Speaker: **Subra Suresh**, Director of the U.S. National Science Foundation (NSF)

**Topic**: Nanomechanics of Engineered and Biological Materials

**Vittorio de Nora Prize Lecture**

**Tuesday, March 13 • 11:25 a.m.**
**Dolphin Hotel, Europe 5**

Speakers: **Antoine Allanore**, Massachusetts Institute of Technology, USA; and **James Yurko**, Electrolytic Research Corporation, USA

**Topic**: Development of Electro-metallurgical Processes for 21st Century Metal Extraction

**About the Topic**: This presentation will first briefly present some existing extraction methods, in particular electrometallurgical ones, pointing-out the advantages and issues related to the current state-of-the-art. The second part of the talk will present how breakthrough electrochemical processes have recently been developed to adapt to environmental and energy constraints, taking the example of low- and high-temperature electrochemical extraction processes scaled-up for transition and light metals.

**2012 Shri Ram Arora Award**

**Wednesday, March 14 • 3 p.m.**
**Swan Hotel, Pelican 2**

Speaker: **Anjali Sharma**, University of Delhi

**Topic**: Novel Sensor Structure of SnO2 Thin Film Integrated with Catalytic Micro-Discs for the Detection of Trace Level NO2 Gas

**About the Topic**: An improvement in the sensing response, response time and recovery time could be attributed to the spill-over of sensing gas molecules over the uncovered surface of SnO2 thin films by WO3 micro-discs catalyst.

**JIM International Scholar Award Winner**

**Tuesday, March 13 • 8:30 a.m.**
**Dolphin Hotel, Southern II**

Speaker: **Noritaka Saito**, Kyushu University

**Topic**: Effect of Shear Stress on Crystallization Behavior of Mold Flux for Continuous Casting

**About the Topic**: This presentation will focus on how modern steelmaking involves handling slags and fluxes mostly in the temperature region between liquidus and solidus, to fully exploit their functional capabilities and the various methods researchers have developed to study the crystallization behavior of them.
Networking & Social Events

**Student Mixer**

**Sunday, March 11 • 8:30 10:30 p.m.**
Dolphin Hotel, Southern Ill

Meet and mingle with the next generation of materials scientists and engineers as peer mentors in an informal social setting.

**President’s Welcoming Reception**

**Monday, March 12 • 5 to 6:30 p.m.**
Dolphin Resort, Pacific Room

Gather with 2011 TMS President Garry Warren and colleagues for an informal social event in the exhibition hall.

**Honorary & Memorial Dinners**

All honorary dinners will be held Monday, March 12. Tickets are needed for admission to these events and may be purchased at the Registration Desk in Dolphin Resort, Atlantic Room.

**T.T. Chen Honorary Dinner**
6:30 to 8 p.m. • Dolphin Resort, Northern B Room

**Emeritus Professor George D.W. Smith Honorary Dinner**
6:30 to 8 p.m. • Swan Resort, Lark Room

**Robert Ritchie Honorary Dinner**
6:30 to 8 p.m. • Swan Resort, Osprey 1

**Randall M. German Honorary Dinner**
6:30 to 8 p.m. • Swan, Toucan Room

**Dinner in Memory of Patrick Veyssière**
6:30 to 8 p.m. • Swan, Osprey 2

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Wolfgang Schneider, 2012 TMS President

About the 2012 TMS President

Wolfgang Schneider is the head of the research and development center of Hydro Aluminum Rolled Products Business in Bonn, Germany and is also a professor of metallurgy at the Technical University of Berlin. A TMS member since 1996, Schneider's vision for his presidency is growing the mission of TMS, with more emphasis on professional development.

"During my presidency, my focus will be on innovation that can expand the product and service portfolio of TMS. One specific area I feel requires more attention is our professional education strategy. I would also like to see more emphasis on the technical agenda and volunteer structure with the focus on technical divisions and committees, which are responsible for the major programming activities of TMS." Schneider received his Dipl.-Ing. degree in foundry technology, as well as his doctorate in metallurgy, from the Technical University of Berlin. He has published more than 140 technical papers and is named as an inventor in nine patents.

As a member of the Society, Schneider served as chair of the TMS Light Metals Division from 2007-2010 and on the TMS Board of Directors from 2003 to 2006 in the membership development area. He has also volunteered in various other capacities for TMS since 1997. His service included: Cast Shop Technology Symposium subject chair, Aluminum Committee chair, Strategic Advisory Committee member, and Nominating Committee member. Schneider has also received several Society awards, including the TMS Light Metals Award in both 1990 and 1995. He has been active in a number of other societies, such as the German Society of Material Science DGM and the German Foundrymen Society VDG.
Society Awards presented by 2011 TMS President Garry Warren

Garry W. Warren is professor in the Department of Metallurgical and Materials Engineering, and Director of the Materials Science Program at the University of Alabama, Tuscaloosa. He is active in the TMS Extraction & Processing Division (EPD) and has served in numerous capacities. Warren has also served at the society level on the TMS Programming Committee, the TMS Financial Planning Committee, the TMS Publications Coordinating Committee, and the TMS Board of Directors.

SOCIETY AWARDS

TMS Fellows Class of 2012

Ian Baker
Sherman Fairchild Professor of Engineering, Dartmouth University

David Dunand
James and Margie Krebs Professor, Northwestern University

Sung-Kwon Kang
Research staff, IBM Corporation

Pradeep Rohatgi
Professor, University of Wisconsin

Cyril Stanley Smith Award
Mats Hillert
Royal Institute of Technology

Early Career Faculty Fellow Award
Michael Demkowicz
Massachusetts Institute of Technology

Educator Award
Marc DeGraef
Carnegie Mellon University

Institute of Metals/Robert Franklin Mehl Award
Subra Suresh
National Science Foundation

Morris Cohen Award
Michael Ashby
University of Cambridge

Shri Ram Arora Award
Anjali Sharma
University of Delhi

Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries
Antoine Allanore
Massachusetts Institute of Technology

JEM Best Paper
Joyelle J. Harris
Exponent Failure Analysis Associates

DIVISION AWARDS

Presented at technical division-related events.

Electronic, Magnetic & Photonic Materials Division

Distinguished Scientist/Engineer
KN Mani Subramanian
Michigan State University

Distinguished Service
Srinivas Chada
Power-One Renewable Energy Solutions

John Bardeen Award
John William Morris, Jr.
University of California

JEM Best Paper
Joyelle J. Harris
Exponent Failure Analysis Associates

Extraction & Processing Division

EPD Distinguished Lecturer
Theodor Lehner
Boliden Mineral AB

EPD Distinguished Service
Tzong Chen
CANMET-MMSL

Technology Award
Jiann-Yang “Jim” Hwang
Xiang Sun
Xiaodi Huang
Michigan Technological University

Application to Practice Award
Mark Taylor
University of Auckland

Brimacombe Medalist(s)
Robert Hyers
University of Massachusetts
Paul Krajelewski
General Motors Company
Zi-Kui Liu
Pennsylvania State University

Bruce Chalmers Award
A. Lindsay Greer
University of Cambridge
### Division Awards

#### Science Award
- James E. Miller
- Richard B. Diver
- Nathan P. Siegel
- Eric N. Coker
- Andrea Ambrosini
- Daniel E. Dedrick
- Mark D. Allendorf
- Anthony H. McDaniel
- Gary L. Kellogg
- Roy E. Hogan
- Ken S. Chen
- Ellen B. Stechel
- Sandia National Labs

#### Light Metals Division

- **Distinguished Service Award**
  - Eric Nyberg
  - Pacific Northwest National Lab

- **Technology Award**
  - Mark Taylor
  - University of Auckland

- **Light Metals Award**
  - Xiangwen Wang
  - Garry Tarcy
  - Eliezer Batista
  - Geff Wood
  - Alcoa Inc

- **Aluminum Reduction Technology Award**
  - Feng Naixiang
  - Northeastern University

- **Bauxite & Alumina Award**
  - Lucy Martin
  - Bechtel Australia Pty Ltd

- **Electrode Technology for Aluminum Production Award**
  - Olivier Trempe
  - Daniel Larouche
  - Michel Guillot

- **Magnesium Best Paper - Fundamental Research Award**
  - Kiran Solanki
  - Mehul Bhatia
  - Arizona State University

- **Magnesium Best Paper - Application Award**
  - Lennart Stutz
  - Helmholtz-Zentrum Geesthacht GmbH

- **Magnesium Best Paper - Student Award**
  - Jan Bohlen
  - Dietmar Letzig
  - Karl Kainer
  - GKSS Forschungszentrum Geesthacht GmbH

- **Energy Best Paper – Professional Award**
  - Peter Loutzenhiser
  - ETH Zurich

- **Energy Best Paper – Student Award**
  - Peng Li
  - Qing-bo Yu
  - Qin Qin
  - Northeastern University

- **JOM Best Paper Award**
  - Pascal Cousol
  - Patrick Coulombe
  - Serge Gosselin
  - Dany Lavoie
  - Aluminerie Alouette
  - Jean-Marc Simard
  - Exaprom
  - Jerry Marks
  - J. Marks and Associates
  - Sylvain Fardeau
  - Rio Tinto Alcan

- **Energy Best Paper**
  - Peter G. Loutzenhiser
  - Anastasia Stamatiou
  - Aldo Steinfeld
  - ETH Zurich

- **Willy Villasmiil**
  - Anton Meier
  - Paul Scherrer Institute

- **Energy Best Paper**
  - John Morral
  - Ohio State University

- **Distinguished Scientist/Engineer Award**
  - Yuntian Zhu
  - North Carolina State University

- **Distinguished Service Award**
  - Eric Taleff
  - University of Texas

- **JOM Best Paper Award**
  - Scott Hollister
  - University of Michigan
AIME Awards Presented by Brajendra Mishra

Brajendra Mishra is president of The American Institute of Mining, Metallurgical, and Petroleum Engineers. A member of TMS since 1992, Mishra served as president in 2006. He is a professor of metallurgical and materials engineering and the associate director of the Kroll Institute for Extractive Metallurgy and the Advanced Coatings and Surface Engineering Laboratory, Colorado School of Mines. He is also the associate director of the National Science Foundation Industry-University Cooperative Research Center for Resource, Recovery and Recycling.

AIME AWARDS

AIME Henry DeWitt Smith Scholarship
Jennifer Carter
The Ohio State University

Eric Gratz
Boston University

Karem Tello
Colorado School of Mines

Mengtao Xie
Illinois Institute of Technology

AIME Honorary Membership
David Laughlin
Carnegie Mellon University

AIME Champion H. Mathewson Award
Adam L. Plichak
U.S. Air Force Research Laboratory

Robert E.A. Williams
James C. Williams
The Ohio State University

AIME Rossiter W. Raymond Memorial Award
David Rowenhorst
Alexis Lewis
Naval Research Laboratory

Robert Lansing Hardy Award
Andrew Minor
University of California

STUDENT AWARDS

2011 ASCE Alfred Noble Prize
Markus Buehler
Raffaella Paparcone
Massachusetts Institute of Technology
Graduate Outstanding Student Paper
First Place: Zhinan An
University of Tennessee
Second Place: Indranil Lahiri
Florida International University

Undergraduate Outstanding Student Paper
First Place: Sumit Goenka
Carnegie Mellon University
Second Place: Tasha Totten
Washington State University

TMS J. Keith Brimacombe Presidential Scholarship
Rachel Garrick
University of Illinois

OTHER AWARDS

Young Leader Professional Development Award Winners

EMPMD Young Leader Professional Development
Chao-Hong Wang
National Chung Cheng University
Ashwin Ramasubramaniam
University of Massachusetts

EPD Young Leader Professional Development
John Carpenter
Los Alamos National Lab
Soobhankar Pati
Metals Oxygen Separation Technologies

LMD Young Leader Professional Development
Qizhen Li
University of Nevada
Pretesh Patel
Light Metals Research Center

MPMD Young Leader Professional Development
Nathan Mara
Los Alamos National Lab
Kantesh Balani
Indian Institute of Technology

SMD Young Leader Professional Development
Nima Rahbar
University of Massachusetts
Clarissa Yablinsky
University of Wisconsin

Young Leader International Scholar Award
Douglas Spearot
University of Arkansas
**Sunday**

**TMS2012 Materials Bowl**
Noon to 8:30 p.m. • Dolphin Hotel, Southern IV
Elimination Rounds – Noon to 3 p.m.
Final Championship Round – 8:00 p.m.

Student teams compete for cash prizes and earn the right to take home the traveling trophy after conquering three rounds of intense, materials science-based questions.

**Student Mixer**
8:30 to 10:30 p.m. • Dolphin Hotel, Southern III

Put on your dancing shoes to meet and mingle with peers in an informal social setting.

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**Monday**

**Poster Contest Judging**
5 to 6:30 p.m. • Dolphin Hotel, Atlantic

**Tuesday**

**Best of Show Judging – Ribbon Presentation**
10:30 to 11:30 a.m. • Dolphin Hotel, Atlantic

**Career Forum**
3 to 5 p.m. • Swan Hotel, Osprey 2

Organized by the TMS Young Leader Committee, this session will feature speakers from a variety of materials science backgrounds and career stages who discuss how to navigate a career path to ultimate goals.

**Career Panel**

| Julia Greer, | Jud Ready, |
| Cal Tech | Georgia Tech |
| Eric Brown, | George T. “Rusty” Gray III, |
| Los Alamos National Laboratory | Los Alamos National Laboratory |
| Frank DelRio, | Eric Schmidt, |
| NIST | V&M Star |
| Alpesh Shukla, | Frank Balle |
| Lawrence Berkeley National Laboratory | University of Kaiserslautern |
| Paul Ohodnicki, | Chris Weinberger, |
| National Energy Technology Laboratory | Sandia National Laboratory |

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**SPECIAL INFORMATIONAL SESSION:**
Congressional Science and Engineering Fellowship Program

**Monday, March 12 • 1 to 2 p.m.**
Swan Hotel, Parrot 2 Room

**Speakers:**

**Jennifer Nekuda Malik**
2011-2012 TMS/MRS Congressional Science and Engineering Fellow

**Topic:** Engineering Public Policy: Science in Government

**Edward Herderick**
2009-2010 TMS/MRS/ACerS Congressional Science and Engineering Fellow

**Topic:** The Transition from PhD candidate to Congressional Staffer to Engineer in the Materials Industry

Have you ever considered learning about the field of science policy in the U.S. Senate and House of Representatives?

The TMS/MRS Congressional Fellowship Program offers an amazing opportunity for scientists at all stages of their careers to spend a year as a special legislative assistant in the United States Congress in Washington, DC.

TMS2012 offers a snapshot of this experience via this informational session featuring testimonials from Jennifer Nekuda Malik, current Fellow, who is a staff member on the Senate Energy and Natural Resources Committee, and Edward Herderick, who served on the staff of Ohio Senator Sherrod Brown during his Fellowship. The pair will discuss their day-to-day agenda, education, and benefits to their personal career advancement. An opportunity for questions and discussion will follow.
Mark Your Calendar
Upcoming Meetings

TMS provides numerous opportunities for advancing research and collaboration on the latest technology through a series of diverse conferences and workshops. For the ultimate in professional development and networking, make the face-to-face connections at these events designed to engage the materials science and engineering community.

For more information visit the TMS Meetings and Events page at www.tms.org/Meetings/meetings_events.aspx.

2012 Near Net Shape Manufacturing Workshop
April 11-13, 2012
iWireless Center, Moline, Illinois • USA

13th International Conference on Aluminum Alloys (ICAA -13)
June 3-7, 2012
Carnegie Mellon University • Pittsburgh, Pennsylvania

2012 NanoNuclear Workshop
June 5-7, 2012
Gaithersburg Marriott Washingtonian Center, Gaithersburg, Maryland

International Conference on 3D Materials Science 2012
July 8-12, 2012
Seven Springs Mountain Resort • Seven Springs, Pennsylvania

2012 Methods for 3D Microstructural Studies Workshop
July 13-14, 2012
Carnegie Mellon University • Pittsburgh, Pennsylvania

TMS 2012 Industrial Aluminum Electrolysis Course: The Definitive Theory and Practice of Primary Aluminum Production
September 9-14, 2012
Rio Tinto Alcan • Jonquiere, Quebec, Canada

Superalloys 2012: The 12th International Symposium on Superalloys
September 9-13, 2012
Seven Springs Mountain Resort • Champion, Pennsylvania

Materials Science & Technology 2012 Conference & Exhibition
October 7-11, 2012
Pittsburgh, Pennsylvania

TMS 2013: Linking Science and Technology for Global Solutions
March 3-7, 2013
San Antonio, Texas
The following stand-alone book titles and supplemental proceedings will be available:

- 3rd International Symposium on High Temperature Metallurgical Processing
- CFD Modeling and Simulation in Materials Processing
- Characterization of Minerals, Metals, and Materials
- Electrometallurgy 2012
- Energy Technology 2012
- EPD Congress 2012
- International Smelting Technology Symposium
- Light Metals 2012
- Magnesium Technology 2012
- TMS2012 Supplemental Proceedings: Volume 1: Materials Processing and Interfaces
- T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization

Attendees may purchase books at the Wiley booth located adjacent to the Member Welcome area outside the exhibit hall.

**Don’t Miss These TMS-Wiley Book Author Events!**


Stop by the Wiley booth in the registration area for more information.

Author Signing Hours:
Morris: Monday, March 12, 2 to 3 p.m.
Apelian: Tuesday, March 13, Noon to 1 p.m.

Cookies and coffee will be served!

*Discount available only at the TMS2012 Annual Meeting.
TMS 2011-2012 Leadership
Executive Committee

Professional Development:
David Shifler
Office of Naval Research, USA

Content Development and
Dissemination Committee:
William J. “Jud” Ready
Georgia Institute of Technology, USA

Carl Cady
Los Alamos National Laboratory, USA

Public and Governmental Affairs:
Kevin J. Hemker
Johns Hopkins University, USA

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Electronic, Magnetic & Photonic Materials:
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Power-One Renewable Energy, USA

Extraction & Processing:
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Praxair, Inc., USA

Materials Processing & Manufacturing:
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South Dakota School of Mines and Technology, USA

Light Metals:
John N. Hryn
Argonne National Laboratory, USA

Structural Materials:
Dennis M. Dimiduk
United States Air Force Research Laboratory

Functional Area Directors

Membership & Student Development:
Ellen K. Cerreta
Los Alamos National Laboratory, USA

David Bahr
Washington State University, USA (Incoming)

Programming:
Hani Henein
University of Alberta, Canada

Neville Moody
Sandia National Laboratory, USA (Incoming)
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Exhibit Hours

Monday, March 12 ...............................................12 p.m. - 6:30 p.m.
Tuesday, March 13 ..............................................10:30 a.m. - 6:00 p.m.
Wednesday, March 14 .........................................10:30 a.m. - 3:00 p.m.

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COMMITTING FOR TOMORROW

A global leader in equipment and services for the power generation, power transmission and rail transport markets, Alstom has placed sustainable growth at the centre of its strategy, by developing innovative, environmentally friendly technologies. Each day, Alstom’s employees, spread throughout more than 70 countries, work to make our future better.

www.alstom.com
Company Descriptions

ABB Inc. Booth #300
ABB Analytical Measurements 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 39 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.

Across International Booth #113
Founded and based in New Jersey, United States, Across International supplies crystal substrates, laboratory equipment, in the area of heat treatment and material processing for universities, research facilities and labs. We have more than 15 years of industrial manufacturing experience in drying ovens, ball mills, lab furnaces, pellet presses and pressing dies.
Our goal is to build up business partnerships with friends around the world. We provide quantity discounts and will reply to your requests within the same business day; 100% customer satisfaction is always our first priority.

Advanced Dynamics Corp., Ltd. Booth #101
For over four 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 anode handling and cleaning, aluminum ingot and T-Bar handling, sawing and packaging systems. We also have experience in specialty systems for the magnesium, copper, zinc, steel and lead industries.
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, “Our ingenuity delivers productivity when you think of ADCL for your next project.

Almeq Norway AS Booth #506
ALMEQ Norway AS is an engineering and marketing company for a wide range of equipment and services to aluminium smelters worldwide.
The long term objective for the company is to be a leading supplier of own equipment as well as an export marketing partner for other well accepted manufacturers of machines and equipment for the primary aluminium smelters worldwide.

Aluminium International Today Booth #105
Aluminium International Today is the aluminium industry’s leading international publication reporting on aluminium production and processing. Founded in 1989, it provides a wealth of technical features aimed at equipping producers and processors with information on latest developments. Added to this is a digest of industry news, contracts, events, new technology 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. E-mail aluminium@quartzltd.com and visit www.aluminiumtoday.com.

AluminiumNetwork.com Booth #417
A Global Network for the Primary Aluminium Industry, AluminiumNetwork.com is your internet-based portal to supply and support you with a wide range of services; your meeting place with like-minded partners who can assist in improving your business and accelerate your project.
The main focus of aluminiumnetwork.com is the primary aluminium industry and it is aimed particularly at:
• Primary producers
• Suppliers of raw materials or intermediates
• Equipment suppliers
• Providers of services, including consulting services and project support.
The AluminiumNetwork.com Consultants / Freelancers data base is the perfect source for independent expertise in all of the engineering disciplines, from alumina through to primary aluminum production, including all the support functions of the process. By providing a global platform, AluminiumNetwork.com is THE place to meet with Consultants and Freelancers within the primary aluminium industry. The clients of AluminiumNetwork.com will have access to the Consultants and Freelancers database and will be able to select their required need by qualification and skills.
Please visit www.AluminiumNetwork.com for detailed information.
Company Descriptions

Astrium North America  Booth #333

Astrium North America is a U.S. based company specializing in program and project management, software engineering, external carrier development and integration services, experiment and payload processing, life and physical sciences hardware and flight simulation and training for the international space community.

ATR  Booth #316

The ATR National Scientific User Facility offers materials science engineers and scientists the opportunity to test materials in an irradiation environment and perform analyses on the irradiated specimens. Capabilities available include three test reactors and a host of post irradiation examination facilities across the United States. Non-proprietary research is cost-free to U.S. university led teams.

Access to facilities is through a solicitation and review process: The kinds of research solicited include, but are not limited to, advanced materials for high performance reactor systems, understanding light water reactor core materials including austenitic steels and nickel alloys, determining properties of material joints after exposure to a neutron irradiation environment and the applicability of nanostructured materials to radiation resistant applications.

To learn more about ATR NSUF, please visit our website at: http://atrnsuf.inl.gov.

AUMUND Foerdertechnik  Booth #501

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:
- 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
- Reduced investment and operating cost

AUMUND's head office is located in Rheinberg, Germany. E-mail at metallurgy@aumund.de. Contact Person/Designation: Matthias Moritz / General Manager

Beijing Antaike Information Development Co., Ltd  Booth #332

Beijing Antaike Information Development Co., Ltd, relying on the industrial status and background of China Non ferrous Metals Industry Information Center, focuses on researching and analyzing the production, consumption, market, management, and industrial policies of non ferrous metals industry and uses the information within the industry to push forward the overall development of the industry. We provide information and consultancy services for global metals markets, and the construction of enterprise information technology as well as their brand promotion.

AUMUND Foerdertechnik  Booth #501

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Big C: Dino-Lite Scopes  Booth #340

Big C offers the Dino-Lite Portable Digital Microscope, which provides high-quality microscopy video interfacing to PC and MAC with clear and steady imaging and 10X-200X magnification. The included software “DinoCapture” makes it easy and convenient to take snapshots, record videos, manipulate images, and save and e-mail discoveries. It is a single lens device with diverse applications.
Company Descriptions

Boreal Laser  Booth #319

Boreal Laser makes GasFinder laser based toxic and hazardous gas detectors that are used in a variety of open path (ambient, environmental and safety), stack, vent and process monitoring applications. Portable GasFinders are light, battery operated and easy to set up and use. Multiple path point GasFinder MC systems can monitor up to eight paths or points with a single analyzer. Both portable and fixed GasFinders are self-calibrating, robust, reliable and maintenance free. GasFinders benefits also include fast one second response, lack of interference from other gases and low cost of ownership. GasFinders are currently available for hydrogen fluoride (HF), hydrogen chloride (HCl), hydrogen sulfide (H2S), ammonia (NH3), methane (CH4), carbon dioxide (CO2), hydrogen cyanide (HCN), ethylene (C2H4) and acetylene (C2H2). Typical applications include Aluminum smelting, Refineries (esp. HF Alkylation), Petrochemical and Chemical Plants, Gas Production and Processing, Green House Gas applications, plus Bricks and Ceramics.

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Brochot  Booth #200

Brochot SA is the descendent of a very old industrial company going back to the early 19th Century. The Brochot family remained the owners until 1986, when it was bought by its present management.

During the years 1986 to 1992 the new owners were to develop the firm both internally and by external acquisitions along two lines:
• Increasing its sub-contracting work, a thriving activity at the time
• Developing the range of equipment for the production of primary aluminium BROCHOT concentrated on developing and rounding out its know-how in the design and building of special equipment for industry, in the automated “meddle mechanical” area.

Despite having skills and references in other sectors, such as the motor and railway and printing industries, for several years BROCHOT has, for several years seen the bulk of its turnover come from companies producing primary aluminium and magnesium.

Buss AG  Booth #116

Buss AG is an established Swiss manufacturer of value-added mixing and kneading systems for various applications.

The genuine Buss Kneader technology, developed by Buss AG in 1945, has meanwhile made its mark in the aluminium and other industries. Today, more than 2500 BUSS Kneaders are in operation worldwide, 250 thereof in the continuous production of carbon pastes.

For nearly 60 years, the Buss Kneader has been the benchmark for reliable and cost-effective mixing of anode pastes. Now Buss AG is proud to present a new Kneader generation, the four-flighted KX series, designed for even more intensive mixing and micro-dispersion at considerably higher output rates and lower investment cost.

The genuine Buss Kneader technology is the best choice for a reliable low production cost and customer approved production of high quality anodes.

Buss ChemTech and Laeis  Booth #431

Buss ChemTech AG (BCT): as the world leader in equipment supply and technologies for the aluminium industry based on 60 years experience, offers high developed and fully dedicated applications for Anode manufacturing and Aluminium Fluoride production, covering:
• Modular and fully continuous running Green Anode Plants, e.g. the KAS Carbon Plant in Pavlodar
• Pitch Melting Plants based on unique, highly efficient function incl. appropriate storage
• BCT Paste Kneader with latest major improvements, the most efficient paste preparation application
• Coke Preheater, Paste Cooler and Hydraulic Anode Press integrated to the process
BCT is providing original parts and worldwide on-site support for all maintenance, operating and process aspects to ensure you an efficient and reliable production.

Since September 2011, Buss ChemTech is joining KRESTA Industries, a private owned industrial group with 700 employees, own fabrication facilities and full EPC services. A further step to successfully serve our customers with guaranteed solutions.

www.buss-ct.com

LAEIS GmbH: offers hydraulic presses MEGA 2500/1600 AV for production of prebaked anodes. These presses are modifications of the renowned HPF presses, supplied more than 600 times to different industries, optimally adapted to anode production requirements. With die areas up to 1800 x 850 mm² and filling depth up to 1400 mm practically all anode formats can be produced. A vacuum system provides for optimal densification and even density distribution over the whole anode volume. The special weighing and mould filling system together with the sophisticated press control guarantees extremely high accuracy and reproducibility of anode weight and height. Depending on anode formats, production capacity is up to 50-60 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.

www.laeis.eu
CA Picard International
Booth #415

C.A. PICARD is specialized in manufacturing of high quality wear parts for continuous kneaders for the manufacture of green anodes for the primary aluminum industry.

PICARD manufactures kneading teeth, wearing plates / liners and screw flights out of high wear resistant qualities.

Chongqing Runji Alloy Co., LTD. / Okaya (U.S.A.), Inc
Booth #323

We specialize in producing all kinds of alloying tablets. We are continuing to improve, modernize and expand our company’s production capacity in order to increase productivity and efficiency. Our acquisition of the largest Mn ore mines in Jingxi County, Guangxi province of China, has increased our capacity to more than 3 million tons and our new production line of Mn flakes has also been completed with an annual capacity of 30,000 tons. With the development of these programs along with our state-of-the-art production management, technologies and facilities, we can guarantee enough raw material supply at very competitive price levels while maintaining our high level of quality.

Information about our partners: Okaya (U.S.A.), Inc. is an international trading house that provides representation in North America for Chongqing Runji Alloy Company, LTD. This partnership is an example of Okaya’s expansion of its business domain from its core area of iron and steel to various related fields of business. We can also perform marketing, logistics and processing functions to fulfill our role as the “Best Global Sourcing Partner”. As an independent trading company with a high level of flexibility, Okaya will continue to propose insightful and creative business opportunities by looking at various areas with a broad perspective. Also visit us online at www.okaya.co.jp/en
Company Descriptions

CIMM  Booth #426

As the company certified by ISO9001:2008 and international projects contractor accredited by P.R.China, CIMM GROUP is a healthy and fast growing integrated multinational corporation professionally engaged in providing technology, engineering, manufacturing, trade and EPC service in fields of aluminium and steel, minerals, metals and metallurgy, cement and construction, refinery and petrochemical, ports and shipyards, oil and gas, power generation and transmission, green resource, and energy, etc.

CIMM GROUP is also the leading raw material and equipments supplier for aluminium smelters. Some of the products are aluminium fluoride and cryolite, anode, cathode, silicon metals, refractory, insulation bricks, silicon nitride bonded silicon carbide blocks, CPC, aluminium tablets, etc. and some of equipments are Pot Tending Machine, Stacking Crane, Furnace Tending Assembly, Aluminium Ladle cleaning Machine, Vibration Machine, Anode Clamp, Crush Breaker and assorted Spare Parts, etc., which have been supplied to overseas markets to establish good and steady relationships with Australia, Brazil, India, Russia, Middle East, Kazakhstan, Europe, USA, etc. The supplied products have a great reputation among our customers. CIMM GROUP is always committed to be a trustworthy business partner.

Claudius Peters  Booth #318

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.

CMI Novacast Inc  Booth #131

CMI Novacast Inc. is a privately held company founded in 1972 as Cast Metals International by Paul R. Gouwens. At that time, it was a consulting firm endeavoring to introduce new technologies to the United States from foreign countries. One of the companies introduced was GAAA of Lyon, France. GAAA was in the business of producing electromagnetic pumps for metering of molten metal.

GAAA opened an office in Elk Grove Village, Illinois, in 1973 to service the North American market. GAAA was purchased by Novatome in 1978, and in 1981 the French government nationalized Novatome with the requirement that all work in aluminum cease. At that time, Cast Metals International changed its name to CMI Novacast Inc. and took over the production and sale of the pumps as designed by Novatome.

CMI Novacast’s commitment to all customers is to deliver the most reliable, predictable, and high-performance low pressure or gravity casting system in the industry.

Colt International  Booth #104

Colt is a global supplier and manufacturer of natural and mechanical ventilation systems.

The principal activity of Colt is the supply of specialist products and systems in the field of building services with particular emphasis on gravity ventilation and the environmental control of industrial and commercial buildings. Especially for the aluminium industries, Colt is supplier of:

- Static Roof Ventilators for reduction area and anode bake building
- Controllable Air intake louvers for air intake in the basement of reduction, anode bake buildings and cast houses
- Clastra Wall , manufactured from reinforced fiber plastic
- Pot hoods/cover for pots.

MISSION STATEMENT: Our vision is to make the world a better place in which to live and work by helping to make the environment associated with buildings healthy, safe, productive and comfortable.

CompuTherm LLC  Booth #518

CompuTherm, LLC, expertise in thermodynamics and kinetics, develops computational tools for industrial applications in the broad field of materials science and engineering. The products of CompuTherm include the Pandat software and thermodynamic databases for numerous alloy systems, such as Al-, Ni-, Ti-, Mg-, Fe-based alloys. These products are currently used by hundreds of users worldwide. Pandat is a powerful software package for the calculation of multi-component, multi-phase equilibrium and related properties. In addition to the phase diagram calculation and optimization modules, a precipitation module and a diffusion module are currently being developed in the framework of the Pandat software.

In the past 15 years, CompuTherm has collaborated with academic and industrial partners and has worked on many government-sponsored projects. CompuTherm also develops tailor-made software and databases for specific applications, provides consulting services to materials industries and collaborates with other institutions working on challenging programs with potential commercial payoffs.
Company Descriptions

CSM Instruments

CSM Instruments has been leader in the development of instruments for advanced materials testing for over thirty years.

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

Additionally, we have a thorough sample testing service and demonstration laboratory in Boston, MA where you can send us your samples for evaluation or take a firsthand look at our instruments.

Cytec Industries, Inc.

Cytec collaborates with mining companies to optimize their operations through the delivery of innovative chemical technologies. We utilize our superior application expertise to develop solutions based on our customer’s specific needs. We offer technologies that:

- Decrease the cost of operations
- Provide better recovery and selectivity
- Process difficult ores
- Prevent or limit employee’s exposure to hazards
- Optimize the use of natural resources
- Minimize waste and re-tooling
- Do not require on-staff scientists or engineers

Cytec is committed to partnering with our customers to meet their needs. Our network of technical staff provides on-site technical assistance worldwide. We are dedicated to on-time delivery, even to the worlds harder to reach areas. Our unique approach to servicing our customers has made Cytec the leading provider of reagents to the mining industry.

SEC CARBON

World Best Graphitized Cathode Block from Kyoto, Japan

SEC CARBON, LIMITED

http://sec-carbon.com

SK-B® is a registered trade mark of SEC Carbon, Limited.
### Company Descriptions

#### Daifuku Webb Co/Webb Aluminum  
**Booth #312**

Daifuku Webb Company is a recognized leader in the field of engineered material handling systems and equipment. Our full line of integrated material handling products are computer controlled to efficiently automate rod/anode assembly, and green or baked anode operations. Our product line includes:
- Automatic Guided Vehicles
- Power and free conveyors
- Roller conveyors
- Heavy-duty chain conveyors
- Automated Storage and Retrieval Systems
- Custom designed automation equipment

From raw materials handling and transport to anode, molten metal, and cast ingot handling to automated storage of work-in-process and finished product, Daifuku Webb Company has nearly 50 years of material handling and control experience in the Aluminum Industry.

#### Danielli Corus Technical Services  
**Booth #115**

Using proven technology, Danielli Corus helps clients in the primary metals industry achieve maximum performance. We bring reliability, economic benefits and minimized emissions to aluminium producers world-wide. Based on specialized know-how and vast experience, Danielli Corus offers engineering and contracting services as well as consultancy at all levels of development. Danielli Corus is a client-focused, solutions-driven company. It offers an integrated approach to all aspects essential to success in an increasingly competitive global industry.

Danielli Corus provides efficient, cost-effective and versatile scrubbing technologies for the aluminium smelting industry. We are best known for our proprietary dry scrubbing technology, incorporating the patented vertical radial injection (VRI) system, for the control of emissions from potlines, carbon anode baking furnaces and green carbon plants. Danielli Corus also commissioned the two largest wet scrubbers ever built at an aluminium smelter for the reduction of sulfur emissions from the potlines.

Today, based on our proprietary dry scrubbing technology and our versatile wet scrubbing technology, numerous fume and gas treatment plants have been built for primary aluminium smelters around the world.

#### Dubai Aluminium Co., Inc.  
**Booth #517**

Dubai Aluminium (“DUBAL”) owns and operates one of the world’s largest single-site primary aluminium smelters. The DUBAL complex, built on an 480-hectare site in Jebel Ali, Dubai, comprises a one million metric ton smelter, a 2,350 MW power station (at 30°C), a large carbon plant, extensive casting operations (1.267 million metric tons), a water desalination plant and other facilities.

High quality aluminium products are made in three main forms: foundry alloy for the automotive industry; extrusion billet for construction, transport and industrial applications plus billets for forging processes in automotive industries; and high purity aluminium for the electronics and aerospace industries. More than 300 customers are served in at least 45 countries worldwide, predominantly in the Far East, Europe, the ASEAN region, the MENA region and North America. A quality-focused, customer-centered and innovation-drive organization, DUBAL holds ISO 9001, ISO/TS 16949, ISO 14001, ISO/IEC 27001, ISO/IEC 20000-1, and OHSAS 18001 certification.

DUBAL also owns 50% of Emirates Aluminium (“EMAL”) in Al Taweelah, Abu Dhabi, where Phase I with a smelter capacity of 750,000 metric tons was fully commissioned by the end of 2010. EMAL Phase II is currently under construction. With a view to securing its alumina requirements, DUBAL has invested actively in greenfield bauxite/alumina projects in Republic of Guinea, Brazil, Cameroon and India. These projects are in various stages of development.

DUBAL’s in-house developed, proprietary reduction cell technologies, DX Technology and DX+ Technology (operating at 380 kA and 420 kA respectively), currently rank among the best reduction technologies available. DX Technology has already been installed at industrial scale at DUBAL (40 cells) and EMAL Phase I (756 cells); while DX+ Technology has been specified for EMAL Phase II (444 cells).

#### EBSD Analytical  
**Booth #233**

EBSD Analytical provides advanced microstructural 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. With over 16 years experience in EBSD, you can trust that the results we provide will be of the highest quality.
EDAX Inc.  Booth #218
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).

EDAX’s two TEAM™ analysis systems, TEAM™ EDS and TEAM™ Pegasus are both easy to use and offer Smart Features, which provide analytical intelligence to enable users to easily obtain exceptional results. TEAM™ EDS is the industry’s most advanced EDS Analysis System. The newly released TEAM™ Pegasus is a world class materials characterization solution, providing users with both crystal structure and elemental composition results in one easy-to-use EBSD/EDS package. In addition the Orbis micro-XRF elemental analyzer provides small and micro-spot analysis and mapping.

EDAX also offers camera and detector solutions to meet all your analysis needs.

EDAX develops the best solutions for micro- and nano-characterization, where elemental and/or structural information is required, making analysis easier and more accurate. www.edax.com

EGYPTANODE  Booth #424
EgyptAnode is a merchant coke calcining and baked carbon anode production facility, aiming to produce high quality carbon materials to be used in the aluminium industry worldwide. EgyptAnode is set to build its own calciners as a 1st phase of its project, with a 300,000 MT capacity of high quality calcined coke (Anode & Fuel grade) with start-up scheduled in 3rd Quarter 2013, while the anode production is scheduled to be in 2015.

The facility is located in Suez, Egypt, on the Southern entrance of the Suez Canal, on the Red Sea, and a short distance from Egypt’s Mediterranean ports, giving it an ideal location to the Middle East market, Europe, and the Americas.

Eirich Machines, Inc.  Booth #522
Eirich Machines designs, manufactures and supplies batch and continuous machinery 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 laboratory size units to 250 ft³ capacity machines. Eirich High Intensity Mixers 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.

Energoprom Group  Booth #202
Energoprom Group is one of the most efficient companies of non-raw material sector of the Russian economy, runs business globally and supplies more than 50% of its production to the world market.

The Group is the fifth largest world producers of carbon and graphite products.

The main activity - production of high technological electrode, cathode and other carbon and graphite products for steel, aluminum, ferroalloy, silicon, chemical, nuclear and engineering industries.

The Group includes five companies: Novocherkassk, Novosibirsk, Chelyabinsk Electrode Plants, Doncarb Graphite and Aviauglerod, which are located in close proximity to consumers.

Farra Engineering, Ltd.  Booth #526
Farra Engineering is a New Zealand based company that in conjunction with aluminium smelters in New Zealand and Australia has developed two machines to increase efficiency and safety in the carbon bake plants.

The Pit Maintenance Unit (PMU) provides easy and safe access to the bake pits for routine maintenance, utilizing one or two traversing cages that lower down into the pits. The unit can service up to 8 pits before simply relocating via the overhead crane and the beautifully balanced single point lifting attachment on the unit. To complement this we have developed a Flue Wall Building Station (FWBS) that allow tradesmen to safely and efficiently build the brick flue walls from an elevated platform, utilizing four interconnected rack and pinion drives to keep the flue wall rock steady and perfectly level. The wall drops down after every completed row of bricks and once fully completed it is easily removed for subsequent installation in the bake pits.

Our PMU’s are installed in most recent new builds including Qatalum and Emirates Aluminium in the Middle East and the FWBS in the Hydro smelter at Kurri Kurri in Australia.
Company Descriptions

Fives Solios  Booth #407

FIVES SOLIOS is one of the companies of Fives, a major International Group, with considerable experience in industrial engineering and management of large projects all over the world. Fives Solios is specifically dedicated to the Aluminium Industry and develops innovative solutions in order to comply with more and more stringent environmental standards while increasing safety and reliability. Fives Solios most particularly works on reducing energy consumption in its process technologies.

- Reduction: Gas Treatment Centers on electrolysis pots and Bath Processing Units.
- Carbon: High Capacity Green Anode Plants, Pitch storage and processing, Liquid Pitch Marine Terminal, Firing & Control Systems for anode baking furnaces, and Fume Treatment Centers on anode baking furnaces.
- Casthouse Area: Melting and Holding furnaces including water cooling systems as well as integration of downstream casting machines, Heat Treatment furnaces for rolling mills and associated control systems.
  www.fivesgroup.com

FLSmidth  Booth #225

FLSmidth is your major equipment supplier from Bauxite Mining and Refining through Calcination and Smelting. Every day, worldwide, our equipment crushes, conveys, grinds, digests, clarifies, precipitates, stores, and calcinates bauxite to produce alumina. Combining the respected brand names of MÖLLER, KOCH-MVT, FULLER-TRaylor, WEMCO, EIMCO, DORR-OLIVER, PNEUMAPRESS, KREBS, ABON, RAHCO, CEntry, Conveyor Engineering and Raptor, FLSmidth offers a broad range of equipment and processes while increasing recoveries, lowering energy consumption, and providing proven reliability. We also offer metallurgical testing utilizing the expertise of FLSmidth Dawson’s metallurgical laboratories. FLSmidth is your One Source, One Partner providing integrated solutions that will save you valuable time on your project schedule!

With a global reach spanning six continents, Koppers is a leading integrated producer of carbon compounds and treated wood products essential to many world industries.

True leadership begins with Koppers employees. We embrace safety, health, environmental stewardship and personal integrity in everything we do and in every product we produce. We give back to our communities in so many ways and we don’t just talk sustainability, we live it.

To learn more about our standards of leadership, visit us at www.koppers.com.

Solid leadership in a constantly changing world.

436 Seventh Avenue  Pittsburgh, PA 15219-1800
www.koppers.com
## Company Descriptions

**Gannon University**  Booth #139

Founded in 1925 in Erie, Pennsylvania, Gannon University is a comprehensive Catholic institution that encourages the professional and personal growth of its students through a holistic education. Gannon University offers an Online Master’s in Engineering Management (MS-EM) degree designed to help professional engineers put their careers on track for increased responsibility as an engineering manager or project director. The online engineering management program curriculum blends the best in advanced engineering studies and advanced coursework in business. Engineering professionals who complete Gannon University’s MS-EM are poised to assume additional leadership responsibilities to advance their career.

**Gautschi Engineering GmbH**  Booth #212

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
- AIR GLIDE® and AIRSOL VEIL® mould technology

**GE Aviation**  Booth #207

GE Aviation is the world’s leading producer of large and small jet engines for commercial and military aircraft. We also supply aircraft-derived engines for marine applications and provide aviation services. GE Aviation’s technological excellence, supported by continuing substantial investments in research and development, has been the foundation of growth, and helps to ensure quality products for customers.

**GES**  Booth #219

GES, supplying quality graphite to various industries for over 25 years, represents some of the leading graphite producers worldwide. The fine grain extruded, molded and iso-molded grades cover three distinct grain sizes. Offerings include cathode blocks, rods for molten metal pump shafts and support posts, large block for pump bases, and rounds for rotor heads. GES provides competitive pricing, technical support, and convenient warehousing to meet your needs. Our Technical Sales personnel will be available in our booth to discuss your application and which grades will meet your requirements.

**Gillespie + Powers, Inc.**  Booth #324

A Corporation engaged in the design, supply, installation, and maintenance of industrial aluminum melting and process furnaces, refractory systems, acid-proof construction, and specialty refractories, as in waste incineration.

**GLAMA Maschinenbau GmbH**  Booth #201

GLAMA has designed and built heavy-duty Equipment for Aluminum 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
- Hammer Crustbreakers
- Tapping Trucks
- Anode Pallet Transporters
- Furnace Charging Machines
- Furnace Tending Machines
- Ladle Charging Trucks
- Butt Cleaning Manipulators
- Coil Lift Trucks
- Molten Metal Carriers

GLAMA’s experience of many years of producing machines with a unique combination of advanced control and rugged, reliable construction is evident in the several hundred machines now in service. GLAMA equipment withstands the heat, dust, vibration and battering of heavy industry while delivering precise handling performance.

More details: [www.glama.de](http://www.glama.de)

**GNA alutech, Inc.**  Booth #103

A comprehensive range of equipment and unsurpassed reliability and efficiency are at the heart of GNA alutech’s success. Leading aluminum works all over the world rely on GNA alutech products and technologies, proof of the company’s capacity to respond to the multiple needs and stringent requirements of its clients.
Goodfellow Corporation  Booth #341

Goodfellow supplies small quantities of metals, alloys, ceramics and polymers to meet the research, development and specialist product requirements of science industry worldwide. The company offers two distinct services:

The first meets the needs of those customers who require small quantities of our standard catalog products for immediate shipment.

The second is for those who require larger quantities or further processing of the company's standard products, or who need products which fall within our general supply capabilities.

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

Visit Goodfellow Corporation at website: www.goodfellowusa.com or e-mail info@goodfellowusa.com

Gouda Refractories  Booth #414

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, combined with innovative installation technology for more than 100 years.

Gouda Refractories develops, manufactures, sells and installs top quality refractory linings. Gouda's solutions play an important role in, non-ferrous metal (mainly aluminium), petrochemical, environmental and energy industries. Based on an industry-oriented structure and highly competent employees, Gouda Refractories guarantees an optimal support which results in efficiency and reduction of refractory cost. Gouda Refractories supplies total solutions to customers which are cost effective, state of the art, and reliable. Gouda's R&D department is conducted in close co-operation with its customers and renowned research institutes. Gouda's quality assurance is based on the international ISO 9001 standard.

Guangxi Bama Zhengyu Titanium Industry Co., Ltd  Booth #209

Guangxi Bama Zhengyu Titanium Industry Co., Ltd is a professional manufacturer of Aluminum master alloys and Aluminum alloying additives in China. We always take innovation as the power of development. We are highly professional, well educated, diligent and full of vigor. In principle of good honesty, equality and mutual benefits, we always keep the modest and prudential attitude, develop more new products, make more friends globally, and provide our customers with qualified products and good service.

Harper International  Booth #236

Harper International is a global leader in complete thermal processing solutions, as well as technical services essential for the production of advanced materials. Harper serves advanced, cutting-edge material markets with custom-engineered thermal processing systems. Our support to these emerging industries begins in early stages of research and development, whether at corporate R&D centers, universities, government institutions, or start-ups. Harper is a partner through the entire development process assisting in the scale up and commercialization of advanced materials that will change our everyday lives. One thing you won’t see at Harper is a cookie cutter line of products that we work to fit into your requirements. We specialize in first-of-a-kind solutions using our exceptional depth and breadth of knowledge. Harper’s culture is one of real ingenuity and creativity – we are constantly challenging ourselves to craft the best-engineered technology solutions for our customers’ needs.
Company Descriptions

Hencon BV  Booth #102

Hencon provides a complete range of heavy duty vehicles and vacuum technology solutions for aluminium smelters, aluminium foundries, light metal producers, industrial plants and mining applications. Originally a Dutch company, we developed a broad experience in the supply of solutions for customers in the light metal industry. With our solutions we want to make the difference for our customers and commit ourselves to measurable cost savings. Therefore we design machines that are safe to use and easy to operate and maintain. While at the same time our company is committed to offering you the support you require to make your business a success.

We think global and act local. This resulted in the unique concept of business units of Hencon on your doorstep: such as our service and production plants in the Netherlands, Russia, South Africa, Mozambique and India up to today.

Our goal is to offer our customers solutions to enable them to strive for continuous operating excellence in the lower cost curve of the industry.

With Hencon, you select a partner who has over 55 years of experience in the industry. We translate this knowledge into a durable partnership that shows commitment, creativity and entrepreneurship, in order to make our customers excel.

Whenever you would have questions about vacuum technology solutions, transport equipment and plant logistics; feel free to contact us for:
- Feasibility studies
- Know-how and analyses
- Training
- Support
- New equipment
- Maintenance solutions

Hencon offers tailor-made solutions with a clear eye for your specific needs and production processes. Combined with our know-how, we make the difference with solutions that offer you value for money.

Our clients can be found worldwide in the following countries: Argentina, Australia, Bahrain, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Egypt, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Cameroon, Mexico, Montenegro, Mozambique, Netherlands, New Zealand, Norway, Oman, Poland, Qatar, Romania, Russian Federation, Saudi Arabia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, United Kingdom, United States of America and Venezuela.

Hysitron  Booth #416

As world leader in nanomechanical test instruments, Hysitron is dedicated to providing next-generation testing solutions for nanoscale mechanical characterization. Hysitron’s nanomechanical test instruments provide in-situ SPM imaging in addition to the quantitative measurement of multiple mechanical properties, including hardness, modulus, fracture toughness, interfacial adhesion, and wear resistance. Our instruments feature a full suite of advanced complementary techniques, including nanoDMA® III to continuously obtain elastic-plastic and viscoelastic properties of materials as a function of indentation depth, frequency, and time. Additional Hysitron hybrid techniques include nanoECR® for simultaneous electrical and mechanical property measurements, Modulus Mapping for high resolution property mapping, and elevated temperature testing to determine material properties at operating or processing temperatures. Stop by our booth to see how the industry-leading TI 950 TriboIndenter redefines the world of nanomechanical testing. Hysitron will also be showcasing the PI 95 and PI 85 PicoIndenter®, truly quantitative depth-sensing indenters capable of in-situ observation during testing inside a TEM and SEM.

ICE Publishing  Booth #500

ICE Science is the new flagship journal collection from ICE Publishing inspiring fresh thinking on how breakthrough research can be practically applied to make energy, materials and medicines ever more efficient and effective. Launching with a series of full-color, bi-monthly journals in 2012, the collection aims to deliver a truly holistic overview of each scientific discipline, bringing together communities that traditionally work in silos to ensure important discoveries and applications are accessible to all those in the field. The first two editions of ‘Bioinspired, Biomimetic and Nanobiomaterials’, ‘Emerging Materials Research’ and ‘Nanomaterials and Energy’ are available free on our booth.

ICE Publishing is the publishing division of the Institution of Civil Engineers (ICE). We produce a wide range of publications sharing expert advice, leading research and best practice. With a history of making research in engineering and allied sciences practically useful since 1836, we offer a unique breadth of experience.
InfoSol Inc.  Booth #224

InfoSol is a leading provider of Business Intelligence solutions. With an in-house product development team and partnerships with other leading Business Intelligence solutions providers around the world, InfoSol offers the “best in class” and most innovative add-on solutions. These solutions include InfoBurst for Automated Report and Dashboard Bursting/Publishing, along with Intelligent Cache Query for optimal Xcelsius dashboard performance and scalability.

Having more than fifteen years experience in providing end-to-end Business Intelligence applications, InfoSol sees beyond the data to deliver visionary solutions that inspire.

Innovatherm GmbH + Co., KG  Booth #213

Innovatherm is the competent partner and the world market leader in anode baking technology. As a subsidiary of the LINGL Company, innovatherm operates in the aluminium industry, providing full service in combustion technology for reconstruction, fine tuning and optimization of existing anode baking furnaces as well as new furnaces including dry adsorption fume treatment plants.

For this purpose, Innovatherm has developed excellent process technologies and concepts with mathematical models, special components for the combustion like burners and gas valves, and future oriented control philosophies for optimal process management as well. For best results these concepts are custom-tailored to maximize plant safety, efficiency and economics.

Latest products established in the market are:
- ProBake Advanced Firing Systems for anode baking furnaces
- ProClean Fume Treatment Plants for the aluminium industry
- ProCast Supervisory Control Systems for primary and secondary Casthouses incl. charging management, target alloy calculation and melting optimization

International Aluminium Journal  Booth #235

International ALUMINIUM Journal deals with all facets of aluminium’s value chain from the production of the metal via its processing through to recycling. The editorial focus is on smelting and semis production including the suppliers of plant, equipment and technology. Consideration is given to economic, technical and environmental/ecological topics as well as other aspects that affect the metal and its product applications in the different target markets. Aluminium relevant research articles from companies and institutes are also published. The publication is thus of particular interest to smelters and remelters, semis producers, foundries, fabricators and converters, metal traders, semis stock holders and research facilities. International ALUMINIUM Journal is circulated in over 40 countries worldwide – made in Germany, distributed to the world. Published by Giesel Verlag GmbH; visit www.alu-web.de and www.giesel.de.

Jordan Valley Semiconductor  Booth #107

Jordan Valley is the leaders in X-ray metrology for semiconductors and thin films, with a range of products to suit all needs. Our products range from fully automated systems for specialist semiconductor fabs (JVX range) through to diffractometers for compound semi manufacturers (QC3, QC-Velox and QC-RT) and state of the art general research diffractometers (D1).

With the acquisition of Bede Scientific in 2008, Jordan Valley has over 30 years experience in a wide range of X-ray metrology methods including X-ray diffraction (XRD), X-ray reflectivity (XRR), high resolution XRD (HRXRD), X-ray Fluorescence (XRF) and X-ray topography (XRT). The systems are designed to be simple to use yet powerful enough to perform the most demanding measurements. Automation of the alignment, measurement and analysis is available on all systems to remove the necessity of highly trained operators being required for routine measurements. The simulation software (RADS, REFS) is generally regarded as the industry leader for HRXRD and XRR analysis.

Jordan Valley systems are installed in major semi manufacturers production lines, R&D labs, LED manufacturers, GaAs and InP production lines as well as many universities and research institutes worldwide.
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Kempe International

Kempe is the largest provider of asset and maintenance services in the aluminium smelting industry and has the most extensive product range for the aluminium smelting industry and is one of the top five global suppliers.

Kempe is currently supplying the Anode Rodding Shop and Anode Handling System for Ma’aden Aluminium and the Bath Treatment Plants for Hindalco Mahan & Aditya Smelters. We have recently installed the CBF4 Anode Handling & Transfer System at Boyne Smelters.

Kempe works for 30 smelters in 21 countries across 7 regions – Australasia, Middle East, Africa, Asia, Europe, North America, and South America. Kempe has in-house manufacturing in Australia, China, UAE & Mozambique.

Kempe has more than 2,000 employees globally, which includes in-house construction crews & equipment.

Kempe will be available at TMS to discuss potential client requirements in the various areas of aluminium smelting including – Anode Handling & Cleaning, Rodding Shops, Bath Removal (hot & cold), Bath Cooling & Processing, and other Carbon, Potroom and Casthouse equipment.

Light Metal Age

Light Metal Age is the pre-eminent magazine of the light metal world. In 2012, we are pleased to celebrate our 70th anniversary of publication, covering primary production and semi fabrication of the light metals aluminum, titanium, and magnesium. Circulation is international and goes to primary and secondary smelters; casthouses; extrusion operations; rolling mills; sheet, rod, and wire mills; and foundries. Coverage of associated metal processes and equipment includes DC casting, surface technologies such as anodizing, furnaces and melting, degassing and filtration, automation and instrumentation, and handling. Recipients are executives, general managers, plant managers, technicians, metallurgists, chemists, and engineers responsible for fabrication, production, and operations.

Light Metal Age also produces select article archive content on CDs, including the Titanium Article Archive (Nov. 1945 – Aug. 2009) and the Magnesium Article Archive (May 1943 – August 2011), as well as the Aluminum Extrusion Article Archive (July 1943 – April 2011). For more information, visit Light Metal Age on the web at www.lightmetalage.com.

Linde LLC

Linde, a leading global industrial gases company, provides industry-leading portfolio solutions for the aluminum industry ranging from gases and equipment to process consulting and services. These solutions enable our customers to increase productivity, lower fuel consumption and other costs and reduce emissions.

We offer dedicated applications for every step in the aluminum process chain, all designed to help you reduce fuel consumption and emissions, and improve quality:

- Low-temperature oxyfuel melting technologies to increase the melt rate, cut energy costs and reduce emissions
- Refining to improve the quality of the final product by purging the melt with gases to remove hydrogen, non-metallic inclusions and unwanted trace elements
- Heat treatment in the form of annealing in a protective nitrogen atmosphere to reduce oxidation and discoloration
- Extrusion cooling and shrouding with liquid nitrogen to raise production rates, improve surface finish and increase die lifetime.

LP Royer, Inc.

For all workers in the metallurgical industry, L.P. Royer is your “one stop” supplier for specialized and innovative safety footwear since 1934, visit us and see “THE SMELTER BOOT”. The XPAN® soling technology, unique to L.P. Royer in North America, adds to the mix to bring you a lighter dual density rubber sole that protect from heat and extreme cold and offer superior traction, shock absorption and durability. With our wide range of adapted protection including internal and external metatarsal protection, nonmagnetic toe protection you will find the best style for you. L.P. Royer products meet CSA, ASTM CE marking quality standards.

Maney Publishing

Maney delivers a personalized service to authors, societies, readers and libraries for the publishing and international dissemination of high quality, peer-reviewed scholarly research.

Specializing in print and electronic journal publishing, Maney is committed to technical and editorial innovation combined with traditional values of quality and collaboration.

Maney publishes an impressive collection of highly regarded, peer-reviewed journals covering both niche and general topics in materials science and engineering. Coverage ranges from fundamental research to engineering application and from the extraction and refining of minerals to the characterization, processing and fabrication of materials and their performance in service.
Welcome to TMS’s showcase of ideas on how the techniques and principles that form the foundation for Materials Innovation @ TMS—the Society’s exciting new strategic initiative—can revolutionize the design, development and deployment of advanced materials.

Browse the gallery of scientific and technical posters and displays that present “materials innovation in action.” Network with individuals and companies who offer tools, support, and services that can enable you to implement these approaches within your own organization or team. Learn about the array of resources and opportunities that are being offered as part of Materials Innovation @ TMS. A special feature of the TMS 2012 Exhibition, the Materials Innovation Gallery will be open throughout the conference during regular exhibit hours, so stop by often!

Materials Innovation @ TMS is focused on significantly reducing the time and costs associated with materials development through the advancement of a seamless and dynamic innovation infrastructure that unifies and streamlines design and manufacturing processes. The Materials Innovation Gallery has been designed to provide a visually compelling glimpse of how these concepts can potentially transform the future of materials and manufacturing innovation.

Mecfor Booth #430

For the last 15 years, we have design and manufactured specialized equipment for the Aluminum production sector. We are present in many countries worldwide and part of the 4 or 5 worldwide manufacturers, thus the only one in America. Our main products are, crucible carries, anode carriers, anode grooving, descaling robots, skimming stations, mobile equipment for loading, custom made specialized equipment.

Metallurgical & Materials Society of CIM Booth #230

We are a world class Canadian organization that serves society and the needs of professionals in the global metallurgy and materials community. The purpose of MetSoc is to serve our members, society and others involved in the research, development and application of the science and technologies for the environmentally responsible extraction, fabrication, utilization and recycling of metals and materials.
Company Descriptions

Micro Materials Ltd  Booth #432

Micro Materials Ltd (MML) - A wealth of mechanical property measurements in one instrument: The NanoTest Vantage system carries out a range of nanomechanical property measurements:

- Nanoindentation
- Nano-scratch and wear
- Nano-impact and fatigue
- Nano-fretting

Optimize material properties under true “in-service” conditions: The instrument can operate under a range of environmental conditions: high temperature up to 750°C, in liquids, and under non-ambient gases.

Unique capability: The high temperature testing module allows testing of a sample heated up to temperatures of 750°C. The patented MML nano-impact and fatigue system affords unrivalled information on fracture and fatigue behavior.

A trusted manufacturer: Established in 1988, MML’s global customer base includes leading research institutes such as MIT, Cambridge and Oxford Universities.

Details from: Denise Hoban, International Business Development Director, denise@micromaterials.co.uk or www.micromaterials.co.uk

Moduloc Ltd, a Rotalec company  Booth #434

- Engineered Solutions for the Metals Industry
- Industrial Sensors and Measurement Systems
- Laser Based Measurement Systems of hot or cold product for length, width or positioning
- Industrial Part Marking and Reading Solutions
- Digital Laser Level Counters
- Industrial Vision Systems
- Hot Metal Detectors
- Wireless Safety and Radio Remote Control
- Material Handling Solutions

MTI Corp  Booth #330

MTI Corporation, founded in 1994 by a group of material researchers from MIT and UC Berkeley, has now become the leading manufacturer of oxide crystals and substrates in the world, thanks to venture capital from Silicon Valley. MTI continues to develop new crystal substrates and maintain high quality of its single crystal substrates. MTI is equipped with the latest state of the art instruments, which allow achievement of the highest standard. We strive continuously to keep pace with customers’ increasing demands on super-smoothness, super-flatness, and super-cleanliness. In 2000, by popular demand, MTI started to manufacture precision bench-top machines for material processing, analysis, and crystal wafer containers.

MTI currently operates three production factories in China. This allows for the possibility of providing high quality and low cost precision machines for material research and R&D Labs, including: low speed cutting saw, wire diamond saw, automatic polishing machine, high temperature oven, tube furnace, X-Ray crystal orientation machine, and Mini XRD, as well as complete set of equipments for research of rechargeable battery materials. Simple to operate, low cost, and commitment to our customers is our priority. MTI strives to become the world’s leader in bench-top machines for material lab.

MTS Systems Corp  Booth #331

Engineers and researchers worldwide rely on MTS for the testing technology and expertise required to support the research, development and production of advanced metals, composites and ceramics. Reliable, high-performance MTS solutions are deployed across a diversity of industries such as aerospace, power generation, civil engineering and automotive, accurately and efficiently meeting the most demanding materials testing requirements.

The MTS portfolio is engineered to address a full spectrum of materials testing requirements - from tension/compression to fracture mechanics to complex multi-axial fatigue studies at elevated temperatures. This portfolio features: high-performance servohydraulic, static-hydraulic and electromechanical testing systems; versatile, high-resolution controls; proven application software; precision accessories; robust environmental simulation systems; and unmatched service and support.

Explore the MTS booth and discover how innovative MTS test solutions and decades of industry expertise can optimize the effectiveness and efficiency of your materials research, development and production programs.

Nanovea  Booth #511

Nanovea designs and manufacture Profilometers, Mechanical Testers & Tribometers to combine the most advanced testing capabilities in the industry: Scratch Adhesion, Indentation Hardness, Wear Friction & 3D Non-Contact Metrology at Nano, Micro & 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.
National Filter Media Corporation  Booth #519

At National Filter Media we take pride that we are one of the world’s oldest and largest providers of air pollution control and liquid filtration products. NFM has achieved success by adhering to the same business principles practiced since the firm was founded in 1906. We believe in building partnerships with our customers and in earning their business every day. The technology has changed since 1906, but our commitment remains the same. We want to be long term partners with our customers.

Nederman  Booth #339

Nederman has been in business since 1944 and is one of the world’s leading companies supplying products and services to protect our environment. The new headquarters in Thomasville, NC and sales/manufacturing in Westland, MI and Reno, NV bring even greater capabilities to design, manufacture, install and service our products nationwide, providing you with complete turnkey solutions.

Our new product offering includes systems for the extraction and filtration of dust, gas, smoke, and automobile exhaust fumes, equipment for industrial cleaning, as well as at source extraction equipment and clamp-together ducting.

Netzsch  Booth #327

Thermal analysis, calorimetry, thermal properties, & contract testing services; DSC, DTG, STA (Simultaneous DSC-DTG), TGA from cryogenic to +2400°C, evolved gas analysis by coupled FTIR, MS, and a new GC-MS system, adiabatic reaction calorimeters (ARC & APTAC) to measure thermal & pressure properties of exothermic chemical reactions, new MMC 274 tabletop reaction calorimeter, dilatometers, thermal conductivity, thermal diffusivity by laser flash & xenon flash to +2800°C, DMA, TMA, and DEA - dielectric analysis for in-situ thermostet cure monitoring.

NFC - China Nonferrous Metal Industry Booth #425

China Nonferrous Metal Industry’s Foreign Engineering & Construction Co., Ltd. (NFC) was founded in 1983. It is a state-controlled holding company listed on Shenzhen Stock Exchange in 1997. As a China leading enterprise engaged in general contracting of overseas nonferrous metal (particularly aluminum, copper, zinc and etc.) projects and resources development, it covers a wide spectrum from technical assistance, engineering design, equipment manufacturing, construction, supervision, installation and training to mining, beneficiation, smelting, processing and etc. It is also listed on ENR as one of the top 225 international contractors for consecutive years. With competitive edges in technology and rich experience in EPC contracting, NFC has consistently been dedicated to global nonferrous metal industry. NFC is capable and willing to work with world partners by providing a portfolio of services including technologies, equipment supply and management.

NIST/Measurement Services Division  Booth #222

NIST Standard Reference Materials supports accurate and compatible measurements by certifying and providing over 1300 Standard Reference Materials with well-characterized composition or properties, or both. SRMs are used to perform instrument calibrations as part of overall quality assurance programs, verify the accuracy of specific measurements and support the development of new measurement methods. The Standard Reference Data Group has provided well-documented numeric data to scientists and engineers for use in technical problem-solving, research, and development. The Calibration Services are designed to help the makers and users of precision instruments achieve high levels of measurement quality and productivity.

NKM Noell GmbH  Booth #306

NNSC has built a strong technical force based on specialists who individually have up to 25 years experience in Primary Aluminium Industry for Potroom as well for Carbon Area, being the only independent equipment supplier.

For more than 40 years on the market through its constitutitive companies, with more than 1,000 cranes in operation worldwide, NNSC is developing its mission for the Primary Aluminium Smelters and Nuclear plants:
- To be a global supplier of handling systems, process equipment and solutions,
- To integrate the client's process objectives in the design of the products through a continuous flow of mutual exchange.

Olympus Innov-X  Booth #422

Olympus Innov-X provides portable handheld X-Ray Fluorescence (HHXRF) analyzers for simple, non-destructive sorting of challenging grade separations, alloy chemistry and grade ID in seconds. They provide highly specific material chemistry to rapidly and accurately identify pure metals and alloy grades. HHXRFs allow for testing of literally thousands of types of materials anywhere, anytime. For scrap recycling applications, our HHXRFs provide reliable ID in 1-2 seconds for most grades. They are designed for durability – to withstand the tough processing environment. Our HHXRFs are used for fast, reliable alloy sorting and analysis for a wide variety of ferrous and non-ferrous material. We provide optimized HHXRF configurations for cost-effective analysis when time is of the essence and when materials cannot be transported, damaged, or altered. Our X-5000 Mobile XRF analyzers offer maximum portable power with a closed beam configuration.
Company Descriptions

Opsis  Booth #419

Opsis is a worldwide supplier of gas monitoring systems for process control applications, industrial continuous emission monitoring and ambient air quality and fence-line monitoring. Systems use open path UV-DOAS, FTIR and laser diode TDL technologies. Monitoring solutions are provided as integrated systems including gas measurements, additional sensors such as flow and temperature and software applications for reporting and networking.

Opsis systems have been implemented in applications in a wide range of industries globally, including aluminum smelters, power plants, incinerators, cement plants and sulfuric acid production plants.

The Opsis system does not need to extract any sample of the gas making it effective to measure reactive components such as ammonia, and strong acids. Same is applicable in case gas condition is either extremely corrosive or hot, or both.

Gaseous components that can be measured include, for example: SO2, SO3, NOx, CO, CO2, H2O, NH3, HCL, HF, Cl2, ClO2, HCHO, BTX, O3, Hg, HgTot. Measurements are certified under TUV, MCERTS and EPA.

Outotec Ltd.  Booth #309

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. The company has over 50 years experience helping customers worldwide in both segments of the aluminum process to reach their goals. What sets Outotec apart from its competition?

They are there to help their customers from start to finish in terms of plant design, and they customize solutions to fit a client’s specific needs. Outotec’s processes and equipment have become industry standards and their references stretch back decades – a track record that has lead to their current reputation as a leading innovative technology partner. The company also offers innovative solutions for the chemical industry, industrial water treatment and the utilization of alternative energy sources.

Parker Hannifin  Booth #206

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.

Photron Inc.  Booth #335

Photron offers a wide range of high-speed cameras; from HD resolution to 2,000 frames per second (fps), through dual miniature heads providing 2K fps for real time image processing, to the world’s fastest mega pixel high speed camera providing reduced resolution to over one and a half million fps.

Precision Light and Air Ltd.  Booth #105

Precision Light and Air (PLA) is an Australian based industrial instrumentation manufacturer specializing in process analyzers for mining and metals industries. These analyzers are particularly suited for high temperature and high scale applications as in alumina and nickel refineries. Our flag ship Smartdiver is regarded as the industry standard for measuring mud level, clarity, interface and tank profiles in the most hostile operating environments. Other analyzers supplied globally by PLA include non-nuclear density gauges, slurry liquor phase density refractometers, inline ceramic conductivity meters and suspended solids meters. With a support team ranking second to none, PLA remains a premier solution provider in industry.
### Company Descriptions

**Proto Manufacturing**  
**Booth #123**

PROTO Manufacturing is a leading provider of portable and laboratory based x-ray diffraction systems and services including:

- X-ray diffraction residual stress measurement
- X-ray diffraction retained austenite and nitride analysis
- Laue single crystal orientation systems
- Custom powder diffraction systems
- Fine focus and micro focus x-ray tubes
- Electropolishers

PROTO Manufacturing also provides measurement services through its laboratories in the United States, Canada and Japan. Visit online at [http://www.protoxrd.com](http://www.protoxrd.com) or by e-mail at xrdlab@protoxrd.com.

**RHI AG**  
**Booth #516**

Refractory competence for the non ferrous metals industry: RHI is the world’s leading supplier of high-grade ceramic refractory products and services. As a reliable and competent partner it is our constant aim to add value to the process of our customers by achieving the best price/performance ratio with our refractory system solutions.

The comprehensive program of products and services ranges from basic and non-basic mixes and bricks to prefabricated products, slide gate plates, purging plugs, as well as computer simulations like CFD or FEM. We also offer special machines, repair systems and technical equipment used to install refractory products into the various production units of the non ferrous metals industry. Our metallurgists are active around the globe and cooperate with renowned research facilities and universities to support the improvement of metallurgical processes and furnace integrity.

**Rio Tinto Alcan**  
**Booth #301**

Global leader in the aluminium industry

Building on more than a century of experience and expertise, Rio Tinto Alcan is a global leader in the aluminium industry. We supply high quality bauxite, alumina and aluminium worldwide and our AP smelting technology is the industry benchmark. Our enviable hydroelectric power position delivers significant competitive advantages in today’s carbon constrained world. Rio Tinto Alcan is the aluminium product group of Rio Tinto, a leading international business 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.

**Sente Software Ltd.**  
**Booth #338**

We offer materials-focused software products for modeling the behavior and properties of complex alloys. The thermodynamic databases produced by Thermotech set the standard for the prediction of equilibrium and non-equilibrium structures in multi-component commercial alloys. Our latest product, JMat-Pro, is a unique software program for predicting phase transformations, physical/mechanical properties and solidification properties for complex alloys. It provides fast and robust calculations that have been extensively validated to ensure sound predictions of the properties. Our software combines industrial relevance with realistic physical models and user-friendly interfaces that work with “real” materials which are multi-component in nature and exhibit complex behavior. [www.jmatpro.com](http://www.jmatpro.com).

**SLM Co., Ltd**  
**Booth #240**

We are an Aluminium Master Alloys Manufacturer located in Korea. Our company is specialized in Grain Refiners(AlTiB Alloys), Modifiers(AlSr Alloys) and Other Aluminium Alloys such as AlTi, AlB, AlV, AlMg, AlMn etc. We produce aluminium alloys in various forms such as Rod in coil, Cut Rod, Bar and Plate.

We have been producing high quality of Aluminium Master Alloys for 19 years and we export to over 20 countries. We supply high quality materials at competitive price.

We are looking for distributors now. Please visit our stand!
**Company Descriptions**

**STAS**
Booth #302

STAS is a Canadian based company specialized in the fabrication of process technologies for the aluminium industry.

The company has over 20 years experience, 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. STAS is a world leader in providing various equipment designed to improve productivity and the quality of molten aluminium.

Three main product lines are available:
1. Casthouse technologies, which include the Alcan Compact Degasser (ACD), the Rotary Flux Injector (RFI), the Inert Gas Dross Cooler (IGDC), the Deep Bed Filter (DBF) and the Treatment of Aluminium in Crucible (TAC).
2. Crucible cleaning shops, which include crucible cleaning systems, crucible preheating systems, and siphon tube cleaners and preheaters.
3. Pot room and rodding shop equipment, which include fume hoods to reduce HF emissions, anode positioning systems, anode stub inspection systems and anode butt inspection systems.

**Sunstone**
Booth #215

Sunstone Development Co., Ltd. (“Sunstone”) is the largest anode exporter and one of the largest merchant anode manufacturers in China. It owns and operates two anode production facilities with an annual capacity of 520,000 metric tons. More than half of Sunstone’s annual capacity is exported to more than 20 aluminium smelters in as many countries. Sunstone provides anodes to aluminium smelters in North America, Europe, Russia and the Middle East. The company holds ISO 9001, ISO 14001 and OHSAS 18001 certifications.

Sunstone’s aim is to provide the most innovative, rational, cost effective and user friendly technical solutions. Among the most significant families of mobile equipment are the Tapping Vehicles, Anode Transporters, Crucible Transporters and Tilters, Alumina/ AlF3 Feeding Vehicles, Furnace Charging Vehicles and Furnace Tending Vehicles, Multipurpose Anode Chang ers and Crust Breakers. Beside its line of purpose designed vehicles, Sunstone provides a number of stationary equipment such as Crucible Cleaning Machines, the Crucible Tilting stations and the Anode Butts Cleaning Stations.

**Techmo**
Booth #413

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

The full range of purpose designed machines covers different types of equipment performing a large number of operations in pot-rooms, rodding shops and cast-houses. The Company’s aim is to provide the most innovative, rational, cost effective and user friendly technical solutions.

**Tenova Core**
Booth #334

Tenova Core 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 also provides a wide range of heat treating, reheating and specialty furnaces as well as technical and spare parts services.

**Thermo Scientific**
Booth #423

Thermo Scientific product portfolio provides world-class solutions for analytical microscopists. See the QuasOr EBSD system and experience the seamless integration of EDS, WDS and EBSD in the NORAN System 7 X-ray microanalysis system. Also see our EDXRF, WDXRF/XRD and OES products for materials characterization in terms of qualitative and quantitative elemental/phase composition.

**Thermo-Calc Software**
Booth #223

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 expert evaluation of experimental data. Databases are available for Al, Mg, steels, Ni-superalloys, Ti, solders and other materials. Programming interfaces are available which enable Thermo-Calc to be called directly from in-house developed software or Matlab.

DICTR is used for accurate simulations of diffusion in multicomponent alloys. TC-PRISMA is a new software package for the simulation of precipitation kinetics in multicomponent alloys.
### Company Descriptions

**Tri-State Refractories Corp.**  Booth #239  
Tri-State Refractories is a full service contractor specializing in the Aluminum Industry. We offer turn key projects for Carbon Bake Furnaces, Aluminum Holding and Melters, De Laq Furnaces, Rotary Furnaces, Pot Lining, and most other requirements for plant operations. We also have maintenance contracts in place with Rio Tinto Alcan and Alcoa doing multi task type work throughout these facilities.

**UES, Inc.**  Booth #108  
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.

RoboMet.3D™ is a fully automated, serial sectioning system that generates two-dimensional data for three-dimensional reconstruction. Robo-Met.3D enables more time for data analysis and characterization and ensures repeatable and accurate data is collected in an efficient and cost-effective manner.

Additional areas of expertise for UES include materials science, metallurgy, ceramics, processing science, modeling and simulation, surface engineering, materials characterization, biotechnology, sensor development and nanomaterials.

**University of Central Florida AMPAC**  Booth #119  
The Advanced Materials Processing and Analysis Center (AMPAC) located at the University of Central Florida is an interdisciplinary research and education center for materials science and engineering. AMPAC excels in the development, processing and characterization of advanced materials, addressing a broad range of civilian and defense applications including energy, microelectronics, nanotechnology, sensors and actuators, biomaterials, lasers and propulsion. AMPAC administers the Materials Science and Engineering Graduate Program, a nationally ranked academic program. AMPAC is also home to the Materials Characterization Facility (MCF), a user facility with state-of-the-art electron microscopy, ion spectroscopy, x-ray analysis and much more. AMPAC also maintains the Advanced Microfabrication Facility, a class 1000 cleanroom facility for the fabrication and testing of semiconductor devices, thin films and more.

**Westmoreland Advanced Materials, LLC**  Booth #325  
Westmoreland Advanced Materials manufactures a full line of premium refractory castables. In addition, the company provides innovative refractory technology for the aluminum industry. WAM® AL II is a truly unique, non-wetting corundum resistant refractory castable developed specifically for the aluminum industry. This family of products provides for all metal contact needs including a non-penetrable insulating product, a high strength/high density product, a gunning product and maintenance and repair products. Customers using this technology in aluminum metal processing applications have measured and documented energy savings up to 46%, maintenance savings of at least 50% and have reduced down times to 8% of typical.

If you process aluminum metal come visit us at booth #325 and learn how we can improve your processing efficiency and your cost to produce product.

**York Linings Intl. Inc.**  Booth #401  
York Linings Inc. is a market leader in the design and installation of refractory linings in all major industries. We incorporate our own in-house experience and technology with that of the major refractory suppliers to provide our clients with an installed product that will provide the best lining performance in their specific industry.

YLI have been involved in many major Aluminum smelting plants in the United States and Overseas. Major projects include New Carbon Bake Furnaces, Reduction Cells, Cathode Sealing, Metal Holding Furnaces and Plant maintenance.

YLI are committed to deliver a quality Refractory project, meeting the high levels of design criteria, safety standards and schedule requirements for today’s industrial climate, providing best results for the future of your facility.
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<td>Interfacial Reactions of the Pb-free Solder Joints</td>
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| Phase Transformations and Deformation in Magnesium Alloys            | Tues     | AM       | Southern V (D)| 75  |
| Processing to Control Morphology and Texture in Magnesium Materials  | Mon      | PM       | Europe 10 (D)| 49   |
| Processing to Enhance Performance in Rare Earth Permanent Magnets    | Mon      | PM       | Europe 10 (D)| 102  |
| Role of Magnetic Fields and Texturing to Improved Magnetic Materials | Tues     | PM       | Europe 10 (D)| 102  |
| Thin Films and Applications                                         | Wed      | PM       | Europe 10 (D)| 154  |

| Producing, Recovery and Recycling of Rare Earth Metals               | Thurs    | PM       | Europe 4 (D)| 188  |

| Radiation Effects in Ceramic Oxide and Novel LWR Fuels              | Thurs    | PM       | Europe 4 (D)| 156  |

| Randall M. German Honorary Symposium on Sintering and Powder-Based  | Wed      | AM       | Oceanic 2 (D)| 25   |
| Materials                                                          |          |          |            |      |
| Sintering Theory and Practice                                      | Mon      | AM       | Oceanic 2 (D)| 49   |
| Current Activated and Conventional Sintering                       | Mon      | PM       | Oceanic 2 (D)| 156  |
| Powder Technology                                                  | Tues     | PM       | Oceanic 2 (D)| 75   |
| Powder Processing and Consolidation I                              | Tues     | PM       | Oceanic 2 (D)| 103  |
| Powder Processing and Consolidation II                             | Wed      | AM       | Oceanic 2 (D)| 130  |
| Powder Processing and Consolidation III                            | Wed      | PM       | Oceanic 2 (D)| 155  |

| Reaching New Heights: Materials Innovation in the Aerospace Industry| Wed      | PM       | Northern E2 (D)| 156  |

| Recent Developments in Biological, Electronic, Functional and      | Wed      | AM       | Swan 10 (S)| 130  |
| Structural Thin Films and Coatings                                 |          |          |            |      |
| Process-Properties-Performance Correlations I                      | Wed      | AM       | Swan 10 (S)| 156  |
| Applications to Bio, Energy and Electronic Systems                | Thurs    | AM       | Swan 10 (S)| 178  |
| Process-Properties-Performance Correlations III                    | Thurs    | PM       | Swan 10 (S)| 188  |

| Recycling General Sessions                                         | Tues     | AM       | Europe 4 (D)| 76   |
| Metals                                                             |          |          |            |      |
| Electronics                                                        | Tues     | PM       | Europe 4 (D)| 103  |
| Building Materials                                                 | Wed      | AM       | Europe 4 (D)| 1331 |
| Waste Utilization                                                  | Wed      | PM       | Europe 4 (D)| 157  |

| Refractory Metals 2012                                             | Wed      | AM       | Mockingbird 2 (S)| 131  |
| W and Mo Alloys | Structure, Microstructure and Properties                        |          |          |            |      |
| Alloy Predictions and Synthesis | Oxidation and Corrosion                                | Wed      | PM       | Mockingbird 2 (S)| 157  |

| Science and Engineering of Light Metal Matrix Nanocomposites and    | Mon      | AM       | Macaw 2 (S)| 26   |
| Composites                                                        |          |          |            |      |
| Metal Matrix Nanocomposites                                       | Mon      | AM       | Macaw 2 (S)| 50   |
| Nanocomposites and Composites                                    | Mon      | PM       | Macaw 2 (S)| 50   |
| Metal Matrix Composites                                           | Tues     | AM       | Macaw 2 (S)| 76   |

<p>| Solar Cell Silicon                                                | Mon      | PM       | Europe 7 (D)| 50   |
| Silicon Production                                                | Tues     | AM       | Europe 7 (D)| 77   |</p>
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**Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment**

- Atomic Level Structures, Compositions, and General Methods
- Morphological Stability
- Interface Interaction with Defects
- Mechanical Properties
- Non-metallic Interfaces, Electronic Structures
- Grain-boundaries and Triple Junctions
- Interface Dynamics, Oxidation

**Stochastic Methods in Materials Research**

- Dislocations Organization
- Plastic Flow
- Screw Dislocations-lattice Friction
- Intermetallic Alloys
- Nanograined Materials
- Deformation Mechanisms

**Titanium: Advances in Processing, Characterization and Properties**

- Processing and Process Modeling I
- Processing and Process Modeling II
- Microstructure Evolution and Characterization I
- Microstructure Evolution and Characterization II
- Fatigue of Titanium Alloys
- Mechanical Properties
- General Abstracts

**T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization**

- Plenary Session
- Copper Electrefining
- Base Metal Processing
- Transition Metal Processing
- Precious Metals, Recycling and the Environment
- Characterization
- Processing and Properties I
- Processing and Properties II

**Ultrasound Grained Materials VII**

- Plenary Session
- Deformation Mechanisms
- Processing-Microstructure-Property Relationships: Al-, Mg- and Ti-Alloys
- Processing-Microstructure-Property Relationships: Fe-, Cu- and High-Entropy Alloys
- Young Scientist
- Thermal Stability
- Applications and Transitions
- Powder Processing
- Mechanical Response
- Advanced Analysis Methods

**Ultrasonic Fatigue of Advanced Materials and Systems**

- Ultrasonic Fatigue of Metals and Alloys I
- Ultrasonic Fatigue of Metals and Alloys II

**Wettability and Interfacial Phenomena between Metals and Ceramic/Refractory Materials**

- Session I
### Symposium Poster Sessions

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### General Poster Session

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**About TMS Poster Sessions**

The TMS 2012 Annual Meeting & Exhibition is pleased to provide a central area for all poster presentations at the conference. This area, located in the Atlantic Hall in the Dolphin Hotel near Registration, will include:

- Individual symposium poster sessions
- General poster session
- Student poster sessions (by division)

**Presentation times:**

Presenters should plan to be available to discuss their posters on Monday, March 12, from 5:30 to 6 pm in conjunction with the President's Welcoming Reception in the exhibition hall.

**Poster installation and removal:**

Presenters may install their posters on Sunday, March 11, from 12 to 6 pm and on Monday, March 12, from 7 to 8 am.

Presenters may remove their posters beginning at noon on Wednesday, March 14. All posters must be removed before 5 pm on Wednesday.
2012 Aluminum Plenary: “Aluminum Industry Technology 2020, A Look Ahead”: Subodh Das

Achieving Carbon Neutrality in the Global Aluminum Industry

10:45 AM

Alumina Technology – Present and Future

9:35 AM

A Sustainable Production of Primary Aluminum: Claude Vanvoren; 1Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM


9:05 AM

Alumina Technology – Present and Future: Ender Suvaci1; 1Anadolu University

9:35 AM

A Sustainable Production of Primary Aluminum: Claude Vanvoren1; 1Rio Tinto Alcan

10:05 AM Break

10:15 AM

Driving Business Technology to Remain Competitive in the Aluminum Industry: Roberto De Andrade1; 1Alcoa Inc

10:45 AM

Achieving Carbon Neutrality in the Global Aluminum Industry: Subodh Das1; 1Phinix LLC

11:15 AM

The Aluminum Story – The Positive Contribution of the Aluminum Industry and its Products to Sustainable Development: Chris Bayliss1; 1International Aluminium Institute

11:45 AM Panel Discussion

12:05 PM Concluding Comments

2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Carbon Nanomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Terry Xu, UNC Charlotte

MONDAY AM

Monday AM Room: Pelican 1
March 12, 2012 Location: Swan Resort

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Nae Eung Lee, SungKyunKwan University

8:30 AM Introductory Comments

8:45 AM Invited

Graphene - The Route Toward Applications: Wonbong Choi1; 1Florida International University

9:00 AM

Growth of Low Dimensional Carbon Nanomaterials: John Boeckl1; Weijie Lu1; William Mitchel1; 1Air Force Research Laboratory

9:40 AM

Piezoelectric Coated Carbon Nanotubes for Electronic Applications: David Stollberg1; Austin Mohney2; 1Georgia Tech Research Institute; 2Lock Haven University

10:00 AM Break

10:15 AM Invited

Engineering Improved Strain Capacity Carbon Nanotube Electrodes on Shape Memory Polymers for Cortical Brain Probes, Cochlear Implants, Flexible Antennas and Multi-Electrode Arrays: Dustin Simon1; Taylor Ware1; Yael Hanein2; Moshe David-Pur1; Edward Keefer1; Walter Voit1; 1UT Dallas; 2Tel-Aviv University; 3Plexon

10:50 AM

Photo-Ignition of Liquid Fuel Spray and Solid Fuel by Carbon Nanotubes: Alireza Badakhshan1; Stephen Danczyk1; 1Jacobs Technology Inc.; 1Air Force Res. Lab

11:10 AM

Boron Carbide Nanowires: Low Temperature Synthesis, Structural and Thermal Conductivity Characterization: Zhe Guan1; Timothy Gut1; Juekuan Yang2; Yang Yang2; Deyu Li2; Terry Xu1; 1UNC Charlotte; 2Vanderbilt University

11:30 AM

Electrical and Mechanical Response of CNT Turfs under Normal Loads: Anqi Qiu1; David Bahr1; 1Washington State University

2012 Symposium on Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Heterostructure Growth and Characterization


Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Jiyong Kim, University of Texas at Dallas; Christopher Matranga, National Energy Technology Laboratory

Monday AM Room: Pelican 2
March 12, 2012 Location: Swan Resort

Session Chairs: Nitin Chopra, The University of Alabama; Christopher Matranga, National Energy Technology Laboratory (NETL)

8:30 AM Introductory Comments

8:35 AM Invited

Defining Nanoscale Structure-Property Relationships in Nanowire Heterostructures: Lincoln Lauhon1; 1Northwestern University

9:10 AM Invited

Challenging the Trade-Offs in Synthesis and Application of Core/Shell Nanocrystal Fluorophores: Andrew Greytak1; 1University of South Carolina
MONDAY AM

9:45 AM
Anisotropic Evaporation of GaN Nanowires Analyzed Using Atom Probe Tomography: James Riley1; Rodrigo Bernal2; Qiming Li3; Horacio Espinosa4; George Wang5; Lincoln Lauhon6; ‘Northwestern University; 2Sandia National Laboratories

10:05 AM
Fabrication of Silicon Nanowires by Metal Nanoparticles Assisted Anisotropic Etching and Their Electron Microscopic Studies: Wenwu Shi1; Laura Phillips2; Nitin Chopra3; ‘The University of Alabama

10:20 AM Break

10:30 AM Invited
Hybrid Nanowires for Functional Applications: Pelagia Gouma1; 2SUNY Stony Brook

11:05 AM Invited
Tuning Color by Pore-Depth of Metal-Coated Nanostructured Porous Alumina: Dongxian Zhang1; Xulongqi Wang2; Haijun Zhang3; Yi Ma4; Jianzhong Jiang5; ‘Zhejiang University

11:40 AM Invited
In-Situ TEM Controlled Growth of Silicide in Si Nanowires: Yi-Chia Chou1; Mark Reuter2; King-Ning Tu3; Eric Stach4; Frances Ross5; ‘IBM/ Purdue University; 2IBM T. J. Watson; 3University of California Los Angeles; 4Purdue University/BNL

12:15 PM
Development of ZnO/MgO/p-Si Heterostructures for Pure UV Light Emitting Diode with Carrier Blocking Layer: Byung Oh Jung1; Ju Ho Lee2; Hyung Koun Cho3; Jeong Yong Lee4; Ho Seong Lee5; 1Sungkyunkwan University; 2KAIST; 3Kyungpook National University

12:30 PM
The Temperature and Excitation Intensity Effects on the Photoluminescence Spectra of InAs /InP Quantum Dots: Fatima Besahraoui1; ‘Oran University

3rd International Symposium on High Temperature Metallurgical Processing: High Efficiency New Metallurgical Technology
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Patrick Masset, TU Freiberg; Onuralp Yucel, Istanbul Technical University; Rafael Padilla, University of Concepcion; Guifeng Zhou, Wuhan Iron and Steel

Monday AM
March 12, 2012  Location: Dolphin Resort

Session Chairs: Tao Jiang, Central South University; Merete Tangstad, Norwegian University of Science and Technology

8:30 AM Introductory Comments

8:40 AM
A Laboratory Investigation of the Reduction of the Siderite Iron Ore to Iron Nugget: Nikolay Panishev1; Eugene Redin2; Vladimir Pilshchikov3; ‘Magnitogorsk Iron & Steel Works; 2Hares Engineering GmbH

9:00 AM
Composite Agglomeration Process of Iron Ore Finest: Tao Jiang1; Youming Hu2; Guanghui Li3; Yufeng Guo4; Zhengwei Yu5; Xiaohui Fan6; Yuanbo Zhang7; Yongbin Yang8; ‘Central South University

9:20 AM
Investigation of Pyrometallurgical Nickel Pig Iron (NPI) Production Process from Lateritic Nickel Ores: Onurali Yucel1; Ahmet Turan2; Halil Yildirim3; ‘Istanbul Technical University

9:40 AM
Novel Process for Utilizing Low-Grade Manganese Oxide Ores by Sulfur-Based Reduction Roasting-Acid Leaching: Tao Jiang1; Zhixiong You2; Yuanbo Zhang3; Daoxian Duan4; Guanghui Li5; ‘Central South University

10:00 AM Break

10:10 AM
Silicon Process Pilot Scale Experiment in a Semi Closed in a 440 kVA Furnace Furnace: Ingeborg Solheim1; SINTEF Materials and Chemistry

10:30 AM
Slide Gate Systems for Copper Tapping: Klaus Gamweger1; Andreas Schmidt2; ‘RHI AG

10:50 AM
Recovery of Huangmei Limonite by Flash Magnetic Roasting Technique: Wen Chen1; Xinghua Liu2; Zeyou Peng3; Qiuin Wang4; ‘Changsha Research Institute Of Mining And Metallurgy

11:10 AM
Studies on Alternative Blast Furnace Burden Structure with High Proportion Sinter: Jianjun Fan1; Guanzhou Qiu2; Tao Jiang3; ‘Central South University, 4Taluyan Iron and Steel (Group )Co. Ltd

11:30 AM
Hydrothermal Sulfidation of Carbonate-Hosted Zinc-Lead Ore with Elemental Sulfur: Cunxiong Li1; Chang WEI2; ‘Kunming University of Science and Technology

Advances in Surface Engineering: Alloyed and Composite Coatings: Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Srinivasak Bakshi, Indian Institute of Technology Madras; Arvind Agarwal, Florida International University

Monday AM
March 12, 2012  Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited
An Overview of Dry Sliding Wear of Two-Phase FeNiMnAl Alloys: I. Baker1; ‘Dartmouth College

9:00 AM Invited
CrN-Ag Nanocomposite Coatings: High-Temperature Lubrication through Nanopore Channels: Daniel Gall1; ‘Christopher Mulligan2; Paul Papi1; Thierry Blanchet1; ‘Rensselaer Polytechnic Institute; 2Benet Laboratories

9:25 AM Invited
Micromechanisms of Failure in Multilayered Hard Coatings of ZrN-Zr and TiAIN-TiN: Vikram Jayaram1; Nisha Verma2; ‘Indian Institute of Science
9:50 AM Advances in Surface Engineering for Amorphous Coatings: Sandip Harimkar; 1Oklahoma State University

10:10 AM Break

10:25 AM Metal Matrix Composite Hardfacing by Additive Friction Stir: Jeffrey Schultz; 1Schultz-Creehan Holdings, Inc

10:45 AM Multiscale Mechanical and Tribological Behavior of Plasma Sprayed Carbon Nanotube Reinforced Aluminum Composites: Srinivasa Bakshi; 2Indian Institute of Technology, Roorkee, India

11:05 AM Microstructures and Wear Properties of (Ti,Mo)N, Hard Coatings: Yuji Sutou; Junichi Koike; Mei Wang; Takaomi Toihara; 1Tohoku University; 2OSG Corporation

11:25 AM Wear Resistance of Spray Formed Stainless Steels: Claudio Bolfarini; Leamar Beraldo; Conrado Afonso; Claudio Kimitami; Walter Botta; 1Universidade Federal de São Carlos

11:45 AM Use of Thermo-Mechanical Simulator in Studying the Cyclic Oxidation of NiCrAlY Coatings: Nidhi Rana; R. Jayaganthan; Satya Prakash; 1Indian Institute of Technology, Roorkee, India

9:50 AM Using High-Resolution Topographic Imaging to Characterize the Hemming Performance of Automotive Aluminum Alloys: Mark Stoudt; Joseph Hubbard; John Carsley; Susan Hartfield-Wünsch; 1National Institute of Standards and Technology; 2General Motors R&D Center; 3General Motors Technical Center

10:10 AM Characterization of Electron Beam Deposited Aluminum Alloy 2139: Milo Kral; Karl Buchanan; Craig Brice; Marcia Domack; Ravi Shenoy; William Hofmeister; 1University of Canterbury; 2NASA Langley Research Center; 3UT Space Institute

10:30 AM Break

10:45 AM Near Net Shaped Casting of 7050 Al Wrought Alloy by CDS Process: Microstructure and Mechanical Properties: Seyed Giaasiaan; Abbas Khalaif; Xiaochun Zeng; Sumanth Shankar; 1McMaster University

11:05 AM A Study of Stress Effects on η-Phase Precipitation in Al-Mg Alloys Using In-Situ TEM: Daniel Scotto D’Antuono; Jennifer Gaies; William Golumbfskie; Mitra Taheri; 1Drexel University; 2Naval Surface Warfare Center

11:25 AM Effect of Heat Treatment on Silicon in Hypereutectic Al-Si Alloy: Ying Zhang; 1Zhengzhou Research Institute of CHALCO

8:30 AM Aluminum Welded Blank Applications in the Automotive Industry: Susan Hartfield-Wunsch; Ravi Verma; Blair Carlson; 1General Motors

8:50 AM Influence of Stress on Sensitization in Al-Mg Alloys: William Golumbfskie; Jennifer Gaies; Mitra Taheri; 1Naval Surface Warfare Center, Carderock Division; 2Drexel University

9:10 AM Material Performance of Naturally Sensitized Aluminum 5xxx Alloys: Angela Whitfield; Daniel Stiles; William Golumbfskie; 1Naval Surface Warfare Center

9:30 AM Precipitation of the θ (Al,Cu) Phase in Al-Cu-Ag Alloys: Julian Rosale; Laure Bourgeois; Barrington Muddle; 1National Institute for Materials Science; 2Monash University

9:50 AM Atomistic Effects in Migrating Interphase Interfaces - Recent Progress and Future Study: Interfacial Structure with Small Misfit: Sandip Harimkar; 1Oklahoma State University

8:35 AM Invited Topological Modelling of the Growth and Accommodation of Plate-Shaped Products Formed in Displacive Transformations: Robert Pond; 1University of Exeter; 2Private individual

9:05 AM Invited Application of Edge-to-Edge Matching Model to Surface Transformation in a Titanium-Chromium Alloy: Mingxing Zhang; Dong Qu; Patrick Kelly; 1The University of Queensland

9:35 AM Crystallographic Morphology Evolution in a FCC/BCC System via a Discrete Atom Method: Dai Fu-Zhi; Wen-Zheng Zhang; 1THU

9:55 AM Characterization of Alpha/Gamma Interfaces in a Bainitic Microstructure: Sherri Hadian; Gary Purdy; Gianluigi Botton; 1McMaster University
### Biological Materials Science Symposium: Bio-Inspired Materials: Mechanics and Design

**Sponsored by:** The Minerals, Metals and Materials Society, TMS
**Electronic, Magnetic, and Photonic Materials Division, TMS
**Structural Materials Division, TMS: Biomaterials Committee**

**Program Organizers:** Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman, Texas A&M University

**Monday AM**

**Room: Swan 7**

**Location: Swan Resort**

**Session Chairs:** John Nychka, University of Alberta; Nima Rahbar, University of Massachusetts Dartmouth

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>Introductory Comments</td>
<td></td>
</tr>
<tr>
<td>8:35 AM</td>
<td>Bioinspired Ceramic Coatings: Durability and Potential for Self-Lubricity: John Nychka; Nathan Lun; University of Alberta</td>
<td></td>
</tr>
<tr>
<td>8:55 AM</td>
<td>Structure-Property Relationships of the Natural Multi-Layered Material Systems: Wayne Hodo; Paul Allison; Mei Chandler; John Peters; Allan Kennedy; Rogie Rodriguez; ERDC; University of Puerto Rico - Mayaguaz</td>
<td></td>
</tr>
<tr>
<td>9:10 AM</td>
<td>Quantum Effects in Interfacial Mechanics of Polymer-Ceramic Hybrid Biomaterials: Devendra Dubey; Vikas Tomar; Purdue University</td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Nonlinear Behavior of Silk Minimizes Damage and Begets Spider Web Robustness from the Molecules Up: Markus Bauhler; Steven Cranford; Nicola Pugno; Anna Tarakanova; Massachusetts Institute of Technology</td>
<td></td>
</tr>
<tr>
<td>10:10 AM</td>
<td>Mechanics of Hierarchical Structures in Bone: Shashindra Pradhan; Dinesh Katti; Kalpuna Katti; North Dakota State University</td>
<td></td>
</tr>
<tr>
<td>10:40 AM</td>
<td>Phase Field Model of Fracture for Inhomogeneous Materials: Mark Jhon; Qian Xiao Li; Institute of High Performance Computing</td>
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</tr>
</tbody>
</table>

### Bulk Metallic Glasses IX: Alloy Development and Application

**Sponsored by:** The Minerals, Metals and Materials Society, TMS
**Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee**

**Program Organizers:** Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

**Monday AM**

**Room: Swan 6**

**Location: Swan Resort**

**Session Chairs:** Peter Liaw, The University of Tennessee; William Johnson, Keck Laboratory of Engineering

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenters</th>
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</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>Keynote</td>
<td></td>
</tr>
<tr>
<td>8:35 AM</td>
<td>Progress in Engineering Applications of Bulk Metallic Glasses: William Johnson; University of Tennessee</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Glass Formation in a Laser-Glazed Zr-Cu-Ni-Al-Nb Alloy: Brian Welk; Hamish Fraser; Mark Gibson; The Ohio State University; CSIRO</td>
<td></td>
</tr>
<tr>
<td>9:10 AM</td>
<td>Invited</td>
<td>Bulk Metallic Glasses: From Fundamentals to Applications: Atakan Peker; Washington State University</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Fabrication of Microchannels for Micro-Fluidic Applications Using High Frequency Micromachining on an Amorphous Material: Vivek Jain; Apurbba Sharma; Pradeep Kumar; Indian Institute of Technology Roorkee</td>
<td></td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Invited</td>
<td>Development of Porous Metallic Glass Compacts: Ki Buem Kim; Sejong University</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>10:15 AM</td>
<td>Invited</td>
<td>Bulk Metallic Glasses Form Like Plastics: Jan Schroers; Yale University</td>
</tr>
<tr>
<td>10:35 AM</td>
<td>Invited</td>
<td>Mechanistic and Thermodynamic Origins of Toughness in Metallic Glasses: Marios Demetriou; William Johnson; Robert Ritchie; California Institute of Technology; University of California, Berkeley</td>
</tr>
<tr>
<td>10:55 AM</td>
<td>Invited</td>
<td>Recent Research Efforts in Bulk Metallic Glass Matrix Composites at NASA JPL/Caltech: Douglas Hofmann; NASA JPL/Caltech</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Glass Forming Ability of the Multi-component Bulk Metallic Glasses: Anupriya Agrawal; Logan Ward; Katharine Flores; Wolfgang Windl; The Ohio State University</td>
<td></td>
</tr>
<tr>
<td>11:25 AM</td>
<td>Invited</td>
<td>Effect of Casting Technique on Glass Formation of Bulk Metallic Glasses: Tao Zhang; Beihang University</td>
</tr>
</tbody>
</table>
11:45 AM Invited
New Ti-Based Bulk Metallic Glasses for Biomedical Application: 
Xidong Hui1; Xiaolong Zhou2; Xiaohua Chen3; Xiongqun Liu4; Yuan Wu5; 
Zhaoping Lu6; 1University of Science and Technology Beijing

12:05 PM
Effect of Tungsten Reinforcement Particle Sizes on the Fabrication of 
Hf-Based Metallic Glass Matrix Composites: Min Ha Lee1; Daniel 
Sordel1; Jürgen Eckert2; 1Korea Institute of Industrial Technology; 
2Caterpillar Advanced Materials Technology Group; 1IFW Dresden

12:15 PM Invited
Ferromagnetic Fe-Based Bulk Metallic Glasses with Low Glass 
Transition Temperature and Large Supercooled Liquid Region: Wei 
Zhang1; Canfeng Fang2; Akhiro Makino3; Akhisara Inoue4; 1School of 
Materials Science and Engineering, Dalian University of Technology; 
2Institute for Materials Research, Tohoku University; 3WPI, Advanced 
Institute for Materials Research, Tohoku University

CFD Modeling and Simulation in Materials Processing: CFD Modeling in Materials 
Processing I
Sponsored by: The Minerals, Metals and Materials Society, TMS 
Extraction and Processing Division, TMS Materials Processing and 
Manufacturing Division, TMS: Process Technology and 
Modeling Committee, TMS: Solidification Committee 
Program Organizers: Laurentiu Nastac, The University of 
Alabama; Lifeng Zhang, Missouri University of Science and 
Technology; Brian Thomas, University of Illinois at Urbana-
Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-
Kaddah, The University of Alabama; Adam Powell, Metal Oxygen 
Separation Technologies, Inc.; Hervé Combeau, Institut Jean 
Lamour

Monday AM
Room: Asia 4 
March 12, 2012 
Location: Dolphin Resort

Session Chairs: Lifeng Zhang, Missouri University of Science and Technology; Raj Venturumilli, Ansys, Inc.

8:30 AM Keynote
Fluid Flow, Solidification and Inclusion Entrapment during Steel 
Centrifugal Casting Process: Lifeng Zhang1; Edith Martinez2; Kent 
Peaslee3; 1University of Science and Technology

9:00 AM Invited
A Coupled CFD-Thermodynamic-Kinetic Model to Simulate a Gas 
Stirred Ladle Refining Process: Raj Venurumilli1; Pavan Shivararam2; 
1ANSYS, Inc.; 2U.S. Steel Corporation

9:25 AM Invited
A Micro-Macro Model of a PGM Fuel Cell System: Thiyyagarajan 
Paramadhyayalan1; Hrushikesh Pimpalgaonkar1; Suresh Sundarraj2; 
1General Motors

9:50 AM
Mathematical Modelling of Welding Process of Al/Al2O3 
Nanocomposites Produced by Solidification Route: Payodhar Padhi1; 
France Behera1; 1Konark Institute of Science & Technology

10:10 AM Break

10:30 AM
Modeling the Effects of Tool Geometries on the Temperature 
Distributions and Material Flow of Friction Stir Aluminum Welds: 
Hrushikesh Mohanty1; Manas Mahapatra2; Pradeep Kumar3; P K Jha4; 
1Indian Institute of Technology Roorkee

10:50 AM
Determination of Heat Transfer Coefficient Distribution at Part 
Surface during Press Quenching Process Using CFD: Morgan 
Guardino1; Soraya Benitez2; Liang He3; Richard D. Sisson4; 1Worcester 
Polytechnic Institute; 2Sikorsky Aircraft

11:10 AM
Fuzzy Extraction Separation Optimized Process of Tm, Yb and Lu 
Enriched Oxides by Computer Simulation: Fengli Yang1; Sh Yang2; 
Mingzhou Li1; Changren Tong1; 1Jiangxi University of Science and 
Technology

11:30 AM
Understanding Fuming during Metal Refining by CFD: Jan Erik 
Olsen1; Mari Naess2; Gabriella Tranell2; 1SINTEF Materials & Chemistry; 
2NTNU

11:50 AM
CFD-Based Modelling on Interfacial Heat Transfer for Water 
Quenching: Gang Wang1; Yiming Rong1; 1Tsinghua University

12:10 PM
Mathematical Model of Purges Process at a Heat Treatment Furnace: 
Irma Hernández1; Jacobo Vargas2; 1Universidad Autónoma del Estado de 
México; 2UAEMex

Characterization of Minerals, Metals, and 
Materials: Characterization of Ferrous Metals I
Sponsored by: The Minerals, Metals and Materials Society, 
TMS Extraction and Processing Division, TMS: Materials 
Characterization Committee 
Program Organizers: Jiann-Yang Hwang, Michigan Technological 
University; Sergio Montero, State University of North Rio De 
Janeiro; Chenqiang Bai, Chongqing University; John Carpenter, 
US Department of Energy; Donato Firrao, Politecnico di Torino; 
Byoung-Gon Kim, Korea Institute of Geoscience & Mineral 
Resources; Mingdong Cai, Schlumberger

Monday AM 
Room: Asia 2 
March 12, 2012 
Location: Dolphin Resort

Session Chairs: Jian Li, CANMET-MLI; Donato Firrao, Politecnico di Torino

8:30 AM
Characterization of the Microstructure of Compacted Graphite Cast 
Iron: Vahid Rastegar1; 1Dalarna University

8:50 AM
EBSD Analysis of Complex Microstructures of CSP® Processed Low 
Carbon Micro-Alloyed Steels: Carl-Peter Reip1; Reinhard Flenker2; 
Matthias Frommert2; 1SMS Siemag AG; 2Salzgitter Mannesmann 
Forschung GmbH

9:10 AM
Empirical Models of Cold Working Effect in Steel Tube Production: 
Robert Batson1; Jing Zhang2; 1University of Alabama
9:30 AM
Correlation of Cu Precipitation with Austenite Decomposition in a Continuously Cooled Multicomponent Steel: An Atom Probe Tomography Study: Qingdong Liu1; Wenqing Liu1; Shujin Zhao1; Qifeng Zeng2; 1Shanghai University; 2Shanghai Nuclear Engineering Research & Design Institute

9:50 AM
Effect of Epsilon Martensite on Low Temperature Tensile Properties of Fe-12Mn and Fe-14Mn Steels: Jung-Su Kim1; Jong Bae Jeon1; Joong Eun Jung1; Young Won Chang1; POSTECH

10:10 AM Break

10:20 AM
Microstructural Investigation of Carbon Steel after Hot Rolling to Optimize Complex Hot Forming of Thick Plates: Gerhard Töber1; Okechukwu Anopuo2; Petra Maier2; 1University of Applied Sciences Stralsund; 2CORTRONIK GmbH

10:40 AM
Microstructural Characterization of Fe-Mn-C Ternary Alloy under Near-Rapid Solidification: Wenbin Xia1; Rong Yang1; Changjiang Song1; Qijie Zhai1; 1Shanghai University

11:00 AM
Effects of Surface Modifications on SCW Corrosion Resistance: Jian Li1; Penttila Sami2; Wenyue Zheng1; 1CANNET-MTL; 2VTT

11:20 AM
Interface Mass Transfer during the Tribofinishing Process: Isaias Hilerio1; Dulce Medina2; Victor Cortes2; Juan Muñoz2; 1UAM AZCAPOTZALCO; 2UAM Zacapoztalco

11:40 AM
Martensitic Meso- and Nanostructures in High-Carbon Low-Alloyed Steels: Albin Stormvinter1; Peter Hedström2; Annika Borgenstam1; 1KTH Royal Inst. of Technology

Computational Thermodynamics and Kinetics: In Honor of Dr. Long-Qing Chen, EMPMD

Outstanding Scientist: Session I

8:30 AM Introductory Comments

8:40 AM
Films and Bifilms – An Update: John Campbell1; 1University of Birmingham

9:00 AM
Fluid Flow and Inclusion Entrapment in the Runner Steel During Ingot Casting: Lifeng Zhang1; Yongfeng Chen1; Shufeng Yang1; 1Missouri University of Science and Technology

9:20 AM
Modeling of Mould Filling of Low-Pressure Die-Cast Aluminum Alloy Wheels: Jianglan Duan1; Daan Maijer1; Steve Cockcroft2; Carl Reilly2; Ken Nguyen3; Dominc Au1; 1University of British Columbia

9:40 AM Break

10:00 AM
Quench Sensitivity of 2024, 6063 and 7075: Engin Tan1; Ali Tarakcilar1; Derya Dispinar2; 1Pamukkale University; 2University of Istanbul
10:20 AM
Effect of Different Casting Parameters on the Cleanliness of High Manganese Steel Ingots Compared to High Carbon Steel: Petricov von Schweinichen; Zhiye Chen; Dieter Senk; Alexander Lob; RWTH Aachen University, Department of Ferrous Metallurgy, Intezstrasse 1, 52072 Aachen, Germany

10:40 AM
Tensile Properties, Porosity and Melt Quality Relation of A356: Derya Disipinar; Shahid Akhtar; Arne Nordmark; Freddy Syvertsen; Marisa Di Sabatino; Lars Armbjerg; SINTEF Materials and Chemistry; NTNU

11:00 AM
Investigation on Non-metallic Inclusions of Q420 Ingots Cast by Bottom Teeming: Yanzhao Luo; Jiongming Zhang; Chao Xiao; Jin Yang; University of Science & Technology Beijing; University of Science & Technology Beijing

11:20 AM
Tracking the Formation and End Location of Oxides in Orthopaedic Investment Casting Running Systems: Mark Jolly; Alan Kavanagh; University of Birmingham; Deupuy Johnson &Johnson

Emeritus Professor George D.W. Smith Honorary Symposium: Atom Probe Tomography

Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS/ASM:
Phase Transformations Committee

Program Organizers: Michael Miller, Oak Ridge National Laboratory; Gregory Olson, Northwestern University and QuesTek Innovations LLC; George Krauss, Colorado School of Mines

Session Chairs: Michael Miller, Oak Ridge National Laboratory; Thomas Kelly, Cameca Instruments, Inc.

Funding support provided by: Oak Ridge National Laboratory; QuesTek Innovations LLC; AMETEK, Inc

MONDAY AM

8:30 AM Invited
Advanced Materials for Energy Storage Application: Ilias Belharouak; Argonne National Laboratory

8:55 AM
Nanoscale Testing of Low Dimensional Materials for Energy Harvesting and Storage: Reza Shahbazian-Yassar; Hessam Ghassemi; Anjana Asthana; Yoke Yap; Michigan Technological University

9:10 AM
Nanostructured 3.9 V Trileptile Cathode Materials for Li-Ion Batteries: Praveer Barpanda; Jean Marie Tarascon; The University of Tokyo; Université de Picardie Jules Verne

9:25 AM Invited
A Nanofober Approach to Advanced Lithium-Ion Battery Materials: Xiangwu Zhang; North Carolina State University

9:50 AM Break

10:10 AM Invited
Carbon-Containing Nanocomposite Materials for Energy Storage: Glib Yushin; Georgia Institute of Technology

10:35 AM
Nanostructured Metals and Metal Oxides for High Capacity Anodes of Li-Ion Rechargeable Batteries: Ming Au; Thad Adams; Savannah River National Laboratory

10:50 AM
Nano-Crystalline Sn-Co-C Alloys Prepared as a High Stable Anode for Lithium Ion Batteries: Youlan Zou; Xiangyang Zhou; Juan Yang; Jie Li; Jingjing Tang; Central South University

11:05 AM
Transmission Electron Microscopy Studies on Lithium Battery Materials III: Effect of Aluminum Substitution in Layered Oxides: Alpesh Shukla; Thomas Conry; Marca Doeff; Thomas Richardson; Lawrence Berkeley National Laboratory
11:20 AM
The Effects of Annealing on the Charge-Discharge Characteristics of Eutectic Al-Si Thin Film with Pre-Deposited Al Layer: Chao-Han Wu; Fei-Yi Hung; Truan-Sheng Lui; Li-Hui Chen; 1Department of Materials Science and Engineering, National Cheng Kung University

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fundamentals of Fatigue Damage and Modeling
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee
Monday AM Room: Oceanic 6
March 12, 2012 Location: Dolphin Resort
Session Chairs: Tongguang Zhai, University of Kentucky; Michael Sangid, Purdue University

8:30 AM Introductory Comments

8:35 AM Invited
Fatigue Modeling - Linking Microstructure to Predictions of Fatigue Crack Initiation: Michael Sangid; Huseyin Sehitoglu; 1Purdue University; 2University of Illinois, Urbana-Champaign

9:00 AM Invited
A FIB Study of the Resistance of Grain Boundaries to Short Fatigue Crack Propagation in Three-Dimensions in High Strength Al Alloys: Wei Wen; A. H. W. Ngan; Tongguang Zhai; 1University of Kentucky; 2University of Hong Kong

9:25 AM Invited
On Crack Initiation and Early Growth of Very-High-Cycle Fatigue for High Strength Steels: Yoashi Hong; Aiguo Zhao; Chengqi Sun; 1Institute of Mechanics, Chinese Academy of Sciences

9:50 AM
Quantification of Fatigue Weak-Links in 713 Cast Al Alloys: Zhiqiang Xu; Xinliang Zang; Yanguang Liu; Yuanbin Zhang; Bin Xu; Tongguang Zhai; 1College of Mechanical Engineering, Yanshan University; 2Materials Science and Engineering Department, Shandong Jianzhu University; 3Chemical and Materials Engineering Department, University of Kentucky

10:10 AM Break

10:25 AM Invited
Fundamental Principle of Cyclic Deformation and Dislocation Evolution in fcc Single Crystals: Peng Li; Shouxin Li; Zhongguang Wang; Zhefeng Zhang; 1Institute of Mechanics, Chinese Academy of Sciences

11:00 AM
From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Biological and Bioinspired Materials Science
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University
Monday AM Room: Mockingbird 1
March 12, 2012 Location: Swan Resort
Session Chairs: Marc Meyers, University of California, San Diego; Markus Buehler, MIT

8:30 AM Introductory Comments

8:35 AM Keynote
Studies of Mechanical Properties of Materials across Length Scales: Subra Suresh; 1Department of Materials Science and Engineering, Massachusetts Institute of Technology

9:15 AM
Structural Hierarchies Define Toughness and Defect-Tolerance Despite Simple and Mechanically Inferior Brittle Building Blocks: Markus Buehler; 1Massachusetts Institute of Technology

9:30 AM
Enhanced Energy Dissipation through Size-Dependent Nanoscale Heterogeneity in Bone: Ming Dao; 1MIT

9:45 AM
Multiscale Modeling of R-Curve Behaviors in Bone Tissue: Kwai Chau; 1Daniel Nicoletta; 2Southwest Research Institute

10:00 AM Break

10:15 AM Keynote
Scale Effects and Hierarchy in Biological Materials: Marc Meyers; 1University of California, San Diego; 2UCSD; 3National Tsing Hua U.

10:55 AM
On the Exceptional Fatigue Toughness of Elk Antler Bone: Po-Yu Chen; 1Maximilian Launey; 2Joanna McKittrick; 3Robert Ritchie; 4National Tsing Hua University; 5Lawrence Berkeley National Laboratory; 6University of California, San Diego; 7University of California, Berkeley

11:10 AM
Aging-Related Changes in the Plasticity and Toughness of Human Cortical Bone at Multiple Length Scales: Elizabeth Zimmermann; 1Eric Schaible; 2Harshikesh Bale; 3Holly Barth; 4Simon Tang; 5Peter Reichert; 6Bjorn Busse; 7Tamara Alliston; 8Joel W Ager III; 9Robert O. Ritchie; 1Lawrence Berkeley National Lab; 2University of California San Francisco
Mechanical Behavior in Human Cortical Bone Across Multiple Length Scales: Investigations of Elastic Anisotropy and Damage Accumulation: Ryan Roeder; Andrew Baumann; Travis Turnbull; Joshua Gargac; David Rudy; Justin Deuerling; Glen Niebur; 
1University of Notre Dame

Integrative Materials Design: Performance and Sustainability: Processing and Properties of Traditional and Novel Materials at Ambient and High Temperatures I
Sponsored by: The Minerals, Metals and Materials Society, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizer: Diana A. Lados, Worcester Polytechnic Institute

Monday AM
Room: Europe 2
March 12, 2012
Location: Dolphin Resort

Session Chair: Diana Lados, Worcester Polytechnic Institute

8:30 AM Introductory Comments
8:35 AM Invited
Nanostructured Metals: Synergy between Multiple Scales: Enrique J. Lavernia; 1University of California, Davis

9:00 AM Invited
Optimization of Mechanical Properties in Ultrafine Grained Lightweight Alloys: Rajiv Mishra; 1Missouri University of Science and Technology

9:25 AM Invited
Friction Stir Welding in Aluminum and Magnesium Alloys: Effects of Processing Parameters on Microstructure and Mechanical Properties: Andrew Biro; 1Diana Lados; 1WPI

9:50 AM
Sequential Approximate Optimization Based Robust Design of SiC-Si3N4 Nanocomposite Microstructures: Gilberto Mejia-Rodriguez; Vikas Tomar; John Renaud; 1San Luis Potosi; 1Purdue University; 1University of Notre Dame

10:10 AM Break
10:35 AM Invited
Bulk Metallic Glasses: Highly Processable, High Performance Materials: Jamie Kruzic; 1Oregon State University

11:00 AM
Characterization of Nickel Rich NiTiHf Shape Memory Alloys for Use as High Temperature Actuators: Daniel Coughlin; 1Glen Bigelow; Anita Garg; Ronald Noebe; 1Ohio State University; 1NASA Glenn Research Center

11:20 AM Invited
Design of Smart Metal-Matrix Composites for Sustainability and Advanced Performance: Charles Fisher; 1Michele Manuel; 1University of Florida

11:40 AM
Multi-Scale Design of Open-Cell Aluminum Alloy Foam: Daeyong Kim; 1Ji Hoon Kim; 1Myoung-Gyu Lee; 1Jong Kook Lee; 1Korea Institute of Materials Science; 1Pohang University of Science and Technology; 1Hyundai Motor Company

International Smelting Technology Symposium (Incorporating the 6th Advances in Sulfide Smelting Symposium): Plenary Session
Program Organizers: Jerome Downey, Montana Tech of the Univ of Montana; Thomas Battle, Midrex Technologies, Inc.; Jesse White, Elkem Solar Research

Monday AM
Room: Northern A3
March 12, 2012
Location: Dolphin Resort

Session Chair: To Be Announced

8:30 AM Introductory Comments
8:40 AM Keynote
2012 EPD DISTINGUISHED LECTURER: Conservation & Development: Industrial Learning in Non-Ferrous Smelting: Theo Lehner; 1Boliden Mineral AB

9:25 AM
Modernization and New Copper Smelter Project Developments on the Central African Copperbelt: Timothy Smith; 1SNC Lavalin

9:55 AM Break
10:10 AM
Developments in DC Arc Smelting Technology in Southern Africa: Rodney Jones; Isabel Geldenhuys; 1Glen Denton; 1Mintek

10:40 AM
Aluminothermic Smelting: A Versatile Process Serving Demanding Markets: James Robison; 1Reading Alloys, Inc., an Ametek Company

11:10 AM
The Blast Furnace: What Was, What Is, and What Will Be: Mark Schlesinger; 1David Robertson; 1Missouri University of Science and Technology

Magnesium Technology 2012: Plenary Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Monday AM
Room: Southern IV
March 12, 2012
Location: Dolphin Resort

Session Chairs: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht

8:30 AM Introductory Comments
8:45 AM Keynote
Magnesium Alloy Development Using Phase Equilibria Computation and Microstructure Validation: Alan Luo; 1Raja Mishra; 1Bob Powell; 1Anil Sachdev; 1General Motors Corporation

9:15 AM Keynote
Research and Application of Mg Alloys for Aerospace: Donald Shih; 1The Boeing Company
9:45 AM Keynote
Atoms-to-Grains Corrosion Modeling for Predictive Design of Mg-Alloys: Santanu Chaudhuri; Jie Xiao; Hyunwook Kwak; Washington State University

10:15 AM Break

10:30 AM Keynote
Solid State Joining of Magnesium to Steel: Yuri Hovanski; Michael Santella; Saumyadeep Jana; Hao Yu; David Field; Tsung-Yu Pan; Siva Pilli; Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Washington State University

11:00 AM Keynote
Grain Evolution During High Temperature Necking of Magnesium Alloys: Paul Krajewski; General Motors

11:30 AM Keynote
Production of Wide Shear-Rolled Magnesium Sheet for Part Forming: David Randman; Bruce Davis; Martyn Alderman; Govindarajan Muralidharan; Thomas Muth; Thomas Watkins; William Peter; Magnesium Elektron North America; Oak Ridge National Laboratory

Materials and Fuels for the Current and Advanced Nuclear Reactors: Nuclear Fuels - Modeling
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Monday AM
Room: Swan 2
March 12, 2012
Location: Swan Resort

Session Chair: Ramprashad Prabhakaran, Idaho National Laboratory

8:30 AM Invited
3-Dimensional, High-Resolution Modeling of Nuclear Fuel Performance: Pellet Clad Interaction: Brian Wirth; Derek Gaston; Jason Hales; Richard Martineau; Robert Montgomery; Y.R. Rashid; Chris Staneck; University of Tennessee; Idaho National Laboratory; Pacific Northwest National Laboratory; Anatech Corp.; Los Alamos National Laboratory

9:00 AM
Multiscale Modeling of Reactor Fuel Restructuring: Michael Tonks; Paul Millett; Bulent Biner; Liangzhe Zhang; Xianming Bai; Idaho National Laboratory

9:20 AM
Phase-Field Modeling of Pore Migration in Nuclear Fuels Due to a Temperature Gradient: Liangzhe Zhang; Michael Tonks; Paul Millett; Bulent Biner; Yongfeng Zhang; Karthikeyan Chockalingam; Idaho National Laboratory

9:40 AM
Computational Crystal Plasticity with the Jacobian-Free Newton Krylov Method: Karthik Chockalingam; Micheal Tonks; Paul Millett; Bulent Biner; Idaho National Laboratory

10:00 AM
Thermomechanical Properties Prediction of Complex Heterogeneous Irradiated Nuclear Fuel: Dongsheng Li; Yulan Li; Fei Gao; Ram Devanathan; Xin Sun; Mohammed Kahleel; Pacific Northwest National Laboratory

10:20 AM Break

10:30 AM
Effect of Di- and Quad-Interstitials on the Diffusivity of Oxygen in UO$_2$: Rakesh Behra; Taku Watanabe; David Anderson; Blas Uberuaga; Chaitanya Deo; Georgia Institute of Technology; Los Alamos National Laboratory

10:50 AM
First-Principles Theory of Magnetism, Crystal Field and Phonon Spectrum of UO2: Fei Zhou; Vidvuds Ozolins; UCLA

11:10 AM
Investigation of the Stability and Energies of Defect and Defect Clusters In bcc-U Using Atomic Level Simulations: Priyank Shukla; Benjamin Beeler; Erin Haywar; Chaitanya Deo; Michael Baskes; Maria Okuniewski; Georgia Institute of Technology; University of California, San Diego; Idaho National Laboratory

11:30 AM
A Semi-Empirical Interatomic Potential for bcc U: Benjamin Beeler; Chaitanya Deo; Michael Baskes; Sergey Rashkeev; Maria Okuniewski; Georgia Institute of Technology; University of California-San Diego; Idaho National Laboratory

11:50 AM
Influence of Zn on the Thermodynamic Stability in the FeO-Fe2O3-NIO System: Dongwon Shin; Theodore Besmann; David Anderson; Oak Ridge National Laboratory; Los Alamos National Laboratory

Materials Processing Fundamentals: Process Metallurgy of Metals
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Antoine Allanore, MIT; Cong Wang, Saint-Gobain High Performance Materials

Monday AM
Room: Oceanic 8
March 12, 2012
Location: Dolphin Resort

Session Chairs: Lifeng Zhang, Missouri S&T; Antoine Allanore, MIT

8:30 AM Introductory Comments

8:35 AM
A Critical Review of the Modified Froode Number in Ladle Metallurgy: Krishnakanar Krishnapisharody; Gordon Iorns; McMaster University

9:00 AM
Inclusion Characteristics in Stainless Steel Ingots: Shufeng Yang; Lifeng Zhang; Yongfeng Chen; Missouri University of Science and Technology

9:25 AM
FEM Study of Centerline Defect Closure In Large Open-Die Forgings: Jie Zhou; Joshua Blackketter; Philip Nash; Illinois Institute of Technology

9:50 AM
Effect of Mould Taper and Wall Thickness on Steel Ingots Soundness by 3-D Solidification Simulation: Peng Lan; Yang Li; Jian Quan Zhang; Ruitian Zhang; Jingyuan Wang; Hengyi Zhang; Department of Metallurgical Engineering and State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; Angang Subsidiary Enterprise Company
Materials Research in Microgravity: Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Robert Hyers, University of Massachusetts; Hani Henein, University of Alberta; Valdis Bojarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrium; Daniela Voss, ESA
Monday AM Room: Asia 3 Location: Dolphin Resort
Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited
'Astrium

9:10 AM
The Materials Science Laboratory
An Opportunity for Materials Processing on Board the ISS: Petra Neuhaus1; Harald Lenski1; 'Astrium'; 'Astrium

9:35 AM Invited
Novel Second Generation Inserts for the MSL Aboard ISS: Florian Kargl1; Christian Stenzel1; Andreas Meyer1; 'German Aerospace Center (DLR)'; 'Astrium

10:10 AM Break

10:30 AM Invited
Results of the MICAST Experiments in MSL Onboard the ISS: Sonja Steinbach1; Lorenz Ratke1; Sadik Dost1; Robert Erdmann1; Yves Fautrelle1; Jacques Lacaze1; Andras Roosz 1; Gerhard Zimmermann1; 'DLR'; 'University of Victoria'; 'University of Arizona'; 'ENSHMG'; 'CIRIMAT'; 'SGMU'; 'ACCESS

11:05 AM Invited Microgravity Melting Experiments: Revealing the Mechanism of Dendritic Growth: Martin Glicksman1; 'University of Florida

11:40 AM
Phase-Field Simulation of Dendrite Fragmentation: Maziar Aghvami1; Christoph Beckermann1; 'University of Iowa

Mechanical Behavior at Nanoscale I: In-situ Technique on Deformation Process
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Behavior Committee, TMS: Solidification Committee
Program Organizers: Scott Mao, University of Pittsburgh; Julia Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology
Monday AM Room: Asia 1 Location: Dolphin Resort
Session Chairs: Scott X Mao, University of Pittsburgh; Julia Greer, California Institute of Technology

8:35 AM Invited
Micro-Compression Testing of Cu: About Single Crystals, Grain Boundaries and Polycrystals: Gerhard Dehm1; Peter Imrich1; Christoph Kirchlechner1; Bo Yang1; Christian Motz2; 'Erich Schmid Institute of Materials Science, Austrian Academy of Sciences and Materials Physics, University of Leoben'; 'Erich Schmid Institute of Materials Science, Austrian Academy of Sciences'; 'University of Leoben Materials Physics'; 'Materials Center Leoben GmbH

9:05 AM Invited
On Atomic Resolution In-Situ Electron Microscopy Study of Abnormal Mechanical Properties of Nanowires and Ultra-Thin Layers: Ze Zhang1; X.D. Han1; 'Department of Materials Science and Engineering, Centre of Electron Microscopy'; 'Institute of Microstructure and Properties of Advanced Materials

9:35 AM
Deformation of Gold Nanowires: Elongation Mechanisms and Quantum Conductance: Lyle Levine1; Francesca Tavazza1; Douglas Smith1; Anne Chaka1; Jon Pratt1; 'National Institute of Standards and Technology

9:55 AM Break

10:05 AM Invited
Size Matters for Deformation Twinning in Single Crystal Metals: Evan Ma1; 'Johns Hopkins University

10:35 AM
In Situ TEM Observations of Reverse Dislocation Motion upon Unloading of Ultrafine-Grained (UFG) Aluminium Strained in the Microyield Region: Daniel Caillard1; Frederic Mompiou1; Marc Legros1; Hael Mughrabi2; 'CNRS'; 'University of Erlangen

10:55 AM
Direct Observation of Deformation Behaviors in Nanostructured Ceramic Materials by In Situ Nanoindentation in TEM: Haiyan Wang1; Joon Hwan Lee1; Amiya Mukherjee1; Xinghang Zhang1; 'Texas A&M University'; 'UC Davis

11:15 AM
Localized Crystal Rotation in Gum Metal at Ideal Strength: Shigeru Kuramoto1; Tadahiko Furuta1; Daigo Satoyama1; Elizabeth Withey2; J.W. Morris, Jr.1; 'Toyota Central R&D Labs., Inc.; 'Lawrence Livermore National Laboratories'; 'University of California, Berkeley

11:35 AM
Stress-Driven Grain Boundary Migration in Ultrafine-Grained Mg Film: Yong Zhang1; John Sharon1; Kevin Hemker1; 'Johns Hopkins University
11:55 AM TEM Studies on Microstructure and Mechanical Properties of Nanotwinned Metals: Ying Zhang1; James Anderegg1; Ryan Ott1; Mikhail Mendelev1; Matthew Kramer1; ‘Ames Lab

12:15 PM Interface Dominated Small Scale Plasticity in a Ni-Based Superalloy: Robert Maass1; Bin Gan1; Sammy Tin1; Lucas Meza1; Julia Greer1; ‘California Institute of Technology; ‘Illinois Institute of Technology

Session Chairs: Zhaozhui Jin, Shanghai Jiao Tong University; Douglas Irving, North Carolina State University

8:30 AM Keynote Observations of Stress-Coupled Grain Boundary Migration: John Sharon1; Frederic Monpiou2; Marc Legros2; Kevin Hemker3; ‘Johns Hopkins University; ‘CEMES-CNRS

9:00 AM Keynote Atomic Modeling of Grain Boundary Sliding/Migration and Related Mechanical Behavior in FCC Metals: X.M. Su1; Z.H. Jin1; P. Gumbsch1; K. Lu1; ‘Shanghai Jiao Tong University; ‘Karlsruher Institut für Technologie (KIT); ‘Institute of Metal Research (IMR)

9:30 AM Dislocation Pileups in fcc Aluminum Bicrystals: Steven Valone1; Jian Wang1; Richard Heagland1; Timothy Germann1; ‘Los Alamos National Laboratory

9:45 AM Molecular Dynamics Simulation of Energy Dissipation at the Liquid/Solid Interface with Slip Boundary Condition: Kai Huang1; Izabela Szlufarska1; ‘UW-Madison

10:00 AM Nucleation and Early Growth of Mechanical Deformation Twins in Hexagonal Close-Packed Metals Deformed at Extreme Conditions: George Kaschner1; Stephen Niezgoda1; Rodney McCabe1; Carlos Tome1; ‘Los Alamos National Laboratory

10:15 AM Break

10:25 AM Keynote Coupled Grain Boundary Motion in a Nanocrystalline Grain Boundary Network: Mario Velasco1; Helena Van Swijghenhouwen1; Christian Brand1; Enrique Martinez-Saez1; Alfredo Caro1; ‘Paul Scherrer Institute; ‘Los Alamos National Laboratory

10:55 AM Keynote Multi-Scale Simulation of the Mechanical Response of Metal/Metal Interfaces in Non-Equilibrium Environments: Douglas Irving1; ‘North Carolina State University

11:25 AM Atomistic Modeling of Structure and Twinning from the {112}KS Cu-Nb Interface: Keonwook Kang1; Jian Wang1; Irene Beyerlein1; ‘LANL

11:40 AM Phase Separation of Binary Alloy: Effects of Semi-Coherent Interface: Siu Sin Quek1; Rajeev Ahlawatia1; David Srolovitz1; ‘Institute of High Performance Computing Singapore

11:55 AM Interface Bond Strength of HIP-Clad Depleted Uranium and 6061-Aluminum: Manuel Lovato1; Cheng Liu1; William Blumenthal1; ‘Los Alamos National Laboratory

Session Chairs: Nick Barbosa, NIST; Whitney Poling, Colorado School of Mines

8:30 AM Crack Tip Deformation Mechanisms in hcp Zr with and without Dilute H Impurities: Margarita Ruda1; Graciela Bertolino1; Diana Farkas1; A. Baruj1; ‘CNEA and Univ. N. del Comahue.; ‘CONICET; ‘Virginia Tech

8:50 AM Fracture Toughness of 9Cr-1MoV and Thermally Aged Alloy 617 for Advanced Reactor Applications: Randy Nanstad1; Mikhail Sokolov1; Xiang (Frank) Chen1; ‘Oak Ridge National Laboratory; ‘University of Illinois

9:10 AM Influence of Cold Work and Sensitization on Stress Corrosion Cracking of Stainless Steel: Elaine West1; Nathan Lewis1; David Morton1; Bryan Miller1; ‘Knolls Atomic Power Laboratory; ‘Bettis Atomic Power Laboratory

9:30 AM Time-Dependent Fatigue Crack Propagation in Ni-Based Solution-Strengthened Superalloys INCONEL 617 and HAYNES 230: Longzhou Ma1; ‘Shawon Roy1; ‘University of Nevada Las Vegas

9:50 AM Strain Localization During Creep-Fatigue Deformation of Alloy 617: Mark Carroll1; Laura Carroll1; Richard Wright1; ‘Idaho National Laboratory

10:10 AM Break

10:30 AM Creep Behaviors of a Nanocluster-Strengthened Ferritic Steel: M Brandes1; G Daehn1; M Miller1; M Mills1; ‘The Ohio State University; ‘Oak Ridge National Laboratory


Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhuiwei Shan, Xi’an Jiaotong University

Monday AM Room: Oceanic 1 March 12, 2012 Location: Dolphin Resort

Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhuiwei Shan, Xi’an Jiaotong University

Session Chairs: Zhaozhui Jin, Shanghai Jiao Tong University; Douglas Irving, North Carolina State University

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10:10 AM Break

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Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberson, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anseroglu, LANL
10:50 AM Creep Deformation Mechanisms in Grade 91 Steel: Triratna Shrestha1; Mehdi Basirat1; Indrajit Charit1; Gabriel Potirniche1; Karl Rink1; Uttara Sahay1; 1University of Idaho; 2Washington State University

11:00 AM Mechanical Response of the PMMA-CNT Nanocomposite via Molecular Dynamics: Yueji Kim1; Eugenio Jaramillo2; Benjamin Haley1; Alejandro Strachan1; 1Purdue University; 2Texas A&M International University

11:30 AM Micromechanical Analysis of Influences of Agglomerated Nanotube Interphase on Effective Material Properties of a Three Phase Piezoelectric Nanocomposite: Tian Tang1; Paul Wang1; 1Mississippi State University

11:50 AM Effect of Nano-Paper Coating on Flexural Properties of a Fire-Treated Glass Fiber-Reinforced Polyester Composite: Jamie Skovron1; Jinfeng Zhuge1; Ali Gordon1; Jan Gou1; 1University of Central Florida

12:10 PM Finite Element Modeling of the Nanoscratching of Polymer Surfaces: William Chirdon1; Joshua Rozas1; 1University of Louisiana at Lafayette

**Neutron and X-Ray Studies of Advanced Materials V: Centennial: Von Laue, Bragg and Diffraction Centennial**


Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Monday AM Room: Swan 8
March 12, 2012 Location: Swan Resort

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, Polytechnic Institute of New York University

8:30 AM Keynote Materials Research with X-Rays: Gernot Kostorz1; 1ETH Zurich

8:55 AM Invited Diffuse Scattering Resulting from Macromolecular Frustration: Richard Welberry5; 1Research School of Chemistry

9:15 AM Invited Residual Strain Measurement by X-Ray and Neutron Diffraction: The First 100 Years: Philip Withers4; 1University of Manchester

9:35 AM Invited Inelastic Neutron Scattering Measurements and Calculations of Anharmonic Phonons in fcc Metals: Brent Fultz1; Xiaoli Tang1; Chen Li1; 1California Institute of Technology

9:55 AM Invited Monitoring Strain Path Changes by High Resolution Reciprocal Space Mapping: Christian Wejdeman1; Ulrich Lientz2; Henning Poulsen1; Wolfgang Pantleon1; 1Risoe DTU; 2Argonne National Laboratory

**Nanocomposites: Mechanical Behavior and Modelling of Nanocomposites**

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee

Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Monday AM Room: Swan 8
March 12, 2012 Location: Swan Resort

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, Polytechnic Institute of New York University

8:50 AM Compressive Strength of Epoxy- Graphite Nanoplatelets Composites: H. A. Colorado; 1; Indrajit Charit1; 2; Gabriel Potirniche1; 3; Karl Rink1; 4; Uttara Sahay1; 1University of Idaho; 2Washington State University

9:10 AM Invited Creep Behavior of High Temperature Alloys for Intermediate Heat Exchanger in Next Generation Nuclear Plant: Xingshuo Wen1; 1University of Cincinnati; 2Idaho National Laboratory; 3Oak Ridge National Laboratory

9:15 AM Invited Graphene Based Composite Materials: Nikhil Koratkar1; 1Rensselaer Polytechnic Institute

9:50 AM Compressive Properties of Polymeric Syntactic Foams at Various Quasi-Static and High Strain Rates: Vasanth Chakravarthy Shumugasamy1; Dinesh Pinisetty1; Nikhil Gupta1; 1Polytechnic Institute of New York University

10:10 AM Thermal Expansion of Carbon Nanofiber Reinforced Syntactic Foams: Ronald Poveda1; Sriniket Achar1; Nikhil Gupta1; 1Polytechnic Institute of New York University

10:30 AM Break

10:50 AM Atomistic and Continuum Understanding of the Particle Clustering and Particle Size Effect on the Room and High Temperature Strength of SiCN Nanocomposites: Vikas Tomar; 1Purdue University
MONDAY AM

10:15 AM Break

10:20 AM Invited
Diffraction from Vibrating Crystals: From Ultrasound to Phonons:
Klaus-Dieter Liss1; Andreas Magerl2; 1ANSTO; 2University of Erlangen-Nürnberg

10:40 AM Keynote
Real Space Atomic Correlation and Elastic/Inelastic Scattering from Disordered Systems: Takeshi Egami1; ‘University of Tennessee

11:05 AM Invited
From Closed Packed Metal Structures to Monoclinic SMA and Multiphase Complex Materials: 20 Years of Rietveld Stress-Texture Analyses: Luca Lutterotti1; ‘University of Trento

11:25 AM Invited
Internal Strain Evolution during Thermomechanical Cycling of NiTi Shape Memory Alloys Investigated Using Neutron Diffraction: Raj Vaidyanathan1; Othmane Benafan1; Doug Nicholson1; Ron Noebe2; Santo Padula3; Bjorn Clausen2; Don Brown3; Sven Vogel2; ‘UCF; ‘NASA Glenn Research Center; ‘Los Alamos National Laboratory

11:45 AM Invited
Small-Angle Scattering with Synchrotron Radiation and Neutrons - Precise Experimental Techniques for Quantitative and Structural Analysis in Chemistry and Physics: Günter Goerigk1; ‘Helmholtz-Zentrum Berlin

12:05 PM Keynote
Hard X-ray Microscopy and its Application to Energy Science – Current Studies and Next-Generation Capabilities: Jörg Maser1; Barry Lai1; ‘Argonne National Laboratory

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Studies of Mechanical Properties and Effects of Current I
Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central Univ.; Laura Turbini, Research in Motion; Tae-Kyu Lee, Cisco Systems; Govindarajan Muralidharan, Oak Ridge National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

Monday AM Room: Swan 9
March 12, 2012 Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Invited
Impact of Sn Grain Orientation and Isothermal Aging on Pd Added Sn-Ag-Cu Solder Interconnect Board Level Mechanical Shock Performance: Tae-Kyu Lee1; Bite Zhou1; Thomas R. Bieler1; Kuo-Chuan Liu1; ‘Cisco Systems; ‘Michigan State University

8:55 AM Invited
Effect of Temperature Dependant Deformation Characteristics on Thermomechanical Fatigue Reliability of Eutectic Sn-Ag Solder Joints: Deep Choudhuri1; Andre Lee1; K.N. Subramanian1; ‘Michigan State University

9:20 AM
Stress-Strain Behavior of Lead Free Solder Joints Determined by Digital Image Correlation Techniques: Golta Khatibi1; Martin Lederer1; Brigitte Weiss1; Herbert Ipser1; ‘University of Vienna

9:40 AM
Effect of Continuous Recrystallization on Pb-Free Solder Joints in Thermomechanical Fatigue (TMF): Liang Yin1; Babak Arfaei1; Peter Borgesen2; ‘Universal Instruments Corp; ‘Binghamton University

10:00 AM
Influence of Aging on Fatigue Behavior of SnAgCu Solders: Jonathon Tucker1; Dennis Chan1; Ganesh Subbarayan1; Carol Handwerker1; ‘Purdue University

10:20 AM Break

10:30 AM

10:50 AM
Effects of Crystal Orientation on Recrystallization and Damage in Lead-Free Solders during Thermal Cycling in Low and High Stress Package Designs: Bite Zhou1; Thomas Bieler1; Tae-Kyu Lee1; Kuo-Chuan Liu1; ‘The University of Texas at Arlington; ‘Cisco Systems, Inc

11:10 AM
Study on Fatigue Mechanism in Pb-Free Solder Joint using Isothermal Shear Fatigue: Huili Xu1; Choong-Un Kim1; Tae-Kyu Lee1; Hong-Tao Ma1; Kuo-Chuan Liu1; ‘The University of Texas at Arlington; ‘Cisco Systems Incorporation

11:30 AM
Retarding Electromigration on Lead-Free Solder Joints by Micro-Sized Metal Particle Reinforcements: Limin Ma1; Yong Zuo1; Guangchen Xu1; Fu Guo1; ‘Beijing University of Technology

11:50 AM
Effect of Thermomigration on Redistribution and Growth of Intermetallic Compounds in the Sn0.7Cu Solder Bump under Current Stressing: Wei-Yu Chen1; Kwang-Lung Lin1; ‘National Cheng Kung University
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XI: Solder-related Reliability Issues

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS; Alloy Phases Committee

Program Organizers: Chih-Ming Chen, National Chung Hsing University; Jie-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg;
Yee-Wen Yen, National Taiwan University of Science and Technology; Shih-Kang Lin, University of Wisconsin – Madison

Monday AM  Room: Swan 10
March 12, 2012  Location: Swan Resort

Session Chairs: Chih-Ming Chen, National Chung Hsing University; Katsuaki Suganuma, Osaka University

8:30 AM Invited
Effect of Crystal Orientation on Mechanically Induced Sn Whiskers of Sn-Cu Platings: Yukiko Mizuguchi; Youseke Murakami; Shigetaka Tomiyama; Tadasu Asai; Tomoya Kiga; Katsuaki Suganuma; Hitoshi Sakurai; Chih Chen; National Chiao Tung University; Osaka University; Harima Chemicals, Inc.

8:40 AM Invited
History of Sintering: Eugene Olevsky; San Diego State University

8:50 AM
Effects of Cu-Bearing Flux on Joint Reliability and Microstructure of Sn-3.5Ag/ENIG Joint: Huxiao Xie; Rare-Earth Containing Lead-Free Solders with Enhanced Ductility: Chih-Chia Hu; Chih-Ming Lin; National Chung Hsing University; Osaka University; Harima Chemicals, Inc.

9:05 AM
Gold and Palladium Induced Embrittlement Phenomenon in Microbumps Using Au/Pd(P)/Ni(P) Metallization Pads: Wei-Hsiang Wu; Chia-Ming Lin; Yen-Chen Lin; Cheng-En Ho; Yuan Ze University

9:20 AM
Inhibiting Cu-Sn Intermetallics by a Pre-Heat Treatment: Chih-Chia Hu; Hsiang-Yao Hsiao; Chih Chen; National Chiao Tung University

9:35 AM
Rare-Earth Containing Lead-Free Solders with Enhanced Ductility: Huxiao Xie; Nikhillesh Chawla; Arizona State University

9:50 AM
Study of Orientation of Solder Grains in Microbumps for 3D IC Packaging: Han-wen Lin; Chih Chen; National Chiao Tung University

10:05 AM Break

10:15 AM Invited
Effect of External Strain on Growth of Interfacial Intermetallic Compounds between Sn on Cu Substrate: Yu-Ting Wang; Shin-Nan Li; Ming-Tzer Lin; National Chung Hsing University

10:35 AM
Development and Evaluation of Direct Deposition of Au/Pd(P) Bilayer on the Cu Metallization in Soldering Applications: Cheng-En Ho; T. T. Kuo; H. G. Wang; C. W. Fan; Yuan Ze University

10:50 AM
Effective Suppression of Electromigration-Induced Cu Dissolution by Using a Ag Barrier Layer in Lead-Free Solder Joints: Chao-hong Wang; Han-teng Shen; Wei-han Lai; National Chung Cheng University

11:05 AM
Driving Force of EM-Induced Cu Dissolution in Cu-Sn Compound: Cheng Tse Lu; Cheng-Yi Liu; National Central University

11:20 AM
Reactive Wetting of Heterogeneous Substrates by Sn-based Solders: Q. Lai; L. Zhang; J. Shang; Institute of Metal Research; University of Illinois

11:35 AM
The Cross-Interaction in the Ni/Sn/Cu Sandwich-Type Solder Joint with Electroless Pd Surface Finish: Chi-Pu Lin; Chih-Ming Chen; National Chung-Hsing University

11:50 AM
Grain Boundary Penetration of Various Types of Ni Layers by Molten Pb: Chia Yuan Chang; C. Robert Kao; National Taiwan University

Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Sintering Theory and Practice

Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS; Powder Materials Committee

Program Organizers: K. Morsi, San Diego State University; Fernand Marquis, Naval Postgraduate School; John Meyer, Iowa State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

Monday AM  Room: Oceanic 2
March 12, 2012  Location: Dolphin Resort

Session Chair: Eugene Olevsky, San Diego State University

8:30 AM Introductory Comments

8:40 AM Keynote
History of Sintering: Randall German; San Diego State University

9:10 AM Invited
Gold and Palladium Induced Embrittlement Phenomenon in Microbumps Using Au/Pd(P)/Ni(P) Metallization Pads: Wei-Hsiang Wu; Chia-Ming Lin; Yen-Chen Lin; Cheng-En Ho; Yuan Ze University

9:20 AM
Inhibiting Cu-Sn Intermetallics by a Pre-Heat Treatment: Chih-Chia Hu; Hsiang-Yao Hsiao; Chih Chen; National Chiao Tung University

9:35 AM
Rare-Earth Containing Lead-Free Solders with Enhanced Ductility: Huxiao Xie; Nikhillesh Chawla; Arizona State University

9:50 AM
Study of Orientation of Solder Grains in Microbumps for 3D IC Packaging: Han-wen Lin; Chih Chen; National Chiao Tung University

10:05 AM Break

10:15 AM Invited
Effect of External Strain on Growth of Interfacial Intermetallic Compounds between Sn on Cu Substrate: Yu-Ting Wang; Shin-Nan Li; Ming-Tzer Lin; National Chung Hsing University

10:35 AM
Development and Evaluation of Direct Deposition of Au/Pd(P) Bilayer on the Cu Metallization in Soldering Applications: Cheng-En Ho; T. T. Kuo; H. G. Wang; C. W. Fan; Yuan Ze University

10:50 AM
Effective Suppression of Electromigration-Induced Cu Dissolution by Using a Ag Barrier Layer in Lead-Free Solder Joints: Chao-hong Wang; Han-teng Shen; Wei-han Lai; National Chung Cheng University

11:05 AM
Driving Force of EM-Induced Cu Dissolution in Cu-Sn Compound: Cheng Tse Lu; Cheng-Yi Liu; National Central University

11:20 AM
Reactive Wetting of Heterogeneous Substrates by Sn-based Solders: Q. Lai; L. Zhang; J. Shang; Institute of Metal Research; University of Illinois

11:35 AM
The Cross-Interaction in the Ni/Sn/Cu Sandwich-Type Solder Joint with Electroless Pd Surface Finish: Chi-Pu Lin; Chih-Ming Chen; National Chung-Hsing University

11:50 AM
Grain Boundary Penetration of Various Types of Ni Layers by Molten Pb: Chia Yuan Chang; C. Robert Kao; National Taiwan University
8:30 AM Introductory Comments

8:35 AM
A Unified Theoretical Model for Nanoparticle and Microparticle Capture by Metal Solidification Front: Jiaquan Xu1; Lianyi Chen1; Xiaochun Li1; University of Wisconsin-Madison

8:55 AM
Characterization of Solidification of Nanoparticle enforced Al Using In Situ TEM: Jorg Wietzorek1; Hasso Weiland2; Andreas Kulovits1; Can Liu1; 1University of Pittsburgh; 2Alcoa

9:15 AM
Interfacial Analysis of CNT Reinforced AZ61 Mg Alloy Composites: Katsuyoshi Kondoh1; Hiroyuki Fukuda1; Junko Umeda1; Bunshi Fugetsu2; 1Osaka University; 2Hokkaido University

9:35 AM
Magnesium Nanocomposites Processed by Electromagnetic Acoustic Transduction: Hunter Henderson1; Zachary Bryan1; Orlando Rios2; Gail Mackiewicz-Ludtka2; Alexander Melin3; George Lopp4; Yu-Min Su5; Michele Manuel1; 1University of Florida; 2Oak Ridge National Laboratory

9:55 AM
Properties of Aluminum-Graphene Nanocomposites: Stephen Bartolucci1; Joseph Paras1; Mohammad Rafiee2; Sabrina Lee1; Javad Rafiee1; Deepak Kapoor1; Nikhil Koratkar3; 1US Army ARDEC; 2Rice University; 3Rensselaer Polytechnic Institute

10:15 AM Break

10:30 AM
Biodegradability and Mechanical Performance of Hydroxyapatite Reinforced Magnesium Matrix Nanocomposite: Chao Ma1; Lianyi Chen1; Jiaquan Xu1; Axel Fehrenbacher1; Yan Li1; Frank Pfeifferkorn1; Neil Duffie1; Jing Zheng1; Xiaochun Li1; 1UW-Madison

10:50 AM
Mechanical Properties of A356-CNTCast Nano Composite Produced by a Special Compocasting Route: Benjamín Abdassipour1; Behzad Niroumand2; Sayed Mahmoud Monirvaghefi3; 1Isfahan University of Technology

11:10 AM
Influence of Nanodispersions on Metallurgical Properties and Performance of Cast AISI Alloys: Imam El Mahallawy1; Yehia Shash1; Hoda Abdelkader2; Laila Shehata2; Mohamed Abdelraziz2; Asmaa Amer Abdelmegeed1; Joachim Mayer2; Alexander Schedt2; 1Cairo University; 2Helwan University; 3Scientific & Technology Centre of Excellence; 4The British University in Egypt; 5Gemeinschaftslabor fuer Elektronenmikroskopie

11:50 AM
Grain Refinement and Mechanical Property Enhancement in As-cast Al-Mg Nanocomposites: Dake Wang1; Michael De Cicco2; Xiaochun Li3; 1University of Wisconsin-Madison

Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Atomic Level Structures, Compositions, and General Methods

8:30 AM Invited
Grain Boundary Complexion Conformations (Equilibrium Interface-Stabilized Phases) in Materials: Martin Harmer1; 1Lehigh University

9:00 AM Invited
Defect Structures of Interphase Boundaries in Metallic Nano-Composites: Amit Misra1; Qiangmin Wei2; Richard Hoagland2; Xiang-Yang Liu1; Dhriti Bhattacharyya2; 1Los Alamos National Laboratory; 2ANSTO

9:30 AM Invited
Structural and Compositional Transitions Across Interfaces in Titanium Alloys (Invited): Soumya Nag1; Arun Devanji2; Robert Williams2; Gopal Viswanathan3; Jaimie Tiley3; Hamish Fraser3; Rajarshi Banerjee4; 1University of North Texas; 2The Ohio State University; 3Air Force Research Laboratory

10:00 AM Break

10:10 AM
Gradient Energy, Interfacial Energy and Interface Width: an Example from Ni-Base γ+γ′ Alloys: Alan Ardell1; 1National Science Foundation

10:30 AM
Modeling Nickel Surfaces and Grain Boundaries with the Fragment Hamiltonian Model: Helen Telila1; Susan Atlas2; Steven Valone1; 1Los Alamos National Laboratory; 2University of New Mexico

10:50 AM
Grain Boundary Diagrams: A New Materials Science Tool: Jian Luo1; Xiaomeng Shi1; Naixie Zhou1; 1Clemson University

Sunday AM.

8:30 AM Topical Discussion: Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Atomic Level Structures, Compositions, and General Methods

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10:50 AM
Grain Boundary Diagrams: A New Materials Science Tool: Jian Luo1; Xiaomeng Shi1; Naixie Zhou1; 1Clemson University
Symposium in Memory of Patrick Veyssiére: Understanding the Mechanisms Controlling Plastic Flow: Dislocations Organization

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division

Program Organizers: Georges Saada, LEM CNRS ONERA; Dennis Dimiduk, Air Force Research Laboratory; Hael Mughrabi, University Erlangen-Nuremberg; Haruyuki Inui, Kyoto University

Monday AM Room: Europe 6
March 12, 2012 Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: G. Saada, LEM/CNRS/ONERA; R. Yang, Shenyang National Laboratory for Materials Science

8:30 AM Introductory Comments

8:40 AM Invited
Defect Kinetics on Experimental Timescales Using Atomistic Simulations: Hao Wang1; David Rodney4; Dongsheng Xu1; Rui Yang1; INP Grenoble; Institute of Metal Research

9:20 AM Invited
Atomistic Simulation of the Breaking and Reaction of Dipolar Dislocations under Shear Deformation: Dongsheng Xu1; Hao Wang1; Rui Yang1; David Rodney4; Patrick Veyssiére1; Institute of Metal Research, Chinese Academy of Sciences; SIMAP-GPM2, INPG; LEM, CNRS-ONERA

9:40 AM Invited
Dislocation Organisation in Samples of Different Sizes: Yu Lung Chiu1; University of Birmingham

10:00 AM Break

10:15 AM Invited
Mechanical Behavior and Dislocation Self-Patterning in Fatigued Single Crystalline Silicon: Marc Legros1; CEMES-CNRS

10:45 AM Invited
Mechanisms Controlling Plastic Flow of Silicon High Stress: Jacques Rabier1; CNRS

11:15 AM Invited
An Extended Kocks-Mecking Approach with an Explicit Role of Cross-Slip on the Balance between Isotropic and Kinematic Hardenings: First Application to Solutes in Ferrite: Olivier Bouaziz1; David Barbier1; J. D. Embury2; Guillaume Badinier1; ArcelorMittal; McMaster University; University of British Columbia

11:20 AM Invited
Low Cycle Fatigue of Copper Single Crystals under Alien Distribution of Dislocations: Marek Niewczas1; McMaster University


Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: Adam Pilchak, US Air Force Research Laboratory; Christopher Szczepanski, US Air Force Research Laboratory; Vasisht Venkatesh, Pratt & Whitney

Monday AM Room: Oceanic 3
March 12, 2012 Location: Dolphin Resort

Session Chairs: Rodney Boyer, Boeing Company; Vasisht Venkatesh, Pratt & Whitney

8:30 AM Invited
The Evolution of “Beta–Titanium Alloys” for the Aerospace Industry: Rodney Boyer1; James Williams2; John Fanning3; Boeing Company; The Ohio State University; TIMET

9:00 AM Invited
Integrated Computational Materials Engineering: Recent Progress in the Advanced Titanium Microstructure and Modeling Program: Michael Glavicic1; Rod Boyer1; Tom Broderick1; Fred Cohen1; Yuzhi Wang1; Fan Zang1; Donald Boyce1; Wei-Tsu Wu1; Ayman Salem1; Ron Wallis1; Vikas Saraf1; Vasisht Venkatesh1; Lee Semiatin1; Rolls-Royce Corporation; The Boeing Company; General Electric Aviation; Pratt & Whitney; The Ohio State University; Computherm; Cornell University; Scientific Forming Technologies; Materials Resources LLC; Wyman-Gordon; ATI Ladish Forging; TIMET; Air Force Research Laboratory

9:30 AM
Microstructural Evolution and Mechanical Properties of β-Titanium Ti-10V-2Fe-3Al during Incremental Forming: Sven Winter1; Sebastian Fritschi1; Martin F.-X. Wagner1; Chemnitz University of Technology

9:50 AM
Low-cost Ultrafine Grained Titanium Sheet Production by Extrusion-Machining: Kayla Calvert1; Wilfredo Moscoco2; Mert Efe1; Dinakar Sagaparum1; Srinivasan Chandrasekar2; Kevin Trumble3; University of California San Francisco; Pontificia Universidad Catolica Madre y Maestra; Purdue University

10:10 AM
Microstructure Evolution during Different Thermal Processing in Billet of High-Strength Titanium Base Alloy VT43: Anatoly Yakovlev1; Nadezhda Nochovnaya1; All-Russian Scientific Research Institute of Aviation Materials

10:30 AM Break

10:40 AM
Crystal Plasticity Finite Element Analysis of Hot Deformation of Ti-6Al-4V with Lamellar Microstructure: Ayman Salem1; Surya Kalidindi1; Jaimie Tiley1; S. Semiatin1; Materials Resources LLC; Drexel University; Air Force Research Laboratory

11:00 AM
Modeling Superplastic Forming and Diffusion Bonding of Titanium Alloys: Weiqi Luo1; Jae-Bong Yang1; Ravi Shankar2; Wei-Tsu Wu1; Vasisht Venkatesh1; Yoji Kosaka1; Phani Gudipati2; Daniel Sanders3; Larry Hefti1; Scientific Forming Technologies Corporation; Titanium Metals Corporation; The Boeing Company

11:20 AM
Finite Element Analysis of the Anisotropic Behavior of Ti6AL4V during Incremental Sheet Metals Forming: Kazem Sanusi1; Emad Uheida1; Tiaan Oosthuizen1; University Of Stellenbosch,
11:40 AM
Study on Hot Deformation Behavior of TC4 Titanium Alloy: Yanling Lu1; Sihai Jiao2; Xingta Zhou1; Anqing Dong1; 1Shanghai Institute of Applied Physics, Chinese Academy of Sciences; 2Baoshan Iron & Steel Co., LTD; 1Shanghai Jiao Tong University

12:00 PM
Evolution of Microstructures and Properties of Ti-44Al-6V-3Nb-0.3Y Alloy after Forging and Rolling: Yuyong Chen1; Hongzhi Niu1; Shulong Xiao1; Ping Sun1; Changjiang Zhang1; 1Harbin Institute of Technology

12:20 PM
Effect of Forging on Microstructural Characteristic and Tensile Properties of In-Situ (TiB+TiC)/Ti Composite: Yuyong Chen1; Changjiang Zhang1; Shulong Xiao1; Dezong Wu1; Hongzhi Niu1; 1Harbin Institute of Technology

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Plenary Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Materials Characterization Committee
Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper, J. E. Dutrizac, CANMET; Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper
Monday AM Room: Northern A4 March 12, 2012 Location: Dolphin Resort

Monday AM Room: Northern A4
March 12, 2012 Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

Session Chair: Shijie Wang, Rio Tinto Kennecott Utah Copper

8:30 AM
In Honor of Dr. Tsong T. Chen: John Dutrizac1; Shijie Wang2; 1CANMET-MMSL; 2Rio Tinto Kennecott Utah Copper

8:45 AM
A Review of the Behavior and Deformation of Lead, Bismuth, Antimony and Arsenic in Copper Electrowinning: Michael Moats1; Shijie Wang1; Daniel Kim1; 1University of Utah; 2Rio Tinto Kennecott Utah Copper

9:20 AM Plenary
Technological Overview of Zinc Industry – Now and Future: Takashi Yoshida1; 1Mitsui Mining & Smelting Co., Ltd

9:55 AM Break

10:15 AM Plenary
The Next Decade in Cu, Ni, Co and Platinum Group Metal Extraction: Bill Davenport1; 1University of Arizona

10:50 AM Plenary
The Development of China’s Molybdenum Metallurgical Technologies: Kaisi Jiang1; Wang Haibei2; Zou Xiaoping3; Zhang Lei1; Bangsheng Zhang1; 1Beijing General Research Institute of Mining and Metallurgy

11:25 AM Invited
Some Applications of Molecular Recognition Technology (MRT) to the Mining Industry: Steven Izatt1; Ronald Bruening2; Neil Izatt1; 1IBC Advanced Technologies, Inc.

Ultrafine Grained Materials VII: Plenary Session
Program Organizers: Shijie Wang, Rio Tinto Kennecott, U.S. Army Research Office; Xiaoxu Huang, Risø National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna
Monday AM Room: Swan 5 March 12, 2012 Location: Swan Resort

Session Chairs: Xiaoxu Huang, Risø National Laboratory for Sustainable Energy, Technical University of Denmark; Suveen Mathaudha, U.S. Army Research Office; Terry Lowe, Manhattan Scientifics, Inc.; Michael Zehetbauer, University of Vienna

8:30 AM Introductory Comments

8:35 AM Keynote
Physics of Grain-Size Effect on Twinning in Nanostructured fcc Metals: Yuntian Zhu1; Xiaolei Wu2; Xiaohou Lia3; 1North Carolina State University; 2Institute of Mechanics; 3The University of Sydney

9:15 AM Invited
Near Surface Nanoscale Structures Produced by Plastic Deformation: Niels Hansen1; Xiaodan Zhang1; Yukui Gao2; Xiaoxu Huang3; 1Riso DTU; 2Beijing Institute of Aeronautical Materials

9:35 AM Invited
Strain-Induced Phase Transformations under Compression and Shear in Rotational Diamond Anvil Cell: Valery Levitas1; 1Iowa State University

9:55 AM Invited
Tailoring or Grading Sheet Materials by Using New Concepts in ARB-Processing: Heinz Werner Hoppel1; 1University Erlangen-Nürnberg

10:15 AM Invited
Analysis of Plastic Flow during High-Pressure Torsion: Roberto Figueiredo1; Maria Teresa Aguilar1; Paulo Celín1; Terence Langdon1; 1Federal University of Minas Gerais; 2University of Southern California

10:35 AM Break

10:50 AM Invited
Microstructure and Microtexture Evolution in Pure Metals after Ultra-High Straining: Alexander Zhilyaev1; Terence Langdon2; 1School of Engineering Sciences, University of Southampton, Southampton SO17 1BJ, U.K. and Institute for Metals Superplasticity Problems, Russian Academy of Science, 39 Khalturina, Ufa, 450001 Russia; 2School of Engineering Sciences, University of Southampton, Southampton SO17 1BJ, U.K. and Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California, Los Angeles, CA 90089-1453, U.S.A.

11:10 AM Invited
Dilatometry – A Powerful Tool for the Study of Defects in Ultrafine Grained Metals: Wolfgang Sprengel1; Bernd Oberdorfer2; Eva-Maria Steyskal1; Roland Würschum1; 1Graz University of Technology
11:30 AM Invited
The Combined Effect of Grain Boundaries and Second Phase Particles on the Flow Stress of Nano crystalline Metals: Krzysztof Kurzydlowski1; Romuald Dobosz1; Malgorzata Lewandowska1; 1Warsaw University of Technology

11:50 AM Invited
The Super-Strength of Ultrafine-Grained SPD-Processed Alloys Due to Grain Boundary Segregations: Nariman Enikeev1; Xavier Sauvage1; Maxim Murashkin1; Ruslan Valiev1; 1Ufa State Aviation Technical University; 2University of Rouen, Groupe de Physique des Matériaux, CNRS

12:10 PM Invited
Ultrafine-Grained Shape Memory Alloys: Thomas Waite1; Clemens Mangler1; Gerd Steiner1; Arno Kompatscher1; Martin Peterlechner1; Wolfgang Pranger1; Thomas Antretter1; Franz Dieter Fischer1; Peter Müllner1; 1University of Vienna; 2University of Muenster; 3University of Leoben; 4Boise State University

2:00 PM Introductory Comments

2:05 PM Invited
In-Situ Studies of High-K/III-V Interfaces for Advanced Electronics: R.M. Wallace1; 1Department of Materials Science and Engineering, University of Texas at Dallas

2:40 PM Invited
Stimuli Responsive Field-Effect Transistors Integrated with Nanomaterials: Nae-Eung Lee1; Nguyen Thanh Tien1; D.-J. Kim1; I.-Y Sohn1; Tran Quang Trung1; O.J. Yoon1; 1Sungkyunkwan University

3:15 PM Interface Engineering as a Tool to Enhance Efficiencies of Carbon Nanotube Based Devices: Indranil Lahiri1; Wonbong Choi1; 1Florida International University

3:30 PM In-Situ Electrical Studies on Ozone Functionalization of Graphene: Srikar Jandhyala1; Greg Mordi1; Jiyoung Kim1; 1University of Texas at Dallas

3:45 PM Break

4:00 PM Invited
Nano-Floating Gate Memory Devices: Jang-Sik Lee1; 1Kookmin University

4:35 PM Fabrication and Magnetic Properties of Graded Magnetocrystalline Anisotropy Fe(Ni)Pt Nano-Dots: Bianzhun Fu1; Aaron Gin1; James Harrell1; Gregory Thompson1; 1University of Alabama; 2Sandia National Laboratories

4:55 PM Fabrication of Nano crystalline InGaZnO Films: The Microstructure and the Device Performance of Their Thin Film Transistors: Haseok Jeon1; Hwayoul Choi1; Mi Ran Moon1; Sekwon Na1; Hyo-jeong Lee1; 1Sungkyunkwan University

5:10 PM Discovery a Frozen Nano-Domain State in Non-Metallic Ferroelastic System: Yan Ni1; Zhou Zhang1; Xiaobing Ren1; 1Frontier Institute of Science and Technology, Xi’an Jiaotong University; 2National Institute for Materials Science, Japan

2012 Symposium on Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Carbon Nanomaterials and Heterostructures


Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Jiyong Kim, University of Texas at Dallas; Christopher Matranga, National Energy Technology Laboratory

Monday PM  Room: Pelican 1
March 12, 2012  Location: Swan Resort

Session Chairs: David Stollberg, Georgia Tech Research Institute; HyunJung Shin, Kookmin University
4:05 PM Break

4:20 PM  
Evolution of Gold Nanoparticles in a High Temperature Process and Patterned Growth of Graphene Encapsulated Nanoparticles: Junchi Wu1; Larry Summerville1; Nitin Chopra4; The University of Alabama

4:35 PM  
Growth Mechanisms of Graphene Encapsulated Nanoparticle and Effect of Catalyst Shape on the Graphene Growth: Junchi Wu1; Nitin Chopra4; The University of Alabama

4:50 PM Invited  
Defects in Carbon Based Nanostructures: Applications to Novel Morphologies and Device Concepts: Prabhakar Bandaru1; UC, San Diego

5:25 PM Invited  
Localized Plasmon Enhancement at Dopant Sites in Graphene: Stephen Pennycook1; Wu Zhou1; Jackwang Lee1; Jagjit Nanda1; Sokrates Pantelides2; Mark Oxley1; Micah Prange1; Juan-Carlos Idrobo3; Oak Ridge National Laboratory; Vanderbilt University

3rd International Symposium on High Temperature Metallurgical Processing: Reduction and Titanium Production  
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jianying Huang, Michigan Technological University; Patrick Masset, TU Freiberg; Onuralp Yuce1, Istanbul Technical University; Rafael Padilla, University of Concepcion; Guifeng Zhou, Wuhan Iron and Steel

Monday PM  
March 12, 2012  Location: Dolphin Resort

Session Chairs: Clemens Schmetterer1, TU Freiberg; Ting’an Zhang2, Northeastern University

2:00 PM  
Preparation of Titanium Alloy from Titania-bearing Blast Furnace Slag: Run Huang1; Chenguang Bai1; Xuwei Lv1; Songli Liu1; ‘College of Materials Science and Engineering, Chongqing University; ‘College of Materials Science and Engineering, Pan Zhihua University

2:15 PM  
An Overview of Development of Rotary Hearth Furnace and Functions: Xuefeng She1; Jingsong Wang1; Yihua Han1; Qingguo Xue1; ‘University of Science and Technology Beijing

2:30 PM  
Basic Research of Direct Pyrolysis Performance of MgCl2 in Molten State for New Process of Titanium Sponge Production: Zhang Ting’an1; Lv Guozhi1; Dou Zhihe1; Liu Yan1; Niu Liping1; Zhao Qiuyue2; Sui Xianmin1; He Jiang1; ‘Northeastern University

2:45 PM  
Chlorination of Titania Feedstocks: Samantha Moodley1; Rauf Eric2; Aditya Kale1; Cevat Kucukkaragoz3; ‘Exxaro Resources; ‘University of the Witwatersrand; ‘Mintek

3:00 PM  
Experimental Study on the Pulverization and Reduction Behavior of Sinter in Oxygen Blast Furnace: Yihua Han1; Jingsong Wang1; Rongzong Lan1; Lintao Wang1; Xiaojuan Zuo1; Qingguo Xue1; ‘University of Science and Technology Beijing

3:15 PM  
Formation of Ti(C,N) in Blast Furnace Slag Bearing High TiO2: Shiwei Ma1; Guibao Qiu1; Qingyu Deng1; Hua Wang2; ‘College of Materials Science and Engineering, Chongqing University

3:30 PM Break

3:40 PM  
Modelling of the thermochemical and thermophysical properties of molten slags in high temperature conversion processes: A multiscale approach: Yuanyuan Zhang1; Patrick Masset2; Aurélie Jacob3; Clemens Schmetterer4; Ligang Zhang5; Arne Brönsted6; Angus Gray-Weale7; ‘TU Bergakademie Freiberg

3:55 PM  
Research on Carbonthermal Reduction Behavior of Ilmenite: Yifeng Guo1; Lirong Chen1; Tao Jiang1; Wenjie Weng1; Feng Chen1; ‘Central South University

4:10 PM  
Study of Reduction Kinetics of Low Grade Hematite Ore: Tiejun Sun1; Deqing Zhu1; Jian Pan1; Zhao Qiang1; ‘Central South University

4:25 PM  
Effect of CaO Addition on Metalothermic Reduction of Strontium Oxide: Yeliz Demiray1; Onuralp Yücel1; ‘Istanbul Technical University

4:40 PM  
Production of ZrB2 Powders from ZrO2 Containing Dental Implant Wastes: Sanet Yilmaz1; Murat Alkan1; Onuralp Yücel1; Bora Derin1; ‘Istanbul Technical University

4:55 PM  
Viscosity Evolution of Blast Furnace Slag Bearing Titanium: Hua Wang1; Guibao Qiu1; Qingyu Deng1; Shiwei Ma1; ‘Material Science and Engineering Department, Chongqing University

Advances in Surface Engineering: Alloyed and Composite Coatings: Session II  
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Srinivasa Bakshi, Indian Institute of Technology Madras; Arvind Agarwal, Florida International University

Monday PM  
March 12, 2012  Location: Swan Resort

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM Invited  
Understanding the Origins and Evolution of Residual Stress: Eric Chason1; ‘Div of Engineering

2:30 PM Invited  
Elevated Temperature Microstructural Stability of Ni(Cr)-Chromium Carbide Composite Coatings on Stainless Steel: Graham McCartney1; Yi Ding2; Philip Shipway2; ‘University of Nottingham

2:55 PM Invited  
3-D Focused Ion Beam Serial Sectioning to Determine Solidification and Wear Mechanisms in Adaptive Composites Coatings: Jon-Erik Mogonye1; Hamidreza Mohseni1; Sundeepe Gopagoni1; Junyeon Hwang2; Jamie Tiley3; Rajarshi Banerjee3; Thomas Scharf3; ‘The University of North Texas; ‘Air Force Research Laboratory
3:20 PM
Role of Yttria Stabilized Zirconia on Fracture Toughness of Plasma Sprayed Aluminum Oxide Composite Coatings: S. Arihara1; Anup Keshri2; Arvind Agarwal3; Kantesh Balani4; 1Indian Institute of Technology Kanpur; 2Vellore Institute of Technology; 3Florida International University

3:40 PM
Microstructure Evolution and Corrosion Behavior in Laser Synthesized Fe-base Amorphous Composite Coating on Structural Steel: Shravanam Katakar1; Sameer Paital1; Narendra Dahotre1; 1University of North Texas

4:00 PM Break

4:15 PM
Structural Coatings in Aluminum Alloy Microtruss Materials: Bosco Jr1; Glenn Hibbard1; 1University of Toronto

4:35 PM
Understanding Plasma Spraying of Nano Crystalline Cerium Oxide for SOFC Electrolyte: Virendra Singh1; Robert Draper1; Shashank Saraf1; Sudipta Seal1; 1University of Central Florida

4:55 PM
Laser Cladding of High-Performance CPM Tool Steels on Hardened H13 Hot-Work Tool Steel for Automotive Tooling Applications: Jianyin Chen1; Lijue Xue1; 1IMI-National Research Council Canada

5:15 PM
Dynamic Annealing Effect during Filtered Cathodic Vacuum Arc Deposition of DLC Coatings: Feng Ji Li1; Sam Zhang1; Deen Sun1; 1Nanyang Technological University/School of Mechanical and Aerospace Engineering; 2Singapore Epson Industrial Pte Ltd/PVD Department Plating Division

5:35 PM
Electron Beam Deposited Multilayer Optical Interference Coatings Using Oxide Composites: Askush Nayak1; N Sahoo2; R Tokas2; Arup Biswas3; Nitin Kamble1; 1National Institute of Technology Karnataka, Surathkal; 2Bhabha Atomic Research Centre, Mumbai

Alumina and Bauxite: Bauxite Digestion
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Benny Raahauge, FLSmidth
Monday PM
Room: Northern E3
Location: Dolphin Resort
Session Chair: Yanli Xie, SOnavation Inc.

2:00 PM Characterization of Bauxite and its Minerals by Means of Thermoanalytical Methods: Ekkehard Post1; Bob Fidler2; Dorothea Kwiryi3; Doreen Rapp1; 1NETZSCH Geraetebau GmbH; 2NETZSCH Instruments North America, LLC

2:20 PM Study on Application of a New Model for the Kinetics of Diaspore Leaching Process: Li Bao1; Ting-An Zhang2; Anh Nguyen2; Guozhi Lv1; Zhihe Dou1; Yan Liu1; 1Northeastern University; 2University of Queensland

2:40 PM
Mechanical Activation of Al-Oxyhydroxide Minerals – Physicochemical Changes, Reactivity and Relevance to Bayer Process: Thomas Alex1; Rakesh Kumar2; Sanat Roy2; Surya Mehrotra3; 1National Metallurgical Laboratory (CSIR); 2Indian Institute of Technology, Kharagpur; 3Indian Institute of Technology

3:00 PM
Research on Mechanically Activated Digestion Performance and Kinetics of Diasporic Bauxite: Lv Guozhi1; Zhang Ting’an1; Ke Xianyao2; Liu Yan1; Dou Zhihe1; Li Yan1; He Jicheng1; 1Northeastern University; 2Shenyang Aluminium&Magnesium Engineering&Research Institute

3:20 PM
Mechanochemical Activation to Bauxite: Fernanda Silva1; Carla Barbato1; Rachel Santos1; Diego Seixas2; João Sampiao2; Marta Medeiros1; Francisco Garrido1; 1IQ/UFRJ; 2COPPETEC; 3IQ/UFRJ-CETEM; 4CETEM/MCT

3:40 PM
Effects of Roasting Pretreatment in Intense Magnetic Field on Digestion Performance of High Iron Bauxite: Lv Guozhi1; Zhang Ting’an1; Zhang Xuhua1; Liu Yan1; Dou Zhihe1; Li Yan1; He Jicheng1; 1Northeastern University

4:00 PM
Effect of Chamosite on Bayer Process of Diasporic Bauxite with High Silica: Cao Wenzhong1; Xun Zhang1; Weiwei Tian1; Hong Zhong1; 1Environmental and chemical engineering institute, Nanchang university; 2Environmental and Chemical Engineering Institute, Nanchang University; 3Henan Company of Aluminium Corp. of China

4:20 PM The Economical Flexibility for Processing Diasporic Bauxite: Zhang Baiyong1; Zhou Fengtu1; Guo Shen2; Liao Xinjia1; Ma Chaojian1; Dong Yafeng1; 1Chalco

4:40 PM
Turkey Morcukur Bauxite Processing at ETI Aluminium: Meral Bağyali1; Sedat Aslan1; Burak Ozlen1; Serkan Ertegrab1; Carlos Suarez2; 1ETI Aluminium Co.; 2Hatch Associates Consultant Inc

Aluminium Processing: Rolling
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Edward Williams, Alcoa
Monday PM
Room: Europe 1
Location: Dolphin Resort
Session Chair: Kai Karhausen, Hydro Aluminium Rolled Products

2:00 PM Introductory Comments

2:05 PM Implementation of a Combined Work-Hardening, Recovery and Recrystallization Model into a Through-Process-Model for Production of Aluminum Sheet: Thiemo Brüggemann1; Anna Rott2; Volker Mohlt3; Günter Gottstein2; Kai Karhausen1; 1Institute of Physical Metallurgy and Metal Physics; 2Institute of Physicl Metallurgy and Metal Physics; 3Institute of Physical Metallurgy and Metal Physics, RWTH-Aachen University; 4Hydro Aluminium Deutschland GmbH

2:25 PM Comparative Microstructure and Texture Evolution in the AA1050 Aluminium Alloy Sheets Produced by DC and CC Methods: Heber Otomar1; Ronald Plaut2; 1VM - CBA; 2EPUSP
2:45 PM
Study of Mechanical Properties of 2024 Al Sheet Treated by SMAT and Hot/Cold Rolling: Ka Po Cheung1; San-Qiang Shi2; Jian Lu3; 1The Hong Kong Polytechnic University; 2City University of Hong Kong

3:05 PM
Effects of Asymmetrical Roll Bonding on Microstructure, Chemical Phases and Property of Copper/Aluminum Clad Sheet: Xiaobing Li1; Guoyin Zu2; Ping Wang3; Rong Xu4; 1School of Materials and Metallurgy, Northeastern University; 2School of Materials and Metallurgy, Northeastern University; 3Key Laboratory of Electromagnetic Processing of Materials, Ministry of Education, Northeastern University; 4The State Key Laboratory of Rolling and Automation, Northeastern University

3:25 PM Question and Answer Period

3:35 PM Break

4:05 PM
Influence of Microstructure Representation on Flow Stress and Grain Size Prediction in A5XXX Alloys: Johannes Lohmar1; Markus Bambach2; Gerhard Hirt3; Kai Karhausen4; 1RWTH Aachen University; 2Hydro Aluminium Rolled Products GmbH

4:25 PM
Influence of Pre-Strain on Formability of AA3XXX Aluminum Alloy: Yansheng Liu1; Xiuyu Wen2; Shridas Ningileri3; 1SECAT Inc; 2University of Kentucky

4:45 PM
From Molten Metal to 3.2 mm Wire for Mechanical Applications: Giuseppe Marcantoni1; 1Properzi International, Inc.

5:05 PM Question and Answer Period

Aluminum Alloys: Fabrication, Characterization and Applications: Solidification
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Monday PM Room: Northern E1
March 12, 2012 Location: Dolphin Resort

Session Chair: Hiromi Nagaumi, Suzhou Research Institute for Nonferrous Metals

2:00 PM
Effects of Cu, Mg. and Sr Additions on the Mechanical Properties and Machinability of Near-Eutectic Al-11%Si Casting Alloys: Yasser Zedan1; Agnes Samuel1; Fawzy Samuel1; Saleh Alkahtan1; 1UQAC; 2AlKhair University

2:20 PM
Evolution of Iron Based Intermetallic Phases in Al-7wt%Si Hypoeutectic Alloy: Anton Gorny1; Sumanth Shankar1; 1McMaster University

2:40 PM
A New Approach to Producing Large-Size AA 7055 Aluminum Alloy Ingots: Haitao Zhang1; Jianzhong Cui2; Hiromi Nagaumi1; 1Northeastern University; 2Suzhou Institute for Nonferrous Metals Research

3:00 PM
Thermal Analysis and Microstructures of Modified Grain-Refined Al-7Si-Mg Cast Alloy: Adel Mohamed1; FH Samuel1; Saleh Al kahtanid1; 1UQAC

3:20 PM
Effect of Solidification Velocity and Hydrogen Content on Porosity in Directionally Solidified A356 Castings: Hengcheng Liao1; Ogul Wang2; Wan Song3; Lei Zhao1; Ran Fan1; 1Southeast University; 2GM Global Powertrain Engineering

3:40 PM
Grain Refiner for Aluminium-Silicon Sand Casting Alloys: Magdalena Nowak1; Hari Babu Nadendla1; 1Brunel University

4:00 PM Break

4:15 PM
Novel Casting Process of Developing a Carbon Modified Hyper-Eutectic Wear Resistant Aluminium-Silicon Alloy for the Forging Process: Kuldeep Agarwal1; Rajiv Shivpuri2; Matthew Blankenhorn2; 1Ohio State University; 2Aluministic Corporation

4:35 PM
Solidification Analysis of the Hypereutectic Al-Si Alloys with Addition of Cu and Mg Using Neutron Diffraction: Dimitry Sediako1; Wojciech Kasprzak2; 1National Research Council Canada; 2MTL-Canmet, NRCan

4:55 PM
Refinement of Primary and Eutectic Silicon Phases in the Shape Casting of Hyper-Eutectic Al-Si Alloys: Mohammad Shamsuzzoha1; 1University of Alabama

5:15 PM
Analysis of Thermal and Structural Parameters and Microhardness Variations in Different Al-Cu Alloys Directionally Solidified: Carlos M. Rodriguez1; Adriana E. Candia1; Carlos E. Schvezov2; Mario R. Rosenberger2; Alicia Ares2; 1CONICET/FCEQyN-UNaM; 2FCEQyN-UNaM

Aluminum Reduction Technology: Environment I
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Monday PM Room: Southern III
March 12, 2012 Location: Dolphin Resort

Session Chair: Margaret Hyland, Light Metals Research Center

2:00 PM Panel Discussion Organized by Margaret Hyland, Stephan Broek: Environmental challenges for large smelters, - Views of key issues from legislators, Environmental technologies to address Sulfur and Fluoride

3:20 PM Break

3:40 PM
Low Cost Video Emissions Monitoring Technique for Aluminum Smelting Applications: Michael Gershenzon1; Neal Dando2; Nathan Westendorf2; Steve Lindsay1; 1Alcoa

4:00 PM
Electrolytic Cell Gas Cooling Upstream of Treatment Center: Bernard Cloutier1; Thierry Malard2; El Hani Bouhabila3; Fabienne Virieux4; Philippe Martinet5; 1Solios Environnement Inc; 2Solios Environnement SA; 3Fives Solios

4:20 PM
Jet Induced Boosted Suction System for Roof-Vent Emission Control: New Developments and Perspectives: Jean-Nicolas Maltais1; Michel Meyer2; Mathieu Leduc1; Hyacinthe Rollant1; 1Rio Tinto Alcan
4:40 PM
HF Emission Reduction from Anode Butts Using Covered Trays:
Jean-Pierre Gagne1; René Minville Minville1; Neal Dando2; Mike Gershenzon2; Steve Lindsay3; Harold Frenette4; Alain Moras4; Gilles Dufour4; STAS; Alcoa Technical Center; Alcoa TN; Alcoa Canada, Aluminerie Deschambault

4:40 PM
Strain Glass Caused by Nano-Scale Randomness -- Strain Glass Transition in Low-Temperature-Aged Ti48.7Ni51.3 Alloy: Yuanchao Ji1; Xiaobing Ren1; Xiangdong Ding2; National Institute of Materials Science; Los Alamos National Laboratory

Atomistic Effects in Migrating Interphase Interfaces - Recent Progress and Future Study: Interfacial Structure with Large Misfit and Deformation-induced Migration
Sponsored by: The Minerals, Metals and Materials Society, TMS Phase Transformations Committee Program Organizers: Tadashi Furuhara, Institute of Materials Research, Tohoku University; Sudarsanam Babu, Ohio State University; Hatem Zurob, McMaster University; Jian-Feng Nie, Monash University; Wen-Zheng Zhang, Tsinghua University; James Howe, University of Virginia
Monday PM  Room: Europe 3
March 12, 2012  Location: Dolphin Resort
Session Chairs: Robert Pond, University of Exeter; Jian-Feng Nie, Monash University

2:00 PM Invited
Atomistic Structure and Energetics of the θ' (Al,Cu) – Aluminium Interface: Laure Bourgeois1; Christian Dwyer1; Matthew Weyland1; Jian-Feng Nie2; Barrington Muddle3; Monash University

2:30 PM
Crystallography and Interfacial Energy of Al6(Fe,Mn) Dispersoids Precipitated in AA5182 Alloy: Yunjun Li; Jesper Fris1; Wenzheng Zhang; Lars Arnberg1; SINTEF Materials and Chemistry; Department of Materials Science and Engineering, Tsinghua University; Department of Materials Science and Engineering, NTNU

2:50 PM
Interfacial Disconnections at Sb,Te Precipitates in PbTe: Jean-Pierre Gagne1; René Minville Minville1; Neal Dando2; Mike Gershenzon2; Steve Lindsay3; Harold Frenette4; Alain Moras4; Gilles Dufour4; STAS; Alcoa Technical Center; Alcoa TN; Alcoa Canada, Aluminerie Deschambault

2:50 PM
Interfacial Structure with Large Misfit and Deformation-induced Migration
Sponsored by: The Minerals, Metals and Materials Society, TMS Phase Transformations Committee Program Organizers: Tadashi Furuhara, Institute of Materials Research, Tohoku University; Sudarsanam Babu, Ohio State University; Hatem Zurob, McMaster University; Jian-Feng Nie, Monash University; Wen-Zheng Zhang, Tsinghua University; James Howe, University of Virginia
Monday PM  Room: Europe 3
March 12, 2012  Location: Dolphin Resort
Session Chairs: Robert Pond, University of Exeter; Jian-Feng Nie, Monash University

3:00 PM Invited
A Model for Diffuse Axonal Injury: K Ramesh1; Johns Hopkins University

3:30 PM
Nanoscale Structural and Mechanical Characterization of Conch Shells: Haoze Li1; Zhi-Hui Xu2; Xiaodong Li3; University of South Carolina

3:30 PM
Modeling Human Eye under Shock Loading: Nicola Bonora1; Luca Esposito1; Chiara Clemente1; Tommaso Rossi1; University of Cassino; Ospedale Oftalmico di Roma

3:50 PM Break

4:00 PM
A Study of Plastic Strain Accommodation during Phase Transformation: Michael Kaba1; David Van Aken1; Missouri University of Science and Technology

4:00 PM
Structure and Mechanical Behavior of the Dasypus Novemcinctus Shell: Hongjoo Rhee1; Mark Horstemeyer1; Center for Advanced Vehicular Systems, Mississippi State University

4:00 PM
Modeling Human Eye under Shock Loading: Nicola Bonora1; Luca Esposito1; Chiara Clemente1; Tommaso Rossi1; University of Cassino; Ospedale Oftalmico di Roma

4:30 PM
Strain Glass Caused by Nano-Scale Randomness -- Strain Glass Transition in Low-Temperature-Aged Ti48.7Ni51.3 Alloy: Yuanchao Ji1; Xiaobing Ren1; Xiangdong Ding2; National Institute of Materials Science; Los Alamos National Laboratory

5:10 PM
Structural and Mechanical Properties of Young and Old Bovine Cortical Bone: Ekaterina Novitskaya1; Zherrina Manilay1; Steve Lee1; Joanna McKittrick1; UCSD
Bulk Metallic Glasses IX: Alloy Development and Mechanical Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Monday PM  Room: Swan 6
March 12, 2012  Location: Swan Resort

Session Chairs: C. Liu, Hong Kong Polytechnic University; Y. Yokoyama, Institute for Materials Research

2:00 PM Keynote
Atomic Structures and Mechanical Properties of Bulk Metallic Glasses: C. T. Liu; Yong Yang; X. J. Liu; ‘City University of Hong Kong; ‘Hong Kong Polytechnic University

2:30 PM Production and Mechanical Properties of Roll Bonded Bulk Metallic Glass/Aluminium Laminates: Daniel East; Mark Gibson; Daniel Liang; Jian-Feng Nie; ‘CSIRO; ‘Monash University

2:40 PM Invited
Micro-Scale Moldability and Mechanical Properties of Hypoeutectic Zr-Based Metallic Glasses: Sae Takashima; T. Yamasaki; K. Fujita; A. R. Yavari; A. Inoue; Y. Yokoyama; ‘University of Hyogo; ‘Ube National College of Technology; ‘SIMAP-CNRS; ‘Tohoku University; ‘University of Tennesee

3:00 PM Invited
Structural Order and Density in Bulk Metallic Glass Forming Liquids: Ken Kelton; James Bendert; Anup Gangopadhyay; Nicholas Mauro; ‘Washington University

3:20 PM Break

3:35 PM Invited
Amorphous Multilayers in the Al-Mn System: Wenjun Cai; Shiyan Ruan; Christopher Schuh; ‘MIT

3:55 PM Invited
The Role of Cu in an Iron-Based Bulk Metallic Glass: Michael Miller; J. Gao; Y Wu; Z. Lu; ‘Oak Ridge National Laboratory; ‘University of Science and Technology Beijing

4:15 PM Glass Formation and Properties of Fe- and Co-Based Ternary Bulk Metallic Glasses: Jianfeng Wang; Ran Li; Tao Zhang; ‘Beihang University

4:25 PM Invited
Metallic Glass Wireless Biosensors for Pathogen Detection: Suqiong Li; Shin Horikawa; ‘Yating Chai; ‘Auburn University

4:45 PM Metallic Glasses for Electro-Catalytic Applications: Sundeep Mukherjee; Marcelo Carmo; Golden Kumar; Andre Taylor; Jan Schroers; ‘Yale University

4:55 PM Invited
Impact of Secondary Amorphous Phases on Properties of Metallic Glasses: Eun Soo Park; ‘Seoul National University

5:15 PM Formation and Magnetic Properties of New CoTiZrCo Bulk Amorphous and Nanocrystalline Composites: Yang Yuanzheng; Qiu Junhua; Chen Xianchao; Xie Zhiwei; ‘Guangdong University of Technology

5:25 PM Fabrication of Mg-Based Amorphous Composites: Junhua You; ‘Shenyang University of Technology

CFD Modeling and Simulation in Materials Processing: CFD Modeling in Materials Processing II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Hervé Combeau, Institut Jean Lamour

Monday PM  Room: Asia 4
March 12, 2012  Location: Dolphin Resort

Session Chairs: Adam Powell, Metal Oxygen Separation Technology; Adrian Sabau, Oak Ridge National Lab

2:00 PM Keynote
Multi-Physics Modeling of Molten Salt Transport in Solid Oxide Membrane (SOM) Electrolysis and Recycling of Magnesium: Adam Powell; Soobhankar Pati; ‘Metal Oxygen Separation Technologies, Inc.

2:25 PM Invited
Numeric Modeling for the Carbothermic Aluminum Process: David Roha; ‘Alcoa

2:50 PM Invited
A Coupled CFD-PBE Approach Applied to the Simulation of the Inclusion Behavior in a Steel Ladle: Jean-Pierre Bellot; Valerio De Felice; Ismael L. A. Daoud; Alanardy; ‘Institut Jean Lamour

3:15 PM Invited
Multiphysics CFD Modeling of a Free Falling Jet during Melt-Blowing Slag Fiberization: Dimitrios Gerogiorgis; Dimitrios Parias; Ioannis Paspaliaris; ‘National Technical University of Athens (N.T.U.A.)

3:40 PM Break

4:00 PM Direct Numerical Simulation of Inclusion Turbulent Deposition at Liquid Metal/Slag Interface: Arunvady Xayasenh; Laurent Joly; Hervé Duval; ‘Laboratoire de Génie des Procédés et Matériaux (LGPM) - Ecole Centrale Paris; ‘Département Aérodynamique, Énergétique et Propulsion (DAEP) - Institut supérieur de l’aéronautique et de l’espace

4:20 PM A Numerical Simulation of the Influence of Droplet Impact Dynamics on the Microstructure of Plasma Sprayed Coatings: Jeffrey Yanke; Rodney Trice; Matthew Krane; ‘Purdue Center for Metal Casting Research, School of Materials Engineering, Purdue University
**CFD Calculation of Nitrogen Gas Quenching for Steel Ring Gears:**

Junsheng Wang; Xuming Su; Mei Li; Ronald Lucas; William Dowling; 
Ford Motor Company

**Numerical Simulation of Erosion Using Computational Fluid Dynamics:**

Harpreet Grewal; Harpreet Singh; Anupam Agarwal; 
Indian Institute of Technology Ropar

**A CFX-based Model of Ironmaking Blast Furnace Considering Layered Cohesive Zone:**

Yansong Shen; Baoyu Guo; Aibing Yu; Sheng Chew; Peter Austin; UNSW

**Modelling Pulverized Coal Injection in a Blast Furnace:**

Yansong Shen; Albing Yu; Paul Zulli; UNSW

**Characterization of Minerals, Metals, and Materials: Characterization of Non-Ferrous Materials**

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Sergio Montero, State University of Rio de Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Firrao, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mining Resources; Mingdong Cai, Schlumberger

Monday PM Room: Asia 2 March 12, 2012 Location: Dolphin Resort

**Characterization of New Phases in the Ti-Pt System:**

Karem Tello; Anita Garig; Ronald Noebe; Michael Kaufman; Colorado School of Mines; NASA Glenn Research Center

**Characterization of Sn Whiskering by In Situ Nanoindentation in a Scanning Electron Microscope:**

Nicholas Chapman; Jason Williams; Nikhilish Chawla; Arizona State University

**Columnar Microstructural Architecture in Electron and Laser Beam Melting of Metals and Alloys:**

Edwin Martinez; Lawrence Murr; Sara Gaytan; Crista Amato; Patrick Shindo; Diana Ramirez; Francisco Medina; Jose Martinez; Brenda Machado; Ryan Wicker; University of Texas at El Paso

**Effects of Microstructural Changes on Shape Memory Properties of CuZnNi Shape Memory Alloys:**

Satish S; U S Mallik; Raju T N; Dr. Ambedkar Institute of Technology; Siddaganga Institute of Technology

**Effects of Texture and Extrusion Velocity on the High Strain Tensile Behavior of Zr:**

Juan Escobedo; Ellen Cerreta; Carl Trujillo; Daniel Martinez; Victoria Webster; George Gray III; Los Alamos National Laboratory

**Improvement of Mechanical Properties in Severely Plastically Deformed Ni-Cr Alloy:**

Kuk Hyun Song; Hyun Soo Sul; Won Yong Kim; Korea Institute of Industrial Technology

**Microstructure Development of Nickel Matrix/Carbide Composites:**

Ayodeji Apati; Wits

**Microstructures and Mechanical Properties of Ni-Base Superalloys Fabricated by Laser and Electron Beam Melting:**

K. Amato; S.M. Gaytan; L.E. Murr; P.W. Shindo; J. Hernandez; S. Collins; F. Medina; The University of Texas at El Paso; W.M. Keck Center for 3-D Innovation

**Processing and Microstructural Control of Copper Foams for Thermal Wick Material Systems:**

Keri Ledford; Stephanie Lin; Jason Nadler; Georgia Tech Research Institute; Georgia Institute of Technology School of Material Science

**Microstructure and Mechanical Properties of Laser-Deposited Cu-30Ni Alloy:**

Guru Dinda; Darryl Menifee; Joseph Simpson; Ashish Dasgupta; Sudip Bhattacharya; Jyoti Mazumder; Focus: HOPE; University of Michigan

**Deformation Mechanisms at Varying Temperatures in Alloy 718:**

Donald McAllister; Ning Zhou; Ben Peterson; Michael Mills; The Ohio State University; Honeywell Aerospace

**Computational Thermodynamics and Kinetics: In Honor of Dr. Long-Qing Chen, EMPMD Outstanding Scientist: Session II**


Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Monday PM Room: Australia 3 March 12, 2012 Location: Dolphin Resort

Session Chairs: Yu Wang, MTU; Peter Voorhees, Northwestern University

**Phase Field Modeling and Simulation of Critical Nuclei Morphology:**

Qiuge Du; Penn State University

**Coarsening of Bicontinuous Two-Phase Mixtures:**

C. Park; K. Thornton; Peter Voorhees; University of Michigan; Northwestern University

2:25 PM Invited
Deformation, Damage, and Fracture of Cast Metals: Porosity
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, University of Birmingham; Brian Thomas, University of Illinois at Urbana-Champaign; Carl Reilly, University of British Columbia

Monday PM
March 12, 2012
Room: Oceanic 4
Location: Dolphin Resort

Session Chairs: Carl Reilly, UBC; Salem Seifeddine, University of Jonkoping

2:00 PM
Effect of Porosity on Deformation, Damage, and Fracture of Cast Steel: Christoph Beckermann; Richard Hardin; 'University of Iowa

2:25 PM
Detection and Influence of Shrinkage Pores and Non-Metallic Inclusions on Fatigue Life of Cast Aluminum Alloys: Yakub Tijani; Andre Heinrietz; Wolfram Stets; Patrick Voigt; 'Fraunhofer LBF; 'Institut fuer Giessereitechnik

2:50 PM
Quantifying Fe-Rich Intermetallic Formation and Subsequent Pore Interaction during Solidification of Al Alloys Using in situ Synchrotron-Based Tomographic Microscopy: Chedtha Punsrceabutra; Andre Phillion; Julie L. Fife; Peter D. Lee; 'Imperial College London; 'University of British Columbia; 'Paul Scherrer Institut; 'The University of Manchester

3:15 PM
An Integrated Methodology for Optimizing Al-Si Diecastings in Automotive Applications Part 1 – Modeling the Influence of Casting Defects: Nicola Gramigna; Franco Bonollo; Giulio Timelli; Stefano Ferraro; Gianluca Quaglia; 'ENGINSOFT S.p.A.; 'University Of Padova

Deformation, Damage, and Fracture of Light Metals and Alloys: Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

Monday PM
March 12, 2012
Room: Northern A2
Location: Dolphin Resort

Session Chairs: Qizhen Li, University of Nevada, Reno; Wen-Ming Chien, University of Nevada, Reno

2:00 PM Invite
Strategies for Improving the Strength and Ductility of Nanostructured Light Metals: Yuntian Zhu; Yonghao Zhao; 'North Carolina State University; 'Nanjing University of Science and Technology

2:30 PM
Ultrafine Grained Aluminium Alloys: Processes and Superior Properties: Maxim Murashkin; Georgiy Raab; Ruslan Valiev; 'Ufa State Aviation Technical University

2:50 PM
Effect of Microalloying with Aluminum or Yttrium on Grain Boundary Damping in Fine-Grained Magnesium: Hirokuki Watanabe; Akira Owashi; Tokuteru Uesugi; Yorinobu Takigawa; Kenji Higashi; 'Osaka Municipal Technical Research Institute; 'Osaka Prefecture University

3:10 PM
Characterization of Ductile Fracture in 5083 Aluminum using Micro Computed X-Ray Tomography: Caroline Scheck; Marc Zapar; 'Naval Surface Warfare Center; 'University of Maryland, Baltimore County
3:30 PM Break

3:40 PM Invited
Joint Ab-Initio and Experimental Study on the Effects of Rare Earth (RE) Elements on the Stacking Fault Energy and Plasticity of Magnesium Alloys: Stefanie Sandlöhner; Martin Friak; Alexej Dick; Stefan Zaefferer; Jörg Neugebauer; Dierk Raabe; Max-Planck-Institut

4:10 PM
Abnormal Mechanical Properties of Strain Glass Alloys-A Simulation
Study: Dong Wang; Yunzhi Wang; Xiaobing Ren; Xi’an Jiaotong University; Ohio State University; National Institute for Materials Science

4:30 PM
Warm Forming Simulation of Magnesium Alloy AZ31B Sheets: Ji Hoon Kim; Daeyong Kim; Young-Seon Lee; Myoung-Gyu Lee; R. Wagoner; Korea Institute of Materials Science; Pohang University of Science and Technology; The Ohio State University

4:50 PM
A Systematic Study of Solute Effects on Strength and Ductility of Mg from First Principles: Joseph Yasi; Louis Hector; Dallas Trinkle; University of Illinois at Urbana-Champaign; General Motors R&D Center

5:10 PM
A Macroscopic Yield Function Coupled with Crystal Plasticity Theory for Modeling Forming of AZ31 Magnesium Alloy Sheets: Nitin Chandola; Oana Cazacu; Raja Mishra; Kaan Inal; University of Florida; General Motors; University of Waterloo

Electrode Technology for Aluminium Production: Paste Plant Design and Improvement
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Morten Sortie, Alcoa Norway

Monday PM
March 12, 2012
Room: Americas Seminar
Location: Dolphin Resort

Session Chair: Berthold Hohl, Eirich GmbH & Co KG

2:00 PM Introductory Comments

2:10 PM
Adaptive Fuzzy Controller for Ball Mill in Anode Plant: Edson Cruz; Albras - Alumínio Brasileiro S.A.

2:35 PM
Use of under Calcined Coke to Produce Baked Anodes for Aluminium Reduction Lines: Rajesh Garg; Daniel Salaiman; Alumínium Bahrain

3:00 PM
60 TPH Single Line Green Anode Plant Commissionned at Qatalum: Christophe Bouche; Bertrand Somnard; Sunil Bhajun; Fabienne Virieux; Solios Carbone; Qatalum; Fives Solios

3:25 PM
Improvement of Anode Paste Quality and Performance of ALCOA Lista: Nils Saue; Jon Ystgaard; Jon Johannessen; Markus Meier; Raymond Perruchoud; Alcoa Lista; R&D Carbon Ltd.

3:50 PM Break

4:10 PM
Baked Anode Quality Improvement through Optimization of Green Anode Plant Ultra Fine Content in Ball Mill Product and Process
Parameters: Rajesh Garg; Daniel Salaiman; Masood Toorani; Alumínium Bahrain

4:35 PM
Baked Anode Quality Improvement through Optimization of Green Anode Processing: Xu Haifei; Fan Lijun; Zhang Yang; Sun Yi; Cui Yinhe; SAME; Lanzhou Branch of Chalco

Electrometallurgy 2012: Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS Metalurgy and Materials Society of CIM, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Georges Houlachi, Hydro-Quebec; Antoine Allanoire, Massachusetts Institute of Technology; Michael Free, University of Utah; Michael Moats, University of Utah; Edouard Asselin, UBC; Shijie Wang, Rio Tinto Kennecott Utah Copper; James Yurko, Materion Brush Beryllium and Composites

Monday PM
Room: Europe 5
March 12, 2012
Location: Dolphin Resort

Session Chairs: Michael Free, University of Utah; Georges Houlachi, Hydro-Quebec

2:00 PM Introductory Comments

2:05 PM
Electrometallurgy – Now and in the Future: Michael Free; Michael Moats; Tim Robinson; Georges Houlachi; Neale Neelameggham; David Creher; George Holywell; Marco Ginatta; University of Utah; Republic Anode Fabricators; Hydro-Quebec; ind.LLC; Rio Tinto Alcan; Almagi, Inc.; Ginatta Technologie

2:25 PM
Performance and Commercialization of the Smart Anode, MSA™, for Environmentally Friendly Electrometallurgical Process: Masatsugu Morimitsu; Doshisha University

2:45 PM
A Novel Oxygen Evolution Anode for Electrowinning of Non-ferrous Metals: Tian Zhang; Masatsugu Morimitsu; Doshisha University

3:05 PM
Novel DSA® Anode for Electrowinning of Non Ferrous Metals: Antonio Antozzi; Industrie De Nora SpA

3:25 PM
Increasing Oxygen Charge Transfer Resistance on the Anode in Copper Electrowinning: Reuben Mathew; Laurentian University

3:45 PM Break

4:00 PM
Development of a Fully Dynamic Simulation of the Zinc Electrowinning Process: Michael Mahon; Spencer Peng; Larry Wasik; Akram Alfantazi; University of British Columbia; Aurel Systems

4:20 PM
Aqueous Electrodeposition of Molybdenum: Thomas Morley; Leah Penner; Francois Benard; Tom Ruth; Paul Schafer; Stefan Zeisler; Edouard Asselin; TRIUMF; UBC; BC Cancer Agency Research Centre

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37
4:40 PM Invited
Atomic Probes of Inorganic Materials and Their Devices
Using Ultraviolet Laser Atom Probe: Kazuhiro Hono; Tadakatsu Okhubo; National Institute of Materials Science

2:00 PM Invited
Structural Analysis of Cemented Carbides: Hans-Olof Andrén; Chalmers University of Technology

2:00 PM Invited
Energy Nanomaterials: Li-ion Batteries and Beyond
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee

Monday PM Room: Mockingbird 2
March 12, 2012 Location: Swan Resort
Funding support provided by: Oak Ridge National Laboratory; QuesTek Innovations LLC; AMETEK, Inc

Session Chairs: David Larson, Cameca Instruments, Inc.; Alfred Cezero, Oxford University

2:00 PM Invited
Atom Probe Tomography of Inorganic Materials and Their Devices Using Ultraviolet Laser Atom Probe: Kazuhiro Hono; Tadakatsu Okhubo; National Institute of Materials Science

2:25 PM Invited
Origin of Nanocluster Formation with Microalloying Elements Responsible for the Accelerated Precipitation of the Strengthening Phases in Age-Hardenable Aluminum Alloys: Shoichi Hirotsava; Tomo Ogura; Ai Serizawa; Yoshiki Komiya; Tatsuo Sato; Yokohama National University; Osaka University; Meisei University; Tokyo Institute of Technology

4:50 PM Invited
Chemical-Texture and Nanotopology in Hierarchy-Strengthened Alloys: Peter Liddicoat; Maxim Murashkin; Xiaozhou Liao; Ruslan Valiev; Simon Ringer; The University of Sydney; Ufa State Aviation Technical University

5:05 PM Invited
Catalytic Reactions Investigated by Field Ion Microscopy and Atom-Probe Techniques: Norbert Kruse; University Libre de Bruxelles

5:30 PM Development and Recent Applications of FIM/APT for Heterogeneous Catalysis: Paul Boger; Tong Li; Emmanuelle Marquis; Edman Tsang; George Smith; University of Oxford; University of Michigan

5:45 PM Buried Interface Analysis Using Atom Probe Tomography: Sontharampillai Thevatha; Satyanarayana V. N. T. Kuchibhatla; Arun Devaraj; Fang Liu; Shanthanand Vaithiyalingam; Manjula Nandasi; Bruce Arey; Chongmin Wang; Lisa Porter; Robert Davis; Ty Prosa; EMSL, Pacific Northwest National Lab; Carnegie Mellon University; Cameca Instruments Inc

4:40 PM Invited
Transmission Electron Microscopy Studies on Lithium Battery Materials II: Characterization of Mesoporous TiO2 Films: Alpesh Shukla; Natacha Kriis; Guoying Chen; Thomas Richardson; Lawrence Berkeley National Laboratory

Energy Nanomaterials: Li-ion Batteries and Beyond

Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

Monday PM Room: Swan 3
March 12, 2012 Location: Swan Resort
Session Chairs: Reza Shahbazian Yassar, Michigan Technological University; Ilias Belharouak, Argonne National Laboratory

3:20 PM Preliminary Investigation of the Microstructure-Property-Processing Relationships in a Series of Co-Cr-Cu-Fe-Ni-Al High Entropy Alloys: Abraham Munitz; David Diercks; Michael Kaufman; Colorado School of Mines

2:00 PM Invited
Self-Aligned Cu-Si Core-Shell Nanowire Array as a High-Performance Anode for Li-Ion Batteries: Jun Qu; Huaqing Li; John Henry; Sureendra Martha; Miaofang Chi; Hanbing Xu; Nancy Dudney; Michael Lance; Shannon Maharin; Theodore Besmann; Sheng Dai; Oak Ridge National Laboratory; University of Tennessee

2:00 PM Invited
Investigation of Synthesis of Nano-LiNi0.5Mn1.5O4 Cathode Material for Lithium-Ion Battery by In-Situ Neutron Diffraction: Lu Cai; Zengcai Liu; Chengdu Liang; Ke Au; Spallation Neutron Source; Oak Ridge National Laboratory; Center for Nanophase Material Sciences; Center for Nanophase Material Sciences

2:40 PM Transmission Electron Microscopy Studies on Lithium Battery Materials II: Characterization of Mesoporous TiO2 Films: Alpesh Shukla; Natacha Kriis; Guoying Chen; Thomas Richardson; Lawrence Berkeley National Laboratory
MONDAY PM

3:00 PM Invited
The Facts Influencing Rechargeability of Lithium/Air Batteries: Ming Au1; Elise Fox1; Hector Colon-Mercado1; Thad Adams1; Savannah River National Laboratory

3:30 PM Break

3:50 PM
Solution Precursor Plasma Synthesized Flexible Manganese Oxide Anodes for Li-Ion Batteries: Ramesh Kumar Gudur1; Raghavender Tummala1; Pravansu S. Mohanty1; Univer of Michigan

4:10 PM
Transmission Electron Microscopy Studies on Lithium Battery Materials: Conversion Reactions in Nickel Oxide Nanoplates: Alpesh Shukla1; Jordi Cabana1; Peter Ercius2; Abhay Raj Singh Gautam2; Ulrich Dahmen3; Lawrence Berkeley National Laboratory; National Center of Electron Microscopy, Lawrence Berkeley National Laboratory

4:30 PM
New Method to Fabricate Nanoporous Silicon for Lithium Ion Batteries: Xu Jiang1; Thomas Balk1; University of Kentucky

4:45 PM
A Novel Type of Carbon Coated Sulfur Nanoparticles for Li/S Batteries: Yan Yuan1; Elton Cairns1; LBNL

Session Chairs: Youshi Hong, Institute of Mechanics, Chinese Academy of Sciences; Antonios Kontsos, Drexel University

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Monday PM
Room: Oceanic 6
Location: Dolphin Resort

2:00 PM Invited
Identification of Fatigue Crack Initiation from Surface Particles in High Strength Al Alloys: Xinlang Zhang1; Wei Wen1; Zhiqiang Xu1; Alfonso Ngan1; Tongguang Zhai1; Yanshan University; University of Kentucky; University of Hong Kong

2:20 PM
Influence of the Inclusion Shape on the Rolling Contact Fatigue Life of Carburized Steels: Jutaka Neishi1; Taizo Makino1; Naoki Matsui2; Hitoshi Matsumoto2; Masashi Higashida2; Hideki Ambai2; Sumitomo Metal Industries, Ltd.; Sumitomo Metals(Kokura), Ltd.

2:40 PM
Effects of Size And Position of Al2O3 Inclusions On fatigue Crack Initiation in Low Carbon Bainitic Steel: Tongguang Zhai1; Xiucheng Li1; Wei Wen1; Chengjia Shang1; Linghui Du1; University of Kentucky; University of Science and Technology Beijing; CNMC Ningxia Orient Group Co. Ltd

3:00 PM
Scale-Bridgeing Fatigue Monitoring in Magnesium Alloys: Antonios Kontsos1; Kavan Hazeli1; Prashanth Abraham1; Jefferson Cuadra1; Eric Schwartz2; Raghavendar Saralaya2; Tim Schmidt2; Drexel University; Trilon Quality Systems

3:20 PM
Effect of Orientation on Fretting Behavior of a Single-Crystal Ni-Base Superalloy: Nabil Marouf1; Siegfried Fouvy1; Philippe Belaygue2; LTDS; TURBOMECA

3:40 PM Break

3:50 PM
Slip Transfer across Grain Boundaries and Its influence on the Development of Local Strain Heterogeneities in the Plastic Response: Wael Abuazied1; Michael Sangid1; Jay Carroll1; Huseyin Sehitoglu1; John Lambros1; Ravinder Chona1; University of Illinois at Urbana-Champaign; Purdue University; Sandia National Laboratories; Air Force Research Lab

4:10 PM
Influence of Aluminide Coatings on Fatigue Behavior during Sustained-Peak Low-Cycle Fatigue in a Single-Crystal Ni-Base Superalloy: Luke Retberg1; Tresa Pollock1; University of California Santa Barbara

4:30 PM
Evolution of Microstructure and Mechanical Properties during Rolling Contact Fatigue in High Strength Case-Hardened and Through-Hardened Steels: Ghata Subhash1; Nagaraj Arakere2; Bryan Allyson1; University of Florida

4:50 PM
In Situ Neutron Diffraction Measurements of Stress Fields Around a Fatigue-Crack Tip Under Loading: Soo Yeol Lee1; E-Wen Huang2; Kwan-Wei Lee2; Wanchuck Woo2; Department of Materials Science and Engineering, Chungnam National University, Daejeon, 305-764, South Korea; Department of Chemical & Materials Engineering and Center for Neutron Beam Applications; Neutron Science Division, Korea Atomic Energy Research Institute

5:10 PM
Influence of Twin-Boundary on the Bauschinger’s Effect in Cu Crystal- a Molecular Dynamics Simulation Study: Di Zhu1; Hao Zhang1; Dongyang Li1; University of Alberta

Session Chairs: Jamie Kruzic, Oregon State University; Nikhilesh Chawla, Arizona State University

From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Fatigue
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University

Monday PM
Room: Mockingbird 1
Location: Swan Resort

2:00 PM Invited
Introductory Comments

2:05 PM
Predicting the Behavior of Short Fatigue Cracks: Jamie Kruzic1; Sarah Gallops1; Rawley Greene1; Oregon State University

2:10 PM
Influence of the Yield Surface on Crack Propagation in TiAl: Rawley Greene1; Oregon State University

2:15 PM
Effect of Alumina Coating on Fatigue Crack Propagation in Ni-Al Based Superalloys: Serdar Tamer1; Paul Clark1; Michael H. Gao1; S. Muna Singh2; Robert Ritchie1; Robert Alexander1; Robert A. Ritchie1; Robert Ritchie1; Robert Alexander1

2:20 PM
The Effect of Grain Boundary Misorientation and Misorientation Angle on the Fatigue Property of TiAl: S. Muna Singh2; Robert Ritchie1; Robert Alexander1; Robert A. Ritchie1

2:25 PM
The Effect of Amount of Carbon and Cobalt Concentration on Fatigue Crack Propagation in TiAl: C. Sumit1; T. Sumit1; T. Sumit1

2:30 PM
The Effect of the Presence of Alumina Coating on Fatigue Crack Propagation in Ni-Al Base Superalloys: Robert Alexander1; Robert Ritchie1; Robert A. Ritchie1

2:35 PM
The Effect of the Presence of Small Alumina Particles in Ni-Al Base Superalloys on Fatigue Crack Propagation: Robert Alexander1; Robert Ritchie1; Robert A. Ritchie1

 Session Chairs: Jamie Kruzic, Oregon State University; Nikhilesh Chawla, Arizona State University

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2:20 PM
The Continuing Relevance of Small Fatigue Crack Growth Behavior in the Design and Life Management of Structural Aerospace Components: Michael Caton; Sushant Jha; M. Burba; James Larsen; Reji John; Andrew Rosenberger; 1US Air Force Research Laboratory; 2Universal Technology Corporation; 3University of Dayton

2:35 PM
Relating Fatigue Crack Initiation and Small Crack Propagation to Microstructure in the Polycrystalline Nickel Base Superalloy, Rene 88DT: Jiashi Miao 1; Tresa Pollock 2; J. Wayne Jones 4; 1University of Michigan; 2University of California Santa Barbara

2:50 PM
Endurance Limits and Non-Propagating Cracks: Herwig Mayer; Bernd Schönhauser; Stefanie Stanzl-Tschegg; 1BOKU University Vienna

3:05 PM
Deformation Mechanisms of Small Crack Growth under Dwell-Fatigue in a Ni-Base Superalloy: G. B. Viswanathan; Sushant Jha; Sam Kuhn; Jay Tiley; Hamish Fraser; Reji John; C. Woodward; 1Air Force Research Laboratory; 2The Ohio State University

3:20 PM
Effects of Local Crystallography and Inclusion Geometry on Nucleation and Propagation of Short Fatigue Cracks in Al2024-T351: Bernd Schönbauer; Stefanie Stanzl-Tschegg; 1BOKU University Vienna

3:35 PM Break

3:50 PM
Understanding Fatigue Crack Growth by In Situ 3D X-ray Synchrotron Tomography: Nikhillesh Chawla; 1Arizona State University

4:05 PM
Leave-in-Place Laser Scanning for Fatigue Damage Monitoring and Prognosis: James Earthman; Benjamin Buckner; Kwai Chan; Xiaoxi Liu; Vladimir Markov; 1University of California, Irvine; 2Metrolaser, Inc.; 3Souwest Research Institute

4:20 PM
The Effect of Microstructure on Strain Field Inhomogeneities in Fatigue Crack Growth: Jay Carroll; Wael Abuzaid; Mallory Casperson; John Lambros; Huseyn Sehitoglu; Ravinder Chona; Brad Boyce; 1Sanda National Laboratories; 2University of Illinois at Urbana-Champaign

4:35 PM
Reducing Uncertainty for Fatigue Life Limits at Notches in Two Structural Alloys: Dennis Buchanan; James Larsen; Andrew Rosenberger; Reji John; Sushant Jha; Alisha Hutson; W. John Porter; 1UDRI; 2Air Force Research Laboratory; 3Universal Technology Corporation

4:50 PM
A Comparison of Cast Aluminum Bulkhead Fatigue Resistance: The Effect of Specimen Geometry: Andrea Campbell; John Allison; 1Ford Motor Company; 2University of Michigan

5:05 PM
Predicting Fatigue Crack Growth Behavior at Different Crack Size Scales: Anastasios Gavras; Diana Lados; 1Worcester Polytechnic Institute

Integrative Materials Design: Performance and Sustainability: Processing and Properties of Traditional and Novel Materials at Ambient and High Temperatures II and Condition Assessment and Monitoring
Sponsored by: The Minerals, Metals and Materials Society, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizer: Diana A. Lados, Worcester Polytechnic Institute

Monday PM  Room: Europe 2
March 12, 2012  Location: Dolphin Resort

Session Chair: Diana Lados, Worcester Polytechnic Institute
International Smelting Technology Symposium
(Incorporating the 6th Advances in Sulfide Smelting Symposium): Smelter Design, Construction, Commissioning and Operation
Program Organizers: Jerome Downey, Montana Tech of the Univ of Montana; Thomas Battle, Midrex Technologies, Inc.; Jesse While, Elkem Solar Research

Monday PM  Room: Northern A3
March 12, 2012  Location: Dolphin Resort

Session Chair: To Be Announced

2:00 PM
Boliden Rönnskär Smelter: Challenges and Opportunities for Modern Smelting
: Theo Lehner1; Jan Stål2; 1Boliden Mineral AB

2:25 PM
Design and Commissioning of the Ausmelt TSL Lead Smelter at Yunnan Tin Company Limited: Helin Gu1; Xingcheng Song1; Xu Lan2; Ross Baldock3; Ross Andrews4; Markus Reuter5; 1Yunnan Tin Company Ltd; 2Outotec Pty Ltd

2:50 PM
Granulation as it Pertains to Electric Furnace Matte, Converter Slag, and Converter Matte in a PGM Smelter: Greg Roset1; Dayle Flynn2; Jake Bummer3; 1Stillwater Mining Company

3:15 PM
Design, Development and Early operations of the Konkola Copper Mines Nchanga Smelter Direct Blister Flash Process, Chingola, Zambia: Enock Mponda1; Timothy Smith2; 1KCM plc; 2SNC Lavalin

3:40 PM Break

3:55 PM
Waste Heat Recovery from Industrial Smelting Exhaust Gas: Geir Wedde1; Anders Sorhus2; 1Alstom

4:20 PM
High Performance Brands for the Nonferrous Metals Industry: Dean Gregurek1; Alfred Spanring1; Angelika Ressler1; Sonja Breynner1; 1RHI AG

4:45 PM
Sidewall Design to Improve Lining Life in a Platinum Smelting Furnace: Isabel McDougall1; Jacques Eksteen2; 1Tenova Pyromet; 2Lommin South Africa

5:10 PM
SiC Formation in Submerged Arc Furnaces Producing Silicomanganese: Per Anders Eidem1; Jens Davidsen1; Merete Tangstad1; 1Eramet Norway AS; 2Norwegian University of Science and Technology

IOMMMS Global Materials Forum: Materials in a Green Economy: An International Perspective:
Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS: Materials and Society Committee, TMS: Public and Governmental Affairs Committee
Program Organizers: Sanak Mishra, Arcelor Mittal India; Jud Ready, Georgia Institute of Technology; Christina Meskers, Umicore

Monday PM  Room: Northern A4
March 12, 2012  Location: Dolphin Resort

Session Chairs: Sanak Mishra, ArcelorMittal India Limited; Diran Apelian, Worcester Polytechnic Institute

2:00 PM Introductory Comments by Dr. Sanak Mishra

2:10 PM Invited
The Role of Materials Recycling in Economic Sustainability: Brajendra Mishra1; Warren Hunt2; 1Colorado School of Mines; 2Executive Director, The Minerals, Metals & Materials Society

2:30 PM Invited
Innovative Developments in Steel Industry to Address Global Environmental Trends: Debashish Bhattacharjee1; 1Tata Steel Research Development & Technology

2:50 PM Invited
Recent Development of Materials for Green Energy in Korea: Soon Young Hwang1; Jin-Hong Kim1; 1RIST

3:10 PM Invited
Developing High Performance Steels in a Green Economy: Chengjia Shang1; Yuqing Weng2; 1University of Science and Technology Beijing; 2The Chinese Society for Metals

3:30 PM Invited

3:50 PM Break

4:05 PM Invited
Metals, Materials and the Environment: Bhaskar Roy1; 1M.N. Dastur & Company(P) Ltd

4:25 PM Invited
A Strategy of Metal Supply for Sustainable Development and Supporting Technologies for It in Japan: Takashi Nakamura1; A. Inaba2; 1Institute of Multidisciplinary Research for Advanced Materials; 2Major of Applied Chemistry and Chemical Engineering

4:45 PM Invited
Multi-Eye Approach for Clarification of Surface/Interface Phenomena in Environment and Energy Materials: Tomohiro Nagai1; 1National Institute for Materials Science

5:05 PM Invited
Aluminium Production, Manufacturing and Recycling in Australia – Materials Innovation for a Clean Energy Future: Malcolm Couper1; 1Monash University
5:25 PM Invited
Natural Fiber Composites – Significant Contribution to a Green Economy: Sergio Monteiro; Marc-André Meyers; João Carlos Miguez Suarez; 1State University of the Northern Rio de Janeiro - UENF; 2Military Institute of Engineering;Brazilian Association for Metallurgy, Materials and Mining

5:45 PM Concluding Comments by Prof. Diran Apelian

Magnesium Technology 2012: Deformation Mechanisms
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Monday PM  Room: Southern IV
March 12, 2012  Location: Dolphin Resort
Session Chairs: Bin Li, Mississippi State University; Alok Singh, National Institute of Materials Science

2:00 PM
An Elasto-Plastic Micromechanical Method for Twin Driven Plasticity: Laurent Capolongo1; Pierre Alexandre Juan1; Stephane Berbenni2; Carlos Tome3; 1Georgia Institute of Technology; 2Universite Paris 7 Denis-Diderot; 3Heinrich-Heine-Universität Düsseldorf

2:20 PM
Anomalous Twin Bands in AZ31 Mg Sheet Bending: James Crawford Baird1; Bin Li2; Sanaz Yazdan Parast3; Stephen Horstemeyer4; Haitham El Kadiri5; Paul Wang5; 1Center for Advanced Vehicular Systems; 2National Institute of Materials Science; 3Georgia Institute of Technology; 4Michigan State University; 5Georgia Institute of Technology

2:40 PM
Formation of Nano-Scale Twins and Low Angle Grain Boundaries during Fracture of Fine Grained Magnesium Alloys: Alok Singh1; Hidetoshi Somekawa2; Toshiji Mukai2; 1National Institute of Materials Science; 2Kobe University

3:00 PM
Tensile and Creep Deformation Mechanisms in Rolled AZ31: Carl Boehlert1; Zhe Chen1; Ivan Gutierrez-Urrutia1; Jan Bohlen1; Sanghong Yi2; Dietmar Letzig3; Javier Llorca4; 1Georgia Institute of Technology; 2National Institute of Materials Science; 3Helmholtz-Zentrum Geesthacht; 4IMDEA-Materials

3:20 PM
Structural Origin of Reversible Twinning, Non-Schmid Effect, Incoherent Twin Boundaries and Texture of Hexagonal Close-Packed Metals: Bin Li1; Xiyan Zhang2; Haitham El Kadiri3; Suveen Mathaudhu4; Quancang Ma1; 1Center for Advanced Vehicular Systems; 2University of North Texas; 3Helmholtz-Zentrum Geesthacht; 4IMDEA-Materials

3:40 PM Break

4:00 PM
Length Changes in Extruded Magnesium Alloy Strips by Extrusion-Machining: Dinakar Saigapuram1; Mert Efe1; Wilfredo Moscoso1; Srinivasan Chandrasekar2; Kevin Trumble3; 1Purdue University; 2Pittsburgh Regional Center for Applied Metallurgy; 3Purdue University

4:20 PM
Nano-Indentation Studies of Twinned Magnesium Single Crystals: Fumiaki Hiura1; Raja Mishra2; Michael Lukitsch3; Marek Nieczuz1; 1McMaster University; 2General Motors Research & Development Center

4:40 PM
The Elastic-Plastic Transition in AZ31 Magnesium Alloy: Kun Yang1; Carlos Caceres2; 1The University of Queensland; 2General Motors Research & Development Center

Magnesium Technology 2012: Primary Production
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Monday PM  Room: Southern V
March 12, 2012  Location: Dolphin Resort
Session Chairs: Neale Neelameggham, IND, Inc; Adam Powell, Metal Oxygen Separation Technologies, Inc.

2:00 PM
Carbothermal Production of Magnesium: CSIRO’s MagSonic™ Process: Leon Prentice1; Michael Nagle1; Timothy Barton1; Steven Tassios1; Benny Kuan2; Peter Witt3; Keri Constanti-Carey4; 1CSIRO Process Science and Engineering; 2CSIRO Mathematics Informatics and Statistics

2:20 PM
MagSonic™ Carbothermal Technology Compared with the Electrolytic and Pidgeon Processes: Leon Prentice1; Nawshad Haque1; 1CSIRO Process Science and Engineering

2:40 PM
Scaling-Up Solid Oxide Membrane Electrolysis Technology for Magnesium Production: Soobhankar Path1; Adam Powell1; Steve Tucker1; Steve Derezinski1; 1MOSST Inc.

3:00 PM
Fluid Bed Dehydration of Magnesium Chloride: Kamal Adham1; 1Hatch Ltd.

3:20 PM
Demonstration of Solar-Pumped Laser-Induced Magnesium Production from Magnesium Oxide: Yabe Takashi1; Ohkubo Tomomasa2; Dinh Thanh Hung3; Kuboyama Hiroki1; Nakano Junichi1; 1Tokyo Institute of Technology

3:40 PM Break

4:00 PM
Molten Salt Electrolysis of MgCl2 in a Cell with Rapid Chlorine Removal Feature: Gökhan Demirci1; Ishak Karakaya2; 1Aselsan Inc.; 2Middle East Technical University

4:20 PM
Preparation of Aluminum-Magnesium Alloy from Magnesium Oxide in RECl3-LiF-MgF2 Electrolyte by Molten Salts Electrolysis Method: Sh Yang1; Fengl Yang2; Xianwei Hu3; Zhaowen Wang2; Zhongning Shi4; Bingliang Gao3; 1Jiangxi University of Science and Technology; 2Northeastern University

4:40 PM
Experimental Study on Magnesium Extracted from Ascharite Mineral by Aluminium: Peng Jianping1; Wu Xiaolei1; Feng Naixiang1; Zhou Shigang2; Di Yuezhong1; 1Northeastern University; 2General Institute of Physics
5:00 PM
Electrochemical Investigation on Chlorine and Electrolyte Intercalation into Graphite Anodes during Magnesium Electrolysis
Process: Bing Li1; Jingwei Lou1; Mengfan Yan1; 1East China University of Science and Technology

5:20 PM
Optimization of Preparation for MgO byCalcination from Basic Magnesium Carbonate Using Response Surface Methodology: Bin Zhang1; Jinhu Peng1; Libo Zhang1; shaohua Ju1; 1Kunming University of Science and Technology

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Materials and fuels for the current and advanced nuclear reactors: Nuclear Fuels - Characterization
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Monday PM
Room: Swan 2
Location: Swan Resort

Session Chairs: Robert Mariani, Idaho National Laboratory; Ramprashad Prabhakaran, Idaho National Laboratory

2:00 PM
Recent Developments in the Study of the Effects of Irradiation on the Microstructure of U-Mo Nuclear Fuels: Dennis Keiser1; Jan-Fong Jue1; Jian Gan1; Adam Robinson1; Pavel Medvedev1; 1Idaho National Laboratory

2:20 PM
TEM Study on the Phase Development and Microstructure in a U-7 wt.% Mo vs. Al-7 wt.% Ge Diffusion Couple: E. Perez1; D.D. Keiser1; Y.H. Sohn1; 1Idaho National Laboratory; 2University of Central Florida

2:40 PM
Observations and Analyses of Diffusion Couples, U-10 wt.% Mo vs. Zr: Ke Huang1; Youngjoo Park1; Dennis Keiser1; Yongho Sohn1; 1University of Central Florida; 2Idaho National Laboratory

3:00 PM
Mechanical Properties of U-Mo Fuels: Ramprashad Prabhakaran1; Douglas Burkes2; Jan-Fong Jue1; Amy DeMint1; Jack Gooch1; Dennis Keiser1; Daniel Wachs1; 1Idaho National Laboratory; 2Pacific Northwest National Laboratory; 3Y-12 National Security Complex

3:20 PM
Metallurgical Characterization of the Delta Phase Formation in Uranium-Zirconium Alloy Fuels: Sandeep Irukuvarghula1; Sean McDeavitt1; Sangjoon Ahn1; 1Texas A&M University

3:40 PM Break

3:50 PM
Thermodynamic Assessment of the Uranium-Zirconium Alloy System for Nuclear Energy Applications: Sangjoon Ahn1; Sandeep Irukuvarghula1; Sean McDeavitt1; 1Texas A&M University

4:10 PM
Characterization of U-Zr-Fe and U-Mo-Fe Alloy Fuels Doped with In, Sb, and Pd: Yeon Soo Kim2; Gerard Hofman1; Tom Wieneck1; Ed O’Hare1; Jeff Fortner1; 1Argonne National Laboratory

4:30 PM
Interdiffusion between U - 10wt.% Zr and Fe Diffusion Couples Annealed at 903, 923, 935 and 973K: Youngjoo Park1; Ke Huang1; Bulent Sencer2; Rory Kennedy2; Yongho Sohn1; 1University of Central Florida; 2Idaho National Laboratory

4:50 PM
Microanalysis of Irradiated Coated Particle Fuel from the AGR-1 Irradiation Experiment: Paul Demkowicz1; Isabella van Rooyen1; Scott Ploeber1; Jessica Riesterer1; Brandon Miller1; 1Idaho National Laboratory

5:10 PM
Post-irradiation Examination of High Burnup Metallic Fuels: Heather Chichister1; Douglas Porter1; Steven Hayes1; 1Idaho National Laboratory

Materials Design Approaches and Experiences
III: Material Design Tools
Program Organizers: Ji-Cheng Zhao, The Ohio State University; Akane Suzuki, GE Global Research; Deb Whitis, GE Aviation; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Monday PM
Room: Europe 11
Location: Dolphin Resort

Session Chairs: Deb Whitis, GE Aviation; Hamish Fraser, The Ohio State University

2:00 PM Invited
Multiscale Modeling of Mechanical Performance from a Perspective of Materials Design: Dennis Dimiduk1; 1Air Force Research Laboratory

2:30 PM Invited
Materials Genome®: Building Blocks of Materials: Zi-Kui Liu1; 1The Pennsylvania State University

3:00 PM Invited
Experimental Tools for the Materials Genome Initiative: Ji-Cheng Zhao1; 1The Ohio State University

3:30 PM Break

3:50 PM Invited
An Integrated CALPHAD Tool for Modeling Precipitation Kinetics and Accelerating Materials Design: Qing Chen1; Heng-Jeng Jou2; Gustav Sterner3; Johan Bratberg4; Anders Engström3; Paul Mason3; Thermo-Calc Software AB; 1QuesTek Innovations LLC; 2Thermo-Calc Software, Inc

4:20 PM Invited
Integrated Computational Materials Engineering for Precipitation Modeling of Multi-Component Alloys: Fan Zhang1; W. S. Cao1; S. L. Chen1; Chuan Zhang1; Y. A. Chang1; CompuTherm, LLC

4:50 PM Invited
Direct 3-D Materials Characterization and Its Incorporation into Computational Models: John Sosa1; Daniel Huber1; Robert Williams1; Peter Collins2; Hamish Fraser1; 1The Ohio State University; 2University of North Texas

5:20 PM Invited
Use of Phase Field Method as a Tool for Alloy Design: Ning Zhou1; Yunzi Wang1; 1Ohio State University
Materials Processing Fundamentals: Physical Metallurgy of Steel

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Process Technology and Modeling Committee

Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Antoine Allanore, MIT; Cong Wang, Saint-Gobain High Performance Materials

Monday PM  Room: Oceanic 8
March 12, 2012  Location: Dolphin Resort

Session Chairs: Antoine Allanore, MIT; Lifeng Zhang, Missouri S&T

2:00 PM
Estimation of Yield Stress of Linepipe Steel Pipes by Stress-Strain Curves Obtained from Low-Cycle Fatigue Tests: Seok Su Sohn1; Seung Youb Han1; Sang Yong Shin1; Jin-ho Bae1; Nack J. Kim1; Hyoung Seop Kim1; Sunghak Lee1; 1Pohang University of Science and Technology; 2POSCO Corp.

2:25 PM
Evaluation of Phase Transformations in Subcritical Temperature Austenitic Nitriding: Yingying Wei1; Zbigniew Zurecki1; Richard Sisson1; 1Worcester Polytechnic Institute; 2Air Products and Chemicals, Inc.

2:50 PM
Influence of the Hot Rolling Process on the Mechanical Behaviour of Dual Phase Steel: Mehdi Asadi1; Heinz Palkowski1; 1Benteler Automotive; 2TU Clausthal

3:15 PM
Molybdenum Effects on the Recrystallization and Austenite Decomposition of a High-Niobium HSLA Steel: Erik Pavlina1; E. Damm2; John Speer3; Chester Van Tyne3; 1Pohang University of Science and Technology; 2The Timken Company; 3Colorado School of Mines

3:40 PM
The Steel Super Strengthening Phenomenon During Intensive Quenching: Nikolai Kobasko1; Michael Aronov2; Joseph Powell1; 1IQ Technologies, Inc.; 2IQ Technology, Inc.

4:05 PM Break

4:20 PM
Three-Dimensional Characterization of Laser-Welds in 304-L Stainless Steel: Jonathan Madison1; Larry Aagesen2; 1Sandia National Laboratories; 2University of Michigan

4:45 PM
Continuous Casting Simulation of 2304 Duplex Stainless Steel Via Horizontal Directional Solidification Technique: Qing Qing Sun1; Meihong Lin2; 1University of Science and Technology; 2University of Greenwich

5:10 PM
Influence Of Cooling Rates On Nitrogen Precipitation Behaviors And The Ferrite Fraction In Cast 2507 Super Duplex Stainless Steel: Dong Liao1; Honggang Zhong1; 1Shanghai University

5:35 PM
Microstructure and Corrosion Behaviour of TiC Reinforced Duplex Stainless Steel Matrix Composites Synthesized by Laser Melt Injection: Babatunde Obadele1; Peter Olubambi1; Oluwagbenga Johnson1; 1Tshwane University of Technology

Monday PM  Room: Asia 3
March 12, 2012  Location: Dolphin Resort

Session Chair: To Be Announced

2:00 PM
Studies of Thermophysical Properties of Metals and Semiconductors by Containerless Processing under Microgravity: Achim Seidel1; Wolfgang Soellner2; Christian Stenzel1; 1Astrium

2:25 PM Invited
Advanced Measurement Devices for the Microgravity Electromagnetic Levitation Facility EML: Juergen Brillo1; Holger Fritze2; Georg Lohöfer3; Michal Schulz2; Christian Stenzel1; 1DLR; 2TU-Clausthal; 3Astrium

3:00 PM
Electrostatic Levitation Furnace for the ISS: Keiji Murakami1; Naokiyo Koshikawa2; Kohichi Shibasaki3; Takehiko Ishikawa4; Junpei Okada5; Tetsuya Takada6; Tatsuya Arai7; Naoki Fujino8; Yukiko Yamaura9; 1JAXA; 2IHI Aerospace

3:25 PM Break

3:45 PM Invited
Thermophysical Property Measurements Under Reduced Gravity Conditions: Evolution and Status of theThermoLab Project: H-H Focht1; R.K. Wunderlich2; L. Battezzati3; E. Ricci4; J. Etay5; S. Seetharaman1; J. Brillo6; M. Watanabe7; K. Kelton8; D.M. Matson9; Robert Hyers10; 1U. Ulm; 2Universita di Torino; 3CNR-ITEN; 4CNRS, SIMAP-EPM, PHELMA-Campus; 5KTH Royal Institute of Technology; 6Deutsches Zentrum für Luft- und Raumfahrt, ; 7Gakushin University; 8Washington University; 9Tufts University; 10University of Massachusetts

4:20 PM Invited
Electrostatic Levitation: A Tool to Support Materials Research in Microgravity: Jan Rogers1; Michael SanSoucie1; 1NASA/MSFC

4:55 PM Invited
Novel Needle-Network Multi-Scale Model for the Solidification of Highly Branched Dendritic Microstructures: Damien Tourret1; Alain Karna2; 1Northern University

5:30 PM
Status of Viscosity Measurements by the Oscillating Drop Method in an Electromagnetic Levitation Device under Reduced Gravity Conditions: Jacqueline Etay1; Ivan Egry2; Kouls Pericleous2; Rainer Wunderlich3; 1CNRS SIMAP-EPM; 2DLR; 3University of Greenwich; 4University of Ulm
Mechanical Behavior at Nanoscale I: Atomistic Modeling on Deformation Mechanisms

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Behavior Committee, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Scott Mao, University of Pittsburgh; Julia Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Monday PM
Room: Asia 1
March 12, 2012
Location: Dolphin Resort

Session Chairs: Ting Zhu, Georgia Institute of Technology; Christopher Weinberger, Sandia National Laboratory

2:00 PM Invited
Modeling Dislocation Nucleation and Strength in Nanowires and Nanopillars: Andrew Jennings; Christopher Weinberger; Julia Greer; California Institute of Technology; Sandia National Labs

2:30 PM Invited
Interface-Facilitated Twinning/De-Twinning: Jian Wang; Nan Li; Irene Beyerlein; Nathan Mara; Amit Misra; Los Alamos National Laboratory

3:00 PM
Revealing the Failure Mechanisms in Nanomaterial Electrodes for Lithium Ion Batteries: Ting Zhu; Shan Huang; Xiaohua Liu; Jianyu Huang; Georgia Institute of Technology; Sandia National Laboratories

3:20 PM
Effects of Size and Microstructure in Compression of Nanoscale Metallic Pillars by Molecular Dynamics Simulation: Frederic Sansoz; University of Vermont

3:40 PM
Emission of Dislocations from Random Grain Boundaries in Nanocrystalline FCC Materials: Laura Patrick; Diana Farkas; Virginia Tech

4:00 PM Break

4:10 PM Invited
Size-Affected Behavior in Pure Compression of Micron-Sized Metallic Crystals – a Theoretical Study: Satish Rao; Dennis Dimiduk; Michael Uchic; Tripancine Parthasarathy; Jaafar El-Awady; Christopher Woodward; UES Inc.; Air Force Research Laboratory; Johns Hopkins University

4:40 PM
Nanoscale Investigation of Twinning and Detwinning during Strain-Path Changes in Magnesium: Meuhl Bhatia; Kiran Solanki; Amitava Moitra; CAVS - Center for Advanced Vehicular System; Arizona State University; Pennsylvania State University

5:00 PM
Molecular Dynamics Study of Deformation Mechanism Map of Nanostructured Metal: Shigenobu Ogata; Yunjiang Wang; Guo-Jie Gao; Osaka University

5:20 PM
Defect-Free Core/Shell Nanowires Based on New Misfit Strain Relaxation Mechanisms: Haijian Chu; Jian Wang; Caizhi Zhou; Irene Beyerlein; Yangzhou University; Los Alamos National Laboratory; Los Alamos National Laboratory

5:40 PM
Core Properties of Mixed Dislocations in BCC Iron: Emmanuel Cloutet; Mathilde Miguras; Mathieu Albagnac; SRMP, CEA Saclay

Mechanical Behavior Related to Interface Physics: Interface Evolution under Mechanical Loading: Experiment, Characterization, and Theoretical Modeling


Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiwei Shan, Xi’an Jiaotong University

Monday PM
Room: Oceanic 1
March 12, 2012
Location: Dolphin Resort

Session Chairs: Irene Beyerlein, Los Alamos National Laboratory; Huiling Duan, Peking University

2:00 PM Keynote
FCC/BCC Interface Evolution in Severe Plastic Deformation: Irene Beyerlein; Jian Wang; Nathan Mara; Nathan Mara; Los Alamos National Laboratory

2:30 PM Keynote
Thermo-Mechanical Solution of Film/Substrate Systems under Local Thermal Load and Its Applications: Huiling Duan; Peking University

3:00 PM
Computational and Experimental Investigation of the Interfacial Dynamic Compressive Behavior of High Strength Aluminum Alloys: William Lee; Praheek Shanbhag; Hanadi Salem; Mohammed Zikry; North Carolina State University; The American University in Cairo

3:15 PM
Deformation Mechanisms of Hall-Petch Strengthening in Bimodal Nanocrystalline Materials: Chandra Pande; Naval Research Laboratory

3:30 PM
Exploring and Exploiting Physical Properties of Molecular Crystals Subjected to Mechanical Milling: M. Teresa Carvajal; Yuyuan Jing; Andrew Otte; John Blendell; Purdue University

3:45 PM Break

3:55 PM Keynote
Characterization and Modeling of Heterogeneous Deformation near Grain Boundaries in Titanium and Ti-5Al-2.5Sn: Thomas Bieler; Darren Mason; Claudio Zambaldi; Philip Eisenlohr; Chen Zhang; Hongmei Li; Leyun Wang; Yiyi Yang; Carl Boehlen; Martin Cramp; Rozaliya Barabash; Wenjun Liu; Michigan State University; Albion College; Max-Planck-Institut für Eisenforschung; Oak Ridge National Laboratory; Argonne National Laboratory
MONDAY PM

4:25 PM Keynote
Phase Field Modeling for the Effects of Coherency Stress and Vacancy Source/Sinks on the Interface Sharpening and Intermixing Rate in Coherent Nano-Multilayers: Haibo Wan; Yao Shen; Xuejuan Jin; 'Shanghai Jiao Tong University

4:55 PM

5:10 PM
Chemical Changes Underlying Aging of Silica in Nano-mechanical Contacts: Yun Liu; Izabela Szlufarska; 'University of Wisconsin - Madison

5:25 PM
Interfacial Response of Friction-Welded 304-Stainless Steel and 6061-Al in Tension: Cheng Liu; Manuel Lovato; William Blumenthal; 'Los Alamos National Laboratory

Mechanical Performance of Materials for Current and Advanced Nuclear Reactors: Mechanical and Small-Scale Testing of Reactor Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberson, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, LANL

Monday PM  Room: Swan 1
March 12, 2012  Location: Swan Resort

Session Chairs: Greg Oberson, Nuclear Regulatory Commission; Nick Barbosa, NIST

2:00 PM Invited
A Perspective on Current Challenges in Development and Application of Uniaxial Micro-scale Testing to Characterize the Mechanical Properties of Materials: Paul Shade; Michael Uchic; Dennis Dimiduk; 'Air Force Research Laboratory

2:30 PM Invited
Benefits and Challenges of Small Scale Materials Testing for Nuclear Application: Peter Hosemann; Daniel Kiener; Stuart Maloy; Jenny Martus; 'UC Berkeley; 'Montanuniversitat leoben; 'LANL

3:00 PM
Compatibility of MYRRAH Candidate Structural Materials with Lead-Bismuth Eutectic Environment: Effect of Strain Rate and Low Dissolved Oxygen Concentration: Guater Coen; Joris Van den Bosch; Serguei Gavrilov; 'SCK-CEN

3:20 PM
Mechanical Testing of Nuclear Materials Using a MEMS Approach: Nicholas Barbosa; David Read; 'National Institute of Standards & Tech

3:40 PM
Grain Size Effects in Micro-Scale Tensile Testing of 316L Stainless Steel: Whitney Poling; Nicholas Barbosa; Kip Findley; David Read; 'Colorado School of Mines; 'National Institute of Standards and Technology

4:00 PM Break

4:20 PM
Small Specimen Testing for Evaluating Radiation-Induced Changes in Mechanical Properties of Structural Reactor Materials at High Irradiation Doses: Ellen Rabenberg; Kyle Knori; Brian Jaques; Bulent Sencer; Darryl Butt; F.A. Garner; 'Boise State University; 'Idaho National Laboratory; 'Radiation Effects Consulting

4:40 PM
Study of Size and Irradiation Effects on Mechanical Properties of Silicon Carbide Micropillars: Chanson Shin; Hyung-Ha Jin; Dong-Jin Kim; Junhyun Kwon; 'Korea Atomic Energy Research Institute

5:00 PM
Multi-Axial Mechanical Behavior of Zircaloy-4 and Effect on Initial Texture: Akawat Siriruk; Matthew Kant; Dayakar Penumadu; 'Elena Garlea; 'University of Tennessee; 'Y-12 National Security Complex

Nanocomposites: Processing of Nanocomposites I
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofer, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Monday PM  Room: Swan 8
March 12, 2012  Location: Swan Resort

Session Chairs: Brandon Howe, Air Force Research Laboratory; Garth Wilks, Air Force Research Laboratory

2:00 PM
Development of Al and Co Nanowires by the Method of Phase Separation: Tanjore Jayaraman; Yuan Tian; Jeremy Anderson; Jeffrey Shield; 'University of Nebraska

2:20 PM
Thermal Modeling of Carbon Nanotube Growth Experiments: Kevin Maxwell; Benji Maruyama; Jaimie Tiley; 'US Air Force Research Laboratory

2:40 PM
Boron Nitride Nanotube Reinforced Aluminum Nanocomposites: Debrupa Lahiri; Virendra Singh; Mingdong Bao; Luhua Li; Sudipta Seal; Ying Chen; Arvind Agarwal; 'Florida International University; 'University of Central Florida; 'Deakin University

3:00 PM
Fabrication of Aluminum Matrix Composite Reinforced by Intermetallic Compounds of Various Nano/Micro-Architectures: Can Zhu; Yufeng Wu; Gup-Yong Kim; 'Iowa State University

3:20 PM Break

3:40 PM Invited
From Hard Coatings to Thermoelectrics: Effects of Nanostructure on Fundamental Physical Properties of Hf1-xAlxN Alloys: Brandon Howe; Andrey Voevodin; Joseph Greene; Ivan Petrov; 'Air Force Research Laboratory; 'University of Illinois

4:20 PM
Formation of Nano Dispersed Ceramic-Metallic Composite Coatings: Ratan Saha; M Farrokhzad; T Khan; 'University of Calgary
4:00 PM
Microtruss Cellular Nanocomposites: Khaleed Abu Samkh; Guojie Huang; Milan Skocic; Hatem Zurob; David Embury; Olivier Bouaziz; Glenn Hibbard; University of Toronto; McMaster University; Grenoble Institute of Technology; ArcelorMittal Research

5:00 PM
Manufacturing and Characterization of an Auxetic Composite: Fu-Fen Chiung; Stony Brook University

5:20 PM
Discarded Ultrafine Particulate Carbonaceous Materials Used as Reinforcers of Rubber Vulcanized Products: Guillermo Martin-Cortes; Fabio Esper; Luiz Saldrio Galvao Dantas; Wildor Hennessy; Francisco Valenzuela-Diaz; Universidade Esta\c{c}do de S\c{a}; Bentonisa-Bentonita do Nordeste S.A.; Polytechnic School-University of Sao Paulo

5:40 PM
Properties of Additional Reinforcers Materials Used to Complement NAOB – A Rubber / Organoclay Nanocomposite Material: Fabio Esper; Guillermo Martin-Cortes; Luis Saldvio Dantas; Adriana Cutrim; Wildor Hennessy; Francisco Valenzuela-Diaz; Universidade Esta\c{c}do de S\c{a}; Bentonisa-Bentonita do Nordeste S.A.; Escola Polit\c{e}cnica da Universidade de Sao Paulo

Neutron and X-Ray Studies of Advanced Materials V: Centennial: In Honor of Dr. Gabrielle Long
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory, Xiun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Monday PM
March 12, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Lyle Levine, NIST; Andrew Allen, NIST

2:00 PM Introductory Comments Lyle Levine

2:05 PM Keynote
Microstructural Changes in Nanotwinned Cu Resulting from Unidirectional and Reversed High Pressure Torsion: C. Shute; Y. Liao; K. Tsuchiya; Y. Zhu; A. Hodge; T. Barbee; Julia Weertman; Northwestern University; National Institute of Materials Science; North Carolina State University; University of Southern California; Lawrence Livermore National Laboratory

2:30 PM Invited
The Ultra-Small Angle X-Ray Scattering Instrument (USAXS) - Delivering Unique Science for More Than 25 Years: Jan Ilavsky; Peter Jemian; APS, Argonne National Laboratory

2:50 PM Invited
Small-Angle Neutron Scattering Studies of Cement Hydration: Andrew Allen; Jeffrey Thomas; Hamlin Jennings; NIST; Schlumberger-Doll Research; MIT

3:10 PM
Ultra-Small-Angle X-Ray Scattering—X-Ray Photon Correlation Spectroscopy Studies of Equilibrium and Nonequilibrium Dynamics: Fan Zhang; Andrew Allen; Lyle Levine; Jan Ilavsky; Gabrielle Long; National Institute of Standards and Technology; Argonne National Laboratory

3:25 PM Invited
Probing Materials’ Reactivity Using X-Ray Pair Distribution Function Methods: Karen Chapman; Argonne National Laboratory

3:45 PM Invited
The Many Facets of Guinier-Preston Zones in Al-Rich Al-Ag: Gernot Kostorz; ETH Zurich

4:05 PM Break

4:10 PM
The Bonse-Hart Ultra-Small-Angle Scattering Camera Worldwide: Current Status: Pete Jemian; Argonne National Laboratory

4:25 PM Invited

4:45 PM Invited
Interrelation between Grain-Size-Induced and Strain-Induced Broadenings of X-Ray Diffraction Profiles: What We Can Learn from It about Nano-Structured Materials?: Emil Zolotyaybko; Technion

5:05 PM Invited
Studies of the Early Stages of Temperature Induced Glass Devitrification: Wim Bras; G Neville Greaves; Simon Clark; Martin Kunz; Vladimir Martis; Sabysachi Sen; Netherlands Organization for Scientific Research; University of Wales; Lawrence Berkeley Laboratory; University College London; UC Davis

5:25 PM
Directly Imaging Microstructures Using Ultra-Small-Angle X-Ray Scattering: Lyle Levine; Gabrielle Long; Fan Zhang; Jan Ilavsky; National Institute of Standards and Technology; Advanced Photon Source

5:40 PM Invited
Measurement of S(q) as q \rightarrow 0 in Amorphous Si: Gabrielle Long; Ruobing Xie; Steven Weigand; Simon Moss; Sjoerd Roorda; Salvatore Torquato; Paul Steinhardt; Argonne National Laboratory; University of Houston; Université de Montréal; Princeton University
**Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Studies of Mechanical Properties and Effects of Current II**

*Sponsored by:* The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

*Program Organizers:* Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central University; Laura Turbini, Research in Motion; Tae-Kyu Lee, Cisco Systems; Govindarajan Muralidharan, Oak Ridge National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

**Monday PM**

1:30 PM

**Current Stressing**

Irregular Cu Cathode Dissolution in Solder Joints under Electron

4:20 PM

Robert Kao1; 1Department of Materials Science & Engineering, National Metal Research; 2University of Illinois

Chen1; 1Chung-Kung University, Tainan, Taiwan

Yi-Shao Lai 3; 1National Chiao Tung University; 2National Tsing Hua University

Masaru Fujiyoshi2; King-Ning Tu1; 1UCLA; 2Hitachi Metals, Ltd.

Fay Hua2; J.W. Morris1; 1U.C. Berkeley; 2Intel Corporation

**Crowding and Joule Heating Effects of Electromigration in Flip-chip Interconnects**

Influence of Cu Column Under-Bump-Metallizations on Current Crowding and Joule Heating Effects of Electromigration in Flip-chip Solder Joints: *Yu-Chun Liang*1; W. A. Tsao1; Chih Chen1; Da-Jeng Yao2; Yi-Shao Lai1; 1National Chiao Tung University; 2National Tsing Hua University; 3Central Laboratories, Advanced Semiconductor Engineering, Inc.

**Monday PM**

Room: Swan 9

March 12, 2012

Location: Swan Resort

**Session Chair:** Tae-Kyu Lee, Cisco Systems

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**Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XI: Phase Equilibria and Transformations of the Pb-free Solders and Thermoelectric Materials**

*Sponsored by:* The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee

*Program Organizers:* Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shih-Kang Lin, University of Wisconsin – Madison

**Monday PM**

Room: Swan 10

March 12, 2012

Location: Swan Resort

**Session Chairs:** Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg
3:35 PM Break

3:50 PM Invited
Materials for HT Lead Free Soldering and Development of the Thermodynamic Database for Relevant Materials: Alen Koupati1; Alan Dinsdale1; Andrew Watson1; Jan Vrestad; Adela Zemanova1; Pavel Broz1;
1Institute of Physics of Materials, ASCR; 2National Physical Laboratory.; 3Institute for Materials Research, University of Leeds; 4Department of Chemistry, Masaryk University

4:10 PM
Time-Temperature-Transformation Diagrams of High Purity Powdered Tin: Kazuhiko Nogita1; Stuart McDonald1; Jonathan Read1; Shoichi Suegama1; 1The University of Queensland; 2Nihon Superior Co. Ltd.

4:25 PM
Thermoelectric Materials Design Based on Phase Separation between Half-Heusler MnSn and Heusler M(Ni,Co)Sn (M = Hf, Zr): Yoshihito Kimura1; Naoko Katou1; Yaw-Wang Chai1; 1Tokyo Institute of Technology

4:40 PM
Diffusion Mobilities in the Face Centered Phase in the Ag – Cu – In – Sn System: Wojciech Gierloka1; Md. Azizul Haque1; 1YuanZe University

4:55 PM
Evaluation of Diffusion Barrier between SAC305 and Tellurium: Chang-Yen Ko1; Albert T. Wu1; Tai-Yin Lin1; 1National Central University Dep. Chemical and Materials Engineering

Processing to Control Morphology and Texture in Magnetic Materials: Processing to Enhance Performance in Rare Earth Permanent Magnets
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Magnetic Materials Committee
Program Organizers: Matthew Kramer, Iowa State University; Mike McHenry, Carnegie Mellon University; David Laughlin, Carnegie Mellon University; Jinfang Liu, University of Virginia; Ivan Skorvanek, Institute of Experimental Physics

Monday PM  Room: Europe 10  Location: Dolphin Resort

Session Chairs: Matthew Williard, Naval Research Laboratory; Oliver Gutleisch, IFW Dresden

2:00 PM Invited
Advanced Processing and Microstructure of High Performance Permanent Magnets: Oliver Gutleisch1; Thomas Woodcock1; Konrad Güth1; Juliane Thielsch1; Martina Moore1; Simon Sawatzki1; 1IFW Dresden

2:25 PM Invited
Restructuring of Grain Boundaries of Sintered NdFeB Magnets: Mi Yan1; 2Zhejiang University

2:50 PM
Investigation of a Unique Texturing Mechanism in Ag-Containing RE, Fe, Bi Alloys: Nathaniel Oster1; Daniel Cavanaugh1; Kevin Dennis1; R. McCallum1; Matthew Kramer1; Iver Anderson1; 1Iowa State University; 2Ares Laboratory

3:05 PM
Thermodynamics Effect of Magnetic Field on the Solidification of Fe-Nd Eutectic: Sophie Rivairoard1; Eric Beauvignon1; Thomas1; 1CNRS

3:20 PM
Studies of Anisotropic MRE-Fe-B Magnets Fabricated by Hot Deformation in a Vacuum Hot Press (MRE=Nd+Y+Dy): Wei Tong1; Kevin Dennis1; Nathaniel Oster1; Matt Kramer1; Iver Anderson1; Ralph McCallum1; 1Iowa State University

3:35 PM Break

3:55 PM Invited
Effect of Particle Size on the Coercivity of R-Fe-B (R=Nd, Pr) Powders Prepared by Surface-Activated Ball Milling: Nilay Gunduz Akdogan1; Dan Neil3; Chris Brown4; Wanfeng Li5; Dimitris Niarchos5; George Hadijipanayis5; 1University of Delaware; 2NCSR "Demokritos"

4:20 PM Invited
Fabrication of Anisotropic Nanostructured Rare-Earth Bonded Magnets: J.P. Liu1; 1University of Texas-Arlington

4:45 PM Invited
Textured Polycrystalline Permanent Magnet Nanoflakes: Jinfang Liu1; Baozhi Cui1; 1Electron Energy Corporation

5:10 PM
Novel Sm-Fe-N Nanoflakes with High Coercivities: Nilay Gunduz Akdogan1; Wanfeng Li5; Alexander Gabay1; George Hadijipanayis5; 1University of Delaware

5:25 PM
Cluster Synthesis, Direct Ordering and Alignment of Rare-Earth Transition-Metal Nanomagnets: Balamurugan Balasubramanian1; Ralph Skomski1; Jeffrey Shield1; George Hadijipanayis1; David Sellmyer1; 1University of Nebraska; 2University of Delaware

Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Current Activated and Conventional Sintering
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Fernand Marquis, Naval Postgraduate School; John Meyer, Iowa State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

Monday PM  Room: Oceanic 2  Location: Dolphin Resort

Session Chair: Javier Garay, University of California-Riverside

2:00 PM Invited
Development of a Simple Empirical Model for Current Activated Pressure Assisted Densification: J. Garay1; A. Dupuy1; 1UC Riverside

2:25 PM Invited
Issues in Transforming SPS (FAST) into a Viable Manufacturing Solution: James Sears1; 1South Dakota School of Mines & Technology

2:50 PM
Advances in Current Activated Tip-Based Sintering (CATS): Ahmed El Desouky1; Kee Moon1; Sam Kassegne1; Joanna McKittrick1; Khaled Morsi1; 1SDSU; 2UCSD

3:05 PM
Low-Thermal Load Consolidation of Sm-Fe-N Flake Powder by Combination of Cyclic Compression and Current Sintering: Kenta Takagi1; Hiroyuki Nakayama1; Kimihiro Ozaki1; 1National Institute of Advanced Industrial Science and Technology (AIST)
3:20 PM
Fabrication of TiN / Fe-Al Cermet from Mixture of TiN, Fe and Al Powders: Hirohiko Nakayama; Kimihiro Ozaki; Keizo Kobayashi; 'National Institute of Advanced Industrial Science and Technology

3:35 PM Break

3:50 PM Invited
Liquid Phase Sintering of NiTi: David Dunand; 'Northwestern University

4:15 PM
The Effect of Powder Morphology on the Sintering Behavior of Ti and Ti Ally Powders: Wei Chen; Yukinori Yamamoto; William Peter; Michael Clark; Stephen Nunn; Jim Kiggans; Thomas Muth; Ryan Dehoff; Craig Blue; Brian Fuller; Kamal Akhtar; 'Oak Ridge National Laboratory; 'Cristal US, Inc./International Titanium Powder

4:30 PM
Transparent Polycrystalline Alumina Obtained by SPS: Single and Double Doping Effect: Burcu Apak; Halide Esra Kanbur; Esra Ozkan Zayim; Gultekin Goller; Onuralp Yucel; Filiz Cinar Sahin; 'Istanbul Technical University

4:45 PM
Effect of TiC Addition on Sintering Behavior of ZrC: Burak Acicbe; Ipek Akin; Filiz Sahin; Onuralp Yucel; Gultekin Goller; 'Istanbul Technical University

5:00 PM
Sintering of Nanocrystalline Tungsten Powder: William de Rosset; 'Army Research Laboratory

5:15 PM
Mechanical Properties of Spark Plasma Sintered ZrC-SiC Composites: Sumbule Sagdic; Ipek Akin; Filiz Sahin; Onuralp Yucel; Gultekin Goller; 'Istanbul Technical University

6:00 PM
In Situ Composite of (Mg2Si)/Al-Si-Cu Fabricated by Squeeze Casting: Huseyin Lus; Gokhan Ozer; Kerem Guler; 'Yildiz Technical University

7:00 PM
An Investigation on the Capability of Equal Channel Angular Pressing for Consolidation of Aluminum and Aluminum Composite Powder: Reza Derakhshandeh Hashemi; Ahmad Jenababi Jahromi; 'Fars Science and Research Branch, Islamic Azad University; 'Shiraz University

8:00 PM
Effect of Core-shelled Nanoparticles of Carbon-Coated Nickel on Magnesium: Yi Sun; Hongseok Choi; Hiromi Konishi; 'Yadim Pikhiyovich; Robert Hathaway; Xiaochun Li; 'University of Wisconsin Madison; 'Oshkosh Corporation

8:45 PM Break

9:00 PM
Microstructural Control during In-Situ Synthesis of (AIN+Mg2Si)/Mg Matrix Composites: Xiaofei Ma; David Johnson; Kevin Trumble; 'Purdue University

10:15 PM
Optimization of Tensile Strength of Friction Stir Welded Al-(10 to14 wt.%) TiB2 Metal Matrix Composites: Santhiyagu Joseph Vijay; Natarajan Murugai; Siva Parameswaran; 'Karunya University; 'Coimbatore Institute of Technology; 'Texas Tech University

10:45 PM
Ultrasonically Processed AS41 Magnesium Alloy Matrix Composites: Neeraj Srivastava; Gajanandan Chaudhuri; S.K. Nath; 'IIT Roorkee

5:00 PM
Science and Engineering of Light Metal Matrix Nanocomposites and Composites: Nanocomposites and Composites
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division
Program Organizers: Xiaochun Li, University of Wisconsin-Madison; Alan Luo

Monday PM  Room: Macaw 2
March 12, 2012  Location: Swan Resort

Session Chair: Hongseok Choi, University of Wisconsin-Madison

2:00 PM
Uniform Dispersion of Nanoparticles in Metal Matrix Nanocomposites: Liangyi Chen; Hongseok Choi; Axel Fehrenbacher; Jiaquan Xu; Chao Ma; Xiaochun Li; 'University of Wisconsin Madison

2:20 PM
Effect of Particle Size Distribution on the Response of Particle Reinforced Metal Matrix Composites: Brandon McWilliams; KT Rameshi; Chian Yen; 'US Army Research Laboratory; 'Johns Hopkins University

2:40 PM
Microstructure and Mechanical Properties of Gas Atomized CP Ti Containing Y2O3 and TiB: Vincent Hammond; Sesh Tamirisaikanala; Brady Butler; William Hanusiak; 'Army Research Laboratory; 'FMW Composite Systems

3:00 PM
An Investigation of the Capability of Equal Channel Angular Pressing for Consolidation of Aluminum and Aluminum Composite Powder: Reza Derakhshandeh Hashemi; Ahmad Jenababi Jahromi; 'Fars Science and Research Branch, Islamic Azad University; 'Shiraz University

3:20 PM
Effect of Core-shelled Nanoparticles of Carbon-Coated Nickel on Magnesium: Yi Sun; Hongseok Choi; Hiromi Konishi; 'Yadim Pikhiyovich; Robert Hathaway; Xiaochun Li; 'University of Wisconsin Madison; 'Oshkosh Corporation

3:40 PM Break

4:00 PM
Microstructural Control during In-Situ Synthesis of (AIN+Mg2Si)/Mg Matrix Composites: Xiaofei Ma; David Johnson; Kevin Trumble; 'Purdue University

4:15 PM
In Situ Composite of (Mg2Si)/Al-Si-Cu Fabricated by Squeeze Casting: Xianjuan Wang; K.B. Nie; K Wu; X.S Hu; M.Y Zheng; 'Harbin Institute of Technology; 'Harbin Institute of Technology

4:35 PM
SiCp/Mg-Zn-Ca-Mn Mg Matrix Composites Fabricated by Stir Casting: Xiaojun Wang; K.B. Nie; K Wu; X.S Hu; M.Y Zheng; 'Harbin Institute of Technology; 'Harbin Institute of Technology

4:55 PM
Ultrasonically Processed AS41 Magnesium Alloy Matrix Composites: Neeraj Srivastava; Gajanandan Chaudhuri; S.K. Nath; 'IIT Roorkee

5:15 PM
Optimization of Tensile Strength of Friction Stir Welded Al-(10 to14 wt.%) TiB2 Metal Matrix Composites: Santhiyagu Joseph Vijay; Natarajan Murugai; Siva Parameswaran; 'Karunya University; 'Coimbatore Institute of Technology; 'Texas Tech University

Solar Cell Silicon: Silicon Production
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Arjan Ciftja, SINTEF; Gabriella Tranell, Norwegian University of Science and Technology; Gregory Hildeman, Consultant; Shadia Ikhmayies, Al Isra University

Monday PM  Room: Europe 7
March 12, 2012  Location: Dolphin Resort

Session Chair: Arjan Ciftja, SINTEF Materials and Chemistry

2:00 PM Introductory Comments

2:05 PM
An Investigation into the Electrochemical Production of Si by the FFC Cambridge Process: Emre Ergil; Ishak Karakaya; Metehan Erdogan; Fuat Erdem; 'Aselsan Inc.; 'Department of Metallurgical and Materials Engineering, Middle East Technical University

2:30 PM
Distribution of Boron and Phosphorus during Alloying and Slag Treatment of Metallurgical Grade Silicon: Yulia Meteleva-Fischer; Yongxiang Yang; Rob Boom; Bert Kraaijveld; Henk Kuntzel; 'Materials innovation institute/TU Delft; 'Delft University of Technology; 'Solwaf B.V.
2:50 PM
Experimental and Molecular Simulation Studies of Silicon Production in an Microwave Furnace: Jan-Philipp Mai; Gabriele Raabe; Juergen Koehler; JPM Silicon GmbH; University of Braunschweig - Institute of Technology

3:10 PM Break

3:30 PM
Improved Material Efficiency in the Si Deposition from SiHCl3 under Mesoplasma Condition: Makoto Kambara; Toyonobu Yoshida; The University of Tokyo

3:50 PM
Impurities Distribution between SiO Gas and Reactant Materials in a Silicon Furnace: Elena Dal Martello; Gabriella Tranell; Oleg Ostrovski; Guangqing Zhang; Ola Raaness; Kai Tang; NTNU; UNIS; SINTEF

4:10 PM
The Kinetics of Boron Removal during Slag Refining in the Production of Solar-Grade Silicon: Egil Krystad; Shuang Zhang; Gabriella Tranell; NTNU

4:30 PM
Raman Spectroscopic Study of the Structural Modifications Associated with the Addition of Calcium Oxide and Boron Oxide to Silica: Jeff Kline; Merete Tangstad; Gabriella Tranell; NTNU

4:50 PM
Structure Silicon Deposits Obtained by Electrolysis SiO2 in the Chloride-Fluoride Melts: Oleg Chemezov; Aleksey Apisarov; Andrey Isakov; Yurii Zaikov; Institute of High-Temperature Electrochemistry Russian Academy of Science Ural Division

Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Morphological Stability


Program Organizers: Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schmitz, University of Münster; David Seidman, Northwestern University

Monday PM
Room: Oceanic 7
Location: Dolphin Resort

Funding support provided by: Los Alamos National Laboratory

Session Chairs: David Seidman, Northwestern University; Emmanuelle Marquis, University of Michigan

2:30 PM Invited
Evolution of Hetero-Interfaces in Alloys Forced by Severe Plastic Deformation: Pascal Bellon; Robert Averback; Nhon Vo; Yin Ashkenazy; Daniel Schwen; Elvan Ekiz; Tim Lach; Mohsen Pouryazdan; Horst Hahn; University of Illinois; Karlsruhe Institute of Technology

3:00 PM
Ab Initio Study of Competitive Coherent Hydride Formation in Zirconium Alloys: Ludovic Thuinet; Rémy Besson; UMET

3:20 PM
Compositional Evolution of Q-Phase Precipitates in an Al-Alloy via 3-D Atom-Probe Tomography: Aniruddha Biswas; David Seidman; Bhabha Atomic Research Centre; Northwestern University

3:40 PM Break

3:45 PM
Polyhedron Analysis for Structure Identification in Atomistic Simulations: Thomas Schablitzki; Jutta Rogal; Ralf Drautz; Ruhr University Bochum

4:05 PM
Investigation of Interfacial Precipitation and Segregation in Ultra High Strength Steel with TEM and 3D Atom Probe: Matthew Hartshorne; Paul Novotny; Michael Schmidt; David Seidman; Mitra Taheri; Drexel University; Carpenter Technology Corporation; Northwestern University

4:25 PM
Fabrication and Characterization of Oriented Fe-Y2Ti2O7 Interfaces: Implications to the Development and Optimization of Nanostructured Ferritic Alloys: Tiberiu Stan; Yuan Wu; G. Robert Odette; Kurt Sickafus; Hanna Dapkowska; Bruce Gaulin; University of California Santa Barbara; University of Tennessee; McMaster University

4:45 PM
Atmospheric Simulations of Cu Growth on ZnO Surfaces Using COMB Potentials: Yu-Ting Cheng; Tao Liang; Bryce Devine; Beverly Hinojosa; Aravind Asthagiri; Simon Phillpot; Susan Sinnott; University of Florida; The Ohio State University

5:05 PM
Microscopic Study of Cu-based Dilute Cu-Nb-W Ternary System: Xuan Zhang; Pascal Bellon; Robert Averback; UIC

5:25 PM
Characterization of Reaction Layers in Mn1.5Co1.5O4 Coated Fuel Cell Interconnects: Neal Magdefrau; Lei Chen; John Yamanis; Ellen Sun; Mark Aindow; United Technologies Research Center; University of Connecticut

2:00 PM Invited
Precipitates in Al-Cu Alloys Revisited: Donald Siegele; Aniruddha Biswas; Christopher Wolverton; David Seidman; University of Michigan; Bhabha Atomic Research Center; Northwestern University
Symposium in Memory of Patrick Veyssiére: Understanding the Mechanisms Controlling Plastic Flow: Plastic Flow
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division
Program Organizers: Georges Saada, LEM CNRS ONERA; Dennis Dimiduk, Air Force Research Laboratory; Hael Mughrabi, University Erlangen-Nuremberg; Haruyuki Inui, Kyoto University

Monday PM  Room: Europe 6
March 12, 2012  Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: D. Caillard, CEMES/CNRS; M. Niewczas, McMaster University

2:00 PM Invited
TEM Deposition Maps: Microstructure & Mechanical Behavior: Muriel Veron1; Edgar Rauch; 1SIMaP

2:30 PM Invited
Plastic Flow Heterogeneity and Yielding Instabilities: Georges Saada1; Tomas Krumi2; I. Kubena; 1LEM CNRS ONERA; 2 Institute of Physics of Materials Materials ; 3 Institute of Physics of Materials Materials

2:55 PM Invited
A Dislocation-Based Model for Interpretation of Strain Path Changes in Steel and Magnesium: Carlos Tomé1; Kohshiroh Kitayama; Edgar Rauch; Gabriela Vincze; Jose Gracio; Frederic Barlat; 1Los Alamos National Laboratory; 2University of Aveiro; 3Universite de Grenoble/ CNRS Grenoble; 4Pohang University of Science and Technology

3:25 PM Break

3:40 PM Invited
Finite Element Implementation of a Self-Consistent Polycrystal Plasticity Model: Application to α-Uranium: Marko Knezevic1; Rodney McCabe2; Ricardo Lebensohn3; Carlos Tomé3; Bogdan Mihaila3; 1Los Alamos National Laboratory

4:00 PM Invited
Modeling Plasticity and Cracks at the Atomic Scales within a Continuum Framework: Pierre-Antoine Geslin1; Benoit Appolaire2; Alphonse Fine1; 1LEM ONERA / CNRS ; 2LEM ONERA / CNRS

4:30 PM Invited
Spectral Elasto-Viscoplastic Formulation for the Prediction of Micromechanical Fields with Direct Input and Validation from Voxelized Data: Ricardo Lebensohn1; Jette Oddershede2; Grethe Winther2; 1Los Alamos National Laboratory; 2Riso DTU

4:50 PM Invited
Binary and Ternary Interaction Coefficients in BCC Metals and Single Crystal Strain Hardening: Roman Madec4; Ladislas Kubin5; 1CEA, DAM, DIF; 2LEM (CNRS/ONERA)

Titanium: Advances in Processing, Characterization and Properties: Processing and Process Modeling II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: Adam Pilchak, US Air Force Research Laboratory; Christopher Szczepanski, US Air Force Research Laboratory; Vasisht Venkatesh, Pratt & Whitney

Monday PM  Room: Oceanic 3
March 12, 2012  Location: Dolphin Resort

Session Chairs: Michael Glaviczik, Rolls-Royce Corporation; Vasisht Venkatesh, Pratt & Whitney

2:00 PM
Effect of Processing on Microstructure and Mechanical Properties of Ti-6Al-4V Fabricated Using Electron Beam Melting (EBM): Nikolas Hrabe1; Ryan Kircher; Timothy Quinn1; 1NIST; 2Medical Modeling

2:20 PM
Surface Tension and Viscosity of Industrial Ti-alleys Measured by the Oscillating Drop Method under Reduced Gravity Conditions: Rainer Wunderlich1; Hans-Joerg FECHT1; 1Universitaet Ulm

2:40 PM
Fractographic Characterization of Electron Beam Freeform Fabrication [EBF3] Produced Ti-6Al-4V: Cynthia Lach1; Robert Hafley1; 1NASA Langley Research Center

3:00 PM
Microstructure and Mechanical Properties of Ti-6Al-4V Fabricated by Selective Laser Melting: Marco Simonelli1; Yau Yau Tse1; Chris Tuck1; 1Loughborough University

3:20 PM
Computational Modeling of Aluminum Evaporation and Flow in Electron Beam Button Melting of Ti-6Al-4V: Zhongkui Zhang1; Carl Reilly1; Daan Maijer1; Steve Cockcroft1; 1The University of British Columbia

3:40 PM
Computational Modeling of the Dissolution of Alloying Elements: Jun Ou1; Aniruddha Chatterjee1; Daan Maijer1; Steve Cockcroft1; Carl Reilly1; 1The University of British Columbia

4:00 PM Break

4:10 PM
Cost Effective and Eco-Friendly Process for Preparation of Wrought Pure Ti Material via Direct Consolidation of TiH2 Powders: Takanori Mimoto1; Nozomi Nakonishi1; Thotsaphon Threruirapapong1; Junko Umeda1; Katsuyoshi Kondoh1; 1Osaka University

4:30 PM
The Effect of Micro-Alloying on the Preform Fabrication of Titanium Alloys and the Forged Mechanical Properties: Ma Qian1; Y. F. Yang1; X. Wu1; S. D. Luo1; K. Xia2; C. J. Bettles3; G. B. Schaffer3; 1The University of Queensland; 2The University of Melbourne; 3Monash University

4:50 PM
Linear Friction Welding of Titanium Alloys – Processing, Characterisation and Properties: Hangyue Li1; Simon Bray3; Yina Guo1; Jiayun Jiang1; Robin Wilson1; Paul Bowen1; 1The University of Birmingham; 2Rolls-Royce plc
5:10 PM
Deformation Mechanisms in near-a titanium Friction Stir Welds:
Richard Fonda; Keith Knipling; Adam Pilchak; 'Naval Research Laboratory; 'Air Force Research Laboratory

5:30 PM
X-Ray Tomography of CP Titanium Friction Stir Welds Incorporating Fiducial Markers: Jennifer Wolf; Richard Everett; Stephen Szpara; 'Naval Surface Warfare Center; 'Naval Research Laboratory

5:50 PM
Effect of Dual-Laser Beam Welding on Microstructure Properties of Thin-Walled 947-TiAl Based Alloy Ti-45Al-5Nb-0.2C-0.2B (TNB): Jie Liu; Volker Ventzke; Peter Staron; Heinz-Günter Brokmeier; Michael Oehring; Nikolai Kashaev; Norbert Huber; 'Institute of Materials Research, Helmholtz-Zentrum Geesthacht, Germany

Monday PM Room: Oceanic 5 March 12, 2012 Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport-McMoRan

Session Chair: Michael Moats, The University of Utah

2:00 PM
METTOP-BRX-Technology – Industrial Application: Christine Wenzl; Andreas Filzwieser; Stefan Konetschnik; 'METTOP GmbH

2:20 PM
Implementing Wireless Electrolytic Cell Monitoring System at Kennecott Utah Copper for Improved Operational Efficiency: Ari Rantala; Daniel Kim; 'Outotec (Finland) Oy, Finland; 'Rio Tinto Kennecott Utah Copper

2:40 PM
Autoclave Pressure Oxygeen Leaching Of Anodic Copper Slimes: Tracy Morris; Luis Navarro; 'ASARCO LLC

3:00 PM
Mechanism and Thermodynamics of Floating Slimes Formation: Brent Hiskey; 'University of Arizona

3:20 PM Break

3:30 PM
Detellurization Process of Copper Anodic Slimes Leach Liquor by Cementation of Tellurium Using Elemental Copper: Tracy Morris; Luis Navarro; Weldon Read; 'ASARCO LLC

3:50 PM
New Process of Precipitation of Sb and Bi from Copper Electrolytes with PO2: Gerardo Cifuentes; Jaime Simpson; Cristián Vargas; 'USACH; 'PropPipe Ltda.

4:10 PM
Study of Electrolyte Impurity Precipitates at the Kennecott Refinery: Justin McAllister; Daniel Kim; Shijie Wang; 'Rio Tinto

4:30 PM
Copper Refining Electrolyte Purification by the Use of Molecular Recognition Technology (MRT) for Bismuth Removal: Luis Navarro; Weldon Read; Tracy Morris; 'ASARCO LLC

4:50 PM
Optimizing a Cascading Liberator: Bradford Westrom; Omar Araujo; 'Freeport-McMoRan Copper & Gold

5:10 PM
Copper Electrorefining Impurity Evaluation: Michael Free; Justin McAllister; Urian Marshall; Megan Marshall; Daniel Kim; Shijie Wang; 'University of Utah; 'Kennecott Utah Copper, LLC

Monday PM Room: Swan 5 March 12, 2012 Location: Swan Resort

Session Chairs: Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

2:00 PM Invited
Austenitic Steels Strengthened by Nano-Scale Twins: K. Lu; Nairong Tao; 'Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

2:20 PM
Twinning Phenomena in Cryomilled Pure Mg and Mg-Al-Zn Alloy Nanocrystalline Powders: Baolong Zheng; Ying Li; Yizhang Zhou; Suveen Mathadhu; Enrique Lavermia; 'University of California, Davis; 'Los Alamos National Laboratory; 'U.S. Army Research Office

2:35 PM
An Elasto-Plastic Dislocation and Disclination Model for Small Scale Plasticity: Application to Grain Boundaries and Triple Junctions: Laurent Capolungo; 'Manas Upadhyay; Vincent Taupin; Claude Fresnengas; 'Georgia Institute of Technology; 'Universite Paul Verlaine

2:50 PM
Effect of Stacking Fault Energy on the Microstructural Evolution of Pure Cu and Cu-Al Alloys during Severe Plastic Deformation: Xianghai An; Shiding Wu; Zhefeng Zhang; Roberto Figueiredo; Nong Gao; Terence Langdon; 'Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; Department of Metallurgical and Materials Engineering; 'Materials Research Group, School of Engineering Sciences; Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California
3:05 PM  
Effect of Stacking Faults and Twin Boundaries on Grain Refinement Induced by High-Pressure Torsion: Yanbo Wang1; Xiaozhou Liao1; Yonghao Zhao2; Enrique J. Laverinia3; Simon P. Ringer4; Zenji Horita5; Terence G. Langdon6; Yuntian Zhu7; 1The University of Sydney; 2University of California; 3Kyushu University; 4University of Southern California; 5North Carolina State University

3:20 PM Invited  
Effects of Deformation Parameters and Stacking Fault Energy on Grain Refinement in Cu–Al Alloys Subjected to Plastic Deformation: Nairong Tao1; Y. Zhang1; K. Lu1; ‘Shenyang National Laboratory for Materilas Science Institute of Metal Research, Chinese Academy of Sciences

3:40 PM  
The Influence of Dislocation Density on Dislocation-Twin Boundary Interactions in Nanocrystalline Materials: Song Ni1; Yanbo Wang1; Xiaozhou Liao1; R.B. Figueiredo2; Hongqi Li3; S.P. Ringer4; T.G. Langdon5; Yuntian Zhu6; 1The University of Sydney; 2Federal University of Minas Gerais; 3Los Alamos National Laboratory; 4University of Southern California; 5Department of Materials Science & Engineering, North Carolina State University

3:55 PM  
Break

4:10 PM Invited  
Deformation Mechanism of Columnar-Grained Cu with Preferentially Orientated Nanoscale Twins: Lei Lu1; Institute of Metal Research, CAS

4:30 PM  
Deformation Twinning in Commercial Pure Titanium during Severe Plastic Deformation: Yanjun Li1; Yongjun Chen2; John Walmsley1; Hans Roven2; ‘SINTEF Materials and Chemistry; ‘Department of Materials Science and Engineering, NTNU

4:45 PM  
Mechanical Behavior of and Deformation Mechanisms in a Nanocrystalline Alloy: Ruslan Valiev1; Dmitry Gunderov4; Aleksander Lukyanov1; 1Ufa State Aviation Technical University

5:00 PM  
Grain Refinement in Pure Titanium Processed by Severe Plastic Deformation: Y. Chen1; Y. Li2; X. Xu3; J. Hjelen1; H. Roven1; 1NTNU; 2SINTEF; 3Jiangsu University

5:15 PM  
Grain Boundary Sliding in Ultra-Fine Grained 5083 Al: Ming-Je Sung1; Jung Hun Han2; Farghalli Mohame2; ‘University of California, Irvine

5:30 PM  
Structural and Mechanical Characterization of Nanostructured Al-1%Si Alloy Produced by Heavy Cold Rolling: Tianlin Huang1; Qingshan Dong1; Xu Gong1; Xiaoxu Huang2; Qing Liu2; ‘Chongqing University; ‘Riso National Laboratory for Sustainable Energy, Technical University of Denmark

5:45 PM  
Processing of Ultrafine-Grained Nickel by Dislocation Activities at Intermediate Dynamic Strain Rate: Microstructure Evolution and Mechanical Properties: Lukasz Farbaniec1; Guy Dirras1; Akrum Abdul-Latif1; 1LSPM - UPR3407 CNRS; ‘Laboratoire d’Ingénierie des Systèmes Mécaniques et des Matériaux
2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: 0-Dimensional Nanomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Terry Xu, UNC Charlotte

Tuesday AM
Room: Pelican 1
March 13, 2012
Location: Swan Resort

Session Chair: Terry Xu, University of North Carolina at Charlotte

8:30 AM Introductory Comments

8:35 AM Invited Computational Study on Nanoparticles in Catalysis: Da Hye Kim1; Hyun You Kim1; Ji Hoon Ryu1; Hyuck Mo Lee1; 1KAIST

9:00 AM Characterization of Metallic Nano Particles Synthesized by Electrical Wire Explosion Technique for Catalytic Application: Seung-Yub Lee1; Gwang-Yeob Lee2; Min-Ha Lee2; 1Columbia University; 2Korea Institute of Industrial Technology (KITECH)

9:30 AM Citrate Mediated Wet Chemical Synthesis of Fe Doped Nanoapatites: A Model for Singly Doped Multifunctional Nanostructures: Rajendra Kasinath1; Michael Klen1; Robert Uselman1; 1Montana Tech of the University of Montana; 2NIST-Boulder

9:50 AM Selective Electrocatalytic Activity of Ligand Stabilized Copper Oxide Nanoparticles: Christopher Matranga1; Douglas Kauffman1; Paul Ohodnicki1; Brian Kail1; 1US DOE- NETL

10:10 AM Break

10:25 AM Preparation of Colloidal Quantum Dot Nanocrystals for Analysis by Atom Probe Tomography: Sonal Padalkar1; Bhola Nath PaI1; Jennifer Hollingsworth1; Lincoln Lauhon1; 1Northwestern University; 2Los Alamos National Laboratory

10:45 AM Supercapacitive Properties of Hydrothermally Synthesized Co3O4 Nanostuctures: David Mitlin1; Huatao Wang1; Li Zhang1; 1University of Alberta and NINT NRC

11:05 AM Synthesis and Silica Encapsulation of Magnetite Nanoparticles for Biomedical Applications: Shampa Aich1; Pravin Dixit1; 1Indian Institute of Technology Kharagpur

2012 Symposium on Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Surfaces, Deposition, and Coatings


Program Organizers: Nitin Chopra. The University of Alabama; Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Jiyoung Kim, University of Texas at Dallas; Christopher Matranga, National Energy Technology Laboratory

Tuesday AM
Room: Pelican 2
March 13, 2012
Location: Swan Resort

Session Chairs: Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University

8:30 AM Microstructures and Performance of Sputter Deposited NiAl-Cr-Hf and NiAl-Cr-Zr Coatings: Joel Alfano1; Mark Weaver1; 1Univ of Alabama

8:50 AM New Trends in Superhydrophobic Coating Using PS/SiO2: Ariosvaldo Sobrinho1; Marcos Baracho1; Rômulo Navarro1; Felipe Mariz1; José Nascimento1; André Rodrigues1; 1UAEMA / UFCG; 2UFC/DEMA

9:10 AM Invited Production of SiC Using Thermal Plasma: M. Ramachandran1; Ramana Reddy1; 1The University of Alabama

9:45 AM Surface Nanostructuring of Steel 35 by Electrospark Machining with Electrodes Based on Tungsten Carbide and Added Al2O3 Nanopowder: Sergey Nikolenko1; Nikolay Syuy1; 1Institute of Materials Science, Khabarovsk Scientific Center, Far Eastern Branch, Russian Academy of Sciences

10:05 AM Break

10:25 AM Synthesis and Characterization of Oxide-Based Core/Shell Nanowires: Lyndon Smith1; Nitin Chopra1; 1The University of Alabama

10:40 AM Invited How and Why Do Whiskers Grow from Sn Coatings?: Eric Chason1; Fei Pei1; Nitin Jadhav1; 1Div of Engineering

11:10 AM Invited Flexible, Transparent, Conducting Films of Copper Nanowires: Benjamin Wiley1; 1Duke University
10:45 AM EFFECT OF MgO CONTENT ON MELTING FEATURES OF SiO2-CaO-MgO-Al2O3 Slag in Nickel Laterite Metallurgy: Xuewei Li1; Cheng Pan1; Chongqing University, China

11:00 AM INFERENCE OF SILICON CONTENT IN HOT METAL ON MINERALOGICAL CHARACTERIZATION AND PHYSICO-CHEMICAL PROPERTIES OF VANADIUM SLAG: Chongyang Zhao1; Bing Xie1; Xiaopeng Zhen1; Qingyun Huang1; Xie Zhang1; Chongqing University

11:25 AM A Model of Decarburization and Boil of Iron/Carbon Droplets: Mark Schwarz1; CSIRO

11:40 AM ANALYSIS OF INFLUENCE FACTORS ON THE MELTING POINT OF THE FREEZE SLAG INSIDE FLASH SMELTING FURNACE BRICKLESS REACTION SHAFT: Jinliang Wang1; Chuanfu Zhang2; Jiangxi University of Science and Technology, China; Central South University

Advances in Surface Engineering: Alloyed and Composite Coatings: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Srinivasa Bakshi, Indian Institute of Technology Madras; Arvind Agarwal, Florida International University

Tuesday AM Room: Macaw 1
March 13, 2012 Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited Chromium Nitride Coatings for Biological Applications: Aracely Rocha1; Liangxian Chen1; Chengming Li1; Hong Liang1; Texas A&M University; University of Science and Technology Beijing

9:00 AM Invited Development and Characterization of Aluminum Matrix In-situ Aluminum Di-borides Composites Coatings for Tribological Applications: Sudeep Ingole1; Rajeshwari Paluri1; Texas A&M University

9:25 AM A Nanoindentation Study of Laser Deposited Nickel-Based Carbide Metal Matrix Composite Coating: Samar Kalita1; Advanced Engineered Materials Center - University of North Dakota

11:40 AM Effect of MgO Content on Melting Features of SiO2-CaO-MgO-Al2O3 Slag in Nickel Laterite Metallurgy: Xuewei Li1; Cheng Pan1; Chongqing University, China

11:00 AM Influence of Silicon Content in Hot Metal on Mineralogical Characterization and Physico-chemical Properties of Vanadium Slag: Chongyang Zhao1; Bing Xie1; Xiaopeng Zhen1; Qingyun Huang1; Xie Zhang1; Chongqing University

11:25 AM A Model of Decarburization and Boil of Iron/Carbon Droplets: Mark Schwarz1; CSIRO

11:40 AM Analysis of Influence Factors on the Melting Point of the Freeze Slag Inside Flash Smelting Furnace Brickless Reaction Shaft: Jinliang Wang1; Chuanfu Zhang2; Jiangxi University of Science and Technology, China; Central South University

Advances in Surface Engineering: Alloyed and Composite Coatings: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Srinivasa Bakshi, Indian Institute of Technology Madras; Arvind Agarwal, Florida International University

Tuesday AM Room: Macaw 1
March 13, 2012 Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Introductory Comments
9:45 AM
In-Situ Synthesis of TiC/SiC/Ti3SiC2 Composite Coatings by Spark Plasma Sintering: Ashish Singh1; Sandip Harimkar1; Arvind Agarwal1; Srinivasa Bakshi2; David Virzi3; Anup Keshri3; 1Florida International University; 2IIT Madras

10:05 AM Break

10:20 AM
Microstructure and Wear Properties of Laser In-situ Formation of TiBx and TiC Titanium Composite Coatings: J. Liang; C S Liu; S Y Chen; C X Ren; 1Northeastern University; 2Northeastern University

10:40 AM
Surface Engineered CVD Diamond Coatings for Dry Machining Applications: Humberto Gomez1; Delcie Durham2; Kevin Chou2; Xingchong Xiao3; Michael Lukitsch3; Ashok Kumar3; 1University of the Norte; 2University of South Florida; 3The University of Alabama; 1General Motors R&D Tech. Center

11:00 AM
Creep Properties of Y-PSZ Coated 6063 Aluminum Alloy: Eray Erzi1; Cem Kahruman1; Suat Yilmaz1; 1Istanbul University

11:20 AM
Effect of Pre-Oxidation Treatments on the Mechanical Properties of (Ni,Pt)Al Systems Measured by Nanoindentation: Juan Alvarado-Orozco1; Alma Mora-Garcia2; Haide Ruiz-Luna; Haide Ruiz-Luna2; Luis Alberto Cáceres-Diaz3; John Garcia-Herrera2; Juan Muñoz-Saldaña2; Jose Ortiz-Merino2; Gerardo Trapaga-Martinez2; Ricardo Morales-Estrella2; Doug Konitzer2; Enrique Samaniego-Benitez2; 1Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional; 2Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional

11:40 AM
Contribution of Ti Addition to the Electronic Structure and Adhesion at the Fe2Al5/Fe Interface in 55%Al-Zn Coating: Guangxin Wu1; Yuling Ren1; Jieyu Zhang1; Kuochih Chou1; 1Shanghai University

Alumina and Bauxite: Red Mud Bauxite Residue

**Alumina and Bauxite: Red Mud Bauxite Residue**
**Sponsored by:** The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
**Program Organizer:** Benny Raahauge, FLSmidth

Tuesday AM  Room: Northern E3
March 13, 2012  Location: Dolphin Resort

**Session Chair:** Tim Laros, FLSmidth Salt Lake City

8:30 AM
Bauxite Residue Management: Ken Evans1; Eirik Nordheim2; Katy Tssemelis2; 1Rio Tinto Alcan; 2European Aluminium Association; 1International Aluminium Institute

8:50 AM
Tests with New Flocculant for Red Mud Decanting in Alunorte: Tatiani Santos1; Juracy Filho1; Américo Borges1; Humberto Lima1; Juarez Borges1; Frederico Giust2; Alexandre Rabaça2; 1Alunorte SA; 2SNF do Brasil

9:10 AM
Red Mud Filtration Test Results using AFP IV™ Automatic Filter Press: Manfred Bach1; 1FLSmidth

9:30 AM
Study on Dry-Method Volume Expansion Technology for Wet Red Mud Yard: Li Mingyang2; Xu Shutao2; Yi Xiaobing2; 1CHALIECO; 2CHALIECO

9:50 AM
ETI Aluminum Red Mud Characterization and Processing: Gokhan Demiri1; Sedat Arslan1; Bekir Celik1; Meral Baygul1; Carlos Enrique Suarez2; 1ETI Aluminyum; 2Hatch Associates Consultant Inc.

10:10 AM
Studies on Metal Flow from Khondalite to Bauxite to Alumina and Rejects from an Alumina Refinery, India: Birendra Mohapatra1; Barada Mishra1; Chittaranjan Mishra2; 1Institute of Minerals & Materials Technology(IMMT); 2Other

10:30 AM
Directions for Large Scale Utilization of Bauxite Residue: Andrey Panov1; Gennady KlIMENTENOK2; Gennadiy Podgorodetskiy3; Vladislav Gorbunov1; 1RUSAL Vami; 2RUSAL Engineering & Technology Centre; 3National University of Science and Technology “MISIS”

10:50 AM
Production of Pig Iron from NALCO Red Mud by Application of Plasma Smelting Technology: Purbha Makerjee1; Bhagyadhar Bhoi1; Chittaranjan Mishra2; Ramani Dash2; Bijay Satapathy2; Kalidas Jayasankar2; 1Institute of Minerals & Materials Technology(IMMT); 2National Aluminium Company Limited; 3Gandhi Institute of Engineering & Technology(GIET)

**Aluminium Processing: General**
**Sponsored by:** The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
**Program Organizers:** Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Edward Williams, Alcoa

Tuesday AM  Room: Europe 1
March 13, 2012  Location: Dolphin Resort

**Session Chairs:** Kai Karhausen, Hydro Aluminium Rolled Products; Edward Williams, Alcoa

8:30 AM Introductory Comments

8:35 AM
Finite Element Simulation Analysis of the Ultrasonic Vibration Forging of an Aluminum Cylinder Workpiece: Yanxiong Liu1; Qingyou Han1; 1Purdue University

8:55 AM
Refinement of Fe-Intermetallic Compounds by Caliber Rolling Process of Al-Mg-Si-Fe Alloys: Chakrishi Phongsulsathawan1; Hiroyasu Tezuka1; Tatsuo Sato2; Susumu Takamori2; Yoshiaki Ohawa2; 1Tokyo Institute of Technology; 2National Institute for Materials Science

9:15 AM
Analytical and FEM Modeling of Aluminum Billet Induction Heating with Experimental Verification: Mark Kennedy1; Shahid Akhtar2; Jon Arne Bakken1; Ragnhild Aune3; 1Norwegian University of Science and Technology; 2Norwegian University of Science and Technology

9:35 AM Question and Answer Period

9:45 AM Break

10:15 AM
The Evolution of Mechanical Properties and Microstructure in Early Stages of Natural Ageing on 2024 Plates: Gheorghe Dobra1; Ioan Savă1; Cristian Stanescu1; Ioan Sava1; 1ALRO
10:35 AM
Formation of Intermetallic Compound on the Interface of Copper/Aluminum Clad Sheet Produced by Asymmetrical Roll Bonding and Annealing: Xiaobing Li1; Guoyin Zu2; Ping Wang3; Rong Xu4; 1School of Materials and Metallurgy, Northeastern University; 2School of Materials and Metallurgy, Northeastern University; 3Key Laboratory of Electromagnetic Processing of Materials, Ministry of Education, Northeastern University; 4The State Key Laboratory of Rolling and Automation, Northeastern University

10:40 AM Question and Answer Period

Aluminum Alloys: Fabrication, Characterization and Applications: Thermal Mechanical Processing
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizer: Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum

Tuesday AM
Room: Northern E1
Location: Dolphin Resort

Session Chair: Xiyu Wen, University of Kentucky

8:30 AM
Modeling of As-Cast A356 for Coupled Explicit Finite Element Analysis: Matthew Roy1; Daan Maier2; 1The University of British Columbia

8:50 AM
Textures, Particle Structures and Mn Solution in Al Matrix of a Continuous Cast AA3004 Aluminum Alloy after Cold Rolling and Annealing: Xiyu Wen1; Yansheng Liu2; Jingwu Zhang3; Shridas Ningilieri3; Tongguang Zhai4; 1University of Kentucky; 2Secat Inc.; 3State Key Laboratory of Metastable Materials Science and Technology

9:10 AM
Observation of Structure Evolution during Annealing of 7xxx Series Al Deformed at High Temperature: Cory Parker1; David Field2; 1Washington State University

9:30 AM
Study of Homogenization Treatments of DC Cast 5xxx Series Al-Mg-Mn Alloy Modified with Zn: Akram Haleb1; Tamara Radetic1; Miljana Popovic2; Endre Romhanji3; 1Department of Metallurgical Engineering, Faculty of Technology & Metallurgy, University of Belgrade, Belgrade, Serbia

9:50 AM
Microstructure Evolution of 7003 Aluminum Alloy by Equal Channel Angular Extrusion Process: Qingnan Shi1; Gang Yang1; Liangwei Chen1; Xiaoxi Wang1; Zaohua Liu1; 1Kunming University of Science and Technology, School of Materials Science and Engineering

10:10 AM
Steel-Aluminum Composite Castings for High-Performance Die-Cooling Applications: Heiner Michels1; Andreas Bührig-Polaczek2; David Becker3; 1RWTH Aachen, Foundry Institute; 2Centre of Materials Forming; 3Aubert & Duval

10:30 AM Break

10:45 AM
High Strength Al-Mg-Mn Alloy Sheets Fabricated by Twin Roll Casting: Hyong-Wook Kim1; Suk-Bong Kang1; Jae-Hyung Cho1; 1Korea Institute of Materials Science

11:05 AM
Increasing Mechanical Properties of AA 6082 by Optimizing Chemical Compositions and processing Parameters during Extrusion: Milan Tercelj1; Matevz Fazarinc1; Goran Kugler1; Iztok Perus1; 1University of Ljubljana

11:25 AM
Investigation of the Porosity Evolution during Hot-Compression Tests on an Aluminum Alloy: Agouti Siham1; Bouchard Pierre-Olivier2; Piellard Mickael1; Le Brun Pierre2; Bozzolo Nathalie2; 1Centre of Materials forming; 2Centre of Materials Forming; 3Aubert & Duval; 4Constellium CRV

11:45 AM
Effect of Strain Rate on the Microstructural Development in DC Cast Al-15Si Alloy: Chuxia Wang1; Fuxiao Yu2; Dazhi Zhao1; Xiang Zhao1; Liang Zuo1; 1Northeastern University, China

12:05 PM
Influence of High-Pressure Torsion on Mechanical Properties and Microstructural Evolution in 2197 Al-Li Alloy: Yuan Yuan1; Huimin Li1; Xuguang Li1; Xiangyang Li1; 1Beihang University

Aluminum Reduction Technology: Energy Saving
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Tuesday AM
Room: Southern III
Location: Dolphin Resort

Session Chair: Martin Segatz, Hydro Aluminium Deutschlands

8:30 AM
Research and Application of Energy Saving Technology for Aluminum Reduction in China: Feng Naixiang1; Peng Jianping1; Wang Yaowu1; Di Yuezhong1; 1Northeastern University

8:50 AM
Low Energy Cell Development on AP Technology3: Olivier Martin1; Bertrand Allano1; Etienne Barrioz1; Aurore Escande1; Yves Caratini1; Nolwenn Favel1; 1Rio Tinto Alcan

9:10 AM
Review on the Energy Saving Technologies Applied in Chinese Aluminum Reduction Industry: Fengqin Liu1; Songqiu Gu1; 1Chalco

9:30 AM
Numerical Simulation on Coupled Multi-field of the Perforated Anode in Aluminum Reduction Cells under Low Carbon Operation: Hesong Li1; Xi Cao1; Yingfu Tian1; 1Central South University, China; 2Chongqing Tiantai Aluminum Industry Co.Ltd

9:50 AM
Improved Energy Management during Anode Setting Activity: Ali Jassim1; Gregory McIntyre1; Arvind Kumar1; Jose Blasques1; Mohammed Sadiq1; Maryam Al-Jallaf1; Ali Al Zarouni1; 1Dubai

10:10 AM Break

10:20 AM
The Transition Strategy at Alouette towards Higher Productivity with a Lower Energy Consumption: Pascal Coursol1; Jules Coté1; Francois Laflamme1; Pascal Thibault1; Alexandre Blais1; Dany Lavoie1; Serge Gosselin1; 1Aluminerie Alouette; 2Rio Tinto Alcan
10:40 AM
Experimental Studies of the Impact of Anode Pre-Heating: Otavio Fortini1; Srinivas Garimella2; Edwin Kunn1; Yimin Ruan1; Benyam Yacob1; Jack Sorensen1; 1Alcoa

11:00 AM
Depth Analysis and Potentiality Exploitation on Energy-Saving and Consumption-Reduction of Aluminum Reduction Pot: Jianfei Zhou1; Marc Dupuis2; Jun Huang1; Xiaobing Yi1; Feiya Yan1; 1Guangyuan Aluminum Magnesium Design & Research Institute; 2GéniSim Inc

11:20 AM
Development and Application of SAMI’s Low Voltage Energy-Saving Technology: Dongfang Zhan1; Xiaodong Yang1; Wei Liu1; 1Shenyang Aluminium & Magnesium Engineering & Research Institute Co. Ltd

11:40 AM
Twin Air Compressor for Energy Saving and Backup Capability: Anne-Gaëlle Hequet1; Serge Despinasse1; 1ECL

10:00 AM Break

8:30 AM Invited
Peptide-Tailored Solid Interfaces: From Biocompatibility to Self-assembly and Biomaterialization: Mehmet Sarikaya1; 1University of Washington

9:10 AM
Biological Materials Science Symposium: Biological and Bio-Inspired Materials I: Hard Biomaterials
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman, Texas A&M University

Tuesday AM Room: Swan 7
March 13, 2012 Location: Swan Resort
Session Chairs: Ryan Roeder, University of Notre Dame; Candan Tamerler, University of Washington

8:30 AM Keynote
Peptide-Tailored Solid Interfaces: From Biocompatibility to Self-assembly and Biomaterialization: Mehmet Sarikaya1; 1University of Washington

9:10 AM
Design of Bone-Mimetic Scaffolds: Ryan Roeder1; Timothy Conrad1; Robert Kane1; 1University of Notre Dame

9:30 AM
Mechanical Behavior of a Cellulose-Based Scaffold in Vascular Tissue Engineering: Parisa Pooyan1; Rina Tannenbaum1; Hamid Garmestani1; 1Georgia Institute of Technology

9:45 AM
Sheep Hydroxyapatite (SHA)- Commercial Inert Glass (CIG) Composites: Nermin Demirkol1; Faik Oktar2; Eyup Kayali1; 1Kocaeli University; 2Marmara University; 3Istanbul Technical University

10:00 AM Break

10:10 AM Invited
Mineralization of Dense Collagen Scaffolds Using a Polymer-Induced Liquid-Precursor (PILP) Process: Yaping Li1; Taiji Thula2; Laurie Gower1; 1University of Minnesota; 2University of Florida

10:40 AM
Assessing Biocompatibility and Mechanical Properties of Degradable Metallic Biomaterials: Puneet Gill1; Norman Munroe1; Amit Daye1; Rupak Dua1; Sharan Ramaswamy1; 1Florida International University; 1University of Tennessee Knoxville

11:00 AM
Anisotropic Behavior and Phase Transformation in Bone: Ahmet Ucisk1; Mehmet Aksoy1; Isil Kutbay1; Metin Usta1; Cuma Bindal1; 1Bogazici University; 2Ministry of Health Istanbul Division; 3Gebze Institute of Technology; 4Sakarya University

11:20 AM
Fatigue Behavior of Ti-6Al-4V for Medical Applications after Surface Modification by Anodization: Fernanda Potomati1; Lais Possato2; Enrico Giordano1; Claudemiro Bolfarini1; 1Universidade Federal de São Carlos

11:40 AM
Morphological Evaluation of Osteoblast-TiO2 Nanotube Interfaces: Tolou Shokuhfar1; Chang Choi1; Craig Friedrich1; 1Michigan Technological University
8:30 AM Keynote
Atomic Level Flow Dynamics in Metallic Glasses: Takeshi Egami1; Takuya Iwashita2; 1University of Tennessee

9:00 AM
Nucleation Reactions during Deformation and Crystallization of Metallic Glass: Seth Inhoff; John Perpezek; Mingwei Chen; Sergio Gonzalez; Akhisa Inoue; University of Wisconsin-Madison; Tohoku University; Universitat Autònoma de Barcelona

9:10 AM Invited
High Energy X-Ray Scattering Studies of Plastic Process Zones around Fatigue Crack Tips in Metallic Glasses: Todd Hufenagle; Uday Vempati; Jon Almer; Johns Hopkins University; Argonne National Laboratory

9:30 AM Invited
Irreversible Lattice Deformation and Enhanced Fragility Under Fatigue in Amorphous Solids: Despina Louca; Peng Tong; Gongyao Wang; Peter Liaw; Yoshihiko Yokoyama; Anna Llobet; Yiming Qiu; Yunfeng Shi; University of Virginia; University of Tennessee; Tohoku University; Los Alamos National Laboratory; NIST Center for Neutron Research; Rensselaer Polytechnic Institute

9:50 AM Break

10:05 AM Invited
Structure and Dynamics of a Metallic Glass during Mechanical Deformation: Wojciech Dmowski; Takeshi Egami; Konstantin Lokshin; Yoshihiko Yokoyama; Chiu-Pi Chuang; Matthew Stone; Takeshi Egami; University of Tennessee

10:25 AM Invited
Investigation of Microstructure and Property Variations in Metallic Glass Matrix Composites: Nicholas Hutchinson; Anupriya Agrawal; Wolfgang Windl; Katharine Flores; The Ohio State University

11:05 AM
Short and Medium Range Order in Ca-Mg-Cu Amorphous Alloys: Oleg Senkov; Yongjiang Cheng; Daniel Miracle; Evan Ma; Emma Barney; Alex Hannon; Air Force Research Laboratory; John Hopkins University; ISIS Facility, Rutherford Appleton Laboratory

11:30 AM Break

11:35 AM
Structural Anisotropy of BMGs after Mechanical Deformation: Yang Tong; Zbigniew Witczak; Chiu-Pin Chuang; Takeshi Egami; Wojciech Dmowski; University of Tennessee; Inst. High Pressure Phys.; ORNL

11:45 AM Invited
In Situ High Temperature X-Ray Diffraction Studies on Bulk Metallic Glasses: Norbert Matern; IFW Dresden

12:05 PM
Mechanical Behavior of Zr/Hf Based Bulk Metallic Glasses under Uniaxial Quasi-Static and Dynamic Compression: Weihua Yin; Laszlo Kecske; Qiuming Wei; UNC Charlotte; WMRD, US ARL

Session Chair: Takeshi Egami, University of Tennessee; Katharine Flores, The Ohio State University

Cast Shop for Aluminum Production: Grain Refinement and Castings
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Trond Furu, Hydro

8:30 AM
Effect of Grain Refiner Amount on the Hot Tearing of 6xxx Alloys During DC Casting: Muhammad Umar Chandia; Arild Håkonsen; John Hafsås; Hydro Aluminium; Hycast AS

8:50 AM
Grain Refining of Pure Aluminum: Lucy Han; Corey Vian; Jie Song; Zhiwei Liu; Qingyou Han; Clause Xu; Lu Shao; West Lafayette Jr./Sr. High School; Purdue University; Hans Tech

9:10 AM
Study on the Microstructure Changes of Hypereutectic Aluminum Casting Alloy Using Ultrasonic Vibration Process: Jie Song; Qingyou Han; Purdue University

9:30 AM
A Mathematical Model and Computer Simulations for Predicting the Response of Aluminum Casting Alloys to Heat Treatment: Chang-Kai Wu; Makhlouf Makhlouf; Worcester Polytechnic Institute

9:50 AM Break

10:10 AM
Understanding and Improving Chemical Capability in the Casthouse: Kjell Bjorn Halse; Ananda Bowles; Inge Johansen; Hydro Aluminium

10:30 AM
Effects of Water Content of Frozen Mold on Fluidity of Aluminum Alloy: Naoki OMURA; Shuji Tada; National Institute of Advanced Industrial Science and Technology(AIST)

10:50 AM
Simulation Tools to Complement Cast House Design and Daily Operation: Laszlo Tkakas; Robert McCulloch; Scheale Duvah Pentiah; Robert Baxter; Bechtel Canada Co.

11:10 AM
Formation of Microstructure in Al-Si Alloys under Ultrasonic Melt Treatment: Liang Zhang; Dmitry Eskin; Alexis Miroux; Laurens Katgerman; Deft University of Technology; Brunel University; Materials Innovation Institute

11:30 AM Break
CFD Modeling and Simulation in Materials Processing: Modeling of Melting and Remelting Processes
Sponsored by: The Minerals, Metals and Materials Society, TMS
Extracting and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Hervé Combeau, Institut Jean Lamour

Tuesday AM
March 13, 2012
Room: Asia 4
Location: Dolphin Resort

Session Chairs: Alain Jardy, Institut Jean Lamour; Laurentiu Nastac, The University of Alabama

8:30 AM Keynote
A Multiscale Transient Modeling Approach for Predicting the Solidification Structure in VAR Processed Alloy 718 Ingot: Laurentiu Nastac1; The University of Alabama

9:00 AM Invited
A Multiscale Model for the Simulation of V.A.R. Ingot Solidification: Mathieu Revil-Baudard; Alain Jardy; Faustine Leclerc; Miha Zaloznik; Véronique Rebeyrolle; Hervé Combeau; Institut Jean Lamour; Areva NP Cezus; Institut Jean Lamour; Areva NP Cezus

9:30 AM Invited
The Effect of Slag Cap Thickness on the Pool Depth in Electroslag Remelting: Jeffrey Yanke; Rodney Trice; Matthew Krane; Purdue University

10:00 AM Invited
Mathematical Modeling of Fluid Dynamics and Vessel Vibration in the AOD Process: Christian Wuppermann; Antje Rückert; Herbert Pfeifer; Hans-Juergen Odenthal; Erich Hovestädter; RWTH Aachen University; SMS Siemag AG

10:30 AM Break

10:50 AM
Solute Redistribution, Liquid/Solid Interface Instability, and Initial Transient Regions during the Unidirectional Solidification of Ti-6-4 and Ti-17 Alloys: Laurentiu Nastac; The University of Alabama

11:10 AM
CFD Modeling of Splash in Molten Materials Processing Operations: Mark Schwarz; CSIRO

11:30 AM
Numerical Analysis of Electromagnetic Field in an Electroslag Remelting Process with Three Phases Electrodes: Baokuan Li; Fang Wang; Meilong Shan; Fumitaka Tsukihashi; Northeastern University

11:50 AM
Influence of the Electric Current Frequency on the Electroslag Remelting Process: Abdellah Kharicha; University of Leoben

Sponsored by: The Minerals, Metals and Materials Society, TMS
Extracting and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jian-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Fira, Politecnico di Torino; Byoung-Gun Kim, Korea Institute of Geoscience & Mineral Resources; Mingdong Cai, Schlumberger

Tuesday AM
Room: Asia 2
March 13, 2012
Location: Dolphin Resort

Session Chairs: Doyle Fiona, University of California, Berkeley; Chen-Guang Bai, Chongqing University

8:30 AM
A Novel Low-Energy Route for the Extraction of Copper And Cobalt Metals/Alloys from the Zambian Sulphide Concentrates: Yotamu Hara; Animesh Jha; Leeds University

8:45 AM
Structural and Chemical Modification of Sulfide Mineral Surfaces by High-Power Nanosecond Pulses: Igor Bunin; Valentine Chanturiya; Alexey Kovalev; Irina Khabarova; Elizaveta Koporulina; Research Institute of Comprehensive Exploitation of Mineral Resources RAS

9:00 AM
Characterization of Magnetic and Non-Magnetic Iron Oxide Nanoparticles Synthesized by Different Routes: Alyssa Maich; E. Yegan Erdem; Fiona Doyle; University of California, Berkeley

9:15 AM
Characterization of Concentrate, Pellet and DRI Samples for Trace Elements: Mingming Zhang; AcelorMittal Global R&D

9:30 AM
Dielectric and Temperature-Rising Characteristics of Ore Fines Materials in Microwave Field: Hongbo Zhu; Linqing Dai; Jinhui Peng; Wei Liang; Zhenliang Weng; Qianxu Ye; Jian Chen; Kumming University of Science and Technology

9:45 AM
Characterization of the Roughness of the Iron Ore Particles: Xuewei Lv; Xiaobo Huang; Chongqing University, China

10:00 AM
Synthesis and Characterization of Al, Ag, Ti, Cu, and B Substituted Hydroxyapatite: Celaletdin Ergun; Thomas Webster; Gurbuz Gunes; Abdurrahman Bahadir; Huinan Liu; Ibrahim Erden; Istanbul Technical University; Brown University; MSTU; University of California, Riverside; Yildiz Technical University

10:15 AM
Electric Resistivity of Fine Chromite Ore: Cheng Pan; Xuewei Lv; Chenguang Bai; Xuyang Liu; Donghai Li; Chongqing University

10:30 AM
Reduction of Agglomerated Manganese Ores in Ferromanganese Production: Thomas Brynjulfson; Merete Tangstad; Norwegian University of Science and Technology

10:45 AM
Making Direct Reduced Iron from Millscale Containing Coal by Microwave Heating: Linqing Dai; Hongbo Zhu; Jinhui Peng; Jian Chen; Qianxu Ye; Kumming University of Science and Technology
11:00 AM  Ceramic Pigments with Spinel Structure Obtained by Low Temperature Methods: Oscar Restrepo1; Edgar Chavarriaga1; Leidy Jaramillo1; ‘National University of Colombia

11:15 AM  Synthesis and Characterization of Jarosite-Type Compounds with Arsenic: Francisco Patiño1; Iván Reyes1; Mizraim Flores1; Miguel Pérez2; Martín Reyes3; Julio Juárez4; ‘Universidad Autónoma del Estado de Hidalgo

11:30 AM  Mechanical Characterization of Cellular Ceramic Materials: Wilson Acchar; Fernando Barcelos1; Luis Pereira1; ‘Federal University of Rio Grande do Norte; ‘Federal University of Rio de Janeiro

11:45 AM  Study of Atapulgite for Human Health: Wilson Acchar1; Tulio Moura2; Antonio Costa3; Ledjane Barreto; ‘Federal University of Rio Grande do Norte; ‘Federal University of Sergipe

Computational Thermodynamics and Kinetics: Phase-Field Simulations in Alloys I


Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Session Chairs: Mikko Haataja, Princeton University; David Wu, IHPC

Tuesday AM  Room: Asia 5  Location: Dolphin Resort

March 13, 2012

8:30 AM  Invited  Phase-Field Modeling of Evolving Microstructures and Phase Transformations in Solid Oxide Fuel Cells: Mikko Haataja1; ‘Princeton University

8:55 AM  Inertia Dominated Criticality in Martensites: Oguz Salman1; Alphonse Finel2; Lev Truskinovsky3; ‘CNRS - Ecole Polytechnique; ‘ONERA-CNRS

9:10 AM  Continuum-Level Simulation of a Displacement Reaction System Based on Computational Thermodynamics and Kinetics: Hui-Chia Yu1; Chen Ling1; Jishnu Bhattacharya1; Anton Van der Ven1; Katsuyo Thomson1; ‘University of Michigan

9:25 AM  A Phase-Field Model for δ-Zirconium Hydride Formation in Single- and Polycrystalline Zirconium Alloys: Tae Woock Heo1; Kimberly Colas1; Arthur Motta1; Long-Qing Chen1; ‘The Pennsylvania State University

9:40 AM  Phase Field Modeling of Coherent Zirconium Hydrides Reorientation under Applied Load: Liangfei Zhang1; Ludovic Thuinet1; Alexandre Legris1; Andrée Debacter2; Antoine Ambard3; ‘UMET; ‘EDF R&D

9:55 AM  Continuum Dislocation Dynamics: Comparison between Models: Woosong Choi1; Yong Chen1; Stefanos Papanikolaou1; James Sethna1; ‘Cornell University

10:10 AM  Break

10:30 AM  An Accurate Scheme for Resolving Grain Boundaries in a Phase-Field Model of 3D Grain Coarsening: David Wu1; Zhidong Leong2; Dickson Thian1; Carl Krill III1; ‘Institute of High Performance Computing; ‘Ulm University

10:45 AM  Phase Field Approach to Stress-Induced Solid-Solid and Solid-Liquid Phase Transformations: Valery Levitas1; ‘Iowa State University

11:00 AM  Topological Effects in Coarsening of Grain-Boundary-Engineered Microstructures: Ming Tang1; Bryan Reed1; Vasily Bulatov2; James Belak1; Thomas Lagrange1; Joel Bernier1; Mukul Kumar1; ‘Lawrence Livermore National Laboratory

11:15 AM  3D Phase Field Simulation of Phase Coarsening in Binary Two Phase System: Vishal Yadav1; Nele Moelans1; ‘Katholieke Universiteit Leuven

11:30 AM  A Phase Field Crystal Study of Rapid Solidification and Solute Trapping in Binary Alloys: Harith Hamadi1; Jeff Hoyt1; Nikolas Provatas1; ‘McMaster University

11:45 AM  Enhancement of Field-Induced Strain Responses in Decomposed Two-Phase Nanodispersions: Wei-Feng Rao1; Armen Khachatryan1; ‘Rutgers University

Computational Thermodynamics and Kinetics: Thermodynamics


Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Session Chairs: Vidvuds Ozolins, UCLA; Joerg Neugebauer1, MPIE

Tuesday AM  Room: Australia 3  Location: Dolphin Resort

March 13, 2012

8:30 AM  Invited  Fully Ab Initio Determination of Free Energies: Where Do We Stand?: Jörg Neugebauer1; Fritz Körmann1; Alexey Dick1; Albert Glenski1; Blazej Grabowski1; Tilmann Hickel1; ‘Max-Planck-Institut für Eisenforschung GmbH; ‘Lawrence Livermore National Lab
8:55 AM
Ab-Initio Discovery of Crystal Structures and Phase Diagrams: Richard Hennig1; William Tipton1; Clive Bealing1; Kiran Mathew1; 1Cornell University

9:10 AM
Determinants of Thermal Stability in Nano-sized Binary Alloys: C. C. Yang1; Y.-W. Mai1; 1The University of Sydney

9:25 AM
Fully Ab Initio Determination of Anharmonic Contributions by Efficient Sampling Strategies: Albert Glensk1; Blazej Grabowski2; Tilmann Hickel1; Jörg Neugebauer1; Max-Planck-Institut, Duesseldorf, Germany; 1Lawrence Livermore National Laboratory

9:40 AM
High-Throughput Ab-Initio Calculations of Topologically Close-Packed Phases in Transition-Metal Alloys: Thomas Hammerschmidt1; Bernhard Seiser2; Ralf Drautz2; David Pettifor3; 1ICAMS, Ruhr-University Bochum; 2University of Oxford

9:55 AM Break

10:20 AM Invited Thermodynamics of Unstable Structures: Vidvuds Ozolins1; 1UCLA

10:45 AM
Ab Initio Thermodynamics of the fcc-bcc Transition in Ca Including All Relevant Finite-Temperature Excitation Mechanisms: Blazej Grabowski1; Per Soderlind1; Tilmann Hickel1; Jörg Neugebauer1; Lawrence Livermore National Laboratory; Max-Planck-Institut für Eisenforschung

11:00 AM
Thermodynamic Modeling of Peirce-Smith Converter Slag at the Chagres Smelter, Chile: N Cardona1; P.J. Mackey1; P. Coursol2; R. Paradis3; R. Parra4; Kingston Process Metallurgy; P.J.Mackey Technology Inc.; 1Couroul Consultants; 2Chagres Smelter; 3University of Concepcion

11:15 AM
Micron-Scale Measurements of Heat Capacity by Time-Domain Thermoreflectance: Xuan Zheng1; Changdong Wei2; David Cahill1; Ji-Cheng Zhao1; 1Seagate Technology; 2The Ohio State University; 3University of Illinois – Urbana-Champaign

11:30 AM
Quantum Monte Carlo and Statistical Sampling Approach to Reference States for Thermodynamic and Kinetic Models: D. M. Nicholson1; Randolph Hood2; P. R. C. Kent1; Fernando Reboredo1; Markus Eisenbach; 1Oak Ridge National Laboratory; 2Lawrence Livermore National Laboratory

11:45 AM
Ab Initio Temperature-Dependent Lattice Dynamics for BCC Uranium: Per Soderlind1; Blazej Grabowski1; Lin Yang1; Alexander Landa1; Lawrence Livermore National Laboratory

Defects and Properties of Cast Metals: Hot Tearing
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, University of Birmingham; Brian Thomas, University of Illinois at Urbana-Champaign; Carl Reilly, University of British Columbia

Tuesday AM  Room: Oceanic 4
March 13, 2012  Location: Dolphin Resort
Session Chairs: Derya Dispinar, NTNU; Christoph Beckermann, University of Iowa

8:30 AM
Quantitative Characterization of Damage Evolution during the Solidification of Al Alloys Using Fast Synchrotron Tomography: Peter D. Lee1; Chedtha Puncreobutr1; Thomas Connolley1; Richard W. Hamilton1; 1The University of Manchester; 2Imperial College London; 3Diamond Light Source Ltd,

8:55 AM
The Importance of Solidification Structure with Respect to Hot Tearing during Continuous Casting of Steels: Robert Pierer1; Wolfgang Rauter2; Christian Bernhard2; 1Chair of Metallurgy, Montanuniversitaet Leoben; 2voestalpine Stahl Donawitz Gmbh & Co KG

9:20 AM
Hot Tearing Susceptibility in DC-Cast Aluminum Alloys: Nasim Jamaly1; Andre Phillion1; Steven Cockcroft1; Jean-Marie Drezet2; 1University of British Columbia; 2Ecole Polytechnique Federale de Lausanne

9:45 AM Break

10:10 AM
Solidification Phenomena during Casting of Stainless Steel/Cast Iron Composites: Tim Lucey1; Mark Reid1; Michael Corrie1; Paul Huggett1; Ken Moran1; Wing Yeung1; Richard Wuhrer1; 1University of Technology, Sydney; 2University of Wollongong; 3Materials Solutions Pty. Ltd.; 4Moran Scientific Pty. Ltd.

10:35 AM
Hot Tear Susceptibility of Al-Mg-Si Alloys with Varying Iron Contents: Lisa Sweet1; Mark Easton1; John Taylor1; Cameron Davidson1; Liming Lu1; Malcolm Couper2; David StJohn3; 1CAST crc; 2ARC CoE of Design in Light Metals; 3School of Engineering, The University of Queensland

11:00 AM
Rules to Prevent and Mitigate Hot Tearing in Al Based Casting Alloys: Shimin Li1; Kumar Sadayappan2; Diran Apelian3; 1Worceter Polytechnic Institute; 2CANMET- Materials Technology Laboratory; 3Worcester Polytechnic Institute

11:25 AM
The Analytical Model of Microsegregation for Solute Elements in Solidifying Mushy Zone of Steel: Chao Xiao1; Jiongming Zhang1; Yanzhao Luo1; 1University of Science and Technology Beijing
Deformation, Damage, and Fracture of Light Metals and Alloys: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Gizhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

Tuesday AM | Room: Northern A2
March 13, 2012 | Location: Dolphin Resort

Session Chair: Fuqian Yang, Univ. of Kentucky

8:30 AM Invited
Corrosion Damage of Deformed AZ31 Mg Alloy: Guang-Ling Song1; GM Global Research & Development

9:00 AM Invited
Relationship of Corrosion Fatigue and Stress Corrosion Cracking Thresholds to Degree of Sensitization in Al-Mg Alloy: Peter Pao1; Ronald Holtz2; Thomas Longazel1; Robert Bayles1; Ramasis Goswami2; Naval Research Laboratory; SAIC

9:30 AM
Fatigue and Corrosion Properties of Mg-Al-Mn Alloy by Super Vacuum Die Cast: Wei Wen1; Alan A. Luo2; Tongguang Zhai1; University of Kentucky; General Motors Corporation

9:50 AM
Effect of Corrosion on the Strength of Fillet Arc Welded Cu-Lean AA7xxx Joints: J. Dabrowski1; Dr. M. Bruhis1; Dr. J.R. Kish1; Centre for Automotive Materials & Corrosion, McMaster University, Hamilton, ON Canada

10:10 AM Break

10:20 AM
Micro-Shear Stress and Damage Predictions from Hydrostatic Stress Loading of Aluminum Alloys 7075, 7039, and 7020: John Chinella1; U.S. Army Research Laboratory

10:40 AM
Coupling Experimentation and Computation to Investigate Damage Evolution in High Purity Aluminum: Matthew Tucker1; John Bingert2; Brian Patterson1; Cheng Liu1; Ricardo Lebensohn1; Los Alamos National Lab

11:00 AM
The Effect of Chemistry and Microstructure on the Deformation and Fracture Behavior of (Ti, Zr)Ni-Based Alloys with Aluminum Additions: Derek Hsen Dai Hsu1; B. Chad Hornbuckle2; Gregory Thompson2; Michele Manuel1; University of Florida; The University of Alabama

11:20 AM
Investigation of Frequency Effect on Fretting Wear Damage of Titanium Alloy: Qualitative and Quantitative Approaches: Benjamin van Peteghem1; Siegfried Fouvy1; Patricia De Oliveira Campos Neubauer1; Laboratoire de Tribologie et Dynamique des Systèmes

11:40 AM
Primary Creep in Titanium Alloys: Role of Trace Elements: Srikant Gollapudi1; Tapash Nandy1; Satyanarayana D1; Phaniraj C1; Defence Metallurgical Research Laboratory; IGCAR

Electrode Technology for Aluminium Production: Bake Oven Design and Improvement
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizer: Morten Sorlie, Alcoa Norway

Tuesday AM | Room: Americas Seminar
March 13, 2012 | Location: Dolphin Resort

Session Chair: André Proulx, Rio Tinto Alcan

8:30 AM
Anode Quality and Bake Furnace Performance of EMAL: Raja Akhtar1; Markus Meier2; Peter Sulger1; Werner Fischer1; Ralph Friedrich1; Thomas Janousch1; Emirates Aluminium EMAL; R&D Carbon Ltd.; Riedhammer GmbH

8:55 AM
Experiences in FTC Design, Operation and Development: Erik Dupon1; Peter Klu1; Edo Engel1; Danieli Corus Technical Services; Danieli Corus BV

9:20 AM
Boost of Anode Production at Voerdal Aluminium by Advanced and Integrated Control Strategies: Michael Schneider1; Christian Krupp1; Detlef Maiwald2; Domenico Di Lisa1; Voerde Aluminium GmbH; Innovatherm

9:45 AM
New Central Control System Architecture for Anode Baking Furnaces: Nicolas Fiat1; Xavier Genin1; Fabienne Virieux1; Solios Carbone; Fives Solios

10:10 AM Break

10:25 AM
Methods to Improve Fuel Utilization for Open Top Anode Baking Furnaces: Rifu Lin1; Shoulci Gao1; Lin Tang1; Yan Li1; Sunstone

10:50 AM
Energy Saving Technologies for Anode Manufacturing: Jingli Zhao1; Qingcai Zhao1; Jinan Aohai Carbon Products Corporation Ltd.

Electrometallurgy 2012: Session II
Program Organizers: Georges Houlachi, Hydro-Quebec; Antoine Allancore, Massachusetts Institute of Technology; Michael Free, University of Utah; Michael Moats, University of Utah; Edouard Asselin, UBC; Shijie Wang, Rio Tinto Kennecott Utah Copper; James Yurko, Materion Brush Beryllium and Composites

Tuesday AM | Room: Europe 5
March 13, 2012 | Location: Dolphin Resort

Session Chairs: Georges Houlachi, Hydro-Quebec; Jim Yurko, Materion Brush Beryllium and Composites

8:30 AM
Molten Carbonates in the Energy Field, as Electrolytes, Composite Materials, Fuel Carriers or Reaction Media: Michel Cassir2; Chimie ParisTech
8:50 AM  
The Equilibrium between Titanium Ions and Metal Titanium in Fluoride-Chloride: *Quyu Wang*1; Hongmin Zhu1; 1University of Science and Technology Beijing

9:00 AM  
Surface Area Effects at Liquid-Liquid Interfaces Consisting of a Liquid Metal and an Electrolyte: *Paul Burke*1; Brice Chung1; Brian Oldfield1; Donald Sadoway1; 1MIT

9:30 AM  
Electrochemical Behavior of Calcium-Bismuth Alloys in Molten Salt Electrolytes: *Hojong Kim*1; Dane Boysen1; Donald Sadoway1; 1MIT

9:50 AM  
Low Temperature Extraction Process for Metals from Metal Oxides Using Ionic Liquids: *Vibha Gill*1; Ramana Reddy1; 1The University of Alabama

10:10 AM Break

10:25 AM  
Towards Sustainable Metals Production by Molten Oxide Electrolysis: *Donald Sadoway*1; 1MIT

10:45 AM  
Effect of Electronic Current on the Solid Oxide Membrane (Som) Process for Magnesium Production: *Eric Gratzi*1; Soobhankar Pati1; Jarrod Milisheint1; Adam Powell1; Uday Pal1; 1Boston University; 1Metal Oxygen Separation Technologies

11:05 AM  
Behavior of Silicon Electrodepositing in Fluoride Molten Salts: *Xin Wang*1; Shuqiang Jiao1; Hongmin Zhu1; 1University of Science and Technology Beijing

11:25 AM  
**VITTORIO DE NORA PRIZE:** Development of Electrometallurgical Processes for 21st Century Metal Extraction: *Antoine Allanore*1; James Yurko1; 1Massachusetts Institute of Technology

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**Emeritus Professor George D.W. Smith Honorary Symposium: Steels I**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS

**Materials Processing and Manufacturing Division, TMS/ASM:** Phase Transformations Committee

**Program Organizers:** Michael Miller, Oak Ridge National Laboratory; Gregory Olson, Northwestern University and QuesTek Innovations LLC; George Krauss, Colorado School of Mines

Tuesday AM  
Room: Mockingbird 2

March 13, 2012  
Location: Swan Resort

**Funding support provided by:** Oak Ridge National Laboratory; QuesTek Innovations LLC; AMETEK, Inc

**Session Chairs:** George Krauss, Colorado School of Mines; Hans-Olof Andren, Chalmers University of Technology

8:30 AM Invited  
Some Atoms I Have Known: A Tale of Two Smiths: *Greg Olson*1; 1Northwestern University

8:55 AM Invited  
Microstructural Characterisation of Nanometre Scale Irradiation Damage in High-Ni Welds: *Jonathan Hyde*1; Paul Styman1; Colin English1; George Smith1; Keith Wilford1; Tim Williams1; Robin Boothby1; Helen Thompson1; 1National Nuclear Laboratory; 2Oxford University; 3Rolls Royce

9:20 AM Invited  
Contributions of Atom Probe Tomography to the Understanding of Steels: *Michael Miller*1; 1Oak Ridge National Laboratory

9:45 AM  
Three Dimensional Characterization of Interfaces in Nanolayered Radiation Tolerant Metallic Thin Films: *Arun Devraj*1; Venkata Rama Seshas R Vemuri1; Tamas Varga1; Shuttanandan Vaihityalingam1; Satyanarayana V. N.T Kuchibhatla1; Chongmin Wang1; Thevuthasan Suntharampillai1; Charles H Henager1; 1EMSL, Pacific Northwest National Laboratory; 2Pacific Northwest National Lab

10:00 AM Break

10:30 AM Invited  
Ultrahigh Strength Pearlite Microstructures: Contributions by *George D. W. Smith*; *George Krauss*1; *Stephanie Miller1*; Emmanuel De Moor1; David Matlock1; 1Colorado School of Mines

10:55 AM Invited  
Atom Probe Analyses of Advanced Sheet Steels: *Kazuhiro Seto*1; David Saxey2; George Smith3; 1JFE Steel Corporation; 2University of West Australia; 3Oxford University

11:20 AM Invited  
Atom Probe Tomography for Industrial Applications: *Harald Leitner*1; 1Montanuniversitaet Leoben

11:45 AM  
The Application of Atom Probe Tomography to the Identification of Transformation Mechanisms of the Bainite Reaction in Steels: *Francisca Caballero*1; Michael Miller2; Carlos Garcia-Mate0; Juan Cornde1; 1CENIM-CSIC; 2ORNL

12:00 PM  
Atom Probe Analysis of Nanoscale Austenite Reversion in Steels: Dirk Ponge1; Dierk Raabe1; Lei Yuan1; Pyuck Choi1; Jim Wittig1; 1Max-Planck-Institut

12:15 PM  
Control of p-n Heterojunction Abruptness in Vapor-liquid-solid Grown Semiconductor Nanowires: *Daniel Perea*1; Jinkyung Yoo1; Daniel Schreiber1; S. Tom Picraux2; Theva Thevuthasan1; 1Pacific Northwest National Laboratory; 2Los Alamos National Laboratory

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**Energy Nanomaterials: Photovoltaics I**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS

**Materials Processing and Manufacturing Division, TMS:** Nanomechanical Materials Behavior Committee

**Program Organizers:** Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

Tuesday AM  
Room: Swan 3

March 13, 2012  
Location: Swan Resort

**Session Chairs:** Reza Shahbazian Yassar, Michigan Technological University; Dhandapani Venkataraman, University of Massachusetts Amherst

8:30 AM Invited  
Self-Assembly Strategies for Nanoscale Assemblies For Organic Photovoltaic Cells: *Dhandapani Venkataraman*1; 1University of Massachusetts Amherst
9:00 AM
Atom Probe Contribution to the Characterization of Cigs Grain Boundaries: Philippe Pareige1; Emmanuel Cadel1; Francois Couzinie-Devy1; Nicolas Barreau2; John Kessler2; 1Rouen University; 2IMN

9:20 AM
 Plasma Sprayed Titanium Oxide-Carbon Nanotube Composite Coating for Dye Sensitized Solar Cells: Cheng Zhang1; Ujwal Chaudhary1; Santanu Das1; Samarth Thomas1; Arvind Agarwal1; 1Florida International University

9:35 AM
Reaction Based Sintering and Applications for Dye Sensitized Solar Cells: Sukanya Murali1; Dunbar Birnie1; 1Rutgers University

9:55 AM Break

10:25 AM Invited Session
First-Principles-Based Nanomaterials Design for Solar Energy Storage and Conversion: Alexie Kolpak2; Jeffrey Grossman1; 1MIT

10:55 AM
Doped Titanium Oxide Nanotube Arrays with Enhanced Photocatalytic Properties: Z. Xu1; Q. Li1; S. Gao1; J. Shang1; Institute of Metal Research, 1University of Illinois

11:15 AM
New Numerical Method to Calculate the True Optical Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and Solar Cells: Fatima Besabraou1; 1Oran University

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue Life Prediction and Enhancement
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Tuesday AM  Room: Oceanic 6
March 13, 2012  Location: Dolphin Resort

Session Chairs: Richard Gangloff, University of Virginia; Nikhilesh Chawla, Arizona State University

8:30 AM Invited Session
Probabilistic Property-Life Mapping Based P-S-N Experiment Principle of Small Samples: Liyang Xie1; Jianzhong Liu1; 1Northeastern University, Shenyang, China; 2Beijing Aeronautical Materials Institute

8:50 AM
A Probabilistic Approach to Modeling Fatigue Life Variation: Julian Raphael1; Peter Liaw; Wei Wu; 1J R Technical Services, LLC; 1The University of Tennessee

9:10 AM
A Non-Linear Damage Accumulation Fatigue Model for Predicting Strain Life at Variable Amplitude Loadings Based on Constant Amplitude Strain Fatigue Data: Peter Huffman1; Scott Beckman1; 1Iowa State University

9:30 AM
Fatigue Life Prediction of Friction Stir Welded Profiles: Meysam Mahdavi Shahri1; Torsten Höglund1; Rolf Sandström1; 1Royal Institute of Technology

9:50 AM
Neural Network Fatigue Life Prediction in Notched Bridge Steel I-Beams from Acoustic Emission Amplitude Data: Eric Hill1; Fady Barsoum1; Jamil Suleman1; Andrej Korcak1; Yi Zhang1; 1Embry-Riddle Aeronautical University

10:10 AM Break

10:20 AM
Effect of Laser Shock Peening (LSP) on the Fatigue Behavior of Ti-6Al-4V ELI Alloy: Sagar Bhumare1; Sethuraman Subramaniam1; James Guenes1; Leonora Felon1; David Kirschman1; Seetha Ramaiah Mannava1; Dong Qian1; Vijay K. Vasudevan1; 1University of Cincinnati; 2Air Force Research Laboratory/RDSM, WPAFB

11:00 AM
Effect of Grinding Residual Stress on Fatigue Performance of Crankshaft: Mahesh Dhuman1; Ramchandra Prasad1; Suresh Arangali1; 1Bharat Forge Limited; 2Department of MEMS, Indian Institute of Technology Bombay

11:20 AM
Effects of Ultrasonic Laser Micromachining on Structure and Mechanical Properties of 316 LVM Stainless Steel: Hossein Lavavaf1; John Lewandowski1; Janet Gbur1; Dave Dudzinski1; Melissa Young1; David Schwam1; John L Lewandowski1; 1CWRU; 2Cleveland Clinic Foundation

11:40 AM
Fatigue Response of Aluminium Alloy 7075-T6 Bolted Plates at Flight Environmental Conditions: Reza Hashemi Oskouei1; Raafat Ibrahim1; John Mikhail1; 1Monash University

From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Amorphous and Nanocrystalline Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biомaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University

Tuesday AM  Room: Mockingbird 1
March 13, 2012  Location: Swan Resort

Session Chairs: Brad Boyce, Sandia National Laboratory; Reinhold Dauskardt, Stanford University

8:30 AM Introductory Comments

8:35 AM Keynote
Fracture and Mechanical Behavior of Hybrid Molecular Glass Films: Experiments and Computational Models: Reinhold Dauskardt1; 1Stanford University
9:15 AM Keynote
Microstructure and Stress State Effects on Fracture of Novel Materials: John Lewandowski; ‘Case Western Reserve Univ

9:55 AM
Thermography Study on the Temperature Evolution of Bulk Metallic Glasses under Monotonic and Cyclic Loading: Peter Liaw; Gongyao Wang; B. Yang; Y. Yokoyama; C. T. Liu; A. Inoue; ‘University of Tennessee; ‘Shell Company; ‘Tohoku University; ‘City University of Hong Kong

10:10 AM
R-Curve Behavior of Zr-Ti-Cu-Al Bulk Metallic Glass with Extraordinary Fracture Toughness: Jian Ye; Qiang He; Evan Ma; ‘Institute of Metal Research, Chinese Academy of Sciences; ‘Department of Materials Science and Engineering, Johns Hopkins University

10:25 AM Break

10:40 AM
Fatigue-Induced Grain Growth as a Precursor to Crack Nucleation: Brad Boyce; Henry Padilla; ‘Sandia National Labs

10:55 AM
The Role of Free and Grain Boundary Surfaces in the Fatigue of Nanostructured Metals: Christopher Muhlstein; ‘The Pennsylvania State University

11:10 AM
The Mechanical Behavior of Highly Nano-Twinned Cu: Andrea Hodge; Timothy Furnish; Troy Barbee; ‘University of Southern California; ‘Lawrence Livermore National Laboratory

11:25 AM
Mechanical Properties of Nanotwinned and Nanolayered Metal Films: Xinghang Zhang; Yue Liu; Daniel Bufford; Haiyan Wang; ‘Texas A&M University

11:40 AM
A Comparative Study of the Mechanical Properties and Fracture of Nanocrystalline (20 nm), Ultrafine Grained (100 nm) and Coarse Grain Polycrystalline (> 1 μm) Ni: Indranil Roy; Farghali Mohamed; ‘Schlumberger; ‘University of California, Irvine

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Sponsored by: The Minerals, Metals and Materials Society, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizer: Diana A. Lados, Worcester Polytechnic Institute

Tuesday AM Room: Europe 2
March 13, 2012 Location: Dolphin Resort

Session Chair: Diana Lados, Worcester Polytechnic Institute

8:30 AM Invited
Innovation in the Manufacturing of Powder Forged Automotive Connecting Rods: Ian Donaldson; ‘GKN Sinter Metals LLC

8:55 AM
New Concepts for Damage Tolerant Steels for High Performance Components: Margarita Bambach; Hans Henning Dickert; Wolfgang Bleck; ‘RWTH Aachen University

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9:15 AM
Design of Novel Steels with Reduced Density: Jonas Schwabe; Wolfgang Bleck; Henning Dickert; Alexander Zimmermann; ‘RWTH Aachen

9:35 AM
Effect of Pretreatment on the Strength and Formability of Vehicle Hot-Forming Martensitic Steels: Ying Chang; Yipeng Gao; Ping Hu; Liang Ying; Zhaohuan Meng; Yunzhi Wang; ‘Dalian University of Technology; ‘OSU

9:55 AM
The Contribution of Niobium Bearing Steels and Enhanced Sustainability: Steven Jansto; ‘CBMM-Reference Metals Company

10:15 AM Break

10:40 AM Invited

11:05 AM Invited
Engineering Solutions for Sustainability: Materials & Resources: Brajendra Mishra; ‘Colorado School of Mines

11:30 AM Invited
Limited Materials Availability: Considering the Importance of Materials Market Dynamics: Randolph Kirchain; Elisa Alonso; Frank Field; ‘Massachusetts Institute of Technology

11:50 AM Invited
Development of Aluminum Dross Based Material for Engineering Applications: Chen Dai; Diran Apelian; ‘WPI

12:10 PM Invited
Increasing Use of Secondary Materials in Production Planning: Elsa Olivetti; Randolph Kirchain; Gabrielle Gaustad; ‘MIT; ‘Rochester Institute of Technology, Rochester, NY

International Smelting Technology Symposium (Incorporating the 6th Advances in Sulfide Smelting Symposium): Current and Emerging Smelting Technologies


Tuesday AM Room: Northern A3
March 13, 2012 Location: Dolphin Resort

Session Chair: To Be Announced

8:30 AM
The Path to Technology Development, Ralph Baggaley and the Evolution of Copper Smelting Technology: Larry Southwick; Ralph Yardley; ‘L.M. Southwick & Associates; ‘Yardley & Associates

8:55 AM
Processing of Lead, Zinc, Copper and Nickel Concentrates - The Xstrata Technology Approach: Gerardo Alvear Flores; ‘Xstrata Technology

9:20 AM
Ferroalloy Research in Norway – Cooperation between Academia and Industry: Merete Tangstad; ‘NTNU
9:45 AM
Status of the Alcoa Carbothermic Aluminum Project: Christina White; Øyvind Mikkelsen; David Roha; Alcoa Norway ANS; Alcoa Technical Center

10:10 AM Break

10:25 AM
Outotec’s Smelting Solutions in Non-Ferrous Metals Production: Asmo Vartiainen; Outotec Oy

10:50 AM
Atlantic Copper PS-Converters: A Continuous Commitment to the Future: Antonio Martin; Jesús Hurtado; Francisco Jimenez; Atlantic Copper SA

11:15 AM
Improvements on Converter Operating Practice at Mufulira Smelter, Zambia: John Sakala; Sydney Kwailela; ‘Mopani

Tuesday AM  Room: Europe 10

Tuesday AM  Room: Swan 2

Magnetic Materials for Energy Applications II: Permanent Magnets for Energy Applications

9:00 AM Invited
Compatibility of Metallic Transmutation Fuels with Fe-Based Alloys: Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

9:20 AM
Reducing Fuel Cladding Chemical Interaction by Pinning Lanthanide Fission Products in Metallic Fuel: Gerald Egeland; Thomas Hartmann; Robert Mariani; Rory Kennedy; Steve Hayes; University Nevada Las Vegas; Idaho National Lab

9:40 AM
Nanofluid-Based Coatings to Mitigate Fuel Cladding Chemical Interactions (FCCI): Vahid Firouzdor; Lucas Wilson; Kumar Sriridaran; Brandon Semerau; Benjamin Hauch; Todd Allen; University of Wisconsin-Madison

10:00 AM
Microstructural and Chemical Characterization of High Burn-Up Mixed Oxide Fuel: Melissa Teague; Brian Gorman; Steven Hayes; Jon Carmack; Idaho National Laboratory; Colorado School of Mines

10:20 AM Break

10:30 AM
Interdiffusion Kinetics in U-Zr: Vincenzo Lordi; Mark Wall; Luke Hsiung; Ron Foreman; Patrice Turchi; Lawrence Livermore National Lab

10:50 AM
Forming Process Development for Al-clad U-10Mo Monolithic Fuel Plates: Kester Clarke; David Alexander; Jill Wright; Pavel Medvedev; Richard Williamson; Los Alamos National Laboratory; Idaho National Laboratory

8:30 AM Invited
Effect of Ni Content on the Crystallization Behavior and Magnetic Properties in a Nanocrystalline (Co1-xNiX)88Zr7B4Cu1 Soft Magnetic Alloy: Billy Hornback; Billie Wang; Taisuke Sasaki; Maria Daniil; Matt Willard; Greg Thompson; The University of Alabama; National Institute for Materials Science; Naval Research Laboratory; Naval Research Laboratory

Materials and Fuels for the Current and Advanced Nuclear Reactors: Nuclear Fuels

8:30 AM Invited
Compatibility of Metallic Transmutation Fuels with Fe-Based Alloys: James Cole; Thomas O’Holleran; Robert Mariani; Dennis Keiser; J. Kennedy; Idaho National Laboratory

9:00 AM
Advanced Fuels with Fission Product Getters to Suppress Fuel-Cladding Chemical Interactions: T. O’Holleran; R. Mariani; Randall Fielding; P. Hansen; T. Hyde; J. Kennedy; Idaho National Laboratory

9:20 AM
Reducing Fuel Cladding Chemical Interaction by Pinning Lanthanide Fission Products in Metallic Fuel: Gerald Egeland; Thomas Hartmann; Robert Mariani; Rory Kennedy; Steve Hayes; University Nevada Las Vegas; Idaho National Lab

9:40 AM
Nanofluid-Based Coatings to Mitigate Fuel Cladding Chemical Interactions (FCCI): Vahid Firouzdor; Lucas Wilson; Kumar Sriridaran; Brandon Semerau; Benjamin Hauch; Todd Allen; University of Wisconsin-Madison

10:00 AM
Microstructural and Chemical Characterization of High Burn-Up Mixed Oxide Fuel: Melissa Teague; Brian Gorman; Steven Hayes; Jon Carmack; Idaho National Laboratory; Colorado School of Mines

10:20 AM Break

10:30 AM
Interdiffusion Kinetics in U-Zr: Vincenzo Lordi; Mark Wall; Luke Hsiung; Ron Foreman; Patrice Turchi; Lawrence Livermore National Lab

10:50 AM
Forming Process Development for Al-clad U-10Mo Monolithic Fuel Plates: Kester Clarke; David Alexander; Jill Wright; Pavel Medvedev; Richard Williamson; Los Alamos National Laboratory; Idaho National Laboratory
11:10 AM
Characterization of Freeze-Cast Scaffolds as a Novel Fuel Form: Clarissa Yablansky1; Joan Burger1; Amanda Lang1; Philipp Hunger2; Thomas Gage1; Ulrike Wegst1; Todd Allen1; 1University of Wisconsin; 2Drexel University

11:30 AM
Transport Studies with Porous Metal Fuels: Robert Mariani1; Curtis Clark1; Thomas O’Holleran1; Blair Park1; Randall Fielding1; J. Kennedy1; 1Idaho National Laboratory

11:50 AM
Production Scale-Up of Cylindrical Compact Fabrication: Eric Shuber1; Jeffrey Phillips1; 1 Battelle Energy Alliance/INL

Materials Design Approaches and Experiences III: High Strength High Toughness Steels
Program Organizers: Ji-Cheng Zhao, The Ohio State University; Akane Suzuki, GE Global Research; Deb Whites, GE Aviation; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Tuesday AM Room: Europe 11 Location: Dolphin Resort

Session Chairs: J.-C. Zhao, The Ohio State University; Greg Olson, Northwestern University

8:30 AM Invited
Multi-Scale Modelling to Aid Alloy Design: Matthias Militzer1; 1The University of British Columbia

9:00 AM Invited
Integrated Computational Materials Design: From Genome to Flight: Greg Olson1; 1Northwestern University

9:30 AM Invited
Multi-Scale Microstructure Design of High Performance Structural Steel: Chengjia Shang1; 1University of Science and Technology Beijing

10:00 AM Break

10:20 AM Invited
A Coupled Thermodynamics-Genetic Algorithm Approach For the Design of High Strength Stainless Steels: Sybrand Van Der Zwaag1; Wei Xu1; 1Technical University Delft

10:50 AM
Material Design and Prediction of Deformation Response of Stainless Twinning Induced Plasticity Steels: Linda Mosecker1; Alireza Saeed-Akbari1; Wolfgang Bleck1; 1Department of Ferrous Metallurgy RWTH Aachen University

11:10 AM
Materials Design Over the Decades, How Far Have We Come?: Charles Kuehmann1; Herng-Jeng Jou1; Jason Sebastian1; Chris Kern1; 1 QuesTek Innovations LLC

11:30 AM
Formation and Morphology Control of TCP σ Phase in Austenitic Heat Resistant Steels: Harumi Inatomi1; Masa Takeyama1; 1Tokyo Institute of Technology

11:50 AM
Changes of Work-Hardening-Rate in Advanced High Strength Austenitic Steels by the Applied Deformation and Material Parameters: Alireza Saeed-Akbari1; Wolfgang Bleck1; 1 RWTH Aachen University

Program Organizers: Xingbo Liu, West Virginia University; Teruhisa Horita, National Institute of Advanced Industrial Science and Technology; Jeffrey Hawk, National Energy Technology Lab; Jeffrey Fergus, Auburn University

Tuesday AM Room: Europe 8 Location: Dolphin Resort

Session Chairs: Xingbo Liu, West Virginia University; Teruhisa Horita, National Institute of Advanced Industrial Science and Technology (AIST)

8:30 AM Invited
Fuel Flexibility and Microstructural Change in Anode during Operation of Solid Oxide Fuel Cells: Koichi Eguchi1; Hiroki Muroyama1; Toshiaki Matsui1; 1Kyoto University

9:00 AM
Study of Microstructure and Electrical Conductivity on (Ce0.9Nd0.1)1-xMxO2-δ Electrolytes for Intermediate-Temperature Solid Oxide Fuel Cells: Fanzhi Meng1; N. Trubaki1; Defeng Zhou1; Yanjie Xie1; Jian Meng1; 1University of Toyama; 2Changchun Technology of University; 3Changchun Institute of Applied Chemistry, Chinese Academy of Sciences

9:20 AM Invited
Thermal Stability and Structural Evolution of LSM/YSZ Composite Cathode for SOFC by In-Situ Neutron Diffraction: Ke An1; Ling Yang1; Rebecca Mills1; Lu Cai1; 1Oak Ridge National Laboratory

9:50 AM
Relationship between Cathode Performance and Impurity Concentration for Solid Oxide Fuel Cells: Teruhisa Horita1; DoHyung Cho1; FangFang Wang1; Taro Shimonosono1; Haruo Kishimoto1; Katsuhiko Yamaji1; Manuel Brito1; Harumi Yokokawa1; 1AIST

10:10 AM Break

10:20 AM
Possibility of Metal Film Supported Electrolyte for Proton-SOFC: Kenichi Kawamura1; Taku Kitahara1; Shun Kawamura1; Mitsutoshi Ueda1; Toshio Maruyama1; 1Tokyo Institute of Technology

10:40 AM
Advanced Conductive Coating Performance at the Long-Term SOFC Operating Condition: Jung Pyung Choi1; Jeffery Stevenson1; Scott Ryan1; Matt Chou1; Gordon Xia1; 1Pacific Northwest National Laboratory

11:00 AM
Transition Metal Doping of Manganese Cobalt Spinel Oxides for Coating SOFC Interconnects: Jeffrey Fergus1; Yingjia Liu1; Jason Ganley1; Dileep Chakkathara Janardhanan Nair1; William Tilson1; Adam Dekich1; 1Auburn University
11:20 AM
The Effect of Cerium Oxide Nanoparticle Oxidation State on the Degradation Mitigation of 1100 EW Nafion® Composite Membranes: Benjamin Pearman1; Nahid Mohajeri1; Darlene Slattery1; Len Bonville1; Diego Diaz1; Sudipta Seal2; Michael Hampton2; 1Florida Solar Energy Center - UCF; 2University of Central Florida

11:40 AM
The Electrochemical Properties of TiAlCrN Coated Stainless Steel with PEMFC Environment: Min-Seok Moon1; Kee-Do Woo2; Myung-Han Yoo3; Shin-Jae Kang4; Joon-Hyuk Song3; 1Chonbuk National University, Jeonju Institute of Machinery Carbon Composites; 2Chonbuk National University; 3Chonbuk National University, Jeonju Institute of Machinery and Carbon composites; 4Chonbuk National University, Jeonju Institute of Machinery and Carbon composites

Materials Processing Fundamentals: Application of Microwave, Magnet, Laser and Plasma Technology
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Antoine Allano, MIT; Cong Wang, Saint-Gobain High Performance Materials

Tuesday AM
Room: Oceanic 8
March 13, 2012
Location: Dolphin Resort
Session Chairs: Cong Wang, Alcoa Technical Center; Antoine Allano, MIT

8:30 AM
New Developments in Lorentz Force Velocimetry: Andre Thess1; Yurii Kolesnikov2; Christian Karcher3; Rico Klein1; Michael Gramss1; Dandan Jian1; Christiane Heinicke1; André Wegfuss1; Christian Resag1; Xiaodong Wang1; Thomas Bocck1; Thomas Froehlich1; Falko Hilibrunner1; Christian Diethold1; Ilko Rahneberg1; Michael Werner1; Bernd Halbedel1; 1TU Ilmenau

8:55 AM
Non-Contact Measurements in Liquid Metal Free-Surface Flow Using Time-of-Flight Lorentz Force Velocimetry: Dandan Jian1; Christian Karcher1; 1TU Ilmenau

9:20 AM
Microstructure and Mechanical Properties of Friction Stir Welding Zone in SS400(SPHC) Plate: Kwang-jin Lee1; Sang-Hyuk Kim1; Ik-Hyun Oh1; Kee-Do Woo2; 1Korea Institute of Industrial Technology; 2Chonbuk National University

9:45 AM
Modeling of Pulsed-Laser Superalloy Powder Deposition Using Moving Distributed Heat Source: Manas Mahapatra1; Leijun Li1; 1Indian Institute of Technology Roorkee; 2Utah State University

10:10 AM
Heat Transfer Characteristics of Magnetite under Microwave Irradiation: Zhiwei Peng1; Jian-Yang Hwang1; Matthew Andriezej1; Zheng Zhang1; Xiaodi Huang1; 1Michigan Technological University

10:35 AM Break

10:50 AM
Effect of Microwave Curing on GFRP Composites: T Srinath1; P Martin Jeebaraj1; Rajaiah K1; 1Dr. Ambedkar Institute of Technology

11:15 AM
Experimental and Numerical Approach for Surface Finish during Laser Machining of Alumina: Hitesh Vora1; Sameer Paial1; Sandip Harimkar2; Sandra Boetcher2; Narendra Dahotra3; 1University of North Texas; 2University of Central Florida; 3University of North Texas

11:40 AM
Refinement Effect of Pulse Magnet-Oscillation on Solidification Structure of Medium Carbon Steel: Yufeng Cheng1; Zhengxin Yin1; Xin Cao1; Yongyong Gong1; Renxing Li1; Qijie Zhai1; 1Shanghai University

12:05 PM
Research on Solidification Structure Refinement of SUS430 Ferritic Stainless Steel by Electric Current Pulse: Xin Cao1; Zhenxing Yin1; Yufeng Cheng1; Renxing Li1; Yongyong Gong1; Qijie Zhai1; 1Shanghai University

Materials Research in Microgravity: Session III
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Robert Hyers, University of Massachusetts; Hani Henein, University of Alberta; Valdis Bojarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrium; Daniela Voss, ESA

Tuesday AM
Room: Room: Asia 3
March 13, 2012
Location: Dolphin Resort
Session Chair: To Be Announced

8:30 AM Invited
Thermophysical Properties Measurement of High-Temperature Liquids under Microgravity Conditions in Controlled Atmospheric Conditions: Masahiro Watanabe1; Shumpei Ozawa1; Akitoshi Mizuno1; Takefushi Hibi1; Hirota Kawauchi1; Kentaro Murai1; Suguru Takahashi1; 1Tokyo Metropolitan University; 2Tokyo University

9:40 AM
Microgravity Research on Bulk Metallic Glasses and Composites: Douglas Hofmann1; NASA JPL/Caltech

10:05 AM Break

10:20 AM Invited
Detachment of Tertiary Dendrite Arms during Controlled Directional Solidification in Aluminum – 7 wt% Silicon Alloys: Observations from Ground-based and Microgravity Processed Samples: Richard Grugel1; Robert Erdmann2; James Van Hoose3; Surendra Tewari4; David Poirier5; 1Marshall Space Flight Center; 2University of Arizona; 3Qualis/Jacobs; 4Cleveland State University; 5University of North Texas

10:55 AM
Microstructure Formations in the Two Phase Region of the Binary Peritectic Organic System TRIS-NPG: Andreas Ludwig1; Johann Mogeritsch1; 1University of Leoben, Dept. Metallurgy

11:20 AM
Thermodynamics of Metal-Gas Eutectic Solidification and Potential Effects of Gravity on Microstructural Evolution: Douglas Swenson1; Paul Sanders1; Amber Lifer1; Helen Ranck1; 1Michigan Technological University
11:45 AM
Three-Dimensional Phase Field Modeling of Directional Solidification under Microgravity Conditions with Quantitative Experimental Comparison: Damien Tourret1; Alain Karma1; Rohit Trivedi1; Bernard Billia1; Nathalie Bergeron1; Jean-Marc Debierrre1; Rahima Guerin1; 1Northeastern University; 2Iowa State University; 3Institut Matériaux Microélectronique Nanosciences de Provence, UMR CNRS 6242

Mechanical Behavior at Nanoscale I: Deformation Mechanisms at Nanoscale
Program Organizers: Scott Mao, University of Pittsburgh; Julia R Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Tuesday AM  Room: Asia 1  Location: Dolphin Resort
Session Chairs: Marc Legros, CEMES-CNRS; Jianyu Huang, Sandia National Lab

8:30 AM Invited
Shear Banding Mechanism in Nano-Twinned Cu–Al Alloy: C.S. Hong1; N.R. Tao1; X.X. Huang1; K. Lu1; 1Chinese Academy of Sciences; 2Riso National Lab

9:00 AM Invited
Stochastic Effects in Deformation and Fracture of Nanowires: Andreas Sedlmayr1; Reiner Möning1; Steven Boles1; Gunther Richter1; Oliver Kraft1; 1KIT; 2Max-Planck-Institut für Intelligente Systeme

9:30 AM
Plasticity in BCC Pillars Observed In-Situ by Laue Diffraction: Helena Van Swygenhoven1; Julien Zimmermann1; Cecile Marichal1; Steven Van Petegem1; 1Paul Scherrer Institute

9:50 AM
Discrete Plastic Deformation in Gold Nanowires: Scott Mao1; He Zheng1; Christopher R. Weinberger1; Jianyu Huang2; 1University of Pittsburgh; 2Sandia National Lab

10:00 AM Break

10:20 AM Invited
Deformation Mechanisms in Small Scale Al: An In-Situ TEM Study: Frederic Monpial1; 1CEMES-CNRS

10:50 AM Invited
Stochastic Behavior of Dislocation Nucleation in Solids with Defects: David Bah1; Yoonkap Kim1; Christine Joseph1; Benjamin Revard1; Iman Salehinia1; 1Washington State University

11:20 AM
Nanovoid Generation and Growth in Metals: Dislocation Mechanisms: Marc Meyers1; Yihe Tang1; Eduardo Bringa1; Bruce Remington1; 1University of California, San Diego; 2Univ. Nac.Cuyo; Lawrence Livermore National Laboratory

11:40 AM
Deriving Deformation Mechanisms in Nanocrystalline AuCu Thin Films from in situ Synchrotron-Based XRD and SEM Tensile Tests: Jochen Lohmiiller1; Patric Gruber1; Ralph Spolenak1; 1Karlsruhe Institute of Technology; 2ETH Zurich

12:00 PM
Characterization of Deformation Mechanisms during Cold Rolling of Nanocrystalline Nickel: Jorg Wiezorek1; Andreas Kulovits1; 1University of Pittsburgh

12:20 PM
Probing the Relation between Indentation Characteristics and Dislocation Substructure: Lin Li1; Myoung-Gyu Lee2; Peter Anderson3; 1The Ohio State University; 2POSTECH

Mechanical Behavior Related to Interface Physics: Microscopic Characteristic of Interface Mechanical Response
Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiewei Shan, Xi’an Jiaotong University

Tuesday AM  Room: Oceanic 1  Location: Dolphin Resort
Session Chairs: Andrew Minor, UC Berkeley & LBL; Scott Mao, University of Pittsburgh

8:30 AM Keynote
Understanding Dislocation Interactions with Interfaces: Josh Kacher1; Ben Eftink1; Ian Robertson1; 1University of Illinois

9:00 AM Keynote
Probing the Origin and Evolution of Strength in Small Volumes with In Situ TEM Nanomechanical Testing: Andrew Minor1; 1UC Berkeley & LBL

9:30 AM
Direct Observation of Dislocation Confined Layer Slip in Multilayers: Nan Li1; Jian Wang1; Jianyu Huang1; Amit Misra1; 1LANL; 2Sandia National Lab

9:45 AM
In Situ Observation of Dislocation Assisted Stress Driven Grain Boundary Migration: Zhangjie Wang1; Zhiwei Shan1; Ju Li1; Jun Sun1; Evan Ma1; 1Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; 2Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology; 3Department of Materials Science and Engineering, Johns Hopkins University

10:00 AM
The Influence of Grain Boundary Structure upon Damage Evolution at Grain Boundary Interfaces: Alejandro Perez-Bergquist1; Christian Brand1; Juan Escobedo1; Carl Trujillo1; Ellen Cerreta1; George Gray III1; Timothy Germann1; 1Los Alamos National Laboratory

10:15 AM Break

10:25 AM Keynote
Surface and Interface Controlled Plasticity and Phase Transition in Nanometer-Sized Au Crystals: Scott Mao1; He Zheng1; Jianyu Huang1; Christopher R. Weinberger1; 1University of Pittsburgh; 2Sandia National Lab
10:55 AM Keynote
Grain Boundaries and Strength in Nanostructured Metals Produced by Plastic Deformation: Xiaozu Huang; Niels Hansen; 'Riso National Laboratory for Sustainable Energy, Technical University of Denmark

11:25 AM
Twinning in Bulk Nanolayered AgCu under High Strain Rate: Ben Elijink1; Owen Kingstedt; Buyang Cao; Doug Safarik; John Lambros; Nathan Mara; Ian Robertson; 'University of Illinois; 'Los Alamos National Lab

11:40 AM
Interfaces and Mechanical Properties of Highly Textured Cu/Co Multilayers: Yue Liu; Youxiong Chen; Haiyan Wang; Ji Chen; Xinghang Zhang; 'Texas A&M University; 'Liaoning Shihua University

11:55 AM
Deformation and Spallation of Shocked Cu Bicrystals with S3 Coherent and Symmetric Incoherent Twin Boundaries: Weihong Han; Sheng-Nian Luo; Timothy C Germann; Davis L Tonks; 'Los Alamos National Lab

Mechanical Performance of Materials for Current and Advanced Nuclear Reactors: Characterization and Modeling of Dislocation Structures in Nuclear Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberson, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, LANL

Tuesday AM
March 13, 2012
Room: Swan 1
Location: Swan Resort

Session Chairs: Elaine West, Knolls Atomic Power Laboratory; Osman Anderoglu, Los Alamos National Laboratory

8:30 AM Invited
Understanding the Dislocation Processes and Interactions Responsible for Creating Defect-Free Channels in Deformed Irradiated Metals: Josh Kacher; Grace Liu; Ian Robertson; 'University of Illinois

9:00 AM
Planar Dislocations and Dislocation Channeling in Unirradiated and Irradiated Austenitic Stainless Steels: Young Suk Kim; Sung Soo Kim; Dae Whan Kim; 'Korea Atomic Energy Research Institute

9:20 AM
Incorporation of Dislocation Climb in Crystal Plasticity Models: Alankar Alankar; Alfredo Caro; Ricardo Lebensohn; 'Los Alamos National Laboratory

9:40 AM
Polycrystalline Modelling of the Behaviour of Neutron Irradiated Zirconium Alloys and Comparison with TEM Observations: Fabien Onimus; 'CEA

10:00 AM
The Interaction Energy between Point and Line Defects in BCC Iron: Erin Hayward; Blas Uberaaga; Chaitanya Deo; Carlos Tome; 'Georgia Institute of Technology; 'Los Alamos National Laboratory

10:20 AM Break

10:35 AM
The Effect of Crowdions on the Dislocation Bias Factor: Alexander Barashenkov; Stanislav Golubov; Bachu Singh; Roger Stoller; 'Oak Ridge National Laboratory; 'Riso National Laboratory

10:55 AM
Atomic-Scale Study of Strengthening Due to Inclusion-type Obstacles in Iron: Yury Osetskyi; Roger Stoller; 'ORNL

11:15 AM
Microstructural Evolution and Dislocation Density Analysis of HT9 Steel Irradiated in the FFTF: Paula Mosbrucker; Donald Brown; Levente Balogh; Stuart Maloy; Thomas Sisneros; 'Los Alamos National Laboratory

11:35 AM
A Multiscale Investigation of the Interaction between Edge Dislocations and Voids in BCC Iron: Sylvain Quevreux; Jaime Marian; Anasthasios Arsenlis; Brian D. Wirth; 'Lawrence Livermore National Laboratory; 'University of Tennessee

11:55 AM
Effects of 3He in ErT2: Gillian Bond; Clark Snow; James Browning; Mark Rodriguez; James Knapp; Ryan Wixom; Peter Schultz; Donald Cowgill; 'New Mexico Tech; 'Sandia National Laboratories; 'Oak Ridge National Laboratory

Nanocomposites: Energetic & Catalytic Nanocomposites
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Tuesday AM
March 13, 2012
Room: Swan 8
Location: Swan Resort

Session Chairs: Christopher Crouse, Air Force Research Laboratory; John Zhanhu Guo, Lamar University

8:30 AM Invited
Synthesis, Reactivity and Mechanical Properties of Aluminized Fluorinated Acrylic (Alfa) Nanocomposites: Christopher Crouse; Christian Pierce; Jonathan Spowart; 'Air Force Research Laboratory

9:10 AM
Silicon-Based Nanocomposites for Energetic Applications: Paul Redner; Neha Mehta; Karl Oyler; Gartung Cheng; Christopher Csernica; Jesse Sabatini; Jay Poret; Zhaohua Luan; Russell Broad; Deepak Kapoor; 'US Army, RDECOM-ARDEC

9:30 AM Invited
Synthesis and Characterization of Nanoscale & Nanostructured Pyrophoric Nanocomposites: Chris Haines; Lauren Armstrong; Zac Doorenbos; Kendall Mills; Darold Martin; Jay Poret; Deepak Kapoor; 'US Army ARDEC; 'Innovative Materials & Processes LLC
Electrode for Cholesterol Electrochemical Detection
Nanodiamond – Polypyrrole Conductive Composite as Working

11:10 AM
Comprehensive and Sustainable Recycling of Polymer Nanocomposites: Jiahua Zhu1; John Zhanhu Guo1; Suying Wei1; 'University of Central Florida

11:30 AM
Photocatalytic Degradation of TOC by Fe2O3/TiO2 Coated on Light Ceramic: Ju Hua1; 'Harbin Institute of Technology

11:50 AM
Colloidal Ag-Pt/TiO2 Nanocomposites for Photocatalysis: Bijith Mankidy1; Vinay Gupta1; Babu Joseph1; 'University of South Florida

12:10 PM
Nanodiamond – Polypyrrole Conductive Composite as Working Electrode for Cholesterol Electrochemical Detection: Pedro Villalba1; Punya Basnayaka1; Manoj Ram1; Ashok Kumar1; 'University of South Florida

Neutron and X-Ray Studies of Advanced Materials V: Centennial: In Honor of Prof. G. Kostorz
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xin-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Tuesday AM
March 13, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Bernd Schoenfeld, ETH; Bennett Larson, ORNL

8:30 AM Introductory Comments Bernd Schoenfeld

8:35 AM Invited
From Diffuse Scattering to Ground State Structures: Bernd Schoenfeld1; 'ETH Zurich

8:55 AM Invited
In Situ Small-Angle X-Ray Scattering Studies of Formation, Aggregation and Dissolution of Nanoparticles in Suspension for Environmental Health and Safety: Andrew Allen1; Matthew Martin1; Robert MacCuspie1; Vincent Hackley1; Jan Ilavsky1; 'NIST; 2Argonne National Laboratory

9:15 AM Invited
Size-Dependent Transitions in Nanostructured Zirconia-Scandia Solid Solutions. A High Temperature Synchrotron Diffraction Study: Aldo Craievich1; Paula Abdala2; Diego Lamas1; 'Institute of Physics - USP; 2ESRF; 3Facultad de Ingenieria - Universidad Nacional del Comahue

9:35 AM
Depth-Dependent Plastic and Elastic Strain Gradients from Polychromic Microdiffraction: Rozaliya Barabash1; 'Oak Ridge National Laboratory

9:50 AM Invited
Kinetcs of Nano Quasicrystal Formation from Zr-Based Metallic Glass Ribbons and Its Implication to the Heterogeneous Metallic Glass Structure: Hiroshi Okuda1; Yasuke Maezawa1; Ryo Arao1; Shojirio Ochiai1; Junji Saida1; 'Kyoto University; 'Tohoku University

10:10 AM Invited
In-Situ Diffraction Studies of Microstructural Changes during Deformation and Irradiation: Ralph Spolenak1; 'ETH Zurich

10:30 AM Invited
Combined Use of Small-Angle X-Ray and Neutron Scattering: SAS in Color: Masato Ohnuma1; Yojiro OBA1; Koppoju Suresh1; Powel Kozikowski1; 'National Institute for Materials Science

11:15 AM Invited
Cascade Dynamics Information Possible from Sub-Picosecond X-Ray Scattering: Bennett Larson1; Jon Tischler1; Roger Stoller1; 'ORNL

11:35 AM Invited
Mechanics of Magnetic Shape Memory Alloys across the Length Scales: Peter Müllner1; 'Boise State University

11:55 AM Invited
Phonons in Martensite and Austenite NiMnGa - Its Relation to Ferromagnetic Shape Memory: Winfried Petry1; Semih Ener1; Jürgen Neuhaus1; 'Technische Universität München (Munich University of Technology)

12:15 PM Invited
Multiple Whole X-Ray Line Profile Analyses for Investigating the Role and Nature of Dislocations in Plastic Deformation of Semicrystalline Polymers: Michael Zehetbauer1; Florian Spieckermann1; Gerald Polt1; Harald Wilhelm1; Michael Kerber1; Sigrid Bernstorff1; Erhard Schaffer1; 'University of Vienna; 'Laboratory of Polymer Engineering LKT-TGM; 'Sincrotrone Trieste

12:35 PM Invited
Energy-Dispersive Synchrotron Diffraction – a Versatile Method for Advanced Materials Characterization: Christoph Genzel1; 'Helmholtz-Zentrum Berlin für Materialien und Energie
Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Effects of Ultrafine Joints and Alloy/microstructure Relationships
Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central Univ.; Laura Turbini, Research in Motion; Tae-Kyu Lee, Cisco Systems; Govindarajan Muralidharan, Oak Ridge National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

Tuesday AM  Room: Swan 9
March 13, 2012  Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Invited
Linkages between Microstructure and Mechanical Properties of Ultrafine Interconnections: Zhiyong Wu1; Ziheng Huang1; Hua Xiong1; Paul Conway2; 1Sun Yat-Sen University; 2Loughborough University

8:55 AM
Silver Addition Effects on the Ni-Sn Interfacial Reaction for 3D IC Applications: J. J. Yu1; H. Y. Chuang1; M. S. Kuo2; W. L. Shih1; C. Kao2; 1National Taiwan University; 2National Taiwan University

9:15 AM
Effect of Minor Alloy Additions on the Interfacial Reactions with Low Solder Volume for 3D IC Applications: Ting-Li Yang1; C. Robert Kao1; 1National Taiwan University

9:35 AM
Preferred Orientation of 30 \u00b0956m Fine Pitch Sn2.5Ag Micro-Bumps Studied by Synchrotron Polychromatic X-Ray Laue Microdiffraction: Tian Tian1; Kai Chen2; Martin Kunz3; Nobumichi Tamura4; Tao-Chih Chang5; Chau-Jie Zhan1; King-Ning Tu5; 1UCLA; 2Lawrence Berkeley National Laboratory; 3Industrial Technology Research Institute

9:55 AM
Thermomigration on 3D IC Pb-Free Micro Bump: Wei-Cheng Jha1; Fan-Yi Ouyang1; 1National Tsing Hua university

10:15 AM
Effects of Small Solder Volume on the Cu/Sn/Cu Interfacial Reactions for 3D IC Applications: Meng Hsin Chen1; Hsin Yi Chuang1; Ting Li Yang1; C. Robert Kao1; 1National Taiwan University

10:35 AM Break

10:45 AM
Volume Shrinkage Induced by Interfacial Reaction in Micro Ni/Sn/ Ni Structure: C. Li1; H. Chuang1; M. Kuo1; C. Kao1; 1National Taiwan University

11:05 AM Invited
The Effect of Doping Nd on the Oxidation Resistance and Wettability of Sn-0.7Cu Solder: Jian Zhou1; Yi-Li Fang1; Xu Chen1; Yang-Shan Sun1; Feng Xue1; 1Southeast University

11:30 AM
Single-Joint Shear Strength of Micro Cu Pillar Bumps with Different Amounts of Intermetallics: Yi-Jen Chen1; C. Robert Kao1; 1National Taiwan University

11:50 AM
Interfacial Reactions in the Sn-Co-Cu/Ni Couples: Chih-Ming Chen1; Chia-Ming Hsu1; Sinn-Wen Chen1; 1National Tsing Hua University

12:10 PM
Microstructural Evolution in SnAgCu Solder and Effect on Constitutive Response During Creep: Babak Talebpanour1; Praveen Kumar2; Zhe Huang1; Chien-Hung Wen1; Indranath Dutta2; 1Washington State University; 2Indian Institute of Science

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XI: Interfacial Reactions of the Pb-free Solder Joints
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shih-Kang Lin, University of Wisconsin – Madison

Tuesday AM  Room: Swan 10
March 13, 2012  Location: Swan Resort

Session Chairs: Albert T. Wu, National Central University; Jae-Ho Lee, Hongik University

8:30 AM Invited
Kinetics of Solid-State Reactive Diffusion in the Sn/(Ni-X) System: Masanori Kajihara1; 1Tokyo Institute of Technology

8:50 AM Invited
Properties of Au-Ge Based Alloys for High Temperature Lead Free Solders: Christian Leinenbach1; Shan Jin2; Fabrizio Valenza3; Donatella Giuranno3; Rada Novakovic4; Hans-Rudolf Elsener5; Jiang Wang5; Simona Delsante6; Gabriella Borzone6; Andrew Watson7; 1Empa-Swiss Federal Laboratories for Materials Science and Technology; 2National Research Council (CNR) – Institute for Energetics and Interphases (IENI); 3University of Genova; 4University of Leeds

9:10 AM
Study of Intermetallic Compound Growth of Sn-2.3Ag Solder Micro-Bumps during Solid-State Aging: Tao-Chi Liu1; Yi-Sa Huang1; Chih-Hsing Tang1; Chih-Rong Chen1; Chih Chen1; 1National Chiao Tung University; 1Integrated Service Technology Inc

9:25 AM
Reflow and Solid-State Reactions between SnAgCu-xNi Solder and Au/Pd/Ni Surface Finish: Bo-Mook Chung1; Yong-Ho Baek1; Jaeho Choi1; Joo-Youl Huh1; 1Korea University; 1Gangneung-Wonju National University

9:40 AM
Effect of Interfacial Compound Layer on Pd Resettlement during Reflow and Solid-State Reactions between Sn-rich Solder and Ni Substrate: Yong-Ho Baek1; Bo-Mook Chung1; Jaeho Choi1; Joo-Youl Huh1; 1Korea University; 1Gangneung-Wonju National University

9:55 AM
Employment of a Bi-Layer of NiP/Cu as a Diffusion Barrier Layer for Cu bump/Sn Bonding Structures for the 3D Integration Applications: Byunghoon Lee1; Haseok Jeon1; Hoo-Jeong Lee1; 1Sungkyunkwan University
Phase Transformations and Deformation in Magnesium Alloys: Phase Transformations and Deformation

Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Jian-Feng Nie, Monash University; Sean Agnew, University of Virginia; Suveen Mathaudhu, Army Research Office

Tuesday AM Room: Southern V
March 13, 2012 Location: Dolphin Resort

Session Chairs: Jian-Feng Nie, Monash University; Tresa Pollock, University of California Santa Barbara

8:30 AM Introductory Comments Jian-Feng Nie, Sean Agnew and Suveen Mathaudhu

8:35 AM Invited
Key Issues in Thermodynamic Mg Alloy Database: Rainer Schmidt-Fetzer¹; 'Clausthal University of Technology

9:00 AM Invited
Grain Refinement of Magnesium Alloys: Theoretical Developments and Their Application: David Stichl²; Ma Qian³; Mark Easton⁴; 'University of Queensland; 'Monash University

9:25 AM Invited
Enhancement of Precipitation Hardening of Magnesium Alloys by Microlallying: Kazuhiro Hono¹; C. L. Mendis¹; T. T. Sasaki¹; T. Ohkubo¹; T. Bhattacharjee¹; 'National Institute for Materials Science

Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Powder Technology
Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

Tuesday AM Room: Oceanic 2
March 13, 2012 Location: Dolphin Resort

Session Chair: Iver Anderson, Iowa State University

8:30 AM Keynote
Nanostructured Metals: Synthesis and Behavior from the Nanoscale to the Microscale: Enrique J. Lavernia¹; 'University of California, Davis

9:00 AM Invited
Effect of Powder Synthesis and Processing on Luminescence Properties: Joanna McKitterick¹; Jinkyu Han¹; Jae Ik Choi¹; Jan Talbot¹; 'University of California, San Diego

9:25 AM Invited
Improved Understanding of Gas and Melt Flow Manipulation for Enhanced Control of Powder Yields from Close-Coupled Gas Atomization Processing: Iver Anderson¹; Joel Rieken¹; John Meyer²; David Byrd³; Andrew Heidloff³; 'Ames Laboratory; 'Iowa State University

9:50 AM Invited
Modeling Nucleation and Growth during Co-Precipitation in Mg-RE Alloys: Yipeng Gao¹; Hong Liu²; Jianfeng Nie²; Yunzhi Wang¹; 'The Ohio State University; 'Monash University

10:15 AM Break

10:25 AM Invited
Mg-M-RE Alloys Containing LPSO Structures with Synchronization of Stacking and Chemical Modulations: Yoshitoyo Kawamura¹; Michiaki Yamashita¹; Eiji Abe¹; Koji Hagihara¹; 'Kumamoto University; 'The University of Tokyo; 'Osaka University

10:50 AM On the Structure, Transformation and Deformation of Long-Period Ordered Structures in Mg-Y-Zn Alloys: Yuman Zhu¹; Allan Morton¹; Jian-Feng Nie¹; 'Monash University; 'CSIRO

11:15 AM Invited
Creep Mechanism in a Mg-6Al-3Ca-0.3Mn Alloy: Tomoyuki Homma¹; S. Nakawaki¹; Shigeharu Kamado¹; 'Nagoya University of Technology

11:40 AM Invited
Deformation in Magnesium from First-Principles: Dallas Triakle¹; Joseph Yasi¹; Louis Hector¹; 'University of Illinois, Urbana-Champaign; 'General Motors R&D Center

12:05 PM In-Situ Neutron Diffraction Study of Aging of a Mg-0.5Nd-Zr Alloy (WE43): Effects of Precipitation on Individual Deformation Mechanism Strength and Activity: Sean Agnew¹; F. Polesak²; Bjorn Clausen³; 'University of Virginia; 'Los Alamos National Laboratory

TUESDAY AM
10:15 AM Break

10:30 AM Invited
TEM Guided Microstructural Design of MgH2 Powders and Thin Film Alloys with Room Temperature Volumetric Hydrogen Cycling Ability: David Mittleman; Peter Kalisvaart; Mohsen Danieie; Shu Tao; Ben Zahiri; Helmut Fritzschke; University of Alberta and NINT NRC; Eindhoven University of Technology; SIMS-CNBC NRC

10:55 AM
Effect of Pre-Consolidation Solidification Structure in Novel Gas Atomization Precursor Powder Approach for Efficient Production of Ni-based Oxide Dispersion Strengthened (ODS) Alloys: John Meyer; Joel Rieken; Iver Anderson; Iowa State University; Ames Laboratory, US DOE

11:10 AM
Effect of Rapid Solidification and Heat Treatment on D2 Tool Steel: Pooya Delshad Khatibi; Hani Henein; Douglas Ivey; University of Alberta

Recycling General Sessions: Metals
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizer: Joseph Pomykala, Alter Trading

Tuesday AM
Room: Europe 4
March 13, 2012
Location: Dolphin Resort

Session Chair: Joseph Pomykala, Alter Trading

8:30 AM
Advantages of Long Term Al Recycling Batch Planning in a Constrained Secondary Material Market: Tracey Brommer; Brit Elin Gihleangen; Elsa Olivetti; Randolph Kirchain; Massachusetts Institute of Technology; Norsk Hydro

8:50 AM
Mechanical Dross Processing: The Approach to Zero Waste from Smelter and Secondary Dross: David Rosh; GPS Global Solutions

9:10 AM
Recycling of Aluminium Alloy Scraps by Pressure-Assisted Investment Casting for Aluminium Foam Manufacture: Seksak Asavavisithchail; Areeya Srichaiyaperk; Nathitha Jareankieathbovorn; Chulalongkorn University

9:30 AM
In-Process Separation of Mill Scale From Oil at Steel Hot Rolling Mills: Naiyang Ma; ArcelorMittal

9:50 AM
Recycling of Electric Arc Furnace Dust: Vicente Sobrinho; Vitor Telles; Felipe Grillo; Jose Oliveira; Jorge Alberto Tenorio; Denise Espinosa; IFES; USP

10:10 AM Break

10:30 AM
Recycling of Electric Arc Furnace Dust in Iron Ore Sintering: Victor Telles; Denise Espinosa; Jorge Tenorio; University of Sao Paulo - USP

10:50 AM
Extraction of Iron Oxide and Concentration of Titanium Compounds in Bauxite Residue: Edisson Magalhaes; Emanuel Macedo; Antonio Souza; Joao Nazareno Quaresma; Danielley Quaresma; Luis Venancio; Federal University of Pará

11:00 AM
Pyrometallurgical Approaches for Utilization of Smelting Slag from Cobalt Concentrate: Jeongsoo Sohn; Kang-In Rhee; Soo-Kyung Kim; Korea Institute of Geoscience and Mineral Resources

11:30 AM
Heat Treatment of Black Dross for the Production of a Value Added Material - A Preliminary Study: Reza Beheshti; Shahid Akhtar; Raghvendra A. E. Aune; KTH; NTNU; NTNU KTH

11:50 AM
Development of Synthetic Flux for Basic Oxygen Steel Making Using Waste Oxides of Steel Plant: Jagannath Pal; S. Ghorai; P. Venkatesh; D. P. Singh; M. C. Goswami; Bandyopadhyay; S. Ghosh; Council of Scientific and Industrial Research, National Metallurgical Laboratory

12:10 PM
Addition of Electric Arc Furnace Dusts in Hot Metal: Felipe Grillo; Denise Espinosa; Jose Oliveira; Jorge Tenorio; University of Sao Paulo - USP; Federal Institute of Espirito Santo

Science and Engineering of Light Metal Matrix Nanocomposites and Composites: Metal Matrix Composites
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division
Program Organizers: Xiaochun Li, University of Wisconsin-Madison; Alan Luo

Tuesday AM
Room: Macaw 2
March 13, 2012
Location: Swan Resort

Session Chairs: Alan Luo, GM; Xiaochun Li, University of Wisconsin-Madison

8:30 AM
Slow-Shot High Pressure Die-Casting (SS-HPDC) Process for AE44 Magnesium Single-Cylinder Engine Block with Short-Fiber Reinforcement in the Bore: Bin Hu; Pan Wang; Bob Powell; Xiaochun Zeng; General Motor China Science Lab; General Motors Global R&D Center; Shanghai Jiao Tong University

8:50 AM
Compressive Properties of Al-B4C Composites over the Temperature Range of 25 - 500 °C: Srina Gangolu; R. Rao; N Prabhu; V Deshmukh; B Kashyap; Indian Institute of Technology Bombay; Naval Materials Research Laboratory

9:10 AM
Mechanical Properties of a Spherical Particle Reinforced Aluminum Composite after Metal Working: William Harrigan; Gamma Technology

9:30 AM
Effect of Processing on the Dynamic Response of a Silicon Carbide Reinforced Aluminum Matrix Composite: Brandon McWilliams; Tomoko Sano; Jian Yu; Chian Yen; US Army Research Laboratory

9:50 AM
Fabrication and Characterization of Al-SiC Composite Foam: Geo Harrison; Ganapathy Subramanian; Vinoth Kambl; Pradeep Kumar; College of Engineering Guindy, Anna University
**10:10 AM Break**

**10:25 AM**
Aluminum Metal Matrix Composite via Direct Metal Laser Deposition: Processing And Mechanical Characterization: Benjamin Walder1; Samar Kalita1; Advanced Engineered Materials Center - University of North Dakota

**10:45 AM**
A Microstructure-Sensitive Fatigue Model for SiC Reinforced AA6061 Metal Matrix Composites: Andrew Brammer1; J Jordan1; The University of Alabama

**11:05 AM**
Damage Evolution Model for Hybrid Metal Matrix Composites: Jessica Dibelka1; Scott Case1; Virginia Polytechnic Institute and State University

**11:25 AM**
Numerical Simulation of Pressure Infiltration Process for Making Metal Matrix Composites: Effect of Process Parameters: Bo Wang1; Krishna M. Pillai1; University of Wisconsin-Milwaukee

**11:45 AM**
A Parametric Study of Hot Rolling of an Aluminum MMC via ANSYS and LS-DYNA: Charles Mansfield1; Nathan Mutter1; Ali Gordon1; UCF

**Solar Cell Silicon: Refining and Characterization**
*Sponsored by:* The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Committee
*Program Organizers:* Arjan Ciftja, SINTEF; Gabriella Tranell, Norwegian University of Science and Technology; Gregory Hildeman, Consultant; Shadia Ikhmayies, Al Isra University

**Tuesday AM**
*Room: Europe 7*

**Session Chair:** Arjan Ciftja, SINTEF Materials and Chemistry

**8:30 AM**
High Frequency EM Purification of Silicon: Lucas Damoah1; Lifeng Zhang1; Missouri University of Science and Technology

**8:55 AM**
Mono-Like Ingot/Wafers Made of Solar-Grade Silicon for Solar Cells Application: Sergey Beringov1; Timur Vlasenko1; Sergiy Yatsuk1; Oleksandr Liaskovskiy1; Iryna Buchovska1; Pillar Group

**9:15 AM**
Preparation and Characterizations of Hydrogenated Microcrystalline Silicon Germanium Thin Films Prepared by RF Magnetron Sputtering: C. H. Chang1; C. W. Chang1; H. S. Chen1; J. P. Chu1; National Taiwan University of Science and Technology; Industrial Technology Research Institute

**9:35 AM**
Removal of Phosphorus from Silicon Melts by Vacuum Refining: Buhle Xakalashe1; Jafar Safarian1; Merete Tangstad1; Mintek; NTNU

**9:55 AM**
Thermodynamics of Phosphorous Distribution between Si and Fe-Si in Solvent Refining of Silicon: Leili Tafaghodi Khajavi1; Mansoor Barati1; University of Toronto

**10:15 AM Break**

**10:35 AM**
Interface Techniques for the Characterization of Multi-Crystalline Silicon Bricks and Wafers: Steve Johnston1; Fei Yan1; Katherine Zaubrecher1; Mowafak Al-Jassim1; Omar Sidelkheir1; Alain Blosse1; National Renewable Energy Laboratory; Colorado State University; Calisolar

**10:55 AM**
Silicon PV Wafers: Correlation of Mechanical Properties and Crack Propagation with Defects and Stresses: Khaled Youssif1; Meirong Shi1; Prashant Kulshreshtha1; George Rozgonyi1; North Carolina State University

**11:15 AM**
Thermodynamics on Boron Rejection during Metallurgical Grade Silicon Oxidation by Silicon Dioxide: Yaqiong Li1; Yi Tan1; Jiayan Li1; Shentui Wu1; Yao Liu1; Dalian University of Technology

**11:35 AM**
On the Segregation of Impurities in Solar Silicon: Kader Zaidat1; Abdallah Nouri1; Yves Delannoy1; Grenoble-INP

**11:55 AM**
Effect of Solute Hydrogen on Toughness of Feed Stock Polycrystalline Silicon for Solar Cell Applications: Mohamad Zbib1; Megan Reynolds1; Uttara Sahaym1; Grant Norton1; David Bahr1; Wayne Osborne1; Washington State University; RFC Silicon

**Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Interface Interaction with Defects**
*Program Organizers:* Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schnitz, University of Münster; David Seidman, Northwestern University

**Tuesday AM**
*Room: Oceanic 7*

**Session Chairs:** Richard Hoagland, Los Alamos National Lab; Alfredo Caro, Los Alamos National Lab

**8:30 AM Invited**
On the Feasibility of Designing Interfaces Immune to Helium Damage: Michael Demkowicz1; Abishek Kashinath1; Amit Misra1; Nan Li1; Massachusetts Institute of Technology; Los Alamos National Laboratory

**9:00 AM Invited**
Effect of Nanoparticle-Matrix Interfaces on Cavity Formation in ODS Ferritic Steels under Dual-Beam Irradiation: Luke Hsiung1; Lawrence Livermore National Laboratory

**9:30 AM Invited**
Interface Microstructure Evolution of Heterogeneous Systems under Vacancy Supersaturation: Enrique Martinez Saez1; Jeffery Hetherly1; Alfredo Caro1; Michael Nastasi1; LANL
9:50 AM
Interface Structures, Defects, and Mechanical Properties at fcc-bcc Interfaces from “Tunable” Potentials: Xiang-Yang Liu; Richard Hoagland; Jian Wang; Blas Uberuaga; Michael Demkowicz; Michael Nastasi; Amit Misra; 1Los Alamos National Lab; 1Massachusetts Institute of Technology

10:00 AM Break
10:20 AM Invited
Defect-Interface Interactions in Oxide Ceramics: Blas Uberuaga; 1Los Alamos National Laboratory

10:50 AM
On the Solute/Interface-Interaction in the Framework of a Defectant Concept: Reiner Kirchheim; 1University of Göttingen

11:10 AM
Interface Facets Identified with Singularity in Interfacial Structures: Wenzheng Zhang; Xinrui Gu; Tsinghua University

11:30 AM
On the Factors Governing the Sink Strength of Semicoherent fcc-bcc Interfaces: Kedarnath Kolluri; Michael Demkowicz; 1Massachusetts Institute of Technology

11:50 AM
Energetics of Point Defect and Impurity Segregation to Grain Boundaries in Fe: Mark Tschopp; Kiran Solanki; Nathan Rhodes; 1MSU/CA VS; 2Arizona State University; 3University of Florida

Symposium in Memory of Patrick Veyssiére:
Understanding the Mechanisms Controlling Plastic Flow: Screw Dislocations-lattice Friction
Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS
Structural Materials Division
Program Organizers: Georges Saada, LEM CNRS ONERA; Dennis Dimiduk, Air Force Research Laboratory; Hael Mughrabi, University Erlangen-Nuernberg; Haruyuki Inui, Kyoto University

Tuesday AM
Room: Europe 6
March 13, 2012
Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: H. Inui, Kyoto University; M. Mills, Ohio State University

8:30 AM Invited
The Role of the Initial Dislocation Density in Controlling Size-Affected Flow Response: Jaafar El-Awady; Michael Uchic; Dennis Dimiduk; Sathish Rao; Christopher Woodward; 1Johns Hopkins University; 2Air Force Research Laboratory; 3UES Inc.

9:05 AM Invited
Atomistic Simulations of Intersection Cross-Slip Nucleation in Face-Centered Cubic Materials: Sathish Rao; Dennis Dimiduk; Michael Uchic; Triplicane Parthasarathy; Jaafar El-Awady; Christopher Woodward; 1UES Inc.; 2Air Force Research Laboratory; 3Johns Hopkins University

9:25 AM Invited
Kinetics of Screw Dislocations in Fe and Fe Alloys at Low Temperatures: Daniel Caillard; 1CNRS

9:55 AM Invited
A New Type of Dislocation Source in BCC Molybdenum: Qing-Jie Li; Xiang-Dong Ding; Zhi-Wei Shan; Ju Li; Jun Sun; Evan Ma; 1Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; 2Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, MIT; 3Department of Materials Science and Engineering, Johns Hopkins University

10:15 AM Break
10:30 AM Invited
Elevated Temperature Deformation Mechanisms in Ta2C: Nicholas De Leon; Billie Wang; 1University of Alabama

11:00 AM Invited
Screw Dislocations in Zirconium: an ab Initio Study: Emmanuel Cieux; 1SRMP, CEA Saclay

11:20 AM Invited
Experimental Study and Finite Element Computation of the Single Crystal Behavior of Zirconium: Cyril Lebon; Fabien Onimus; Eva Héripé; Laurent Dupuy; Ludovic Vincent; Xavier Feaugas; 1CEA; 2Ecole Polytechnique; 3University of La Rochelle

11:40 AM Invited
Atomistic Simulations of Kinks on 1/2<110> Screw Dislocation in Magnesium Oxide: Philippe Carrez; Patrick Cordier; 1Lab. UMET CNRS-UMR8207

Titanium: Advances in Processing, Characterization and Properties: Microstructure Evolution and Characterization I
Sponsored by: The Minerals, Metals and Materials Society, TMS
Structural Materials Division, TMS; Titanium Committee
Program Organizers: Adam Pilchak, US Air Force Research Laboratory; Christopher Szczepanski, US Air Force Research Laboratory; Vasisht Venkatesh, Pratt & Whitney

Tuesday AM
Room: Oceanic 3
March 13, 2012
Location: Dolphin Resort

Session Chairs: Lee Semiatin, US Air Force Research Laboratory; Peter Collins, University of North Texas; Adam Pilchak, US Air Force Research Laboratory

8:30 AM Invited
Formation of Transformation Texture in Supertransus Heat Treated Ti-6Al-4V Sheet: Gordon Sargent; Adam Pilchak; Kacey Kinsel; Lee Semiatin; 1US Air Force Research Laboratory

9:00 AM Invited
Variant Selection during Alpha Precipitation in Ti-6Al-4V under the Influence of Local Stress – A Simulation Study: Rongpei Shi; Yunzhi Wang; 1Ohio State University

9:30 AM
Role of Grain-Boundary Characteristics on the Evolution of Allotriomorphic Alpha in Titanium Alloys: Vikas Dixit; G.B. Viswanathan; W.A.T. Clark; Hamish L. Fraser; 1The Ohio State University; 2Air Force Research Laboratory
9:50 AM
Phase Separation and Its Subsequent Influence on Alpha Nucleation in Titanium Alloys: Soumya Nag1; Arun Devaraj2; Yufeng Zheng3; Robert Williams2; Jaimie Tiley2; Hamish Fraser2; Rajarshi Banerjee1; 1University of North Texas; 2The Ohio State University; 3Air Force Research Laboratory

10:10 AM
Morphological, Structural and Compositional Evolution during the Decomposition of Martensite in Ti-2wt%Mo: Yufeng Zheng3; Robert Williams1; Rongpei Shi1; Yunzhi Wang1; Hamish Fraser1; ‘The Ohio State University

10:30 AM Break

10:50 AM
Recent Studies on the Evolution of Microstructure in Ti-Based Alloys: Peter Collins1; Peyman Samimi1; Iman Ghamarian1; Brian Welk2; Dan Huber2; Rajarshi Banerjee1; Hamish Fraser1; ‘University of North Texas; ‘The Ohio State University

11:20 AM
Microstructures in Solid-State Welds of Martensitic and Non-Martensitic Transforming Titanium Alloys: Thomas Broderick1; Adam Pilchak1; Jonathan Orsborn1; Taylor Pratt1; Andrew Woodfield1; Hamish Fraser1; ‘General Electric Aviation; ‘AFRL Materials and Manufacturing Directorate; ‘The Ohio State University

11:40 AM
Microstructure and Mechanical Properties of a Copper Containing Three Phase Titanium Alloy: Srikant Gollapudi1; Tapash Nandy2; Rajdeep Sarkar1; Ashok Gogia1; Sankarasubramanian R1; Chinta Babu U1; ‘DMRL

12:00 PM
Recrystallization Behavior in Ti-13Cr-1Fe-3Al Alloy after Severe Plastic Deformation: Masato Ueda1; Hikaru Matsuhira1; Yuji Takasaki1; Masahiko Ikeda1; Yoshikazu Todaka1; ‘Kansai University; ‘Toyohashi University of Technology

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Base Metal Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS
Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Division, TMS: Materials Characterization Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; J. E. Dutrizac, CANMET; Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper

Tuesday AM Room: Oceanic 5 Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freepoir McMoRan

Session Chair: Daniel Kim, Rio Tinto Kennecott Utah Copper

8:30 AM
The Development of China’s Copper Primary Smelting Technology: Kaixi Jiang1; Lan Li1; Yaping Feng1; Haibei Wang1; Bang Wei1; Xiaoping Zou1; ‘Beijing General Research Institute of Mining and Metallurgy; ‘Beijing General Research Institute of Mining & Metallurgy

8:50 AM
New Process for Treating SCF Flue Dust at Atlantic Copper: Guillermo Rios1; Joan Viñals2; Alba Sunyer2; Cristina Arbizu1; ‘Atlantic Copper; ‘University of Barcelona

9:10 AM
Direct Leaching Alternatives for Zinc Concentrates: Kurt Svens1; ‘K. R. Svens Consulting Incorporation

9:30 AM
The Effect of Polytetrafluoroethylene on Pressure Oxidation of Chalcopyrite: Jiu Nuo1; Eduard Guerra1; ‘Laurentian University

9:50 AM
The Effect of Complexing Agents and the Anode Material on the Kinetics of Electro-Assisted Reduction of Chalcopyrite: Elizeier Martínez-Jimenez1; Gretchen Lapidos-Lavine1; ‘Universidad Autonoma Metropolitana-Iztapalapa

10:10 AM Break

10:30 AM
Nickel Smelter Slag Microstructure and Its Effect on Slag Leachability: Ilya Perederey1; Vladimir Papangelakis1; Indge Mihaylov1; ‘University of Toronto; ‘Wal Base Metals Technology Development

10:50 AM
Characterization of Aluminum Cathode Sheets Used for Zinc Electrowinning: Neil Gao1; Daniel Liu1; Maura Malone1; ‘Teck Metals Ltd.

11:10 AM
Mechanical Pretreatment of Lead Based Alloy Anode for Zinc Electrowinning: Taro Aichi1; Rie Sato1; Makoto Muramatsu2; Hideyuki Takahashi1; Kazuyuki Tohji1; ‘Dowa Metals and Mining Co., Ltd.; ‘Tohoku University

11:30 AM
Duplex Stainless Steel Corrosion in a Zinc Plant Purification Filter Application: Timothy Moore1; Michael Heximer1; Dominic Verhelst1; ‘Teck Metals Ltd

Ultrafine Grained Materials VII: Mechanical Response

Sponsored by: The Minerals, Metals and Materials Society, TMS
Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Risø National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Sciences, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaoei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

Tuesday AM Room: Swan 4 Location: Swan Resort

Session Chairs: Justin Scott, Institute for Defense Analysis; Joel House, Air Force Research Laboratory; Xiaoxu Huang, Risoe National Laboratory for Sustainable Energy, Technical University of Denmark; Pei-Ling Sun, Feng Chia University

8:30 AM Invited
Some Common Features of Ultrafine Grained and Nanocrystalline Bcc Metals Produced by Severe Plastic Deformation: Qiuming Wei1; Laszlo Kecskes2; Suveen Mathaudhu1; Brian Schuster2; ‘University of North Carolina at Charlotte; ‘US ARL; ‘US ARO
8:50 AM
Dynamic Loading of Ultrafine-Grained Aluminum: Matthias Hockauf1; Lothar Meyer2; Martin Wagner1; Chemnitz University of Technology; Nordmetall Research and Consulting GmbH

9:05 AM
Quasi-Static and Dynamic Compressive Mechanical Behavior of Friction Stir Processed Ultrafine Grained Al-Mg-Sc Alloy: Nilesk Kumar1; R. Mishra1; R. Howell2; K. Cho3; Missouri University of Science & Technology; Weapons and Materials Research Directorate

9:20 AM
Anisotropic Mechanical Properties of Commercially Pure Aluminum Processed by Equal Channel Angular Extrusion: Pei-Ling Sun1; Sheng-Jie Huang1; Chung-Yi Yu2; Po-We Kao3; Fung Chia University; National Sun Yat-Sen University

9:35 AM Invited
Tensile Properties and Fracture Mechanisms of Ultrafine Cu Alloys Subjected to Severe Plastic Deformation: Zhifeng Zhang1; P. Zhang1; X. H. An1; Y. Z. Tian1; S. D. Wu2; T. G. Langdon3; Institute of Metal Research; University of Southern California

9:55 AM
Microstructure and Tensile Strength of Grade 2 Ti Processed by Equal-Channel Angular Pressing and Cold Rolling: Vitor Sordi1; Megumi Kawasaki2; Maurizio Ferrante3; Terence Langdon4; Federal University of Sao Carlos; University of Southern California

10:10 AM
Strain Rate Sensitivity of Ultrafine Grained and Nanocrystalline Metals via Instrumented Nanoindentation: Ivan Romero1; L. J. Kecses2; Suveen Mathaudhu3; Quiming Wei1; University of North Carolina at Charlotte; U.S. Army Research Laboratory

10:25 AM Break

10:40 AM Invited
Ductility and Strategies for Improving Ductility of Bulk Nanostructured Materials: Yonghao Zhao1; Nanjing University of Science and Technology

11:00 AM
True Stress-True Strain Relationships until just before Fracture of Ultrafine-Grained Ferrite-Cementite Steels: Noriyuki Tsuchida1; Tadaharu Inoue2; University of Hyogo; National Institute for Materials Science

11:15 AM
Micromechanical Testing of Nanocrystalline and Ultra Fine Grained bcc Metals: Jonathan Ligda1; Brian Schuster2; Quiming Wei1; UNC Charlotte; Army Research Laboratory

11:30 AM
The Effect of High Strain Rate on the Mechanical Properties of Nanoporous Metal: Tanvir Ahmed1; Alan Jankowski2; Texas Tech University

11:45 AM
Influence of Cryogenic Processing on the Mechanical Properties of High-Purity Copper: Joel House1; James O’Brien2; Philip Flater1; Robert De Angelis3; Richard Harris1; Michael Nixon1; Air Force Research Laboratory; O’Brien and Associates; University of Florida

12:00 PM
Occurrence and Elimination of Yield Point Phenomena in Nanostructured Metals: Xiaoxu Huang1; Jacob Kidmose1; Tianlin Huang2; Qingshan Dong2; Niels Hansen1; Riso National Laboratory for Sustainable Energy, Technical University of Denmark; Chongqing University

Session Chairs: Kristopher Darling, U.S. Army Research Laboratory; Radomir Kuzel, Charles University; Christopher Saldana, Pennsylvania State University; Tianbo Yu, Risoe National Laboratory for Sustainable Energy, Technical University of Denmark

8:30 AM Invited
Stability and Microstructural Evolution of Grain Boundaries in Severely Deformed Metals: Gerhard Wilde1; Sergiy Divinski2; Harald Rössner1; University of Muenster

8:50 AM
Thermal Stability in Nanostructured fcc Metals: The Role of Twin Interfaces and Vacancies: Christopher Saldana1; Alexander King1; Srinivasan Chandrasekar1; Pennsylvania State University; U.S. Department of Energy, Ames Laboratory; Purdue University

9:05 AM
X-Ray Diffraction Study of Thermal Stability of Several Materials Prepared by ECAP and HPT: Radomir Kuzel1; Zdenek Matej2; Milos Janecik3; Ondrej Srba4; Charles University in Prague, Faculty of Mathematics and Physics

9:20 AM Invited
Stabilization and Mechanical Properties of Nano-Crystalline Copper by Alloying with Tantalum: Kris Darling1; Laszlo Kecses2; Suveen Mathaudhu3; ARL; Texas A&M University; ARO

9:40 AM
Stability and Grain Growth Mechanisms in Sintered Tungsten: Brady Butler1; James Paramore2; Kristopher Darling2; Micah Gallagher3; Eric Klier1; Heidi Maupin1; U.S. Army Research Laboratory

9:55 AM
Processing and Thermal Stability of Nanocrystalline Tungsten Alloys: Tongjai Chookajorn1; Christopher Schuh1; Massachusetts Institute of Technology

10:10 AM
The Effect of Deformation Texture on the Thermal Stability of UFG HSLA Steel: Enrico Bruder1; TU Darmstadt

10:25 AM Break

10:40 AM Invited
GB Segregations in UFG Alloys Processed by SPD: Xavier Sauvage1; Nariman Enikeev1; Julia Ivanisenko2; Artur Ganev1; Ruslan Valiev1; University of Rouen, CNRS; IPAM-USATU; INT - Karlsruhe Institut für Technologie (KIT)
11:00 AM
Low-Temperature Thermal Stability of Cold-Rolled Nanostructured Aluminum: 
Tianbo Yu1; Niels Hansen1; Xiaoxiu Huang1; 1Riso National Laboratory for Sustainable Energy, Technical University of Denmark

11:15 AM
Conditions for Stabilization of Binary Nanocrystalline Alloys against Grain Growth and Phase Separation: Heather Mandich2; Chris Schuh3; 2MIT

11:30 AM Invited
Enhancement of Strength and Stability of Nanostructured Ni by Small Amount of Solutes: Hongwang Zhang1; Ke Lu1; Reinhard Pippan2; Xiaoxiu Huang3; Niels Hansen1; 1Institute of Metal Research; 2Austrian Academy of Science; 3Riso National Laboratory for Sustainable Energy

11:50 AM
Processing of Thermally Stable, Ultrahigh-Strength Mg-Alloys: Kristopher Darling1; Laszlo Kecskes2; Seeven Mathaudhu1; 1U.S. Army Research Laboratory; 2U.S. Army Research Office

12:05 PM
Applying Equilibrium Segregation Theories to Inhibiting Grain Growth: Brian VanLeeuwen1; 1The Pennsylvania State University

12:20 PM
High-Pressure Torsion-Induced Grain Refinement/Growth in Course-Grained/Nanocrystalline Cu Powders: Haiming Wen1; Troy Topping1; Enrique Lavermia1; Rinat Islamgaliev2; Ruslan Valiev3; 1University of California, Davis; 2Ufa State Aviation Technical University

3:35 PM
Synthesis and Investigation of Growth Mechanisms of Functional Inorganic Oxide Nanomaterials: Yuanbing Mao1; 1University of Texas-Pan American

4:10 PM
Ultrafine ZnO Nanoparticles Synthesized by Ultraviolet Decomposition Process in Ambient Air: Growth Mechanism and Photoresponsive Activities: Jyh Ming Wi1; Hsin-Hsien Yeh1; Hong-Ching Lin1; 1Feng Chia University; 1Industrial Technology Research Institute

4:30 PM
P-Type Conductive Behaviors of AlN Co-Doped ZnO Films Deposited by the Atomic Layer Deposition: Yu-Mi Kim1; Kwang-Seok Jeong2; Ho-Jin Yun1; Seung-Dong Yang1; Sang-Youl Lee1; Hi-Deok Lee1; Ga-Won Lee1; 1Chungnam National Univ.

4:45 PM
Zinc Oxide Nanorods by the Pulsed Plasma in Liquid and Their Photocatalytic Property: Emil Omurzak1; Kengo Taniguchi2; Tsutomu Mashimo1; 1Kumamoto University; 2Kumamoto University

5:05 PM
ZnO Nanowires Grown on ZnO Thin Film Deposited by Atomic Layer Deposition: Mikhail Ladanov1; Paula Algarin Amaris1; Pedro Villalba1; Garrett Matthews1; Manoj Ram1; Jing Wang1; Ashok Kumar1; 1The University of South Florida

5:20 PM
Deposition of Organic and Inorganic Hybrid Laminates Using Ozone Based Atomic Layer Deposition: Sunwoo Lee1; Jie Huang1; Mingun Lee1; Pil-Ryung Cha1; Jiyoung Kim1; 1The University of Texas at Dallas

2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: 1-Dimensional Nanomaterials and ZnO

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Terry Xu, UNC Charlotte

Tuesday PM Room: Pelican 1
March 13, 2012 Location: Swan Resort

Session Chair: Seung Hyuck Kang, Qualcomm

2:00 PM Invited
Energy Generation and Storage Applications of TiO2 Nanotubular Arrays by Atomic Layer Deposition and Nanotemplating: Hyunjung Shin1; 1Kookmin University

2:35 PM
High Performance TiO2 Nanotubes-Based Biosensors for Streptavidin Detection: Mingun Lee1; Antonio Lucero1; Taewook Kim1; Jie Huang1; Moon Kim1; Jiyoung Kim1; 1University of Texas at Dallas

2:55 PM
Nano Boron Carbide in Fabric for Improvement of Ballistic Performance: David Stollberg1; Juan Aguilar1; 1Georgia Tech Research Institute

3:15 PM
Size Dependent Transition of Deformation Mode in Gold Nanowire: A Molecular Dynamics: Pil Ryung Cha1; Na-Young Park1; Ho-Seok Nam1; Seung-Cheol Lee2; 1Kookmin University; 2Computational Science Research Center, Korea Institute of Science and Technology

2:00 PM Invited
Characterization and Modeling of 3D Photovoltaics: Jonathan Gayer1; Daniel Josell1; 1NIST

2:35 PM Invited
More Efficient Polymer Solar Cells by Doping with Ferroelectric Dipoles: Kanwar Nalwa1; John Carr1; Rakesh Mahadevapuranam1; Hari Kodali1; Baskar Ganapathysubramanian1; Sumit Chaudhary1; 1Iowa State University
3:10 PM Break

3:15 PM
Effect of Annealing and Additives on Defects and Recombination in Polymer Photovoltaic Layers: Yuqing Chen1; Rakesh Mahadevaprasad2; Sunil Chaudhary1; Kunflo Yoon3; Lincoln Lahuon2; Shenyang University of Technology; Iowa State University

3:35 PM Invited
Raman Studies of Hybrid Nanostructures for Solar Energy: Vishal Kumar1; T. V. Ramakrishnan2; S. M. R. Sivasubramanian3; Nandakumar Muralidhar1; 1Tata Institute of Fundamental Research; 2Indian Institute of Technology Madras; 3Indian Institute of Science Bangalore

4:00 PM Invited
Developing Titania/Ferroelectric Heterostructures for Solar Photolysis: Gregory Rohrer1; Paul Salvador2; Li Li3; Andrew Schultz4; 1CMU; 2Northwestern University; 3Northwestern University; 4US DOE-NETL

4:15 PM Break

4:30 PM
Photolysis of Heterostructured Powders: Nanostructured TiO2 Shells Surrounding Microcrystalline (Ba,Sr, Pb)TiO3 Cores: Li Li1; Paul Salvador2; Gregory Rohrer1; 1CMU; 2Northwestern University

5:00 PM Invited
Deactivation Mechanism and Hole Scavenging in Heterostructured Visible Light Active CO2 Photoreduction Catalysts: Christopher Matranga1; Congjun Wang2; Robert Thompson1; Paul Ohodnicki1; 1US DOE-DOE; 2University of Illinois

5:45 PM Invited
Production of NbAl3 Powders through Sodium Reduction of Oxides: Erkan Konca1; 1Middle East Technical University; Atilim University

6:00 PM Break

6:15 PM
Production of Fe-Cr-Ni-Ti Alloys by Metallothermic Processes: Cem Colakoglu1; Onuralp Yücel2; Istanbul Technical University; 1Istanbul Technical University; 2INSA de Lyon

6:30 PM
Recrystallization of L-605 Cobalt Superalloy during Hot-Working: Dou Zhihe1; Zhang Ting'an1; Zhang Zhiqui1; Niu Liping1; Lv Guozhi1; Liu Yan1; He Jicheng1; Northeastern University

6:45 PM
Settling of Inclusions in Top-cut SoG-Si Scraps under Electromagnetic Field: Lucas Damoah1; Lifeng Zhang1; Missouri University of Science and Technology

6:00 PM
8:00 PM

7:45 PM
Technological Challenges and Opportunities in Emerging Metal Matrix Composites: Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS
Program Organizers: Ivan Komninos, Lawrence Livermore National Laboratory; Wei Xie, Pennsylvania State University

8:00 PM Invited
Processing of Ni-MoS2 Composite Plating: Ebru Saraloglu Guler1; Ishak Karakaya1; Ebru Saraloglu Guler1; 1Middle East Technical University; 2Atılım University

8:15 PM
Effect of Electroplating Parameters on “HER” Current Density in Ni-MoS2 Composite Plating: Ebru Saraloglu Guler1; Ishak Karakaya1; Ebru Saraloglu Guler1; 1Middle East Technical University; 2Atılım University

8:30 PM
The Roles of Diffusion Factors in Electrochemical Corrosion of TiN and CrN (CrSiCN) Coated Mild Steel and Stainless Steel: Feng Cai1; Qi Yang2; Xiao Huang1; 1Carleton University; 2National Research Council Canada

8:45 PM
Study and Application of the Taphole Clay with High Strength and Friendly Environmental Surroundings in a New Blast Furnace with a Capacity of 3800M3 Volume: Guotao Xu1; Yue Wang1; Yafei Xiong1; Huanyuan Li1; Shuzhong Li2; 1Wuhan Iron and Steel Group Company; 2Northeastern University
2:40 PM
Production of Ceramic Layers on Aluminum Alloys by Plasma Electrolytic Oxidation in Alkaline Silicate Electrolytes: Alexander Lugovskoy1; Alexey Kosenko1; Barbara Kazanski1; Michael Zinigrad1; Ariel University Center of Samaria

3:00 PM
Break

3:15 PM
Wear Properties of Plasma Sprayed Y-PSZ Coated 6063 Aluminum Alloy: Lei Zhi2; Selin Yildirim1; Suat Yilmaz3; Istanbul University

3:35 PM
Slurry Erosion Behavior of Thermally Sprayed Cr,Cr Carbide Coatings: V. N. Shukla1; R. Jayagathan1; B. V. Manoj Kumar1; V. K. Tewari1; IIT ROORKEE

3:55 PM
The Electrochemical Behavior of Surgical Grade 316L SS with and without HA Coatings in Simulated Body Fluid: Harjinder Singh2; Hazoor Singh3; Harpreet Saheet4; Gulu Institute of Engineering & Technology, Ludhiana, Punjab, India; Govt Medical College; Yadvindra College of Engineering, Talwandi Sabo, Bathinda, Punjab, India; Indian Institute of Technology Roorkee

4:15 PM
Modification Research on the Influence on Corrosion Film Properties of Pb-Ca-Sn Alloys of with Addition of Bi, Ag and Zn: Lei Xa; Li Jun Liu1; Pei Xian Zhu1; Kunming University of Science and Technology

Alumina and Bauxite: Hydrate Precipitation, Calcination and Environment
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Benny Rashauga, FLSmidth
Tuesday PM Room: Northern E3
March 13, 2012 Location: Dolphin Resort
Session Chair: Hans-Werner Schmidt, Outotec GmbH

2:00 PM
Growth and Agglomeration of Boehmite in Sodium Aluminate Solutions: Wang Zhi1; Zhang Juan1; Xu Rongguang1; Guo Zhancheng1; Institute of Process Engineering

2:15 PM
Physical Simulation on Mixing Uniformity in Seed Precipitation: Liu Yan1; Zhao Hongliang1; Zhang Ting’an1; Zhao Quyue1; Wang Shuchan1; Gu Songqing1; He Jicheng1; Zhang Chao1; Northeastern University

2:30 PM
Kinetics of Boehmite Precipitation from Supersaturated Sodium Aluminate Solutions with Ethanol-Water Solvent: Wang Zhi1; Xu Rongguang1; Liu Yang1; Guo Zhancheng1; Institute of Process Engineering

2:45 PM
Effect of Crystal Growth Modifier on the Structure of Sodium Aluminate Liquors Analyzed by Raman Spectroscopy: Jianguo Yin1; Wangxing Li2; Zhanwei Liu2; Zhaohui Su2; Zhonglin Yin1; Wentang Xia1; Chongqing University of Science and Technology; Zhengzhou Research Institute of Chalco
Tuesday PM

2:45 PM Question and Answer Period

2:55 PM Break

3:20 PM

The In-Situ Technique for Preparing Al-TiB2 and Al-Al3Ti Composites with ESR: Jun Wang1; Pan Li1; Chong Chen1; Jin Xue2; 1Shanghai Jiaotong University

3:40 PM

Grain Refinement of Al Alloys by Heterogeneous Nucleation of Consumable Ultrasonic Horn: Jeong-Hi Youn1; Young-Ki Lee2; Bong-Jae Choi1; Young-Jig Kim1; 1Sungkyunkwan University

4:00 PM

The Development and Validation of a New Thermodynamic Database for Aluminium Alloys: A Markström1; Z. Du2; S. H. Liu2; L. J. Zhang2; L. Kjellqvist1; J. Bratberg1; Paul Mason2; A. Engström1; Q. Chen1; 1Thermo-Cal Software AB; 2Central South University; 3Thermo-Calc Software Inc.

4:20 PM

Effect of Solid Particles on Fluidity of Semi-Solid Aluminum Alloy Slurry: Yuichiro Murakami1; Kenji Miwa2; Masayuki Kito1; Takashi Honda1; Keigo Yorioka1; Naoyuki Kanetake4; Shuji Tada1; 1Advanced Industrial Science and Technology; 2Aichi Science and Technology Foundation; 3Aisan Industry Co., Ltd.; 4Nagoya University

4:40 PM Question and Answer Period

Aluminum Alloys: Fabrication, Characterization and Applications: Solutioning and Aging Behaviours

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum

Tuesday PM
Room: Northern E1
March 13, 2012
Location: Dolphin Resort

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM

Precipitation Processes in Aged Al-4.0Mg-1.5Cu-(Ge,Si) Alloys: Junhui Xia1; Zhiguo Chen2; Gang Sha3; Simon Ringer4; 1The University of Sydney; 2Central South University

2:20 PM

The Role of Co-Clusters in the Artificial Aging of AA6061 and AA6060: Stefan Pogatscher1; Helmut Antrekowitz1; Thomas Ebner2; Peter Uggowitzer3; 1Montanuniversitaet Leoben; 2AMAG Rolling GmbH; 3Austria Metall GmbH (AMAG); 4ETH Zurich

2:40 PM

Co-Clusters in Al Alloys: Alloy Strengthening and Thermodynamics: Marco Starink1; 1University of Southampton

3:00 PM

The Effects of Aging Treatment and Environment on the Stress Corrosion Cracking Susceptibility of AA6005A Extrusions: Dan Seguin1; Calvin White1; Richard Dickson2; 1Michigan Technological University; 2Consultant

3:20 PM

Nature of Grain Boundary Precipitates and Stress Corrosion Cracking in Al-7075: Ramasis Goswami1; Ronald Holtz2; 1SAIC/Naval Research Laboratory; 2Naval Research Laboratory

3:40 PM

Precipitation of the γ’ (AlAg2) Phase on Dislocation Loops in Al-Ag-(Cu) Alloys: Julian Rosalie1; Laure Bourgeois2; Barrington Muddle3; 1National Institute for Materials Science; 2Monash University

4:00 PM Break

4:15 PM

On Elastic Compressive Stress Aging of an AA7075 Aluminum Alloy: Jinguo Zhang1; Wei Guo2; Hui Li1; Men Yang2; Tiankai Yao3; Xiyu Wen2; 1Yanshan University; 2University of Kentucky

4:35 PM

Influence of Mn in Solid Solution in Softening of AA3003 Alloy During Annealing: Dionisos Spathanis1; John Tsiros2; 1Hellenic Aluminium industry (ELVAL SA); 2Hellenic Aluminium Industry (ELVAL SA)

4:55 PM

The Influence of Solution-Treatment on the High-Temperature Strength of Al-Si Foundry Alloys with Ni: Florian Stadler1; Helmut Antrekowitz1; Werner Fragner2; Helmut Kaufmann3; Peter J. Uggowitzer4; 1University of Leoben; 2AMAG Casting GmbH; 3Austria Metall GmbH (AMAG); 4ETH Zurich

5:15 PM

The Effect of Artificial Aging Treatment on Microstructure and Tensile Properties of AI-12.7Si-0.7Mg Alloy: Fang Liu1; Fuxiao Yu2; Dazhi Zhao1; Liang Zuo1; 1Northeastern University

Aluminum Reduction Technology: Anode Effect, Process Control

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Tuesday PM
Room: Southern III
March 13, 2012
Location: Dolphin Resort

Session Chair: Claude Ritter, Rio Tinto Alcan

2:00 PM

Latest Results from PFC Investigation in China: Xiping Chen; Wangxing Li; Jianhong Yang; 1Zhengzhou Research Institute of Chalco Industry (ELV AL SA); 2Hellenic Aluminium Industry (ELV AL SA)

2:20 PM

Studies of Perfluorocarbon Formation on Anodes in Cryolite Melts: Ole Kjos1; Thor Anders Aarhaug1; Egil Skybakmoen1; Asbjorn Solheim1; 1Consultant

2:40 PM

Characteristics of In Situ Alumina PID Ore Feed Control: Michael Schneller1; 1Consultant

3:00 PM

Towards On-Line Monitoring of Alumina Properties at a Pot Level: Jayson Tessier1; Gary Tarcy1; Eliezer Batista2; Xiangan Wang3; 1Alcoa

3:20 PM Break

3:40 PM

Controlling the Variability of Pots KPVs : The Variability Matrix: Pierre Baillot1; Jean-Paul Aussel1; Armand de Vasselot2; 1I.P.I.; 2Consumable Ultrasound Horn

4:00 PM

Multivariate Statistical Investigation of Carbon Consumption for HSS Reduction Cell: Peter Polyakov1; Tatiana Piskazhova1; Nikita Sharypov; Alexandr Kravovitskiy2; Sergey Sorokin3; 1Siberian Federal University; 2RUSAL Nadoysy aluminium smelter
4:20 PM
Experiences with Alstom’s New Alfeed System at Emal: Sivert Ose; Bjørn Leikvang; Sunny John Mathew; Geir Wedde; Anders Sorhus; Odd Edgar Bjarnar; Alstom Norway; Emirates Aluminium

4:40 PM
Computer Algorithm to Predict Anode Effect Events: Fernando Costa; Leonardo Paulino; Alcoa/Alumar

Aluminum Reduction Technology: Cell Fundamentals, Phenomena and Alternatives I
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Tuesday PM
Room: Northern E4
Location: Dolphin Resort
Session Chair: Michel Reverdy, Dubai Aluminium

2:00 PM
Effect of Current Density and Phosphorus Impurities on the Current Efficiency for Aluminum Deposition in Cryolite-Alumina Melts in a Laboratory Cell: Gudrun Saevarsdottir; Geir Haarberg; Rauan Meirbekov; Reykjavik University; Norwegian University of Science and Technology

2:20 PM
A Thermodynamic Approach to the Corrosion of the Cathode Refractory Lining in Aluminium Electrolysis Cell: Modelling of the Al2O3-Na2O-SiO2-AlF3-NaF-SiF4 System: Guillaume Lambotte; Patrice Chartrand; CRCT, Ecole Polytechnique de Montréal

2:40 PM
Influence of the Sulphur Content in the Anode Carbon in Aluminium Electrolysis - a Laboratory Study: Stanisław Pietrzyk; Janom Thonstad; AGH University of Science and Technology; Norwegian University of Science and Technology

3:00 PM
Concentration Gradients of Individual Anion Species in the Cathode Boundary Layer of Aluminium Reduction Cells: Ashyorn Solheim; SINTEF

3:20 PM
Electrochemical Behaviour of Carbon Anodes in Na3AlF6-K3AlF6-AIF3-NaF-SiF4, System: Guillaume Lambotte; Xue Zhou; University of Science and Technology Beijing

3:40 PM Break

4:00 PM
Operating Parameters of Aluminum Electrolysis in a KF-AIF3 Electrolyte: Olga Tkacheva; John Hryn; Jeff Spangenberg; Boyd Davis; Tom Alcorn; ANL; KPM; Noranda Aluminum

4:20 PM
Effect of KF Additions in Na3ALF6-Al2O3 Electrolytes on Expansion of Cathode Blocks: Zhang Yuehong; Feng Naixiang; Peng Jianping; Wang Yaowu; Han Yeyu; Zhai Xiujuin; Northeastern University

4:40 PM
Preparating Aluminium-Scandium Inter-alloys during Reduction Process in KF-AIF3-Sc2O3 Melts: Quachuo Liu; Jiilai Xue; Jun Zhu; Chunyang Guan; University of Science and Technology Beijing

5:00 PM
Liquidus Temperatures of the System Na3AlF6-K3AlF6-AIF3-Lai Yanqing; Xin Pengfei; Tian Zhongliang; Wei Chenjuan; Chen Duan; Li Jie; Central South University

Atomistic Effects in Migrating Interphase Interfaces - Recent Progress and Future Study: Interface Migration and Alloy Partitioning
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM Phase Transformations Committee
Program Organizers: Tadashi Furuhara, Institute for Materials Research, Tohoku University; Sudarsanam Babu, Ohio State University; Hatem Zurob, McMaster University; Jian-Feng Nie, Monash University; Wen-Zheng Zhang, Tsinghua University; James Howe, University of Virginia

Tuesday PM
Room: Europe 3
Location: Dolphin Resort
Session Chairs: Hatem Zurob, McMaster University; Amy Clarke, Los Alamos National Laboratory

2:00 PM Invited
Partitioning and Austenite Reversion at Martensite-Austenite Interfaces in Mn-Steels: Dierk Raabe; Dirk Pongel; Gerhard Inden; Julio Millán; Pyuck-Pa Choi; Max-Planck-Institut

2:30 PM
Ferrite-to-Austenite and Austenite-to-Ferrite Phase Transformation in a Fe-2 wt% Mn Alloy Studied In-Situ with 3DXRD Utilizing Synchrotron Radiation: Hemant Sharma; Richard Huizenga; Jilt Sietsma; Erik Offerman; Delft University of Technology

3:00 PM
Transitions in Austenite Decomposition Products in a Fe-10%Ni/Fe-5%Ni Diffusion Couple with 0.1%C and 0.3%C: Eduardo Montelade; Arthur Nishikawa; Hélio Goldenstein; Mangels Indústria e Comércio Ltda. - Steel Division; Engineering School - University of São Paulo

3:20 PM
New Observation of PE Kinetics in Fe-C-X and Fe-N-X Systems: Mingxing Guo; Catherine Silva; Hatem Zurob; McMaster University

3:40 PM Break

4:00 PM Invited
Analysis at the Nanoscale of the Austenite/Ferrite Interface during Ferrite Formation: Mohamed Gouné; Frederic Danoix; ArcelorMittal Maizières Research; CNRS - Université de Rouen

4:30 PM
Manganese Partitioning during Pearlite Growth in Fe-C-Mn Medium Carbon Steel: Maria Martin-Aranda; Juan Cornide; Carlos Capdevila-Montes; Michael Miller; Francisca Caballero; Robert Hackenberg; Esteban Urones-Garrote; CENIM-CSIC; ORNL; LANL; Universidad Complutense

4:50 PM
Formation of Grain Boundary Ferrite in Eutectoid and Hypereutectoid Steels: Goro Miyamoto; Yosuke Karube; Tadashi Furuhara; Tohoku University

TUESDAY PM
Biological Materials Science Symposium: Biological and Bio-Inspired Materials II: Hard Biomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman, Texas A&M University

Tuesday PM  Room: Swan 7
March 13, 2012  Location: Swan Resort

Session Chairs: Po-Yu Chen, National Tsing Hua University; Dwayne Arola, University of Maryland Baltimore County

2:00 PM Invited
Biomimetic Scaffolds for Regeneration: Peter Ma; 1University of Michigan

2:30 PM
Hydroxyapatite-Coated Titanium-Based Biomaterials Prepared by RF Magnetron Sputtering: Guoqing Wang; Leping Niu; Sheng Yang; Ting Ting Gao; 1College of Science, Northeastern University

2:50 PM
Estimation of Residual Stresses in Bone Resulting from Surface Treatments: Jose Viray; Dwayne Arola; 1University of Maryland Baltimore County

3:10 PM
Micro-Mechanical Characterization of Bovine Cortical Bone in Bending and Uniaxial Compression: Kelly Kranjc; Pravin Ramesh; Katharine Flores; 1Ohio State University

3:25 PM
The Elastic Modulus of Trabecular Bone: Modeling and Experiments: Elham Hamed; Ekaterina Novitskaya; Jun Li; Po-Yu Chen; Iwona Jasinska; Joanna McKittrick; 1University of Illinois at Urbana-Champaign; 2University of California, San Diego

3:40 PM Break

3:50 PM Invited
Adhesion in Nanoparticles for Cancer Detection and Treatment: Winston Soboyejo; 1Princeton University

4:20 PM
The Importance of Decussation on the Crack Growth Resistance of Enamel: Mobin Yahyazadehfar; Dwayne Arola; 1University of Maryland Baltimore County

4:40 PM
Improved Biocompatible Zirconia and Alumina Based Ceramic Composites: Koushik Biswas; Ajoy Pandey; 1Indian Institute of Technology Kharagpur

5:00 PM
Effect of Bacteria on Mechanical Properties of Dental Composites: Dmitry Khvostenko; Jamie Kruzic; John Mitchell; Jack Ferracane; 1Oregon State University; 2Oregon Health & Science University

5:15 PM
Micromechanical Analysis of Strain-Induced Martensitic Transformation in Biomedical Co-Cr-Mo-N Alloy: Byoung-Soo Lee; Shou Suzuki; Hiroaki Matsumoto; Yuichiro Koizumi; Akihiko Chiba; 1Department of Materials Processing, Graduate School of Engineering, Tohoku University; 2Institute for Materials Research, Tohoku University

Bulk Metallic Glasses IX: Structures and Mechanical Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Tuesday PM  Room: Swan 6
March 13, 2012  Location: Swan Resort

Session Chairs: A. Greer, Univ of Cambridge; J. Eckert, IFW Dresden
4:45 PM
Critical Temperature for Ductile-to-Brittle Transition for Metallic Glasses: Golden Kumar; Pascal Neibecker; Jan Schroers; Yale University; Universitaet des Saarlandes

4:55 PM Invited
Influence of Shear Band on the Mechanical Behavior of Metallic Glasses: Yi Li; National University of Singapore

5:15 PM Invited
Review on the Use of Bulk Metallic Glass for Multi-Scale Tooling Applications: David Browne; Demit Stratton; Michael Gilchrist; Cormac Byrne; University College Dublin

5:35 PM Invited
Intrinsic and Extrinsic Size Effects in the Deformation of Metallic Glass Nanopillars: Jeff De Hosson; O. Kuzmin; Y.T. Pei; Univ of Groningen

**Cast Shop for Aluminum Production: Furnace**
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee

Program Organizer: Trond Furu, Hydro

Tuesday PM  Room: Northern A4
March 13, 2012  Location: Dolphin Resort

Session Chair: Ragnhild Aune, NTNU

2:00 PM  Room: Dolphin Resort
Automated Measurement of Furnace Liquid Metal Heel and Full Furnace Weights: John Courtenay; MQP Limited

2:20 PM  Room: Dolphin Resort
Development of a New Generation Electromagnetic Metal Moving System: Graham Guest; Stephen Augustine; Fabienne Virieux; Solios Thermal; Fives Solios

2:40 PM  Room: Dolphin Resort
Six Years Experience from Low-Temperature Oxyfuel in Primary and Re-Melting Aluminium Cast Houses: Henrik Gripenberg; Linde

3:00 PM Break

3:20 PM  Room: Dolphin Resort

3:40 PM  Room: Dolphin Resort
Quality Comparison between Molten Metal from Remelted Sheets; Mill Finish and Coated: Anne Kvithyld; Arne Nordmark; Derya Disipran; SINTEF

4:00 PM  Room: Dolphin Resort
Numerical Modeling of Oxy-Fuel and Air-fuel Burners for Aluminium Melting: Jorgen Furu; Andreas Buchholz; Trond H. Bergstrom; Knut Marthensen; NTNU; Hydro Aluminium Deutschland GmbH; SINTEF Materials and Chemistry

**CFD Modeling and Simulation in Materials Processing: Modeling of Casting and Solidification Processes I**
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee

Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Herve Combeau, Institut Jean Lamour

Tuesday PM  Room: Asia 4
March 13, 2012  Location: Dolphin Resort

Session Chairs: Herve Combeau, Institut Jean Lamour; Charles-Andre Gandin, Mines ParisTech

2:00 PM Keynote
Multiscale and Multiphysic Models in CFD Modeling and Simulation of Solidification Process: Herve Combeau; Miha Zaloznik; Institut Jean Lamour

2:30 PM Invited
3D CAFE Simulation of a Macrosegregation Benchmark Experiment: Charles-Andre Gandin; T. Carozzani; H. Digonnet; M. Bellet; MINES ParisTech

2:55 PM Invited
Modeling of Multiscale and Multiphase Phenomena in Material Processing: Andreas Ludwig; Abdullah Kharicha; Menghuai Wu; University of Leoben, Dep. Metallurgy

3:20 PM
Numerical Simulation of Macrosegregation Formation during Solidification Accounting for Inoculants and Equiaxed Grain Transport: Knut Omdal Tveito; Marie Bedel; Miha Zaloznik; Herve Combeau; Mohammed M’hamdi; Arvind Kumar; Pradip Dutta; Norwegian University of Science and Technology; Institut Jean Lamour, Departement SI2M, CNRS – Nancy-Universite – UPV-Metz, Ecole des Mines de Nancy; Institut Jean Lamour, Departement SI2M, CNRS – Nancy-Universite – UPV-Metz, Ecole des Mines de Nancy; SINTEF Materials and Chemistry; Department of Mechanical Engineering, Indian Institute of Science, Bangalore

3:40 PM Break

4:00 PM
A Numerical Benchmark Exercise on Thermal and Thermosolutal Convection in Liquid Alloys: Miha Zaloznik; Cedric Le Bor; Stephane Glockner; Olga Badenkova; Yves Du Terrail; Marius-Vasile Bejinariu; Gregor Kosec; Dominique Gobir; Herve Combeau; Institut Jean Lamour; I2M-TREFLE; SIMaP; Universitatea Tehnica de Constructii Bucuresti; Institute Josef Stefan; EM2C

4:20 PM
2D and 3D Numerical Modeling of Solidification Benchmark of Sn-3% Pb Wt. Alloy under Natural Convection: Redouane Boussaar; Lkhdhar Hachani; Bachir Saadi; Xiaodong Wang; Olga Badenkova; Kader Zaitou; Hamda Ben Hadid; Yves Fautrelle; Grenoble-INP; LMF-ECole centrale de Lyon
TUESDAY PM

4:40 PM
Numerical Modeling of the Interaction between a Foreign Particle and a Solidifying Crystalline Interface: Eliana Agaliotis1; Mario Rosenberger1; Alicia Ares1; Carlos Schwezov2; ‘CONICET - UNaM’

5:00 PM
Simulation of A356 Semi-Solid Die-Casting Using Power-Law Model: Seyed Vahidehara Seyed Vakili1; Mahmoud Nili-Ahmadabadi1; ‘University of Tehran’

5:20 PM
Optimization of Tensile Test Pattern for Aluminum Alloys: Engin Tan1; Freddy Syvertsen2; Derya Dospinar2; ‘Pamukkale University;’ SINTEF; ‘University of Istanbul’

Characterization of Minerals, Metals, and Materials: Characterization Technologies

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio De Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Firrao, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mineral Resources; Mingdong Cai, Schlumberger

Tuesday PM  Room: Asia 2
March 13, 2012  Location: Dolphin Resort

Session Chairs: Mingdong Cai, Schlumberger Inc.; John Carpenter, DOE Los Alamos National Laboratory

2:00 PM
3D Characterization of Dendrites in Synthetic and Naturally Occurring Magma: S. Knox1; A. Shiveley2; G. Viswanathan2; M. Chapman1; J. Hammer2; J. Tiley3; ‘Southwestern Ohio Council for Higher Education/Air Force Research Laboratory;’ ‘Air Force Research Laboratory;’ ‘Department of Geology and Geophysics, University of Hawaii’

2:15 PM
3D Metallography of Multiphase Steels: Martin Fischer1; Pierre Lutomski1; Andreas Steiben1; Wolfgang Bleck2; ‘RWTH Aachen University

2:30 PM
Advantages of Integrating Precession Scanning Transmission Electron Microscopy in the Characterization of Metallic Materials: Peter Collins1; Hamid Mohseni1; Tom Scharf1; ‘University of North Texas

2:45 PM
Characterization of Microstructure-Property Relations: Applying Complementary 3D Techniques: John Bingert1; Matthew Tucker2; Robert Suter1; Brian Patterson1; Cheng Liu1; ‘Los Alamos National Laboratory;’ ‘Carnegie Mellon University

3:00 PM
Characterization of Open-Pored Metals Using Image Processing: Bjorn Hinze1; Joachim Roesler1; ‘TU Braunschweig

3:15 PM
Full-Field Strain Mapping of Woven Structural Composites for Aerospace Applications: Shahram Amini1; Ellen Sun1; ‘United Technologies Research Center

3:30 PM Break

3:40 PM
Precession Illumination Based Orientation Imaging, Grain Size and Defect Analysis in the Transmission Electron Microscope: Andreas Kulovits1; Jorg Wiezorek1; ‘University of Pittsburgh

3:55 PM
Micro-Channeled Materials for Acoustic Absorption Applications: Michael Callier1; Keller Tomassi1; Keri Ledford1; Jason Nadler1; ‘Georgia Institute of Technology;’ ‘Georgia Tech Research Institute

4:10 PM
Surface Characterization of 19th Century and Modern Daguerreotypes Using EBSD & EDS: Lisa Chan1; Patrick Ravines2; Bob Anderhalt1; Rob McElroy3; Tara Nylese1; Peter Bush3; ‘EDAX;’ ‘SUNY Buffalo State;’ ‘Archives Studio

4:25 PM
Measuring Crystal Elastic Constants Using Ultrafast Laser Generated Surface Acoustic Waves: Peng Zhao1; Changdong Wei1; Ji-Cheng Zhao1; ‘Ohio State University

4:40 PM
Thermography Assisted Fatigue Testing: Anil Saigal1; Rongbiao Gu1; Christopher San Marchi1; Douglas Matson1; ‘Tufts University;’ ‘Sandia National Laboratory

Computational Thermodynamics and Kinetics: Diffusion Coefficients


Program Organizers: Zhi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Tuesday PM  Room: Australia 3
March 13, 2012  Location: Dolphin Resort

Session Chairs: Anton van der Ven , U Michigan; Carelyn Campbell, NIST

2:00 PM Invited Challenges in Constructing Diffusion Mobility Databases for Industrial Alloys: Carelyn Campbell1; ‘National Institute of Standards and Technology

2:25 PM
Computation and Validation of Effective Diffusion Coefficient in a Magnesium Polycrystal: Bala Radhakrishnan1; Nagraj Kulkarni1; Yongho Sohn1; Jerry Hunter1; ‘Oak Ridge National Laboratory

2:40 PM
Tracer Diffusion Databases – Benefits and Techniques: Nagraj Kulkarni1; Graeme Murch1; Iriana Belova1; Yongho Sohn1; Robert Warmack1; Jerry Hunter1; Bala Radhakrishnan1; ‘Oak Ridge National Laboratory;’ ‘The University of Newcastle;’ ‘University of Central Florida;’ ‘Virginia Polytechnic Institute and State University
2:55 PM
Extracting Chemical Diffusion Coefficients from Ternary Diffusion
Paths: Qiaoju Zhang1; Ji-Cheng Zhao1; 1The Ohio State University

3:10 PM
Solute Diffusion in Ordered Bulk NiAl: A First Principles
Investigation: Priya Gopal2; Srinivasan Srinivilliputhur2; 1University of North Texas, Denton

3:25 PM Break

3:50 PM Invited
Interstitial and Substitutional Solid-State Diffusion from First
Principles: Anton Van der Ven3; 1University of Michigan

4:15 PM
Ab Initio Determination of Point Defects and Derived Diffusion
Properties in Metals: Tilmann Hickel1; 1Max-Planck-Institut fuer Eisenforschung GmbH

4:30 PM
Diffusion of Silicon in Nickel: The Role of Stress and Its Implications
to Microstructural Evolution under Irradiation: Venkateswara Rao
Mangal1; Pascal Bellon1; Robert Averback2; Dallas Trinkle3; 1University of Illinois at Urbana Champaign

4:45 PM
Ab-Initio Calculations of Solute Properties in Magnesium: Liam
Hubey1; Ilya Elifmov1; Joerg Rottler1; Matthias Militzer1; 1University of British Columbia

5:00 PM
Accelerated Self-Diffusion in FCC Metals Due to H Induced
Superabundant Vacancies: Roman Nazarov1; Tilmann Hickel1; Jörg
Neugebauer1; 1Max Planck Institute for Iron Research

5:15 PM
Oxygen-Solute Interaction in α-Titanium and the Effect on Diffusion:
Henry Wu1; Dallas Trinkle1; 1University of Illinois at Urbana-Champaign

Computational Thermodynamics and Kinetics: Phase-Field Simulations in Alloys II

Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Tuesday PM
Room: Asia 5
Location: Dolphin Resort

Session Chairs: Long-Qing Chen, Penn State; John Morral, Ohio State University

2:00 PM
A Phase Field Crystal Model of Irradiation Damage in Materials:
Nana Ofori-Opoku1; Jeffrey Hoy1; Nikolai Provat1; 1McMaster University

2:15 PM
Simulating Microstructure Property Relations in Shape Memory
Polyocrystals: Rajeev Ablawalid5; Siu Sin Quck5; Wu David5; 1Institute of High Performance Computing

2:30 PM
Complex Microstructures Formed in a+b/a̅+α̅' Diffusion Couples in Ni-Al-Cr System: Comparison of Phase Field Simulation from a Model System with Experiments: Xiaqin Ke5; John Morral5; Yunzhi Wang5; 1Ohio State University

2:45 PM
Phase Field Simulations of Electromigration Driven Failure in
SnAgCu Solder Interconnects: Subramanya Sadasiva5; Ganesh Subbarayan-Shastri5; Lei Jiang5; Daniel Pantuso5; Sandeep Sane5; 1Purdue University; 1Intel Corporation

3:00 PM
Elastic Effects on Aging in Cu/Sn-Ag-Cu Lead-Free Solder Joints:
A Phase-Field Study: Durga Anantharayanan1; Patrick Wollants1; Nele Moelans1; 1Department of Metallurgy and Materials Engineering, Katholieke Universiteit Leuven

3:15 PM
Phase-Field Crystal Modeling of Metal-on-Metal Epitaxy: Exploring Routes to Self-Organization: Sriavatsan Muralsidharan1; Raika Khodadad1; Ethan Sullivan1; Mikkio Haataja1; 1Princeton University

3:30 PM Break

4:00 PM
Numerical Modeling of Dendritic Growth During Solidification of
Alloys Using Lattice Boltzmann and Cellular Automaton Methods:
Mokshen Eshraghi1; Sergio Felicelli1; 1Mississippi State University

4:15 PM
Phase-Field Simulation of Segregation to Stacking Fault and Twin
Boundaries in Co-Based Alloys: Yuichiro Koizumi1; Sho Suzuki1; Takuma Ohtomo1; Shingo Kurosu1; Yungping Li1; Hiroaki Matsumoto1; Akihiko Chiba1; 1University of Tokyo

4:30 PM
A Hybrid Phase-Field / Transmission Electron Microscopy Approach
for Quantifying β’ Precipitation Kinetics in Cast Al-Si-Cu Alloys:
Junsheng Wang1; Ruijie Zhang1; William Donlon1; Mei Li1; Long-Qing
Chen1; John Allison1; 1Ford Motor Company; 1University of Science and Technology Beijing; 1Penn State University; 1University of Michigan

4:45 PM
Antiphase Boundaries in Rafted Structures: Experimental
Investigation and Phase Field Modeling: Yann Le Bouar1; Adéle
Lyprend1; Alphonse Findel1; Jean-Sebastien Merot1; Loic Patout1; Francois
Brisset1; 1LEM, CNRS/ONERA; 2ICMMO, Université Paris-Sud

5:00 PM
Modeling the Kinetics of Diffusive Phase Transformations -Phase
Field Method and Thick Interface Model: Ernst Gamsjäger1; Jiri
Svoboda1; Franz Dieter Fischer1; 1Montanuniversität Leoben; 2Academy of Sciences

5:15 PM
Morphological Study of Polymer Crystallization by a Phase-Field
Model: Mohsen Asle Zaeem1; Sasan Nouranian1; Mark Horstemeyer1; Paul Wang1; 1Mississippi State University
Defects and Properties of Cast Metals: Solidification Structure and Segregation
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, University of Birmingham; Brian Thomas, University of Illinois at Urbana-Champaign; Carl Reilly, University of British Columbia

Tuesday PM  Room: Oceanic 4
March 13, 2012  Location: Dolphin Resort
Session Chairs: Matthew Krane, Purdue University; Brian Thomas, University of Illinois

2:00 PM
A Multi-Scale 3D Model of the Vacuum Arc Remelting Process: Koulis Pericleous1; Georgi Djambazov2; Mark Ward3; Yuan Lang2; Peter Lee2; 1University of Greenwich; 2University of Birmingham; 3Imperial College; 4University of Manchester

2:20 PM
Deterministic Origin of Dendritic Side-Branching: Martin Glicksman1; 1Florida Institute of Technology

2:40 PM
Identification of Defect Prone Peritectic Steel Grades by Analyzing the High Temperature Phase Transformations: Peter Presoly1; Robert Pierer2; Christian Bernhardt1; 1Montanuniversität Leoben

3:00 PM
Effect of Deformation on Microsegregation in Cast Structure of Bearing Steel: Mitra Basirat1; Hasse Fredriksson1; 1KTH, Royal Institute of Technology

3:20 PM
Effects of Section Size And Cooling Rate on Microstructure and As-Cast Properties of Investment Cast Co-Cr Biomedical Alloy: Tamas Pautrat1; Zhiqiang Han2; Da Qing3; Cyril Williams4; Guangli Hu5; Changjiang Chen6; Kalair Ramesh7; Datta Dandekar; 1Mines Paristech; 2DePuy (Ireland); 3Pennsylvania State University; 4Mississippi State University; 5University of California Davis; 6University of Sydney, Australia; 7U.S. Army Research Laboratory; 8The Johns Hopkins University

3:40 PM Break

4:00 PM
The Influence of Cu on Eutectic Nucleation and Morphology in Hypoeutectic Al-Si Alloys: Antijaram Darlapudi1; 1University of Queensland

4:20 PM
Molecular-Dynamics Simulations of Ni-Based Superalloys: Christopher Woodward1; James Lill2; Dallas Trinkle1; Mark Astra2; 1Air Force Research Laboratory; 2High Performance Technologies Inc.; 3University of Illinois; 4University of California

4:40 PM
Microstructure and Microsegregation in Inconel 718 Casting: Alexis Paustral1; 1Mines ParisTech

5:00 PM
Numerical Simulation on Solidification Microstructure of Cast Steel Using Cellular Automaton Method: Bin Su1; Zhiquang Han1; Baicheng Liu2; Yongrang Zhao3; Bingzhen Shen2; Lianzhen Zhang1; 1Tsinghua University; 2CITIC Heavy Industries Co., Ltd.

5:20 PM
Microstructure Simulation in Pressurized Solidification during Squeeze Casting of Aluminum Alloy A356: Yanda Li1; Zhiquang Han1; Alan Luo2; Anil Sachdev3; Baicheng Liu2; 1Tsinghua University; 2General Motors Global Research and Development Center

5:40 PM
Modeling of Melt Mixing Phenomena in Cast Iron with Dual Graphite Structure: Simon Lekakh1; Jingjing Qing2; Von Richards3; 1Missouri University of Science and Technology

Deformation, Damage, and Fracture of Light Metals and Alloys: Session III
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASME: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Fuqiang Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

Tuesday PM  Room: Northern A2
March 13, 2012  Location: Dolphin Resort
Session Chairs: Qizhen Li, University of Nevada, Reno; Wen-Ming Chien, University of Nevada, Reno

2:00 PM Invited
Materials Design in Magnesium Alloy Development: Michele Manuel1; 1University of Florida

2:30 PM
The Shear Localization Behavior and Mechanisms of Five Light Metals: Al 7039, Al 5083, Al 5059, AZ31B, and AM60: Sara Perez-Bergquist1; George Gray2; Ellen Cerreta3; Carl Trujillo4; Mike Lopez5; 1Los Alamos National Laboratory

2:45 PM
Reducing Forming Time in Warm Forming of Lightweight Metals by Using Variable Forming Speed: Serhat Kaya1; 1The Ohio State University

3:00 PM
Influence of Size on Strength of Nickel Nanowires: Ilaksh Adlibhata1; Kiran Solanki1; Amruta Moitra1; Mark Tschopp1; 1SEMTE; 2Arizona State University; 3Pennsylvania State University; 4Mississippi State University

3:15 PM
Deformation Twinning Activation of Ti-6Al-4V under Different Loading Conditions: Ming Chu1; Jeremy Millett2; Yu Chiu3; Ian Jones1; 1University of Birmingham; 2AWE

3:30 PM Break

3:50 PM Invited
Mechanical Properties of Bulk Nanostructured 7075 Al Alloy Prepared by Severe Plastic Deformation: Yonghao Zhao1; X.Z. Liao2; 1University of California Davis; 2University of Sydney, Australia; 3University of California, Davis; 4North Carolina State University, Raleigh; 5Ufa State Aviation Technical University, Russia

4:20 PM
1100 Aluminum under Quasi-Static and Dynamic Loading: Cyril Williams1; Guangli Hu2; Changjiang Chen3; Kalair Ramesh4; Datta Dandekar5; 1U.S. Army Research Laboratory; 2The Johns Hopkins University

4:35 PM
Study on High Velocity and High Strain Rate Deformation of Aluminum Alloys with Electromagnetic Forming: Jianhui Shang1; Steve Hatkevich2; Larry Wilkerson3; 1American Trim LLC
Electrode Technology for Aluminium Production: Carbon Materials for Anode and Cathode
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Morten Sortie, Alcoa Norway

Tuesday PM
March 13, 2012
Room: Americas Seminar
Location: Dolphin Resort

Session Chair: Carlos Zangiacomi, Alcoa Aluminum Inc.

1:00 PM
Evolution of Anode Grade Calcined Coke: Les Edwards; Nigel Backhouse; Hans Darmstadt; Marie-Josée Dion; Rain CHI Carbon; Rio Tinto Alcan

2:00 PM
Studies on Impact of Calcined Petroleum Coke from Different Sources on Anode Quality: Binuta Patra; Rabindra Barik; National Aluminium Company Ltd

3:00 PM
Importance of Primary Quinoline Insoluble in Binder Pitch for Anode: Minoru Sakai; Yulong Wang; Takashi Fukuoka; Hitomi Hatano; JFE Chemical Corporation

3:40 PM
Experiences on Anode Reconstruction Process in Soderberg Technology: Carlos Zangiacomi; Jose Luis Garcia Garcia; Andre De Abreu; Ciro Kato; Alcoa Aluminum Latin America; Alcoa INESPAL, S.A.

4:00 PM Break

4:10 PM
Cathode Performance Evaluation at Votorantim Metals - CBA: Jean Pardo; Votorantim Metals - CBA

4:30 PM
Green, Safe and Clean Carbon Products for the Aluminium Electrolysis Pot: Bénédicte Allard; Régis Paulus; Carbone Savoie

4:50 PM
A New Material for Collector Bar Sealing – LRM2: Thiago Simoes; Marcelo Assuncão; Novelis

5:00 PM
Impact Deformation and Dislocation Substructure of Ti-6Al-4V Alloy at Cryogenic Temperatures: Woei-Shyan Lee; Tao-Hsing Chen; Sian-Cing Huang; National Cheng Kung University

5:10 PM
Dry Barrier Mix in Reduction Cell Cathodes: Richard Jeltsch; Chen Cairong; Jetsch Consulting; Chalieco/Gami

Electrometallurgy 2012: Session III
Program Organizers: Georges Houliachi, Hydro-Quebec; Antoine Allanore, Massachusetts Institute of Technology; Michael Free, University of Utah; Michael Moats, University of Utah; Edouard Asselin, UBC; Shiji Wang, Rio Tinto Kennecott Utah Copper; James Yurko, Materion Brush Beryllium and Composites

Tuesday PM
March 13, 2012
Room: Europe 5
Location: Dolphin Resort

Session Chairs: Michael Moats, University of Utah; Edouard Asselin, University of British Columbia

2:00 PM
Capacities of Molten Slags and Their Practical Use: Kazuki Morita; The University of Tokyo

2:20 PM
Investigation of Nucleation and Plating Overpotentials during Copper Electrowinning using the Galvanostatic Staircase Method: Michael Moats; University of Utah

2:40 PM
Nucleation and Growth of Copper on Stainless Steel Cathode Blanks in Electrorefining: Jari Aromaa; Olof Forsén; Antti Kekki; Aalto University

3:00 PM
An Overview of the Design of the New Nickel Tankhouse at Anglo American Platinum's Base Metal Refinery: Deborah Erasmus; Nicko Prinsloo; Anglo American Platinum

3:20 PM
Developments in Base Metal Electrowinning Cellhouse Design: Tim Robinson; Kathryn Sole; Michael Moats; Frank Crundwell; Masatsugu Morimitsu; Lauri Palmu; Republic Alternative Technologies; Independent Consultant; University of Utah; CM Solutions (Pty) Ltd; Doshisha University; Talvivaara

3:40 PM Break

3:55 PM
The Recovery of Manganese from the Boleo Project Using Leach, Precipitation and Electrolytic Manganese Metal Production: Thomas Gluck; David Dreisinger; Jianming Lu; Baja Mining Corp.; Univ of B.C.

4:15 PM
Underpotential Dissolution of Precious Metals from Intermetallic Compounds with Zn: Hideaki Sasaki; Takashi Nagai; Masafumi Maeda; Institute of Industrial Science, The University of Tokyo

4:35 PM
The Recovery of Cobalt from the Boleo Deposit Using Leach, SX and EW: David Dreisinger; Thomas Gluck; Jianming Lu; Univ of B.C.; Baja Mining Corp.
Emeritus Professor George D.W. Smith Honorary Symposium: Steels II and Superalloys
Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Michael Miller, Oak Ridge National Laboratory; Gregory Olson, Northwestern University and QuesTek Innovations LLC; George Krauss, Colorado School of Mines

Tuesday PM  Room: Mockingbird 2
March 13, 2012

Funding support provided by: Oak Ridge National Laboratory; QuesTek Innovations LLC; AMETEK, Inc

Session Chairs: Gregory Olson, Northwestern University; Frédéric Danoix, Université de Rouen

2:00 PM Invited
Ordering Processes in Ni2(Cr,Mo) Alloy Investigated by TEM and 3D-AP: Neila Wanderka1; Amit Verma1; Nikolai Lazarev2; M Sundararaman2; J Singh3; Helmholtz Zentrum Berlin für Materialien und Energie GmbH; 2NSC Kharkov Institute of Physics and Technology, Kharkov, Ukraine; 3Hyderabad Central University, India; 4Bhabha Atomic Research Centre, Structural Metallurgy Section, Mumbai, India

2:25 PM Invited
The Effect of Creep on the Rhenium Distribution Close to the α/α' Interfaces in a Nickel-Based Superalloy: Alessandro Mottura1; Michael Miller2; Roger Reed3; University of California, Santa Barbara; 2Oak Ridge National Laboratory; 3The University of Birmingham

2:50 PM Invited
Spinodal Decomposition in Fe-Cr and Fe-C Systems: Frederic Danoix1; 1CNRS - Université de Rouen

3:15 PM
High Strength Conductors for High Field Magnets: Ke Han1; Jun Lu1; 1National High Magnetic Field Laboratory

3:30 PM
Applications of Atom Probe Tomography in Computational Materials Design: Jason Sebastian1; Gregory Olson1; Jim Wright1; Abhijit Misra1; Eric Hamann1; 1QuesTek Innovations LLC

3:45 PM Break

4:10 PM
Examination of Carbon Redistribution in Quench and Tempered 4340 Steel: Amy Clarke1; Michael Miller2; David Alexander1; Robert Field1; Kester Clarke1; Los Alamos National Laboratory; 1Oak Ridge National Laboratory

4:25 PM
Microstructural Evolution of Second Phases in Austempered High-Al TRIP Steels Examined by Atom Probe Tomography: Hyoang Seok Park1; Jae Bok Seol1; H. Hennayaka1; Kyungpook National University; 1University of Wollongong

4:40 PM
Insight into Cluster Strengthening in a Nb-Microalloyed High Strength Low Alloyed Steel Using Atom Probe Tomography: Kelvin Xie1; Andrew Breen1; Michael Moody1; Julie Cairney1; Simon Ringer1; 1The University of Sydney

4:55 PM
Cluster Strengthening of Microalloyed Castrip® Steels: Sachin Shrestha1; Kelvin Xie1; Chen Zhu1; Julie Cairney1; Simon Ringer1; Chris Killmore2; Kristin Carpenter2; Frank Barbaro2; James Williams2; 1The University of Sydney, Australian Key Centre for Microscopy and Microanalysis; 2BlueScope Steel, Metallurgical Technology

5:10 PM
The Application of Atom Probe Tomography to Oxide-Dispersion-Strengthened Steels: Ceri Williams1; Emmanuelle Marquis2; Paul Bagot2; George Smith1; 1University of Oxford; 2University of Michigan

5:25 PM
APT Characterization of Nanometer Scale Features in RPV Steels and Nanostructured Ferritic Alloys: Insight, Challenges and Opportunities: Peter Wells1; Nick Cunningham1; Eric Stergar1; Yuan Wu1; G. Robert Odette1; 1UC Santa Barbara

5:40 PM
Initial Age Hardening and Nanostructural Evolution in a Cu-Ni-P Alloy: Yasuhiro Aruga1; 1Kobe Steel, Ltd.

5:45 PM
Quantitative Three Dimensional Atom Probe Analysis of In-Situ Tic Reinforced Ni Composite: Junyeon Hwang1; Sundeep Gopagoni1; Kristopher Mahdak1; Jaimie Tiley2; Rajarshi Banerjee3; 1University of North Texas; 2AFRL

Energy Nanomaterials: Photovoltaics II
Sponsored by: The Minerals, Metals and Materials Society, TMS
Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

Tuesday PM  Room: Swan 3
March 13, 2012

Session Chairs: Reza Shahbazian Yassar, Michigan Technological University; Zohreh Razavi, Georgia Institute of Technology

2:00 PM Invited
Morphology Engineering of 1D, 2D and 3D TiO2 Nanostructures and Their Application in Dye-Sensitized Solar Cells: Ziqi Sun1; Jung Ho Kim1; Yue Zhao1; Shixue Dou1; 1University of Wollongong

2:30 PM
Microstructural Evolution of SnS Thin Films Grown by Electrodeposition: Ho Seong Lee1; H. Hennayaka1; Kyungpook National University

2:45 PM Break

3:05 PM Invited
Synthesis of Nanostructured TiO2/Carbon Nanotube Heterojunction Electrodes for Solar Energy-Driven Applications: Zohreh Razavihasabi1; Paul Szymanski1; Hamid Garmetan2; Mostafa Elsayed2; 1Georgia Institute of Technology; 2Georgia Institute of Technology

3:35 PM
Phase-Field Simulations of Patterned Quantum Dot Growth: Larry Aogesen1; Pei-Cheng Ku1; Leung Lee1; Katsuyo Thornton1; 1University of Michigan
3:55 PM
Electrophoretic Co-Deposition of TiO2 and ZnO Photoelectrodes for Flexible Dye-Sensitized Solar Cells: Sheng-Jye Cherng; Chih-Ming Chen; National Chung Hsing University

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue Behaviors at Elevated Temperature
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee
Tuesday PM  March 13, 2012  Location: Oceanic 6
Session Chairs: E-Wen Huang, National Central University; Peter Liaw, The University of Tennessee

4:30 PM
Fatigue Crack Growth Analysis from Acoustic Emission Data on the Navy H-60 Seahawk Helicopter Tail Gearbox: Eric Hill; Fady Barsoum; Jun Shishino; Ting Leung; Prathikshen Selvadorai; Alan Timmons; William Hardman; Embry-Riddle Aeronautical University

4:50 PM
Exploratory Research in Erosion Effects of Nanofluids on Metallic Materials: Gustavo Molina; Mosfegur Rahman; Mario Hulett; Valentin Solouj; Georgia Southern University

From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Small Scale Mechanical Behavior and Theory
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biomaterials Committee Program Organizers: Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University
Tuesday PM  March 13, 2012  Location: Swan Resort
Session Chairs: James Foulk, Sandia National Laboratory; Andrew Minor, University of California, Berkeley

2:00 PM
Thermal Relaxation of Residual Stresses in Laser Shock Peened 7N18 SPF and Ti-6A1-4V Alloys: Experiments and Finite Element Modeling: Amrinder Gill; Vijay Vasudevan; Dong Qian; Zhong Zhou; S.R. Mannava; Kristina Langer; University of Cincinnati; Air Force Research Laboratory

2:20 PM
Effects of Intermediate Temperature Long Term Exposure on Mechanical Behavior of 5083-H116 and 5456-H116: Mohsen Seifi; Justin Grossi; John Lewandowski; Case Western Reserve University

2:40 PM
Measuring Effects of Holding Time and Oxidation on Thermo-Mechanical Fatigue Properties of Compacted Graphite Iron Using Notched Specimens: Sepideh Ghodrat; Michael Janssen; Roumen (R.H.) Petrov; Leo (L.A.L.) Kestens; Jilt Sietsma; Materials Innovation Institute (M2i), TU Delft; TUDelft; Ghent University, TUDelft

3:00 PM
Thermal Fatigue Properties Evaluation of 18Cr Ferritic Stainless Steel Weld HAZ: Kyutae Han; Seunggab Hong; Changhee Lee; Hanyang University / Division of Materials Science & Engineering; POSCO / Technical Research Laboratory

3:20 PM
Fatigue Deformation Behavior of Dispersion Hardened New Heat Resistant Aluminum Alloy at Elevated Temperature: Kee-Ahn Lee; Kyu-Sik Kim; Si-Young Sung; Jung-Chul Park; Bum-Suk Han; Andong National University; Korea Automotive Technology Institute; RIST

3:40 PM Break

3:50 PM
Effect of Almen Intensities on High Cycling Fatigue of Al 2024-T4: Yasser Ahmed; Mostafa El Metwally; German University in Cairo

4:10 PM
The Effects of Microstructure upon Remaining Life of Carburized Ethylene Pyrolysis Tubes: Amy McLeod; Kevin Stevens; Milo Knafl; University of Canterbury; Quest Integrity NZL Limited
4:55 PM
Dislocation Dynamics Simulation of Indentation of FCC Crystals: Mamdouh Mohamed1; Ben Larson1; Giacomo Po2; Nasr Ghoniem1; Anter El-Azbab1; Florida State University; 2Oak Ridge National Laboratory; 1University of California, Los Angeles

5:10 PM
The Elastic Anisotropy of Steel Investigated by Nanoindentation: Ude Hangen1; David Vodnick1; 1Hysitron, INC.

4:50 PM Invited
The Reliability of Various Mechanical Properties on Structural Performance: Ted Anderson1; 1Quest Integrity Group

International Smelting Technology Symposium (Incorporating the 6th Advances in Sulfide Smelting Symposium): Pretreatment and Recycling Processes
Program Organizer: Jerome Downey, Montana Tech of the Univ of Montana; Thomas Battle, Midrex Technologies, Inc.; Jesse White, Elkem Solar Research
Tuesday PM 
Room: Northern A3 
March 13, 2012 
Location: Dolphin Resort
Session Chair: To Be Announced

5:40 PM Invited
Managing Uncertainty in Fracture: Brad Boyce1; Corbett Battaile1; James Foulk1; E. David Reedy1; Sandia National Laboratories

2:00 PM Invited
An ICME Approach to Predict Performance Margins Caused by Microstructural Variability: Elizabeth Hol1; Corbett C. Battaile2; Thomas E. Buchheit3; Christopher R. Weinberger3; Sandia National Laboratories

2:25 PM Invited
Predicting the Properties of Magnesium Sheets by Means of a Multiscale Approach – from the Atomistic to the Macroscopic Scale: Joern Mosler1; Malek Homayonifar2; Mintesnot Nebebe3; Technische Universität Dortmund and Helmholtz-Zentrum Geesthacht, Germany

2:50 PM Invited
Simulation-Based Strategies to Support Alloy Design for Fatigue Resistance: David McDowell1; 1Georgia Institute of Technology

3:15 PM Invited
Managing Uncertainty in Fatigue: Brad Boyce1; Corbett Battaile2; James Foulk1; E. David Reedy1; Sandia National Labs

3:40 PM Invited
An Integrated Framework for Reducing Uncertainty in Fatigue Life Limits of Turbine Engine Alloys: James Larsen1; Sushant Jha2; Michael Caton1; Reji John1; Andrew Rosenberger1; Christopher Szczepanski1; Patrick Golden1; Dennis Buchanan2; Jay Jira1; Air Force Research Laboratory; 2Universal Technology Corporation; 1University of Dayton Research Institute

4:05 PM Break

4:30 PM Invited
Probabilistic Prediction of Minimum Fatigue Life of a Shot Peened Titanium Alloy: Reji John1; Sushant Jha2; James Larsen1; 1Air Force Research Laboratory; 2Universal Technology Corporation

4:55 PM Invited
Effects of Residual Stress on the Behavior of Metallic Materials: Michael Hill1; 1University of California, Davis

5:20 PM Invited
An Evaluation of the Crack-Compliance Method for Determining the Stress Intensity Resulting from Residual Stress: Keith Donald1; 1Fracture Technology Associates

4:00 PM
Injection of Alternative Carbon Containing Materials in the BF: Lena Sundqvist Ökvist1; Gunilla Hyllander2; Michael Hensmann3; Erik Olsson4; Olavi Anttila1; Stefan Schuster1; Maria Lundgren1; 1Swerea MEFOS AB; 2Rönnskär Smelter, Boliden AB; 3Royal Institute of Technology (KTH)

2:50 PM
Optimum Feed Preparation for Sulfide Smelting: Jyri Talja1; Shaolong Shen1; Hannu Mansikkavirta1; Kumera Corporation

3:15 PM
Partially Reduced Feedstocks and Blast Furnace Ironmaking Carbon Intensity: Petrus Pistorius1; 1Carnegie Mellon University

3:40 PM Break

4:00 PM
Experiences of Using Various Metallurgical Reactors for Reduction of V-Bearing Steel Slags and Other Wastes: Mikael Lindvall1; Guozhu Ye1; 1Swerea MEFOS AB
Materials and Fuels for the Current and Advanced Nuclear Reactors: Structural Materials

1


Program Organizers: Rampreshad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday PM Room: Swan 2
March 13, 2012 Location: Swan Resort

Session Chair: Kumar Sridharan, University of Wisconsin - Madison

2:00 PM Invited
Light Water Reactor Materials for Commercial Nuclear Power Applications: Brian Burgos; Westinghouse Electric / Research and Technology

2:30 PM
Cold Spray Technology: A Potential Approach to Address Materials Aging Issues in Nuclear Reactor Systems: Kumar Sridharan; Benjamin Maier; Benjamin Hauch; Youngki Yang; Todd Allen; University of Wisconsin

2:50 PM
Stress Corrosion Crack Initiation Testing of Cold Worked 316 Stainless Steel in Simulated PWR Primary Water under the Spring Loaded Condition: Yuichi Miyahara; Toshio Yonezawa; Atsushi Hashimoto; Tohoku University; Kobe Material Testing Laboratory Co., LTD.

3:10 PM
Creep-Fatigue Behavior of an Advanced Austenitic Alloy Strengthened by Nano-Scale MC Precipitates: Laura Carroll; Mark Carroll; Christopher Hutchinson; Richard Wright; Idaho National Laboratory

3:30 PM

3:50 PM Break

4:00 PM
A Novel Fe-Based ODS Fabrication Process: Joel Rieken; Iver Anderson; Matthew Kramer; Iowa State University; Ames Laboratory

4:20 PM
Evaluation of Silicon Carbide Joining for Nuclear and Fusion Applications: Yutai Katoh; Monica Ferraris; Tatsuya Hinoki; Charles Henager; Oak Ridge National Laboratory; Politecnico di Torino; Kyoto University; Pacific Northwest National Laboratory

4:40 PM
Precipitation of Sigma Phase in Cast Duplex Stainless Steel Z3CN20.09M for Primary Coolant Pipe of Nuclear Power Plants and Its Influence on Localized Corrosion: Yongqiang Wang; Bin Yang; Jun Han; University of Science and Technology Beijing

5:00 PM
Effect of Tellurium on Intergranular Cracking in Nickel-based Alloy: Yanyan Jia; Wenguan Liu; James Cole; Darryl Butt; University of Idaho; Idaho National Laboratory

5:20 PM
Oxide Dispersion Strengthened Steels via Mechanical Alloying and Spark Plasma Sintering: Somayeh Pasebanli; Indrajit Charit; Kerry Allahar; James Cole; Darryl Butt; University of Idaho; Boise State University; Idaho National Laboratory

5:40 PM
Wollastonite Based-Chemically Bonded Phosphate Ceramics with Boron Contents as a Potential Material for Nuclear Shielding Applications: H. A. Colorado; J Pleitt; J-M Yang; C. H. Castano; University of California, Los Angeles; Missouri University of Science and Technology

Materials Design Approaches and Experiences

III: Non-ferrous Alloys and Processes


Program Organizers: Ji-Cheng Zhao, The Ohio State University; Akane Suzuki, GE Global Research; Deb Whitis, GE Aviation; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Tuesday PM Room: Europe 11
March 13, 2012 Location: Dolphin Resort

Session Chairs: Michael Fahrmann, Haynes International, Inc.; Christopher Hutchinson, Monash University

2:00 PM Invited
Design, Microstructure Evolution, Properties, and Applications of Advanced Intermetallic TiAl Alloys: Helmut Clemens; Svea Mayer; Montanuniversität Leoben

2:30 PM Invited
Tools for Manipulating Precipitation Processes: Alloy and Process Design: Christopher Hutchinson; Monash University

3:00 PM Invited
Magnesium Alloy Development Using Computational and Experimental Tools: Alan Luo; Raja Mishra; Bob Powell; Anil Sachdev; General Motors Global Research and Development

3:30 PM Break

3:50 PM Invited
Design of a Nanocrystalline Alloy Coating for Electrical Connector Applications: Christopher Schuh; Alan Lund; MIT; Xtallic Corporation

4:20 PM Invited
Develop ICME Tool for High Ductility Cast Aluminum Alloys for Automotive Body Applications: Mei Li; J. Forsmark; J. Zindel; L. Godlewski; Xuming Su; Ford Motor Company

4:50 PM
Systems Engineering Framework for the Integrated Computational Design of Advanced Aluminum Alloys: Abhijeet Misra; James Wright; Herrn-Jeng Jou; William Counts; Charles Kuehmann; QuesTek Innovations LLC

5:10 PM
The Use of In-Situ Characterization Techniques for the Development of Intermetallic Titanium Aluminides: Svea Mayer; Thomas Schmoeieler; Helmut Clemens; Montanuniversität Leoben
TUESDAY PM
March 13, 2012  Location: Dolphin Resort

2:00 PM
Catalytic Properties of Ni-Al Intermetallic Nanoparticle Catalysts for Hydrogen Production from Methanol and Methane: Ya Xu; Junyou Yang; Masahiko Demura; Toshiyuki Hirano; National Institute for Materials Science; Teruhisa Horita, National Institute of Advanced Industrial Science and Technology; Jeffrey Hawk, National Energy Technology Lab; Jeffrey Fergus, Auburn University

2:20 PM
Ca, Li and Mg Based Lightweight Intermetallics for Hydrogen Storage: Beau Billiet; Ji-Cheng Zhao; Ohio State University

2:40 PM
Effects of Long Term Aging on Creep Properties of HP Alloy Hydrogen Reformer Tubes: Milo Kral; Karl Buchanan; University of Canterbury

3:00 PM
Free Form Fabrication of Catalytic Substrates: Tyler Salisbury; Jerome Downey; William Gleason; Stacy Davis; G. Pinson; R. Christianson; M. Berlin; R. James; E. Rosenberg; K. Gleason; R. Hieber; J. McCloskey; Montana Tech of the Univ of Montana; University of Montana; Center for Advanced Mineral and Metallurgical Processing

3:20 PM
Microstructure and Hydrogen Transport Property of a Mg-Doped Cu-Pd Alloy: Omer Dogan; Rongxiang Hu; Michael Gao; Xueyan Song; DOE National Energy Technology Laboratory; URS; West Virginia University

3:40 PM Break

3:50 PM
Improved Palladium Coatings for Hydrogen Purification Applications: Stacy Davis; Jerome Downey; William Gleason; Tyler Salisbury; G. Pinson; R. Christianson; M. Berlin; R. James; E. Rosenberg; K. Gleason; R. Hieber; J. McCloskey; Montana Tech of the Univ of Montana; University of Montana; Center for Advanced Mineral and Metallurgical Processing

4:10 PM
Thermodynamic and Transport Properties of Abundant-Vacancy Pd$_n$In$_{1-x}$Cu$_x$: Douglas Safarik; Paul Tobash; Anna Llobet; Sven Rudin; Los Alamos National Laboratory

4:30 PM
Phase Transitions of Ammonia Borane Investigated Using Raman Spectroscopy at Low Temperature and High Pressure: Shah Najiba; Jiuhua Chen; Vadam Drozd; Andiry Durygin; Yongzhou Sun; Florida International University

Program Organizers: Xingbo Liu, West Virginia University; Teruhisa Horita, National Institute of Advanced Industrial Science and Technology; Jeffrey Hawk, National Energy Technology Lab; Jeffrey Fergus, Auburn University

4:50 PM
Mixed Conducting Molten Salt Electrolyte for Na/NaCl, Cell: Tannaz Javadi; Anthony Petric; McMaster University

5:10 PM
Effect of Al-Substitution and Melt-Spinning Process on Microstructural and Hydrogen Storage Properties of LaNi$_5$ Intermetallic Compounds: O. Uzun; F. Yilmaz; M.F. Kilicaslan; G.Y. ÖzALP; Soon-Jik Hong; Gaziosmanpasa University; Gaziosmanpasa University; Kastamonu University; International Centre for Hydrogen Energy Technologies; Kongju National University

5:15 PM
Phase Transitions of Nano-scaffold Confined Ammonia Borane Dependent on Pressure: Yongzhou Sun; Jiuhua Chen; Vadam Drozd; Shah Najiba; Florida International University

Materials Processing Fundamentals: Metallurgy of Non-Ferrous Metals
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Antoine Allanore, MIT; Cong Wang, Saint-Gobain
High Performance Materials
Tuesday PM  Room: Oceanic 8  March 13, 2012  Location: Dolphin Resort

Session Chairs: Cong Wang, Alcoa Research Center; Lifeng Zhang, Missouri S&T

2:00 PM
Annealing Effect and Tensile Interface Fracture Mechanism of Pure Silver Bonding Wires: Hao-Wen Hsueh; Fei-Yi Hung; Tuan-Sheng Liu; Li-Hui Chen; Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

2:25 PM
Directional Solidification of Zn-Sn Alloys: Marco Zurco; Carlos M. Rodriguez; Carlos E. Schwezov; Claudia M. Mendez; Alicia Ares; Faculty of Sciences, University of Misiones; CONICET/FCEQyN-UNAM

2:50 PM
Dynamic Recovery during Low Temperature Deformation in an Al-0.1Mg Alloy: Yan Huang; Philip Prangnell; Brunel University; The University of Manchester

3:15 PM
Applications of Thermo-Chemical and Thermo-Physical Models in the Copper and Lead Pyrometallurgical Industries: Pengfu Tan; Xstrata Copper

3:40 PM Break

3:55 PM
Challenges in Compound Forging of Steel-Aluminum Parts: Klaus-Georg Kosch; Bernd-Arno Behrens; Institute of Metal Forming and Metal-Forming Machines, Leibniz Universität Hannover

4:20 PM
Study of Supercritical CO2 Emulsion in Ni Electroplating and Application in Fabrication of Defect-Free Micromechanical Component with High Aspect Ratio: Tso-Fu Mark Chang; Chiemi Ishiyama; Masato Sone; Tokyo Institute of Technology
Materials Research in Microgravity: Session IV


Program Organizers: Robert Hyers, University of Massachusetts; Hani Henein, University of Alberta; Valdis Bojarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrum; Daniella Voss, ESA

Tuesday PM

Room: Asia 3

Location: Dolphin Resort

Session Chair: To Be Announced

2:00 PM Invited

ISS-Experiments and Modeling of Columnar-to-Equiaxed Transition in Solidification Processing: Laszlo Sturz1; Gerhard Zimmermann1; Charles-Andre Gandin2; Bernard Billia3; Nathalie Mangelinc4; Henry Nguyen-Thi5; David John Browne4; Wajira U. Mirihanage4; Daniela Voss3; Christoph Beckermann3; Alain Karma2; ‘Access e.v.’5; ‘MINES ParisTech’6; ‘University of Cincinnati’7; ‘University of South Carolina’8; ‘University College Dublin’9; ‘University of Massachusetts’10; ‘Carnegie Mellon University’11; ‘University of Nebraska’12; ‘University of South Carolina’13; ‘University of Kansas’14; ‘Los Alamos National Laboratory’15; ‘NASA’16;

2:35 PM Invited

Dendrite Growth into Undercooled Melts: Investigated on Earth and in Reduced Gravity: Dieter Herlach1; ‘Deutsches Zentrum für Luft- und Raumfahrt’1

3:10 PM

Coupled Growth in Ternary Systems under Directional Solidification Conditions: Ralph Napolitano1; Irmak Sargin1; ‘Iowa State Univ’1

3:35 PM Break

3:55 PM Invited

Influence of Convection on Dendrite Growth and Microstructure Evolution by Using AC + DC Electromagnetic Levitator: Hideyuki Yasuda2; Yuki Kanzawa3; Takashi Fukuda4; Tomoya Nagira5; Masato Yoshiya6; ‘Osaka University’7

4:30 PM

Liquid Droplet Dynamics in Gravity Compensating High Magnetic Field: Valdis Bojarevics1; Stuart Easter2; Koulish Periculous3; ‘University of Greenwich’4

4:55 PM Invited

Measurements of Dendritic Growth Velocities in Undercooled Melts of Pure Nickel Under Static Magnetic Fields: Jiarong Gao1; Zongning Zhang1; Yingjie Zhang1; ‘Northeastern University’2

5:30 PM

Diamagnetic Levitation by a Superconducting Magnet: A Method for Non-Contact Measurement of the Surface Tension of Aqueous, and other, Diamagnetic Liquids: Richard Hill1; Laurence Eaves1; ‘University of Nottingham’2

Mechanical Behavior at Nanoscale I: Nanowires, Pillar, Multilayers and Nanocrystalline


Program Organizers: Scott Mao, University of Pittsburgh; Julia R Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Tuesday PM

Room: Asia 1

Location: Dolphin Resort

Session Chairs: Gerhard Dehm, Erich Schmid Institut für Materialwissenschaft; Xiaodong Li, University of South Carolina

2:00 PM Invited

Deformation Mechanisms in Cu-Nb Nanolamellar Composites Produced via Severe Plastic Deformation: Nathan Mara2; John Carpenter2; Weizhong Han2; Jon LeDonne3; Jian Wang1; Irene Beyerlein1; ‘Los Alamos National Laboratory’2; ‘Carnegie Mellon University’3

2:30 PM

Characterization of Defects Generated during the Martensitic Transformation in Pseudoelastically-Deformed NiTi Microcrystals: Matthew Bowers1; Michael Mills1; Sivom Manchiraju1; Peter Anderson1; ‘The Ohio State University’2

2:50 PM

Deformation Behavior of a Dual-Phase Sheet Steel: Hassan Ghassemi Armaki1; Robert Maas2; Julia Greer3; Shrikant Bhat4; Sriram Sadagopan4; Sharvan Kumar1; ‘Brown University’2; ‘California Institute of Technology’3; ‘ArcelorMittal’4

3:10 PM

Deforming Nanoporous Gold: Non-Size Effects: Hai-Jun Jin1; Xing-Long Ye2; Jörg Weissmüller2; ‘Institute of Metal Research, Chinese Academy of Sciences’1; ‘Institut für Werkstoffphysik und -Technologie, Technische Universität Hamburg-Harburg’2

3:30 PM Break

3:40 PM

Effects of Alloying, Temperature and Strain-Rate on the Mechanical Behavior of Nanocrystalline Palladium Alloys: Thomas Neithardt1; Oliver Kraft2; ‘Karlsruhe Institute of Technology, Institute for Applied Materials’1; ‘University of Missouri’2

4:00 PM

Mechanical Behaviors of Nanostructures of Low Melting Temperature Metals as Revealed by Synchrotron Laue X-Ray Microdiffraction: Arief Budiman1; M. J. Burek2; G. Lee3; D-C. Jang4; N. Tamura4; M. Kunz1; T. Tsui5; ‘Los Alamos National Laboratory’1; ‘University of Waterloo’2; ‘California Institute of Technology’3; ‘Advanced Light Source (ALS), Berkeley Lab’4

4:20 PM

Tensile Properties of Nano-Twinned Cu Nano-Pillars through Nano-Mechanical Testing, Electron Microscopy, and Atomistics Simulations: Dongchuan Jang1; Xiaoyan Li2; Huajian Gao1; Julia Greer1; ‘California Institute of Technology’1; ‘Brown University’2

TUESDAY PM
4:40 PM
Dislocation Multiplication and Nucleation in Small Metallic Fibers under Stress: The Input of In Situ Transmission Electron Microscopy: Marc Legros1; Frédéric Mompio1; Daniel Gianola2; Andreas Sedlmayr3; Oliver Kraft4; Daniel Caillard5; 'CEMES-CNRS'; 2University of Pennsylvania; 3Los Alamos National Laboratory; 4Karlsruhe Institute for Technology; 5Karlsruhe Institute for Technology

5:00 PM
Deformation of Gold Nanowires: How Impurities Change the Game: Francesca Tavazza1; Lyle Levine1; Anne Chaka1; 'National Institute of Standards and Technology

5:20 PM
Deformation and Fracture of Color-patterned Pulsed Laser Oxides on Stainless Steel: Samantha Lawrence1; Douglas Stauffer2; Ryan Major3; David Adams4; William Gerberich5; David Bahr5; Neville Moody6; 'Washington State University'; 'Hysitron Inc.'; 'Sandia National Laboratories'; 'University of Minnesota

5:40 PM
Strain Heterogeneities within a Sub-Micron Grain in a Polycrystalline Thin Film as Probed by X-Ray Coherent Diffraction during a Thermal Cycle: Nicolas Vaxelaire1; Stephane Labat2; Henry Proudhon3; Christoph Kirchlechner4; Olivier Perroud5; Marie-Ingrid Richard5; Thomas Cornelius6; Jozef Keckes7; Samuel Forest7; Olivier Thomas7; 1CNRS - Aix-Marseille University; 2MINES ParisTech - CNRS; 3Erich Schmid Institute of Materials Science; 4ESRF

2:00 PM Keynote
Crystal-Glass Interfaces: Ju Li1; 'Massachusetts Institute of Technology

2:30 PM Keynote
Interface-Dominated Mechanical Properties of Layered/Fibrous Composites: Rozaliya Barabash1; 'Oak Ridge National Laboratory

3:00 PM
Dislocation-Interface Interaction in Crystalline-Amorphous Metallic Multilayers: Christian Brandl1; Timothy Germann1; Amit Misra2; 'Los Alamos National Laboratory

3:15 PM
Mechanical Characterization of Nanolayered Al/SiC Composites by High Temperature Nanoindentation: S. Lotfian1; J. Molina-Aldareguia2; K. Yazzie3; J. LLorca1; A. Misra4; Nikhillesh Chavdar2; 'IMDEA Materials Institute, 28040-Madrid, Spain'; 2Arizona State University; 3Los Alamos National Laboratory, Los Alamos, NM

3:30 PM
The Interfacial Mechanics of the Thin Oxide Skin on Liquid Gallium Alloy: Ju-Hee So1; Rashed Khan1; Michael Dickey1; 'NC State University

3:45 PM Break

3:55 PM Keynote
Tensile Ductility and Necking In Small-Volume Metallic Glasses: In the Limit of Suppressed Shear Banding: Evan Ma1; 'Johns Hopkins University

4:25 PM Keynote
Deformability and Nanomaterials: Alla Sergueeva1; Sheng Cheng1; Brian Meacham1; Daniel Branganan1; 'The NanoSteel Company

4:55 PM
Analysis of Heterogeneous Deformation along Grain Boundaries in Tensile Tests of Pure Tantalum: Ian Jarvis1; Thomas Bieler1; Martin Crimp1; Darren Mason2; Brad Boyce3; 'Michigan State University'; 2Albion College; 3Sandia National Laboratory

5:10 PM
Novel Design of Functional Nanoporous Metal Architectures: Eric Detst1; Sergey Punzhin1; Patrick R. Onck1; Jeff T.M. De Hosson1; 'University of Groningen

Mechanical Performance of Materials for Current and Advanced Nuclear Reactors: Characterization and Modeling of Microstructural Evolution in Nuclear Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberson, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, LANL

Tuesday PM Room: Swan 1
March 13, 2012 Location: Swan Resort

Session Chairs: Elaine West, Knolls Atomic Power Laboratory; Paula Mosbrucker, Los Alamos National Laboratory

2:00 PM Invited
Microstructures and Mechanical Properties in Carbide and Nitride Ceramics for Advanced Nuclear Systems: Todd Allen1; Yong Yang2; Clayton Dickerson1; 'University of Wisconsin-Madison'; 2University of Florida; 'Argonne National Laboratory

2:30 PM
In-Situ Studies and Modeling of the Deformation and Fracture Mechanism for Wrought Zircaloy-4 and Zircaloy-2 as a Function of Stress-State: Brian Cockeram1; Kwai Chan2; 'Bechtel-Bettis'; 2Southwest Research Institute

2:50 PM
Mechanical Properties of Nanocrystalline Zr from Atomistic Simulation: Zizhe Lu1; Dong-Hyun Kim1; Mark Noordhoek1; Michele Manuel1; Susan Simont1; Simon Philipp1; 'University of Florida

3:10 PM
Plastic Accommodation of Zirconium Hydrides: Cindy Smith1; Ian Robertson1; Molsen Dadfarnia1; Petros Sofonis1; 'University of Illinois
3:30 PM
Microstructural Evolution and Fracture Toughness Recovery by Thermal Annealing in HT9 Steel Irradiated to High Doses: Osman Anderoglu1; Thak Sang Byun2; Stuart Maloy3; 1Los Alamos National Laboratory; 2Oak Ridge National Laboratory

3:50 PM Break

4:05 PM
Molecular Dynamics Simulations of Cascade Evolution near Trapped Interstitial Clusters: Nathan Capps1; Aaron Kohnert1; Karl Hammond2; Donghua Xu3; Brian Wirth3; 1University of Tennessee; 2University of California

4:25 PM
Atomistic Modelling of Helium Trapping by Nanoscale Precipitates: Niraj Gupta1; Alfredo Caro2; Enrique Martinez2; Srinivasan Srivilliputhur3; 1University of North Texas; 2Los Alamos National Lab

4:45 PM
Influence of the Coherency of Nano-Oxides in ODS Materials on the Coarsening Kinetics: Joel Ribi1; Yann De Carlan2; 1CEA

5:05 PM
Spinodal Decomposition in Duplex Stainless Steel: Julie Tucker1; George Young2; Michael Miller2; 1Knolls Atomic Power Laboratory; 2Oak Ridge National Laboratory

5:25 PM
Elemental Solubility Tendency for the Phases of Uranium by Classical Models Used to Predict Alloy Behavior: Van Blackwood1; Travis Koenig1; Saleem Drera1; David Olson1; Brajendra Mishra1; Doug Porter1; Robert Mariani3; 1Colorado School of Mines; 3Idaho National Lab

6:00 PM Break

Nanocomposites: Nanocomposite Interfaces and Characterization
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Tuesday PM
February 13, 2012
Room: Swan 8
Location: Swan Resort

Session Chairs: Meisha Shofner, Georgia Institute of Technology; Javier Garay, University of California, Riverside

2:00 PM
Positron Lifetime Analysis of Polyurea-Nanoclay Composites: Naidu Sceeta1; Danny Hubbard2; Gabriel Burks2; Alex Trochez1; Valery Khabashesku1; 1Grambling State University; 2University of Houston

2:20 PM
Effect of Interfacial Relaxation on Mechanical and Corrosion Properties of Oxide Nano-Particle Reinforced Aluminum Matrix Composites: Jaehyuck Shin1; Jiyeon Suh1; Donghyun Bae3; 1Yonsei University

3:40 PM
Nano-Scale Characterization on the Metal-Carbon Nanotube Interface: Tushar Borkar1; Junyeon Hwang2; Sandip Harimkar2; Jaimie Tiley2; Soon-Hyung Hong3; Rajarsi Banerjee2; 1University of North Texas; 2Korea Advanced Institute of Science and Technology; 3University of California

4:40 PM
Diffusion of Atmospheric Penetrants in Crosslinked and Uncrosslinked Polydimethylsiloxane Based Nanocomposites: Varun Ullal1; Douglas Spearot1; 1University of Arkansas

Neutron and X-Ray Studies of Advanced Materials V: Centennial: Dislocations, Strains, Deformation I
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Tuesday PM
March 13, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Matteo Leoni, University of Trento; Davor Balzar, University of Denver

2:00 PM Keynote
In-Situ Laue Diffraction during Mechanical Testing: Helena Van Swygenhoven1; Julien Zimmermann1; Cecile Marichal2; Steven Van Petegem1; Paul Scherrer Institute

2:25 PM Invited
Deformation Twinning in Mg Probed with Diffraction at Multiple Length Scales: Donald Brown1; Levente Balogh2; Bjorn Clausen1; Carlos Toma1; 1Los Alamos National Lab

2:45 PM Invited
Structure/Microstructure Analysis of Faulted and Modular Materials from Powder Diffraction Data: Beyond the Deterministic Approach: Matteo Leon1; 1University of Trento

3:05 PM
Scientific Opportunities at the High Flux Isotope Reactor Neutron Powder Diffractometer: Ovidiu Garlea1; 1Oak Ridge National Laboratory
3:20 PM
Characterization of Superelasticity in a New Fe-Based Shape Memory Alloy Using Neutron and Synchrotron Radiation: Saurabh Kabra1; Klaus-Dieter Liss1; Kun Yan1; David Carr2; Yuuki Tanaka1; Toshihiro Omori2; Ryosuke Kainuma2; 1ANSTO; 2Tohoku University

3:35 PM Invited
Line Profile Analysis of Plastically Deformed Single Crystals: Andreas Borpely1; 1Ecole des Mines de Saint-Etienne

3:55 PM Invited
Structural Study of Textured Nanocrystalline ZnO Thin Films Prepared by Pulsed Laser Deposition: Radomir Kazel1; Jakub Cizek1; Michal Novotny1; 1Charles University in Prague, Faculty of Mathematics and Physics

4:15 PM Break

4:25 PM Invited
Residual Strain Tensor Determination from the Refinement of Multiple Diffraction Patterns: Davor Balzar1; Nicolae Popa1; Sven Vogel1; Donald Brown1; 1University of Denver; 2National Institute for Materials Physics; 3Los Alamos National Laboratory

4:45 PM Invited
Utilizing In-Situ Neutron Diffraction for Mesoscale Simulation of Recrystallization Texture in Polycrystalline Aluminum: Bala Radhakrishnan1; Sarma Gorti1; Grigoreta Stoica1; Alexandru Stoica1; Govindarajan Muralidharan1; Muth Thomas1; Xun-Li Wang1; 1Oak Ridge National Laboratory

5:05 PM Invited
Application of In-Situ Neutron and X-Ray Measurements at High Temperatures in the Development of Co-Re-Based Alloys for Gas Turbines: Debashis Mukherji1; Juri Wehrs1; Joachim Rösler1; Pavel Strunz1; Ralph Gilles1; Michael Hofmann1; Markus Hözelf1; Helmut Eckerlebe1; 1Technische Universität Braunschweig; 2Nuclear Physics Institute ASCR; 3Technische Universität München; 4Helmholtz-Zentrum Geesthacht

5:25 PM
Evolution of Residual Strains in Nanocrystalline Metals Studied by Diffraction: Steven Van Petegem1; Lin Li1; Julien Zimmermann1; Peter M. Anderson1; Helena Van Swygenhoven1; 1Paul Scherrer Institute; 2The Ohio State University

5:40 PM
Through-Thickness Distribution of Residual Stresses in One-Pass and Multi-Pass 70-mm Thick Welds: Wanchuck Woo1; Vyacheslav EM1; Ji Hyun Yoon1; Jeong-Ung Park1; Gyu-Baek An1; 1KAERI (Korea Atomic Energy Research Institute); 2Chosun University; 3POSCO Steel

5:55 PM
Strain-Induced Dimensionality Crossover in the Modulated Structure of Ferromagnetic Shape Memory Alloy Ni,MnGa: Zhilua Nie1; Yandong Wang1; Yang Ren1; Dongmei Liu1; Zhenwei Huang1; 1Beijing Institute of Technology; 2Argonne National Laboratory; 3Northeastern University

Tuesday PM

Session Chair: To Be Announced

2:00 PM Invited
Aligned Nanowires for Packaging and Circuit Interconnects: Sungho Jin1; 1UC San Diego

2:25 PM
Compliant Structures as Off-Chip Interconnects: Suresh Sitaraman1; 1Georgia Institute of Technology

2:50 PM
Mechanical Stress Measurements in Cu Through-Silicon Via (TSV) Using Synchrotron X-Ray Microdiffraction for 3-D Integration: Arief Budiman1; H.-A.-S. Shin1; B.-J. Kim1; S.-H. Hwang1; H.-Y. Son1; M.-S. Suh1; K.-H. Chung1; K.-Y. Byun1; Y.-C. Joo1; R. Carramoto1; L. Smith1; 1Los Alamos National Laboratory; 2Seoul National University (SNU); 3Hynix, Inc.; 4SEMATECH; 5Advanced Light Source (ALS), Berkeley Lab

3:10 PM
Conductive Anodic Filament Formation in Fine Pitch Halogen-Free Organic Substrates: Koushik Ramachandran1; 1UC San Diego

3:30 PM
Investigations of Interfacial Features in Thick Al Wire Bonds: Golta Khatibi1; Brigitte Weiss1; Johannes Bernardi1; 1University of Vienna; 2Vienna University of Technology

3:50 PM
Effects of Combined Harsh Conditions on Wire Bond Reliability: Maria Morgioudi1; Changping Liu1; Paul Conway1; Steve Riches1; 1Loughborough University; 2GE Aviation Systems - Newmarket

4:10 PM
Advances in Pressure-Less Sintering for High Temperature Electronic Applications: Jiong (Jenny) England1; Srinivas Chada1; Richard Kuder1; Julissa Eckenrode1; Javier Gutierrez1; Paul Gleeson1; 1Henkel

4:35 PM Invited
Novel Sinter Paste Concept - A Lead Free Die Attach Alternative: Wolfgang Schmitt1; Thomas Krebs1; Yvonne Loewer1; 1W.C. Heraeus; 2Heraeus Materials Singapore Pte Ltd

5:00 PM
Effect of Solder Properties on Microstructural and Damage Evolution in Au-Sn Solder Joints: Govindarajan Muralidharan1; Kanth Kurumaddali1; Andrew Kercher1; Scott Leslie1; 1Oak Ridge National Laboratory; 2Powerex Inc
Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikou Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shih-Kang Lin, University of Wisconsin – Madison

Tuesday PM  Room: Swan 10
March 13, 2012  Location: Swan Resort

Session Chairs: Yee-Wen Yen, National Taiwan University of Science and Technology; Shih-Kang Lin, National Cheng Kung University

2:00 PM Invited
Synthesis and Characterization of Low Temperature Sn-Cu and Sn Nanoparticles for the Fabrication of Highly Conductive Ink: Yun Hwan Jo; Inyu Jung; Hyuck Mo Lee; KAIST

2:20 PM Invited
Electrochemical Study on the Silica Particles Dispersed Permalloy Composite Coating: So-Yeon Park; Myung-Won Chung; Jae-Ho Lee; Hongik University

2:40 PM
Thermodynamic Stability and Diffusion Barrier Properties of Amorphous Ta-Rh Alloys for Cu Metallization: Neda Dalili; Qi Liu; University of Alberta

2:55 PM
Application of High-Performance, Advanced Barrierless Cu Alloy Film in Cu Metallization: Chon-Hsin Lin; Asia-Pacific Institute of Creativity/Environmental Engineering

3:10 PM
Effects of Levelers on Copper Electroplating in Patterned Substrate: Myung-Won Jung; In-Seok Kang; Ki-Tae Kim; Jae-Ho Lee; Hongik University

3:25 PM
The Electrical Characteristics and Interfacial Interaction of Ti/Ni/Ag/Au Multilayers under Thermal Cycling Test: Fu-Jung Yeh; Tsung-Chieh Chiu; Kwang-Lung Lin; National Cheng Kung University

3:40 PM Break

3:50 PM Invited
New Solution Method for SiC Crystal Growth: Shigeto Nishitani; Yosuke Yamamoto; Tadaaki Kaneko; Kwansei Gakuin University

4:10 PM Invited
Method of Selective Electroplating having Strong Adhesion and Exceptional Uniformity by Nanoparticle Immobilization: Shien Ping Feng; BoYu; Shuo Chen; Zhifeng Ren; Gang Chen; The University of Hong Kong; Boston College; Massachusetts Institute of Technology

4:30 PM
A Study on the Formation Mechanism of Ytterbium Germanide for Schottky Contact Applications: Sekwon Na; Byunghoon Lee; Hwayoul Choi; Haseok Jeon; Juyun Choi; Yujin Seo; Hyounsub Kim; Seok-Hye Lee; Hoo-Jeong Lee; Sungkyunkwan university; Korea Advanced Institute of Science and Technology

4:45 PM
Electrochemical Behavior of CIGS Electrodeposition for the Application of Photovoltaic Cell: Hyunju Lee; Jae-Ho Lee; Yangdo Kim; Pusan National University; Hongik University

5:00 PM
Intermetallic Compound Formation and Morphology Evolution in the Bi-Sn Solder Joint with Cu Substrate: JinYi Wang; Chih-Ming Chen; National Chung Hsing University

5:15 PM
Study of EM-Induced ENEPIG Bond-Pad Consumption at Sn(Cu)/ENEPIC Joint Interface: Shih Han Wu; Cheng Yi Liu; National Central University
3:15 PM Invited
A Physically Based Phenomenological Model for Deformation Twinning in Magnesium Alloys: Matthew Barnett; 1Deakin University

3:40 PM Invited
Effect of Particle Shape and Habit on Twinning in Magnesium Alloys: Joseph Robson; 1Nicole Stanford; 2Matthew Barnett; 3University of Manchester; 4Deakin University

4:05 PM Break

4:20 PM Invited
Structure Evolution in AZ61L along a Fine-Grain Sheet Processing Path: Tracy Berman1; William Donlon1; Victoria Miller1; Jack Huang2; Ray Decker2; Wayne Jones2; Tresa Pollock1; 1University of Michigan; 2University of Illinois; 3nanoMag; 4University of California Santa Barbara

4:45 PM Invited
Effect of Ca Addition on Texture Evolution and Deformation Behavior of Mg-Zn Alloy Sheets: D.-W. Kim1; J. H. Bae1; B. C. Suh1; M. S. Shim1; 1Institute of Nuclear Technology, Chung-Ang University; 2Korea Electrotechnology Research Institute; 3University of California San Diego

5:10 PM Invited
Effect of Deformation Structure on Static Recovery and Recrystallization of AZ31 Magnesium Alloy: Qing Liu1; Zhen Zeng1; Yunchang Xin1; 1Chongqing University; 2Deakin University

5:35 PM Break

3:15 PM Invited
High Magnetic Field Effect on the Solid State Phase Transformation in Fe-Co Alloys: Bianca Frinca1; Sophie Rivoirard1; Olivier Geoffroy2; Thierry Waeckerle1; 1CNRS/CRETA Grenoble; 2Grenoble Electrical Engineering laboratory; 3ArcelorMittal Research Center

3:35 PM Invited
Effects of FeCo Magnetic Nanoparticles on Microstructure and Mechanical Properties of Sn-Ag-Cu Alloy: Siyang Xu1; Ashfaqur Habib1; Michael McHenry1; 1Carnegie Mellon University

3:55 PM Invited
Classical Nucleation Theory Description of Phase Selection and Compositional Partitioning in Co-Rich (Co,Fe)ZrB-based Nanocrystalline Amorphous Nanocomposites: Paul Ohodnicki1; Michael Widom2; Samuel Kernion3; David Laughlin1; Michael McHenry2; 1National Energy Technology Laboratory; 2Carnegie Mellon University

4:20 PM Invited
Nanostructuring and Texturing for Improved Magnetic Materials: David Sellmyer1; Y. Liu1; T.A. George1; Ralph Skomski1; 1University of Nebraska

4:45 PM Invited
Roles of Texture Formation and Grain Refinement on Nanocomposite Magnetic Alloys: Matthew Willard1; Lamar Minter2; Matt Brandes1; Maria Danili1; 1Naval Research Laboratory; 2Tennessee State University; 3The Ohio State University; 4George Washington University

5:10 PM Invited
High Pressure Crystallization of FeCo Based Alloys: Matthew Lucas1; 1Air Force Research Laboratory

Processing to Control Morphology and Texture in Magnetic Materials: Role of Magnetic Fields and Texturing to Improved Magnetic Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Matthew Kramer, Iowa State University; Mike McHenry, Carnegie Mellon University; David Laughlin, Carnegie Mellon University; Jinfang Liu, ElectroN Energy Corporation; Bill Soffa, University of Virginia; Ivan Skorvanek, Institute of Experimental Physics

Tuesday PM  Room: Europe 10
March 13, 2012  Location: Dolphin Resort

Session Chairs: David Laughlin, Carnegie Mellon; Sophie Rivoirard, CNRS

2:00 PM Invited
The Role of Magnetic Energy in the Remnant State of Spinodally Decomposed Titanomagnetite-Magnetite Minerals: Michael McHenry1; Nicholas Jones1; Huseyn Ucar1; Amanda Velázquez1; Catherine Groschner1; Marina Diaz-Michelena1; David Laughlin2; 1Carnegie Mellon University; 2Instituto Nacional de Técnica Aeroespacial

2:25 PM Invited

2:50 PM
Neutron Scattering Analysis of Magnetostructural Phase Transformations of High Magnetic Field Textured Shape Memory Alloys: Ben Shassere1; Orlando Rios1; Khorgolkhhu Odbadrakh1; Jason Hodges1; Saad Elorfi2; Alex Melin2; Gerry Ludtka3; Boyd Evans3; 1Oak Ridge National Laboratory

3:05 PM
High Magnetic Field Effect on the Solid State Phase Transformation in Fe-Co Alloys: Bianca Frinca1; Sophie Rivoirard1; Olivier Geoffroy2; Thierry Waeckerle1; 1CNRS/CRETA Grenoble; 2Grenoble Electrical Engineering laboratory; 3ArcelorMittal Research Center

3:20 PM
Effects of FeCo Magnetic Nanoparticles on Microstructure and Mechanical Properties of Sn-Ag-Cu Alloy: Siyang Xu1; Ashfaqur Habib1; Michael McHenry1; 1Carnegie Mellon University

3:35 PM Break

3:55 PM Invited
Classical Nucleation Theory Description of Phase Selection and Compositional Partitioning in Co-Rich (Co,Fe)ZrB-based Nanocrystalline Amorphous Nanocomposites: Paul Ohodnicki1; Michael Widom2; Samuel Kernion3; David Laughlin1; Michael McHenry2; 1National Energy Technology Laboratory; 2Carnegie Mellon University

4:20 PM Invited
Nanostructuring and Texturing for Improved Magnetic Materials: David Sellmyer1; Y. Liu1; T.A. George1; Ralph Skomski1; 1University of Nebraska

4:45 PM Invited
Roles of Texture Formation and Grain Refinement on Nanocomposite Magnetic Alloys: Matthew Willard1; Lamar Minter2; Matt Brandes1; Maria Danili1; 1Naval Research Laboratory; 2Tennessee State University; 3The Ohio State University; 4George Washington University

5:10 PM Invited
High Pressure Crystallization of FeCo Based Alloys: Matthew Lucas1; 1Air Force Research Laboratory

Radiation Effects in Ceramic Oxide and Novel LWR Fuels: Experimental Characterization of Radiation Damage in Uranium Fuel and Surrogate Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Peng Xu, University of Wisconsin; Jian Gan, Idaho National Laboratory; Ram Devanathan, Pacific Northwest National Laboratory; Edward Lahoda, Westinghouse Electric Company; Michele Manuel, University of Florida; Ramprashad Prabhakaran, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

Tuesday PM  Room: Macaw 2
March 13, 2012  Location: Swan Resort

Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

Session Chairs: Todd Allen, University of Wisconsin - Madison; Jian Gan, Idaho National Laboratory

2:00 PM Introductory Comments

2:05 PM Invited
Irradiation-Induced Defects in Oxide Nuclear Fuels: William Weber1; 1University of Tennessee

2:35 PM
XPS Measurements of Radiation Damage in Thin Film Single Crystal UO2 and UO3: Brent Heusser1; Melissa Strehle1; 1University of Illinois
2:50 PM
Irradiation Damage of CeO2 with Xe and Kr Implantation: Lingfeng He; Clarissa Yablinsky1; Mahima Gupta1; Todd Allen; Jian Gan; 1University of Wisconsin-Madison; 2Idaho National Laboratory

3:05 PM
Stoichiometry Dependence of the Evolution of Irradiated-Induced Defect Clusters in CeLa2O5: Weiping Chen1; Bei Ye; Aaron Oaks; Yinbin Miao; Brian Kleinfield; Mark Kirk; James Stubbins; U of Illinois at Champaign-Urbana; 1Argonne National Laboratory

3:20 PM Break

3:45 PM Invited Microstructure Characterization and Thermal Annealing of Irradiated Oxide Fuels: Understanding Gas Behavior and Restructuring at High Burnups: Thierry Wiss1; Arne Janssen; Bert Cremer; Hatmut Thiele; Ondrej Benes; Jean-Yves Colle; Dragos Staicu; Vincenzo Rondinella; Rudy Konings; 1EC - JRC - Institute for Transuranium Elements

4:15 PM TEM Characterization of Irradiated RERTR Dispersion Fuels: Jian Gan1; Dennis Keiser1; Brandon Miller1; Adam Robinson1; Jan-Fong Jue1; Pavel Medvedev1; Daniel Wachs1; 1Idaho National Laboratory

4:45 PM 3D Microstructural Characterization of Oxide Nuclear Fuel Surrogates: Effect of the Processing Conditions on Grain Boundary Distributions: Karin Rudman1; Darrin Byler2; Ham Lim2; Robert McDonald1; Pedro Peralta1; Chris Stanek2; Kenneth McClellan2; 1Arizona State University; 2Los Alamos National Laboratory

5:00 PM Ion Irradiations in La Doped CeO2: the Effects of Impurity and Excessive Oxygen Vacancy Environment: Di Yun1; Aaron Oaks2; Jeffrey Rest1; Abdellatif Yacout1; Marquis Kirk1; Wei-ying Chen1; James Stubbins1; Argonne National Laboratory; University of Illinois at Urbana-Champaign

5:15 PM Analysis and Modeling of Swift Heavy Ion Irradiation Defects in CeO2: Clarissa Yablinsky1; Anthony Schulte; Peng Xu2; Jianguo Yu1; Jian Gan1; Todd Allen1; University of Wisconsin; Westinghouse Electric Company; 1Idaho National Laboratory

Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Powder Processing and Consolidation I
Sponsored by: The Minerals, Metals and Materials Society, TMS Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizer: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

Tuesday PM
March 13, 2012
Room: Oceanic 2
Location: Dolphin Resort

Session Chair: Z. Zak Fang, University of Utah

2:00 PM Keynote
A Tribute to the Breadth and Depth of the Influence of Randall M. German on Particulate Materials Processing: John Smugeresky1; 1Sandia National Laboratories, Livermore, CA 94551

2:30 PM Invited Application of Metal Injection Molding to Soft Magnetic Materials: Hideshi Miura1; Kyushu University

2:55 PM Invited Novel Approaches to Powder Processing: Structure and Mechanical Properties: Marc Meyers1; C Wei; E Olevsky; Naresh Thadhani; UCSD

3:20 PM Invited Dynamic Shock-Compression of Particulate Materials: Current Understanding and Possibilities: Naresh Thadhani1; Georgia Institute of Technology

3:45 PM Pressureless Sintering of Si3N4/SiC Nanopowders Prepared by High Energy Reaction Milling of Silica Fume: Jyothi Suri1; Leon Shaw; 1University of Connecticut

4:00 PM Break

4:15 PM Development of Solid Freeform Fabrication for Metallic Parts Using Selective Inhibition of Sintering: Mahdi Yoozbashizadeh1; Behrokh Khoshsnevis1; University of Southern California

4:30 PM Numerical Simulation of Cold Pressing of Armstrong CP-Ti Powders: Adrian Sabau1; Sarma Gorti1; William Peter1; Wei Chen1; Yukinori Yamamoto1; Oak Ridge National Laboratory

4:45 PM The Effect of Coke Particle Size on the Thermal Profile of the Sintering Process Product: Nader Tahanparandezfard1; Ali Heidary Moghadam; Azad University

5:00 PM Issues and Trends in Powder Injection Molding in Korea; Research and Applications: Seong Jin Park1; 1POSTECH

5:15 PM Consolidation of Ferritic Oxide Dispersion Strengthened Alloys by Spark Plasma Sintering: Kerry Allahar1; Katsumi Takeshi; Brian Jaques; Indrajit Charit2; Darryl Butt1; James Cole1; Boise State University; Idaho National Laboratory

Recycling General Sessions: Electronics
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizer: Joseph Pomykala, Alter Trading

Tuesday PM
March 13, 2012
Room: Europe 4
Location: Dolphin Resort

Session Chair: Joseph Pomykala, Alter Trading

2:00 PM Control of Gas Emission during Pyrolysis of Waste Printed Wiring Boards: Alex Luyima; Honglan Shi; Lifeng Zhang; Jaan Kers; Missouri University of Science and Technology; Tallinn University of Technology

2:20 PM Leaching Studies for Metals Recovery from Waste Printed Wiring Boards (PWBS): Alex Luyima1; Honglan Shi1; Lifeng Zhang1; Missouri University of Science and Technology
2:40 PM
Effects of Inoculums Volume on Metals Extraction from Printed Circuit Boards of Computers by Bacterial Leaching: Luciana Yamane1; Denise Espinosa1; Jorge Tenório1; Polytechnic School of São Paulo University

3:00 PM Break

3:20 PM
Removal of Copper Cyanide Complexes from Solutions Formed in Silver/Gold –Cyanidation Recovery Process: Jose Purga1; Jesus L. Valenzuela1; Luciano Ramírez2; Institute Technology of Saltillo; University Hermosillo

3:40 PM
Dissolution of Mixed Zinc-Carbon and Alkaline Battery Powders in Sulphuric Acid Using Ascorbic/Oxalic Acid as a Reductant: Muammer Kayar1; ESOGU

4:00 PM
Selective Recovery of Precious Metals by Selective Adsorption on Garlic Peel Gel: Kai Huang1; Shuqiang Jiao2; Hongmin Zhu3; University of Science and Technology Beijing

4:20 PM
Separation of Si/SiC Wiraeasing Cutting Powder through Sedimentation by Adjusting the Solution pHs: Kai Huang1; Hao Deng1; Jichao Li1; Hongmin Zhu1; University of Science and Technology Beijing

Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Mechanical Properties
Program Organizers: Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schmitz, University of Münster; David Seidman, Northwestern University

Tuesday PM Room: Oceanic 7
March 13, 2012 Location: Dolphin Resort

Funding support provided by: Los Alamos National Laboratory

Session Chairs: Amit Misra, Los Alamos National Lab; Pascal Bellon, University of Illinois

2:00 PM Invited
Creep Deformation in Ion Irradiated Nanocrystalline Cu Alloys: Robert Averbach1; Pascal Bellon1; Yimon Ashkenazy2; Kaipeng Tai1; Jonathan Schäfer2; Karsten Albe1; University of Illinois; Hebrew University of Jerusalem; Technische Universität Darmstadt

2:30 PM Invited
Resolving the Contribution of Interfaces in the Deformation of Nanocrystalline Copper with Atomistic Simulations: Garrett Tucker1; Shreevant Tiwari1; Jonathan Zimmerman2; David McDowell1; Georgia Institute of Technology; Sandia National Laboratories

3:00 PM Heterophase Interface Character Distributions (HICDS) in Accumulative Roll-Bonded (ARB) CU-NB Multilayered Composites at Multi-Scale: Sukbin Lee1; Jonathan LeDonne1; Irene Beryerlein2; Nathan Mara1; Anthony Rollett1; Carnegie Mellon University; Los Alamos National Lab

3:20 PM Lithium Segregation at Matrix/Precipitate Interfaces in Al-Li-Sc and Al-Li-Sc-Yb Alloys: Thermodynamic Treatment, and Effects on Aging Microhardness: Matthew Krug1; David Dunand2; David Seidman1; General Electric Aviation; Northwestern University

3:40 PM Break

3:45 PM Intergranular Fracture Behavior in UO2: Molecular Dynamics Simulations: Yongfeng Zhang1; Xiangyang Liu2; Bulent Biner3; Paul Millett1; Michael Tonks1; David Andersson2; Idaho National Lab; Los Alamos National Lab,

4:05 PM On the Fracture Toughness of Polycrystalline LiCoO2: Meng Qi1; William Woodford1; John Maloney1; W. Craig Carter2; Yet-Ming Chiang3; Krystyn Van Vliet4; Massachusetts Institute of Technology

4:25 PM Rate Dependence Dissipation in Dynamic AFM: Gabriela Venturini1; Alejandro Strachan1; Purdue University

4:45 PM Mechanisms for the Nucleation of Lattice Dislocations from fcc/bcc Incoherent Interfaces: Ruifeng Zhang1; Jian Wang1; Irene Beyerlein1; Timothy Germann1; LANL

5:05 PM Molecular Dynamics Simulation of the Mechanical Behavior of Metallic Glass/Crystalline Composites: Anupriya Agrawal1; Logan Ward1; Katherine Flores1; Wolfgang Windl1; Ohio State University

Stochastic Methods in Materials Research: Session I

Tuesday PM Room: Europe 7
March 13, 2012 Location: Dolphin Resort

Session Chairs: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois at Urbana-Champaign

2:00 PM Invited
Automated Materials Design of Metallic Glasses Using Genetic Algorithms: Logan Ward1; Katherine Flores1; Wolfgang Windl1; The Ohio State University

2:30 PM Data-Driven Models Evolved through Multi-Objective Genetic Algorithms and Their Materials Applications: Nirupam Chakraborti1; Indian Institute of Technology
2:50 PM
Optimum Approximation for Three-Point Correlation Function: Majid Baniasad; Hamid Garmestani; Georgia Institute of Technology Materials Science and Engineering; Georgia Institute of Technology Materials Science and Engineering

3:10 PM Break

3:20 PM Invited
Stochastic Geometry and Transformation Kinetics Theories: Basics and Results: Paolo Rios; Elena Villa; UFF-EEIMVR; University of Milan

3:50 PM
Forward and Inverse Analysis of Engineering Neutron Diffraction Data with Neural Networks: Seung-Yub Lee; Hyuntae Na; Eran Ustundag; Columbia University; Iowa State University

4:10 PM Break

4:20 PM
Probabilistic Modeling of Microstructure Evolution Using Finite Element Representation of Statistical Correlation Functions: Veera Sundararaghavan; University of Michigan

4:40 PM
Unsupervised Learning Algorithm for the Estimation of Crystallographic Texture from Discrete Orientation Measurements: Stephen Niezgoda; Jared Glover; Carlos Tomé; Rodney McCabe; Los Alamos National Laboratory; Massachusetts Institute of Technology

5:00 PM
A Calibrated Monte Carlo Approach to Quantify the Impacts of Misorientation and Different Driving Forces on Texture Development: Lianghe Zhang; Anthony Rollett; Timothy Bartel; Di Wu; Mark Luik; Colorado School of Mines; Carnegie Mellon University; Sandia National Laboratories; Northeastern University

Symposium in Memory of Patrick Veyssiére: Understanding the Mechanisms Controlling Plastic Flow: Intermetallic Alloys

Tuesday PM
Room: Europe 6
Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: Helena Van Swygenhoven-Moens, Paul Scherrer Institute; T. Pollock, MSE/Michigan University

2:00 PM Invited
Plasticity and Dislocation Structures in L12-Ordered Intermetallic Compounds and Transition-Metal Silicides: Haruyuki Inui; KYOSUKE Kishida; Norihiko Okamoto; Kyoto University

2:30 PM Invited
Some Long-Period Superstructures and the Related Motion of Dislocations in Al-Rich TiAl Single Crystals: Takayoshi Nakano; Yukiehi Umakoshi; Osaka University

3:00 PM Invited
Determination of Fundamental Characteristics of Dislocations in Intermetallic Compounds Using γ-Surfaces: Vasek Vitek; University of Pennsylvania

3:30 PM Invited
STEM Imaging and Analysis of the Fine Structure of Dislocations in Ni-Based Superalloys: Patrick Phillips; Hallee Deutchman; Yi Yun Li; Ning Zhou; Yunzhi Wang; Michael Mills; The Ohio State University

4:00 PM Break

4:15 PM Invited
Influence of Dislocation Activity in the Alpha 2 Phase on the Plastic Deformation of Titanium Aluminides: Jörg Wiezorek; Michael Loretto; Hamish Fraser; University of Pittsburgh; University of Birmingham; The Ohio State University

4:20 PM Invited
A Dislocation Dynamics Simulation of the Temperature Dependence of the Flow Stress of L12 Alloys: Ronan Madec; Patrick Veyssière; Georges Saada; CEA, DAM, DIF; CEA (CNRS/ONERA)

4:40 PM Invited
A First Principles Study of the Effect of Ti and Ta on the SFE of the γ' Phase of Co-based Superalloys: Alessandro Mottura; Anderson Janotti; Tresa Pollock; University of California, Santa Barbara

5:00 PM Invited
Cyclic Behavior of a Ni-Based Superalloy Characterized by Electron Microscopy: Patrick Phillips; David Mourer; Dan Wei; Michael Mills; Ohio State University; GE Aviation

Titanium: Advances in Processing, Characterization and Properties: Microstructure Evolution and Characterization II

Tuesday PM
Room: Oceanic 3
March 13, 2012
Location: Dolphin Resort

Session Chairs: Ayman Salem, Materials Resources, LLC; Henry Rack, Clemson University; Adam Pilchak, US Air Force Research Laboratory

2:00 PM Invited
Characterization of Elongated Microtextures in Ti Alloys by Ultrasonic Backscattering: Stan Rokhlin; Jia Li; Oleg Lobkis; Adam Pilchak; The Ohio State University; US Air Force Research Laboratory

2:30 PM Invited
Quantifying Ti-6Al-4V Bimodal Microstructure Using Microstructure Informatics: Ayman Salem; David Turner; Dan Satko; Joshua Shaffer; Stephen Niezgoda; Surya Kalindiri; Materials Resources LLC; Drexel University; Los Alamos National Laboratory

3:00 PM
An Experimental Study on the Effect of Microstructure on Oxygen Ingress in Ti-6242S Alloy: S. Knox; G. Viswanathan; M. Chapman; A. Shiveley; J. Tiley; Southwestern Ohio Council for Higher Education/Air Force Research Laboratory; Air Force Research Laboratory
3:20 PM
Characterizing and Exploring the Broad Utility of Kinetic Metallization, a Novel Subsonic Cold Spray Metal Deposition Technique: John Sosa1; Peter Collins2; Hamish Fraser1; 1The Ohio State University; 2University of North Texas

3:40 PM
Determining the Variance and Distribution of Quantified Microstructure in a α + β Processed Ti-6Al-4V and Their Contribution to the Accuracy of Property-Predictive Neural Network Models: Meg Noble1; Daniel Huber1; John Sosa1; Travis Presley1; Hamish Fraser1; 1Ohio State University

4:00 PM
Calculation of Kearns Number Plots (KNP) and Kearns Number Maps (KNM) from EBSD Data: Application to Ti-6Al-4V with Bimodal Microstructure: Ayman Salem1; Adam Pilchak2; Surya Kalidindi1; 1Materials Resources LLC; 2Air Force Research Laboratory; 1Drexel University

4:20 PM
The Study of Phase Transformation in Beta Titanium Alloys Using Electrical Resistivity Measurement, Image Processing Technique and Electron Microscopy: Yufeng Zheng1; Robert Williams1; Hamish Fraser1; 1The Ohio State University

4:40 PM
Phase Transformations and Mechanical Properties of Alpha-Beta Solution Treated Ti-6.8Mo-4.5Fe-1.5Al: Jana Smilauerová1; Petr Hmrcuba1; Miloš Janecek1; Josef Stráský1; Radomir Kuzel1; Henry Rack1; Herbert Boeckels2; 1Charles University; 2Clemson University

5:00 PM
Effect of Titanium Borides on the Formation of Equiaxed Alpha in Titanium Alloys: Peeyush Nandwana1; Soumya Nag1; Jaimie Tiley1; Hamish Fraser1; Rajarshi Banerjee1; 1University of North Texas; 2Air Force Research Laboratory; 1The Ohio State University

5:20 PM
Effect of Heating Rate on the Short Time Aging Kinetics of Ti-6.8Mo-4.5Fe-1.5Al: Herbert Boeckels1; Henry Rack1; 1Clemson University

5:40 PM
Phase Evolution as a Function of Heat Treatment in Ti-48Al-16Nb Alloys: Narayana Garimella1; A. K. Singh1; N.K. Mukhopadhyay1; G.V.S. Sastry1; 1University of Maryland School of Medicine; 2Defence Metallurgical Research Laboratory Hyderabad India; 3Department of Metallurgical Engineering Banaras Hindu University India

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Transition Metal Processing
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Materials Characterization Committee
Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; J. E. Dutrizac, CANMET; Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper

Tuesday PM
Room: Oceanic 5
March 13, 2012
Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

Session Chair: Michael Free, University of Utah

2:00 PM
FeTi Alloy Production by Electrolytic Reduction of (Fe, Ti) Oxide Electrode in Molten Calcium Chloride: Panigrahi Mrutyunjay1; Atsushi Iizuka1; Etsuro Shibata1; Takashi Nakamura1; 1IMRAM, Tohoku University

2:20 PM
A New Method for Production of Titanium Dioxide Pigment – Eliminating CO2 Emissions: Scott Middlemas1; Z. Zaf Farg1; Peng Fan1; 1University of Utah

2:40 PM
Extraction of Titanium and Vanadium by Chloride Leach Processes: Lucky V. I. Lakshmanan1; R. Sridhar1; T. Sheikhzeinoddin1; Md. Halim1; R. Roy1; 1Process Research Ortech Inc.

3:00 PM
Formation of Titanium Liquid Alloy by Mechanical Mixing and Electrochemical Method: Sho Maruyama1; Shohei Hayashi1; Yuya Kado1; Tetsuya Uda1; Yoshitaro Nose1; 1Kyoto university

3:20 PM Break

3:40 PM
Anion-Exchange Separation of Zr from Hf using Multi-Column Method: Masahito Uchikoshi1; Kouji Mimura1; Minoru Isshiki1; 1Tohoku University

4:00 PM
Recovery of Metals from Molybdenite Concentrate by Hydrometallurgical Technologies: Yufang Wang1; Kaixi Jiang1; Xiaoping Zou1; Lei Zhang1; Sanping Liu1; 1Beijing General Research Institute of Mining and Metallurgy

4:20 PM
The Effect of Phosphate Additions on the Microstructure and Performance of Cr2O3 Gasifier Refractories: Kyei-Sing Kwong1; James Bennett1; Jinchiro Nakano1; John Sears1; Xueyan Song1; 1NETL, US DOE; 2URS Corp.; 3West Virginia University

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee

**Program Organizers:** Suveen Mathaudhu, U.S. Army Research Office; Xiaoxi Huang, Risa National Laboratory for Sustainable Energy, Technical University of Denmark; Hyung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

**Tuesday PM**

Room: Swan 5
March 13, 2012
Location: Swan Resort

**Session Chairs:** David Morris, CENIM, CSIC; Edgar Garcia-Sanchez, Universidad Autónoma de Nuevo León; Jung Bahadur Singh, Bhabha Atomic Research Centre; Jozef Zrnik, Comtes FHT, Inc.

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>2:00 PM</td>
<td>Development of Ultra-High Strength Al-Mg Alloys Processed by Severe Plastic Deformation</td>
<td>Hans Roven; Manping Liu; Maxim Murashkin; Ruslan Valiev; Simon Ringer; The University of Sydney</td>
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<td>2:20 PM</td>
<td>Dynamic Precipitation in AA6060 during HPT Processing at Different Temperatures</td>
<td>Gang Sha; Xiaozhou Liao; Kaan Tugcu; Maxim Murashkin; Ruslan Valiev; Simon Ringer; The University of Sydney</td>
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<td>2:35 PM</td>
<td>ECAP Processing of Al5052 Alloys at Room and Cryogenic Temperatures</td>
<td>Jung Singh; Garima Sharma; Apu Sarkar; V Basavaraj; Jayanta Chakravarty; Bhabha Atomic Research Centre; IIT Bombay</td>
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<tr>
<td>2:50 PM</td>
<td>Effects on Hardening and Ductility of Severe Plastic Deformation of Al-Cu-Li and Cu-Cr-Zr Precipitation Hardening Alloys</td>
<td>David Morris; Kesman Valdes Leon; Maria Muñoz-Morris; CENIM, CSIC</td>
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<tr>
<td>3:05 PM</td>
<td>Structural Evolution in Aluminium Alloy AA6082 during HPT Deformation at Increased Temperature</td>
<td>Josef Zrnik; Libor Kraus; Reinhard Pippan; Martin Fujda; Karel Sperlink; Comtes FHT, Inc.; Austrian Academy of Science; Technical University in Kosice; CSNMT</td>
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**4:40 PM**

Extraction Impurities such as Fe, Ca and Mg from a Titanium Material in Chloride Acid System with Microwave Eneergy Leaching: Shaohua Ju; Jin-Hui Peng; Sheng-Hui Guo; Wang Xin; Lie-Xing Zhou; Meng-Yang Huang; Kunming University of Science and Technology

**5:00 PM**

Study on Sodium Roasting and Chromium Extracting of Fe-Cr Spinel: Hai-Xing Fang; Hong-Yi Li; Bing Xie; Chongqing University

**3:20 PM**

Effect of Short Annealing and Ageing on Microstructure and Mechanical Properties of Ultrafinegrained Al-Mg-Si Alloy: Nageswararao Palakuri; Jayaganthan R; IIT Roorkee

**3:35 PM**

Break

**3:50 PM**

Invited Nanostructure Evolution in Pure Aluminum Heavily Deformed by Torsion: Nobuhiro Tsujii; Sunisa Khamiskul; Hiroki Adachi; Daisuke Terada; Kyoto Univ; University of Hyogo

**4:10 PM**

Effect of the Severe Plastic Deformation on the Wear Behavior of an Al-Mg-Si Alloy: Edgar Ortiz-Cuellar; M. A. L Hernandez-Rodriguez; E. Garcia-Sanchez; Universidad Autónoma de Nuevo León -Facultad de Ingeniería Mecánica y Eléctrica

**4:25 PM**

Effect of Multi Directional Forging at Liquid Nitrogen Temperature on Microstructure and Mechanical Properties of Al-Mg-Si Alloy: Jayaganthan R; Nageswararao P; IIT Roorkee

**4:40 PM**

Effect of Nano-Structural Modification on the Mechanical Behavior of Lamellar Gamma TiAl Alloy: Yu Sun; Anil Sachdev; Enrique Laverman; University of California, Davis; Chemical Sciences and Materials Systems Lab, GM Global R&D Center, Warren, MI

**4:55 PM**


**5:10 PM**

Microstructure and Defect Structure Evolution in Commercial Magnesium Alloys Processed by Severe Plastic Deformation: Miloš Janeček; Jakub Cížek; Jitka Vrátná; Julia Mueller; Jeno Gubíza; Charles University

**5:25 PM**

Effect of HPT Processing Temperature on the Evolution of Strength in a Magnesium Alloy: Yi Huang; Roberto Figueiredo; Terence Langdon; University of Southampton; Federal University of Minas Gerais; University of Southern California

**5:40 PM**

Some Studies on the Microstructural Changes in a Mg-Based AE42 Alloy Subjected to Friction Stir Processing: Brij Dhindaw; Harpreet Singh; Harpreet Singh Arora; I.I.T. Ropar


Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Rise National Laboratory for Sustainable Energy, Technical University of Denmark; Hyung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

Tuesday PM  Room: Swan 4
March 13, 2012  Location: Swan Resort

Session Chairs: Tadahiko Furuta, Toyota Central R & D Labs., Inc.; Rainer Hebert, University of Connecticut; Rimma Lapovok, Monash University; Z.B. Wang, Institute of Metal Research, Chinese Academy of Sciences

2:00 PM Invited
Structure and Properties of the Stainless Cr-Ni-Ti Steel after High Pressure Torsion at T= 300-500°C: Sergey Dobatkin1; Ruslan Valiev2; Olga Rybalchenko1; Maksim Murashkin2; ‘AA. Baikov Institute of Metallurgy and Materials Science of RAS; ‘Ufa State Aviation Technical University

2:20 PM
Effect of Alloy Composition on Mechanical Properties of Bulk Nanostructured Fe-Ni-Co-Ti Alloys Produced by High-Pressure Torsion: Tadahiko Furuta1; Shigeru Kuramoto1; Kaveh Edalati1; Zenji Horita1; Toyota Central R & D Labs., Inc.; ‘Kyushu University

2:35 PM
Synthesis and Characterization of Nanocrystalline High Entropy Alloys: Koteswararao Rajulapati1; P Chandrashekar1; M Sundaraman1; K Bhanu Sankara Rao1; ‘University of Hyderabad

2:50 PM Invited
Influence of Strain Path on the Fracture Behavior of Severely Plastically Deformed Iron: Anton Hohenwarter1; Reinhard Pippan1; ‘Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

3:10 PM
Microstructure Evolution and of a F138 Austenitic Stainless Steel after Severe Plastic Deformation: Andrea Kliauga1; Sergey Dobatkin2; ‘Universidad Federal de Sao Carlos - UFSCar; ‘Baikov Institute of Metallurgy and Materials Science RAS

3:25 PM
Grain Size Effect on High Speed Deformation of Hadfield Steel: Rintaro Uej1; Daisuke Kondo1; Yoshinori Takagi1; Takashi Mizuguchi1; Yasuhiro Tanaka1; Kazunari Shinagawa1; ‘Kagawa University

3:40 PM
Austenitization Process in a Nanostructured Ferritic Steel Produced by Means of Surface Mechanical Attrition Treatment: Z.B. Wang1; L.M. Wang1; K. Lu1; ‘Institute of Metal Research, Chinese Academy of Sciences

3:55 PM Break

4:10 PM Invited
Recent Progress in High-Entropy Alloys: Ming-Hung Tsai1; Jien-Wei Yeh1; ‘National Tsing Hua University

4:30 PM
Refinement of Second Phase Particles in Creep-Resistant Iron Aluminides using High-Temperature Severe Plastic Deformation: David Morris1; Maria Munoz-Morris1; ‘CENIM, CSIC

4:45 PM
Thickness Effect in Micro Drawing of Ultrafine and Coarse Grained Cooper: Andrey Molotnikov1; Rimma Lapovok1; Chengfan Gu1; Chris Davies1; Yuri Estrin1; ‘Monash University

5:00 PM
Accumulative Roll Bonding of Cu-Mo Multilayers: Girija Marathe1; Rainer Hebert1; ‘University of Connecticut

5:15 PM
Combination of DRECE Process and Heat Treatment to Achieve Refining Structure of Brass: Stanislav Rusz1; Karel Malanik1; Jan Kedron1; Jan Dukiewicz2; Lubomir Cizek1; Stanislav Tylsar1; ‘University of South Bohemia; ‘Institute of Metallurgy and Materials Science of Polish Academy of Sciences

5:30 PM
Microstructural Evolution and Mechanical Behaviour of Warm Multi-Axially Forged HSLA Steel: Aditya Padap1; G Chaudhari2; V Pancholi2; S Nath1; ‘Bundelkhand Institute of Engineering and Technology Jhansi, UP India 284128; ‘Indian Institute of Technology Roorkee, India
2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Nanomaterials for Energy Technology

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS:
Nanomaterials Committee

Program Organizers: Jiyong Kim, University of Texas; David Stoilberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nilton Chopra, The University of Alabama; Terry Xu, UNC Charlotte

Wednesday AM
Room: Pelican 1
Location: Swan Resort

Session Chairs: Terry Xu, Univ. North Carolina at Charlotte; Deyu Li, Vanderbilt University

8:30 AM Introductory Comments

8:35 AM Invited
Selected Synthesis Techniques of Thermoelectric Nanomaterials and Their Role in Higher Performance Thermoelectric Materials: Terry Trritt1; Jennifer Graff1; Wenjie Xie2; Xinfeng Tang2; 1Clemson University; 2Wuhan University of Technology

9:10 AM Invited
Thermal Transport Through Individual Nanowires/Nanotubes and Their Contacts: Deyu Li1; 1Vanderbilt University

9:45 AM
Structure and Thermomechanical Behavior of Nanoporous Nickel Thin Films: Lei Wang1; Jiang Xu1; 1University of Kentucky

10:00 AM Break

10:15 AM Invited
All Inorganic “Sensitized” Solar Cells Based on Large Bandgap Semiconductors: Yong Zhang1; 1UNC Charlotte

10:50 AM
Catalytic Properties of AgCu Bimetallic Nanoparticles for PEMFC Cathode: DFT Study: Kihyun Shin1; Da Hye Kim1; Sang Chul Yeo1; Hyuck Mo Lee1; 1KAIST

11:05 AM
High-Performance Electrochemical Capacitors Based on Nanocomposites of Transition Metal Oxide Aerogel / Vertically Aligned Carbon Nanotubes: Mitsub Ohi2; Yonghak Song3; Sangmin Kim1; Haseok Jeon1; Ju Hee Kim1; Haeyoung Kim1; Seungmin Hyun2; Hoo-jeong Lee1; Sungkyunkwan University; 1Korea Institute of Machinery & Materials; 2Yeungnam University

11:20 AM
3D Multiwall Carbon Nanotubes (MWCNTs) for Li-Ion Battery Anode: Chiewon Kang1; Indranil Lahiri1; Rangasamy Baskaran1; Mansoo Choi1; Won Gi Kim2; Yang-Kook Sun1; Wonbong Choi1; Nanomaterials and Device Laboratory, Department of Mechanical and Materials Engineering, Florida International University, USA; 2Department of Energy Engineering, Hanyang University, Seoul, Korea

2012 Symposium on Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: I-Energy
II-Magnetic Materials
III-Chemical Sensing and Surfaces

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS:
Materials Processing and Manufacturing Division, TMS:
Energy Conversion and Storage Committee, TMS:
Nanomaterials Committee, TMS:
Surface Engineering Committee, TMS:
Young Leaders Committee, TMS: EMPMD Council

Program Organizers: Nilton Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Jiyong Kim, University of Texas at Dallas; Christopher Matranga, National Energy Technology Laboratory

Wednesday AM
Room: Pelican 2
Location: Swan Resort

Session Chairs: Sumit Chaudhary, Iowa State University; Nitin Chopra, The University of Alabama; Jiyong Kim, University of Texas at Dallas

8:30 AM
Transport and Electrical Properties of Two Dimensional Hole Gas in δ-MIGFET in GaAs: Outmane Oubram1; 1Clemson University; Luis Manuel Gaggero-Sager1; 1Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México; 2Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México; Facultad de Ciencias, Universidad Autónoma del Estado de Morelos

8:45 AM
Electrochemical Behavior of Nanoceria in Different pH Solution: Shashank Saraf1; Naveen Chandrasekaran1; Sudipta Seal1; 1University of Central Florida

9:00 AM
Facile Preparation and Advanced Characterization of ZnO Nanoparticles: Hulya Kafeleen1; Kasim Ocakoglu1; Emre Erdem1; 1Mersin University; 2Institut für Physikalische Chemie I, Albert-Ludwigs-Universität Freiburg

9:15 AM Invited
Spherical Barium Ferrite (S-BaFe) Nanoparticles for Ultra High-Density Information Data Storage: Jang-Ki Hong1; Jeewon Jalli1; Sung-Hoon Gee2; 1The University of Alabama; 2Seagate Technologies

9:50 AM Invited
Perpendicular Magnetic Tunnel Junctions for Spin-Torque Transfer Random Access Memory (STT-RAM): Subhadra Gupta1; Anusha Natarajarathinam1; Amritpal Singh1; 1The University of Alabama

10:25 AM Break

10:30 AM Invited
Nanocomposite Soft Magnetic Materials: Role of Composition on Properties: Matthew Willard1; 1The University of Alabama; Maria Daniil2; Keith Knipping1; 2National Energy Technology Laboratory; 1National Energy Technology Laboratory and University of Pittsburgh; 2National Energy Technology Laboratory and URS Corporation

11:05 AM Invited
Optical Thin Films for Gas Sensing in Advanced Coal Fired Power Plants: Paul Ohodnicki1; Thomas Brown1; John Baltrus1; Sittichai Natesakhamawat2; Congjun Wang1; 1National Energy Technology Laboratory; 2National Energy Technology Laboratory and University of Pittsburgh; 3National Energy Technology Laboratory and URS Corporation
11:40 AM
Hierarchical Metallic and Ceramic Nanostructures via a Hybrid Approach Combining Laser Interference Ablation and Block Co-Polymer Phase Separation: Taiwo Alabi1; Dajun Yuan1; Suman Das1; 1Georgia Institute of Technology

11:55 AM
Rapid Fabrication of Diverse Two-Dimensional and Three-Dimensional Gold Nanotextures Through Laser Interference Patterning: Dajun Yuan1; Suman Das1; 1Georgia Institute of Technology

12:15 PM Invited Development of Superhydrophobic Nano-structured Ceramics to Promote Dropwise Condensation: Ghazal Azimi1; Kripa Varanasi1; 1MIT

Wednesday AM
Room: Southern II
March 14, 2012 Location: Dolphin Resort

Session Chairs: Mark Schwarz, CSIRO; Xiaohui Fan, Central South University

8:30 AM
A Study of Co-V-Al Alloys by Self Propagating High Temperature Synthesis: Murat Alkan1; Ozlem Altinorud1; Seref Sonmez1; Onuralp Yucel1; Bora Derin1; Vladimir Sanin1; Vladimir Yukhvid1; Istanbul Technical University; 1Institute of Structural Macrokinetics and Materials Sciences

8:45 AM
Strengthening the Sintering of Iron Concentrate Fines by High Pressure Roller Grinding Pretreatment: Yufeng Guo1; Kelang Mu1; Jiang Tao1; Dao Su1; Jinghua Zeng1; 1Central South University

9:00 AM
A Study of Ni-Cr-Al Alloys by Self-Propagating High Temperature Synthesis: Bora Derin1; Ozlem Altinorud1; Murat Alkan1; Seref Sonmez1; Onuralp Yucel1; Vladimir Sanin1; Vladimir Yukhvid1; Istanbul Technical University; 1Institute of Structural Macrokinetics and Materials Sciences, ISMAN

9:15 AM
Research on Sintering Properties of Vanadium-Titanium Magnetite Concentrate: Xiaohui Fan1; Qiang Wang1; Xuling Chen1; Min Gan1; Lishun Yuan1; Shan He1; 1Central South University

9:30 AM
Influence of Limonite Proportion on Sinter Quantity and Quality: Xiaohui Fan1; Dao Su1; Ganghua Fu1; Xuling Chen1; Min Gan1; Tao Jiang1; Yufeng Guo1; 1Central South University

9:45 AM
In Situ Observation of High Temperature Properties of Iron Ore during Sintering Process: Pei Dong1; 1Shouguana China

10:00 AM
Break

10:10 AM
The Influence of m(V2O5)/m(TiO2) on Compositions and Structures of V-Ti-Fe Alloys: Bin Wang1; Kuiren Liu1; Jiashu Chen1; Jilin He1; 1Northeastern University; 1Northwest Rose Metal Materials Research Institute

10:25 AM
Air Leakage Online Monitoring and Diagnosis Model for Sintering: Fan Xiaohui1; Jiang Lijuan1; Chen Xuling1; 1Central South University

10:40 AM
Investigation on the Interfaces of M42/45 Steel Bimetal Composites Sintered by Spark Plasma Sintering: Xu Jinfu1; You Hang1; 1Institute of Materials Engineering, Ningbo University of Technology

10:55 AM
Influence of MgO on the Strength of High Basicity Sinter: Xiaohui Fan1; Wenqi Li1; Min Gan1; Guohua Bai1; Tao Jiang1; Zhiyun Ji1; Zhiyuan Yu1; Xiaoxian Huang1; 1Central South University

Advances in Surface Engineering: Alloyed and Composite Coatings: Session V

8:30 AM
Tribological Behavior of Plasma Sprayed Al-Si Composite Coatings Reinforced with Different Carbon Allotropes: Mingdong Bao1; Cheng Zhang1; Debrupa Lahiri1; Avrind Agarwal1; 1Florida International University

8:50 AM
Evaluation of Brittle Layers Obtained on Boronized Cr-Mo Based Steels: Noe Lopez Perrusquia1; Marco Doñu Ruiz1; 1Instituto Politécnico Nacional

9:10 AM
Evaluation of Residual Stress in Fe2B Coating on Ductile Cast Iron: Marco Doñu Ruiz1; Noe Lopez Perrusquia1; Victor Jorge Cortez Suarez1; David Leoncio Rosado Cruz1; 1IPN; 1UAM; 1UPVM

9:30 AM Break

9:45 AM
Regression Model of Oxidation Behavior of 6061 Al/SiC Composite: Priyamvada Bhaskar1; 1National Institute of Technology, Surathkal

10:05 AM
An Alternative Solution for Aluminium Extrusion Die Surfaces: The Qualified Hard Coatings (AlCrN and AITIN): Behzide Yuce1; Yucel Birol1; 1TUBITAK MAM Materials Institute

10:25 AM
On the Production of Mo-MoSi2 FGM by Diffusion Technology: Ma Ruixin1; Li Shina1; Zhang Japing1; 1USTB
Alumina and Bauxite: Energy and Processing
Alternative Rawmaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Benny Raahauge, FLSmidth

Wednesday AM  Room: Northern E3
March 14, 2012  Location: Dolphin Resort

Session Chair: Tony Kjar, Gibson Crest Pty Ltd

8:30 AM
Decrease of Heat Consumption at Nepheline Processing to Alumina and By-Products: Vladimir Kazakov1; Vadim Lipin2; 1St. Petersburg State Technologic University of Vegetable Polymers; 2Saint Petersburg State Polytechnical University

8:50 AM
Influence of Na2O on the Phase Compositions and the Alumina Leaching Properties of Calcium Aluminate Slag: Yingjie Li1; Z. F. Tong2; Lixiu Lian; 1Jiangxi University of Science and Technology; 2Jiangxi University of Science and Technology

9:10 AM
Influence of Titania on the Phase Compositions and the Alumina Leaching Properties of Calcium Aluminate Slag: Z. F. Tong1; Yingjie Li2; Lixiu Lian2; 1Jiangxi University of Science and Technology; 2Jiangxi University of Science and Technology

9:30 AM
Research of Al and Si Occurrence States on Acid Leaching Performance of High-Alumina Fly Ash: Zhang Ting'an1; La Guozhi2; Dou Zhihe1; Nan Xiangli; Song Dan1; Li Yan1; He Jicheng1; 1Northeastern University

9:50 AM
Study on the Effect of Si and Silicide on Leaching Al2O3 from Magnesium Smelting Reduction Slag: You Jing1; Wang Yaowu1; Feng Naixiang1; Feng Jianping1; Di Yuezhong1; 1Northeastern University

10:10 AM
Extracting Alumina from Coal Fly Ash Using Acid Sintering-Leaching Process: Kang Liu1; Jilai Xue1; 1University of Science and Technology Beijing

10:30 AM
Study on Secondary Reaction Mechanism during Alumina Leaching Process of Calcium Aluminate Slag: Wang Bo1; Sun Hui-Lan2; Yu Hai-Yan3; Pan Xiao-Lin4; Tu Gan-Feng1; 1Northeastern University; 2Hebei University of Science and Technology; 3Northeastern University

10:50 AM
Production of Novel Zeolite of Type Na-P from Sodium Aluminate Liquor/Spent Liquor/Alumina Tri-Hydrate of Nalco’s Alumina Refinery, Damanjodi, Orissa, India: A Unique Builder Material for Detergent Formulation: Chitta Mishra1; 1National Aluminium Company Limited

Aluminum Alloys: Fabrication, Characterization and Applications: Material Characterization

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum

Wednesday AM  Room: Northern E1
March 14, 2012  Location: Dolphin Resort

Session Chair: William Golumbfskie, Naval Surface Warfare Center

8:30 AM
Characterization of High Strength Wrought and Rapidly Solidified Alloys for Aero Engine Applications: Eric Ott1; 1GE Aviation

8:50 AM
Metallographic Identification of Phases in 5xxx Series Aluminum Alloys: Young-Ki Yang1; Todd Allen1; 1University of Wisconsin

9:10 AM
Studies on Flow Characteristics at High-Pressure Die-Casting: Christian Chimani1; Richard Kretz2; Simon Schneiderbauer3; Stefan Puttinger4; Stefan Pirker5; 1LKR Leichtmetallkompetenzzentrum Ranshofen GmbH; 2JKU Johannes Kepler Universität

9:30 AM
Electrohydraulic Sheet Metal Forming of Aluminum Panels: John Bonnen1; Sergey Golovoshchenko2; Scott Dawson1; Alexander Mamutov2; Alan Gillard1; 1Ford Motor Company; 2Oakland University

9:50 AM
Forming of AA7075 under Cryogenic Conditions: Sebastian Fritsch1; Stephanie Hunger2; Matthias Hockauf1; Martin E.-X. Wagner1; 1Chemnitz University of Technology

10:10 AM Break

10:25 AM
Metallurgical Characterization of Aluminum Alloys by Matrix Dissolution: Marcelo Paes1; Francisco Pinheiro1; Miguel Borodiak1; 1Votorantim Metais - CBA

10:45 AM
Effect of Silicon Particles on the Tensile Properties of Heat Resistant Al-Si-Cu-Ni-Mg Alloy Pertaining to Different Tensile Temperature: Chuang Hsu-Chi1; Lui Truan-Sheng1; Chen Li-Hui1; 1National Cheng Kung University

11:05 AM
Work-Hardening and Flow Behavior of AA7055 Alloy Extrusions: Geo Harrison1; Rama Krishna1; Tejaswini1; Chandan Monadal1; 1College of Engineering Guindy, Anna University; 2NTU College of Engineering; 3Defence Metallurgical Research Laboratory, Hyderabad

11:25 AM
Factors Influencing Tensile Mechanical Properties of Al-7Si-Mg Casting Alloys A356/7: Heinrich Möller1; Waldo Stumpf1; Gonasagren Govender1; 1CSIR; 2University of Pretoria
Aluminum Reduction Technology: Cell Technology and Operation
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Wednesday AM
March 14, 2012
Room: Southern III
Location: Dolphin Resort
Session Chair: Bjorn Moxnes, Hydro Aluminium

8:30 AM
DX+: An Optimized Version of DX Technology: Abdalla Al Zarouni1; Ali Al Zarouni1; Michel Reverdy1; Sergey Akhmetov1; Lalit Mishra1; Nadia Ahli1; Ibrahim Baggash1; ‘DUBAL’

8:50 AM
AP40: The Latest of the AP Technology™ Solutions: Laurent Flot1; Benedicte Champel1; Sylvain Fardeau1; Pierre Bon1; David Munoz1; Olivier Martin1; ‘Rio Tinto Alcan’

9:10 AM
A Techno-Economic Optimization Model For Aluminum Electrolysis Production: Yanfang Zhang1; Wansheng Li2; Jianhong Yang2; Dengpeng Chai1; Shilin Qiu1; Jingyi Li2; Zhengzhou Research Institute of Challes; ‘Graduate School of Business and Law, RMIT’

9:30 AM
The Successful Implementation of DUBAL DX Technology at EMAL: Michel Reverdy2; B. Kakkar2; David Spencer2; Walid Al Sayed3; Ali Al Zarouni3; Kamel Al Aswad3; Abdulla Al Zarouni3; ‘DUBAL’; ‘EMAL’

9:50 AM
Commissioning of Emirates Aluminium Smelter Potlines: B.K. Kakkar1; Spencer2; Walid Al Sayed3; Salman Abdulla4; ‘Emirates Aluminium company’

10:10 AM Break

10:30 AM
Update on the Development of D18 Cell Technology at Dubai: Daniel Whitfield1; Tariq Majeed1; Sergey Akhmetov1; Maryam Mohamed Al-Jallaf1; Kamal Al Aswad1; Ibrahim Baggash1; Ali Al Zarouni1; ‘Dubai Aluminium’

10:50 AM
Prebake Potline Restart after Power Supply Interruption: Mikhail Lukin1; John Johnson1; ‘Kubikenborg Aluminium AB’; ‘RUSAL ETC’

11:10 AM
The Restart of Two Idled Pot Lines at Ormet Primary Aluminum: Cecil Smith1; Mark Christman1; ‘Ormet Primary Aluminium’

11:30 AM
Vertical Stud Soderberg Technology Development by UC RUSAL in 2004 - 2011: VYu. Buzunov1; Victor Mann1; Evgeniy Chichuk1; Nikolay Pitertsev1; Igor Cherskih1; Vladimir Frizorger1; ‘RUSAL ETC’; ‘UC RUSAL’

11:50 AM
Uniform Cathode Current Collection / Distribution Effect on Cell Stability (Nine Months of Continuous Treatment of a Sick Cell): Hadi Fanisalek1; ‘Hormozal’

Atomistic Effects in Migrating Interphase Interfaces - Recent Progress and Future Study: Modelling and Mechanisms of Interface Migration
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Tadashi Furuhara, Institute for Materials Research, Tohoku University; Sudarsanam Babu, Ohio State University; Hatem Zurob, McMaster University, Jian-Feng Nie, Monash University; Wen-Zheng Zhang, Tsinghua University; James Howe, University of Virginia

Wednesday AM
March 14, 2012
Room: Europe 3
Location: Dolphin Resort
Session Chairs: Sybrand van der Zwaag, Technical University Delft; Mohamed Gouné, ArcelorMittal Maizières Research SA

8:30 AM Invited
Effects of Alloying Elements on the Growth of Ferrite from Austenite In Multi-Component Fe-C Base Alloys: Masato Enomoto1; Ran Wei1; Guohong Zhang2; Dongwoo Suh2; ‘Ibaraki University’; ‘Pohang University of Science and Technology’

9:00 AM Invited
Modeling of the Austenite to Ferrite Transformation in Fe-C-X Alloys: Joakim Odqvist1; Annika Borgenstam1; Henrik Larsson1; Lars Högland1; John Ågren1; Mats Hillert1; ‘KTH (Royal Institute of Technology)’; ‘Thermo-Calc Software AB’

9:30 AM
New Model for Kinetics of the “γ” to “α” Transformation in Fe-C-X Systems: Damon Panahi1; Hatem Zurob2; Gary Purdy3; Christopher Hutchinson1; Yves Brecher1; ‘McMaster University’; ‘Monash University’; ‘Carnegie Institute of Technology’

9:50 AM Break

10:05 AM Invited
Precise Measurements of Phase Transformation Kinetics: What Can It Tell Us about the Atomic Mechanisms of Interface Migration?: Christophor Hutchinson1; Hatem Zurob2; ‘Monash University’; ‘McMaster University’

10:35 AM Invited
Direct Computation of the Solute Drag on a Moving Interface using Atomistic Simulations: H. Humadi1; Y. Yang2; D. Buta3; B. B. Laird2; Aulia Wicaksono1; Matthias Militzer1; ‘The University of British Columbia’

11:05 AM
Atomistic Simulations of Solute-Interface Interactions in Iron: Hao Jin1; Ilya Elfimov1; Matthias Militzer1; ‘The University of British Columbia’

11:25 AM
Atomistic Modeling of Interstitial Solute Interacting with Moving Interface: Aulia Wicaksono1; Matthias Militzer1; Chad Sinclair1; ‘UBC’
Biological Materials Science Symposium:
Biological and Bio-Inspired Materials III: Soft Biomaterials

**Sponsored by:** The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS
Structural Materials Division, TMS: Biomaterials Committee

**Program Organizers:** Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman, Texas A&M University

Wednesday AM
Room: Swan 7
March 14, 2012
Location: Swan Resort

**Session Chairs:** Molly Kennedy, Clemson University; Molly Gentleman, Texas A&M University

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**8:30 AM Invited**
A Detailed Physicochemical Study of Peptide-Mineral Interactions; Importance of Peptide Composition, Particle Size, Surface Chemistry, pH and Buffer Identity: **Carole Perry**1; Valeria Puddu1; David Belton1;
1Nottingham Trent University

**9:00 AM**
Specific Targeting Molecular Probes: From Materials to Cells: **Hilal Yazici**1; Marketa Hnilova1; Hanson Fong1; Hai Zhang1; Candan Tamerler1;
1University of Washington

**9:20 AM**
Possible Key Property of Nanoparticles that Can Maximize Its Cancer Killing Capacity: **Vanessa Moosarifazeli**1; Soumen Das1; Sudipta Seal1;
1University Central Florida; 2University Central Florida

**9:40 AM**
Response of Mice 7F2 Osteoblast and Porcine Dental Pulp Stem Cells to Substrate Topography: **Marian Kennedy**1; Xue Chen1; Terri Bruce1; Delphine Dean1; Julia Sharp1;
1Clemson University

**10:00 AM**
Determination of Mechanical Properties in Escherichia Coli by Noninodentation: **Cody Wright**1; Abdelmageed Elmustafa1; Clarettta Sullivan1;
1Old Dominion University; 2Eastern Virginia Medical School

**10:15 AM Break**

**10:25 AM Invited**
Measurement of the Cell Adhesion Strength of Patterned Fibroblasts Using Hydrodynamically-Confined Microfluidics: **Kevin Turner**1; Kevin Christ1;
1University of Pennsylvania; 2University of Wisconsin-Madison

**10:55 AM**
The Role of Surface Free Energy of Cell Adhesion in TiO2 Systems: **Eileen Gentleman**1; Kyle Krzywosinski1; Matthew Scorsone1; Molly Gentleman1;
1King’s College London; 2Texas A&M University

**11:15 AM**
Mechanical Response of Brain Tissue Surrogate Material under Impact Loading: **Marius Ellingsen**1; **Deepthi Saint**1; Karim Muehl-Küchler1; Brandon Hinze1;
1South Dakota School of Mines and Technology

**11:30 AM**
Photocatalytic Responses of Bacterial Cells: **J. Zhang**1; **X. Wang**1; P. Wu1; Q. Li1; J. Shang1; **Institute of Metal Research; 2Superior Graphite Co.; 3University of Illinois

**11:45 AM**
Polydimethylsiloxane Mechanical Properties and Their Effects on Cell Growth: **Zhixin Wang**1; Kranthi Elineni1; Nathan Gallant1; Alex Volinsky1;
1University of South Florida

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**Bulk Metallic Glasses IX: Fatigue and Corrosion**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS
Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday AM
Room: Swan 6
March 14, 2012
Location: Swan Resort

**Session Chairs:** Yoshikazu Nakai, Kobe University; Despina Louca, University of Virginia

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**8:30 AM Invited**
On the Fatigue Strength of Monolithic and Composite Bulk-Metallic Glasses: **Bernd Gludovatz**1; Marios Demetriou1; Maximilien Launey1; Douglas Hofmann1; William Johnson1; Robert Ritchie1; Lawrence Berkeley National Laboratory; California Institute of Technology; NDC

**8:50 AM**
Surface Coating of Zr-Based Metallic Glass Film for the Fatigue Property Improvements of Ti-6Al-4V Alloy: **Cheng-Min Lee**1; J. P. Chu1; National Taiwan University of Science and Technology

**9:00 AM Invited**
Environment Assisted Cracking of Zr-Based Bulk Metallic Glass in the Region near Threshold: **Yoshikazu Nakai**1; Toyohiko Koyama1;
1Kobe University

**9:20 AM Invited**
Statistical Modeling of Fatigue for Zr55Cu30Ni5Al10 Bulk-Metallic Glass: **D Gary Harlow**1; Yoshihiko Yokoyama1; 2Lehigh University; 3Tohoku University

**9:40 AM Break**

**9:55 AM Invited**
Understanding Fatigue Resistance in Bulk Metallic Glasses: **Jamie Kruzic**1; Oregon State University

**10:15 AM**
The Study of Fatigue-Induced Damage in Zr-Based Bulk Metallic Glasses: **Chih-Pin Chuang**1; Wojciech Dmowski1; Wei Guo1; Gongyao Wang1; Peter Liaw1; Takeshi Egami1; Yoshihiko Yokoyama1; Ran Li1; Tao Zhang1;
1University of Tennessee; 2Tohoku University; 3Beihang University

**10:25 AM**
The Atomic Structure Changes of a Metallic Glass under Creep and Fatigue Loadings: **Wei Guo**1; Wojciech Dmowski1; Andrew Chuang1; Gongyao Wang1; Yoshihiko Yokoyama1; Yang Ren1; Peter Liaw1; Akhihsa Inoue1;
1University of Tennessee; 2Tohoku University; 3Beihang University

**10:35 AM**
Characterization of Shear Bands and Cracks Induced by Three-Point Bending Fatigue Test in Zr-Cu-Al Bulk Metallic Glass: **Pei-Ling Sue**1; Gongyao Wang1; Peter Liaw1;
1Feng Chia University; 2University of Tennessee, Knoxville

**10:55 AM Invited**
Static and Cyclic Deformation Effects on the Thermomechanical Behavior of Bulk Metallic Glass: **Rainer Hebert**1; Ariti Mubarak1; Gongyao Wang1; Peter Liaw1; Yoshihiko Yokoyama1; Akhihsa Inoue1;
1University of Connecticut; 2University of Tennessee at Knoxville; 3Tohoku University
11:15 AM Invited
Fatigue Behavior of Zr-Based Metallic Glass at Micro- and Nano-Scales: Dongchun Jang1; Peter Liaw2; Gongyao Wang3; Julia Green4; 1California Institute of Technology; 2University of Tennessee

11:35 AM
Thermography Study of Fatigue on Different Amorphous Alloy Systems: Gongyao Wang1; Q. M. Feng1; M. D. Demetriou2; Y. Yokoyama3; P. Liaw1; W. L. Johnson2; A. Inoue4; 1University of Tennessee; 2California Institute of Technology; 3Tohoku University

11:45 AM Invited
A Study of Corrosion Behavior of Zr-Based Metallic Glass Thin Films Deposited by Pulsed DC Magnetron Sputtering Technique: Yi-Chia Liao1; Jyh-Wei Lee2; Ching-Yen Chung2; Chia-Lin Li3; Jenq-Gong Duh4; Jinn P. Chu3; 1Tungnan University; 2Ming Chi University of Technology; 3National Taiwan University of Science and Technology; 4National Tsing Hua University

12:05 PM
Using an Integrated Weighing System: Annett Gebert1; Jakub Koza2; Machining of Bulk Metallic Glasses
Wednesday AM Room: Northern A4

Wednesday AM
Room: Northern A4
March 14, 2012
Location: Dolphin Resort

Session Chair: Gerd-Ulrich Gruen, Hydro

8:30 AM
A New Approach to Identify Aluminum Dross Reduction Opportunities Using an Integrated Weighing System: Simon L’Heureux1; Vincent Goutière1; Joseph Langlais1; David-Alexandre Tremblay1; Peter Waite1; 1Rio Tinto Alcan

8:50 AM
Statistical Analysis of Dross Data for Hydro Aluminium Casthouses: Christian Rosenkilde1; Inge Johansen1; Amanda Bowles1; 1Hydro Aluminium

9:10 AM
Wettability of Aluminium with Aluminium Carbide (Graphite) in Aluminium Filtration: Sarina Bao1; Kai Tang2; Anne Kvithyld3; Thorvald Engh1; Merete Tangstad4; 1NTNU; 2SINTEF

9:30 AM
A New Fused Magnesium Chloride Containing Refining Flux Based on a Ternary System: John Courtenay1; 1MQP Limited

9:50 AM Break

10:10 AM
High Frequency Electromagnetic Separation of Inclusions from Aluminium: Lucas Damoah1; Lifeng Zhang1; 1Missouri University of Science and Technology

10:30 AM
Measurement of Non-Metallic Inclusions in the Size Range of 10-20µm by LIMCA: Mark Badowski1; Stephen Instone1; 1Hydro Aluminium

10:50 AM
Relationship between the Permeability of the Porous Disk Filter and the Filtrate Weight-Time Curves Generated with the PoDFA / Prefil® Footprinter Method: Stephen Instone1; Daniel Krings1; Gerd-Ulrich Gruen2; Roland Schmoll3; Mark Badowski1; 1Hydro Aluminium Rolled Products GmbH

11:10 AM
Study of Ni-Impurity Removal from Al Melt: Muhammad Akbar Rhandhani1; Mohammad Dewan1; Jason Mitchell1; Cameron Davidson1; Geoffrey Brooks1; Mark Easton1; John Grandfield2; 1CAST CRC

11:30 AM Break

CFD Modeling and Simulation in Materials Processing: Modeling of Casting and Solidification Processes II
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee

Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Ngy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Hervé Combeau, Institut Jean Lamour

Wednesday AM Room: Asia 4
March 14, 2012 Location: Dolphin Resort

Session Chairs: Laurentiu Nastac, The University of Alabama; Ngy El-Kaddah, The University of Alabama

8:30 AM
Modeling of Centrifugal Casting Processes with Complex Geometries: Nicholas Humphreys1; Diane McBride2; Nick Croft1; Dimitri Shevchenko1; Nick Green1; Mark Cross2; 1University of Birmingham; 2Swansea University

8:55 AM Invited
Influence of Feeding Flow and Shrinkage Pipe Formation on Macrosegregation of Investment Cast -TIAL Alloys: Sailei Zhang1; Jeff Yanke1; David Johnson1; Matthew Krane1; 1Purdue Center for Metal Casting Research, School of Materials Engineering, Purdue University

9:20 AM
CFD Modeling of Macro-Shrinkage and Shrinkage Porosities in A356 Castings: Laurentiu Nastac1; 1The University of Alabama

9:40 AM
CFD Modeling of Microstructural Development in the Scanning Laser Epitaxy Process: Ranadip Acharya1; Rohan Bansal1; Justin Gambone1; Suman Das1; 1Georgia Institute of Technology

10:00 AM Invited
CFD Modeling and Analysis of Casting of Energetic Materials in Cylindrical Ingots Controlled by the ACH Solidification Technology: Laurentiu Nastac1; Ruslan Mudry2; 1The University of Alabama; 2U.S. ARMY

10:25 AM Break

10:45 AM
Defect Analysis by Casting Simulation Software in Rolling Roll Manufactured by GGG70: Engin Tan1; Ali Tarakci1; Derya Dispinar2; 1Pamukkale University; 2University of Istanbul
8:30 AM
Tile Production Using Wastes from Mining Industry of the Mining District Pachuca and Real Del Monte: Juan Hernandez; Eleazar Salinas1; Francisco Patiño1; Isaoaru Rivera1; J. Flores1; Norma Trápala1; Miguel Pérez1; Mizraim Flores1; Iván Reyes1; Universidad Autónoma del Estado de Hidalgo

9:00 AM
Setting Time of Concrete Material: Laboratory Measurements Versus Field Applications: Monrad Riad1; Samir Shoukr1; Gergis William1; West Virginia University

9:30 AM
Experimental Research to Improve the Soundness of Cementitious Material Blended with Cycled Fluidized Bed Ash: Zhi Shu Jing1; He Xinghua1; Department of Water Supply in South Company of China Metallurgical Group

9:50 AM
Characterization of Dust Generated in the BOF Converter: Eduardo Junca1; José Oliveira1; Denise Espinosa1; Jorge Tenório1; University of São Paulo; Instituto Federal do Espírito Santo

10:10 AM Break

10:20 AM
Production of Apatitic Material Using Turkish Colemanite Mineral: Cagatay Moral1; Gulhayat Nasan-Saygili1; Istanbul Technical University

11:05 AM
SPH Model Approach Used to Predict Skin Inclusions into Semisolid Metal Castings: Frédéric Pineau1; Guillaume D’Amours1; National Research Council Canada

11:25 AM
Influence of Mould Vibrations on the Solidification during a Horizontal Spin Casting: Abdellah Kharicha1; University of Leoben

11:45 AM
Inverse Modeling for Determination of Thermal Properties of the Investment Casting Ceramic Mold: Mingzhi Xu1; Simon Lekakh1; Von Richards1; Shelly Dutler2; Missouri University of Science and Technology; MAGMA Foundry Technologies, Inc

12:00 PM Break

WEDNESDAY AM

3:10 PM
Recent Progress in Atomistic Computational Thermodynamics: Byeong-Joo Lee1; Pohang University of Science and Technology

3:55 PM
A New Many-Body Potential Based on the Second-Moment Approximation of Tight-Binding Scheme for Alpha Hafnium: Xidong Xidong1; Deye Lin1; Yi Wang2; Shunli Shang2; Zi-kui Liu2; University of Science and Technology Beijing; The Pennsylvania State University

4:20 PM
Development of Concentration Dependent Interatomic Potential and Study of Deformation Mechanisms for Light-Weight Mg-Li Alloys: Shivraj Karewar1; Niraj Gupta1; Alfredo Caro2; Srinivasan Srivilliputhur1; Enrique Martinez2; University of North Texas; Los Alamos National Lab

4:45 PM
Charge-Optimized Many Body (COMB) Potential for Uranium: Yangzhong Li1; Tzu-Ray Shan1; Tao Liang1; Simon Phillpot1; Susan Sinnott1; University of Florida

5:10 PM
Structure of Martensite Phase in Free Standing Nano-Particles: Zhen Zhang1; Xiaobing Ren1; Frontier Institute of Science and Technology, Xin’an Jiaotong University; National Institute for Materials Science, Japan

5:35 PM
Nano Phase Diagram, Structural Change and Catalytic Application of Ag-Au Bimetallic Nanoparticles: Sang Chul Yeo1; Da Hye Kim2; Ki hyun Shin1; Hyoung Soo Lee1; KAIST
10:10 AM Break

10:30 AM
Molecular Dynamics Determination of the TTT Diagram For Crystallization of an Undercooled Liquid NiAl Alloy; Elena Levcenko1; Irina Belova1; Alexander Evteev2; Graeme Murch1; ‘The University of Newcastle

10:45 AM
Hybrid Deterministic and Stochastic Approach for Long Time Scale Atomistic Simulations: Pratyush Tiwary1; Axel van de Walle2; ‘Caltech; ‘Brown University

11:00 AM
Spatially-Dependent Cluster Dynamics Modeling of Microstructure Evolution in Low Energy Helium Irradiated Tungsten: Thibault Faney3; Brian Wirth1; Niklas Justin2; ‘UC Berkeley; ‘University of Tennessee

11:15 AM
Reciprocal-Space Approach for Atomic Interactions and Configuration Correlations in Inhomogeneous Systems: Mariya Rasschupkyna1; Volodymyr Bugaev1; Alexander Udyansky1; Miguel Castro-Colin1; Peter Wochnert2; ‘Max Planck Institute for Intelligent Systems; ‘Max Planck Institute for Iron Research GmbH

11:30 AM
Atomistic Simulation of Nucleation during Crystallization: Ramanarayan Haribaraputran3; Pavel Rutkevych4; David Wu1; ‘Institute of High Performance Computing, Singapore

11:45 AM
Screening High-Performance Liquid Metal Anode for SOFC: Combining Ab Initio Molecular Dynamics Simulations and Experiments: Michael Gao1; Harry Abernathy1; Mike Widom2; ‘National Energy Technology Lab; ‘Carnegie Mellon University

Computational Thermodynamics and Kinetics: Oxides, Steels, and Nuclear Materials


Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Wednesday AM

Room: Asia 5
March 14, 2012
Location: Dolphin Resort

Session Chairs: Raymundo Arroyave, Texas A & M; Bengt Hallstedt, RWTH Aachen

8:30 AM Invited
Thermodynamic Modeling of Oxide Systems – From Slags to Advanced Functional Materials: Bengt Hallstedt1; ‘RWTH Aachen University

8:55 AM
Thermodynamic and Kinetic Calculations Supporting the Development of Tool Steels: Karin Frisk1; ‘Swerea KIMAB

9:10 AM
Thermodynamic and Elastic Properties of β-Fe from First-Principles Calculations: Martin Friak1; Fritz Koermann1; Alexey Dick1; Alexander Udyansky1; Tilmann Hickel1; David Holec1; ‘Max Planck Institute for Iron Research; ‘Montanuniversitaet Leoben

9:25 AM
Thermodynamic Properties of Cementite Including Magnetic, Vibronic, and Electronic Excitations from Ab Initio: Alexey Dick1; Fritz Körmann1; Tilmann Hickel1; Jörg Neugebauer1; ‘Max-Planck-Institut für Eisenforschung GmbH

9:40 AM
Ab-Initio Calculation of High-Temperature Rare Earth Phases Using Large-Displacement Phonon Methods: Nikolas Antolin1; Oscar Restrepo1; ‘WPI; ‘Ohio State University

9:50 AM Break

10:20 AM
A Genetic Algorithm Approach to Maximize Austenite Volume Fraction in TRIP Steels: Shengyen Li1; Ruixian Zhu1; Ibrahim Karaman1; Raymundo Arroyave1; ‘Texas A&M University

10:35 AM
CarbonitridingTool© - Modeling the Carbonitriding Process: Yuan Xu1; Liang He1; Guannan Guo1; Huaxia Yu1; Laura Patricia Rivera2; Richard D. Sisson1; ‘Worcester Polytechnic Institute

10:50 AM
Modeling of Low Alloy Steel Gaseous Nitriding Process: Mei Yang1; Richard Sisson1; ‘WPI

11:05 AM
Advanced Stochastic Cluster Dynamics for Studying of Defect Evolution in Materials under Multi-beam Irradiation Conditions: Tian Hoang1; Jaime Marian1; Vasily Bulatov1; Daryl Chrzan2; ‘Lawrence Livermore National Laboratory; ‘University of California, Berkeley

11:20 AM
Computational Modeling of Dislocation Loop Coarsening: Andrew Boyne1; Ximiao Pan1; Yunzhi Wang2; ‘University of North Texas; ‘The Ohio State University

11:35 AM
Simultaneous and Sequential Transformations: Computational Simulation, Analytical Methods and Experimental Results: Paulo Rios1; Weslely Assis1; Tatiana Salazar1; Andre Alves1; Simone Oliveira1; ‘UFF-EEIMVR

11:50 AM
Identifying the Energetics of He-Point Defect Interactions in Fe: Xianxiang Hu1; Donghua Xu2; Brian Wirth2; ‘UC Berkeley; ‘University of Tennessee, Knoxville
Defects and Properties of Cast Metals: Ductility, Creep, Stress and Cracks
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mark Jolly, University of Birmingham; Brian Thomas, University of Illinois at Urbana-Champaign; Carl Reilly, University of British Columbia

Wednesday AM  Room: Oceanic 4
March 14, 2012  Location: Dolphin Resort

Session Chairs: Dai Xiaojun, The University of Birmingham; Mei Li, Ford Motor Company

8:30 AM
Thermal-Mechanical Model Calibration with Breakout Shell Measurements in Continuous Steel Slab Casting: Junya Iwasaki; Brian Thomas; ‘Nippon Steel Corp.; ’University of Illinois at Urbana-Champaign

8:55 AM
Transverse Creep Behavior of Superalloy Bicrystals: Kaitlin Gallup; Tresa Pollock; ‘University of California, Santa Barbara

9:20 AM
Effect of Cooling Structure on Stress Distribution of Copper Plates of Slab Continuous Casting Mold: Xiang-Ning Meng; ’Northeastern University

9:45 AM
An Integrated Methodology for Optimizing Al-Si Diecastings in Automotive Applications Part2 – Model Validation in Structural Components: Nicola Gramegna; Franco Bonollo; Giulio Timelli; Stefano Ferraro; Gianluca Quaglia; ‘ENGINSOFT S.p.A.; ’University Of Padova

10:10 AM Break

10:35 AM
Embrittelement in Superaustenitic Stainless Steels: Sermin Turhan; Barry King; Eren Kalay; Scott Chumbley; ‘Cankaya University; ’Iowa State University; ’METU

11:00 AM
Deformation Prediction of a Heavy Hydro Turbine Blade During Casting Process with Consideration of Martensitic Transformation: Jinwu Kang; Tianjiao Wang; ’Tsinghua University

11:25 AM
Reasonable Temperature Schedules for Cold or Hot Charging of Continuously Cast Slabs: Yang Li; Peng Lan; Ke Liu; Haibo Sun; Hongzhi Chen; Jiaquan Zhang; ’State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

11:50 AM
Affection of Charging Temperature on the Hot Ductility of Nb-Containing Steel: Yongjian Lu; Qian Wang; ’College of Materials Science and Engineering, Chongqing University

Deformation, Damage, and Fracture of Light Metals and Alloys: Session IV
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Güzhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

Wednesday AM  Room: Northern A2
March 14, 2012  Location: Dolphin Resort

Session Chair: Ke An, Oak ridge national lab

8:30 AM Invited
Influence of Deformation Path and Heating Rate on Recrystallization Kinetics in Al-2%Mg Alloy: Grigoreta Stoica; G. Muralidharan; B. Radhakrishnan; S. B. Gorti; A. D. Stoica; S. Vogel; H. M. Reiche; K. An; D.E. Fielden; H. Cao; H.D. Skorpenske; R.A. Mills; T. Ungar; B.C. Chakoumakos; X-L. Wang; ’ORAU/ORNL; ’ORNL; ’LANL; ’UTK; ’Eötvös University of Budapest

9:00 AM Invited
Deformation and Fracture Behavior of Magnesium Alloy WE43 at Temperatures and Strain Rates Relevant to Deformation Processing: Sean Agnew; F Polesak; ’University of Virginia

9:30 AM
An Investigation of Plastic-Deformation Dynamics on a Wrought AZ31B Magnesium Alloy Using Real-Time In-Situ Neutron-Diffraction Measurements: Wei Wu; Ke An; Peter Liaw; ’The University of Tennessee; ’Oak Ridge National Laboratory

9:50 AM Break

10:00 AM
In-Situ Neutron Diffraction Study of Plastic Deformation in Solid-Solution-Strengthened Mg-Al and Mg-Zn Binary Alloys: Soo Yeol Lee; Michael A. Gharghouri; Huaimiao Wang; Ghazal Nayyeri; Peidong Wu; Warren J. Poole; Wei Wu; Ling Yang; Ke An; ’Chungnam National University; ’National Research Council Canada; ’McMaster University; ’The University of British Columbia; ’The University of Tennessee; ’Oak Ridge National Laboratory

10:20 AM
In-Situ Microstructure Evolution of Pure Aluminum Single Crystal under Plane Strain Tension: Yong Seok Choi; Do Hyun Kim; Hyun-Sik Choi; Suk Hoon Kang; Jun-Hyun Han; Heung Nam Han; Kyu Hwan Oh; ’Seoul National University; ’Korea Atomic Energy Research Institute; ’Chungnam National University

10:40 AM
Low Temperature Superplastic Deformation of Mg-Bi-Si Alloys: Sergei Remennik; Alexander Katsman; Dan Shechtman; ’Technion - Israel Institute of Technology
Electrode Technology for Aluminium Production: Characterization of Anode Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Morten Sorlie, Alcoa Norway
Wednesday AM Room: Americas Seminar
March 14, 2012 Location: Dolphin Resort
Session Chair: Victor Buzunov, UC RUSAL

8:30 AM
Improving the Precision and Productivity of Green Coke VCM Analysis: Les Edwards1; Kevin How1; James Marino1; Marvin Lubin1; 1Rain CI Carbon

8:50 AM
Discrete Element Method Applied to the Vibration Process of Coke Particles: Behzad Majidi1; Kamran Azari1; Houshang Alamdari1; Mario Fafard1; Donald Ziegler2; 1Laval University; 2Alcoa Canada
9:10 AM
Vibrated Bulk Density using Semi-automated Device: Simplifying Sample Preparation while Improving Accuracy and Precision: Jignesh Panchal1; Jeffrey Rolle1; 1A.J.Edmond Company
9:30 AM
Characterization of Pre-Baked Carbon Anode Samples Using X-Ray Computerized Tomography and Porosity Estimation: Donald Picard1; Houshang Alamdari1; Donald Ziegler2; Bastien Dumas1; Mario Fafard1; 1Aluminium Research Centre-REGAL, Laval University; 2Alcoa Canada
Primary Metals
9:50 AM
Diagnosing Anode Quality Problems Using Optical Macroscopy: Barry Sadler1; 1Net Carbon Consulting Pty Ltd
10:10 AM Break
10:25 AM
Properties and Production Conditions Affecting Crack Formation and Propagation in Carbon Anodes: Odd Einar Frosta1; Arne Petter Ratvik2; Harald A. Øye2; 1Norsk Hydro ASA; 2Norwegian University of Science and Technology
10:45 AM
New Method for Representative Measurement of Anode Electrical Resistance: Marie-Josée Chollier-Brym1; Denis Laroche1; Alain Alexandre1; Michel Landry1; Claude Simard1; Lucien Simard1; Danny Ringuette1; 1RioTinto Alcan
11:05 AM
Increasing Coke Impurities – Is this Really a Problem for Metal Quality?: Gyan Jha1; Frank Cannova1; Barry Sadler1; 1Tri-Arrows Aluminum; 2BP Coke; 3Net Carbon Consulting
11:25 AM
Aluminum Electrolysis Anti-Oxidation Coating Carbon Anod: Sh Yang1; Fengli Yang1; Zhaowen Wang1; Zhongning Shi2; Bingliang Gao3; 1Jiangxi University of Science and Technology; 2Northeastern University

Electrometallurgy 2012: Session IV
Program Organizers: Georges Houlachi, Hydro-Quebec; Antoine Allanore, Massachusetts Institute of Technology; Michael Free, University of Utah; Michael Moats, University of Utah; Edouard Asselin, UBC; Shijie Wang, Rio Tinto Kennecott Utah Copper; James Yurko, Materion Brush Beryllium and Composites
Wednesday AM Room: Europe 5
March 14, 2012 Location: Dolphin Resort
Session Chairs: Antoine Allanore, Mass. Inst. Techn.; Michael Free, University of Utah

8:30 AM
Electrochemical Study of the Kinetics of Copper Metal Leaching with Ferric Iron: Tomas Vargas1; Rolando Espinoza1; 1University of Chile
8:50 AM
Fundamental Reduction Kinetics of Fe(III) on Chalcopyrite Surface: Guihua Yue1; Edouard Asselin1; 1The University of British Columbia
9:10 AM
Influence of Anodic and Cathodic Sub-Processes on the Rate of Copper Dissolution during Ferric Leaching of Chalcopyrite at 70 °C: Hector Jordan1; Tomas Vargas1; 1University of Chile
9:30 AM
Cathodic Reactions on Oxidized Chalcopyrite Electrode: Ahmad Ghahremaninezhad1; Edouard Asselin1; David Dixon1; 1The University of British Columbia
9:50 AM
Investigation of Charge Transfer Resistance at Pyrite Electrodes Modified by Gold and Silver Nanoparticles: Maziar Eghbalnia1; David Dixon1; 1University of British Columbia
10:10 AM Break
10:25 AM
Electrochemistry of Enargite: Reactivity in Alkaline Solutions: Robert Gow1; Courtneay Young1; Hsin Huang1; Greg Hope1; Yasushi Takasaki2; 1Montana Tech of the University of Montana; 2Griffith University; 3Akita University
10:45 AM
Electrochemical Evaluation of Petzite Leaching: Laurence Dyer1; Maziar Eghbalnia1; David Dixon1; John Rumball1; Edouard Asselin1; 1University of British Columbia; 2Barrick Gold Corporation
11:05 AM
Effect of pH And Temperature on Meso-2,3-Dimercaptosuccinic Acid Mediated Dissolution of Polycrystalline Au Electrodes: Scott Smith1; Eduard Guerra1; Jeffrey Shepherd1; 1Laurentian University
11:25 AM
Design and Commissioning of a Laboratory Scale Electrocoagulation Reactor: Eduard Guerra1; Padma Nayathy Mahadevan2; Samir Chefai2; 1Laurentian University; 2Barrick Gold Corporation
### Energy Nanomaterials: Supercapacitors

*Sponsored by:* The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee; TMS: Nanomechanical Materials Behavior Committee

**Program Organizers:** Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

**Wednesday AM**  
Room: Swan 3  
March 14, 2012  
Location: Swan Resort

**Session Chairs:** Reza Shahbazian Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>Electrochemical Synthesis of Nanostructured Vanadium Oxides for Use as Supercapacitor Electrodes</td>
<td>Allison Engstrom¹; Fiona Doyle¹; ¹University of California, Berkeley</td>
</tr>
<tr>
<td>8:50 AM</td>
<td>Flexible Zn2SnO4/MnO2 Core/Shell Nanocable-Carbon Microfiber Hybrid Composites for High-Performance Supercapacitor Electrodes</td>
<td>Lihong Bao¹; Jianfeng Zang¹; Xiaodong Li¹; ¹University of South Carolina</td>
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<tr>
<td>9:10 AM</td>
<td>Dealloyed Nanoporous Metals for Energy Storage</td>
<td>Mingwei Chen¹; ¹Tohoku University</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Supercapacitive Properties of Hydrothermally Synthesized Co3O4 Nanostructures</td>
<td>David Mitlin¹; Huatao Wang¹; Li Zhang¹; ¹University of Alberta and NINT NRC</td>
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<tr>
<td>10:00 AM Break</td>
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<tr>
<td>10:30 AM</td>
<td>Graphene/Polyaniline Hybrids-Based Supercapacitor</td>
<td>Li Li¹; Shiren Wang¹; ¹Texas Tech University</td>
</tr>
<tr>
<td>10:50 AM</td>
<td>Three-Dimensional Nanoporous Bulk Composite Electrodes Utilized in Battery-Like Electrochemical Capacitors</td>
<td>Weifeng Wei¹; Xinwei Cui¹; Weixing Chen¹; Douglas Ivey¹; ¹Central South University; ¹University of Alberta</td>
</tr>
<tr>
<td>11:10 AM</td>
<td>Interdigital Hybrid Graphene/CNT Micro-Electrodes for Supercapacitor Application</td>
<td>Majid Beidaghi¹; Chunlei Wang¹; ¹Florida International University</td>
</tr>
<tr>
<td>11:25 AM</td>
<td>Nanostructured Manganese Oxide Supercapacitor Electrodes via Solution Precursor Plasma Synthesis</td>
<td>Raghavender Tummala¹; Ramesh Kumar Guduru¹; Pravansu S Mohanty¹; ¹Univ of Michigan</td>
</tr>
</tbody>
</table>


*Sponsored by:* The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

**Wednesday AM**  
Room: Oceanic 6  
March 14, 2012  
Location: Dolphin Resort

**Session Chairs:** Jeffrey Evans, University of Alabama in Huntsville; Ronald Holtz, Naval Research Laboratory

<table>
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<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>Microstructural and Environmental Effects on Corrosion and Fatigue Crack Growth in 7075 Aluminum Alloy</td>
<td>Amir Bonakdar¹; Jason Williams¹; Nikhilesh Chawla¹; ¹Arizona State University</td>
</tr>
<tr>
<td>8:50 AM</td>
<td>Model for the Superimposed Effects of Stress-Corrosion Cracking and Environmentally Enhanced Fatigue in Aluminum-Magnesium Alloy 5083</td>
<td>Ronald Holtz¹; Peter Pao¹; Naval Research Laboratory</td>
</tr>
<tr>
<td>9:10 AM</td>
<td>Governing Factors for the Corrosion-to-Fatigue Transition in 7075-T651</td>
<td>James Burns¹; Richard Gangloff¹; ¹University of Virginia</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Enhanced Corrosion Fatigue Resistance of AISI304 Bellows Expansion by Modifying the Bellows Shape</td>
<td>Takafumi Ono¹; Hiroyuki Miyamoto¹; Toshiyuki Ueno¹; Tomomi Fujikawa¹; ¹Doshisha University</td>
</tr>
<tr>
<td>9:50 AM</td>
<td>Corrosion Fatigue and Crack Propagation of Different Austenitic Stainless Steels in High Chloride Solutions at Elevated Temperatures</td>
<td>Clemens Viehütter¹; Gregor Morì¹; Michael Panzenböck¹; Reinhard Pippau¹; Rainer Fluch¹; ¹CD-Laboratory of Localized Corrosion; ²Montanuniversität Leoben; ³Austrian Academy of Science; ⁴Bohler Special Steels</td>
</tr>
<tr>
<td>10:10 AM Break</td>
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<tr>
<td>10:20 AM</td>
<td>Creep-Fatigue-Environment Crack Growth Kinetics</td>
<td>Jeffrey Evans¹; ¹University of Alabama in Huntsville</td>
</tr>
<tr>
<td>10:40 AM</td>
<td>Effect of Corrosive Environment on High Cycle Fatigue of Friction Stir Welded Al-Mg Alloy</td>
<td>Gaurav Argade¹; Nilesh Kumar¹; Rajiv Mishra¹; ¹Missouri University of Science and Technology</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Galvanic Corrosion Behavior of Ni-C Filled Conductive Silicon Rubber Coupled to Magnesium Alloys</td>
<td>Hu Zhou¹; Zhidong Xia¹; Zhe Li¹; Fu Guo¹; ¹Beijing University of Technology</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Interfacial Reaction between Co-Based Alloy and Molten Al</td>
<td>Ning Tang¹; Yunping Li¹; Shingo Kurosu¹; Hiroaki Matsumoto¹; Yuichiro Koizumi¹; Akihiko Chiba¹; ¹Graduate School of Engineering, Tohoku University, Japan; ²Institute for Materials Research, Tohoku University, Japan</td>
</tr>
</tbody>
</table>
### The Preparation Techniques of an Alloy Coating with Special Properties

**Li Naijun**<sup>1</sup>; Science College of Shenyang University

### From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Environmental Effects and Hydrogen Embrittlement

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biomaterials Committee

**Program Organizers:** Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University

<table>
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<td>Li Naijun&lt;sup&gt;1&lt;/sup&gt;; Science College of Shenyang University</td>
</tr>
<tr>
<td>11:40 AM</td>
<td>Next-Generation Microelectronic Solder Joints and Their Mechanical Properties</td>
<td>Hyelim Choi&lt;sup&gt;2&lt;/sup&gt;; Heeman Choe&lt;sup&gt;3&lt;/sup&gt;; Kookmin University</td>
</tr>
<tr>
<td>11:50 AM</td>
<td>Microstructure and Mechanical Properties of Electroplated Nickel-Cobalt Alloys with Cobalt Content Less Than 3wt.%</td>
<td>Rong Yuan&lt;sup&gt;1&lt;/sup&gt;; Christopher Panichas&lt;sup&gt;1&lt;/sup&gt;; Yi He&lt;sup&gt;1&lt;/sup&gt;; Mitul Modi&lt;sup&gt;1&lt;/sup&gt;; Intel Corporation</td>
</tr>
</tbody>
</table>

### Integrating and Leveraging Collaborative Efforts for ICME Education: Session I

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Education Committee, TMS: Integrated Computational Materials Engineering Committee

**Program Organizers:** Laura Bartolo, Kent State University; James McGuffin-Cawley, Case Western Reserve University

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**Wednesday AM**

**Room:** Mockingbird 1

**March 14, 2012**

**Location:** Swan Resort

**Session Chairs:** Brian Somerday, Sandia National Laboratories; Richard Gangloff, University of Virginia

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**Wednesday AM**

**Room:** Europe 2

**March 14, 2012**

**Location:** Dolphin Resort

**Session Chairs:** Laura Bartolo, Kent State University; James McGuffin-Cawley, Case Western Reserve University

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**8:30 AM**

**Introductory Comments**

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**8:35 AM**

**Keynote**

- **Models for Fracture in Lithium-Ion Battery Storage Particles:** Robert McMeeking<sup>1</sup>; UCSB

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**9:15 AM**

**Keynote**

- **Understanding and Modeling Environment Effects on Intrinsic Fatigue Crack Propagation:** Richard Gangloff<sup>1</sup>; University of Virginia

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**9:55 AM**

**Keynote**

- **Mechanism of Hydrogen Embrittlement in Fatigue:** Yukitaka Murakami<sup>1</sup>; Kyushu University/International Institute for Carbon-Neutral Energy Research

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**10:35 AM**

**Break**

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**10:50 AM**

**Micromechanics of Hydrogen-Induced Fracture: From Experiments and Modeling to Prognosis:** Petros Sofronis<sup>1</sup>; Mohsen Dadfarnia<sup>1</sup>; Brian Somerday<sup>2</sup>; Philip Schembri<sup>1</sup>; Dorian Balch<sup>1</sup>; University of Illinois; Sandia National Laboratories; Los Alamos National Laboratory

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**11:05 AM**

**Connecting Hydrogen Enhanced Plasticity to Fracture – A New Multi-Scale Approach:** May Martin<sup>1</sup>; Akihide Nagao<sup>1</sup>; Mohsen Dadfarnia<sup>1</sup>; Petros Sofronis<sup>1</sup>; Ian Robertson<sup>1</sup>; University of Illinois

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**11:20 AM**

**The Effect of Trace Oxygen on Gaseous Hydrogen-Accelerated Fatigue Crack Growth in a Low-Strength Pipeline Steel:** Brian Somerday<sup>1</sup>; Chris San Marchi<sup>1</sup>; Kevin Nibur<sup>1</sup>; Sandia National Laboratories; HyPerformance Testing

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**11:35 AM**

**Next-Generation Microelectronic Solder Joints and Their Mechanical Properties:** Hyelim Choi<sup>2</sup>; Heeman Choe<sup>3</sup>; Kookmin University

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**11:50 AM**

**Microstructure and Mechanical Properties of Electroplated Nickel-Cobalt Alloys with Cobalt Content Less Than 3wt.%:** Rong Yuan<sup>1</sup>; Christopher Panichas<sup>1</sup>; Yi He<sup>1</sup>; Mitul Modi<sup>1</sup>; Intel Corporation

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**Microstructure and Mechanical Properties of Electroplated Nickel-Cobalt Alloys with Cobalt Content Less Than 3wt.%:** Rong Yuan<sup>1</sup>; Christopher Panichas<sup>1</sup>; Yi He<sup>1</sup>; Mitul Modi<sup>1</sup>; Intel Corporation

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**Cyber-Enabled Materials Simulations via NanoHUB.org:** Alejandro Strachan<sup>1</sup>; Benjamin Haley<sup>1</sup>; Ravi Premod Vedula<sup>1</sup>; Purdue University

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Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Pyrometallurgy Committee
Program Organizers: Jerome Downey, Montana Tech of the Univ of Montana; Thomas Battle, Midrex Technologies, Inc.; Jesse White, Elkem Solar Research

Wednesday AM  Room: Northern A3
March 14, 2012  Location: Dolphin Resort

Session Chair: To Be Announced

8:30 AM
Departure from Equilibria in Ilmenite Smelting: Petrus Pistorius1; 1Carnegie Mellon University
8:55 AM
Distribution of Boron and Calcium between Silicon and Calcium Silicate Slags: Lars Klemet Jakobsson1; Merete Tangstad2; 1NTNU
9:20 AM
High Temperature Experimental Investigations and Thermodynamic Modelling in the FeTiO$_3$-Ti$_2$O$_3$-TiO$_2$ Ternary Slag System: Stian Seim1; Leiv Kolbeinsen2; In-Ho Jung3; 1Eramet Titanium & Iron; 2Norwegian University of Science and Technology; 3McGill University
9:45 AM
Reaction Mechanisms in Carbothermic Production of Silicon, Study of Selected Reactions: Eli Ringdalen1; Merete Tangstad2; 1SINTEF ; 2NTNU
10:10 AM Break
10:30 AM
High Temperature Phases in Chromium Containing Cu-Fe-Ni-S Mattes: Rauf Eric1; Sanele Nkosi2; 1University of the Witwatersrand; 2Council for Mineral Technology
10:55 AM
Stabilities of Phases in the Cu2S-FeS-PbS System: Hanna Johto1; Bekka Taskinen1; 1Aalto University School of Chemical Technology
11:20 AM
Experimental Thermodynamic Study of the Equilibrium Phase Assemblage AgBi$_2$S$_3$-Bi$_2$S$_3$-S: Fischa Tesfaye1; Bekka Taskinen1; 1Aalto University School of Chemical Technology
11:45 AM
Vacuum Distillation Refining of Crude Tin - Thermodynamics Analysis and Experiments on the Removal of Arsenic from the Crude Tin: Yifu Li1; Bin Yang1; Dachun Liu1; Baoqiang Xu1; Yongnian Dai1; 1Kunming University of Science and Technology
12:10 PM
Investigation of Removing Cadmium and Thallium from Crude Indium by Vacuum Distillation: Jiang Wenlong1; 1National Engineering Laboratory of Vacuum Metallurgy, Kunming University of Science and Technology.

Magnesium Technology 2012: Alloy and Microstructural Design
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Wednesday AM  Room: Southern V
March 14, 2012  Location: Dolphin Resort

Session Chairs: Jian-Feng Nie, Monash University; Nack J. Kim, POSTECH

8:30 AM
Age Hardening Behavior of Mg-1.2Sn-1.7Zn Alloy Containing Al: Taisuke Sasaki1; Tadakatsu Ohkubo1; Kazuhiro Hono1; 1National Institute for Materials Science
8:50 AM
Evaluating the Effect of Pre-Ageing Deformation on β' Precipitate Size and Distribution in Mg-Zn(-Y) Alloys: Julian Rosalie1; Hidetoshi Somekawa2; Akos Singh3; Toshiji Mukai4; 1National Institute for Materials Science; 2Kobe University
9:10 AM
Effect of Zinc Content on the Microstructure and Mechanical Properties of Extruded Mg-Zn-Y-La Alloys with LPSO Phase: Jonghyun Kim1; Yoshihito Kawamura2; 1Kumamoto Technology & Industrial Foundation; 2Kumamoto University
9:30 AM
Effect of Ca Addition on the Microstructural and Mechanical Properties of AZ51/1.5 Al2O3 Magnesium Nanocomposite: Md Ershadul Alam1; Rowshan Rima1; Nguyen Bau2; Albedmagid Hamoada3; Manoj Gupta2; 1Qatar University; 2National University of Singapore
9:50 AM Break
10:10 AM
Effect of Zn Concentration and Grain Size on Prismatic Slip in Mg-Zn Binary Alloys: Nicole Stanford1; Matthew Barnett1; 1Deakin University
10:30 AM
Microstructural Characterization of Homogenised and Aged Mg-Gd-Nd Alloys Containing Zn, Y and Zr: Suzan Khawaled1; Menachem Bamberger1; Alexander Katsman1; 1Technion - Israel Institute of Technology
10:50 AM
Mechanical Properties and High-temperature Oxidation Behavior of Mg-Al-Zn-Ca-Y Magnesium Alloys: Young-Min Kim1; Bong Sun You1; Myeon-Shik Shin2; Nack Joon Kim2; 1Korea Institute of Materials Science; 2Pohang University of Science Technology
11:10 AM
Effects of Ca on Microstructure and Mechanical Properties of ZA62 Alloys: Zhang Gang1; 1Shenyang University of Technology
11:30 AM
Effects of Si on Microstructure and Mechanical Properties of Mg-5Sn-2Sr Alloy: Hao Shuai1; 1Shenyang University of Technology.
Magnesium Technology 2012: Casting and Solidification
Sponsored by: The Minerals, Metals and Materials Society, TMS
Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Wednesday AM
March 14, 2012
Room: Southern IV
Location: Dolphin Resort

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Yongho Sohn, University of Central Florida

8:30 AM
Twin Roll Casting of Thin AZ31 Magnesium Alloy Strip with Uniform Microstructure and Chemistry: Iman Bayandorian1; Ian Stone1; Yon Hong1; Zhongyun Fan1; 1Brunel University

8:50 AM
Mathematical Modeling of the Twin Roll Casting Process for AZ31 Magnesium Alloy – Effect of Set-Back Distance: Amir Hadadzadeh1; Mary Wells1; Elhamghi Essadriqi2; 1University of Waterloo; 2CANMET Materials Technology Laboratory

9:10 AM
Interdiffusion and Phase Formation in the Mg-Y System: Katrina Bermudez1; Sarah Brennan1; Yongho Sohn1; 1University of Central Florida

9:30 AM
Microstructure and Mechanical Properties of High Pressure Die Cast AM50 Magnesium Alloy Containing Ce: Faruk Mert1; Ahmet Ozdemir2; Karl Ulrich Kainer1; Norbert Hort1; 1Gazi University; 2Helmholtz-Zentrum Geesthacht (HZG)

9:50 AM
Effect of Intensive Melt Shearing on DC Cast Ingots of Magnesium Alloys: Yubo Zuo1; Zhongyun Fan1; Bo Jiang1; Yijie Zhang1; 1Brunel University

10:10 AM Break

10:30 AM
Effect of the Solidification Rate on Microstructure of Cast Mg Alloys at Low Superheat: Gregory Poole1; Nathan Rimkus2; Aerial Murphy1; Paige Boehmcke1; Nagy El-Kaddah1; 1The University of Alabama; 2Los Alamos National Laboratory

10:50 AM
Impact and Energy Dissipation Characteristics of Squeeze and Die Cast Magnesium Alloy AM60: Sante DiCecco1; Henry Hu1; William Altenhof1; 1University of Windsor

11:10 AM
Sliding Wear Behavior of Squeeze Cast Magnesium Composite AM60-9% (Al2O3)f: Anindyia Banerji1; Henry Hu1; Ahmet Alpas1; 1University Of Windsor

11:30 AM
Solidification Studies of Mg-Al Binary Alloys: Manas Paliwal1; Youn-Bae Kang2; Elhamghi Essadriqi1; In-Ho Jung1; 1McGill University; 2GIFT, POSTECH; 3CANMET-MLT

Magnetic Materials for Energy Applications II: Magnetocaloric and Magnetostrictive Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS:
Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Francis Johnson, GE Global Research; S Guruswamy, Univ. of Utah; J Liu, Electron Energy Corporation

Wednesday AM
March 14, 2012
Room: Europe 10
Location: Dolphin Resort

Session Chairs: R. Mahendiran, National University of Singapore; Ivan Skorvanek, Slovak Academy of Sciences

8:30 AM Invited
Magnetocaloric Effect in Pr-Doped La0.7Ca0.3MnO3: Magnetic and Calorimetric Studies: Ramanathan Mahendiran1; 1National University of Singapore

9:00 AM Invited
Magnetocaloric Effect in GdFe-Co-Based Melt-Spun Ribbons: Jozef Marcin1; Zbigniew Sniadecki2; Jozef Kovac3; Bogdan Idzikowski4; Ivan Skorvanek5; 1Institute of Experimental Physics; 2Institute of Molecular Physics

9:30 AM Invited
Novel La(FeSi)13-Based Composites for Magnetic Refrigeration: Julia Lyubina1; Ulrich Hannemann1; Mary Ryan1; Lesley Cohen2; 1Imperial College London; 2Imperial College London

10:00 AM
Optimizing the Magnetic Field Response of Magnetocaloric Materials by Nanostructuring: Victorino Franco1; Rafael Caballero-Flores1; Alejandro Conde1; Laszlo Kiss1; Laszlo Péter2; Imre Bakonyi2; 1Sevilla University; 2Hungarian Academy of Sciences

10:15 AM Break

10:30 AM
Comprehensive Study on Microstructure and the Magnetocaloric Properties in Mn-Substituted La(Fe,Si)13: Maria Kranz1; Cristiano Teixeira1; Konstantin Skokov1; Jian Liu1; James Moore1; Paula Wendhausen1; Ludvig Schultz1; Oliver Gutleisch1; 1IFW Dresden; 2Federal University of Santa Catarina

10:45 AM
The Maximum Possible Cooling Power of La(FeSi)13 and Gd Based Magnetic Refrigerators: Konstantin Skokov1; Alexey Karpenkov1; Oliver Gutleisch1; 1Institute of Experimental Physics; 2Institute of Molecular Physics

11:00 AM
The Effect of W Substitution on the Magnetostriective Behavior of [001] Fe-Ga Alloy Single Crystal: Chai Ren1; Biswadeep Saha1; Meenakshisundaram Ramanathan1; Sivaraman Guruswamy1; 1University of Utah

11:15 AM
Influence of Deformation and Ga Content on Magnetostriective Behavior in Fe-Ga Alloys: Biswadeep Saha1; Meenakshisundaram Ramanathan1; Chai Ren1; Sivaraman Guruswamy1; 1University of Utah

11:30 AM
Modeling Magnetic and Structural Phase Transformations in Co-Ni-Al Ferromagnetic Shape Memory Alloys FSMA’s: Hassan Thawabi1; Navdeep Singh1; Texas A&M University
Materials and Fuels for the Current and Advanced Nuclear Reactors: Structural Materials II
Program Organizers: Ramprasad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Wednesday AM  Room: Swan 2  Location: Swan Resort
Session Chair: Kumar Sridharan, University of Wisconsin - Madison

8:30 AM Invited
Materials Development for the Traveling Wave Reactor: Micah Hackett1; Gary Povirk1; James Vollmer1; 1TerraPower

9:00 AM Materials Corrosion in Liquid Fluoride Salt for NGNP Applications: Kumar Sridharan1; Luke Olson1; Robert Sellers1; Brian Kelleher1; Wei-Jen Cheng2; James Ambrosek1; Mark Anderson1; Todd Allen1; 1University of Wisconsin; 2National Taiwan University of Science and Technology

9:20 AM Corrosion Behavior of a F91/Fe-12Cr-2Si Composite in Liquid Lead-Bismuth-Eutectic as a Function of Oxygen Potential in the Temperature Range 600-715°C: Michael Short1; Ronald Ballinger1; 1MIT

9:40 AM Effects of Ordering Reaction on Lattice Variation in Alloy 690: SungSoo Kim1; Young Suk Kim1; 1Korea Atomic Energy Research Institute

10:00 AM Break

10:10 AM Effect of Coatings on the Corrosion-resistance of Fe, 9-14% Cr Steels in Supercritical Water: Selçuk Kuyucak1; Jian Li1; Wenyue Zheng1; 1Dept. of Natural Resources Canada

10:30 AM Studies on Stacking Fault Energy of Low Carbon Austenitic Stainless Steels: Toshio Yonezawa1; Ken Suzuki1; Suguru Ookii1; Hideshi Tezuka1; Shunichi Suzuki1; 1Tohoku University; 2Tokyo Electric Power Company

10:50 AM Formation and Thermal Stability of Nanosized Oxide Precipitates in NiAl-(Y2O3,Ti) Alloys: Yongdeog Kim1; Hyon-Jee Lee1; Zuhair A. Munir1; Lizhen Tan1; Jeremy T. Busby1; Brian D. Wirth1; 1UC BERKELEY; 2UC Davis; 1Oak Ridge National Laboratory; 2University of Tennessee, Knoxville

11:10 AM Finite Element Creep Behavior Analysis in Welded Joints of Modified 9Cr-1Mo Steel: Mehdi Basirat1; Tirarina Shrestha1; Gabriel Potirniche1; Indrajit Charit1; Karl Rink1; 1University of Idaho

11:30 AM Study on Microstructural Changes and Corrosion Resistance of Ti-5Ta-2Nb/304L SS Explosive Clads in Concentrated Nitric Acid: Sudha Chervathur1; Ravishankar A1; Prasanthi T.N1; Kamachi Mudali U1; Saroja S1; 1Indira Gandhi Centre for Atomic Research

Materials Design Approaches and Experiences III: Superalloys
Program Organizers: Ji-Cheng Zhao, The Ohio State University; Akane Suzuki, GE Global Research; Deb Whitis, GE Aviation; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Wednesday AM  Room: Europe 11  Location: Dolphin Resort
Session Chairs: Akane Suzuki, GE Global Research; Deb Whitis, GE Aviation

8:30 AM Invited
The Alloys by Design Approach in Superalloy Development: Nils Warnken1; 1University of Birmingham

9:00 AM Invited
Development of Superalloy GTD262 at GE: Liang Jiang1; Ganjiang Feng2; Ji-Cheng Zhao1; 1GE Global Research; 2GE Energy

9:30 AM Invited
New Co-Base Superalloys Strengthened by γ' Phase - Alloy Design and Applications: Kiyohito Ishida1; 1Tohoku University

10:00 AM Break

10:20 AM
High Temperature Microstructure and Properties of New L1,-Containing Co-Al-W Alloys: Michael Tius1; Jun Zhu1; Alessandro Mottura1; Akane Suzuki1; Tresa Pollock1; 1University of California, Santa Barbara; 2University of Michigan; 3GE Global Research

10:40 AM Effect of Alloying Elements on Microstructure and Mechanical Property of Co-Al-W-Base Superalloys: Fei Xue1; Meiling Wang1; Qiang Feng2; 1University of Science and Technology Beijing

11:00 AM Invited
Accelerating Insertion of Materials at GE Aviation: Deborah Whitis1; Arturo Acosta1; Daniel Wei1; Liang Jiang1; 1General Electric Company

11:30 AM Invited
Development of High Temperature Capability P/M Disk Superalloys: Eric Huron1; Kenneth Bain1; David Mourer1; 1General Electric Company

12:00 PM
Computational Development of Polycrystalline Alloys Using Automated Importance Sampling: Bryce Conduit1; Gareth Conduit1; Paul Mignanelli1; Howard Stone1; Mark Hardy1; 1University of Cambridge; 2Rolls-Royce plc


*Program Organizers:* Xingbo Liu, West Virginia University; Teruhisa Horita, National Institute of Advanced Industrial Science and Technology; Jeffrey Hawk, National Energy Technology Lab; Jeffrey Fergus, Auburn University

**Wednesday AM**  
Room: Europe 8  
March 14, 2012  
Location: Dolphin Resort

**Session Chairs:** Junpin Lin, University of Science and Technology Beijing; Axel Kranzmann, Federal Institute of Materials Research and Testing; 2BTU Cottbus

**8:30 AM Invited**

**Corrosion and Materials Degradation in Microturbines:**  
*Wendy Matthews*; 1Karren More; 2Independent Consultant; 3Oak Ridge National Laboratory

**9:00 AM**

**Development of Cast Alumina-Forming Austenitic Stainless Steel Alloys:**  
*Govindarajan Murulidharan*; 1Yukinori Yamamoto; 2Michael Brady; 3Larry Walker; 1Oak Ridge National Laboratory

**9:20 AM**

**Impact of Casting Superheat on the Mechanical Properties of Traditionally Wrought Ni-Based Superalloys for USC Steam Turbines:**  
*Paul Jablonski*; 1Jeffery Hawk; 2Daniel Purdy; 3Philip Maziasz; 1US Department of Energy; 2GE; 3ORNL

**9:40 AM**

**Mechanical Behavior of Tempered Martensitic Steels for Ultrasupercritical Steam Applications:**  
*Jeffrey Hawk*; 1Paul Jablonski; 2Christopher Cowen; 1U.S. Department of Energy, National Energy Technology Laboratory; 2United States Department of the Treasury

**10:00 AM Break**

**10:10 AM**

**Influence of SO2 and Water on the Corrosion in Oxyfuel Coal Power Plant:**  
*Axel Kranzmann*; 1Alexander Findiesen; 1Federal Institute for Materials Research and Testing; 2BTU Cottbus

**10:30 AM**

**Microstructure Characterization of Crept Ni-Base Alloys for High Temperature Use:**  
*Jeffrey Hawk*; 1John Sears; 2Paul Jablonski; 1U.S. Department of Energy, National Energy Technology Laboratory; 2URS, NETL

**10:50 AM**

**Strengthening Concepts & Mechanical Behavior of Ni-Base Alloys in A-USC Steam Turbines:**  
*Jeffrey Hawk*; 1Paul Jablonski; 1U.S. Department of Energy, National Energy Technology Laboratory

**11:10 AM**

**The Effect of Temperature on Equilibrium of Coal-Petcoke Slag Mixtures under Gasification Conditions:**  
*Jinichiro Nakano*; 1Sudhir Ranjan; 2Kye-Sing Kwong; 1James Bennett; 2Xueyan Song; 3Seetharaman Sridhar; 1NETL; 2Carnegie Mellon University; 3West Virginia University

**11:30 AM**

**Nano-Scale Carbide Characterization in a Tempered Martensitic 9Cr Steel Used for Ultrasupercritical Steam Power Plants:**  
*Niven Monsegue*; 1Mitsuhiro Murayama; 2William Reynolds; 1Virginia Tech

**Materials Research in Microgravity: Session V**

*Sponsored by:* The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee

*Program Organizers:* Robert Hyers, University of Massachusetts; Hani Henein, University of Alberta; Valdis Bojarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrium; Daniela Voss, ESA

**Wednesday AM**  
Room: Asia 3  
March 14, 2012  
Location: Dolphin Resort

**Session Chair:** To Be Announced

**8:30 AM Invited**

**Solidification Modeling: from Electromagnetic Levitation to Atomization Processing:**  
*Charles-Andre Gandin*; 1D. Tourret; 2T. Volkmann; 3D. Herlach; 4I. Ilbagi; 5H. Henein; 6MINES ParisTech; 7DLR; 8University of Alberta

**9:05 AM Invited**

**X-Ray Radiographic Observation of Directional Solidification under Microgravity:**  
*XRMON-GF Experiments on MASER12 Sounding Rocket Mission: Guillaume Reinhardt*; 1Henri Nguyen-Thi; 2Aboul-Aziz Bogno; 1Bernard Billia; 1Ragnvald Mathiesen; 1Gerhard Zimmermann; 1Ylva Houltz; 1Kenneth Löh; 2Daniela Voss; 3Antonio Verga; 4Fabio De Pascale; 5IM2NP - Université Paul Cézanne; 6NTNU; 7ACCESS e.V; 8Swedish Space Corporation; 9European Space Agency

**9:40 AM**

**Innovative Video Diagnostic Equipment for Material Science Experiments in Space:**  
*Giuseppe Capuano*; 1Daniele Titomanlio; 2Wolfgang Soellner; 3Achim Seidel; 4Techno System Developments; 5Astrium

**10:05 AM Break**

**10:25 AM Invited**

**Three-Dimensional Interface Pattern Evolution in Directional Solidification under Micromicrogravity Conditions:**  
*Nathalie Bergeon*; 1Anthony Bergeon; 2Anthony Ramirez; 3L Chen; 4Bernard Billia; 5Alain Karma; 6Jiho Gu; 7Min Xu; 8Rohit Trivedi; 1Université Paul Cézanne; 2Northeastern University; 3Iowa State University

**11:00 AM**

**Containerless Measurements of Density and Viscosity of Fe-Co Alloys:**  
*Jonghyun Lee*; 1Douglas Matson; 2Robert Hyers; 3Tufts University and UMass Amherst; 4Tufts University; 5University of Massachusetts

**11:25 AM**

**TEMHD Effects On Solidification under Microgravity Conditions:**  
*Andrew Kao*; 1Koulis Pericleous; 2University of Greenwich
Mechanical Behavior at Nanoscale I:
Deformation/strength at Nanoscale and Li-induced Deformation
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Behavior Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Scott Mao, University of Pittsburgh; Julia R Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Wednesday AM Room: Asia 1
March 14, 2012 Location: Dolphin Resort

Session Chairs: David Bahr, Washington State University; Nathan Mara, Los Alamos National Laboratories

8:30 AM Invited
Unveiling the Strengthening and Toughening Mechanisms of Nacre – Lessons from Nature: Xiaodong Li; University of South Carolina

9:00 AM
Size Effect on the Mechanical Behaviour of GaAs Nanowires: Yanbo Wang; Qiang Gao; Xiaozhou Liao; Yiu-Wing Mai; Chennupati Jagadish; The University of Sydney; The Australian National University

9:20 AM
Plasticity of Metal Nanoparticles in Nanoextrusion: Antti Tolvanen; Karsten Albe; TU-Darmstadt

9:40 AM
Anisotropic Swelling of Si Nanowires and Size-Dependent Fracture of Si Nanoparticles during Lithiation: Xiaohua Liu; He Zheng; Li Zhong; Shan Huang; Khim Karki; Li Qiang Zhang; Yang Liu; Akhiro Kushima; Wen Tao Liang; Yang Li; Hui Yang; Xu Huang; Shan Huang; Ting Zhi; The Pennsylvania State University; The University of Virginia

10:00 AM Break

10:10 AM Invited
Physical Origin of Large Strain Bursts in Submicron Al Pillars: Zhangjie Wang; Yuan Gao; Qingjie Li; Ziwei Shao; Ju Li; Zhao Zhuang; Jun Sun; Evan Ma; Center for Advancing Materials Performance from the Nanoscience (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; Applied Mechanics Laboratory, School of Aerospace, Tsinghua University, Beijing; Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology; Department of Materials Science and Engineering, Johns Hopkins University

10:30 AM
In-Situ Transmission Electron Microscopy Observation of Discrete Hopping Lithiation in ZnO Nanowire: Akhiro Kushima; Xiao Liu; Guang Zhu; Ju Li; Zhong Wang; Jian Huang; Department of Materials Science and Engineering, University of Pennsylvania; Center for Integrated Nanotechnologies, Sandia National Laboratories; School of Materials Science and Engineering, Georgia Institute of Technology; Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology

10:50 AM
Multiple-Stripe Lithiation Mechanism of Individual SnO2 Nanowires in a Flooding Geometry: Jinyu Huang; Scott Mao; Li Zhong; Xiaohua Liu; Guangfeng Wang; Center for Integrated Nanotechnologies, Sandia National Laboratories; Department of Mechanical Engineering and Materials Science, Univ. of Pittsburgh

11:10 AM
Thickness Dependence Deformation Behaviour of Multilayer Metallic Nanopillars: Mark Hoffman; Pranesh Dayal; Nick Savvides; The University of New South Wales

11:30 AM
In Situ TEM Electrical Contact Indentation Observations in Doped Si Nanopillars: Douglas Stauffer; Sanjit Bhowmick; Sergie Krylyuk; Albert Davydov; Ryan Major; Hysitron, Inc.; Metallurgy Division, Material Measurement Laboratory (MML)

11:50 AM
Multiscale Modeling of Anisotropic Growth in Lithiated Silicon Nanowires: Suilin Zhang; Hui Yang; Xu Huang; Shan Huang; Ting Zhu; The Pennsylvania State University; Georgia Tech

12:10 PM
Study of Dislocation Climb at Nanovoids in BCC Metal: Mishreyee Bhattacharya; A. Dutta; A. Giri; N. Gayathri; P. Barat; Variable Energy Cyclotron Centre; Jadavpur University

Mechanical Behavior Related to Interface Physics: Interface Structures: Characterization, Theory, and Modeling
Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiwei Shan, Xi’an Jiaotong University

Wednesday AM Room: Oceanic 1
March 14, 2012 Location: Dolphin Resort

Session Chairs: Nathan Mara, Los Alamos National Laboratory; Sreeramamurthy Ankem, University of Maryland

8:30 AM Keynote
Disconnection Mechanisms in Twin Growth: Robert Pond; University of Exeter

9:00 AM Keynote
Exploiting the Atomic Structure of Interfaces in Crystalline Solids: Richard Hoagland; Jian Wang; Michael Demkowicz; Amit Misra; Los Alamos National Laboratory; MIT
9:30 AM
Atomic Cu/Nb Interface Structures Characterized by Transmission Electron Microscopy: Shijian Zheng1; Weizhong Han1; Robert Dickerson1; Nathan Mara1; 1Los Alamos National Laboratory

9:45 AM
Evaluation of Twin Boundary Interfaces to Strain Hardening by Electron Channeling Contrast Imaging: Ivan Gutierrez-Urrutia1; Dierk Raabe1; 1Max-Planck-Institut-For Iron Research

10:00 AM
Ultra Fast Grain Boundary Segregation In Hot Deformed Nickel: Marion Allart1; Frédéric Christien1; Renê Le Gall1; 1Université de Nantes

10:15 AM Break

10:25 AM Keynote
The Role of Interfacial Interaction Stresses and Crystallography on Deformation Mechanisms of Two-Phase Titanium Alloys: William Joost1; Zane Wyatt1; Sreenanamurthy Ankem1; 1University of Maryland

10:55 AM
Quantitative NanoSIMS Analysis of Grain Boundary Segregation in Bulk Samples: Frederic Christien1; Katie Moore2; Clive Downing2; Chris Grovenor2; 1University of Nantes; 2University of Oxford

11:10 AM
Increased Adhesion of Cr-Pt Interface at High Temperatures: Megan Cordill1; Aidan Taylor1; Gerhard Dehm1; 1Erich Schmid Institute of Materials Science; 2Dept. Material Physics

11:25 AM
Atomistically Informed Dislocation Dynamics Simulations on Dislocation-Interface Interactions: Caizhi Zhou1; Jian Wang2; Irene Beyerlein2; Curt Bronkhorst1; 1Los Alamos National Laboratory; 2Los Alamos National Laboratory

11:40 AM
The Periodic Unit of Doubly-diffracted Reflections from Periodic Grain Boundaries in Cubic Crystals and Its Relationship with Coincident Site Lattice: Mohammad Shamsuzzoha1; 1University of Alabama

Mechanical Performance of Materials for Current and Advanced Nuclear Reactors: Irradiation and Testing of Fuels and Cladding Materials
Sponsored by:The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberg, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, LANL

Wednesday AM Room: Swan 1
March 14, 2012 Location: Swan Resort

Session Chairs: Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, Los Alamos National Laboratory

8:30 AM Invited
In-Situ and Post Irradiation Mechanical Testing of Ion Irradiated Materials: Gary Was1; Anne Campbell1; Vani Shankar1; Cheng Xu1; 1University of Michigan; 2IGCAR

9:00 AM
Ion Implantation as a Neutron Analogue in Tungsten Alloys: Measuring Mechanical Properties: David Armstrong1; Steve Roberts1; Angus Wilkinson1; 1University of Oxford

9:20 AM
In-Situ Proton Irradiation Creep of Ferritic-Martensitic Steel T91: Cheng Xu1; Gary Was1; 1University of Michigan

9:40 AM
In-Situ Ion Irradiation TEM and Nanoindentation Studies of 316L and HT9: Khalid Hattar1; Alexander McGinnis1; Thomas Buchheit1; Luke1; 1Sandia National Laboratories; 2Naval Postgraduate School

10:00 AM
On the Radiation Growth in HCP Metals: Stanislav Golubov1; Alexander Barashev1; Roger Stoller1; 1ORNL

10:20 AM Break

10:40 AM
Grain Size Effect on Radiation Induced Defect Morphology in Nanocrystalline Iron: Greg Vetterick1; Chris Barr1; John Baldwin2; Khalid Hattar1; Mark Kirk3; Pete Bald4; Amit Misra2; Mitra Taheri1; 1Drexel University; 2Los Alamos National Laboratory; 3Sandia National Laboratories; 4Argonne National Laboratory

11:00 AM
Development of W-UO2/CeO2 CERMET Fuels for Ultra High Temperature Reactor Applications: Jonathan Webb1; James Werner1; Robert Hickman2; 1Idaho National Laboratory; 2NASA Marshal Space Flight Center

11:20 AM
Structure and Property Relationship in Spark Plasma Sintered UO2 Pellets: Ghatu Subhash1; James Tulenko1; Ronald Baney1; Ge Lihao1; Andrew Cartas1; 1University of Florida

11:40 AM
Non-Destructive Analysis of Microstructural Evolution after Irradiation of Zr2.5Nb Pressure Tubes Using Neutron Diffraction Line Profile Analysis: Levente Balogh1; Donald Brown1; Mark Daymond2; 1Los Alamos National Laboratory; 2Queen’s University

Nanocomposites: Nanocomposites for Magnetic and Dielectric Applications
Sponsored by:The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Wednesday AM Room: Swan 8
March 14, 2012 Location: Swan Resort

Session Chairs: John Zhanhu Guo, Lamar University; Matthew Lucas, Air Force Research Laboratory

8:30 AM
Removal of As(III) from Water and Decolorization of Methylene Blue by Mn3O4-Coated Magnetite Nanoparticles: Gabriela Silva1; Fabiana S. Almeida1; Nathália C. Pissolati2; Maria Sylvia S. Dantas3; Ângela M. Ferreira1; Virginia S.T. Ciminelli1; 1UFMG; 2CEFET-MG
8:50 AM  
Synthesis and Electrical Analysis of Nano-Crystalline Barium Titanate and PLZT Nanocomposites for Use in High-Energy Density Applications: Christopher DiAntonio; Todd Monson; Tom Chavez; Sandia National Laboratories

9:10 AM  
Conductive Polyaniline-Magnetite Nanocomposites: Hongbo Gu; Yudong Huang; Xi Zhang; Jiahua Zhu; Suying Wei; John Zhanhu Guo; Lamar University

9:30 AM  
Synthesis of Tailored Core-Shell Magnetic Microparticles for Intravascular Embolization: Gabriella Ferreira; Alexandre Umpierre; Fabricio Machado; Universidade de Brasilia

9:50 AM Break

10:10 AM Invited  
Electromagnetic Field Shielding Polyurethane Nanocomposites Reinforced with Core-Shell Fe-Silica Nanoparticles: Jiahua Zhu; Suying Wei; John Zhanhu Guo; Lamar University

10:50 AM  
Hysteretic Magneto-Photoluminescence in Mn Ion Implanted Silicon Rich Oxide Thin Films: Wei Pan; Sandia National Labs

11:10 AM  
Structure-Property Relationships Nanostructured Dielectric Materials: Lawrence Drummy; Scott Fillery; Hilmar Koerner; Richard Vaia; Air Force Research Laboratory

11:30 AM  
Effects of Thermal Processing on Crystallinity and Dielectric Properties of P(VDF-HFP) Nanocomposites: Hongxu Liu; Fiona Doyle; University of California, Berkeley

11:50 AM  
Soft Magnetic Nanocomposite for High Frequency Applications: Matthew Lucas; Air Force Research Laboratory

12:10 PM  
Dramatic Expansion of Luminescence Region in GaP/Polymer Nanocomposites: Sergei Pyskin; John Ballato; Academy of Sciences of Moldova; Clemson University

12:30 PM  
Neutron and X-Ray Studies of Advanced Materials V: Centennial: Alloys, Correlations, Phase Transitions  
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xin-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Wednesday AM  
Room: Southern I  
March 14, 2012  
Location: Dolphin Resort

8:30 AM Keynote  
Structural Characterization of Complex Materials Using Total Scattering: Thomas Proffen; Oak Ridge National Laboratory

8:55 AM  
Inelastic Scattering Studies of Iron Alloys: Matthew Lucas; Air Force Research Laboratory

9:10 AM Invited  
Local Structure and Diffuse Scattering in Modern Ferroelectric Materials: Marek Pasciak; Ross Whitfield; Darren Goossens; Richard Welberry; Australian National University

9:30 AM  
The PDF of Glassy Solids - Pitfalls and Traps of Experiment and Interpretation: Wojciech Dmowski; Takeshi Egami; University of Tennessee; ORNL

9:45 AM Invited  
X-Ray Cross-Correlation Analysis and Sample Ensemble Averaging Effect: Miguel Castro-Colin; Peter Wochner; Mariya Raschchupkyna; Voldymyr Bugaev; Christian Gurt; Gerhard Gruebel; Max-Planck-Institut fuer IS; DESY

10:05 AM Invited  
Characterization of Complex Precipitation Pathways Using Small Angle X-Ray Scattering: Alexis Deschamps; Frederic de Geuser; Grenoble Institute of Technology; CNRS

10:25 AM  
Characterization of Nanostructures in Co-Pd-Si-O Soft Magnetic Nanogranular Film Using Compact type Small-Angle Neutron Scattering Spectrometer: Yojiro Oba; Masato Ohnuma; Shigehiro Ohnuma; Michihiro Furusaka; National Institute for Materials Science; Research Institute for Electromagnetic Materials; Hokkaido University

10:40 AM Break

10:50 AM  
Synchrotron SAXS of Reverted Al-4wt.%Cu during In Situ Artificial Ageing: Brad Dukat; Marsha Singh; Shig Saimoto; Luke Westfall; Lixia Rong; Queen’s University; Stony Brook University
11:05 AM Invited
Local Structure Models of Diffuse Scattering in Relaxor Ferroelectrics: Branton Campbell1; Benjamin Frandsen1; Va-Yee Vue1; Matthew Gardner1; Kevin Sepp1; 1Brigham Young University

11:25 AM
The Structural Relationship between Negative Thermal Expansion and Quartic Anharmonicity of Cubic ScF3; Chen Li1; Xiaoli Tang1; Jorge Munoz1; Douglas Abernathy2; Brent Fultz3; 1Caltech; 2ORNL

11:40 AM
In-Situ Measurement of Crystalline Lattice and Amorphous Strains in Fluoropolymers by Neutron Diffraction: Eric Brown1; Bruce Olley2; Cynthia Welch1; Dana Dettelbaum1; Rex Hjelm1; Arthur Scholz2; Don Brown1; 1Los Alamos National Laboratory; 2UC Santa Barbara

11:55 AM
Lattice Defects Diffuse Scattering from Thin Films of Si-Ge System with Low Energy Ar+ and Xe+ Bombardments during MBE Growth: Paul Rozenak1; 1Hydrogen Energy Batteries LTD

12:10 PM
Vibrational Entropy of Amorphous Copper Zirconium: Hillary Smith1; Chen Li1; Glenn Garrett1; Matthew Lucas1; Matthew Stone1; Douglas Abernathy1; Brent Fultz3; 1California Institute of Technology; 2Air Force Research Lab; 3Oak Ridge National Laboratory

10:25 AM
Effect of Different Loading Condition on the Accumulation of Internal Strain in a Creep Resistant Bainitic Steel: Michael A. Weisser1; Steven Van Petegem1; Stuart R. Holdsworth1; Helena Van Swygenhoven1; Paul Scherrer Institute; 1EMPA

10:40 AM Invited
Verification of Site Occupancies in a Nickel Base Superalloy Using Synchrotron and Neutron Diffraction Techniques Coupled with Atomic Modeling and High Resolution TEM: J. Tiley1; G. Viswanathan1; S. Knox1; A. Shively1; S Nag1; R Banerjee1; H. Fraser1; 1Air Force Research Laboratory; 2Southwestern Ohio Council for Higher Education/Air Force Research Laboratory; 3Department of Materials Science, University of North Texas; 4Department of Materials Science and Engineering, The Ohio State University

11:00 AM
Plastic Deformation of Nanocluster-Strengthened Ferritic Steel Studied by In-Situ Neutron Diffraction: Alexandru Stoica1; Grigoretta Stoica1; Zhongwu Zhang1; Xun-Li Wang1; 1ORNL; 2Auburn University

11:15 AM
In-Situ Neutron Study of Phase Transformation Kinetics under Far-From Equilibrium Conditions in Advanced High-Strength Steels: Zhenzhen Yu1; Zhili Feng1; Wei Zhang2; Ke An2; Rebecca Mills1; Eliot Specht1; Xun-Li Wang1; 1Oak Ridge National Laboratory

11:30 AM Invited
SANS and QENS Studies of Phase Behavior and Dynamics of Hydrogen Confined in Nanopores: Nidia Gallego1; Cristian Contescu1; Dipendu Saha1; Lilin He1; Eugene Mamonov1; Alexander Kolesnikov1; Yuri Melnichenko1; 1Oak Ridge National Laboratory

11:50 AM
Strain-Rate-Effect on the Lattice-Strain Evolution of a Generation-IV-Reactor-Power-Plant Alloy: E-Wen Huang1; Shan-Yu Wu1; Wei Wu2; Ke An2; Yang Ling1; Chung-Hao Chen1; Peter K. Liaw2; 1Department of Chemical & Materials Engineering and Center for Neutron Beam Applications, National Central University; 2Department of Materials Science and Engineering University of Tennessee; 3Oak Neutron Scattering Sciences Division Oak Ridge National Laboratory; 4Department of Mathematics and Computer Science North Carolina Central University

12:05 PM
In-Situ High-Energy X-Ray Study of Effect of High Magnetic Field on the Phase Transition of Antiferromagnetic CoO Crystal: Gang Wang1; 1Northeastern University
Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Solder Alloy Design for Challenging Applications

Sponsored by: The Minerals, Metals and Materials Society, TMS; Electronic, Magnetic, and Photonic Materials Division, TMS; Electronic Packaging and Interconnection Materials Committee

Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central University; Laura Turbinii, Research in Motion; Tae-Kyu Lee, Cielo Systems; Govindarajan Muralidharan, Oak Ridge National Laboratory; John Elmer, Lawrence Livermore National Laboratory; Yan Li, Intel

Wednesday AM Room: Swan 9
March 14, 2012 Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Invited
Influence of Composition on the Morphology of Primary Cu6Sn5 in Sn-4Cu Alloys: Kazuhiro Nogita1; Stuart McDonald1; Jonathan Read1; Tina Ventura2; Motonori Miyaoaka2; Keith Sweatman1; Testuro Nishimura1;1The University of Queensland; 2Nihon Superior Co. Ltd.

8:55 AM
Relating the Microstructure to the Shear Strength of Fluxless AuSn Solder Bonds: Jeffrey Florando1; Ilya Golosker1; Barry Olsen1; Lawrence Livermore National Laboratory

9:15 AM
The Initial Rerflow Interaction between Sn3.0Ag0.5Cu Solder and Ni Metallization: Yu-Wei Lin1; Kwang-Lung Lin1; 'National Cheng Kung University

9:35 AM
Intermetallic Compound Formation and Growth at the Lead-Free Solder/Cu Interface during Laser Rerflow Soldering and during Isothermal Aging: Hiroshi Nishikawa1; Noriyu Iwata1; Tadashi Takemoto1; Osaka University

9:55 AM
The Effect of Microstructure on the Reliability of Lead Free Solder Joints: Babak Arfaei1; Liang Yin1; Eric Cotts1; Peter Borgesen1; Binghamton University; 2Universal Instruments Corporation

10:15 AM
The Effect of Composition on the Thickness Morphology and Growth of Interfacial Intermetallic in Pb-Free Solders: Keith Sweatman1; Jonathan Read1; Tetsuro Nishimura1; Kazuhiro Nogita1; Nihon Superior Co., Ltd.; University of Queensland

10:35 AM Break

10:45 AM Invited
The Development and Validation of a New CALPHAD Thermodynamic Database for Lead Free Solders: Paul Mason1; Pingfang Shi1; Andreas Markstrom2; Johan Bratbergh2; Anders Engstrom2; Qing Chen3; Huashan Liu3; Zhanpeng Jin1; 1Thermo-Calc Software Inc.; 2Thermo-Calc Software AB; 3Central-South University

11:10 AM
Investigation of Ti-Alloyed Sn-Ag and Sn-Cu Solders for Their Microstructure, Solidification, Mechanical Properties and Interfacial Reactions: W. Chris Chen1; Sung K. Kang2; C. Robert Kao1; National Taiwan University; 1IBM T.J. Watson Research Center; 2National Taiwan University

11:30 AM
Lead Free Solder Joint Void Growth during Multiple High Temperature Rerflows: Yan Li1; John Moore2; Rajen Dias1; Deepak Goyal1; Intel

11:50 AM
Effect of Temperature on the Mechanical Properties of Cu3Sn and (Cu,Ni)3Sn3: Dekui Mu1; Han Huang1; Kazuhiro Nogita1; The University of Queensland

12:10 PM
Effects of Minor Pd Doping on Microstructural Evolution and Interfacial Reactions in Sn-3.0Ag-0.5Cu-xPd/Cu during Isothermal Aging: Hsiu-Chuan Chuang1; Jenq Gong Dub1; Chih-Yuan Cheng2; Im Wang2; T'sing Hua University; Shenmao Technology Inc. Micro Material Institute

Radiation Effects in Ceramic Oxide and Novel LWR Fuels: Computational Modeling of Defect Evolution under Irradiation

Sponsored by: The Minerals, Metals and Materials Society, TMS; Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Peng Xu, University of Wisconsin; Jian Gan, Idaho National Laboratory; Ram Devanathan, Pacific Northwest National Laboratory; Edward Lahoda, Westinghouse Electric Company; Michele Manuel, University of Florida; Ramprakash Prabhakaran, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

Wednesday AM Room: Macaw 2
March 14, 2012 Location: Swan Resort

Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

Session Chairs: Ram Devanathan, Pacific Northwest National Laboratory; Michele Manuel, University of Florida

8:30 AM Invited
On the Problem of Void Growth in Irradiated Materials: Anter El-Azab1; Florida State University

9:00 AM
Interactions of Voids and Grain Boundaries in UO2 by Molecular Dynamics Simulation: Tsu-Wu Chiang1; Aleksandr Chematynskiy1; Bowen Deng1; Susan Sinnott1; Simon Phillipot1; University of Florida

9:15 AM
Computational Studies of the Formation and Migration of Atomic Defect Clusters in UO2 under Irradiation: Xian-Ming Bai1; Anter El-Azab1; Todd Allen1; Idaho National Laboratory; Florida State University; 3University of Wisconsin-Madison

9:30 AM
Atomistic Simulation of Radiation Effects in Nano-Grained Cerium Oxide: Amit Kumar1; Ram Devanathan1; Vaiithiyalingam Sujithananand1; Satyanarayana Kuchibhatla2; Suntharampillai Thevuthasan2; Sadhipa Seal1; University of Central Florida; Pacific Northwest National Laboratory

9:45 AM
Electrochemistry of Defects in Irradiated UO2: Abdel-Rahman Hassan1; Thomas Hochrainer1; Jianguo Yu2; Xiaoning Bai2; Todd Allen1; Anter El-Azab1; Florida State University; Idaho National Laboratory; University of Wisconsin
10:00 AM Break

10:15 AM Invited
Multi-Scale Modeling of Fission Gas Evolution in UO2: Blas Uberuaga1; David Andersson1; Xiang-Yang Liu3; Pankaj Nerikar1; Christopher Stanek1; Los Alamos National Laboratory

10:45 AM
Mesoscale Modeling of Intergranular Bubble Growth and Percolation: Paul Millett2; Michael Tonks1; Idaho National Laboratory

11:00 AM
Self-Healing Response of Oxides to Irradiation: Dilpuneet Aidhy1; Dieter Wolf3; Argonne National Laboratory

11:15 AM
Computer Simulation of Dislocation Loop Evolution in Irradiated Cerium Oxide with Lanthanum Dopant: Yinbin Miao1; Aaron Oaks3; Wei-Ying Chen1; Bei Ye1; Brian Kleinfeldt1; James Stubbins1; University of Illinois at Urbana-Champaign

11:30 AM
Segregation of Ru to Edge Dislocations in Uranium Dioxide: Anuj Goyal1; Bowen Deng1; Minski Hong1; Aleksandr Chernatynskiy1; Susan Sinnott1; Simon Philipp1; University of Florida

Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Powder Processing and Consolidation II
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Fernand Marquis, Naval Postgraduate School; John Meyer, Iowa State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

Wednesday AM Room: Oceanic 2
March 14, 2012 Location: Dolphin Resort

Session Chair: K Morsi, San Diego State University

8:30 AM Invited
Powder Material Principles Applied to Additive Manufacturing: David Bourell1; University of Texas

8:55 AM Invited
Optimizing Ductility and Strength of Ultrafine Grained Nickel via Cryo-Milling and Ceracon Forging: Yonghao Zhao1; T.D. Topping2; J.F. Binger3; E.J. Lavernia1; University of California Davis; Los Alamos National Laboratory

9:20 AM Invited
Powder Metallurgy and Terabtyes: Pavan Suri1; Heraeus Materials Technology

9:45 AM Invited
Controlling Performance of PM Consolidation in Extrusion: Wojciech Misloek1; Lehigh University

10:10 AM Break

10:25 AM Invited
Advances in Synthesis and Densification of Heterogeneous Materials: Fernand Marquis1; Naval Postgraduate School

10:50 AM
Processing Challenges of Dual-Matrix Carbon Nanotube Aluminum Composites: Amal Esawi1; Khaled Morsi2; Ibah Salama1; Haay Saleeb1; American University in Cairo; San Diego State University

11:15 AM
The Versatility of Combustion Synthesis Processing: K. Morsi1; San Diego State University

Recent Developments in Biological, Electronic, Functional and Structural Thin Films and Coatings: Process-Properties-Performance Correlations I
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Jian Luo, Clemson University; Xing Yang (Mark) Liu, National Research Council Canada; Nancy Michael, University of Texas at Arlington; Roger Narayan, University of North Carolina and North Carolina State University; Choong-un Kim

Wednesday AM Room: Swan 10
March 14, 2012 Location: Swan Resort

Session Chairs: Nancy Michael, University of Texas at Arlington; Xing Yang (Mark) Liu, National Research Council

8:30 AM Introductory Comments

8:35 AM
Atomic Scale Characterization of the Nanoscaled Structure of Sputtered Fe-C Thin Films: Xavier Sauvage1; Amelie Fillion1; Jean Marie Le Breton1; Ben Lawrence1; Michel Perez2; Colin Scott3; Arnaud Weck3; Chad Sinclair4; University of Rouen, CNRS; Department of Materials Engineering, The University of British Columbia; Universite de Lyon - INSA de Lyon, MATEIS; Aceler Mittal Research Maizieres; Mechanical Engineering Department, University of Ottawa

9:05 AM
Dependence of Tribology of Carbide Derived Carbon Films on Humidity: Marcin Tlustochowicz1; CTLGroup

9:35 AM
Structural and Optical Properties of Silicon Carbonitride Thin Films Deposited by Reactive DC Magnetron Sputtering: Okan Agirseven1; Tolga Tavsanoglu1; Esra Ozkan Zayim1; Onuralp Yucel1; Istanbul Technical University

9:55 AM
Influence of TIG Re-Melting and RE (La2O3) Addition on Microstructure, Hardness and Wear of Ni-WC Composite Coating: Bal Mukund Dhakar1; Dheerendra Dwivedi1; Satpal Sharma1; Indian Institute of Technology Roorkee; Gautam Buddha University

10:25 AM Break

10:40 AM
Evaluation of Mechanical Properties of Ni-Ti Bi-Layer Thin Film: Maryam Mohri1; Mahmud Nili-Ahmadabadi1; University of Tehran

11:00 AM
Anodic TiO2 Nanotubular Arrays with Pre-Synthesized Hydroxyapatite - A Promising Approach to Enhance the Biocompatibility of Titanium: Luning Wang1; University of Alberta

11:30 AM
Preparation and Properties of Cu2ZnSnS4 Thin Films by Electrodeposition and Sulfurization: Chao An1; Huimin Lu1; Xi Chen1; Beihang University
Recycling General Sessions: Building Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS
Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizer: Joseph Pomykala, Alter Trading

Wednesday AM Room: Europe 4
March 14, 2012 Location: Dolphin Resort

Session Chair: Jeffrey Spangenberger, Argonne National Laboratory

8:30 AM
Ecological Recovery Process for Textile Waste: Efthalea Carpus1; Emilia Visileanu1; The Research-Development National Institute for Textile and Leather

8:50 AM
Technical Tools for Increasing the Eco-Efficiency of Textile Products: Emilia Visileanu1; Efthalea Carpus1; The Research-Development National Institute for Textile and Leather

9:10 AM
Characterization of the Chemical Changes and Surface Properties of Carbonated Waste Cement: Kwangsu Yoo1; Seong-Ho Lee1; Sun-Ho Hwang1; Ji-Whan Ahn1; Korea Institute of Geoscience and Mineral Resources

9:30 AM
Recycling of Flat Glass Waste into Clayey Ceramic: Thais da Costa Caldas1; Alline Cordeiro Morais1; Sergio Neves Monteiro1; Carlos Fontes Vieira1; State University of the North Fluminense Darcy Ribeiro

9:50 AM Break

10:10 AM
A Study on Waste Packaging Containers Generated by Household in Taiwan: Esher Hsu1; Chen-Ming Kuo2; National Taipei University; 1-Shou University

10:30 AM
Manufacture of Calcium Sulfocalcinate with Alumina Waste: Ji-Whan Ahn1; Sun-Ho Hwang1; Seong-Ho Lee1; Kwangsu Yoo1; Korea Institute of Geoscience and Mineral Resources

10:50 AM
Recycling of Styrene-Divinylbenzene Copolymer through Sequential Mass-Suspension Polymerization Process: Nathalia Campelo1; Alexandre Umpierre2; Fabricio Machado2; Universidade Católica de Brasilia; 1University of Idaho

11:10 AM
Modeling of Heavy Metals Ions Adsorption by Polyamidoamine Dendrimers: Mohamed Barakat1; J Kuhn2; KAU University; 1USF

11:30 AM
Mullites Bodies Produced From the Kaolin Residue Using Microwave Energy: Maria Brasiliero1; Romualdo Menezes2; Andre Rodrigues2; Gelnires Neves1; Lisiane Santana1; Universidade Federal do Ceará; 1Universidade Federal de Campina Grande

Refactory Metals 2012: W and Mo Alloys |
Structure, Microstructure and Properties
Sponsored by: The Minerals, Metals and Materials Society, TMS
Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Eric Taleff, The University of Texas at Austin; Todd Leonhardt, Rhenium Alloys Inc; Rachel DeLucas, H.C. Starck; Gary Rozak, HC Starck Inc

Wednesday AM Room: Mockingbird 2
March 14, 2012 Location: Swan Resort

Session Chairs: Todd Leonhardt, Rhenium Alloys Inc.; Gary Rozak, HC Starck Inc

8:30 AM
Brittle to Ductile Transition in Forged Tungsten and Tungsten-Tantalum Alloys: David Armstrong1; J Gibson2; J Lachanary3; Angus Wilkinson1; Steve Roberts2; Michael Rieth2; University of Oxford; 2Karlsruhe Institute of Technology

8:50 AM
The Re Effect on Fracture Toughness of Mo- and W-Based Alloys for Nuclear Applications: Mikhail Sokolov1; Evan Ohrriher2; Roger Stoller2; ORNL

9:10 AM
Room Temperature Fracture Toughness of Mo-41%Re and Mo-47.5%Re Alloys: Dylan Liebl1; Jennifer Gaies2; Mark Opecka2; University of Wisconsin-Madison; 2NSWC Carderock Division

9:30 AM
Stress-Controlled Cyclic Deformation Response of Mo, Mo-Re and Mo-Si Solid Solutions: Xiaoqiao Yu1; Sharvan Kumar2; Brown University

9:50 AM
Fabrication of Tungsten and Tungsten-Rhenium Alloys via Pulsed Electric Current Sintering: Jonathan Webb1; Cory Sparks2; Mary O'brien1; Indrajit Charit1; Derek Baars1; Aboozar Mapar1; Payam Darbandi1; Thomas Bieler1; Farhang Pourboghrat1; Chris Compton2; Michigan State University; Nat'l Superconducting Cyclotron Lab

10:10 AM Break

10:20 AM
Stress-Strain Behavior of Nb Single Crystal Tensile Specimens with Different Grain Orientations: Di Kang1; Derek Baars2; Aboozar Mapar1; Payam Darbandi1; Thomas Bieler1; Farhang Pourboghrat1; Chris Compton2; Michigan State University; Nat'l Superconducting Cyclotron Lab

10:40 AM
Synthetic 3D Tantalum Microstructures: Veronica Livescu1; John Binger1; Davis Tonks1; Joseph Tucker2; Gregory Rohrer2; Los Alamos National Laboratory; Carnegie Mellon University

11:00 AM
Coherent Precipitates in Cr Cold Solution: Omer Dogan1; Xueyan Song1; Michael Gao1; DOE National Energy Technology Laboratory; West Virginia University; URS

11:20 AM
Strengthening Mechanisms of the Molybdenum-Base Alloy MHC: Christopher Poehl1; Juergen Schatte1; Harald Leitner1; Montanuniversität Leoben; Plansee SE

11:40 AM
Nature and Results of Dynamic Abnormal Grain Growth in Tantalum: Nicholas Pedrazas1; Elizabeth Holm2; Eric Taleff2; The University of Texas at Austin; Sandia National Labs
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 PM</td>
<td>Influence of the Heating Rate on the Recrystallization Behavior of Molybdenum: Sophie Primig; Harald Leitner; Wolfram Knabl; Alexander Lorich; Helmut Clemens; Roland Stickler; Montanuniversität Leoben; Plansee SE; Universität Wien</td>
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<td></td>
<td>Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Non-metallic Interfaces, Electronic Structures</td>
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<td>Program Organizers: Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schmitz, University of Münster; David Seidman, Northwestern University</td>
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<tr>
<td>Wednesday AM</td>
<td>Room: Oceanic 7</td>
<td>Location: Dolphin Resort</td>
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<tr>
<td>March 14, 2012</td>
<td>Funding support provided by: Los Alamos National Laboratory</td>
<td>Session Chairs: Blas Uberuaga, Los Alamos National Lab; Steven Valone, Los Alamos National Lab</td>
</tr>
<tr>
<td>8:30 AM Invited</td>
<td>Semiconductor Interfaces – Structure, Properties, and Dopant Segregation: Wolfgang Windl; Ohio State Univ.</td>
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<tr>
<td>9:00 AM Invited</td>
<td>A First Principles Thermodynamic Study of Si-HfO2 and Pt-HfO2 Interfaces: Rampi Ramprasad; Hong Zhu; University of Connecticut</td>
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<tr>
<td>9:30 AM</td>
<td>Interfacial Reconstruction of Au/TiO2 from ab Initio: Min Yu; Dallas Trinkle; Lawrence Berkeley National Laboratory; University of Illinois, Urbana-Champaign</td>
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<tr>
<td>9:50 AM</td>
<td>Structure and Properties of the Y2O3/Fe Interface from First Principles Calculations: Samrat Choudhury; Christopher Stanek; Blas Uberuaga; Los Alamos National Laboratory</td>
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<tr>
<td>10:10 AM Break</td>
<td>The Structure of Interfaces in GaSb/InAs Superlattices: Emil Zolotovabko; Techmion</td>
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<tr>
<td>10:20 AM Invited</td>
<td>The Accuracy of a Flow Stress Model for Metal Forming: Thomas Henke; Markus Bambach; Gerhard Hirt; RWTH Aachen University</td>
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<tr>
<td>10:50 AM</td>
<td>In Situ TEM Investigations of Wetting-Dewetting Transitions of Ultra-Thin Nickel Films on (100) Silicon Substrates: Andrew Thron; Klaus van Bentheim; University of California, Davis</td>
<td></td>
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<tr>
<td>11:10 AM</td>
<td>Hybrid Monte Carlo–Molecular Dynamics Simulations of Nanometer-Scale Y–Ti–O Precipitation in BCC Iron: Karl Hammond; Lauren Marus; Hyon-Jee Lee Voigt; Brian Wirth; University of Tennessee, Knoxville; University of California, Berkeley</td>
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<tr>
<td>11:40 AM</td>
<td>Phase-Field Simulation of Segregation to Lamellar Interface in Refractory NbSi2/MoSi2 Duplex Silicide: Yuichiro Koizumi; Toshihiro Yamazaki; Akihiko Chiba; Koji Hagihara; Takeyoshi Nakano; Koretaka Yuge; Haruyuki Hinou; Tohoku University; Osaka University; Kyoto University</td>
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<tr>
<td>11:50 AM</td>
<td>Solute Segregation at Cu/Alumina Interface and Its Influence on Alumina Growth Kinetics in Alumina Dispersion-Strengthened Copper: Jian Wu; Jiamin Huang; Zhourui Xu; Xuanhui Qi; Shaogun Liu; Graduate School at Shenzhen, Tsinghua University; Shenzhen Zhongjnin Lingnan Nonfemet Co., Ltd., Shenzhen; University of Science and Technology Beijing; Central South University</td>
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<td>8:30 AM Invited</td>
<td>Statistics of Fracture: Weibull, Gumbel and Other Questions: Ashvini Shekhawat; Claudio Manzato; Phani Nukala; Mikko Alava; Stefano Zapperi; James Sethna; Cornell University; Universita di Modena e Reggio Emilia; Oak Ridge National Laboratory; Aalto University; CNR - Consiglio Nazionale delle Ricerche</td>
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<tr>
<td>9:00 AM</td>
<td>Development of a Novel Support Vector Machine (SVM) Model to Predict the Process-Structure-Property Relations in Materials Informatics: Osama Abuomar; Hongjoo Rhee; Roger King; Department of Electrical and Computer Engineering, Center for Advanced Vehicular Systems (CAVS), Mississippi State University, Mississippi State, MS 39762; Center for Advanced Vehicular Systems (CAVS), Mississippi State University, Mississippi State, MS 39762</td>
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<tr>
<td>9:20 AM</td>
<td>Bootstrap Analysis of Experimental Uncertainties Affecting the Accuracy of a Flow Stress Model for Metal Forming: Thomas Henke; Markus Bambach; Gerhard Hirt; RWTH Aachen University</td>
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<tr>
<td>9:40 AM Break</td>
<td>Uncertainty Quantification Of Yield Stress Predictions In Nanocrystalline Nickel: Lei Cao; Marisol Koslowski; Purdue University</td>
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<td>9:50 AM Invited</td>
<td>Continuum Theory of Dislocation Cellular Structures: Fractals, Scaling Theories, and X-Ray Diffraction: Yong Chen; Woosong Choi; Stefanos Papanikolaou; James Sethna; Cornell University</td>
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<tr>
<td>10:40 AM</td>
<td>Stochastic Modeling and Simulation of Fiber Evolution during Melt-Slag Fiberization: Dimitrios Gerogiorgis; Dimitrios Panias; Ioannis Paspaliaris; National Technical University of Athens (N.T.U.A.)</td>
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<td>11:10 AM</td>
<td>Thermal Conductivity Prediction of Nano Fluid Using ANN/GA - A Hybrid Approach for a Radiator Design: Piyushar Padhi; France Behera; Debasis panDA; Konark Institute of Science &amp; Technology</td>
<td></td>
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11:00 AM
Symposium in Memory of Patrick Veyssière: Understanding the Mechanisms Controlling Plastic Flow: Nanogranulated Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic Magnetic and Photonic Materials Division, TMS Structural Materials Division
Program Organizers: Georges Saada, LEM CNRS ONERA; Dennis Dimiduk, Air Force Research Laboratory; Hael Mughrabi, University Erlangen-Nuernberg; Haruyuki Honkimäki; 1Karlsruhe Institute of Technology, Institute for Applied Materials; 3Lawrence Berkeley National Laboratory; 4University of California; 5KIT - Karlsruhe Institute of Technology
1University of Leoben; 2INM - Leibnitz Institute for New Materials; 3Lawrence Berkeley National Laboratory; 4University of California; 5KIT - Karlsruhe Institute of Technology
Wednesday AM
Room: Oceanic 3
Location: Dolphin Resort

Session Chairs: Sushant Jha, UTC/US Air Force Research Laboratory; Matt Brandes, The Ohio State University; Chris Szczepanski, US Air Force Research Laboratory

8:30 AM Invited
Fabrication Routes and the Effect of Microstructure on the Mechanical Behavior of Ni-Base Superalloy Thin Films and MEMS Structures: Devin Burns; Yong Zhang; Timothy Weihls; Kevin Henker; 1Johns Hopkins University

8:55 AM Invited
Following Deformation Mechanisms in Nanocrystalline Ni Using In Situ Synchrotron Techniques and Orientation Imaging: Patric Gruber; Jochen Lohmiller; Oliver Kraft; Christian Braun; Manuel Grewer; Rainer Birringer; Aaron Weis; Christian Kuebel; Veijo Honkimäki; 1Karlsruhe Institute of Technology, Institute for Applied Materials, P.O. Box 3640, 76021 Karlsruhe, Germany; 2University des Saarlandes, Lehrstuhl für Experimentalphysik, Campus D2 2, 66041 Saarbrücken, Germany; 3Karlsruhe Institute of Technology, Institute of Nanotechnology, P.O. Box 3640, 76021 Karlsruhe, Germany; 4Karlsruhe Institute of Technology, Institute of Nanotechnology, P.O. Box 3640, 76021 Karlsruhe, Germany; 5Karlsruhe Institute of Technology, Karlsruhe Nano Micro Facility, Herrmann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany; 6European Synchrotron Radiation Facility, Materials Science Group, BP 220, 38043 Grenoble Cedex, France

9:15 AM Invited
Studying the Micromechanical Behavior of fcc/bcc Metals by Quantitative In-Situ TEM and μ-Laue: Daniel Kienert; Andreas Schneider; Nobumichi Tamura; Martin Kanz; 2Andrew Minor; Patric Gruber; 1University of Leoben; 3INM - Leibnitz Institute for New Materials; 4Lawrence Berkeley National Laboratory; 5University of California; 6KIT - Karlsruhe Institute of Technology

9:45 AM Break

10:00 AM Invited
Understanding the Small-Scale Plasticity of Pillars in Compression and Fibers in Tension: E. P. George; P. Sudharsan Phani; K. E. Johanns; G. M. Pharr; Oak Ridge National Laboratory; 1University of Tennessee

10:25 AM Invited
Deformation Mechanisms in Nanocrystalline Alloys: Steven Van Petegem; Julien Zimmermann; Helena Van Swygenhoven; Paul Scherrer Institute

11:00 AM Invited
Defromation, Strengthening and Interimittency Behavior of Ni3Al Alloy Microcrystals: Dennis Dimiduk; Michael Uchic; Satish Rao; Paul Shade; Chris Woodward; Ed Nadgorny; 1Air Force Research Laboratory; 2UES, Inc.; 3Michigan Technological University

11:30 AM Invited
Titanium: Advances in Processing, Characterization and Properties: Fatigue of Titanium Alloys
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: Adam Pilchak, US Air Force Research Laboratory; Christopher Szczepanski, US Air Force Research Laboratory; Vasisht Venkatesh, Pratt & Whitney

Wednesday AM
Room: Europe 6
Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: D. Dimiduk, AFRL/RXLM; E. Georges, Ohio State University
10:30 AM Break

10:40 AM Invited
Deformation and Fracture in Titanium Alloys: Microscale Characterization: M. Brandes1; The Ohio State University

11:10 AM
Dislocation Level Mechanisms of Dwell Fatigue Crack Initiation and Propagation in Near-Alpha Titanium: Matt Brandes1; Adam Pilchak2; Robert Williams1; Michael Mills1; Hamish Fraser3; James Williams4; The Ohio State University; Air Force Research Laboratory

11:30 AM
Micromechanisms of Fatigue in Ti-5Al-5Mo-5V-3Cr: Nicholas Jones1; Michael Sheedy1

10:30 AM


Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Materials Characterization Committee

Program Organizers: Shi-Jie Wang, Rio Tinto Kennecott Utah Copper, J. E. Dutrizac, CANMET, Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper

Wednesday AM
Room: Oceanic 5
March 14, 2012
Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

Session Chair: Bradford Wesstrom, Freeport-McMoRan El Paso Refinery

8:30 AM
Simulating the Blanking of Preg Robbers in Gold Ores by Treating Activated Carbon with Hard Paraffin Wax: Gus Van Weert1; John Jiang2; Olivia Wang3; Yeounk Choi4; ORETOME Limited; Barrick Gold Corporation; Process Research ORTECH

8:50 AM
Dissolution of Platinum, Palladium and Rhodium in 250g/L NaCl: Kristian Lillkung1; Jari Aromaa1; Olof Forsen1; Aalto University, School of Chemical Technology

9:10 AM
Silver Recovery from Complex Concentrates—A Mineralogical Approach: Joe Ferron1; Hydroproc

9:30 AM
Development of New Recycling Process of PGMs: Toru Okabe1; Junpei Mitsui1; Katsuhira Nose1; The University of Tokyo

9:50 AM
Molybdenum Recovery and Impurity Removal from Smelter Dusts: Troy Bednarski1; Violina Cocalia1; Tyler McCallum1; Matthew Soderstrom1; Alexis Soto2; Cytec Industries Inc., USA; Cytec Chile Ltda

10:10 AM Break

10:30 AM
Acid Separation for Impurity Control and Acid Recycle using Short Bed Ion Exchange: Michael Sheedy1; Paul Pajunen1; Eco-Tec Inc.

10:50 AM
Various Arsenic Treatments in Non-Ferrous Metallurgy and Other Potential Applications: Tetsuo Fujita1; Shun Fujieda2; Kozo Shinoda3; Shigeru Suzuki4; Dowa Metals & Mining company limited; Tohoku University

11:10 AM
New Vermiculite-Copper Nanoparticle Product with Antibacterial Properties: Jaroslaw Drelich5; Bowen Li6; Jiann-Yang Hwang7; Michigan Technological University

11:30 AM
Scorodite Solubility and Storage Management Systems for Arsenic-Bearing Compounds: Tetsuo Fujita1; Shun Fujieda2; Kozo Shinoda3; Shigeru Suzuki4; Dowa Metals & Mining Company Limited; Tohoku University

Ultrafine Grained Materials VII: Advanced Analysis Methods


Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Risø National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

Wednesday AM
Room: Swan 4
March 14, 2012
Location: Swan Resort

Session Chairs: Malgorzata Lewandowska, Warsaw University of Technology; Peter Liddicoat, The University of Sydney; M. Ravi Shankar, University of Pittsburgh; Marco Starink, University of Southampton

8:30 AM Invited
Neutron Scattering Studies on the Stability of Texture in Cu/Nb Nanolamellar Composites Fabricated via Accumulative Roll Bonding: John Carpenter1; Sven Vogel1; Irene Beyerlein1; Nathan Mara1; Los Alamos National Laboratory

8:50 AM
Homogeneity of SPD Processed UltrafineGrained Aluminium: Malgorzata Lewandowska1; Michal Przybysz1; Mariusz Kuleczyk1; Wacław Pachla1; Warsaw University of Technology; Institute of High Pressure Physics PAS

9:05 AM
In Situ Measurements of Deformation Strain and Strain-Rate in Equal Channel Angular Pressing: Saradhi Komera1; Saurabh Basu1; Ravi Shankar1; University of Pittsburgh

9:20 AM Invited
Influence of Alloering on a Strain Induced Grain Growth in Nanocrystalline Pd: Liila Kurmanavaeva1; Yulia Ivanisenko1; Institute of Nanotechnoogy, KIT

9:40 AM
Nanostructural Evolution in Hierarchy-Strengthened Al-Mg Alloys: Peter Liddicoat1; Maxim Murashkin1; Xiaohou Liao1; Ruslan Valiev2; Simon Ringer1; The University of Sydney; Ufa State Aviation Technical University
9:55 AM
Validation and Analysis of a Model for Grain Refinement by Cold Severe Plastic Deformation: Marco Starink; Xiaoguang Qiao; Nong Gao; University of Southampton

10:10 AM Break

10:25 AM Invited Spatial Distribution of the Dislocation Density and the Strength of Nb and Ta Deformed by High-Pressure-Torsion Determined by X-Ray Peak Profile Analysis: Bertalan Jóni; Erhard Schaffer; Tamás Ungár; Michael Zehetbauer; Eötvös University Budapest, Hungary; University of Vienna, Austria

10:45 AM
Mapping Microstructures Resulting from Severe Simple Shear Deformation: Sepideh Abolghasem; Saurabh Basu; Shashank Shekhar; Jiazhao Cai; M. Ravi Shankar; University of Pittsburgh

11:00 AM
A Crystal Plasticity FEM Study about Influence of Crystal Orientation on the Texture Evolution and Heterogeneity of ECAPEd Copper Single Crystals: Guanyu Deng; Cheng Lu; Lihong Su; Kiet Tieu; Xianghua Liu; University of Wollongong; Northeastern University

11:15 AM Invited
Using Deformation Mechanism Map to Depict Flow Processes in Superplastic Ultrafine-Grained Materials: Megumi Kawasaki; Terence Langdon; University of Southern California

11:35 AM
Modeling Temperature-Dependent Mechanical Response of UFG Al-1100 at High Strain Rates: Emily Haskins; K.T. Ramesh; Johns Hopkins University

11:55 AM
Nickel with Multimodal Grain Size Distribution Achieved by SPS: Microstructure and Mechanical Properties: Guy-Daniel Kollo; David Tingaud; Guy Dirras; Université Paris 13- Institut Galilée

12:10 PM
Mechanical Properties of Nanostructurized Al-Bi Alloys: Koteswararao Rajulapati; Sreedevi Varam; K. Bhanu Sankara Rao; University of Hyderabad

9:05 AM
Mechanical Properties of Nanocrystalline Cu-, Mg-, and Fe-Base Alloys from In-Situ and HPT Consolidated Ball-Milled Powders: Khaled Youssef; Daria Setman; Michael Zehetbauer; Suhrit Mula; Pengchao Kang; Ronald Scattered; Carl Koch; North Carolina State University; University of Vienna; National Institute of Technology; Harbin Institute of Technology

9:20 AM Invited
Microstructure Features, Strengthening Mechanisms and Hot Deformation Behavior of Oxide-Dispersion Strengthened Al6063 Alloy with Ultrafine-Grained Structure: A. Simchi; H. Asgharzadeh; H.S. Kim; Sharif University of Technology; Pohang University of Science and Technology

9:40 AM
Microstructure and Mechanical Properties of Polycrystalline Nickel with Controlled Micro/Nano Grain Volume Fractions: Guy-Daniel Kollo; David Tingaud; Guy Dirras; Université Paris 13- Institut Galilée

9:55 AM
Nickel with Multimodal Grain Size Distribution Achieved by SPS: Microstructure and Mechanical Properties: Guy-Daniel Kollo; David Tingaud; Guy Dirras; Université Paris 13- Institut Galilée

10:10 AM
Quantifying Strengthening Mechanisms in Cryomilled Al Alloys and Their Composites: Troy Topping; Zhihui Zhang; Ying Li; Enrique Lavernia; University of California, Davis

10:25 AM Break

10:40 AM
Mechanics of Powder Equal Channel Angular Pressing: Hyoung Seop Kim; POSTECH

10:55 AM
Microstructure Evolution and Mechanical Behavior of Ultrafine Grain Structured Al 7075 Developed by Cryomilling: Kaka Ma; Troy Topping; Enrique Lavernia; Julie Schoenung; University of California, Davis

11:10 AM
Explosive Fabrication of Bulk Ultrafine Grained Al-Ni-Ti Composite Materials: Nikoloz Chikhradze; Akaki Gignishvili; Mikhail Chikhradze; Mining Institute/Georgian Technical University

11:25 AM
Mechanical Properties of Nanostructured Al-Bi Alloys: Koteswararao Rajulapati; Sreedevi Varam; K. Bhanu Sankara Rao; University of Hyderabad

11:40 AM
Effect of Grain Size Distribution and Zr Addition on Mechanical Properties and Oxidation Resistance of Fe-Cr-Ni Alloys: Mahesh Venkataraman; Raman Singh; Carl Koch; Monash University; North Carolina State University

11:55 AM
Comparison of Structure and Properties of Nanomaterials Processed by Ball Milling and High Pressure Torsion: Jelena Horak; Daria Setman; Michael Kerber; Hamed Bamanpour; Carl Koch; Ron Scattered; Michael Zehetbauer; University of Vienna; North Carolina State University

12:10 PM
Synthesis and Characterization of Binary Al-Mn Alloys for Structural Applications: Lauren Armstrong; Rajendra Sadangi; Kris Darling; Chris Haines; Deepak Kapoor; US Army, ARDEC; US Army, ARL
12:25 PM
Grain Size Dependence of Deformation Microstructure Formation in Compressed Aluminum: Guomin Le1; Andy Godfrey2; Xiaoxu Huang2; Niels Hansen3; Grethe Winther1; Tsinghua University; Risø National Laboratory for Sustainable Energy, Technical University of Denmark

11:15 AM
Basic Need of Standardization for Ultrasonic Fatigue Testing: Claude Bathias1; University Paris Pouest

2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Structural Nanomaterials
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Yonghao Zhao, Nanjing University of Science and Technology
Session Chair: Yonghao Zhao, Nanjing University of Science and Technology

Wednesday PM
Room: Pelican 1
March 14, 2012
Location: Swan Resort

2:00 PM Invited
Mechanical Properties and Deformation in Multi-scale Nanostructured Cu and Ti: Yonghao Zhao1; Y. Li2; T. Topping2; Y.T. Zhu3; R.Z. Valiev4; E.J. Lavernia5; University of California Davis; Chan University of Science and Technology; University of California Davis; North Carolina State University; Ufa State Aviation Technical University

2:35 PM
Mechanical Behavior of Bulk Diamondate Stabilized Aluminum Matrix Nanocomposites: Khinlay Maung1; Colin Arnold2; Ali Yousefian1; Farghalli Mohamed3; James Earthman1; University of California, Irvine; Boeing Research & Technology

2:55 PM
Mechanical Characterization of Alumina In-Situ Aluminum Di-Borides Nano Composites: Sudeep Ingole1; Zulfiqar Khan1; Rajeshwari Paluri1; Fevzi Ozaydin2; Texas A&M University; Bournemouth University

3:15 PM
Phase Transformations during Mechanical Alloying of Ni-Al-Cr Powders Mixture to Produce Nanocrystalline Intermetallic Compounds: M.H. Enayati1; A. R. Shirani2; A Shokoofeh3; Isfahan University of Technology; Azad University; Khajoe Nasir Toosi Technical University

3:35 PM Break

3:50 PM
Synthesis of Gold, Manganese and Nickle Alloy Films Possessing Nano and Various Microstructures: Bassey Udofo1; Aerospace

4:10 PM
Formation of Aluminum Di-Borides in Alumina Matrix Through Mechanical Mixing for Tribological Applications: Sudeep Ingole1; Fevzi Ozaydin2; Rajeshwari Paluri1; Texas A&M University

4:30 PM
Fabrication and Characterization of Porous Zinc via Selective Dealloying of Al-Zn Alloys: Elvin Estremera1; Rafael Soler2; Amariel Declet3; Ulises Barajas-Valdes1; O. Marcelo Suarez1; University of Puerto Rico

4:45 PM
Refrinement of Ligaments of Nanoporous Ag Ribbons by Controlling the Surface Diffusion of Ag: Tingting Song1; Yulai Gao2; Zhonghua Zhang3; Qijie Zhai1; Shanghai University; Shandong University
2012 Symposium on Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: I-Chemical Sensing and Devices II-Biomaterials and Applications


Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Jiyoung Kim, University of Texas at Dallas; Christopher Matranga, National Energy Technology Laboratory

Wednesday PM  Room: Pelican 2
March 14, 2012  Location: Swan Resort

Session Chairs: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama

2:00 PM Invited
Nanometal-on-Semiconductor Substrates for Single-Molecule Spectroscopy: Kaan Kalkan1; Oklahoma State University

2:30 PM Invited
Plasmonics Based Harsh Environment Compatible Chemical Sensors: Michael Carpenter1; University at Albany-SUNY

3:00 PM
2012 Shri Ram Arora Award: Novel Sensor Structure of SnO2 Thin Film Integrated with Catalytic Micro-Discs for the Detection of Trace Level NO2 Gas: Anjali Sharma1; Monika Tomar1; Vinay Gupta1; University of Delhi

3:35 PM Invited
Sub-Nanometer Scale Nanostructures: Ultrathin Nanowires and Nanoclusters: Yuping Bao1; Yalin Xu1; Soubantika Palchoudhury1; The University of Alabama

4:05 PM
Magnetic Particles Accumulated in Acidithiobacillus Ferrooxidans Cells under Static Magnetic Field Affection: Hongxu Li1; Chao Li1; Zhi Qian Zhang1; Lin Wang1; University of Science and Technology

4:20 PM
Nanotechnology for Drug Formulation: Improving Solubility of Insoluble Drugs: Aeriel Murphy1; Dennis Leung2; University of Alabama; Merck Sharp & Dohme Corporation Inc.

4:35 PM
Tunable and Functional Silica Cross-Linked Micellar Core-Shell Nanoparticles: Fangli Chi1; Bin Yang1; Qisheng Huo2; Jiuhua Chen1; Florida International University; Jilin University

4:50 PM
Vertically Aligned and Axially Heterostructured Metal Nanowires and Their Soft Composites: Junchi Wu1; Nitin Chopra1; The University of Alabama

5:05 PM
Superhydrophobic Properties of Poly(methylmethacrylate) (PMMA) Nano Modified: Ariosvaldo Sobrinho1; Marcos Baracho2; Luiz Pontes2; Daniel Campos2; Analigia Araujo1; Geilza Porto1; UAEMC / UFCG; UAF / UFCG

5:20 PM
The Biosorption Behavior of Rhodococcus Opacus on the Surface of Calcium and Magnesium Minerals: Hongzu Li1; An Li1; Binbin Liu1; University of Science and Technology

5:35 PM
The Formation of an Eutectic Mixture for Predicting the Ideal Solubility of Thermally Stable and Unstable Compounds: Rodolfo Pinal1; Ryan McCain1; Purdue University

5:50 PM Invited
Microstructure and Mechanical Properties of Multistructured Peacock Feathers: Neelima Mahato1; Debrupa Lahiri1; Arvind Agarwal1; Kantes Balani1; Indian Institute of Technology Kanpur; Florida International University

6:20 PM
Production of Various Silicates from Rice Hull Ash: Oszgul Taspinar1; Evre Sadic1; Onur Ozcan1; Istanbul Technical Univ.

3rd International Symposium on High Temperature Metallurgical Processing: Energy and Environment

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiantang Hwang, Michigan Technological University; Patrick Masset, TU Freiberg; Onuralp Yucel, Istanbul Technical University; Rafael Padilla, University of Concepcion; Guifeng Zhou, Wuhan Iron and Steel

Wednesday PM  Room: Southern II
March 14, 2012  Location: Dolphin Resort

Session Chairs: Mansoor Barati, University of Toronto; Hongmin Zhu, University of Science & Technology Beijing

2:00 PM
Current Status of Heat Recovery from Granulated Slag: Shaghayegh Esfahani1; Mansoor Barati1; University of Toronto

2:15 PM
Contribution to the Energy Optimization in the Pyrometallurgical Treatment of Greek Nickelferrous Laterites: Konstantinos Karalis1; Charalabos Zografidis2; Anthimos Xenidis2; Stelios Tabouris2; Eamonn Devlin1; National Technical University of Athens; General Mining and Metallurgical Company S.A. LARCO; NCSR Demokritos

2:30 PM
Strengthening Sintering of Refractory Iron Ore with Biomass Fuel: Xiaohui Fan1; Zhiyan Ji1; Min Gan1; Xueling Chen1; Wengu Li1; Central South University
2:45 PM
Combustion Behavior of Pulverized Coal Injection in Corex Melter Gasifier: Zhang Shengfa1; Zhu Feng1; Bai Chenguang2; Wen Liangying1; Qiu Guiba1; Hu Meiling1; Qin Yuelin1; 1College of Materials Science & Engineering, Chongqing University

3:00 PM
Improved Short Coil Correction Factor for Induction Heating of Billets: Mark Kennedy1; Shahid Akhtar2; Jon Arne Bakken1; Raghild Aune2; 1Norwegian University of Science and Technology; 2Norwegian University of Science and Technology

3:15 PM
Liberation of Metallic-Bearing Minerals from Host Rock Using Microwave Energy: Matthew Andriese1; Jiann-Yang Hwang1; Zhiwei Peng1; 1Michigan Technological University

3:30 PM Break

3:40 PM
Effects of Binders Additives on Compressive Strength of Hematite Pellets in Firing Process: Yantang Huang1; Guihong Han1; Tao Jiang1; Guanhui Li1; Yuanbo Zhang1; Dan Wang1; 1Central South University

3:55 PM
Mechanisms of NO Formation during SiO Combustion: Nils Eivind Kamfjord1; 1; Halvard Tveit1; Edin Myrhaug2; Mari Ness1; 1NTNU; 2ELKEM

4:10 PM
New Technologies of Energy Saving and Low CO2 Emission for Iron Making: Xiuewei An1; Jingsong Wang1; Qingguo Xue1; 1University of Science and Technology Beijing

4:25 PM
Pilot Scale Measurements of NOx Emissions from the Silicon Process: Nils Eivind Kamfjord1; Ingeborg Solheim1; Halvard Tveit1; 1NTNU; 2SINTEF

4:40 PM
The Effect of Thermal State of Raw Pellets on the Strength of Reduced Pellets: Zhu-Chengu Huang1; Daoguang Yang1; Ling-Yun Yi1; 1Central South University

Aluminum Alloys: Fabrication, Characterization and Applications: Emerging Technologies

Aluminum Alloys: Fabrication, Characterization and Applications: Emerging Technologies
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee Program Organizers: Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum

Wednesday PM
Room: Northern E1
March 14, 2012
Location: Dolphin Resort

Session Chair: Subodh Das, Phinix

2:00 PM
Effect of Tool Rotational Speed on the Microstructures and Tensile Properties of 7075 Aluminum Alloy Via Friction Stir Process (FSP): Ming-Hsiang Ku1; Fei-Yi Hung1; Tuan-Sheng Lui; Li-Hui Chen1; National Cheng Kung University

2:20 PM
Improving Microstructure of AISI H13 Extruding Dies Using Ion Nitriding: Francisco Montalvo1; Eulogio Velasco2; Adrian Canales1; 1CUPRUM; 2Texas State University

2:40 PM
Linear Friction Welding of a 2024 Al Alloy: Microstructural, Tensile and Fatigue Properties: Alessandro Morri1; Lorella Ceschini1; Fabio Rotundo2; 1University of Bologna

3:00 PM
The Effect of Friction Stir Welding on the Microstructure and Tensile Properties of Al 2139-T8 Alloys: Tomoko Sano1; Jian Yu1; Chian-Fong Yen1; Kevin Doherty1; 1US Army Research Laboratory

3:20 PM Break

3:35 PM
Friction Stir Welding of Al- Zn- Mg Alloy AA7039: Chaitanya Sharma1; Dheerendra Dwivedi2; Pradeep Kumar1; 1Indian Institute of Technology Roorkee

3:55 PM
Fabrication and Particle Pushing of TiB2 Particle Reinforced Aluminum Composites: Meng Wang1; Qingyou Han1; 1Purdue University

4:15 PM
Post Weld Heat Treatment of Friction Stir Welded AA2017: Mohamed Ahmed1; Bradley Wynne2; 1Suez Canal University; 2The University of Sheffield

Aluminum Reduction Technology: Cell Fundamentals, Phenomena and Alternatives II
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee Program Organizer: Olivier Martin, Rio Tinto Alcan

Wednesday PM
Room: Northern E4
March 14, 2012
Location: Dolphin Resort

Session Chair: Patrice Chartrand, Ecole Polytechnique Montreal

2:00 PM
Cryoscopic Data for Hall-Héroult Bath Containing Magnesium Fluoride, Calcium Fluoride, Potassium Cryolite, and Sodium Chloride: Ashjorn Solheim1; Lisbet Stoen1; Jannicke Kvello1; 1SINTEF

2:20 PM
Potentiometric Fluoride Analysis with Improved Analytical Performance: Thor-Anders Aarhaug1; Kalman Nagy1; 1SINTEF

2:40 PM
Investigation of the Mechanism of Mass Transport between the Anode-Bath Interface and the Active Bubble Generating Sites in the Hall-Héroult Cells: Sandor Ponesak1; Laszlo Kiss1; 1University of Quebec at Chicoutimi

3:00 PM
Dedepolarized Gas Anodes for Electrowinning of Aluminium from Cryolite-Alumina Melts in a Laboratory Cell: Geir Martin Haarberg1; Sajun Xiao1; Arne Petter Ratvik1; Tommy Mokkelbost2; 1Norwegian University of Science and Technology; 2SINTEF

3:20 PM Break

3:40 PM
Reduction of the Operating Temperature of Aluminium Electrolysis: Low-Temperature Electrolyte: Alexey Apisarov1; Juan Barreiro2; Alexander Dedyukhin1; Leopoldo Galan2; Alexander Redkin1; Olga Tkacheva1; Yuri Zaikov1; 1Institute of High Temperature Electrochemistry; 2Aleastur
Aluminum Reduction Technology: Environment II

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Wednesday PM  Room: Southern III
March 14, 2012  Location: Dolphin Resort

Session Chair: Anders Sorhus, Alstom Norway AS

2:00 PM
GHG Measurement and Inventory for Aluminum Production: Jerry Marks1; Chris Bayliss2; 1J Marks & Associates; 2International Aluminum Institute

2:20 PM
Optimization and CFD Simulation in the Ventilation of AP60 Reduction Cell Buildings: Edmund Baltuch1; Siegmar Baltuch1; 1Air-Therm Inc.

2:40 PM
HEX Retrofit Enables Smelter Capacity Expansion: Hussain Al Halwachi1; 1Aluminum Bahrain (Alba)

3:00 PM
Experimental and Theoretical Study on the Fluidization of Alumina Fluoride Used in the Aluminum Smelter Processes: Paulo Douglas Vasconcelos1; André Luiz Mesquita2; 1Albras Alumínio Brasileiro S.A; 2Federal University of Pará

3:20 PM Break

3:40 PM
A Method for Comparing the HF Formation Potential of Aluminas with Different Water Contents: Camilla Sommerseth1; Karen Olsen2; Christian Rosenkilde1; Astrid Meyer1; Linda Kristiansen1; Thor Aarhaug1; 1Norwegian University of Science and Technology, NTNU; 2SINTEF; 3Hydro Aluminium; 4Norsk Hydro

4:00 PM
Visualising the Sources of Potroom Dust in Aluminium Smelters: David Wong1; Nursiani Tjahyono1; Margaret Hyland1; 1University of Auckland

4:20 PM
Impurity Elements in Raw Gas Ultra-Fines from Aluminum Electrolysis Cells: Heiko Gaertner1; Arne Petter Ratvik1; Thor Anders Aarhaug1; 1NTNU; 2SINTEF

Atomistic Effects in Migrating Interphase Interfaces - Recent Progress and Future Study: Roles of Interface on Microstructure Development

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Tadashi Furuhara, Institute for Materials Research, Tohoku University; Sudarsanam Babu, Ohio State University; Hatem Zurob, McMaster University; Jian-Feng Nie, Monash University; Wen-Zheng Zhang, Tsinghua University; James Howe, University of Virginia

Wednesday PM  Room: Europe 3
March 14, 2012  Location: Dolphin Resort

Session Chairs: Masato Enomoto, Ibaraki University; Annika Borgenstam, Royal Institute of Technology

2:00 PM Invited
Structural Transformations in Binary Alloys with Phase Field Crystals: Michael Greenwood1; Nana Ofori-Opoku2; Nikolas Provatas3; Joerg Rottler4; Chad Sinclair5; Mathias Millitzer5; 1University of British Columbia; 2McMaster University

2:30 PM Invited
Application of the Diffusion-Multiple Approach in Alloy Development: Ji-Cheng Zhaor; 1The Ohio State University

3:00 PM
Modelling Growth and Dissolution Kinetics of Grain-Boundary Cementite in Cyclic Carburizing: Kouji Tanakao; Hideaki Ikehata1; Hiroyuki Takamiya1; Hiroyuki Mizuno2; Takeyuki Shimada2; 1Toyota Central R&D Labs., Inc.; 2Aichi Steel corp.

3:20 PM Break

3:40 PM Invited
Mechanisms for Negative Creep in Nickel Base Superalloys: J. Tiley1; 1University of Birmingham

4:00 PM
Interphase Precipitation of Vanadium Carbide in Low Alloy Steels: Tadashi Furuhara1; Toshio Murakami1; Goro Miyamoto1; Naoya Kamikawa1; 1Institute for Materials Research, Tohoku University; 2Kobe Steel Ltd.

5:00 PM
The Effect of Molybdenum on Niobium, Titanium Carbonitride Precipitate Stability and Grain Refinement in a High-Temperature Vacuum Carburizing Steel: Charles Enloe1; J.G. Speer1; K.O. Findley2; 1Colorado School of Mines, Advanced Steel Processing and Products Research Center

5:20 PM Concluding Comments Hatem Zurob
Biological Materials Science Symposium: Biological and Bio-Inspired Materials IV: Soft Biomaterials
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman, Texas A&M University

Wednesday PM  Room: Swan 7
March 14, 2012  Location: Swan Resort
Session Chairs: Paul Calvert, University of Massachusetts Dartmouth; Molly Gentleman, Texas A&M University

2:00 PM Invited
Bionic Hydrogel Sensors and Actuators: Paul Calvert; University of Massachusetts

2:30 PM
The Effect of Polyvinyl Alcohol (PVA) Weight Ratio on Apatite-PVA Composites: Tugba Basargan; Gulhayat Nasun-Saygili; Istanbul Technical University

2:50 PM
Silver Base Nano-Particle Preparation by Ion Biosorption of Bacillus Megaterium: Hongxu Li; Yunchi Guo; Chuanqi Jiao; University of Science and Technology

3:10 PM
A Comprehensive Study of Hydrogel Material Mechanical and Tribological Properties at Small Scales: Bo Zhou; Nicholas Randall; Drew Griffin; Rahul Nair; CSM Instruments

3:30 PM
Biomechanics Studies at the Advanced Photon Source Using High-Energy X-rays: Jonathan Almer; Stuart Stock; Argonne National Laboratory; NorthWestern University

3:50 PM Break

4:00 PM Invited
Adhesion of Shells: Applications in Bacteria Aggregation and Transportation in a Porous Medium: Jiayi Shi; Sinan Muftu; April Adhesion of Shells: Applications in Bacteria Aggregation and Transportation in a Porous Medium: Jiayi Shi; Sinan Muftu; April

4:30 PM
Nanoindentation: Potential Diagnostic Method for Cancerous Transformation of Melanocyte: Ana Paula Benaduce; Debrupa Lahiri; Lidia Kos; Arvindagarwal; Florida International University

4:45 PM
Antimicrobial Efficacy and Degradation Route of Silver-Based Coated Endotraacheal Tubes: Minoo Arzpeima; Gunilla Björfing; Sigbritt Karlsson; Ragnhild. E Aune; Royal Institute of Technology; Karolinska Institute; Norwegian University of Science and Technology (NTNU)

5:00 PM
Nano-Scale Mechanical Response of the Organic Constituent in Abalone Nacre: Maria Lopez; Yu-Chen Chan; Hsien-Wei Chen; Pao-Sheng Chen; Po-Yu Chen; Jenq-Gong Duh; Joanna McKittrick; Marc Meyers; UCSD; National Tsing Hua University

5:15 PM
Cell Toxicity of Go/Rgo: Function of Size and Oxygenated Functional Group Density: Soumen Das; Sanjay Singh; Virendra Singh; Daeha Joung; Janet Dowding; Rameech McCormack; Lei Zhai; Saiful I. Khondaker; William Seif; Sudipta Seal; University of Central Florida

Bulk Metallic Glasses IX: Simulation and Modeling
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday PM  Room: Swan 6
March 14, 2012  Location: Swan Resort
Session Chairs: Mo Li, Georgia Institute of Tech; Yunfeng Shi, Rensselaer Polytechnic Institute

2:00 PM Invited
Packing, Cluster Formation and Their Roles in Physical and Mechanical Property of Metallic Glasses: Mo Li; Qikai Li; Georgia Institute of Tech; Tsinghua University

2:20 PM Invited
First-Principles Tensile and Compression Experiments on a Model Metallic Glass: Wai-Yin Ching; Yungfeng Shi; Despina Louca; Gongyao Wang; Peter Liaw; University of Missouri-Kansas City; Rensselaer Polytechnic Institute; University of Virginia; University of Tennessee

2:40 PM Invited
Simple Analytic Models for Plastic Deformation and Slip Avalanches: From Crystals to Amorphous Materials to Granular Materials: Karin Dahmen; Yehuda Ben-Zion; Jonathan Uhl; Georgios Tsekenis; University of Illinois at Urbana Champaign; University of Southern California

3:00 PM
Phase-Field Simulation Study of Nucleation and Propagation of Shear Bands in Bulk Metallic Glasses with Stress-Induced Precipitation of Martensitic Nanocrystals: Alireza Zaheri; Fadi Abdeljawad; Mikko Haataja; Princeton University

3:10 PM Invited
Correlations during Plastic Flow in Model Metallic Glasses: Craig Maloney; Carnegie Mellon University / Civil & Environmental Engineering

3:30 PM Invited
Computer Simulation of the Structure of Zr-Based Amorphous Alloys: Mikhail Mendelev; Ames Laboratory

3:50 PM Break

4:05 PM Invited
Simulating the Effect of Poisson Ratio on Metallic Glasses: James Morris; Oak Ridge National Laboratory

4:25 PM
Analysis of Glass-Forming Ability through Atomistic Modeling: Logan Ward; Katharine Flores; Wolfgang Windl; The Ohio State University
4:35 PM Invited
Bauschinger Effect in Metallic Glass Nanowires under Cyclic Loading: Yunfeng Shi1; Jian Luo1; Louca Despina2; Gongyao Wang1; Peter Liaw3; Rensselaer Polytechnic Institute; 2University of Virginia; 3The University of Tennessee

4:55 PM
Modeling the Intrinsic Shear Strength of Metallic Glass: Yongqiang Cheng1; Evan Ma1; Johns Hopkins University

5:05 PM Invited
Atomistic Anisotropy in Deformed Metallic Glasses Studied via Molecular Dynamics Simulations: Ronche Wang1; Chun-Yi Wu1; Peter Liaw2; National Cheng Kung University; 2University of Tennessee

5:25 PM Invited
Structures, Phase Transformations and Elastic Properties of High-Entropy AlxCrCuFeNi Alloys: Ab Initio Molecular Dynamics Simulation: Michael Gao1; Louis Santodonato2; Peter Liaw3; National Energy Technology Lab; 3University of Tennessee

5:45 PM
Quasi-Phase-Transition Model of Shear Bands in Metallic Glasses: Zengjian Liu1; Ran Li1; Gang Wang2; Sujun Wu1; Xuyang Lu1; Tao Zhang1; Beihang University; 1Shanghai University

Cast Shop for Aluminum Production: Direct-Chill Casting and Microstructures
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Trond Furu, Hydro

Wednesday PM Room: Northern A4 Location: Dolphin Resort
Session Chairs: Pierre Le Brun, Constellium CRV; Trond Furu, Hydro

2:00 PM
Improving Strip Surface Quality Using Different Casting Atmospheres for the Horizontal Single Belt Strip Casting (HSBC) Process: Donghui Li1; Mihaiela Isac1; Roderick Guthrie1; 1McGill Metals Processing Centre

2:20 PM
Influence of Casting Direct Chill Casting Process Variables on Surface Quality of Aluminum Alloy Sheet Ingots: Mostafa El-Bealy1; 1Shams University, (CC)

2:40 PM
Square Rolling Slabs from Start of Casting - the Elimination of Butt Swell: Arild Hakonsen1; Harald Naess1; Idar Steen1; Terje Iveland1; 1Hyecast AS; 2Hydro Aluminium; 3Hydro Aluminium

3:00 PM
Residual Stresses in As-Cast Billets: Neutron Diffraction Measurement and Thermomechanical Modeling: Jean-Marie Dreze1; Thilo Pirling1; Christophe Jaquero1; 1Ecole Polytechnique Federale Lausanne; 2Institut Laue Langevin; 3Constituell Valais SA

3:20 PM Break

3:40 PM
The Deepwater Horizon Explosion and Correlations to the Aluminium Casthouse: Alex Lowery1; Terry Bateman2; Joe Roberts2; 1Wise Chem LLC; 2Pyrotek Pty Ltd.; 3Pyrotek Inc

4:00 PM
Deformation Behaviors of Pure Al and Al-4.5 Mass%Cu Alloy in Semi Solid State: Nobuhiro Sakaguchi1; 2Samitomo Light Metal Industries,LTD.

4:20 PM
Chemical Additions to Reduce Hot Tearing in the Cast House: Lisa Sweet1; John Taylor1; Mark Easton1; Malcolm Couper2; Nick Parson3; 1CAST Co-operative Research Centre; 2ARC Centre of Excellence of Design in Light Metals; 3Rio Tinto Alcan

4:40 PM Break

CFD Modeling and Simulation in Materials Processing: Electromagnetic and Ultrasonic Processing of Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS: Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Hervé Combeau, Institut Jean Lamour

Wednesday PM Room: Asia 4 Location: Dolphin Resort
Session Chairs: Andre Thess, TU Ilmenau; Valdis Bojarevics, University of Greenwich

2:00 PM Keynote
Modeling Magnetically Excited and Magnetically Damped Liquid Metal Flow: Valdis Bojarevics1; Koulis Pericleous1; 1University of Greenwich

2:30 PM Invited
Numerical Simulation of Liquid Metal Flows under the Influence of Magnetic Fields: Andre Thess1; Thomas Boeck1; Christian Karcher1; Joerg Schumacher1; Dmitry Krasnov1; Gautam Puluigundla1; Saskia Tympel1; Vitaly Minchenya1; Shuai Dong1; 1TU Ilmenau

2:55 PM Invited
Numerical Analysis of the Influence of Melting and Application of Electromagnetic Stirring prior to Solidification on Macrosegregation Formation during Casting of a Binary Alloy: Knut Omdal Tveito1; Mohammed M’Hamdi1; Hervé Combeau1; Miha Založnik1; Xiaodong Wang1; Bachir Saadi1; Yves Fautrelle1; 1Norwegian University of Science and Technology; 2INTEF Materials and Chemistry; 3Institut Jean Lamour, Departement SI2M, CNRS – Nancy-Université – UPV-Metz, Ecole des Mines de Nancy; 4Institut Jean Lamour, Departement SI2M, CNRS – Nancy-Université – UPV-Metz, Ecole des Mines de Nancy; 5SIMAP – CNRS – INPG - Université Joseph Fourier

3:20 PM Invited
Multiscale Modeling of Ingot Solidification Structure Controlled by Electromagnetic and Ultrasonic Stirring Technologies: Laurentiu Nastac1; 1The University of Alabama

3:45 PM Break

4:05 PM
Evolution of the Velocity Field during Solidification in an Electromagnetically Stirred Melt: Gregory Poole1; Nagy El-Kaddah1; 1The University of Alabama
4:30 PM
Modeling the Case Hardening of Crankshafts: Tiruttani Kamal1; Suresh Sundarra1; 1General Motors

4:50 PM
Study of De-Agglomerations Ceramic Nano Particles in the Aluminium Melt under Cavitation Phenomenon for Processing of Metal Matrix Nanocomposites: Payodhar Padhi1; Pragyan Mohanty2; 1Konark Institute of Science & Technology; 2TER

5:10 PM
Fundamental Study on Behavior of Inclusion in Electromagnetic Swirling Flow in Immersion Nozzle in Continuous Casting Process: Su Zhijian1; Li Dewei1; Yang Ying2; Nakajima Keji1; Jónsson Pär1; Marukawa Katsukiyo2; He Jicheng1; 1Northeastern University; 2Royal Institute of Technology (KTH); 3Sumitomo Metal Industries, Ltd.

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiana-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio de Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Fira, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mineral Resources; Mingdong Cai, Schlumberger

Wednesday PM
Room: Asia 2
March 14, 2012
Location: Dolphin Resort

Session Chairs: Sergio Monteiro, State University of North Rio de Janeiro; Zheng Zhang, Michigan Technological University

2:00 PM
Influence of La2O3 Additive Content on the Phase Stability, Sintering and Microstructure of 8 MOL.% Y2O3 Stabilized Zirconia (8YSZ) Ceramic Used for Solid Oxide Fuel Cell Applications: Suleyman Tekeli1; Bulent Aktas2; Serdar Salman3; 1Gazi University; 2Harran University; 3Marmara University

2:15 PM
Development and Characterization of Carbonaceous Materials Incorporated with Metal (Ti, V and Zn)−Organic Compounds for Hydrogen Storage: Mala Nath1; Asheesh Kumar1; Arjit Mallick1; 1Indian Institute of Technology Roorkee

2:30 PM
Characterization of Nickel Oxide Nanoparticles for Hydrogen Adsorption with External Electric Field: Zheng Zhang1; Xiang Sun2; Zhiwei Peng1; Jiann-Yang Hwang1; 1MTU

2:45 PM
Ag /Diamond Composite Shims for High-Performance Thermal Management: Jason Nadler1; Lee Bannister1; 1GTRI

3:00 PM
Nanocrystalline CdS Thin Films Prepared by Vacuum Evaporation: Shadia Ikhmayies1; 1AI Isra University

3:15 PM
Structure−Property Correlation of Pb(Ni0.33Nb0.67)O3−(1-x) Pb(Zr0.52Ti0.48)O3 Based Relaxor-Ferroelectric Ceramics Synthesized Via Columbite Precursor Method: Bandi Mallesham1; T. V. Jayaraman1; A. R. James3; Dibakar Das1; 1University of Hyderabad; 2University of Nebraska; 3Defence Metallurgical Research Laboratory

3:30 PM
Evolution of High-Energy Electron Beam Irradiation Effects on Zeolite Supported Catalyst: Metal Nanoprecipitation: Kai Song1; Jinsong Wu2; Dana Sauter3; Vinayak Dravid4; Peter Stair5; 1Northwestern University

3:45 PM
The Characteristics of Optical Recording Media Affected by The Accelerating Aging Test: Der-Ray Huang1; 1NDHU

4:00 PM
A Comparison between the Properties of Spray-Pyrolyzed SnO2:F/ CdS:In Structures Prepared by Using NH4F and HF as a Source of Fluorine: Shadia Ikhmayies1; Riyad Ahmad-Bitar1; 1Al Isra University; 2University of Jordan

4:15 PM
Transmission Electron Microscopy Study on Interfaces in Cu/CuZr Multi-layer Thin Films: Ying Li1; Robert Dickerson1; Amit Misra1; 1Los Alamos National Laboratory

4:30 PM
Characterization and Preparation of Anti-Reflection Coatings in the RANGE of 3-5 µm for Si Optical Window: Khurram Iqbal1; Asghari Maqsood1; 1National University of Sciences and Technology

4:45 PM
Investigation of Room Temperature Dislocation Mobility in Metal Diborides (ZrB2) Using Nano and Micro Indentation: Ghatu Subhash1; Dipankar Ghosh1; 1University of Florida

Computational Thermodynamics and Kinetics: Cluster Expansion, Kinetic Monte Carlo, and First-principles
Program Organizers: Zhi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Wednesday PM
Room: Australia 3
March 14, 2012
Location: Dolphin Resort

Session Chairs: Brent Fultz, Caltech; Axel van de Walle, Brown University

2:00 PM Invited
Cluster Expansion Methods - Progress and Outlook: Axel van de Walle1; 1Brown University

2:25 PM
Kinetic Monte Carlo Simulations of Diffusion-Limited Nucleation: Ying Hao Lai1; Ramanarayan Hariharaputran2; David Wu3; 1Institute of High Performance Computing

2:40 PM
Kinetics of Tellurium Precipitation in CdTe-Based Materials: Vincenzo Lordi1; Lawrence Livermore National Lab
2:55 PM
Influence of Misfit Stresses on Sputter-Induced Patterns on Alloy Thin Films: Bharath Srinivasan; Ramanarayan Harinaraputra; Yong-Wei Zhang; 1Institute of High Performance Computing, Singapore; 2Institute of High Performance Computing

3:10 PM Break

3:40 PM
Quality Improvement of Aluminium Alloy Castings by application of a New Casting Facility instead of a Conventional Investment Casting Process: Xiaojun Dai; Mark Jolly; Binxu Zeng; University of Birmingham

4:05 PM
Ribon-Substrate Adhesion and Catastrophic Sticking in the Planar-Flow Melt Spinning of Metals: Anthony Alievi; Eric Theisen; Paul Steen; Cornell University; Metglas, Inc

4:30 PM Concluding Comments

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**Defects and Properties of Cast Metals: Novel Processes and Applications**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Qizhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

**Wednesday PM**

- Location: Dolphin Resort
- **Room:** Northern A2
- **Date:** March 14, 2012

**Session Chairs:** Qizhen Li, University of Nevada, Reno; Wen-Ming Chien, University of Nevada, Reno

**Program:**

- **2:00 PM Invited**

  **Study of the High-Performance Super-Light Mg-Li Alloys and Heat-Resistant Mg-RE Alloys:** Milin Zhang; Ruizhi Wu; Jinghuai Zhang; Fengchun Jiang; Harbin Engineering University

- **2:30 PM**

  **Effect of Stacking Fault Energy and Solute Size on the Rare Earth Texture Evolution and Deformation Behavior of Magnesium Alloys:** Zachary Bryan; Ryan Hooper; Michele Manuel; University of Florida

- **3:00 PM Break**

**3:35 PM**

**Alloy Development and High Temperature Deformation of TiAlNbCrMo Alloys:** Glenn Bean; Michele Manuel; University of Florida

**3:50 PM**

**Role of Substitution Elements on Twinning Nucleation Mechanism in Magnesium:** Mehal Bhatia; Kiran Solanki; Amitava Moitra; Mark Tschopp; SEMTE; Department of Chemical Engineering and Materials Science and Engineering; CAVS - Center for Advanced Vehicular System

**4:05 PM**

**Effect of Aging Treatment on Fatigue Behavior of an Al-Cu-Mg Ag Alloy:** Micheal Burba; Michael Caton; Sushant Jha; Christopher Szczepanski; University of Dayton; US Air Force Research Laboratory; Universal Technology Corporation

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**DEFORMATION, DAMAGE, AND FRACTURE OF LIGHT METALS AND ALLOYS: SESSION V**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Qizhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

**Wednesday PM**

- Location: Dolphin Resort
- **Room:** Northern A2
- **Date:** March 14, 2012

**Session Chairs:** Qizhen Li, University of Nevada, Reno; Wen-Ming Chien, University of Nevada, Reno

**Program:**

- **2:00 PM Invited**

  **Study of the High-Performance Super-Light Mg-Li Alloys and Heat-Resistant Mg-RE Alloys:** Milin Zhang; Ruizhi Wu; Jinghuai Zhang; Fengchun Jiang; Harbin Engineering University

- **2:30 PM**

  **Effect of Stacking Fault Energy and Solute Size on the Rare Earth Texture Evolution and Deformation Behavior of Magnesium Alloys:** Zachary Bryan; Ryan Hooper; Michele Manuel; University of Florida

- **3:00 PM Break**

**3:35 PM**

**Alloy Development and High Temperature Deformation of TiAlNbCrMo Alloys:** Glenn Bean; Michele Manuel; University of Florida

**3:50 PM**

**Role of Substitution Elements on Twinning Nucleation Mechanism in Magnesium:** Mehal Bhatia; Kiran Solanki; Amitava Moitra; Mark Tschopp; SEMTE; Department of Chemical Engineering and Materials Science and Engineering; CAVS - Center for Advanced Vehicular System

**4:05 PM**

**Effect of Aging Treatment on Fatigue Behavior of an Al-Cu-Mg Ag Alloy:** Micheal Burba; Michael Caton; Sushant Jha; Christopher Szczepanski; University of Dayton; US Air Force Research Laboratory; Universal Technology Corporation
Electrode Technology for Aluminium Production: Characterization of Cathode Materials

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee

**Program Organizer:** Morten Sorlie, Alcoa Norway

**Wednesday PM**  
**March 14, 2012**  
**Room:** Americas Seminar  
**Location:** Dolphin Resort

**Session Chair:** Egil Skybakmoen, SINTEF

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2:00 PM  
Spent Potlining: an Update: Rudolf Pawlek; 'TS+C

2:25 PM  
Analysis of Porous Structures of Graphitic Cathode Materials and the Correlation to Penetrated Sodium: Xiang Li, Jilai Xue, Jun Zhu, Qingcheng Zhang, 'University of Science and Technology Beijing

2:50 PM  
Characterization of Carbon Cathode Materials by X-Ray Microtomography: Martin Brassard, Martin Lebeuf, Alexandre Blais, Loig Rivoalond, Martin Desilets, Gervais Soucy, 'Universite de Sherbrooke, 'Rio Tinto Alcan

3:15 PM  
New Observations in Creep Behavior of Ramming Paste in Aluminium Electrolysis Cell: Sakineh Orangi, Donald Picard, Houshang Alamdari, Donald Ziegler, Waldo Fafard, 'NSERC/Alcoa Industrial Research Chair MACE3, and Aluminium Research Centre-REGAL, Laval University, 'Alcoa Canada

3:40 PM Break

3:55 PM  
Wetting of KF-AlF3-Based Melts on Graphite Cathode Materials for Aluminium Electrolysis: Yanan Zhang, Jilai Xue, Jun Zhu, Xiang Li, 'University of Science and Technology Beijing

4:20 PM  
Fundamentals of Aluminum Carbide Formation: Bronislav Novak, Kati Tschöpe, Arne Petter Ratvik, Tor Grande, 'Norwegian University of Science and Technology

4:45 PM  
Investigation of the Cathode Wear Mechanism in a Laboratory Test Cell: Kati Tschöpe, Anne Støre, Stein Rørvik, Egil Skybakmoen, Tor Grande, Arne Ratvik, 'NTNU, 'SINTEF Materials and Chemistry

5:10 PM  
Study on Graphitization of Cathode Carbon Blocks for Aluminium Electrolysis: Gao Feng, 'Northeastern University

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Energy Nanomaterials: Thermoelectrics and Thermal Transport

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee

**Program Organizers:** Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

**Wednesday PM**  
**Room:** Swan 3  
**March 14, 2012**  
**Location:** Swan Resort

**Session Chairs:** Meyya Meyyappan, NASA Ames Research Center, Reza Shahbazian Yassar, Michigan Technological University

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2:00 PM  
Ab-Initio Thermal Conductivity for Thermoelectric Nanostructured Materials: Derek Stewart, Anupam Kundu, Natalio Mingo, Alistair Ward, David Broido, Cornell University, CEA-Grenoble, Boston College

2:25 PM  

2:50 PM  
Study to Bi2Te3-Based Thermoelectric Nanocomposite Added Silver Nanoparticles by Metal-Organic Decomposition: Hsin-Hsien Yeh, Chiung-Hsiung Chen, Hong-Ching Lin, Ming-Wei Lai, Chien-Neng Liao, National Tsing Hua University, 'ITRI

3:15 PM  
Enhanced Performances of Micro-Thermoelectric Devices Integrating Layered A2Te3 (A=Sb, Bi) Films: Tanming Tan, 'Beihang University

3:30 PM Break

4:00 PM Invited  
Thermal Transport in Nanomaterials for Energy Applications: Xinwei Wang, 'Iowa State University

4:30 PM  
Effects of Surface Faceting and Twinning on Thermal Transport Characteristics of Silicon Nanowires: Frederic Sansoz, 'University of Vermont

4:55 PM  
Mechanical and Thermal Energy Transport in Biological and Biologically Inspired Nanostructures: Markus Buehler, 'Massachusetts Institute of Technology
**Energy Technologies and Carbon Dioxide Management: CO2 Management and Utilization**

*Sponsored by:* The Minerals, Metals and Materials Society, TMS

*Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee*

**Program Organizers:** Maria Salazar-Villalpando, DOE/National Energy Technology Laboratory; Neale Neelameggham, IND LLC*; Donna Guillon, Idaho National Laboratory; Subodh Das, Phinx, LLC; Ramana Reddy, Univ of Alabama; Animesh Jha, Univ of Leeds; Soobhankar “Sib” Pati, Metal Oxygen Separation Technologies (MOxST); Mark Jolly, Univ of Birmingham; Lakshmanan Valkuntam, Process Research ORTECH Inc

**Wednesday PM**

**Room:** Europe 8

**Location:** Dolphin Resort

**Session Chairs:** Maria Salazar-Villalpando, DOE/National Energy Technology Laboratory; Neale Neelameggham, IND LLC*; Mahesh Jha, DOE; Jung-Kun Lee, University of Pittsburgh

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<td>2:00 PM</td>
<td>Introductory Comments</td>
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<td>2:05 PM</td>
<td><strong>Keynote</strong></td>
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<td></td>
<td>Meeting the Materials Challenges to Enable Clean Coal Technologies:</td>
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<td><em>Bryan Morreale</em>; <em>Cynthia Powell</em>; *US DOE National Energy Technology</td>
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<td>2:25 PM</td>
<td><strong>Keynote</strong></td>
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<td>Liquid Fuels from CO2, Water, and Solar Energy: <em>Aldo Steinfeld</em>;</td>
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<td><em>ETH Zurich</em></td>
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<td>Solar Activated Photocatalytic Conversion of CO2 and Water to Fuels</td>
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<td>by TiO2-Based Nanocomposites: <em>Qianyi Zhang</em>; <em>Lianjun Liu</em>; <em>Ying Li</em>;</td>
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<td><em>University of Wisconsin-Milwaukee</em></td>
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<td></td>
<td>Electro-Catalytic Conversion of Carbon Dioxide into Hydrocarbon</td>
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<td>Fuels: A Theoretical Study of Selectivity and Efficiency of Copper</td>
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<td>Catalysis: <em>Tao Liang</em>; <em>Yu-Ting Cheng</em>; <em>Simon Phillpot</em>; *Susan</td>
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<td>Sinnott*; <em>University of Florida</em></td>
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<td>Reduction of Energy Consumption and GHGs Emission in Investment</td>
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<td>Casting Process by Application of a New Casting Method: <em>Xiaojun Dai</em>;</td>
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<td><em>Mark Jolly</em>; <em>Binxu Zeng</em>; <em>University of Birmingham</em></td>
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<td>Bauxite Residue Neutralization and Carbon Sequestration from Flu</td>
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<td>Gas: <em>Luis Venancio</em>; <em>Emanuel Macedo</em>; <em>José Antonio Souza</em>; *Fernando</td>
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<td>Botelho*; <em>Otacilio Dias</em>; <em>Federal University of Para</em>; *Federal</td>
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<td>50% Reduction of Energy and CO2 Emission in Metallurgical</td>
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<td>Furnaces by Burners: <em>Michael Potesser</em>; <em>Davor Spotjaric</em>; *Burkhart</td>
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<td>Holleis*; <em>Martin Demuth</em>; <em>Messer Group</em></td>
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<td>CO2 Removal from Industrial Off-Gas Streams by Fluidized Bed</td>
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<td>Carbonation: <em>Koulis Pericleous</em>; <em>Mazaher Molaei</em>; <em>Mayur Patel</em>;</td>
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<td><em>University of Greenwich</em>; <em>University of Greenwich</em></td>
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### 4:35 PM

A Hydro-Mechanical Model and Analytical Solutions for Geomechanical Modeling of Carbon Dioxide Geological Sequestration: *Zhijie Xu*; *Yilin Fang*; *Timothy Scheibe*; *Alain Bonneville*; *Pacific Northwest National Laboratory (PNRL)

**Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Materials Corrosion and Prevention**

*Sponsored by:* The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

**Wednesday PM**

**Room:** Oceanic 6

**Location:** Dolphin Resort

**Session Chairs:** Gary Harlow, Lehigh University; Richard Ricker, NIST

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<td>Effect of Hydrogen on the Localized Corrosion of Stainless Steels:</td>
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<td><em>Lijie Qiao</em>; <em>University of Science and Technology Beijing</em></td>
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<td>Water-Induced Damage of Subsurface Layer in AA 2037 Al Alloy Probed by</td>
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<td>a Slow Positron Beam: <em>Yichu Wu</em>; <em>Peihai Li</em>; <em>Tongguang Zhai</em>; *Paul</td>
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<td>Investigation on Corrosion Behavior of Ni-Based Alloys in Molten</td>
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<td>Fluoride Salt Using Synchrotron Radiation Technique: <em>Min Liu</em>; *Yanling</td>
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<td>Hydrogen on the Mechanical Properties of Metals: <em>Richard Ricker</em>;</td>
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<td>Cr-Ni-Mn Austenitic Stainless Steel: <em>Alexander Ramirez</em>; *Adriana</td>
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<td>Marucia Santanilla*; <em>Neusa Alonso-Falleiros</em>; <em>University of Sao Paulo</em></td>
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<td>Cracking of X70 Pipeline Steel in High pH CarbonateBicarbonate by EIS:</td>
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**Prevention: Materials Corrosion and Prevention**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

**Program Organizers:** Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

**Wednesday PM**

**Room:** Oceanic 6

**Location:** Dolphin Resort

**Session Chairs:** Gary Harlow, Lehigh University; Richard Ricker, NIST

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4:45 PM
Comparative Study of the Influence of Welding Parameters on the Characteristics of Stainless Steel Weld Overlays Applied by FCAW and SAW Process: Raphael Henrique de Melo1; Theophilo Maciel1; 1Federal University of Campina Grande

5:05 PM
Effect of Conversion Coatings on SCC Behavior of Pipeline Steels: Aliakbar Oskuie1; Taghi Shahrabi1; 1Tarbiat Modares University

Federal Funding Workshop: Panel Discussion
Sponsored by: The Minerals, Metals and Materials Society, TMS Public & Governmental Affairs Committee
Program Organizers: Robert Shull, National Institute of Standards and Technology; Jud Ready, Georgia Institute of Technology

Wednesday PM
March 14, 2012
Room: Northern C
Location: Dolphin Resort

2:00 PM Introductory Comments

2:05 PM Keynote
Fracture Mechanics by 3D Crack-Tip Microscopy: Philip Withers1; 1University of Manchester

2:45 PM
Fracture Behavior of Tungsten: Bernd Gludovatz1; Stefan Wurster2; Andreas Hoffmann1; Reinhard Pippan1; 1Lawrence Berkeley National Laboratory; 2Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; 1Plansee SE

3:00 PM
Grain Boundary Cracking in Sn-Rich Pb-free Solders: J. Shang1; 1University of Illinois

3:15 PM
Tensile Deformation of Quenched and Partitioned Steel - A Third Generation High Strength Steel: Jason Coryell1; Josh Campbell2; Vesna Savic1; John Bradley3; Sushil Mishra1; Shashank Tiwari1; Louis Hector Jr; 1General Motors; 2GM R&D Center

3:30 PM
The Influence of Microstructure and Texture on Strain Localization in Thin Stainless Steel Sheet: Eric Buchovecky1; Louis Hector Jr2; Siguang Xu1; John Bradley2; Sushil Mishra1; Allan Bower1; 1Brown University; 2General Motors

3:45 PM Break

4:00 PM
Microscale Testing of Fracture Toughness in Graded Pt-Ni-Al Bond Coats on Superalloys: Jaya Nagamani1; Vibram Jayaram1; Sanjay Biswas1; 1Indian Institute of Science

4:15 PM
Deformation Response of Cold-Drawn and Annealed MP35N Wire: M.J.N.V. Prasad1; Sharvan Kumar1; 1Brown University

4:30 PM
Mechanical Behavior of Copper Single Crystal in the Presence of Point Defects: Iman Salehinia1; David Bahr1; 1WSU
4:45 PM
Effect of Grain Boundary Character on Strain Localization and Grain Boundary Sliding during Creep Deformation of Nickel-Bases Superalloys: Jennifer Carter1; Michael Uchic2; Michael Mills3; 1The Ohio State University; 2Air Force Research Laboratory, Materials & Manufacturing Directorate

5:00 PM
Comparison of Deformation Mechanisms for Constant Strain Rate and Creep Testing of a Ni-Based Superalloy: Hallee Deutchman1; Michael Mills2; 1The Ohio State University

### International Smelting Technology Symposium (Incorporating the 6th Advances in Sulfide Smelting Symposium): Pyrometallurgical Process Modeling, Control & Instrumentation

**Sponsored by:** The Minerals, Metals and Materials Society, The Metallurgy and Materials Society of CIM, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jerome Downey, Montana Tech of the Univ of Montana; Thomas Battle, Midrex Technologies, Inc.; Jesse White, Elkem Solar Research

Wednesday PM  Room: Northern A3
March 14, 2012  Location: Dolphin Resort

Session Chair: To Be Announced

#### 2:00 PM
Comparison of Classical Tools and Modern Finite Element Modeling in the Electrical Design of Slag Resistance Furnaces: Mark Kennedy1; Melina Garcia2; Finn Olesen3; 1Norwegian University of Science and Technology; 2Elkem AS; 3Elkem Bjølvefossen AS

#### 2:25 PM
CFD Modelling of Combustion Behaviour in Slag Fuming Furnaces: Md Huda1; Jamal Naser2; Geoffrey Brooks3; M. Reuter4; Robert Matuszewicz5; Swinburne University of Technology; 6Outotec Limited

#### 2:50 PM
Modeling as a Tool for Scale-Up of an Iron Smelt-Reduction Process: Mark Schwarz1; Mark Davis2; 1CSIRO; 2Hismelt Corp

#### 3:15 PM
Validating Temperature Measurements in Pyrometallurgical Applications – A Case Study: Håvard Molnaas1; Joalet Steenkamp2; Merete Tangstad3; 1NTNU; 2University of Pretoria

#### 3:40 PM Break

#### 4:00 PM
Electric Slag Furnace Dimensioning: Mark Kennedy1; 1Norwegian University of Science and Technology

#### 4:25 PM
Physical Modeling Study on Mixing Phenomena in a C-H2 Smelting Reduction Furnace Bath with Asymmetric Side Blowing Process: Jinyin Xie1; Jieyu Zhang1; Kongfang Feng2; Jixu Wang3; Fei Ruan4; Zhiyu Liu5; Shaobo Zheng6; Xin Hong7; 1Shanghai University

#### 4:50 PM
Successful Application of Model Based Predictive Control for Production and Thermal Efficiency Optimization of High Temperature Melters: Erik Muijsenberg1; 1Elkem Technology

### Magnesium Technology 2012: Corrosion and Coating

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Light Metals Division; TMS: Magnesium Committee

Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Wednesday PM  Room: Southern IV
March 14, 2012  Location: Dolphin Resort

Session Chairs: Guang-Ling Song, GM Global Research & Development; Michelle Manuel, University of Florida

#### 2:00 PM
“Electroless” E-Coating for Mg Alloys: Guang-Ling Song1; 1GM Global Research & Development

#### 2:20 PM
The Influence of Galvanic Current on Cerium-Based Conversion Coatings on Mg, Al, and Galvanized Steel Couples: Surender Maddela1; Matthew O’Keefe2; Yan-Ming Wang3; 1Missouri University of Science and Technology; 2GM Research and Development

#### 2:40 PM
Effect of Sn Additives on the Microstructure and Corrosion Resistance of Anodic Coating Formed on AZ31 Magnesium Alloy in Alkaline Solution: S. Salman1; K. Kuroda2; N. Saito3; M. Okido4; 1Graduate School of Engineering, Al-Azhar University, Nasr City, Cairo 11371, Egypt; 2Nagoya University

#### 3:00 PM
Effect of Thickness on the Morphology and Corrosion Behavior of Cerium-Based Conversion Coatings on AZ31B Magnesium Alloy: Carlos Castano1; Surender Maddela1; Matthew O’Keefe1; Yan-Ming Wang2; 1Missouri University of Science and Technology; 2GM R&D Center

#### 3:20 PM
Mechanical and Corrosion Properties of As-Cast and Extruded Mg10Gd Alloy for Biomedical Application: Petra Maier1; Sören Müller2; Hajo Dieringa3; Norbert Hort4; 1University of Applied Sciences Stralsund; 2Extrusion Research and Development Center TU Berlin; 3Helmholtz-Zentrum Geesthacht

#### 3:40 PM Break

#### 4:00 PM
Corrosion Behavior of Various Steels by AZ31 Magnesium Melt: Chuei Kin Tang1; Marie-Aline Van Ende1; In-Ho Jung2; 1McGill University

#### 4:20 PM
Corrosion of Ultrasonic Spot Welded Joints of Magnesium to Steel: Tsung-Yu Pan1; Michael Santella1; 1Oak Ridge National Laboratory

#### 4:40 PM
Effects of Orientation on Corrosion Behavior of Magnesium Single Crystals: Nguyen Dang Nam1; Ming Zhe Bian2; Kwang Seon Shin3; Hwa Chul Jung4; 1Magnesium Technology Innovation Center, Seoul National University

#### 5:00 PM
Effect of Some Microstructural Parameters on the Corrosion Resistance of Magnesium Alloys: Yaning Hu1; Joseph Kish2; Joseph McDermid3; Wenyue Zheng4; 1McMaster University; 2CANMET-MTL
5:00 PM
Biaxial Deformation Behavior of AZ31 Magnesium Alloy at High Temperature: Yamashita Daisuke; Masafumi Noda; Kunio Funami; Chiba Institute of Technology

Materials and Fuels for the Current and Advanced Nuclear Reactors: Modeling I
Program Organizers: Rampreshad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Wednesday PM
Room: Swan 4
Location: Swan Resort
March 14, 2012
Session Chair: Paul Millett, Idaho National Laboratory

2:00 PM
Cluster Dynamics and Kinetic Monte Carlo Simulations of Atomistic to Nanoscale Defect Dynamics in In-Situ TEM Irradiation on Thin Molybdenum Foils: Donghua Xu; Brian Wirth; Meimei Li; Mark Kirk; University of Tennessee-Knoxville; Argonne National Laboratory

2:20 PM
Kinetic Monte Carlo Simulation of He Bubble Nucleation at Different Types of Grain Boundaries in Mg: Liangzhe Zhang; Paul Millett; Michael Tonks; Yongfeng Zhang; Bulet Biner; Idaho National Laboratory

2:40 PM
He Bubble Nucleation at Grain Boundaries (GBs) in BCC Mo: Liangzhe Zhang; Paul Millett; Michael Tonks; Yongfeng Zhang; Bulet Biner; Idaho National Lab

3:00 PM
Strip-Yield Modeling of Creep Crack Incubation and Growth in Cr-Mo Steels for Nuclear Reactor Applications: Gabriel Potirniche; Mehdi Basirat; University of Idaho

3:20 PM
Peculiarities of Creep Temperature Dependence in Irradiated Materials: Pavlo Selyshev; Volodimir Sugakov; University of Pretoria; Institute for Nuclear Research

3:40 PM Break

4:00 PM
Ab Initio Study of Radiation Induced Amorphization in ZrC: Ming-Jie Zheng; Dane Morgan; Izabela Szlufarska; University of Wisconsin - Madison

4:20 PM
Phase-Field Simulation and Experimental Studies of Oxidation of Zirconium: Mohsen Asle Zaeem; Haitham El Kadiri; Michael Mills; The Ohio State University; Bechtel Marine Propulsion Corp.

4:30 PM
Characterization and Modeling of Creep Mechanisms in Zircaloy-4: Benjamin Morrow; Robert Kozar; Ken Anderson; Michael Mills; Quantum Technologies

4:50 PM
High-Temperature Creep and Superplasticity in Zirconium Alloys: Applications to LOCA Conditions: Ali Massih; Quantum Technologies
Materials and Fuels for the Current and Advanced Nuclear Reactors: Structural Materials - Characterization


Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Session Chair: Micah Hackett, Terra Power

Wednesday PM  Room: Swan 2
March 14, 2012  Location: Swan Resort

2:00 PM
Long-Term High-Temperature Microstructure Stability and Mechanical Properties of Advanced Ferritic-Martensitic Steels: Tongfei Tan; Jeremy Busby; Oak Ridge National Laboratory

2:20 PM
Characterization of Surface Modifications of 316L Stainless Steel: Giovanni Facco; Andreas Kulovits; Jorg Wiezork; University of Pittsburgh

2:40 PM
Investigation of Effect of Zr Allotropic Transformation on Interdiffusion between Mo and Zr: Ashley Ewih; Judith Dickson; Yongho Sohn; University of Central Florida

3:00 PM
Characterization of Oxide Dispersion-Strengthened (ODS) Alloy Powders Processed by Mechano Chemical Bonding (MCB) and Ball Milling: Longzhou Ma; Bruce Kang; C.C. Huang; University of Nevada Las Vegas; West Virginia University; Hosokawa Micron Powder Systems

3:20 PM
Laser Welding of Alloy 690 for Nuclear Power Systems: Julie Tucker; Terry Nolan; George Young; Knolls Atomic Power Laboratory

3:40 PM Break

3:50 PM
Pulsed Magnetic Welding for Advanced Core and Cladding Steels: Yong Yang; Sindo Kou; Todd Allen; University of Florida; University of Wisconsin-Madison

4:10 PM
Effects of Laser Shock Peening on Residual Stress, Microstructure and Corrosion Behavior of Alloy 600: Abhishek Telang; Amrinder Gill; James Guenes; S Mannava; Dong Qian; Vijay Vasudevan; University of Cincinnati

4:30 PM
Nanoindentation and the Micromechanics of Zry-4: Christabel Evans; Trevor Lindley; David Dye; Imperial College London

4:50 PM
Characterization of Zirconium Excel Alloy for Generation IV CANDU SCW Reactors: Mohammad Sattari; Richard Holt; Mark Daymond; Queen’s University

5:10 PM
Order-Disorder Transformation in a Ni-Cr-Mo Alloy: Amit Verma; Jung Singh; M Sundaramanan; Nelia Wanderka; Babhaha Atomic Research Centre; University of Hyderabad; Helmholtz-Zentrum Berlin für Materialien und Energie GmbH

Materials Design Approaches and Experiences III: High Strength Steels


Program Organizers: Ji-Cheng Zhao, The Ohio State University; Akane Suzuki, GE Global Research; Deb Whltis, GE Aviation; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Wednesday PM  Room: Europe 11
March 14, 2012  Location: Dolphin Resort

Session Chairs: Qiang (Charles) Feng, University of Science and Technology Beijing; Michael Fahrmann, Haynes International, Inc.

2:00 PM Invited
Alloy Design of 9% Cr Steel for High Efficiency Ultra-Supercritical Power Plants: Fujio Abe; National Institute for Materials Science

2:30 PM Invited
Advanced Heat Resistant Austenitic Stainless Steel for A-USC Power Plant: Guocai Chai; Sandvik Materials Technology

3:00 PM Invited
In Situ Inclusion Behavior in Ultra-High Strength Steels: Jon Groh; Mark Rhodes; General Electric Company

3:30 PM Break

3:50 PM Invited
Development of High-Performance Structural Alloys for Nuclear Energy Systems: Steven Zinkle; Michael Brady; Yuki Yamamoto; Michael Santella; Phillip Maziasz; David Hoelzer; Jeremy Busby; Lizhen Tan; Govindarajan Muralidharan; Oak Ridge National Laboratory

4:20 PM Invited
Design Approaches and Performance of Novel Austenitic Heat Resistant Steels Strengthened by TCP/GCP Intermetallics for A-USC Power Plants: Masao Takeyama; Imanuel Tarigan; Tokyo Institute of Technology, Consortium of the Japan Research and Development Center for Materials (JRCM); Tokyo Institute of Technology

4:50 PM
Effect of Grain Boundary Laves Phase on Mechanical Properties of Fe-20Cr-30Ni-2Nb Steels: Naoya Kanno; Naoki Takata; Masao Takeyama; Tokyo Institute of Technology; Consortium of the Japan Research and Development Center for Materials (JRCM)

5:10 PM
Microstructural Studies on Thermomechanically Processed Plain Carbon Dual Phase Steel: Abhishek Singh; G Chaudhari; Mukesha Bharadwaj; N Sethi; I. I. T. Roorkee
Materials Research in Microgravity: Session VI
Sponsored by: The Minerals, Metals, and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Robert Hyers, University of Massachusetts; Hani Henein, University of Alberta; Valdis Bojarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrium; Daniela Voss, ESA

Wednesday PM  Room: Asia 3
March 14, 2012  Location: Dolphin Resort

Session Chair: To Be Announced

2:00 PM Invited
Coarsening of Two-Phase Mixtures: Experiments on the International Space Station: J. Thompson1; E. Gulsoy2; Peter Voorhees1; 1Northwestern University

2:35 PM Invited
Multi-Scale Modeling on Liquid Phase Sintering Affected by Gravity: Preliminary Analysis: Eugene Olevsky1; Randall M. German1; 1San Diego State University

3:10 PM
Self-assembly of Ni-nanoparticles in Aerosols Produced Thermally On-ground and under Microgravity Conditions: Stefan Lösch1; Bernd Günther1; Daniela Nolle2; Eberhard Göring1; 1Fraunhofer; 2Max-Planck-Institut

3:35 PM Break

3:55 PM Invited
Crystallographic Stability of Metastable Phase Formed by Containerless Processing in REFeO3 (RE: Rare-Earth Element): Kazuhiko Kuribayashi1; M.S. Vijaya Kumar2; 1Shibaura Institute of Technology; 2Institute of Space and Astronautical Science, JAXA

4:30 PM
On-Line Real Time Diagnostics of a Single Fluid Atomization System: Pooya Dehshad Khatibi1; Arash Ilbagi1; Hani Henein1; 1University of Alberta

4:55 PM
Electrodeposition of Metals in Microgravity Conditions: Yasuhiro Fukunaka1; 1JAXA/Waseda University

5:20 PM
Propagation Regime of Iron Dust Flames: Francois Tang1; Samuel Goroshin2; Andrew Higgins2; 1European Space Agency; 2McGill

Mechanical Behavior at Nanoscale I: Nanomechanical Experiment and Modeling
Program Organizers: Scott Mao, University of Pittsburgh; Julia Greer, California Institute of Technology; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Wednesday PM  Room: Asia 1
March 14, 2012  Location: Dolphin Resort

Session Chairs: Daniel Gianola, University of Pennsylvania; Julia Greer, California Institute of Technology (Caltech)

2:00 PM Invited
Effect of Electric Current on Nanoindentation of Copper: Fuqian Yang1; 1University of Kentucky

2:20 PM
Structure Effects on the Bending Strength of Si Nanowires: Gheorghe Stan1; Sergiy Krylyuk1; Albert Davydov1; Igor Levin1; Robert Cook1; 1National Institute of Standards and Technology

2:40 PM
Extended Structure of Point Defects in Graphene: Mark Jhong1; David Srolovitz1; 1Institute of High Performance Computing

3:00 PM
Estimation of Dislocation Nucleation Stresses from Nanoindentation by Combined Modeling and Experiment: Li Ma1; Dylan Morris1; Stefhanii Jennerjohn1; David Bahr1; Lyle Levine1; 1NIST; 2Michelin North America; 3Washington State University

3:20 PM
Interaction of the Microstructure and Test Geometry on the Size Dependence of Plasticity: Andy Bushby1; David Dunstan1; 1Queen Mary, University of London

3:40 PM
Quantifying Polysilicon Strength Size Effects Using an In-Situ on-Chip Tensile Test Platform: Mohamed Saleh1; Siddharth Hazra2; Jack Beuth3; Maarten de Boer1; 1Carnegie Mellon University

4:00 PM Break

4:10 PM
Humidified Nanoindentation: Grant Klafehn1; Corinne Packard1; 1Colorado School of Mines

4:30 PM
A Nanoscale Investigation on Effect of Hydrogen in Confined Volumes: Ilaksh Adlakha1; Kiran Solanki1; Amitava Moitra2; Mark Tschopp3; 1SEMTE; 2Pennsylvania State University; 3Mississippi State University

4:50 PM
Automated Analysis of Crystal Defects in Large-Scale Atomistic Computer Simulations: Alexander Stukowski1; Tom Arsenlis1; 1Lawrence Livermore National Laboratory
**Mechanical Behavior Related to Interface Physics: Deformation Mechanisms in Nanoscale Materials**


Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiwei Shan, Xi’an Jiaotong University

Wednesday PM  
Room: Oceanic 1

*Session Chairs:* Julia Greer, California Institute of Technology; Jianyu Huang, Sandia National Laboratories

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2:00 PM Keynote

Deformation Mechanisms in Single Boundary-Containing Metallic Nano-Pillars: Grain, Phase, and Crystal Boundaries: *Julia Greer*;
Robert Maas1; Xun Gu1; Qiang Guo1; Siddartha Pathak1; ‘California Institute of Technology

2:30 PM Keynote

Lithiation Induced Stress and Failure of Anode Materials in Lithium Ion Batteries: *Jianyu Huang*1; ‘Sandia National Laboratories

3:00 PM

Effect of Contact Interface on the Mechanical Behavior of Submicro Sized Au Particles: Zhangjie Wang1; Zhixi Shang1; Xu Li1; Jun Sun1; Evan Ma1; ‘Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; ‘Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology; ‘Department of Materials Science and Engineering, Johns Hopkins University

3:15 PM

Exhaustion Hardening in Mo-alloy Nanofibers: *Claire Chisholm*1; Hongbin Bei1; Matthew Lowery1; Jason Oh1; S.A. Syed Asif2; Oden Warren1; Zhiwei Shang1; Easo George1; Andrew Minor1; ‘University of California, Berkeley and National Center for Electro microscopy; ‘Materials Science and Technology Division, Oak Ridge National Laboratory; ‘Hysitron Incorporated; ‘Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano), State Key Laboratory for Mechanical Behavior of Materials, Xi’an University and Hysitron Incorporated; ‘Materials Science and Technology Division, Oak Ridge National Laboratory and Department of Materials Science and Engineering, University of Tennessee, Knoxville

3:30 PM

Fracture Toughness of Nanocrystalline Cu and Cu-Cr pillars Thin Film Composites: *Sharvan Kumar*1; Seong-woong Kim2; Jin-Woo Yi1; Hyun-Gyu Kim1; Kyung-Suk Kim1; ‘Brown University; ‘Korea Institute of Materials Science; ‘Seoul National University of Technology

3:45 PM Break

3:55 PM Keynote

Friction and Mechanics of Lamellar and Nanostructured MoS2; *Eric Bucholtz*1; Simon Phillipot1; Susan Sinnott1; ‘University of Florida

4:25 PM Keynote

Dislocation-Twin Interactions in Nanocrystalline fcc Metals: *Yantian Zhu*1; ‘North Carolina State University

4:55 PM

Investigating the Role of Grain Boundaries during the Plastic Deformation of Bicrystal Nanowires Using Molecular Dynamics: *Garratt Tucker*1; Zachary Aitken1; Julia Greer2; Christopher Weinberger2; ‘Sandia National Laboratories; ‘California Institute of Technology

5:10 PM

Interpreting Hardness Data in Multilayer Thin Films: *Michael Gram*1; John Carpenter2; George Phar1; Peter Anderson1; ‘Ohio State University; ‘Los Alamos National Laboratory; ‘University of Tennessee

5:25 PM

Interaction between Lattice Dislocation and Weak Interface in Anisotropic Bi-Crystal Composites: *Haijian Chu*; Jian Wang1; Caizhi Zhou1; ‘Yangzhou University; Los Alamos National Laboratory; ‘Los Alamos National Laboratory

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**Mechanical Performance of Materials for Current and Advanced Nuclear Reactors: Irradiation Performance of Advanced and Model Alloys**

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Nicholas Barbosa, National Institute of Standards & Tech; Greg Oberson, United States Nuclear Regulatory Commission; Matthew Kerr, United States Nuclear Regulatory Commission; Elaine West, Knolls Atomic Power Laboratory; Stuart Maloy, Los Alamos National Laboratory; Osman Anderoglu, LANL

Wednesday PM  
Room: Swan 1

*Session Chairs:* Osman Anderoglu, Los Alamos National Laboratory; Stuart Maloy, Los Alamos National Laboratory

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2:00 PM Invited

Effect of Irradiation on the Tensile and Impact Properties of Structural and Cladding Materials: *Jean Henry*1; Xavier Avery1; Philippe Dubuisson1; ‘CEA

2:30 PM

Rate Sensitivity in Irradiated HT-9 for Reactor Applications: *Stuart Maloy*1; Tarik Saleh1; Tobias Romero1; Sara Perez-Bergquist1; Mychailo Toloczko1; ‘Los Alamos National Laboratory

2:50 PM

High Temperature Mechanical Properties of Nanostructured Ferritic Alloys and Advanced Ferritic-Martensitic Steels: *Thak Sang Byun*1; David Hoelzer1; Lizhen Tan1; Stuart Maloy1; ‘Oak Ridge National Laboratory; ‘Los Alamos National Laboratory

3:10 PM

Radiation Damage in ODS Ferritic steel under Multi-Ion-Beam Irradiation: *Luke Hsiung*1; Michael Fluss1; Scott Turney1; Bill Choi1; ‘Lawrence Livermore National Laboratory
3:30 PM  3-D Modeling of Incipient Spall Damage in Shocked FCC Multicrystals Using Crystal Plasticity: Kapil Krishnan\(^1\); Leda Wayne\(^1\); Andrew Brown\(^1\); Pedro Peralta\(^1\); Shengnian Luo\(^2\); Darrin Byler\(^2\); Aaron Koskela\(^1\); Arizona State University; Los Alamos National Laboratory

3:50 PM  Break

4:00 PM  Low Temperature Twinning in Tantalum: Mukul Kumar\(^1\); Lawrence Livermore National Laboratory

4:30 PM  Review of Pressure Effects on Flow and Fracture of Materials: John Lewandowski\(^1\); Case Western Reserve Univ

4:50 PM  The Effects of Microstructural Evolution on the Spall Response of 1100 Aluminum: Cyril Williams\(^1\); Changgai Chen\(^1\); Kaliat Ramesh\(^1\); Datta Dandekar\(^1\); U.S. Army Research Laboratory; Johns Hopkins University

5:10 PM  The Role of Crystallite Orientation & Grain Boundary Character on the Uniaxial Tensile Response in Commercially Pure 1050 Aluminum: Nathaniel Sanchez\(^1\); Darcie Dennis-Koller\(^1\); David Field\(^1\); Los Alamos National Laboratory/Washington State University; Los Alamos National Laboratory; Washington State University

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**Minerals, Metals and Materials under Pressure: Damage and Microstructure**

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Chemistry and Physics of Materials Committee, TMS/ASM: Phase Transformations Committee Program Organizers: Ellen Cerreta, Los Alamos National Laboratory; Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois, Urbana-Champaign; Vijay Vasudevan, Univ. Cincinnati

**Wednesday PM  Room: Europe 7**

March 14, 2012  Location: Dolphin Resort

Session Chair: Ellen Cerreta, Los Alamos National Laboratory

2:00 PM Invited

Isolating the Influence of Kinetic and Spatial Effects on Dynamic Damage Evolution in OFHC Cu: Darcie Dennis-Koller\(^1\); Pablo Escobedo-Diaz\(^1\); Ellen Cerreta\(^1\); Los Alamos National Laboratory

2:30 PM  Effect of Release Rate on the Dynamic Tensile Response of Polycrystalline Copper: Juan Escobedo\(^1\); Ellen Cerreta\(^1\); Darcie Dennis-Koller\(^1\); Carl Trujillo\(^1\); Curt Bronkhorst\(^1\); Los Alamos National Laboratory

2:50 PM  Continuum Scale Material Modeling under Large Strain, Strain Rates and Pressure Incorporating Microstructure Effect: Nicola Bonora\(^1\); Andrew Ruggiero\(^1\); Gianluca Ianniti\(^1\); Simone Dichiardo\(^1\); University of Cassino; Techdyn Engineering

3:10 PM  Mechanical Properties and Constitutive Modeling of Metals under Shock Deformation: Shuh Rong Chen\(^1\); George Gray\(^1\); Los Alamos National Laboratory

3:30 PM  Nanocomposites: Nanocomposites for Energy Transport, Harvesting and Storage

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee

Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Wednesday PM  Room: Swan 8

March 14, 2012  Location: Swan Resort

Session Chairs: Garth Wilks, Air Force Research Laboratory; Jaime Grunlan, Texas A & M University

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2:00 PM Invited

Thermoelectric Nanocomposites: Effect of Nanostructures on Lattice Thermal Conductivity: Terry Tritz\(^1\); Wenjie Xie\(^2\); Xinfeng Tang\(^1\); Clemson University; Wuhan University of Technology

2:40 PM  Stabilization of Graphene-Polyaniline Based Nanocomposite Electrodes Using Barium Strontium Titanate for Supercapacitor Application: Supriya Ketkar\(^1\); Manoj Ram\(^1\); Ashok Kumar\(^1\); Thomas Weller\(^1\); Andrew Hoff\(^1\); University of South Florida

3:00 PM Invited

Thermoelastic Study of InGaN-Based Materials for Thermal Energy Harvesting: Liqing Su\(^1\); Bahadir Kucukkok\(^1\); Elisa Hurwitz\(^1\); Ian Ferguson, Na La; University of North Carolina at Charlotte; University of North Carolina at Charlotte

3:40 PM  Nanocomposites for Electrochemical Energy Storage: Yuanbing Mao\(^1\); Elizabeth Martinez\(^2\); Texas A&M University

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Neutron and X-Ray Studies of Advanced Materials V: Centennial: Three Dimensional Studies

Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Wednesday PM
March 14, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: John Budai, Oak Ridge National Laboratory; Leyun Wang, MSU

2:00 PM Keynote
Next Generation 3DXRD: Henning Poulsen1; Soren Schmidt1; Erik Lauridsen1; Andrew King2; Gavin Vaughan3; Jonathan Wright4; Wolfgang Ludwig5; Jette Oددders6; Xiaoxu Huang7; Wolfgang Pantleon8; Dorte Juul Jensen9; Hissie Dijck10; Risoe DTU11; ESRF12

2:25 PM Invited
X-Ray Topography Studies of Synthetic Diamonds for Use as Optical Elements at Synchrotron X-Ray Sources: John Macrander1; Xiannong Huang2; Ali Khounsary3; Josef Maj4; Halsen Assoufid5; Argonne National Laboratory6

2:45 PM Invited
Microstructure inside Nanocrystals Using Laue X-Ray Micro/Nanodiffraction: John Budai1; Jonathan Tischler1; Zhengwei Pan1; Alexander Tselev1; Andrei Kolmakov1; Oak Ridge National Laboratory2; University of Georgia3; Southern Illinois University

3:05 PM Invited
In-Situ Micro-Beam X-Ray Diffraction Studies on Advanced High-Strength Steels: Nieki van Dijck1; Delft University of Technology
Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Whisker Growth in Tin and Related Solder Alloys

2:00 PM Invited
Effects of Grain Misorientation & Strain Distribution on Whisker Formation on Electroplated Sn-Cu films: Carol Handwerker1; Pylin Sarobol1; Wei-Hsun Chen2; Peng Su1; John Blendell1; ‘Purdue University; ‘Cisco

2:30 PM Invited
Probing Mechanisms for Sn Whisker Growth by In Situ Nanoindentation in a Scanning Electron Microscope: Nicholas Chapman1; Jason Williams2; Nikhilash Chawla3; ‘Arizona State University

3:00 PM
Understanding the Variation in Mechanical Properties of Sn Films with Alloying and Modification of Microstructure: Nitin Jadhav1; Maureen Williams2; Fei Pei3; Gery Stafford3; Eric Chason1; ‘Brown University; ‘National Institute of Standards and Technology

3:20 PM
Mitigation and Verification Method of Sn Whisker Growth for Pb-free Automotive Electronics: Won Sik Hong1; Cul Min Oh2; Do Seop Kim3; ‘Korea Electronics Technology Institute(KETI); ‘Hyundai Motor Company

3:40 PM Break

3:50 PM
Crystallographic Characterization of an Electroplated Zinc Coating: Philippe Pareige1; Auriane Etienne1; Agnès LINA2; Laurent Crétonni3; ‘Rouen University; ‘EDF

4:10 PM
Real-Time Study of Whisker Formation in Tin/Copper Systems by EBSD Characterization: Fei Pei1; Nitin Jadhav1; Eric Chason1; ‘Brown University

4:30 PM
Tin Whisker and Hillock Formation on Thermally Cycled, Large Grained Pb-Free Solder Alloy Films: John Koppes1; Pylin Sarobol1; Wei-Hsun Chen2; Peng Su1; John Blendell1; Carol Handwerker1; ‘Purdue University; ‘Cisco Systems

4:50 PM
Precipitation of Large Ag3Sn Intermetallic Compounds in SnAg2.5 Microbumps after Multiple Reflows in 3D-IC Packaging: Ming-Yung Guo1; Wei-Chi Sung1; Chih Chen1; ‘National Chiao Tung University

Processing to Control Morphology and Texture in Magnetic Materials: Thin Films and Applications

2:00 PM Invited
Nanostructure Optimization of FePt Thin Films for Magnetic Recording: Kazuhiro Hono1; Yukiko K Takahashi2; ‘National Institute for Materials Science

2:25 PM Invited
Control of Texture and Morphology of Thin Films for Magnetic Recording Applications: David Laughlin1; En Yang1; Hoan Ho2; Vincent Sokalski2; Jimmy Zhu3; ‘Carnegie Mellon

2:50 PM
Combinatorial Search of Rare-Earth-Free Permanent Magnets: Magnetic and Microstructural Properties of Fe-Co-W Thin Films: Tieren Gao1; Ichiro Takeuchi2; Yaqiao Wu3; Matthew Kramer4; Iver Anderson1; Bill McCallum1; Kevin Dennis3; ‘University of Maryland

3:05 PM
Effect of Rapid Annealing on the Microstructure of FeSiNbBCu Alloys: Pradeep Konda Gokulloss1; Pyuck-pa Choi2; Dierk Raabe3; Giselher Herzer2; ‘Max Planck Institute for Iron Research GmbH; ‘Vacuumschmelze GmbH & Co. KG

3:20 PM Break

3:40 PM Invited
Large Abnormal Grain Growth Behavior in Galfenol Rolled Sheets: Qingfeng Xing1; Adam Boesenberg2; Eric Summers3; Thomas Lograsso1; ‘Ames Laboratory; ‘ETREMA Products, Inc.

4:05 PM Invited
The Role of Crystallographic Texture in Microwave and Millimeter: Yajie Chen1; Anton Geiler2; Trifon Fitchorov2; Andrew Daigle3; Carmine Vittoria4; Vincent Harris2; ‘Northern Eastern University; ‘Metamagnetics Inc.

4:30 PM
Role of Alloying Elements in Improvement of Alnico Permanent Magnet Alloys: Scott Long1; R.W. McCallum1; M.J. Kramer1; Kevin Dennis2; D.T. Cavanaugh3; Y.Q. Wu4; I.E. Anderson1; ‘Ames Laboratory

4:45 PM
Structure and Chemistry of the Alnico Spinodal: Matthew Kramer1; YaQiao Wu2; V. Antropov3; S. Long4; K. Dennis5; R. McCallum6; I. Anderson7; S. Constantinides7; ‘Iowa State University; ‘Ames Laboratory; ‘Arnold Magnetic Technologies
Radiation Effects in Ceramic Oxide and Novel LWR Fuels: Effects of Radiation on Thermal Transport and Fuel Performance

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

**Program Organizers:** Peng Xu, University of Wisconsin; Jian Gan, Idaho National Laboratory; Ram Devanathan, Pacific Northwest National Laboratory; Edward Lafore, Westinghouse Electric Company; Michele Manuel, University of Florida; Ramprashad Prabhakaran, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

**Wednesday PM**

Room: Macaw 2

Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

**Session Chairs:** Edward Lahoda, Westinghouse Electric Company; Peng Xu, Westinghouse Electric Company

### 2:00 PM Invited

**Effects of Radiation on Thermophysical Properties of Ceramic Oxide Fuels:** Dragon Staicu; European Commission, Joint Research Centre, Institute for Transuranium Elements

### 2:30 PM

**Effect of Dislocations on Thermal Conductivity of UO2:** Bowen Deng; Aleksandr Chernatynskiy; Priyank Shukla; Susan Sinnott; Simon Phillpot; University of Florida; Georgia Institute of Technology

### 2:45 PM

**Radiation-Enhanced Diffusivity Measurements of Nd in Single Crystal Thin Film UO2:** Xiaochun Han; Brent Heuser; University of Illinois

### 3:00 PM

**Thermal Properties of ThO2-Based Fuel Using Atomic Level Simulations:** Rakesh Behera; Aleksandr Chernatynskiy; Simon Phillpot; Chaitanya Deo; Georgia Institute of Technology; University of Florida

### 3:15 PM

**Thermal Transport in Uranium Dioxide from First Principles:** Aleksandr Chernatynskiy; Simon Phillpot; University of Florida

### 3:30 PM Break

### 3:40 PM Invited

**Simulation of the Pellet Cladding Interaction Phenomenon with the PLEIADES Fuel Performance Software Environment:** Bruno Michel; Chrystelle Nonon; Jerome Sercombe; Frederic Michel; Vincent Marelle; Isabelle Ramiere; CEA

### 4:10 PM Invited

**Mechanistic Modeling of Fuel Microstructure Evolution and Fission Product Release under Irradiation:** Mikhail Veshchunov; Nuclear Safety Institute (IBRAE) of Russian Academy of Sciences

### 4:40 PM

**Theoretical Investigation on Interplay of Defect Clusters and Fission Gas in Uranium Dioxide:** Ying Chen; Hua Y Geng; Yasunori Kaneta; Motoyaus Kinoshita; Shuichi Iwata; Tohoku University; Institute of Fluid Physics; The University of Tokyo; Central Research Institute of Electric Power Industry

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**Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Powder Processing and Consolidation III**

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

**Program Organizers:** K. Morsi, San Diego State University; Fernando Marquis, Naval Postgraduate School; John Meyer, Iowa State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

**Wednesday PM**

Room: Oceanic 2

Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

**Session Chair:** J. Sears, South Dakota School of Mines & Technology

### 2:00 PM

**LASER Powder Deposition of AlMgB14-TiB2 Ultra-Hard Coatings on Titanium, Steel, and Cast Iron Substrates:** Jacob Fuerst; Michael Carter; James Sears; South Dakota School of Mines and Technology

### 2:15 PM

**Pre-Sintered Preforms - Applications for Gas Turbine Components:** Jeremy Boyle; AIM MRO

### 2:30 PM

**Modeling of Compaction Behavior Al6061 and SiC Powder by Semi-Solid Powder Forming:** Yufeng Wu; Gap-Yong Kim; Iowa State University

### 2:45 PM

**Novel Amalgams for In-Space Fabrication of Replacement Parts:** Calvin Cochran; James Van Hooser; Richard Grugel; Hendrix College; Qualis/Jacobs; Marshall Space Flight Center

### 3:00 PM

**Role of Al-Si Eutectic Powder on Sintering Aspects of Aluminum Alloy: Gaurav Gupta; Anish Upadhyaya; O.P. Modi; AMPRI bhopal; JIT Kanpur

### 3:15 PM Break

### 3:35 PM

**Characterization of Surface Oxides on Steel Powders – Experiments and Modelling:** Karin Frisk; Sophie Caddeo Johansson; Alexander Angré; Swerea KIMAB

### 3:50 PM

**Corrosion Resistant Austenitic (316L) Stainless Steel through Sintering and Surface Modification by Electrostatic Spray Coating:** Kandula Ramakrishna; Kantesh Balani; Anish Upadhyaya; Indian Institute of Technology
4:05 PM
Intense Pulsed Light Sintering Technique for Nanomaterials: H. A. Colorado¹; S. R. Dhage²; J. M.¹; H. T.;¹ University of California, Los Angeles;¹International Advanced Research Center for Powder Metallurgy & New Materials (ARCI)

4:20 PM
Reactive Spark Plasma Sintering of AlON Ceramics: Halide Esra Kanbur³; Burcu Apak³; Gultekin Goller³; Onuralp Yucel³; Filiz Sahin³; Istanbul Technical University

4:35 PM
Spark Plasma Sintering of Silicon Carbide Ceramics: Mehtap Unlu²; Gultekin Goller²; Onuralp Yucel²; Filiz Sahin²; Istanbul Technical University

4:50 PM Invited
Progress in Additive Manufacturing as a Powder Based Solution: James Sears¹; South Dakota School of Mines & Technology

Reaching New Heights: Materials Innovation in the Aerospace Industry: Session I
Sponsored by:
Program Organizers: Robert Shull, National Institute of Standards and Technology; Jud Ready, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory; Thomas Battle, Midrex Technologies

Wednesday PM Room: Northern E2
March 14, 2012 Location: Dolphin Resort

Session Chair: Chuck Ward, US Air Force

2:00 PM Introductory Comments

2:05 PM
Materials Genome Initiative: James Warren¹; NIST

2:15 PM
ICME: Promise and Future Directions: Robert Schafrik²; GE Aviation

2:45 PM
Lessons Learned from the Trenches and Implications on ICME and the MGI: Charles Kuehmann¹; QuesTek Innovations LLC

3:15 PM
Enabling the Era of Hybrid Materials - A Tipping Point of Change: Michael Dudzik²; Rick Barto²; Lockheed Martin Corporation

Recent Developments in Biological, Electronic, Functional and Structural Thin Films and Coatings: Process-Properties-Performance Correlations II
Sponsored by:The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Jian Luo, Clemson University; Xing Yang (Mark) Liu, National Research Council Canada; Nancy Michael, University of Texas at Arlington; Roger Narayan, University of North Carolina and North Carolina State University; Choong-un Kim

Wednesday PM Room: Swan 10
March 14, 2012 Location: Swan Resort

Session Chairs: Jian Luo, Clemson University; Choong-un Kim, University of Texas at Arlington

2:00 PM Introductory Comments

2:05 PM
Near-Surface Residual Stress-Profiling by Incremental Micro-Slot Cutting Method: Assessment of Stress-Calculation Errors: Bartlomiej Winiarski³; Philip Withers³; University of Manchester

2:35 PM
Properties of Coatings Formed by Plasma Electrolytic Oxidation of AM60B Magnesium Alloy in Electrolytes Containing Al2O3 Suspension: Xijin Li¹; Mark Liu¹; Ben Luan¹; National Research Council Canada

3:05 PM
Adhesion between Polymer/Metal interfaces: Sina Youssefian¹; Nima Rahbar¹; UMass Dartmouth

3:25 PM
Hyperthermal Hydrocarbon Modification of PMMA: Leah Hill¹; Travis Kemper¹; Susan Sinnott¹; University of Florida

3:45 PM Break

4:00 PM
Mechanism of Creep Deformation in Porous Organosilicate Thin Films: Emil Zin¹; Tingqin Zhao¹; Nancy Michael¹; Choong-Un Kim¹; Huili Xu¹; The University of Texas at Arlington

4:20 PM
Characterization of Ceramic Layers on Al Alloy by Plasma Electrolytic Oxidation in Two Different Electrolytes Including Sodium Tungstate: In Jun Hwang¹; Ki Ryong Shin¹; Sang il Yoon¹; Young Gun Ko²; Dong Hyuk Shin¹; Hanyang University; Yeungnam University

4:40 PM
Characterization of High Temperature Mechanical Properties of Two Unique Experimental Coatings: Amit Pandey¹; Vladimir Tolpygo¹; Kevin Hemker¹; ORNL; Honeywell; JHU

5:00 PM
Effect of Temperature on the Structure and Properties of Nano-Twin Cu Thin Film Deposited by Unbalanced Magnetron (UBM) Sputtering: Kai Hung Yang¹; Fan-Yi Ouyang¹; National Tsing Hua University
5:30 PM
Formation of Crystalline and Amorphous Phases During Deposition of Ni-Ti Thin Film on Si Substrate – Interpretation of Experimental Results Using Molecular Dynamics Simulations: Shampa Aich; Geetha Priyadarshini B; M. Gupta; Sudipto Ghosh; Madhusudan Chakraborty; 1Indian Institute of Technology Kharagpur; 2Indian Institute of Technology Bhubaneswar

Recycling General Sessions: Waste Utilization
Sponsored by: TMS Recycling and Environmental Technologies Committee
Program Organizer: Joseph Pomykala, Alter Trading

Wednesday PM
Room: Europe 4
Location: Dolphin Resort

Session Chair: Jeffrey S. Spangenberger, Argonne National Laboratory

2:00 PM
Experimental Research on Acid Magenta Dye Decolor Dynamics: Ding Lichao; Chen Yunnen; 1Jiangxi University of Science and Technology

2:20 PM
Study on a River Containing Fluorine and the Pollution Control Method: Luo Jianzhong; Zhang Zheng; 1Guangdong University of Technology

2:40 PM
Study on a Stream Contained Fluorine Excessively and the Industry Pollution Control Method in the Stream: Luo Jianzhong; Zhang Zheng; Zhang Minyi; Zhang Qian; Luo Shuai; 1Guangdong University of Technology

3:00 PM
Investigation of Mo Extraction from a Spent Hydro-Cracking Catalyst by Fungi at Optimal Conditions: Farnaz Amiri; 1Sharif University of Technology

3:20 PM
Leaching Thermodynamics and Kinetics of Preparation of Synthetic Rutile: Wu Zhang; Li Zhangli; Xiang Feng; 1Northeastern University

3:40 PM Break

4:00 PM
Phase Equilibria and Liquidus in CaO-SiO2-FeOx-Al2O3 System in the Temperature Range 1673K to 1873K: Cuihuan Huang; 1Northeastern University

4:20 PM
Precipitation Selectivity of Perovskite Phase from Ti-Bearing Blast Furnace Slag under Reducing Conditions, Argon Atmosphere and Dynamic Oxidation Conditions: Li Zhang; Wu Zhang; 1Northeastern University

4:40 PM
Recovery of Magnesium from Waste Effluent in Nickel Laterite Hydrometallurgy Process: Ningei Sun; Jinshan Liu; Kuiting Wang; Aiguo Dong; Yeda Lu; 1China ENFI Engineering Co. Ltd.

5:00 PM
Recycling of Reverted IN738LC with Reference to Mechanical Properties and Control of Chemical Composition: Reza Rahimi; Mahmood Nili Ahmadabadi; 1University of Tehran

5:20 PM
A Kinetics Study on the Hydrometallurgical Recovery of Vanadium from LD Converter Slag in Alkaline Media: Amirhossein Shahnazi; Fereshteh Rashchi; Ehsan Vahidi; 1University of Tehran; 2University of South Florida

Refractory Metals 2012: Alloy Predictions and Synthesis | Oxidation and Corrosion
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Eric Taleff, The University of Texas at Austin; Todd Leonhardt, Rhenium Alloys Inc; Rachel DeLucas, H.C. Starck; Gary Rozak, HC Starck Inc

Wednesday PM
Room: Mockingbird 2
Location: Swan Resort

Session Chairs: Eric Taleff, The University of Texas at Austin; Rachel DeLucas, H.C. Starck Inc.

2:00 PM
Ab Initio Phase Diagrams of Bcc-Based Transition Metal Alloys – Consequences on Properties: Patrice Turchi; Vaclav Drcha; Josef Kudrnovsky; 1Lawrence Livermore National Laboratory; 2Institute of Physics, Czech Academy of Science

2:20 PM
Bond-Order Potentials for bcc Refractory Metals: Miroslav Cak; Thomas Hammerschmidt; Ralf Drautz; 1ICAMS, Ruhr University Bochum

2:40 PM
Effect of Alloying on Phase Stability and Deformation Behavior of Niobium Silicides: Oleg Kontsevoi; Arthur Freeman; 1Northwestern University

3:00 PM
Microstructure and Properties of New Refractory High Entropy Alloys: Oleg Senkov; Svetlana Senkova; Daniel Miracle; Christopher Woodward; 1Air Force Research Laboratory

3:20 PM
Facile Synthesis and Characterization of Inexpensive Superhard Refractory Metals: Richard Kaner; Reza Mohammadi; Andrew Lech; Miao Xie; Christopher Turner; Beth Weaver; Michael Yeung; Sarah Tolbert; 1UCLA

3:40 PM Break

3:50 PM
Microstructural Characterization of Multicomponent Nb-Ti-Si-Cr-Al-X Alloys: Raghvendra Tewari; Hyo-Jin Song; Amit Chatterjee; Vijay Vasudevan; 1Bhabha Atomic Resarch Centre; 2Department of Chemical and Materials Engineering, University of Cincinnati, OH, 45221-0012; 3Rolls Royce Corporation

4:10 PM
Cobalt-Based Alloys for High Temperature Applications: Rabindra Mahapatra; M. Ashraf Imam; Charles Lei; Jerry Feng; 1Naval Air Systems Command; 2Naval Research Lab

4:30 PM
Oxidation Behavior of Nb-Ti-Si-Cr-Al-X Based Multi-Component Based Alloys: Raghvendra Tewari; Amit Chatterjee; F. J. Boerio; Vijay Vasudevan; 1Bhabha Atomic Resarch Centre; 2Rolls Royce Corporation; 1University of Cincinnati
Solid-State Interfaces II: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Grain-boundaries and Triple Junctions

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS
Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Chairs: Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schmitz, University of Münster; David Seidman, Northwestern University

Wednesday PM  Room: Oceanic 7
March 14, 2012  Location: Dolphin Resort

Funding support provided by: Los Alamos National Laboratory

Session Chairs: Guido Schmitz, University of Münster, Germany; Reiner Kirchheim, University of Göttingen, Germany

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2:00 PM Invited
Thermodynamics and Kinetics of Grain Boundary Junctions: Günter Gottstein; Lasar Shvindlerman; Luis Barrales-Mora; Bingbing Zhao; 1RWTH Aachen University

2:30 PM Invited
Interfaces, Grain Boundaries and Triple Junctions in Metallic Multilayers: Zoltán Balogh; Patrick Stender; Mohammed Chellali; Guido Schmitz; Westfälische Wilhelms Universität, Münster

3:00 PM
Grain Boundary Junction Formation During Annealing of a Model Columnar Microstructure: James Belak; Bryan Reed; Vasily Bulatov; Ming Tang; Tom Lagrange; Joel Bernier; Mukul Kumar; Lawrence Livermore National Laboratory

3:20 PM
Effect of Three-Dimensional Grain Boundary Structure, Crystallography and Chemistry on Sensitization in Al-Mg Alloys: Alexis Lewis; Keith Knipling; Naval Research Laboratory

3:40 PM Break

3:50 PM Invited
The Disconnection Mechanism of Coupled Migration and Shear at Grain Boundaries: Robert Pond; Hassan Khater; Anna Serra; John Hirth; University of Exeter; Universitat Politecnica de Catalunya;
Private individual

4:20 PM
Geometrical construction of 90° ∆Σ (hk0) Quasi-periodic Grain Boundaries in Cubic Crystals: Mohammad Shamsuzzoha; University of Alabama

4:40 PM
Observations and Trends of Shear-Coupled Grain Boundary Motion: Eric Homer; Stephen Foiles; Elizabeth Holm; David Olmsted; Brigham Young University; Sandia National Laboratories; University of California, Berkeley

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5:00 PM
Surface Effects and Resolving Apparent Inconsistencies in Grain Migration Rate Measurements in Aluminum: Arkady Vilenkin; The Hebrew University of Jerusalem

5:20 PM
Stress Induced Migration of Symmetric Tilt Grain Boundaries in Zinc: Askar Sheikh-Ali; Kazakh-British Technical University

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Symposium in Memory of Patrick Veyssière: Understanding the Mechanisms Controlling Plastic Flow: Deformation Mechanisms

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS
Structural Materials Division

Program Organizers: Georges Saada, LEM CNRS ONERA; Dennis Dimiduk, Air Force Research Laboratory; Hael Mughrabi, University Erlangen-Nürnberg; Haruyuki Inui, Kyoto University

Wednesday PM  Room: Europe 6
March 14, 2012  Location: Dolphin Resort

Funding support provided by: National Science Foundation

Session Chairs: M. Véron, Pelham; K. Hemker, John Hopkins University

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2:00 PM Invited
Deformation Mechanisms in B2 Intermetallic CoTi: Rupalee Mulay; University of Virginia

2:30 PM Invited
Development of a Crystal Model for Twinning in Tantalum: Jeffrey Florando; Nathan Barton; James McNaney; Luke Hsiang; Mukul Kumar; Lawrence Livermore National Laboratory

3:00 PM Invited
Nucleation Versus Propagation of Deformation Twins in Tantalum Driven by High Shear Strain Rate at Low Temperature: Changqiang Chen; Kaliat Ramesh; Kevin Hemker; Mukul Kumar; Jeff Florando; Johns Hopkins University; Lawrence Livermore National Laboratory

3:30 PM Invited
Laser Shock Induced Changes in Microstructure, Residual Stress, Plasticity and Properties of Aero Engine and Other Alloys: Amrinder Gill; Yixiang Zhao; Abhishek Telang; Zhong Zhou; Seetha Mannava; Dong Qian; Vijay Vasudevan; University of Cincinnati

3:50 PM Break

4:05 PM Invited
A Comparison of Dislocation Microstructures Formed during Severe Plastic Deformation of an Al-2.5 Mg Alloy at Room and Cryogenic Temperatures and Their Effect on Alloy’s Room-Temperature Strength: Jung Singh; Apu Sarkar; Garima Sharma; Jayanta Chakravarty; Babha Atomic Research Centre

4:25 PM Invited
Relationship between Plasticity Mechanism and “Multiple-Slip” Volume in FCC Metals at Nanoscale: Qing-Jie Li; Zhang-Jie Wang; Zhi-Wei Shan; Ju Li; Jun Sun; Evan Ma; Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, MIT; Department of Materials Science and Engineering, Johns Hopkins University
Tensile Crack Tip in Ti-6Al-4V: Xu Xu

Three-dimensional Investigation of the Microtexture near the Grain Boundary and Dislocation Slip in Ti-5Al-2.5Sn: Chen Zhang

Comparison of CPFE and Experimental Results for the Study of Interaction between Grain Boundary and Dislocation Slip in Ti-5Al-2.5Sn: Chen Zhang; Hongmei Li; Carl Boehlert; Thomas Bieler; Martin Crimp; ‘Michigan State University

5:20 PM
Machining of Coarse Grained and Ultra Fine Grained Titanium: Rimma Lapovok; Andrey Molotnikov; Ashan Bandaranayake; Yuri Estrin; ‘Monash University

5:40 PM
Machinability of β-Titanium Alloy Ti-10V-2Fe-3Al with Different Microstructures: Hendrik Abrahams; Christian Machai; Dirk Biermann; ‘Technische Universität Dortmund

6:00 PM
Residual Stress Relaxation Effects on the Cracking and Wear Processes of Shot Peened Ti-6Al-4V Titanium Alloy under Fretting-Fatigue Loading: Romain Ferre; Siegfried Fouvry; Bruno Berthel; Rémi Amargier; Antoine Ferre; ‘SNECMA; ‘Laboratoire de tribologie et Dynamique des Systèmes (LTDS)

Sponsored by: The Minerals, Metals and Materials Society, TMS

Wednesday PM
Room: Oceanic 3
March 14, 2012
Location: Dolphin Resort

Session Chairs: Soran Birosca, University of Cambridge; Chris Szczepanski, US Air Force Research Laboratory

2:00 PM Invited
Crack Initiation and Microstructurally Short Crack Growth of Ti-6Al-4V: Hans-Juergen Christ; Helge Knobbe; Philipp Koester; Claus-Peter Fritzen; Martin Riedler; ‘University of Siegen; ‘Böhler Schmiedetechnik GmbH & Co KG

2:30 PM Invited
Computational Indicators for Structure-Fatigue Property Relations in Ti Alloys: Craig Przybyla; David McDowell; ‘AFRL; ‘Georgia Institute of Technology

3:00 PM Invited
Hierarchy of Fatigue Deformation Heterogeneities in a Titanium Alloy: A Pathway for Predicting Life-Limiting Failures: Sushant Jha; Robert Brockman; Christopher Szczepanski; Craig Przybyla; James Larsen; ‘Air Force Research Laboratory/Universal Technology Corporation; ‘University of Dayton Research Institute; ‘US Air Force Research Laboratory

3:30 PM
In-Situ Microscale Testing to Evaluate Fatigue Behavior: Christopher Szczepanski; Sushant Jha; Paul Shade; Robert Wheeler; James Larsen; ‘US Air Force Research Laboratory; ‘AFRL/UTC; ‘UES

3:50 PM Break

4:00 PM
Analysis of Dislocation Structures Underneath Nanoindent in an α-Ti Alloy: J. Kwon; P.Sudharshan Phani; M.C. Brandes; A. Pilchak; E.P. George; G.M. Pharr; M.J. Mills; ‘The Ohio State University; ‘The University of Tennessee; ‘WPAFB; ‘Oak Ridge National Laboratory

4:20 PM
Three-dimensional Investigation of the Microtexture near Tensile Crack Tip in Ti-6Al-4V: Xu Xu; Yao You Tse; Geoff West; ‘Loughborough University

4:40 PM
The Effect of Temperature and Stress on the Creep Deformation Modes of Ti-5Al-2.5Sn (wt. %): Hongmei Li; Carl Boehlert; Thomas Bieler; Martin Crimp; ‘Michigan State University

5:00 PM
Comparison of CPFE and Experimental Results for the Study of Interaction between Grain Boundary and Dislocation Slip in Ti-5Al-2.5Sn: Chen Zhang; Hongmei Li; James Seal; Martin Crimp; Carl Boehlert; Thomas Bieler; ‘Michigan State University

5:20 PM
Machining of Coarse Grained and Ultra Fine Grained Titanium: Rimma Lapovok; Andrey Molotnikov; Ashan Bandaranayake; Yuri Estrin; ‘Monash University

5:40 PM
Machinability of β-Titanium Alloy Ti-10V-2Fe-3Al with Different Microstructures: Hendrik Abrahams; Christian Machai; Dirk Biermann; ‘Technische Universität Dortmund

6:00 PM
Residual Stress Relaxation Effects on the Cracking and Wear Processes of Shot Peened Ti-6Al-4V Titanium Alloy under Fretting-Fatigue Loading: Romain Ferre; Siegfried Fouvry; Bruno Berthel; Rémi Amargier; Antoine Ferre; ‘SNECMA; ‘Laboratoire de tribologie et Dynamique des Systèmes (LTDS)

Sponsored by: The Minerals, Metals and Materials Society, TMS

Wednesday PM
Room: Oceanic 5
March 14, 2012
Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

Session Chair: Shijie Wang, Rio Tinto Kennecott Utah Copper

2:00 PM
Selecting the Right Filter Media for the Application: William Wilkie; Robert Boller; ‘Sefar Inc.

2:20 PM
Thermodynamic Study for Removal of Phosphorus from Molten Silicon: Takashi Nagai; Hideaki Sasaki; Masafumi Mueda; ‘The University of Tokyo

2:40 PM
Fatigue and Fracture Mechanics Characterization of Advanced Automotive Steels: Paolo Mattei; Giorgio Scavino; Donato Firrao; ‘Politecnico di Torino

3:00 PM
Kinetic and Thermochemical Analysis of Rubidium Jarosite Decomposition in Alkaline Media: Miguel Perez-Labra; Antonio Romero-Serrano; Eleazar Salinas-Rodriguez; Erika Avila-Davila; Guillermo Juarez-Lopez; Juan Hernandez-Avila; ‘AACTEM UAEH; ‘IPN MEXICO; ‘Instituto Tecnológico de Pachuca; ‘Centro de Investigaciones en Nuevos Materiales Universidad Tecnológica de la Mixteca

3:20 PM Break

3:40 PM
Phase Equilibrium and Characterization Studies of Binary Organic Thermal Energy Storage Materials: Wen-Ming Chien; Ivan Gantan; Amirta Mishra; Dhanesh Chandra; Vamsi Kamisetty; Prathyusha Mekala; ‘University of Nevada, Reno
4:00 PM  Laboratory Test Works and Plant Trials for Milling and Flotation of Slow Cooled Copper Slag: Pengfu Tan; 'Xstrata Copper

4:20 PM  An Experimental Study of Chemical Oxygen Demand Removal from the Coking Wastewater Using Three-Dimensional Electrode Reactor: Lei Zhang; Gai-Feng Xue; J.Y. Huang; 'WISCO

4:40 PM  Behavior of Various Impurities during the Precipitation of Hematite from Ferrie Sulphate Media at 225°C: John Dutrizac; Tzong Chen; 'CANMET-MMSL

5:00 PM  New Process for Granulation of Red Mud and Its Physical Property Assessment: Shuai-Dan Lu; Shaohua Ju; Jin-Hui Peng; Sheng-Hui Guo; Ya-Jian Wang; Lei Guo; Kunming University of Science and Technology

Ultrafine Grained Materials VII: Young Scientist
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Rise National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoun Jeong Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

Wednesday PM  Room: Swan 5
March 14, 2012  Location: Swan Resort

Session Chairs: Justin Scott, Institute for Defense Analysis; Matthias Hockauf, Chemnitz University of Technology; Suveen Mathaudhu, U.S. Army Research Office; Yuntian Zhu, North Carolina State University

2:00 PM  3D-Architecturing Aluminium Sheets by ARB Processing with Graded Copper Particle Reinforcement: Christian W. Schmidt; Mathis Ruppert; Patrick Knödler; Heinz Werner Höppel; Mathias Göken; 'Friedrich-Alexander-Universität Erlangen-Nürnberg

2:15 PM  Advantageous Anisotropy: Designed Performance in Mg Alloy: David Foley; Sonia Modarees-Razavi; Suveen Mathaudhu; Laszlo Kecekes; Ibrahim Karaman; K. Hartwig; Vince Hammond; 'Texas A&M University; 'US Army Research Office; 'US Army Research Laboratory

2:30 PM  Analysis of Microstructure and Microhardness of Zr-2.5%Nb Processed by High Pressure Torsion (HPT): Mychelle Companhoni; Jose Matheus; Andre Pinto; 'Military Institute of Engineering (IME); 'Brazilian Center for Physics Research (CBPF)

2:45 PM  Combining Extrusion and ECAP – an Efficient Processing Route for Large Scale UFG Materials: Philipp Printz; Matthias Hockauf; Thorsten Halle; Gernot Strehl; Martin F.-X. Wagner; Thomas Lampke; 'Chemnitz University of Technology; 'S+C Extrusion Tooling GmbH

3:00 PM  Consolidation of Nanostructured Copper and Copper Based Alloys via High Pressure Torsion: Hamed Bahmanpour; Daria Setman; Jelena Horky; Michael Kerber; Susi Kahofner; Suhrit Mula; Michael Zehetbauer; Ronald Scottдержан; Carl Koch; 'North Carolina State University; 'Faculty of Physics, University of Vienna

3:15 PM  Effects of Post Process Treatments on the Mechanical Stability of Rolled Nanostructured Aluminium: Jacob Kidnose; Lei Lu; Grethe Winther; Niels Hansen; Xiaoxu Huang; 'Riso DTU; 'Institute of Metal Research

3:30 PM  Nanoindentation Analysis for Local Properties of Ultrafine Grained Copper Processed by High Pressure Torsion: Hyeok Jae Jeong; Eun Yoo Yoon; Nack Joen Kim; Hyeong Seop Kim; 'Department of Materials Science and Engineering, POSTECH, Korea; 'Graduate Institute of Ferrous Technology, POSTECH, Korea

3:45 PM  Break

4:00 PM  Strengthening of Al through Addition of Fe and by Processing with High-Pressure Torsion: Jorge Cubero-Sesin; Zenji Horita; 'Kyushu University

4:15 PM  Structural Parameters and Strengthening Mechanisms in Cold-Drawn Pearlitic Steel Wires: Xiaodan Zhang; Andy Godfrey; Xiaoxu Huang; Niels Hansen; 'Tsinghua University, Riso DTU; 'Tsinghua University; 'Riso DTU

4:30 PM  Study of Grain Boundary Weakening using In-Situ Synchrotron X-Ray Diffraction of Ultrafine Grained Materials: Jennifer Girard; Jiuhua Chen; Helen Couvy; Xiaoyang Liu; 'Florida International University; 'University of Michigan; 'Jilin University

4:45 PM  Understanding the Ultrafine Grain Formation and Recrystallization Mechanisms in Magnesium through Extrusion-Machining: Mert Efe; Dinakar Sagapuram; Wilfredo Moscoco; Srinivasan Chandrasekar; Kevin Trumble; 'Purdue University; 'Pontificia Universidad Catolica Madre y Maestra

5:00 PM  Reinforcement Phase Size Effects on a Cryomilled Al – B2C Nanocomposite: Hanry Yang; Troy Topping; Zhihui Zhang; Enrique Lavernia; Julie Schoening; 'University of California Davis

5:15 PM  Homogenization Process and Strain Hardening Behavior of a Two-Phase Cu-Ag Alloy Processed by High-Pressure Torsion (HPT): Y.Z. Tian; Z.F. Zhang; R.B. Figueiredo; N. Gao; T.G. Langdon; 'Institute of Metal Research,Chinese Academy of Sciences; 'Federal University of Minas Gerais; 'University of Southampton; 'University of Southern California

5:30 PM  Microhardness and Microstructural Evolution in Cu-Zr Alloy after High-Pressure Torsion Processing: Jitrapsorn Wongsa-Ngam; Megumi Kawasaki; Terence Langdon; 'University of Southern California
Ultrasonic Fatigue of Advanced Materials and Systems: Ultrasonic Fatigue of Metals and Alloys II; Very High Cycle Fatigue of Composites and MEMS


Program Organizers: Frank Balle, University of Kaiserslautern; Dietmar Eifler, University of Kaiserslautern; Guntram Wagner, University of Kaiserslautern

Wednesday PM  Room: Europe 1
March 14, 2012  Location: Dolphin Resort

Session Chairs: J. Wayne Jones, University of Michigan (USA); Hans-Jürgen Christ, University of Siegen (Germany)

2:00 PM
Very High Cycle Fatigue (VHCF) Behavior of Sn-Rich (Pb-Free) Solder Joints: Martina Zimmermann1; Kyle Yazzie2; Martin Cremer1; Hans-Jürgen Christ1; Nikhilesh Chawla2; 1Universität Siegen; 2Arizona State University

2:20 PM
Ultrasonic Fatigue of Ti6Al4V in the Very High Cycle Fatigue Regime: Stefan Heinz1; Guntram Wagner1; Frank Balle1; Dietmar Eifler1; 1University of Kaiserslautern

2:40 PM Invited
Combining Ultrasonic Fatigue with Synchrotron X-radiography and in situ Nonlinear Ultrasonic Measurements to Detect Crack Initiation: Naji Hussein1; Clinique Brundidge1; Anish Kumar1; Tresa M. Pollock1; J. Wayne Jones1; 1University of Michigan

3:00 PM
In-Situ Characterization of the Damage Evolution of Welded Aluminum Alloy Joints during Very High Cycle Fatigue (VHCF) with Nonlinear Ultrasonic Technique: Martin Cremer1; Martina Zimmermann1; Hans-Jürgen Christ1; 1University of Siegen

3:20 PM Break

3:40 PM
Ultrasonic Fatigue of Aluminum Matrix Composites (AMC) in the VHCF-Regime: Gu tram Wagner1; Matthias Wolf1; Dietmar Eifler1; 1University of Kaiserslautern

4:00 PM
Ultrasonic Fatigue Testing System Combined with Nondestructive Online Testing for Carbon Fiber Reinforced Composites: Frank Balle1; Daniel Backe1; Thomas Helfen1; Ute Rabe1; Sigrun Hirsekorn1; Dietmar Eifler1; Christian Boller1; 1University of Kaiserslautern; 2Saarland University; 3Fraunhofer Institute for Nondestructive Testing, Saarbrücken, Germany

4:20 PM
Small-Scale Multiaxial Fatigue Experiments in the Very High Cycle Regime: Thomas Straub1; Tobias Kennerknecht1; Paulin Robin2; Morgan Tort1; Geoffroy Kieffer1; Yuri Lapusta1; Christoph Eberl1; 1Karlsruhe Institute of Technology (KIT); 2French Institute of Advanced Mechanics (IFMA)

4:40 PM
High and Very High Cycle Fatigue in Al and Cu Thin Films on Si Substrate: Sofie Burger1; Christoph Eberl1; Alexander Siegel1; Alfred Ludwig1; Oliver Kraft1; 1Karlsruhe Institute of Technology; 2Ruhr-Universität Bochum

5:00 PM
Environmental Effects on Fatigue Crack Initiation in the HCF and VHCF Regimes for LIGA Ni Thin Films: Eva Baumert1; Olivier Pierron1; 1Georgia Tech

5:20 PM Concluding Comments Dietmar Eifler, Symposium organizer

Wettability and Interfacial Phenomena between Metals and Ceramic/Refractory Materials:
Session I
Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, Not Applicable

Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politécnico Nacional; Golam Newaz, Wayne State University; Tapas Lahai, Indian Institute of Technology Kharagpur; Zariff Chaudhury, Materion Corporation

Wednesday PM  Room: Macaw 1
March 14, 2012  Location: Swan Resort

Session Chairs: Martin Pech-Canul, Cinvestav Saltillo; Zariff Chaudhury, Materion Corporation; Tapas Lahai, Indian Institute of Technology Kharagpur

2:00 PM
Chemical Wear of Basic Brick Linings in the Non-Ferrous Industry: Dean Gregurek1; Alfred Spanning1; Marcus Kirschen1; Christian Majcenovic1; 1RHI AG

2:20 PM
Diffusion Bonding between Ti3SiC2 and NiTi Shape Memory Alloy: Ankush Kothalkar1; Patrick Mahaffey1; Sandip Basu1; Miladin Radovic1; Ibrahim Karaman1; 1Texas A&M University

2:40 PM
Effect of Surface Modification of Al2O3 Particles on the Microstructure and Mechanical Properties of AI2O3 Nanocomposites: Hossein Beysig1; Seyyed Abdalkarim Sajjadi1; Seyyed Mojtaba Zebarjad1; 1Ferdowsi University of Mashhad

3:00 PM
Study on Wettability of Cu and 85Cu-15Ni Alloy on 18NiO-NiFe2O4 Composite Ceramics: Jinjing Du1; Yinian Liu1; Guangchun Yao1; Zhigang Zhang1; Guoyin Zu1; 1Northeastern University

3:20 PM
Wetting and Wicking Behavior of Refractory Coatings Used in Lost Foam Casting: Robin Woracek1; Indranee Sen1; Dayakar Penumadu1; 1University of Tennessee

3:40 PM
Interfacial Reactions in the Liquid/Solid and Liquid/Vapor Interfaces of Al-Si-Mg Alloys and B12 (Bc2) Substrates: Oziel Herrera-Romero1; Martin Pech-Canul1; Zariff Chaudhury1; Golam Newaz1; 1Centro de Investigacion y de Estudios Avanzados del Instituto Politécnico Nacional; 2Arkansas State University; 3Wayne State University
2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Joint Session with “2012 Surface and Heterostructures”
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, University of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Terry Xu, UNC Charlotte
Thursday AM Room: Pelican 1
March 15, 2012 Location: Swan Resort
Session Chair: Nitin Chopra, University of Alabama

8:30 AM Invited
Modification of Micro-Sterolithography-Fabricated Microneedles Using Pulsed Laser Deposition: Shaan Gittard1; Philip Miller1; Chuning Jin2; Timothy Martin3; Ryan Boehm4; Bret Chisholm5; Shane Statsilen6; Justin Daniels6; Nicholas Cit2; Nancy Monteiro-Riviere7; Adnan Nasir8; Roger Narayan9; ‘Univ of North Carolina & North Carolina State Univ; ‘North Dakota State University; ‘North Carolina State University; ‘University of North Carolina

9:05 AM Nanosphere Lithography of Co/Pd Multilayer Film for Advanced Media: Suzanne Kornegoy1; Shraeyansh Thakur2; Erica Barnes3; Anondo Bannerjee4; Marely Villanueva5; Hao Su6; Zhenzhong Sun7; Dawen Li7; Subhadra Gupta1; ‘The University of Alabama

9:20 AM Optimization of CoPt-AlN Granular Media for High Density Applications: Hao Su1; Anusha Natarajarathinam2; Elizabeth Philip3; Kristy Tippy1; Subhadra Gupta1; ‘The University of Alabama

9:35 AM Reproducible Resistive Switching Behavior in Sputtered TiOx Films: R. J. Jeng1; W. Z. Chang2; J. P. Chu3; ‘National Taiwan University of Science and Technology

9:55 AM Improving Resistance Switching Behavior of HoScO3 Film for the RRAM Application: Effects of Annealing: W. Z. Chang1; S. F. Wang2; J. P. Chu3; ‘Graduate Institute of Engineering, National Taiwan University of Science and Technology; ‘Department of Materials and Minerals Resources Engineering, National Taipei University of Technology; ‘Graduate Institute of Engineering and Department of Materials Science and Engineering, National Taiwan University of Science and Technology,

10:05 AM Break

Environmental Cracking Susceptibility of a Surface Nanocrystallized Stainless Steel in Contrast to its Coarse Grained Counterpart: Indranil Roy1; Jian Lu2; Yuntian Zhu3; Colin Longfield4; Rashmi Bhavsar5; Enrique Lavernia6; Farghali Mohamed7; Schlumberger8; ‘City University of Hong Kong; ‘North Carolina State University; ‘University of California, Davis; ‘University of California, Irvine

10:45 AM Investigation of Al2O3 Nanostructures Using Charge Optimized Many Body Potentials: Dundar Yilmaz1; Bryce Divine2; Simon Phillpot1; Susan Sinnott3; ‘University of Florida; ‘U.S. Army Engineer Research and Development Center

11:05 AM Microstructure, Interfaces, Intermixing and Magnetic Properties of FePt/MgO/FePt/Pt/CrRu Films Deposited on Si/Si Substrate: Ramasis Goswami1; Shu Cheng2; Konrad bussmann3; ‘SAIC/Naval Research Laboratory; ‘Naval Research Laboratory

11:25 AM Fluorescence from Polymers in Uniaxially Stretched Electrospun Nanofiber Mats: Stephen Young1; Indraneel Sen2; Rohit Uppal2; Dayakar Penumadu1; ‘University of Tennessee, Knoxville

11:40 AM Synthesis and Characterization of Core-Shell TaN, Nanocomposites: Lianyun Liu1; Kai Huang2; Zheng Wang3; Jungenh Hou4; Hongmin Zhu5; ‘University of Science and Technology Beijing

11:55 AM Concluding Comments

3rd International Symposium on High Temperature Metallurgical Processing: Treatment and Recycling of Solid Slag/Wastes
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Patrick Masset, TU Freiberg; Onuralp Yucel, Istanbul Technical University; Rafael Padilla, University of Concepcion; Guifeng Zhou, Wuhan Iron and Steel
Thursday AM Room: Southern II
March 15, 2012 Location: Dolphin Resort
Session Chairs: Xiangxin Xue, Northeastern University; Zhiwei Peng, Michigan Technological University

8:30 AM An Integrated Strategy for Whole Ecological Utilization of Typical Industrial Solid Wastes in China: Xiangxin Xue1; He Yang1; Tao Jiang2; Yong Li3; ‘Northeastern University

8:45 AM Chlorination Behaviors of Copper Phases by Calcium Chloride in High Temperature Oxidizing-Chloridizing Roasting: De Qing Zhu1; Dong Chen1; Jian Pan2; Tie Jun Chuan3; Guo Lin Zheng1; Xian Lin Zhou1; ‘Central South University

9:00 AM Decomposition of Zinc Ferrite in Zinc Leaching Residue by Reduction Roasting with Carbon: Mi Li1; Bing Peng1; Liyuan Chai1; Jiming Wang1; Ning Peng1; ‘Central South University

9:15 AM Effect of Iron Containing Metallurgical Byproducts on Pulverized Coal Combustion Efficiency: Zou Chong1; Wen Liangying2; Zhang Shengfu3; Bai Chenguang4; Tan Xiuqin5; ‘Chongqing University

9:30 AM Effect of SiO2 Addition on Production of Fe-Si-Mn Alloy from Adjusted Converter Slag: Caihuang Huang1; Min Chen2; ‘Northeastern University

9:45 AM Experimental Research on Recovery of Heavy Metals from EAF Stainless Steel Dust: Canguo Wang1; Fei Jin1; Guodong Sun1; Mei Zhang1; Min Guo1; ‘University of Science and Technology Beijing
10:00 AM
Research on the Control Model of Vanadium Recovery by BOF Process Based on Neural Network: Qingyun Huang; Bing Xie; Yugang Li; Chongyang Zhao; ‘Chongqing University

10:15 AM Break

10:25 AM
Solidification of EAF Stainless Steel Dust: Bing Peng; Ji Peng; Liyuan Chai; Di Yu; ‘Central South University

10:40 AM
Study on Cementing Material Making with Electrolytic Manganese Residue: Wang Jia; Peng Bing; Chai Li-Yuan; Zhang Qiang; Liu Qin; ‘Central South University

10:55 AM
Utilization of BF Ash and BOF Sludge to Produce Burden of Blast Furnace: Xiulan Deng; Tiejun Chun; Jian Pan; ‘Central South University

11:10 AM
Study on the Desulfuration of Pyrite Cinder Pellets: Zhiyong Ruan; Deqing Zhu; Tiejun Chun; Jian Pan; Zhao Qiang; ‘Central South University

Aluminum Reduction Technology: Equipment
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Thursday AM Room: Europe 1
March 15, 2012 Location: Dolphin Resort

Session Chair: René von Kaenel, KAN-NAK SA

8:30 AM
Integrated Desalination and Primary Aluminium Production: Anders Sorhus; Geir Wedde; Dario Breschi; Guillaume Girault; Nolwenn Favel; ‘Alstom; ‘Rio Tinto Alcan

8:50 AM
Busbar Displacement Study of Aluminum Reduction Cell: Xiquan Qi; ‘Northeastern University Engineering and Research Institute, Co., Ltd

9:10 AM
Impact of Amperage Creep on Potroom Busbars: Thermal-Mechanical Aspects: Andre Felipe Schneider; Daniel Richard; olivier charrette; ‘HATCH Ltd.

9:30 AM
Effective Insulation Control Monitoring System: The CANDI™ Solution for a Safer Production: Anne-Gaëlle Hequet; Serge Despinasse; ‘ECL

9:50 AM Break

10:10 AM
Potline Open Circuit Protection: Laurent Troubat; Roland Mathevon; Pierre Marcellin; Didier Lamant; Michel Jacot; Dominique Duval; Andy Johnston; ‘Rio Tinto Alcan

10:30 AM
Maximize Efficiency and Safety of Smelters through Advanced Multipurpose Simulator Solution: Anne-Gaëlle Hequet; Denis Chapdelaine; ‘ECL

10:50 AM
Challenges in Using Discrete Logistics as a Management Decision Tool for Aluminium Production: Maarten Meijer; Rienk Bijlsma; Martijn Riesenkamp; ‘Hencon; ‘Systems Navigator

Aluminum Reduction Technology: Modelling I
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Thursday AM Room: Southern III
March 15, 2012 Location: Dolphin Resort

Session Chair: Donald Ziegler, Alcoa Canada Primary Metals

8:30 AM
Current Distribution and Lorentz Field Modelling Using Cathode Designs: A Parametric Approach: Subrat Das; ‘Deakin University

8:50 AM
Electromagnetic and MHD Study to Improve Cell Performance of an End-to-End 86 kA Potline: Amit Gupta; Manoj Chulliparambil; Sankar Namboothiri; Satheesh Mani; Biswajit Basu; Jinil Janardhanan; ‘Aditya Birla Science & Technology Company Ltd.; ‘Hindalco Industries Ltd.

9:10 AM
Study on the Influences of Potline Status on the Magnetic Fields of Aluminum Reduction Cells: Xiuan Qi; ‘Northeastern University Engineering and Research Institute, Co., Ltd

9:30 AM
Modeling of Interface Wave of Electrolyte/Aluminum Melt in Aluminum Reduction Cell with Novel Cathode Structure: Xiyan Li; Fang Wang; Xiaobo Zhang; Naixiang Feng; ‘Northeastern University

9:50 AM Break

10:10 AM
The Use of Vortex Method in the Analysis of Multiphase Flow in Aluminum Reduction Cells: Zhang Hehui; Zhang Hongliang; Li Jie; Xu Yujie; Yang Shuai; Lai Yanqing; ‘School of Metallurgical Science and Engineering, Central South University

10:30 AM
Anodic Bubble Behavior in Hall-Héroult Cells: Kristian Etienne Einarsrud; Stein Tore Johansen; Ingo Eick; ‘Norwegian University of Science and Technology; ‘SINTEF Materials and Chemistry; ‘Hydro Aluminium Deutschland GmbH

10:50 AM
Numerical Investigation of Bubble Dynamics in Aluminium Electrolytic Cells: Kaiyu Zhang; Yuqing Feng; Phil Schwarz; Mark Cooksey; Zhaowen Wang; ‘Northeastern University & CSIRO; ‘CSIRO; ‘Northeastern University
Battery Recycling: Session I
Program Organizers: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory.

Thursday AM Room: Europe 4
March 15, 2012 Location: Dolphin Resort

Session Chairs: Gregory Krumdick, Argonne National Laboratory; John Sullivan, Argonne National Laboratory.

8:30 AM Introductory Comments

8:35 AM
Economic and Environmental Trade-Offs for Li-Based Battery Recycling:
Gabrielle Gaustad1; Matthew Ganter1; Xue Wang1; Chelsea Bailey1; Callie Babbitt1; Brian Landi1; 1Rochester Institute of Technology

9:00 AM
Impacts of the Manufacturing and Recycling Stages on Battery Life Cycles:
John Sullivan1; Jennifer Dunn1; Michael Barnes1; Linda Gaines1; 1Argonne National Laboratory

9:25 AM
Battery Recycling by Hydrometallurgy: Evaluation of Simultaneous Treatment of Several Cell Systems:
Carlos Nogueira1; Fernanda Margarido2; 1LNEG; 2IST - Instituto Superior Técnico (TULisbon)

9:50 AM
Hydrometallurgical Process for Manufacturing of Cathode Active Materials from Spent Lithium Ion Battery Packs in Used Hybrid Electric Vehicles:
Soo-Kyung Kim1; Jeongsoo Sohn1; Kang-In Rhee1; 1Korea Institute of Geoscience and Mineral Resources

10:15 AM Break

10:25 AM
Recycling Yearly Up to 7,000 Tons of Rechargeable Batteries:
Mark Caffarey1; 1Umicore USA

10:50 AM
The Use of Liquid–Liquid Extraction and Electroplating to Metals Recovery from Spent Batteries:
Kellie Provazi1; Denise Espinosa1; Jorge Tenório1; 1University of São Paulo

11:15 AM
Distribution Logistics and Proper Disposal of Batteries for Downhole Oilfield Operations:
Amit Mohan1; Indranil Roy1; David Wang1; Ryan Davies1; Jack Broker1; 1Schlumberger

11:40 AM Concluding Comments

Biological Materials Science Symposium: Bio-Inspired Materials: Implants and Devices
Program Organizers: Nima Rahbar, University of Massachusetts Dartmouth; James Guest, John Hopkins University.

Thursday AM Room: Swan 7
March 15, 2012 Location: Swan Resort

Session Chairs: Nima Rahbar, University of Massachusetts Dartmouth; James Guest, John Hopkins University.

8:30 AM Keynote
Structural Testing at the Micro and Nano Scales: Breaking Invisible Specimens with Zero Force:
Roberto Ballarini1; 1University of Minnesota

9:10 AM
Nanoengineering of Implant Surfaces for Enhanced Biointegration:
Fereydoon Namavar1; Renat Sabirianov2; Alexander Rubinstein3; Geoffrey Thiele1; Laura Koepsell1; John Sharp1; Roxanna Namavar1; Hani Haider1; Kevin Garvin1; 1University of Nebraska Medical Center; 2University of Nebraska - Omaha

9:30 AM
New In Vitro and In Vivo Approaches in Evaluating Bioabsorbable Metal Candidates for Stents:
Jeremy Goldman1; Patrick Bowen1; Jesse Gelbaugh1; Jessica Rhadigan2; Jon Criss1; Heath Getty2; Jaroslav Drelich3; 1University of Nebraska Medical Center; 2University of Nebraska - Omaha; 3Michigan Technological University; 4Boston Scientific Corporation

9:50 AM
Investigation of Structure-Mechanical Property Relationship of Porous Titanium and Titanium Alloys:
Ziya Esen1; Sakir Bor2; 1McGill University; 2Middle East Technical University

10:10 AM Break

10:15 AM Invited Design of Biomaterials – Achieving Targeted Properties and Manufacturability with Topology Optimization:
James Guest1; 1Johns Hopkins University

10:40 AM
Investigation of Sr and Ca Containing Mg Alloys for Biodegradable Implant Applications:
Harpreet Brar1; Ida Berglund1; Benjamin Keselowsky1; Malisa Sarntinoranont1; Michele Manuel1; 1University of Florida

11:00 AM
The Effect of Sr and Ca on Corrosion Behavior of Magnesium as Biodegradable Implant:
Mandana Bornapour1; 1McGill University

11:15 AM
Chemotherapy-Induced Surface Degradation and Thrombogenicity of Intravascular Catheters: A Preliminary In-Vitro Study with Focus on Breast Cancer:
Minoo Arzpeima1; Annika Rosén1; Emma Strömberg1; Javier Sanchez2; Gunilla Björling1; Sigbritt Karlsson1; Ragnhild. E Aune3; Samuel Rotstein1; 1Royal Institute of Technology; 2Karolinska Institute; 3Norwegian University of Science and Technology (NTNU)
11:30 AM
LASER Powder Deposition of Titanium - Tantalum Alloys Surfaces for Use in Biomedical and Corrosion Resistant Applications: Jacob Fuerst
1; Michael Carter
2; Dana Medlin
3; James Sears
4; ‘South Dakota School of Mines and Technology

11:45 AM
In Vivo Osseointegration of Nano-Designed Composite Coatings on Titanium Implants: Sybille Faccia
1; Debrupa Lahiri
2; Florence Fioretti
3; Nadia Messadegq
4; Didier Maimard
5; Nadia Benkirane-Jesel
6; Arvind Agarwal
7; ‘FIU
8; ‘FIU
9; ‘INSERM U977
10; ‘GBMC
11; ‘CNRS UMR 7561

Bulk Metallic Glasses IX: Mechanical and Other Properties
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Thursday AM
Room: Swan 6
Location: Swan Resort

Session Chairs: Paul Voyles, University of Wisconsin, Madison; Jian Xu, Institute of Metal Research, Chinese Academy of Sciences

8:30 AM Invited
Structure and Relaxation of Zr-Cu-Al Bulk Metallic Glass from Hybrid Reverse Monte Carlo Modeling of Fluctuation Electron Microscopy Data: Paul Voyles
1; Jinwoo Hwang
2; Zenon Melgarejo
3; Don Stone
4; Ilkay Kalay
5; Matt Kramer
6; ‘University of Wisconsin, Madison
7; ‘Iowa State University

8:50 AM
Evaluation of Microstructure and Mechanical Behavior of Cu Based Bulk Metallic Glass-Carbon Nanotube Composites: Jonathan Nguyen
1; Troy Topping
2; Hideki Kato
3; Yizhang Zhou
4; Enrique Lavernia
5; ‘University of California, Davis
6; ‘Tohoku University

9:00 AM Invited
Oxidation Resistance of Zr- and Ti- Based Bulk Metallic Glasses in the Supercooled Liquid Region: Ka Ram Lim
1; Sung Hyun Park
2; Min Young Na
3; Se Yun Kim
4; Sang Soo Lee
5; Eun-Sung Lee
6; Won Tae Kim
7; Do Hyang Kim
8; ‘Yonsei University
9; ‘Samsung Advanced Institute of Technology
10; ‘Cheongju University

9:20 AM
Study of Plastic Deformation in Structural Modified Zr-Cu-Al Metallic Glasses by Broadband Nanoindentation Creep: Zenon Melgarejo
1; Jinwoo Hwang
2; Chuan Zhang
3; Joseph Jakes
4; Eren Kalay
5; Matt Kramer
6; Paul Voyles
7; Donald Stone
8; ‘University of Wisconsin-Madison
9; ‘Performance Enhanced Biopolymers, United States Forest Service, Forest Products Laboratory
10; ‘Iowa State University

9:30 AM Invited
Potential Energy Landscape of Glasses: Distributions of Activation Energies, Volumes and Attempt Frequencies: David Rodney
1; Pawel Koziatek
2; Peter Derlet
3; Jean-Louis Barrat
4; ‘INP Grenoble
5; ‘Paul Scherrer Institut
6; ‘Université Joseph Fourier

9:50 AM Break

10:05 AM Invited
Weibull Analysis of Fracture Strength for Zr$_{55}$ Ti$_{2}$ Co$_{28}$ Al$_{15}$ Bulk Metallic Glass: Tension-Compression Asymmetry and Porosity Effect: Jian Xu
1; Hui-li Gao
2; Yong Shen
3; ‘Institute of Metal Research, Chinese Academy of Sciences

10:25 AM
Quantitative Microstructural Characterization of Metallic Glass/Crystalline Composites: Nicholas Hutchinson
1; Katharine Flores
2; ‘The Ohio State University

10:35 AM Invited
Micromechanisms of a Dendrite/Zr-Based Bulk-Metallic-Glass Composite Subjected to Plastic Deformation: E-Wen Huang
1; Janwei Qiao
2; Bartlomiej Winiarz
3; Richard Moat
4; Andrew Chuang
5; Mario Scheel
6; Marco Michel
7; Philip Withers
8; Yu-Lih Huang
9; Yong Zhang
10; Peter Liaw
11; ‘National Central University, Taiwan
12; ‘Taiyuan University of Technology, Taiyuan, China
13; ‘University of Tennessee
14; ‘European Synchrontron Radiation Facility Beamline ID15
15; ‘University of Science and Technology Beijing

10:55 AM
Load Relaxation Behavior Of Fe-Based Metallic Glass Supercooled Liquid: Rui Yamada
1; Norihar Yodoshi
2; Akira Kawasaki
3; ‘Tohoku University

11:05 AM Invited
Tensile Micromecanism Crossover for Bulk-Metallic-Glass-Matrix Composites: From Working Hardening to Softening: Junwei Qiao
1; A.C. Sun
2; E.W. Huang
3; Y. Zhang
4; P.K. Liaw
5; C.P. Chuang
6; ‘Taiyuan University of Technology
7; ‘Yuan Ze University
8; ‘National Central University
9; ‘University of Science and Technology Beijing
10; ‘The University of Tennessee

11:25 AM
Evaluations of Physical and Optical Properties of Metallic Glass Patterns Formed in Micro/Nano Scales: Y. C. Chen
1; S. Song
2; T.R. Tsai
3; J. S. C. Jang
4; Y. M. Chen
5; S. E. Lee
6; Jinn P. Chu
7; ‘National Taiwan University of Science and Technology
8; ‘National Taiwan Ocean University
9; ‘National Central University

Bulk Metallic Glasses IX: Structures and Other Properties
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Thursday AM
Room: Swan 1
Location: Swan Resort

Session Chairs: Jörg Löffler, ETH Zurich; Maria Baró, Universitat Autònoma de Barcelona

8:30 AM Invited
Effect of Structure on the Devitrification Pathways in Al-Tb System: Matthew Kramer
1; Paul Voyles
2; Hwang Jinwoo
3; Ryan Ott
4; Matt Besser
5; Ying Zhang
6; YaQiao Wu
7; ‘Iowa State University
8; ‘Middle East Technical University
9; ‘University of Wisconsin, Madison
10; ‘Ames Laboratory

8:50 AM
Thermomechanical Joining of Bulk Metallic Glass Composites: Scott Roberts
1; Douglas Hofmann
2; William Johnson
3; ‘California Institute of Technology
4; ‘NASA - JPL

9:00 AM Invited
Dynamics of Shear Banding in Bulk Metallic Glasses: Jörg Löffler
1; David Klaumünzer
2; Robert Maass
3; ‘ETH Zurich
9:20 AM
Thermodynamics of Isolated Bi-Atomic Clusters: Garth Wilks1; Jose Reveles2; Daniel Miracle1; Shiv Khanna2; 1Air Force Research Laboratory; 2Virginia Commonwealth University

9:30 AM Invited
Primary Transformation Kinetics and Mechanical Properties of Zr-Al-Ni-Cu-Based Metallic Glass in Various Relaxation States: Junji Saida1; Albertus Setyawan2; 1Tohoku University

9:50 AM
Ion Irradiation Induced Nanocrystallization of Metallic Glasses: Lin Shao1; 1Texas A&M University

10:00 AM Break

10:15 AM Invited
Pressure-Induced Phase Transitions in Metallic Glasses: Jianzhong Jiang1; 1University of Tennessee

10:35 AM
Crystallization Kinetics of Ca-Based Bulk Metallic Glasses: Lei Hu1; Feng Ye1; 1University of Science and Technology Beijing

10:45 AM Invited
Effects of Alloying On the Glass Forming Ability and Mechanical Properties of Ti-Based Bulk Metallic Glasses: Ke-Fu Yao1; Pan Gong2; 1Tsinghua University

11:05 AM
Study on Fracture Strength Reliability of Mg-Zn-Ca Bulk Metallic Glasses: Junhua You1; 1Shenyang University of Technology

11:15 AM Invited
Tensile Fracture Criterion of Metallic Glasses: Zhefeng Zhang1; R. T. Qu1; 1Institute of Metal Research

11:35 AM
The Deformation Modes and Universal Scaling Properties in Metallic Glasses: Pengyang Zhao1; Ju Li1; Yanzhi Wang1; 1The Ohio State University; 2Massachusetts Institute of Technology

11:45 AM Invited
Evolution of the Mechanical, Magnetic and Anti-Corrosion Behavior of Fe-Co-B-Si-Nb Bulk Metallic Glass during Thermally-Induced Devitrification: Jordina Fornell1; Sergio González2; Emma Rossinyol2; Eva Pellicer2; Santiago Suriñach1; Dimitri Louzguine1; Akihisa Inoue1; Santiago Suriñach1; Dimitri Louzguine1; Akihisa Inoue1; Jordi Sort1; Josep Nogués1; Maria D Baró1; 1Universitat Autònoma de Barcelona

12:05 PM
Fabrication and Mechanical Properties of Melt-Extracted Fe-Based Amorphous Wires: Weibing Liao1; Yong Zhang1; 1University of Science and Technology Beijing

CFD Modeling and Simulation in Materials Processing: Modeling of Steelmaking Processes
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; Brian Thomas, University of Illinois at Urbana-Champaign; Adrian Sabau, Oak Ridge National Lab; Nagy El-Kaddah, The University of Alabama; Adam Powell, Metal Oxygen Separation Technologies, Inc.; Hervé Combeau, Institut Jean Lamour

Thursday AM  Room: Oceanic 6
March 15, 2012  Location: Dolphin Resort

Session Chairs: Brian Thomas, University of Illinois at Urbana-Champaign; Kouls Pericleous, University of Greenwich

8:30 AM Keynote
Transport and Entrapment of Particles in Steel Continuous Casting: Brian Thomas1; Quan Yuan1; Rui Liu1; Sana Mahmood1; Rajneesh Chaudhary2; 1University of Illinois at Urbana-Champaign; 2Dow Chemical Company

9:00 AM Invited
Mathematical Modeling of a Compressible Oxygen Jet Interacting with a Free Surface in a Basic Oxygen Furnace for Steel Production: Kouls Pericleous1; Bruno Lebon1; Georgi Djambazov2; Mayur Patel2; 1University of Greenwich; 2University of Greenwich

9:25 AM
CFD Model for Prediction of Liquid Steel Temperature in Ladle during Steel Making and Casting: Anurag Tripathi1; J.K. Saha1; J.B. Singh1; S.K. Ajmani1; 1IIT Roorkee

10:05 AM Break

10:25 AM
Fluid Flow and Inclusion Removal in Multi-Strand Tundish with Nozzle Blockage: Pradeep Jha1; Sabin Mishra1; Satish Sharma1; Satish Ajmani1; Mansa Mahapatra1; IIIT Roorkee; 2Tata Steel

10:45 AM
CFD Modeling of Fluid Flow Behavior and Bath Surface Deformation in LD Converter: Tarun Kundu1; 1IIIT Kharagpur

11:05 AM
Effect of Thermal Buoyancy Force on the Flow, Temperature Distribution and Residence Time Distribution of Molten Steel in the Slab Casting Tundish: Haibo Sun1; Bo Yan1; Iqra Khan Zhang1; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

11:25 AM
Time Zone Analysis of F-Curve for Intermixing during Ladle Change-Over: Pradeep Jha1; Suman Kant1; Pradeep Kumar1; Anand Kumar1; IIIT Roorkee

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio De Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Firaoo, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mineral Resources; Mingdong Cai, Schlumberger

Thursday AM  Room: Asia 2
March 15, 2012  Location: Dolphin Resort

Session Chairs: Shadia Ikhnayes, Al Isra University; Jinhui Peng, Kunming University of Science and Technology

8:30 AM
Thermal Properties of Polyester Composites Incorporated with Coir Fiber: Helvio Santafé Júnior1; Noan Simonassi1; Sérgio Monteiro1; 1Universidade Estadual do Norte Fluminense-Darcy Ribeiro

8:45 AM
High Temperature Plastic Crystal Structure Characterization Studies of Orientationally-Ordered/disordered Organic Compounds - Pentaglycerine and 2-Amino-2-methyl-1,3-propanediol Binary System: Wen-Ming Chien1; Ivan Gantan1; Amrita Mishra1; Dhanesh Chandra1; 1University of Nevada, Reno

9:00 AM
Investigating the Rheology of LCPs through Different Die Geometries: Arash Ahmadzadegan1; Michael Zimmermann1; Anil Saiag1; 1Tufts University

9:15 AM
Characterization of Graphite from PAN Aerogels: Shruti Mahadik1; Clarissa Wisner1; Anand Sadekar1; Abhishek Bang1; Massimo Bertino1; Charkia Sotiriou-Leventis1; Nicholas Leventis1; 1MS&T; 2Virginia Commonwealth University

9:30 AM
Effect of the Fiber Equivalent Diameter on the Elastic Modulus and Density of Sisal Fibers: Artur Camposo Pereira1; Sergio Monteiro1; Wellington Inácio1; 1Universidade Estadual do Norte Fluminense

9:45 AM
Tensile Fracture Analysis of Polymer Matrix Composites: Jeongguk Kim1; Sung-Cheol Yoon1; Jung-Seok Kim1; Hyuk-Jin Yoon1; Sung-Tae Kwon1; 1Korea Railroad Research Institute

10:00 AM
Correlation between the Density and the Diameter of Buriti Fibers: Anderson Barbosa1; Michel Oliveira1; Alex Almeida1; Núbia Santos1; Frederico Margem1; Sergio Monteiro1; 1State University of the Northern Rio de Janeiro, UENF; 2State University of Pará

10:15 AM
Thermal and Morphological Behavior of EVOH/Piassava Fiber Composites: Beatriz Nogueira1; Anne Cinellato1; Ángel Ortiz1; Arifa Parveen1; Vijaya Rangari1; Esperidiana Moura1; 1Instituto de Pesquisas Energéticas e Nucleares - Ipen-Cnen/Sp; 2Universidade Federal do ABC - UFABC; 3Tuksgeev University

10:30 AM
Characterization of Thermal Behavior of Epoxy Composites Reinforced with Banana Fibers by TGA/DTG and DSC: Nathalia Rosa1; Lucas Martins1; Sergio Monteiro1; Ruben Rodriguez1; Tereza Castillo1; 1UENF

10:45 AM
Comparative Studies OF Crushing Behavior of Various Fiber Reinforced Skin Polyurethane Foam Cored Composite Sandwich Structures: Krishna Sharma1; Sripathy Malliaiah1; 1Bangalore University

11:00 AM
Elastic Modulus Variation with Diameter for Ramie Fibers: Alice Bevitori1; Isabela da Silva1; Renan Carreiro1; Sergio Monteiro1; 1UENF

11:15 AM
Comparative Study of the Sugarcane Bagasse Fiber/HDPE Composite Properties Using Electron-Beam and Gamma Radiation Treatments: Amanda Pereira1; Alejandra Soria1; Anibal Abreu1; Anne Chinellato1; Nélida del Mastro1; Esperidiana Moura1; 1INSTITUTO DE PESQUISAS ENERGÉTICAS E NUCLEARES - IPEN-CNEN/SP; 2Laboratório Tecnológico do Uruguai; 3Universidade Federal do ABC - UFABC; 4INSTITUTO DE PESQUISAS ENERGÉTICAS E NUCLEARES - IPEN-CNEN/SP

11:30 AM
Effect of Diameter on the Density and Tensile Elastic Modulus of Curaua Fibers: Felipe Lopes1; Renan Carreiro1; Noan Simonassi1; Ailton Ferreira1; Sergio Monteiro1; 1IME; 2UENF; 3UFF


Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio De Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Firaoo, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mineral Resources; Mingdong Cai, Schlumberger

Thursday AM  Room: Europe 6
March 15, 2012  Location: Dolphin Resort

Session Chairs: Xuewei Lv, Chongqing University; Gulhayat SAYGILI, Istanbul Technical University

8:30 AM
Influence of Deformation on the Properties of carbon-Fiber Reinforced 2024 Alloy Matrix Composites: Wu Linli1; 1Northeastern University

8:45 AM
Microstructure and Deformation Behavior of Mg-Al-Zn-Re Magnesium Alloy: Jing Zhang1; Fusheng Pan1; Chenguang Bai1; 1Chongqing university

9:00 AM
Microstructures and Properties of Solid and Open-Cellular TiAl Fabricated by Electron Beam Melting (EBM): J. Hernandez1; L. E. Murr1; S. M. Gaytan1; S. J. Li1; X. Y. Cheng1; Y. X. Tian1; F. Medina1; R. B. Wicker1; 1University of Texas at El Paso; 2Shenyang National Laboratory for Materials Science
9:15 AM
Microstructures and Tensile Mechanical Properties of Mg-9Zn-0.6Zr-2Er Magnesium Alloy Processed by Hot Rolling and Heat Treatment: Jing Zhang1; Boxiang Zhang1; 2Chongqing University

9:30 AM
Nanobond - The Perfect Refractory Choice for Quick Lining and Repairing of Aluminium Melting Furnaces: Thomas Schemmel1; Helge Jansen1; Bertram Kesselheim1; Uwe Kremer1; 2Refratechnik Steel GmbH; 2TRIMET Aluminium GmbH

9:45 AM Break

9:55 AM
Study on Graphitization of Cathode Carbon Blocks for Aluminium Electrolysis: Gao Feng1; FengNai Xiang1; Yang Jian Zhaung1; Niu Qing Ren1; He Hua1; Han Li Guo2; 1Northeastern University; 2Northeastern University; ‘Qingtongxia Aluminum Limited Corporation, Qingtongxia

10:10 AM
Wear Resistance of Graphite /Aluminum Compound Material that Prepared by Stirring Casting: Wu Linti1; Yao Guangchun1; 1Northeastern University

10:25 AM
Characterization of Grit Blasted Metallic Biomaterials by Thermoelectric Power Measurements: Hector Carreon1; Sandra Barruso2; Jose Luis Gonzalez-Carrasco2; Francisca Garcia-Caballero2; Marcela Lieblitch2; 1UMSNH; 2Centro Nacional de Investigaciones Metalúrgicas (CENIM-CSIC)

10:40 AM
Exploring Microstructure-Corrosion Property Correlations in 5000-Series Alloys Using Higher-Order Statistical Metrics: Daniel Satko1; Jonathan Kaufman1; Joshua Shaffer1; Roger Doherty1; Surya Kalindini1; 1Drexel University

10:55 AM
Modeling the Mechanical Response of Aluminum A359-SiCp-30%v: James DeMarco1; Justin Karl1; Yongho Sohn1; Ali Gordon1; 1UCF MMAE Dept.

11:05 AM Break

11:20 AM
Computational Thermodynamics and Kinetics: Interfaces
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech

Thursday AM
9:15 AM Invited
Grain Boundary Energy Function for FCC Metals: Vasily Bulatov1; 1LLNL

9:20 AM
Topological Evolution of Grains in 3D Monte Carlo Modeled Grain Growth: Burton Patterson; Robert DeHoff; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories

9:35 AM
Modeling the Asymptotic Grain Face Distribution in Terms of Tectological Event Rates: Robert DeHoff; Burton Patterson; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories

9:40 AM
Modeling the Asymptotic Grain Face Distribution in Terms of Tectological Event Rates: Robert DeHoff; Burton Patterson; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories

9:50 AM
Grain Boundary Energy Function for FCC Metals: Vasily Bulatov1; 1LLNL

10:05 AM
Break

10:35 AM Invited
Grain Boundary Migration and Growth: What I Do & Do Not Understand: David Srolovitz; 1Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore

11:00 AM Invited
The Mobility of Interfaces and Grain Boundaries from Molecular Dynamics Simulations: H. Song1; M. J. Rahman1; Jeffrey Hoyt1; 1McMaster University

11:25 AM
Lattice Monte Carlo Determination of Harrison Kinetics Regimes for Grain Boundary Diffusion In Materials with Inhomogeneous Grain Structures: Irina Belova1; Graeme Murch1; Thomas Fiedler1; 1The University of Newcastle

11:40 AM
Molecular Dynamics Study of Solid-Liquid Interface Migration in Ni-Zr Alloys: Mikhail Mendelev1; 1Ames Laboratory

Electrode Technology for Aluminium Production: Inert Anode and Wettable Cathode Materials
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Morten Sorlie, Alcoa Norway

Thursday AM
Room: Americas Seminar
March 15, 2012
Location: Dolphin Resort
Session Chair: Jilai Xue, University of Science and Technology Beijing

8:30 AM
Electrolysis Expansion Performance of Modified Pitch Based TiB2-C Composite Cathode in [K3AlF6/Na3AlF6]-AlF3-Al2O3 Melts: Fanchao Zhao1; Xu Jian2; Hou Jin-Long2; Li Lin-Bo2; Zhu Jun1; 1School of Metallurgical Engineering, Xi’an University of Architecture and Technology; 2School of Metallurgical Science and Engineering, Central South University

8:55 AM
Pulse Electrodeposition of TiB2 onto Graphite from TiO2-B2O3-KF- LiF Melts: Bing Li1; Lushan Jiang1; Heng Wang1; 1East China University of Science and Technology

8:55 AM Invited
Grain Boundary Energy Function for FCC Metals: Vasily Bulatov1; 1LLNL

8:00 AM
9:15 AM Invited
Grain Boundary Energy Function for FCC Metals: Vasily Bulatov1; 1LLNL

9:20 AM
Topological Evolution of Grains in 3D Monte Carlo Modeled Grain Growth: Burton Patterson; Robert DeHoff; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories

9:35 AM
Modeling the Asymptotic Grain Face Distribution in Terms of Tectological Event Rates: Robert DeHoff; Burton Patterson; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories

9:40 AM
Modeling the Asymptotic Grain Face Distribution in Terms of Tectological Event Rates: Robert DeHoff; Burton Patterson; Veena Tikare; David Rule; Amy Adams; 1University of Florida; 2Sandia National Laboratories
9:20 AM
Ball-Milled Cu-Ni-Fe-X Materials as Inert Anodes for Al Production in KF-AIF3 Low-Temperature Electrolyte: Sébastien Hélite1; Valery Ouvarov-Bancalero1; Boyd Davis2; Daniel Guay1; Lionel Roué1; 1INRS-Énergie, Matériaux et Télécommunication; 2Kingston Process Metallurgy Inc

9:45 AM Break

10:00 AM
Effect of Nanopowder Content on Properties of NiFe2O4 Matrix Inert Anode for Aluminum Electrolysis: Zhigang Zhang1; Yihan Liu2; Guangchun Yao1; Di Wu1; Jianfei Ma1; 'Northeastern University

10:25 AM
Effect of MnO2 Addition on Early-Stage Sintering Behavior and Properties of NiFe2O4 Ceramics: Jinjing Du1; Yihan Liu1; Guangchun Yao1; Xiuli Long1; Xiao Zhang1; 'Northeastern University

10:50 AM
Study on the Inert Anode for Al Electrolysis Based on the NiFe2O4 Spinel Ceramics: Yihan Liu1; Ming Zhao1; Jing Li1; 'Northeastern University

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**Energy Nanomaterials: Fuel Cells, Hydrogen Storage, Ferroelectrics, Wind Energy**

*Sponsored by The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nanomechanical Materials Behavior Committee*

Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

Thursday AM  Room: Swan 3
March 15, 2012  Location: Swan Resort

Session Chairs: Hamid Garmanesti, Georgia Institute of Technology; Reza Shahbazian Yassar, Michigan Technological University

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8:30 AM Invited
Multi-Physics Functional Design of HeteroFoaM Nanomaterials for Energy Systems: Ken Reifsnider1; Fazle Rabbi1; Rassel Raihan1; 1University of South Carolina

8:55 AM
Electrochemical Properties of Hydride Reduced LaSrCoO1.98 as IT-SOFC Cathode Material Based on Ba(Zr0.98Ce0.02)O3 Electrolyte: Bo Peng1; Gang Chen1; Tao Wang1; Jun Zhou1; Jiaojiao Guo1; Yonghong Cheng1; Kai Wu1; Xi’an Jiaotong University

9:10 AM
Crystallization and Electrochemical Performance of LSCF-CGO Thin Film Cathodes Processed by Single Solution Spray Pyrolysis: Elliott Slamovich1; Bainye Angoua1; Patrick Cantwell1; Eric Stach1; 1Purdue University; 2Lehigh University; 3Brookhaven National Laboratory

9:25 AM Invited
Oxides as Energy Materials: Shriram Ramanathan1; 1Harvard Univ

9:45 AM Invited
A Quantitative Understanding of Interface Dynamics in Complex Oxides with In Situ TEM: Mitra Taheri1; 1Drexel University-Department of Materials Science & Engineering

10:05 AM Break

10:25 AM
Design of Light Weight Structure for Wind Turbine Tower by Using Nano-Materials: Ying Li1; Jian Lu1; 1City University of Hong Kong

10:40 AM
Improved Design of Metal-Organic Framework Family for Efficient Hydrogen Storage: Sang Soo Han1; William Goddard2; 1Korea Research Institute of Standards and Science; 2California Institute of Technology

10:55 AM
Magnesium-Based Hydrogen Storage Nanomaterials: Hongmin Kan1; Ning Zhang1; Xiao-Yang Wang1; Hong Sun1; 1Shenyang University

11:10 AM
TEM Guided Microstructural Design of MgH2 Powders and Thin Film Alloys with Room Temperature Volumetric Hydrogen Cycling Ability: David Motlin1; Peter Kalisvaart1; Mohsen Danaie1; Shu Tao2; Ben Zahiri3; Helmut Fritzsch4; 1University of Alberta and NINT NRC; 2Eindhoven University of Technology; 3SIMS-CNBC NRC

11:25 AM
Development of Novel Nanostructured Electrolytes for Low Temperature Solid Oxide Fuel Cells Applications: Hoda Amani Hamedani1; 1Georgia Institute of Technology

11:40 AM Invited
Development of Superhydrophobic Nano-structured Surfaces for High Efficiency Power Generation: Ghazal Azimi1; Kripa Varanasi2; 1MIT

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**Energy Technologies and Carbon Dioxide Management: Energy Technologies**

*Sponsored by The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee*

Program Organizers: Maria Salazar-Villalpando, DOE/National Energy Technology Laboratory; Neale Neelameggham, IND LLC*; Donna Guillen, Idaho National Laboratory; Subodh Das, Phinix, LLC; Ramana Reddy, Univ of Alabama; Animesh Jha, Univ of Leeds; Soobhankar “Sib” Pati, Metal Oxygen Separation Technologies (MOxST); Mark Jolly, Univ of Birmingham; Lakshmanan Vaikuntam, Process Research ORTECH Inc

Thursday AM  Room: Europe 8
March 15, 2012  Location: Dolphin Resort

Session Chairs: Mahesh Jha, US Dept of Energy; Maria Salazar-Villalpando, DOE/NETL; Animesh Jha, University of Leeds; Soobhankar Pati, Metal Oxygen Separation Technologies

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8:30 AM Introductory Comments

8:35 AM
Energy Opportunities in the Aluminum Processing Industry: Cynthia Belt1; 1Consultant

8:55 AM
An Overview of Energy Consumption and Waste Generation in the Recovery of Cobalt from Copper Sulphide Smelting and Converting Slag and the Proposed Solution: Animesh Jha1; Yotama Harad2; 1University of Leeds

9:15 AM
High Thermal Energy Storage Density LiNO3-NaNO3-KNO3 Quaternary Molten Salts for Parabolic Trough Solar Power Generation: Tao Wang1; Divakar Mantha1; Ramana Reddy1; 1The University of Alabama
9:30 AM
Global Primary Aluminium Industry 2010 Life Cycle Inventory: Chris Bayliss1; Marlen Bertram1; Kurt Buxmann1; Bernard de Gelas1; Samantha Jones1; Linlin Wu1; 1International Aluminium Institute

9:45 AM Break

9:55 AM
Analysis of Combustion Efficiency Using Laser-Induced Fluorescence Measurements of OH-Radicals: Matthias Schnitzler1; Ralf Bölling2; Herbert Pfieffer1; 1IOB RWTH Aachen

10:10 AM
A Solid State Thermoelectric Power Generator Prototype Designed to Recover Radiant Waste Heat: Marit Takla1; Odne Burheim1; Leiv Kolbeinsen1; Signe Kjelstrup1; 1Norwegian University of Science and Technology

10:25 AM
Study on Smelting Reduction of Coal-Containing Pellets of V-Ti Bearing Beach Placers by Combined Rotary Hearth Furnace and Direct Current Arc Furnace: Huimin Lu1; Jingbo Xu1; Qiang Li1; 1Beihang University

10:55 AM
The Relationship between Energy Consumption and CO2 Emissions in Iron and Steel Making: Hao Bai1; Xin Lu1; Hongxu Li1; Lihua Zhao1; Xueting Liu1; Ning Li1; Wei Wei1; Daqiang Cang1; 1University of Science and Technology Beijing

11:10 AM
Development and Application of Shaft Kiln in China: Zhen Guo Li1; Dong Li2; Guang Zhen He3; 1Shanghai Cadre Environment Energy Science and Technology Co., Ltd; 2Shanghai Cadre Environment Energy Science and Technology Co., Ltd; 3Shenyang He Carbon Furnace Design Institute

11:25 AM
Preparation of Biodiesel by Transesterification of Canola Oil Using Solid Base Catalyst KOH / H2Al2O3: Seyed Mojtaba Sadrameli1; Mohamed Omraei1; 1TMU

From Macro to Nano, Understanding Mechanical Behavior across Length Scales: A Structural Materials Division Symposium in Honor of Robert Ritchie: Mechanical Behavior of Novel Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Biomaterials Committee

Program Organizers: Jamie Kruzic, Oregon State University; Brad Boyce, Sandia National Labs; Reinhold Dauskardt, Stanford University

Thursday AM  Room: Mockingbird 1
March 15, 2012  Location: Swan Resort

Session Chairs: Jamie Kruzic, Oregon State University; Mark Hoffman, The University of New South Wales

8:30 AM Introductory Comments

8:35 AM Keynote
Crack-Tip Process Zones in Piezoelectric Ceramics under Mechanical and Electrical Quasistatic and Fatigue Loading: Mark Hoffman1; 1The University of New South Wales

9:15 AM
In Situ Ultrahigh Temperature X-Ray Microtomography Facility for New Generation Structural Material: Hrishikesh Bale1; Abdel Haboub2; James Nasiatka3; Alastair MacDowell4; Brian Cox1; David Marshall5; Robert Ritchie1; 1University of California, Berkeley; 2Lawrence Berkeley National Lab.; 3Teledyne Scientific LLC

9:30 AM
Investigation of the Mechanical Properties of Ti2SC & Ti3SiC2 via In-Situ Neutron Diffraction and Elasto-Plastic Self-Consistent Modeling: Mohamed Shamma1; Volker Presser1; Bjorn Clausen2; Don Brown2; Michel Barsoumi1; 1Drexel University; 2Los Alamos National Laboratory

9:45 AM
Multi-Scale Energy Absorption Mechanisms in Micro-Architected Materials: Lorenzo Valdevit1; Alan Jacobsen2; Tobias Schaedler2; William Carter1; 1University of California, Irvine; 2HRL Laboratories

10:00 AM Break

10:15 AM
Effect of Grain Neighborhood on Pseudoelastic Performance of Polycrystalline Shape Memory Alloys: Harshad Paranjape1; Peter Anderson1; 1The Ohio State University

10:30 AM
Novel Characterization of the Martensitic Transformation Temperature of NiTi Shape Memory Alloys via Micro-Indentation: Bin Gan1; Sara Cantonwine1; Mathilde Gatepin1; Sammy Tin1; 1Illinois Institute of Technology

10:45 AM
Fatigue Life-Prediction of Nitinol under Multiaxial Loading: David Xu1; Robert Ritchie1; 1UC Berkeley
11:00 AM  
Adhesion of Nickel-Titanium Shape Memory Alloy Wires to Polymeric Materials: Theory and Experiment: Louis Hector Jr; Federico Antico; Pablo Zavattieriet; 1GM R&D Center; 1Purdue University

11:15 AM  
Toughening in Bio-Inspired Shape Memory Alloy Embedded Composites: Fatmata Barrie; Michele Manuel; 1University of Florida

11:30 AM  
The Effect of Morphology on the Mechanical Behavior of Cu(Ni)-C Nanocomposites: Alan Jankowski; Tanvir Ahmed; 1Texas Tech University

Magnesium Technology 2012: Advanced Processing and Joining
Sponsored by: The Minerals, Metals and Materials Society, TMS
Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium Office

Thursday AM  Room: Southern V  Location: Dolphin Resort
March 15, 2012

Session Chairs: Suveen Mathaudhu, U.S. Army Research Office; Brian Jordan, University of Alabama

8:30 AM  Microstructure and Creep Properties of MEZ Magnesium Alloy Processed by Thixocasting: Emma Deyanira Morales Garza; Hajo Dieringa; Norbert Hort; 1Helmholtz-Zentrum Geesthacht

8:50 AM  The Effect of Friction Stir Processing on Microstructure and Tensile Behavior of Thixo-molded AZ91 Magnesium Alloy: Bilal Mansoor; Raymond Decker; Sanjay Kulkarni; Steve LeBeau; Marwan Khrisheh; 1Masdar Institute of Science and Technology, Abu Dhabi, UAE; 1Thixomat Inc.

9:10 AM  Effect of Weld Structure on Fatigue Life of Friction Stir Spot Welding in Magnesium AZ31 Alloy: Harish Rao; J Jordan; 1The University of Alabama

9:30 AM  Effect of Corrosion on the Tensile Properties of Friction-Stir Welded AZ31B Sheet: Jennifer Thuss; Joseph Kish; Joseph McDermid; 1Centre for Automotive Materials and Corrosion, McMaster University

9:50 AM  High Speed Rolling of AZ31 and Mg-Zn-Ce Alloys: Mehdi Sanjari; Amir Farzadfar; In-Ho Jung; Steve Yue; Masahiro Hattori; T Sakai; Hiroshi Utsunomiya; Ehchachmi Essadique; McGill; McGill; Osaka University; 1CANMET

10:10 AM Break

10:30 AM  On the Effect of Ti,AIC on the Formation of Thermally Stable Mg Nano Grains: Babak Anasori; Michel Barsoum; 1Drexel University

10:50 AM  Experimental Investigations on the Deformation Behavior of Thixomolded Mg Sheet Alloy: Muammar Koc; Omer Cora; Ryan Snell; Ray Dekker; Jack Huang; 1Istanbul Sehir University; 1Karadeniz Tech Univ; 1VCU; 1Thixomat

11:10 AM  Effects of High Temperature Shot Peening on Surface Characteristics and Fatigue Properties of Forged AZ31 Magnesium Alloys: Ichihara Yuki; Masahumi Noda; Kunio Funami; 1Chiba Institute of Technology

11:30 AM  Solid Solution Hardening Effect of Aluminum on the Creep Deformation of AZ91 Magnesium Alloy: Farhoud Kabirian; Reza Mahmoudi; 1University of Maryland, Baltimore County; 1University of Tehran

Magnesium Technology 2012: Processing-Microstructure-Property Relationships I
Sponsored by: The Minerals, Metals and Materials Society, TMS
Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium Office

Thursday AM  Room: Southern IV  Location: Dolphin Resort
March 15, 2012

Session Chairs: Hidetoshi Somekawa, National Institute of Materials Science; Kyu Cho, U.S. Army Research Laboratory

8:30 AM  Microstructure Modeling of Magnesium Alloys for Engineering Property Prediction: Erin Barker; Dongsheng Li; Xin Sun; Mohammad Khaleel; 1Pacific Northwest National Lab

8:50 AM  Microstructure Modification and Deformation Behavior of Fine-Grained AZ61 Sheet Produced by Thixomolding and Thermomechanical Processing (TTMP): Tracy Berman; William Donlon; Victoria Miller; Jack Huang; Raymond Decker; Tresa Pollock; J. Wayne Jones; 1University of Michigan; 1University of California Santa Barbara; 1nanoMAG, LLC

9:10 AM  Development of High Strength and Toughness Magnesium Alloy by Grain Boundary Control: Hidetoshi Somekawa; Alok Singh; Tadanobu Inoue; Toshiji Mukai; 1National Institute for Materials Science; 1Kobe University

9:30 AM  Effects of Direct Extrusion Process on Microstructure, Texture Evolution and Yield Strength of Magnesium Alloy AZ31: Shiyoung Huang; Mei Li; John Allison; Shaorui Zhang; Dayong Li; Yinghong Peng; 1Ford Motor Company; 1University of Michigan; 1Shanghai Jiao Tong University

9:50 AM  Comparison of Tensile Properties and Crystallographic Texture of Three Magnesium Alloy Sheets: Junying Min; Ying Cao; Jon Carter; Ravi Verna; 1Tongji University; 1GM R&D
10:30 AM
Strain Hardening of ZK60 Magnesium Alloys: Jaehyun Cho¹; Suk Bong Kang¹; ¹Korea Institute of Materials Science

10:50 AM
Strain-Rate Effects of Sand-Cast and Die-Cast Magnesium Alloys under Compressive Loading: J.P. Weiner¹; J.T. Wood¹; ¹University of Western Ontario

11:10 AM
Mechanical Properties of Newly Developed Mg-Alloys AMX602 AND ZAXE1711 under Quasi-Static and Dynamic Loading: Jianghua Shen¹; Weihua Yin¹; Katsuyoshi Kondo¹; Tyrone L. Jones²; Suveen N. Mathaudhu³; Zhiliang Pan¹; Laszlo Kecskes³; Qiuming Wei¹; ¹UNC Charlotte; ³Osaka University; ¹US Army Research Laboratory; ³U.S. Army Research Office

11:30 AM
Phase Field Modeling of β Precipitation in WE54 Alloy: Yipeng Gao¹; Hong Liu¹; Ronggui Shi¹; Zhou Xu¹; Jianfeng Nie¹; Yunzhi Wang¹; ¹The Ohio State University; ¹Monash University

Magnetic Materials for Energy Applications II: Power Conversion and Microstructural Effects

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Raju Ramanujan, Nanyang Technological University; Francis Johnson, GE Global Research; S Guruswamy, Univ. of Utah; J Liu, Electron Energy Corporation

Thursday AM  Room: Europe 10
March 15, 2012  Location: Dolphin Resort

Session Chairs: Michael McHenry, Carnegie Mellon Univ.; Jun Ding, National University of Singapore

8:30 AM Invited
Nano-composite Alloy Design for High Frequency Power Conversion Applications: Shen Shen¹; Paul Ohodnicki¹; Samuel Kernion¹; Alex Leary¹; Vladimir Keylin²; Joseph Huth³; Michael McHenry¹; ¹Carnegie Mellon University; ²National Energy Technology Laboratory; ³Division of Spang & Company

9:00 AM Invited
Economic and Low-Temperature Fabrication of Highly-Textured Ferrite Films and Their Potential in Power-On-Chip Application: Y Yang¹; Jun Ding²; ¹Natl. Univ. of Singapore; ²National University of Singapore

9:30 AM
Magnetic Properties of Strontium Ferrite Prepared Using Submicron-Sized SrFe12-x AlxO19 Powders: Vladimir Menushenkov¹; Vladimir Shubakov²; Sergey Ketov²; ¹National University of Science and Technology «MISIS»; ²National University of Science and Technology «MISIS»

9:45 AM Break

10:00 AM
Effects of Magnetic Field on Microstructure Evolution in Decomposition Process: Yongmei Jia¹; Stephen Hackney³; ¹Michigan Technological University

10:15 AM
Electrical and Structural Characteristics of Ba2DyNbO6: Saharto Chijatterjee¹; Koushik Biswas¹; Mukul Pastor¹; ¹Ace Calderlys Ltd; ²Indian Institute of Technology, Karagpur, India

10:30 AM
Impact of Magnetic Fields on the Corrosion Degradation of Ferromagnetic Materials in Aqueous Electrolytes: Ralph Sueptitz¹; Kristina Tschulik¹; Margitta Uhlemann¹; Ludwig Schultz²; ²FW Dresden

10:45 AM
Influence of Magnetization on the Hydrogen Embrittlement Behavior in AISI 4340 Steel: Meenakshisundaram Ramanathan¹; Biswadeep Saha¹; Chai Ren¹; Sivaraman Guruswamy¹; Micheal McCarter¹; ¹University of Utah

11:00 AM
The Effect of Dynamic Electropulsing on Mechanical and Microstructural Properties of Cold Rolled Fe-6.5%Si Alloy Sheet: Yongfeng Liang¹; Feng Ye¹; Hongchan Zhou¹; Fuming Wang¹; Guoyi Tang¹; Junpin Liu¹; ¹University of Science and Technology Beijing; ²Tsinghua University

Materials and Fuels for the Current and Advanced Nuclear Reactors: Modeling II


Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Thursday AM  Room: Swan 4
March 15, 2012  Location: Swan Resort

Session Chairs: Patrice Turchi, Lawrence Livermore National Laboratory; Michael Tonks, Idaho National Laboratory

8:30 AM
Pressure Effects in Iron-Uranium Diffusion Couples: Daniel Koury¹; Gerald Egeland¹; Abu Iqbal¹; Thomas Hartmann¹; ¹Harry Reid Center, University of Nevada - Las Vegas

8:50 AM
Thermodynamic Properties of Complex Actinide Alloys: Patrice Turchi¹; Alexander Landa¹; Per Søderfjeld³; ³Lawrence Livermore National Laboratory

9:10 AM
Effects of Stress on Void Formation under Irradiation: Srujan Rokkam¹; Karim Ahmed³; Anter El-Azab¹; ¹Florida State University

9:30 AM
KMC Modeling of Helium-Vacancy Clustering in Iron: Aaron Oaks¹; James Stubbins¹; ¹University of Illinois, Urbana-Champaign

9:50 AM
Radiation-Induced Compositional Patterning and Segregation in Concentrated Binary Alloys: Santosh Dubey¹; Anter El Azab¹; ¹Florida State University
10:10 AM
Interaction of Self-Interstitial Clusters with Carbon Atoms and Carbon-Vacancy Complexes in Fe-C Alloys: Anna Serra; Napoleon Anento; 'Universitat Politècnica de Catalunya

10:30 AM Break

10:40 AM
Interaction of \(111\) Edge Dislocation With Interstitial Carbon Atoms in \(\alpha\)-Iron: Hassan Khatere; Anna Serra; Ghiaith Monnet; 'Universitat Politècnica de Catalunya (UPC); 'EDF – R&D

11:00 AM
Structure of Overlapping Ions Tracks in Solids: Andrii Demchyshyn; Pavel Sel'yshchev; 'Taras Shevchenko National University of Kyiv; 'University of Pretoria

11:20 AM
A New Model for Predicting the Oxidation/Gasification of Nuclear Graphite: Ryan Paul; John Morral; 'The Ohio State University

11:40 AM
Cluster Dynamics Modeling of Microstructural Evolution in Ferritic/Martensitic Iron Chrome: Aaron Kohnert; Brian Wirth; Donghwa Xu; Djamel Kaoumi; Arthur Motta; 'University of California; 'University of Tennessee; 'University of South Carolina; 'Pennsylvania State University

12:00 PM
2D/3D Simulation of \(\delta\)-Hydride Re-Orientation under External Load by Phase Field Approach in Zircaloy Matrix: Língfei Zhang; Ludovic Thuiner; 'Electricité de France (EDF) R&D MMC; 'University of Lille 1

Materials and Fuels for the Current and Advanced Nuclear Reactors: Structural Materials - Irradiation Studies I
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Thursday AM
Room: Swan 2
Location: Swan Resort

Session Chairs: Todd Allen, University of Wisconsin - Madison; Ramprashad Prabhakaran, Idaho National Laboratory

March 15, 2012

8:30 AM Invited
Microstructures of Ferritic-Martensitic Alloys Irradiated to High Dose at High Dose Rates: Gary Was; Zhijie Jiao; 'University of Michigan

9:00 AM
Irradiation Studies on Friction Stir Welded MA956 and MA754: Ramprashad Prabhakaran; J Wang; B Miller; J Cole; I Charit; R Mishra; K Murty; 'Idaho National Laboratory; 'Missouri University of Science and Technology; 'University of Idaho; 'North Carolina State University

9:20 AM
The Use of a Local Electrode Atom Probe Method to examine the Microstructure of Zircaloy: Brian Cockeram; Lance Snead; M. Miller; 'Bechtel-Bettis; 'Oak Ridge National Laboratory

9:40 AM
Phase Stability and Elemental Redistribution under High-Dose Ion Irradiation in 14YWT Nanostructured Ferritic Alloy: Yanwen Zhang; Zihua Zhu; Chad Parish; Philip Edmondson; Michael Miller; 'Oak Ridge National Laboratory; 'Pacific Northwest National Laboratory

10:00 AM
Influence of Cr Content on Radiation Induced and Enhanced Precipitation in Neutron Irradiated Fe-Cr Model Alloys of Low Purity: Comparison with Ion Irradiation: Philippe Pareige; Slava Kuksenko; Cristelle Pareige; 'Rouen University

10:20 AM Break

10:30 AM
Study of Ion Irradiation Effects on Microstructure of ODS Ferritic Steels by Atom Probe Tomography: Bertrand Radiguier; Yves Serruys; Olena Kalokhtina; Mathieu Couvat; Laurent Chaffron; Fabrice Legendre; Philippe Pareige; 'GPM UMR CNRS 6634 - Université et INSA du Rouen; 'CEA Saclay - DEN - DMN - SRMP; 'CEA Saclay - DEN - DMN - SRMA - LTME

10:50 AM
Influence of Grain Boundary Character and Grain Orientation on Radiation Damage by Ion Irradiation and Implantation: Dhriti Bhattacharyya; Yongqiang Wang; Fransesh Dayal; David Carr; Amit Misra; Robert Harrison; Lyndon Edwards; 'Australian Nuclear Science and Technology Organization; 'Los Alamos National Laboratory

11:00 AM
Corrosion of HT-9 in Contact with Molten Bismuth Eutectic with and without Simultaneous 6 MeV Proton Irradiation: Staffan Qvist; Magdalena Serrano de Caro; Alan Bolind; Yongqiang Wang; Mark Bourke; Peter Hosemann; 'University of California Berkeley; 'Los Alamos National Laboratory

11:30 AM
On the Stability of Nanostructured 18-Chromium ODS Steels under High Dose Ion-Irradiation: Marie-Laure Lescot; Joël Ribis; Emmanuelle MARQUIS; Yimeng CHEN; Aurèle Gentils; Odile Kaitasov; Yves SERRUYS; Patrick TROCELLIER; Arthur Motta; Yann de Carlan; Alexandre Legrin; 'CEA Saclay; 'University of Michigan; 'CSNSM, CNRS/IN2P3; 'Pennsylvania State University; 'Université de Lille 1

11:50 AM
Temperature Effects on the High Dose Radiation Resistance of Nano-Sized Clusters in Nanostructured Ferritic Alloys: Alicia Certain; Satyanarayana Kuchibhatla; Vaidityalingam Shuthanandan; Chad Parish; Todd Allen; David Hoelzer; 'University of Wisconsin-Madison; 'Pacific Northwest National Laboratory; 'Oak Ridge National Laboratory

12:10 PM
Planar Dislocations and Dislocation Channeling in Unirradiated and Irradiated Austenitic Stainless Steels: Young Suk Kim; Young Suk Kim; Dae Whan Kim; 'Korea Atomic Energy Research Institute
Materials Design Approaches and Experiences III: Joining and Microstructure-Property Relationships

8:30 AM Invited
Application of Microstructure Engineering to the Heat Affected Zone of Welds: Warren Poole; Matthias Militzer; Mehran Maalekian; 'UBC

9:00 AM Invited
Weldable Materials System Design - Application of Computational Thermodynamics and Kinetics: Sudarsanam Babu; 'Ohio State University

9:30 AM
Effect of Pre-Weld Heat Treatment Environment on the Microstructure and Crack Behaviors in the Laser Repair Welded René 77 Nickel-Based Superalloy: Huei-Sen Wang; Sian-Jih Deng; Chen Ming Kuo; 'I-Shou University

9:50 AM Invited
An ICME Approach to Solder Joint Lifetime Prediction: Michael Nielsen; Paul Vianco; Elizabeth Holm; 'Sandia National Laboratories

10:20 AM Break

10:40 AM
Characterization of the Performance at High Temperature of an Incoloy 718 for Improving the Ring Production: Martha Guerrero; Maribel de la Garza; Patricia Zambrano; Pedro Paramo; 'Universidad Autonoma de Nuevo Leon

11:00 AM
Heat Treatment Effects on Creep Behavior of Directionally Solidified CM247LC Superalloy: Ken-Tu Hsu; Huei-Sen Wang; Wei Bin He; Chen-Ming Kuo; Hui-Yun Bor; Chao-Nan Wei; 'ISU University; 'Chun-Shan Institute of Science and Technology

11:20 AM
Influence of Processing Conditions on the Mechanical Properties of High-Nitrogen 18Cr-18Mn Austenitic Steels for Generator Retaining Ring: Byoungchul Hwang; Jong-Ho Shin; Tae-Ho Lee; Heon-Young Ha; Jong-Wook Lee; Sung-Joon Kim; 'Korea Institute of Materials Science; '2 Doosan Heavy Industries & Construction Co., Ltd.

11:40 AM
γ(Ni)1γ(Ni3Al)-d(Ni3Sn)Eutectic Ni-Base Superalloys: The Relationship between Composition, Solidification Characteristics and Microstructure: Mengtao Xie; 'Illinois Institute of Technology

Mechanical Behavior at Nanoscale I: Thin Film and Multilayers

8:30 AM Invited
Mechanics of Low Dimensional Material for Energy Harvesting and Storage: Reza Shahbazian-Yassar; Hessam Ghassemi; Kasra Momeni; Anjana Asthana; Yoke Yap; Gregory Odegard; 'Michigan Technological University

8:50 AM
Micro-Scale Grain Boundary Fracture in Copper and Nickel Alloys: David Armstrong; Helen Dagdale; Angus Wilkinson; Sergio Lozano-Perez; Steve Roberts; 'University of Oxford

9:10 AM
Plastic Strain Recovery in Nanocrystalline Nickel: Marisol Koslowski; Yuesong Xie; 'Purdue University

9:30 AM
Study on the Nanomechanical Properties of High Quality ZnO Microwires by Nanoindentation: Zhi Lin; JianPing He; ZhiWei Liu; 'State Key Laboratory for Advanced Metal Materials; 'University of Science & Technology Beijing

9:50 AM Invited
Defect and Interface Engineering in Semiconductor Nanowires: Shadi Dayeh; Jian Wang; Jian Yu Huang; Samuel Thomas Picraux; 'Los Alamos National Laboratory; 'Sandia National Laboratories

10:10 AM
Deformation Hardening under Friction of Cu Samples with Different Virgin Grain Size in the Lubrication Conditions: Alex Laikhtman; Lev Rapoport; Alexey Moshkovich; Vladislav Perfiliev; Louisa Meshfi; Shmuil Samuha; Sidney Cohen; 'Holon Institute of Technology (HIT); 'Ben-Gurion University of the Negev; 'The Weizmann Institute of Science

10:30 AM Break

10:40 AM
Effect of Indentation Depth and Displacement Rate on spherical Nanoindentation of NiTi Shape Memory Alloys: Indrani Sen; Martin Wagner; 'Technische Universität Chemnitz

11:00 AM
A Versatile Microelectromechanical System for Monotonic and Fatigue Testing of Nanostructures: Ehsan Hosseinion; Brian Allen; Bhaskar Pant; Olivier Pierron; 'Georgia Tech

11:20 AM
Tribological Properties of Nanocrystalline Metallic Contacts: Michael Chandross; Shengfeng Cheng; 'Sandia National Laboratories
11:40 AM
Nanoscale Investigation of Segregation and Embrittlement in \{149; 109Fe due to Hydrogen and Grain Boundary Character: Kiran Solanki; Mark Tsehopp; Nathan Rhodes; 1Arizona State University; 2Mississippi State University

12:00 PM
Small Scale Mechanical Behavior of Silicon as a Function of Electronic Doping: Jacques Rabier; Rudy Ghislain; Jean Luc Demenest; Johann Michler; 1CNRS; 2EMPA

12:20 PM
Three-Dimensional Dislocation Dynamic Simulations in BCC Metal Micro-Pillars: Ill Ryu; Wei Cai; William Nix; Christopher Weinberger; 1Stanford University; 3Sandia National Laboratories

### Mechanical Behavior Related to Interface Physics: Dynamic Response of Interfaces: Experiment and Modeling

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

**Program Organizers:** Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiwei Shan, Xi’an Jiaotong University

**Thursday AM**
- Location: Oceanic 1
- Session Chairs: Timothy Germann, Los Alamos National Laboratory; Xuejun Jin, Shanghai Jiao Tong University

**9:00 AM**
Dynamic Thermo-Mechanical Properties of Ferroelastic Reinforced Metal Matrix Composites: Jack Tilka; Zachary Bryan; Jacob Jones; Michele Manuel; 1University of Florida

**9:15 AM**
Effect of Film Thickness on Mechanical Properties of Free-Standing Thermoset Nanofilms by Molecular Dynamics Simulations: Chanyu Li; Alejandro Strachan; 1Purdue University

**9:30 AM**
Meso-Scale Simulations of Interface Configuration on Shock Wave Propagation in Multilayered Ni-Al Composites: Paul Specht; Naresh Thadathil; Timothy Wehls; 1Georgia Institute of Technology; 2The Johns Hopkins University

**9:45 AM Break**

**9:55 AM Keynote**
High Temperature Twinning Correlated with Grain Growth in a Nano-Grained Co Based Alloys: Xuejun Jin; Jiayao Li; Yao Shen; 1Shanghai Jiao Tong University

**10:25 AM Keynote**
Grain Boundary Mediated Deformation Mechanisms of Nanocrystalline NiFe Alloy under Cyclic and Dynamic Loading: Yonghao Zhao; S. Cheng; Y.Z. Guo; Y.M. Wang; Y. Li; Q.M. Wei; X.-L. Wang; P.K. Liaw; E.J. Lavennia; 1University of California Davis; 2University of Tennessee, Knoxville, USA; 3University of North Carolina, Charlotte; 4Lawrence Livermore National Laboratory, Livermore; 5Oak Ridge National Laboratory, Oak Ridge

**10:55 AM**
Fracture Toughness Testing of Sub-Micron Sized Bi-Embritted Cu Bicrystals: Mark McLean; Austin Wade; Masashi Watanabe; Rick Vinci; 1Lehigh University

**11:10 AM**
Molecular Dynamics Simulations of Plastic Deformation of Nanocrystalline FCC and BCC Metals in Tension and Compression: Marc Meyers; Yizhe Tang; Eduardo Brinja; 1UCSD; 2U Nacional de Cuyo

**11:25 AM**
Effects of H Impurities on Grain Boundary Cracking and Plasticity: Diana Farkas; Martin Gamarra; Laura Patrick; 1Virginia Tech

**11:40 AM**
Insights into Basal Slip Dominated Plasticity of Mg from In Situ TEM Tensile Testing: Qian Yu; Raj Mishra; Andrew Minor; 1UC Berkeley; 2General Motors Research and Development Center

### Minerals, Metals and Materials under Pressure: Phase Transformations and Microstructure

**Sponsored by:** The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Phase Transformations Committee

**Program Organizers:** Ellen Cerreta, Los Alamos National Laboratory; Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois, Urbana-Champaign; Vijay Vasudevan, Univ. Cincinnati

**Thursday AM**
- Location: Europe 7
- Session Chair: Dallas Trinkle, Univ. Illinois, Urbana-Champaign

**8:30 AM Invited**
Influence of Interstitial Content and Stress State of the Shock-Induced Phase Transitions in Zr, Ti, and Fe: George Gray; Ellen Cerreta; Larry Hall; Paulo Rigg; 1Los Alamos National Laboratory

**9:00 AM**
Probing the Role of Temperature on Texture Evolution in Tantalum during Dynamic-Tensile-Extrusion: Carl Trujillo; Juan Escobedo; Ellen Cerreta; George Gray III; Daniel Martinez; 1Los Alamos National Laboratory

**9:20 AM**
The Role of Interfaces on Shock-Induced Damage in Two Phase Metals: Saryu Fensin; Ellen Cerreta; Steven Valone; Steven Valone; George Gray; Adam Farrow; Carl Trujillo; 1Los Alamos National Laboratory
THURSDAY AM

9:40 AM
3-D Study of Microstructural Weak Links in Shock Loaded Copper Polycrystals with Incipient Spall Damage: Andrew Brown; Quan Pham; Kapil Krishnan; Pedro Peralta; Shengnian Luo; Brian Patterson; Scott Greenfield; Darrin Byler; Kenneth McClellan; Aaron Koskela;
1Arizona State University; 2Los Alamos National Laboratory

10:00 AM
Characterization of Near-Surface Microstructures in IN718 Alloy Laser Peened with and without an Ablative Overlay: Amrinder Gill; Vijay Vasudevan; S.R. Mannava; Dong Qian; 
1University of Cincinnati

10:20 AM Break

10:30 AM Invited
Melting Line of Alkali Metals: Shanti Deemyad; 1Cornell University

11:00 AM
Investigating the Effects of High Pressure Shock Loading on Ni-Al Mixtures Using a Laser-Accelerated Flyer Setup: Sean Kelly; Naresh Thadhani; 1Georgia Institute of Technology

11:20 AM
Phase-Field Reaction-Pathway Method Coupled with Plasticity Theory of the Shock Induced Alpha-Epsilon Martensitic Transition in Iron: Aurélien Vattoù; Christophe Denoual; 1CEA

11:40 AM
High Pressure Phase Transitions in Layered Tin Monoselenide Crystals: Ajay Agarwal; Paras Trivedi; Prakash Naik; Dipesh Patel; 
1Shree J P Arts & Science College; 2Shree J P Arts & Science College; 4V S Patel College of Arts & Science

11:30 AM Invited
Nanocomposites: Processing of Nanocomposites II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

Thursday AM
March 15, 2012
Room: Swan 8
Location: Swan Resort

Session Chairs: Meisha Shofner, Georgia Institute of Technology; Frank Fisher, Stevens Institute of Technology

8:30 AM Break

8:50 AM
Structural and Thermal Stability Properties of Cellulose Nanocomposites with Polyactic Acid Matrix: Na Lu; 1University of North Carolina at Charlotte

9:10 AM
Synthetic Process Engineered Polyaniline Nanostructures: Xi Zhang; Jiahua Zhu; Suying Wei; John Zhanhu Guo; 1Lamar University

9:30 AM Invited
Nanoparticle-Enhanced Crystallization of Semicrystalline Polymer Nanocomposites: Frank Fisher; 1Stevens Institute of Technology

10:10 AM
Processing-Structure-Property Relationships in Hydroxyapatite Nanocomposites with a Copolymer-Compatible Interface: Meisha Shofner; Ji Hoon Lee; 1Georgia Institute of Technology

10:30 AM
Self-Healing, High Molar Mass Polymer Nanocomposites: Julie Harmon; Roger Bass; 1University of South Florida; 2Air Force

11:00 AM
Tacticity Effect Studies of PMMA and PMMA-QDs Composites: Suying Wei; Narendhar Anumandla; Jaishri Sharma; 1Lamar University

11:40 AM
Neutron and X-Ray Studies of Advanced Materials V: Centennial: Dislocations, Strains, Deformation II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Thursday AM
March 15, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Peter Liaw, University of Tennessee; Klaus-Dieter Liss, Australian Nuclear Science and Technology Organisation

8:30 AM Keynote
In-Situ, Time-Resolved Diffraction Studies in Thermo-Mechanic Processing: Klaus-Dieter Liss; 1Australian Nuclear Science and Technology Organisation

8:50 AM Invited
Dislocation Densities, Burgers Vector Populations and Slip System Activity in Different Texture Components Determined by Diffraction Peak-Profile Analysis: Tamás Ungár; 1Eötvös University Budapest

9:10 AM
In-Situ Study of Fatigue Damage in a Ni-Based Superalloy by Synchrotron X-Ray Diffraction: Michael Hemphill; Andrew Chuang; Yan Gao; Jon Almer; Tim Hanlon; Liang Jiang; Peter Liaw; 1University of Tennessee; 2General Electric Global Research; 3Argonne National Lab

9:25 AM
Neutron and X-Ray Studies of Advanced Materials V: Centennial: Dislocations, Strains, Deformation II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Thursday AM
March 15, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Peter Liaw, University of Tennessee; Klaus-Dieter Liss, Australian Nuclear Science and Technology Organisation

8:30 AM Keynote
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8:50 AM Invited
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9:25 AM
Investigation of Hydride Phase Transformations at Dislocations in Deformed Pd Using Neutron Scattering and Advanced Computational Techniques: Brent Heuser; Hyunsu Ju; Dallas Trinkle; Douglas

Neutron and X-Ray Studies of Advanced Materials V: Centennial: Dislocations, Strains, Deformation II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

Thursday AM
March 15, 2012
Room: Southern I
Location: Dolphin Resort

Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

Session Chairs: Peter Liaw, University of Tennessee; Klaus-Dieter Liss, Australian Nuclear Science and Technology Organisation

8:30 AM Keynote
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8:50 AM Invited
Dislocation Densities, Burgers Vector Populations and Slip System Activity in Different Texture Components Determined by Diffraction Peak-Profile Analysis: Tamás Ungár; 1Eötvös University Budapest

9:10 AM
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9:25 AM
Investigation of Hydride Phase Transformations at Dislocations in Deformed Pd Using Neutron Scattering and Advanced Computational Techniques: Brent Heuser; Hyunsu Ju; Dallas Trinkle; Douglas
Investigation of Residual Stress in Key-Hole Laser Formed Steels in Conjunction with Transmission Electron Microscopy: Khusboo Rakha; Hossein Beladi; Saurabh Kabra; Sean McTrusty; Stewart Pullen; Ilana Timokhina; Peter Hodgson; Klaus-Dieter Liss; Centre for Material and Fibre Innovation, Deakin University, Victoria 3216, Australia; Bragg Institute, Australian Nuclear Science and Technology Organisation, Lucas Heights, NSW 2232, Australia

10:45 AM
Lienert5; 1ISIS, Rutherford Appleton Laboratory; 2 Cranfield University; 3Auburn University

Exploring Dislocation Source Strengths in Nanocrystalline Ni Using X-Ray Diffraction Footprints: Lin Li; Steven Van Petegem; Helena Van Swygenhoven; Peter Anderson; 'The Ohio State University; 'Paul Scherrer Institut

10:10 AM
Time-Resolved X-Ray Tomography of Semi-Solid Alloy Deformation: Kristina Maria Kareh; Peter Lee; Christopher Gourlay; 'Imperial College London; 'The University of Manchester

10:20 AM Break

10:25 AM Invited
Investigation of Residual Stress in Key-Hole Laser Formed Steels in Conjunction with Transmission Electron Microscopy: Khusboo Rakha; Hossein Beladi; Saurabh Kabra; Sean McTrusty; Stewart Pullen; Ilana Timokhina; Peter Hodgson; Klaus-Dieter Liss; Centre for Material and Fibre Innovation, Deakin University, Victoria 3216, Australia; Bragg Institute, Australian Nuclear Science and Technology Organisation, Lucas Heights, NSW 2232, Australia

10:45 AM
Study of Embryos and Nanoscale Precipitates in a Ferritic Steel by Small Angle Neutron Scattering and Atom Probe Tomography: Z. B. Zhang; C. T. Liu; X.-L. Wang; K. C. Littrell; M. K. Miller; K. An; B. A. Chin; 'Oak Ridge National Labs; 'City University of Hong Kong; 'Auburn University

11:00 AM
Effect of Oxygen Content and Processing on Deformation Modes in a Zirconium Alloy: Christopher Cochrane; Song Cai; Mark Daymond; 'Queen's University

11:10 AM
Study the Hydrogen Induced Volume Expansion and the Embrittlement of Zr-Based Bulk Metallic Glasses: Chih-Pin Chuang; Wojciech Dmowski; Yun Liu; Terrence Udovic; Peter Liaw; Lu Huang; 'University of Tennessee; 'National Institute of Standards and Technology; 'Beihang University

11:20 AM
Characterization of Residual Stress in Laser Shock Peened IN718 SPF Alloy with X-Rays of Different Wavelengths: Amrinder Gill; S.R. Mannava; Vijay Vasudevan; Dong Qian; Gokul Ramakrishnan; Mohammed Belassel; 'University of Cincinnati; 'Proto Manufacturing Limited

11:30 AM
In Situ Time-of-Flight Neutron Diffraction Study of the Phase Transformation in a TC18 Titanium Alloy: Xiaopeng Liu; Ru Lin Peng; Yandong Wang; Shuyan Zhang; Sten Johansson; 'Northeastern University; 'Linköping University; 'Beijing Institute of Technology; 'Rutherford Appleton Laboratory

11:45 AM
Non-Destructive Evaluation of Stress-Strain and Texture in Cold Drawn Tubes by Neutrons and Hard X-Rays: Adele Carradò; Thilo Pirling; Robert Wimpory; 'Heinz-Guenter Brokmeier; 'Heinz Falkowski; 'IPCMS, UMR 7504 UDS-CNRS; 'Institut Laue-Langevin; 'Helmholz Zentrum Berlin; 'Clausthal University of Technology
11:15 AM
Removal of Arsenic Using Green Rust and Other Electrochemically Generated Floc: Md Rahman1; Jewel Gomes1; Kevin Urbanezyk; David Cocke1; 1Lamar University

11:30 AM
Formation of Layered Double Hydroxides in Self-Purification of Polynary Metal Electroplating Wastewaters for Effective Removal of Anionic Dye: JiZhi Zhou1; Guangren Qian1; Zhi Ping Xu1; Yueying Wu1; 1University of Shanghai; 2University of Queensland

11:45 AM
Characterization and Chemical Modification of Electrochemically Produced Layered Double Hydroxides as Nanomaterials: Md Islam1; Jewel Gomes1; Paul Bernazzani1; 1Lamar University

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Physical Property Effects and Responses to Current Technologies

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central Univ.; Laura Turbini, Research in Motion; Tae-Kyu Lee, Cisco Systems; Govindarajan Muralidharan, Oak Ridge National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

Thursday AM Room: Swan 9
March 15, 2012 Location: Swan Resort

Session Chair: To Be Announced

8:30 AM Invited Lecture
Critical Studies to Evaluate the Events Controlling TMF Reliability of Sn-Ag Solder Joints: Stephanie Bergman1; Andre Lee1; K.N. Subramanian1; 1Michigan State University

8:55 AM
In-Situ Mechanical Assessment of Thermomechanically Fatigued POSS-Added Pb-Free Nanocomposite Solder Joints: Stephanie Bergman1; Andre Lee1; K.N. Subramanian1; 1Michigan State University

9:15 AM
Experimental and CPFEM Investigation of Stress Distribution in Shear Tests and Thermal Cycling in Lead-Free Solder Joints: Payam Darbandi1; Bith Zhou1; Farhang Pourboghrat1; Thomas Bieler1; Tae Kuy Lee1; Kuo Chuan Liu1; 1MSU

9:35 AM
Thermal and Mechanical Characterization of Cu/ Cu-In Solder Joints for Thermal Interface and Interconnect Applications: Effects of Interfacial Layers: Jia Liu1; Praveen Kumar1; Indranath Dutta1; Rajen Sidhu1; 1Washington State University; 2Intel Corporation

9:55 AM Break

10:05 AM
Wetting Behavior and Interfacial Reaction between New Electrolytic Ni-Pd Surface Finish/Sn-3.0Ag-0.5Cu Solder Joints: Cheng Ting Ho1; Jenq Gong Duh1; 1National Tsing Hua University

10:25 AM
Analytical Modeling of Diffusion and Growth Processes in Sn-Ag Alloy Systems: Sri Chaitra Chavali1; Ganesh Subbarayan1; Mysore Dayananda1; 1Purdue University

10:45 AM
Effect of Solder Thickness on Electromigration in Sn2.5Ag Solder Joints: Woei haw Khew1; Chih Chen1; 1Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan 30010, Republic of China

11:05 AM
Relationship between Reliability and Effect of Solid Solution Hardening at Solder Joints: Minoru Ueshima1; 1Senju Metal Industry

11:25 AM
Current-Induced Phase Transformation Study of Ni-Sn Intermetallic Compounds in 18 μm Microbumps in Three-Dimensional Integrated-Circuit Packaging Using Kelvin Bump Structure: Yuan-Wei Chang1; Chih Chen1; 1National Chiao Tung University

Recent Developments in Biological, Electronic, Functional and Structural Thin Films and Coatings: Applications to Bio, Energy and Electronic Systems

Sponsored by: The Minerals, Metals and Materials Society, TMS
Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Jian Luo, Clemson University; Xing Yang (Mark) Liu, National Research Council Canada; Nancy Michael, University of Texas at Arlington; Roger Narayan, University of North Carolina and North Carolina State University; Choong-un Kim

Thursday AM Room: Swan 10
March 15, 2012 Location: Swan Resort

Session Chairs: Roger Narayan, University of North Carolina and North Carolina State University; Sufian Abedrabbo, University of Jordan

8:30 AM Introductory Comments

8:35 AM
Multilayer Roll Bonded Sandwich: Processing, Mechanical Performance and Bioactive Behavior: Adele Carradò1; Heinz Palkowski2; 1IPCMS, UMR 7504 UDS-CNRS; 2Clausthal University of Technology

9:05 AM
Effect of Multiple Quaternary Ammonium Ion Salts on the Performance of Heparin Ionic Complex Coating: Narayana Garimella1; Bartley Griffith1; Zhongjun Wu1; 1University of Maryland School of Medicine

9:35 AM
Bio-Inspired Organic/Inorganic Multi-Layer Coating Synthesized by RF-Magnetron Sputtering and Pulse Laser Deposition: Yu-Chen Chan1; Hisen-Wei Chen1; Li-Wei Ho1; Jyh-Wei Lee1; Po-Yu Chen1; Jenq-Gong Duh1; 1National Tsing Hua University

10:05 AM
Nanomechanical Properties of Polyethylene Glycol Coatings on Flat Gold Substrates: Frank DelRio1; Gheorghe Stan1; Robert MacCuspie1; Robert Cook1; 1National Institute of Standards and Technology

10:35 AM Break

10:50 AM
Doping and Co-Doping of Bandgap-Engineered ZnO Films for Solar Driven Hydrogen Production: Sudhakar Shet1; Nuggehalli Ravindra1; Yanfa Yan1; Mowafak Al-Jassim1; 1National Renewable Energy Laboratory; 2New Jersey Institute of Technology
10:30 AM Break

10:40 AM
Titanium Coatings Using Cold Spray: Phillip Leyman1; Rob Hrabe2; Brian James3; Christian Widner4; 1Army Research Laboratory; 2H.F. Webster Inc.; 3GS-12, Supervisor AF Engineering Technical Services; 4South Dakota School of Mines and Technology

11:00 AM
Novel Surface Coating Techniques for Titanium Alloys: Mingxing Zhang1; Shoumou Miao2; 1The University of Queensland

11:20 AM
Fracture Behaviors of TiN and TiN/Ti Multilayer Coatings on Ti Substrate during Nanoindentation: Yong Sun1; Cheng Lu1; Anh Kiet Tieu1; Yue Zhao1; Hongtao Zhu1; Kuiyu Cheng1; Charlie Kong2; 1University of Wollongong; 2University of New South Wales

11:40 AM
Deformation Mechanism in Nanoindentation of Ti63.375Fe34.125Sn2.5 Alloy: Kuiyu Cheng1; Cheng Lu1; Kiet Tieu1; Laichang Zhang2; Yong Sun1; 1University of Wollongong; 2The University of Western Australia

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Processing and Properties II

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Processing and Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Materials Characterization Committee

Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper, J. E. Dutrizac, CANMET, Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper

Thursday AM
Room: Oceanic 5
March 15, 2012
Location: Dolphin Resort

Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

Session Chair: Jaroslaw Drelich, Michigan Technological University

8:30 AM
Characterization of Nanocrystalline SnO2:F Thin Films Prepared by the Spray Pyrolysis Technique: Shadia Ikhmayies1; 1Al Isra University

8:50 AM
Characterization of the Orthotropic Elastic Constants of a Micronic Woven Wire Mesh through Experiments and Modeling: Steven Kraft1; Ali Gordon1; 1University of Central Florida

9:10 AM
Complex Impedance Plots of CdS:In Thin Films Prepared by the Spray Pyrolysis Technique: Shadia Ikhmayies1; Riyad Ahmad-Bitar2; 1Al Isra University; 2University of Jordan

9:30 AM
Characterization of Mexico Magnetic Concentrate Samples for Trace Elements Ni, Cu, Zn, S and P: Mingxing Zhang1; 1ArcelorMittal Global R&D

9:50 AM Break

10:10 AM
Preparation and Characterization of High-Magnetization Microspheres of Fe3O4 Encapsulated with SiO2 and TiO2 Layers: Nan Zhang; Gaifeng Xue; Shangchao Liu; Benquan Fu1; 1Research and Development Center of Wuhan Iron & Steel Group Corp.

10:30 AM
Characterization of Amorphous Vacuum-Evaporated SnO2 Thin Films: Shadia Ikhmayies1; 1Al Isra University

10:50 AM
Preparation of β-Diketone Modified Silica Gel and its Application to the Removal of Heavy Metal Ions from Industrial Wastewater: Nan Zhang1; Gaifeng Xue1; Lei Zhang1; Pu Liu1; Lina Wang1; 1Research and Development Center of Wuhan Iron & Steel Group Corp.

11:10 AM
Elastic Module and Density Dependence on the Diameter of Piassava Fibers: Felipe Lopes1; Alice Bevitori2; Isabela Silva1; Renan Carreiro2; Denise Nascimento2; Sergio Monteiro2; 1IME; 2UENF

10:30 AM Break

10:40 AM
Leaching of Lithium Cobalt Dioxide Using Citric-Thiosulfate Solutions: Alejandro Alonso1; Gretchen Lapidus-Lavine1; Lizeth Alvarado1; 1Universidad Autonoma Metropolitana

8:50 AM
Hydrometallurgical Purification from Leach Liquor of Printed Circuit Board with Cyanex 272: Adriana Santanilla1; Viviane Tavares de Moraes2; Jorge Alberto Soares Tenorio2; Denise Croce Romano Espinosa1; 1Polytechnic School of University of São Paulo

9:10 AM
Leaching of Chalcopyrite Concentrate with Organic Ligand Compounds: Oscar Solis-Marcial1; Gretchen Lapidus-Lavine1; 1Universidad Autonoma Metropolitana-Iztaalalapa

9:30 AM
The Electrochemical Behavior of Electro-Deoxidation Process of Ilmenite Concentrate in Molten Salt: Xuyang Liu1; Meilong Hu1; Chenguang Bai1; Xuewei Lv1; 1Chongqing University

8:30 AM
Leaching of Lithium Cobalt Dioxide Using Citric-Thiosulfate Solutions: Alejandro Alonso1; Gretchen Lapidus-Lavine1; Lizeth Alvarado1; 1Universidad Autonoma Metropolitana
9:50 AM Break

10:10 AM
Vanadium Extraction from High Calcium-Content Vanadium Slag by Calcification Roasting: Hong Yi Li1; Ning Wang1; Bing Xue1; Chunqing University

10:30 AM
The Kinetic Investigation of the Dissolution Of Powellite in Oxalic Acid Solutions: Sedat Ilhan1; Ahmet Kalpakli1; Cem Kahruman1; Ibrahim Yusufoglu1; Istanbul University

10:50 AM
Metallurgical Characterization of Waspaloy Presenting Variations on Chemical Composition, Grain Size, and Hardness: Miguel Neri1; Alberto Martinez-Villafañe1; Caleb Carreño1; Octavio Covarrubias-Alvarado1; Alma Gonzalez-Escarcega1; CIMAV, S.C.; FRISA AEROSPACE S.A. DE C.V.

11:10 AM
Recent Trends in the Processing of Complex Sulphide Ores: Sarveswara Rao Katragadda1; (Retd.) IMMT (CSIR)

11:30 AM
Biosorption Characteristics of Pb(II) from Aqueous Solution onto Poplar Cotton: Kai Huang1; Shuanglong Du1; Ting Luo1; Tao Gui1; Yifan Xu1; Hongmin Zhu1; University of Science and Technology Beijing

Ultrafine Grained Materials VII: Applications and Transitions
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Rise National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehetbauer, University of Vienna

Thursday AM
Room: Swan 5
Location: Swan Resort
Session Chairs: Terence Langdon, University of Southern California; Aibin Ma, North Carolina State University; Suveen Mathaudhu, U.S. Army Research Office; Indranil Roy, Schlumberger

8:30 AM Introductory Comments Young Scientist Award Presentation

8:35 AM Invited
Exceptional Mechanical and Functional Properties of Ultrafine-Grained NbZr Biomedical Alloys: Ibrahim Karaman1; Hans Maier2; Gencaga Purcek1; Felix Rubitschek1; Thomas Niendorf1; Texas A&M University; University of Paderborn; Karadeniz Technical University

8:55 AM
Electrochemical Corrosion of Bulk Cryomilled UFG Al5083 in Contrast to its Coarse Grained Counterpart in Aerated 3.5wt% NaCl Solution: Indranil Roy1; John Meng1; Enrique Laverna1; Farghali Mohammed1; Schlumberger; Honeywell Corrosion Solutions; University of California, Davis; University of California, Irvine

9:10 AM
Microstructural Aspects of Enhancing Strength and Ductility of Ultra-Fine Grained Ti Rods Processed by ECAP-Conform: Irina Semenova1; Sergey Raab1; Alexander Polyakov1; Ruslan Valiev1; Terry Lowe2; UfA State Aviation Technical University; Manhattan Sciences

9:25 AM Invited
Potential of UFG Materials as High Performance Penetrator Materials: Kyung-Tae Park1; Lee Ju Park1; Hyung Won Kim2; Chong Soo Lee1; Hanbat National University; Agency for Defense Development; POSTECH

9:45 AM
Study of a New SPD technique: High Pressure Tube Twisting (HPTT): Roxane Arruffat1; Mandana Arazaghiz2; Arnaud Pougis1; Jean Jacques Fundenberger1; Laszlo Toth1; University Paul Verlaine; Institute PPRIME, UMR 6617 CNRS.

10:00 AM
SFP Procedure and High Performance of Ultrafine-Grained Cu-Mg Alloy for Electrical Railway: At-Bin Ma1; Chengecheng Zhu1; Jinghua Jiang1; Dan Song1; Wenyong Xu1; Hohai University

10:15 AM Break

10:30 AM
Twenty-five Years of Severe Plastic Deformation: Recent Developments in Evaluating the Degree of Homogeneity through the Thickness of Disks Processed by High-Pressure Torsion: Megumi Kawasak1; Roberto Figueiredo1; Terence Langdon1; Univ of Southern California; Federal Univ of Minas Gerais

10:45 AM
Anti-Corrosion Behavior of Ultrafine-Grained Al-26wt% Si Alloy Fabricated by ECAP: Jinghua Jiang1; Aibin Ma2; Dan Song2; Jun Shi2; Kaile Wang1; Donghui Yang2; Jianqing Chen2; Hohai University

11:00 AM
Ultrafine-Grained Thermoelectrics Processed by HPT Featuring Enhanced ZT Values: Michael Zehetbauer1; Gerda Rogl1; Peter Rogl1; Ernst Bauer2; Daria Setman1; Jelena Horky1; Erhard Schafer1; University of Vienna; Vienna University of Technology

11:15 AM Invited
Application of High-Pressure Sliding for Bismuth-Telluride Thermoelectric Materials: Kiyonari Tazoe1; Kanako Mitarai1; Takahiro Hayashi1; Shinji Munetoh1; Zenji Horita1; Kyoto University; Yamaha Corporation

11:35 AM
Application of High-Pressure Torsion to Ceramic-Based Materials: Kaveh Edalati1; Zenji Horita1; Kyoto University

11:50 AM
Microstructure and Mechanical Properties of Thixomolded Mg Alloys After Thermomechanical Processing: Bilal Mansoor1; Raymond Decker1; Sanjay Kulkarni1; Steve LeBeau2; Marwan Khraisheh1; Masdar Institute of Science and Technology, Abu Dhabi, UAE; Thixomat Inc.

12:05 PM Invited
Development of Nanostructured Coating via Electro-Chemical Method: Young Gun Ko1; Dong Hyuk Shin2; Yeungnam University; Hanyang University

12:25 PM
Equal Channel Angular Extrusion of GLIDCOP for use in High-Field Pulsed Magnet Applications: Ryan Need1; David Mutnick1; Adriana Tudela1; Weston Lee1; David Alexander1; Robert Field1; Charles Swensson1; Los Alamos National Laboratory

12:40 PM Concluding Comments
3rd International Symposium on High Temperature Metallurgical Processing: Pelletizing and Raw Materials Processing
Sponsored by: The Minerals, Metals and Materials Society, TMS
Extraction and Processing Division, TMS: Energy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Patrick Masset, TU Freiberg; Onuralp Yucel, Istanbul Technical University; Rafael Padilla, University of Concepcion; Gufeng Zhou, Wuhan Iron and Steel

Thursday PM  Room: Southern II
March 15, 2012  Location: Dolphin Resort

Session Chairman: Ender Keskinlikic, Attilim University; Guanghui Li, Central South University

2:00 PM
Developing Cost-Effective Air Separation Plants for the Mining and Mineral Processing Industry: Goutam Shahan1, Linde Engineering

2:15 PM
Effects of Sodium Salts-Modified Paigeite on Dephosphorization of High-Phosphorus Oolitic Hematite during Reduction: Guanghui Li1, Ting Lei1, Tao Jiang1, Mingjun Rao1, School of Minerals Processing and Bioengineering, Central South University

2:30 PM
Study of Certain Parameters in Laboratory-Scale Smelting of Sivrihisar Late Ores of Turkey: Ender Keskinlikic; Saeid Pournaderi2; Ahmet Geveci2; Yavuz A. Topkaya2; Attilim University, ‘Middle East Technical University

2:45 PM
Dephosphorization Technology of High Phosphorus Oolitic Hematite in Rotary Hearth Furnace Direct Reducing Process: Hongliang Han1; Dongping Duan; Jiwei Zhao1; Institute of Process Engineering, Chinese Academy of Sciences

3:00 PM
Effect of Basicity and MgO on the Pelletizing of Specularite Concentrate: De Qing Zhu1; Jianlin Zhang1; Jian Pan1; Zhao Qiang1; Central South University

3:15 PM
Effects of MHA Binder on Roasting Behaviors of Oxidized Pellets from Specularite Concentrate: Youlian Zhou1; Yuanbo Zhang1; Tao Jiang1; Guanghui Li1; Daoyuan Zhang1; Central South University

3:30 PM Break

3:40 PM
A Study of Carbon-Burdened and Cold-Bonded Pelletizing—Electrosmelting Process Disposing Low-Grade Manganese Ore: Zhao Qiang1; Changsha Research Institute of Mining and Metallurgy

3:55 PM
The Characteristics of Roasting of Magnesium Pellets and Roasting Strengthening: Xiaohui Fan1; Luben Xie1; Min Gan1; Xuling Chen1; Lishun Yuan1; Central South University

4:10 PM
Research on Dephosphorization of Complex and Refractory Oolite Hematite: Chaoying Qi1; Tiejun Chun1; Central South University

4:25 PM
Separation of Iron from Zinc Calcine by Magnetic Roasting and Dressing: Ning Peng1; Bing Peng1; Liyuan Chai1; Mi Li1; Jiming Wang1; Central South University

4:40 PM
Study on Mechanism of Limonite Granulation Gas-Based Roasting-Magnetic Separation Techniques: Zhucheng Huang1; Shiyou Tian1; Tao Jiang1; Central South University

4:50 PM Concluding Comments

Aluminum Reduction Technology: Modelling II and Measurement
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Olivier Martin, Rio Tinto Alcan

Thursday PM  Room: Southern III
March 15, 2012  Location: Dolphin Resort

Session Chair: Jianhong Yang, Chalco

2:00 PM
Modeling Cathode Cooling Due to Power Interruption: Marc Dupuis1; Alton Tabereaux2; GeniSim; Consultant

2:20 PM
Modeling the Mass and Energy Balance of Different Aluminium Smelting Cell Technologies: Vanderlei Gusberti1; Dagoberto Severo1; Barry Welch2; Maria Skyllas-Kazacos2; CAETE Engenharia - Brazil; School of Chemical Engineering - UNSW - Australia

2:40 PM
Current Efficiency Predictive Model and Its Calibration and Validation: Zhiming Liu1; Wangxing Li1; Qingjie Zhao2; Jiemin Zhou1; Yuyong Wang2; School of Energy Science and Engineering Central South University; Zhengzhou Research Institute CHALCO Ltd.

3:00 PM
Wireless and Non-Contacting Measurement of Individual Anode Currents in Hall-Héroult Pots; Experience and Benefits: James Evans; Nobuo Urata; University of California, Berkeley & Wireless Industrial Technologies; Aluminium and Wireless Industrial Technologies

3:20 PM Break

3:40 PM
Impacts of Anode Set on the Energy Re-distribution of PB Aluminum Smelting Cells: Cheuk-Yi Cheung1; Chris Menictas1; Jie Bao1; Maria Skyllas Kazacos1; Barry Welch1; The University Of New South Wales

4:00 PM
Dimensional Analysis in Cold Water Model Experiments of New Cathode Structure Aluminum Cell: Liu Yan1; Zhang Ting’an1; Li Chong2; Zhao Qiuyue3; Wang Shuchan1; Feng Naixiang1; He Jicheng3; Northeastern University

4:20 PM
Flow Field Comparison between Traditional Cell and New Structure Cell by Chalco by CFD Method: Zhiming Liu1; Fengqin Liu1; Yuyong Wang2; Zhengzhou Research Institute of Chalco
Bulk Metallic Glasses IX: Other Related Alloys and Properties
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Thursday PM Room: Swan 1
March 15, 2012 Location: Swan Resort
Session Chairs: Oleg Senkov, UES, Inc.; Yuri Petrusenko, National Science Center - Karhkov Institute of Physics & Technology

2:00 PM Invited
New Refractory High Entropy Alloys: Oleg Senkov2; Svetlana Senkova2; Daniel Miracle2; Christopher Woodward2; Air Force Research Laboratory

2:20 PM
Disordered and Weakly-Ordered Solid-Solution Phases in the High-Entropy Alloy System of Al-Co-Cr-Cu-Fe-Ni: Louis Santodonato1; Zhiting Yang2; Andrew Chuang2; Peter Liaw2; ORNL and UT; University of Tennessee

2:30 PM Invited
Properties Optimization of High-Entropy and Amorphous Alloys by Alloying and Multiple Processing: Yong Zhang1; University of Science and Technology Beijing

2:50 PM Invited
High-Entropy Carbides Based on High-Entropy Alloys: Yu-An Yeh1; Ming-Hung Tsai2; Jien-Wei Yeh1; National Tsing Hua University; National Taiwan University

3:10 PM Invited
Accumulation and Recovery Processes in a High-Entropy Alloy Irradiated with 2.5 MeV Electrons: Yuri Petrusenko1; Alexander Bakai1; Valeriy Borysenko2; Eduard Mayevsky1; Peter K. Liaw1; Gongyao Wang1; Jien-Wei Yeh1; National Science Center - Karhkov Institute of Physics & Technology; Department of Materials Science and Engineering, The University of Tennessee; Department of Materials Science and Engineering, National Tsing Hua University

3:30 PM
Spark Plasma Sintering of Fe-Based Bulk Metallic Glasses: Sandip Harimkar1; Ashish Singh1; Oklahoma State University

3:40 PM Break

3:55 PM Invited
Formation of HfW2 in Mechanically Alloyed W-Based Alloy Systems: Laszlo Kecskes1; Anthony Roberts1; Kristopher Darling1; US Army Research Laboratory

4:15 PM
Manifestation of Short-Range Order, Medium-Range Order, and Structure Defects in Bulk Metallic Glasses: Yuri Petrusenko1; Alexander Bakai1; Ivan Neklyudov1; Igor Mikhailovskij1; Sergiy Bakai1; Peter K. Liaw1; Gongyao Wang1; Qingming Feng2; Tao Zhang1; Lu Huang Huang1; Zengqian Liu1; National Science Center - Karhkov Institute of Physics & Technology; Department of Materials Science and Engineering, The University of Tennessee; School of Materials Science and Engineering, Beijing University of Aeronautics and Astronautics

4:25 PM
Structural Relaxation in Zr-based BMGs Viewed from Potential Energy Landscape: Osumi Haruyama1; Hiroyuki Sawada1; Yoshikiko Yokoyama1; Kohichi Tsuchiya1; Kazumasa Sugiyama2; Tokyo University of Science; Institute of Materials Research, Tohoku University; National Institute of Materials Research

4:35 PM
Investigation of Porous Zr-Based Bulk Metallic Glass: Junhua You1; Shenyang University of Technology

Bulk Metallic Glasses IX: Structures and Other Properties II
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Thursday PM Room: Swan 1
March 15, 2012 Location: Swan Resort
Session Chairs: Jeff De Hosson, Univ. of Groningen; Hongbin Bei, Oak Ridge National laboratory

2:00 PM Invited
Controlled Nanocrystallization of a Bulk Metallic Glass in the Zr-Al-Cu-Co System – Structure, Properties and Ways to New Materials Designs: Rainer Wunderlich1; Arnaud Caron1; Hans-Joerg Fecht1; Universitaet Ulm

2:20 PM
Magnetocaloric Effect of Fe-Based Amorphous Metals: Anja Waske1; Bjorn Schwarz1; Norbert Mattner1; Konstantin Skokov1; Jürgen Eckert1; IFW Dresden

2:30 PM Invited
Work Hardening of High Strength Nanocrystalline Ni-W Alloys: Tohru Yamasaki1; Kazutaka Fujita1; University of Hyogo; Ube National College of Technology

2:50 PM
Medium Range Order Correlations in Lliquid and As-Quenched Al-Tb System – Structure, Properties and Ways to New Materials Designs: Eren Kalay1; Steve Paglieri2; Dhanesh Chandra1; Sang-Mun Kim1; Jenwoo Hwang1; Paul Voyles1; METU; Ames Laboratory US DOE; University of California, Santa Barbara; University of Wisconsin, Madison

3:00 PM Invited
Plasticity of BMG with Shear Bands-Sized Sample: Scott Mao1; University of Pittsburgh

3:20 PM
Hydrogen Solubility and Permeability of Ni-Nb-Zr Amorphous Alloy: Narendra Patil1; Steve Puglisi2; Dhanesh Chandra1; Sang-Mun Kim1; Wen-Ming Chien1; Anjali Talekar1; Ted Flanagan1; Michael Dolan1; University of Nevada, Reno; TDA Research Inc.; University of Vermont; Commonwealth Scientific and Industrial Research Organisation

3:30 PM Break

3:45 PM Invited
Understanding Mechanical Properties of Bulk Metallic Glasses Using Nanoindentation Pop-In Experiment: Hongbin Bei1; Yanfei Gao2; Oak Ridge National laboratory; University of Tennessee/Oak Ridge National laboratory
18:05 PM
Sliding Wear Behavior of Cu50HF41.5-xAl8.5Yx (x = 0, 2, 5, 8, 10 at. %) Bulk Metallic Glass: Dharma Maddala1; Rainer Hebert1; 1University of Connecticut

4:15 PM
Ultra-High Fracture Strength and Elongation to Failure of Submicron-Sized Metallic Glasses: Lin Tian1; Yong-Qiang Cheng2; Cheng-Cai Wang1; Zhi-Wei Shan1; Jun Sun1; Evan Ma1; 1CAMP-Nano, Xi’an Jiaotong University; 2Department of Materials Science and Engineering, Johns Hopkins University; 3Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, MIT; 4Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology

4:25 PM
Smaller is Stronger in Amorphous Metals: Chengcai Wang1; Zhiwei Shan1; Jun Sun1; Ju Li1; Evan Ma1; Xi’an Jiaotong University; Massachusetts Institute of Technology; 3Johns Hopkins University

4:35 PM
The Correlation between Glass Formation and Hardness of the Amorphous Phase: Zhitao Wang1; Kaiyang Zeng1; Yi Li1; National University of Singapore

4:45 PM
Atomic Packing and Its Correlation with Glass Transition in Metallic Glasses: Xiong-Jun Liu1; Zhao-Ping Lu1; Xi Dong Hui1; C. T. Liu1; 1University of Science and Technology Beijing; 2City University of Hong Kong

4:55 PM
Amorphous Phase Separation in a Bulk Metallic Glass of Negative Heat of Mixing: Si Lan1; Yeuk Lan Yip1; Man Tat Lau1; Hin Wing Kui1; Chinese University of Hong Kong

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Sergio Montero, State University of North Rio De Janeiro; Chenguang Bai, Chongqing University; John Carpenter, US Department of Energy; Donato Firrao, Politecnico di Torino; Byoung-Gon Kim, Korea Institute of Geoscience & Mineral Resources; Mingdang Cai, Schlumberger

Thursday PM
Room: Europe 6
March 15, 2012
Location: Dolphin Resort

Session Chairs: Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Michigan Technological University

2:00 PM
Comparison of Creep Life Assessment between Tin-Based Lead-Free Solders and Lead Solders: Kenji Monden1; Denki Kagaku Kogyo K.K.

2:15 PM
Correlational between JIC and Equivalent Fracture Strain Determined by Small-Punch Test in JN1, JJ1 and JK2 Austenitic Stainless Steels: Victor Lopez-Hirata1; Maribel Saucedo-Muñoz1; Toshiyuki Hashida1; 1Instituto Politecnico Nacional (ESIQIE); 2Tohoku University

2:30 PM
Effect of Heat Treatment on the Surface Characteristics of AISI D2 Steel Machined by Wire EDM: Milind Dhople1; 1Chandrakeshkar Gogte1; 2P.E.S. College of Engineering, Aurangabad; 3Visveswarya National Institute of Technology; 4Marathwada Institute of Technology

2:45 PM
Formability of Multilayered Steel Composites with Improved Strength-Ductility Combination: Shoichi Nambu1; Junya Inoue1; Toshihiko Koseki1; The University of Tokyo

3:00 PM
Wear And Nanoidentation Study Of Hardfacing Dual Layer clad of Austenitic Stainless Steel And Tungsten Carbide-Cobalt Alloy: Samar Kalita1; Advanced Engineered Materials Center - University of North Dakota

3:15 PM
Hot Deformation Study by Processing Maps of N Containing Microalloyed Steel: Martina Dikovits1; Cecilia Polletti2; Fernando Warchohmicka2; Gajanam P. Chaudhari3; Vivek Panoshi4; 1WPS, TU Graz; 2Initiative for Sustainable Urban Traffic, TU Vienna; 3Joining and Welding Research Institute

3:30 PM
Influence of Annealing Treatment on Microstructure and Mechanical Properties of Cold-Rolled Sheet of Fe-36Ni Invar Alloy: Xiang Jiang1; Lijuan Li1; Xin Xia1; Junjun Huang1; QiJie Zhai1; 1Shanghai University

3:45 PM
Mechanical Properties of Friction Stir Welded Inconel 600/SS 400 Lap Joints: Kuk Hyun Song1; Won Yong Kim1; Kazuhiro Nakata1; Korea Institute of Industrial Technology; 2Joining and Welding Research Institute

4:00 PM
Thermodynamic Analysis and Observation on Precipitation of Inclusions in RE-253MA Heat Resistance Steel: Zhou Cai1; Chongqing University of Science and Technology

Energy Nanomaterials: Catalysts and Photocatalysts
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Ming Au, Savannah River National Laboratory; Meyya Meyyappan, NASA Ames Research Center

Thursday PM
Room: Swan 3
March 15, 2012
Location: Swan Resort

Session Chairs: Reza Shahbazian Yassar, Michigan Technological University; Masashi Watanabe, Lehigh University

2:00 PM Invited
Computational Studies of Graphene-Supported Metal Nanoparticle Catalysts: Ashwin Ramasubramaniam1; Ioanna Fampiou1; 1University of Massachusetts Amherst

2:30 PM
Oxygen Reduction Reaction (ORR) Activity and Electrochemical Stability of Thin-Film Bilayer Systems of Platinum on Niobium Oxide: David Mitlin1; Li Zhang1; Liya Wang1; Chris Holt1; Titichai Navessin2; Kourosh Malek3; Michael Eikerling3; 1University of Alberta and NINT NRC; 2Department of Chemistry, Simon Fraser University; 3NRC Institute for Fuel Cell Innovation
2:50 PM
Development of Highly Active Titania-Based Nanoparticles for Composite Propellant Combustion: David Reid; Kevin Kreitz; Matthew Stephens; Jessica King; Ponnusamy Nachimuthu; Eric Petersen; Sudipta Seal; University of Central Florida; Texas A&M University; Pacific Northwest National Laboratory

3:05 PM Invited
Hierarchical Microporous Materials: Rational and Designable Heterogeneous Catalysts for Renewable Energy: Wei Fan; University of Massachusetts Amherst

3:35 PM Break

3:55 PM Invited
Characterization of Chemistry of Nanomaterials by (Scanning) Transmission Electron Microscopy: Masashi Watanabe; Lehigh University

4:25 PM
TiO2 Nanotube Arrays Grown in Ionic Liquids: High-Performance in Photocatalysis and Energy Storage: Haqing Li; Jun Qie; Surendra Maratha; Qingzhou Cui; Hanbing Xu; Huimin Luo; Miaoafang Chi; Roberta Meisner; Nancy Dudney; Wei Wang; Sheng Dai; University of Tennessee; Oak Ridge National Laboratory

4:45 PM
Solid State Reactions in TEA Precipitated Cr-ZnO Nanoparticles and Their Use in Photochemical Splitting of Water: Octavio Dominguez; Luisa Flores; Adriana Gaona; Guadalupe Sanchez; Roel Cruz; San Luis Potosi University

Energy Technologies and Carbon Dioxide Management: Waste Heat Recovery
Sponsored by: The Minerals, Metals and Materials Society, TMS, Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Maria Salazar-Villalpando, DOE/National Energy Technology Laboratory; Neale Neelameggham, IND LLC; Donna Guillen, Idaho National Laboratory; Subodh Das, Phinix, LLC; Ramana Reddy, Univ of Alabama; Animesh Jha, Univ of Leeds; Soobhankar “Sib” Pati, Metal Oxygen Separation Technologies (MOxST); Mark Jolly, Univ of Birmingham;
Lakshmanan Vaikuntam, Process Research ORTECH Inc

Thursday PM Room: Europe 8
March 15, 2012 Location: Dolphin Resort

Session Chairs: Animesh Jha, Univ. of Leeds; Maria D. Salazar- Villalpando, DOE/NETL; Soobhankar Pati, Metal Oxygen Separation Technologies

2:00 PM Introductory Comments

2:05 PM
Effect of Materials on the Autoignition of Cyclopentane: Donna Guillen; Idaho National Laboratory

2:25 PM
Low Grade Waste Heat Driven Desalination and SO2 Scrubbing: Srinivas Garimella; Donald Ziegler; James Klausner; Alcoa; University of Florida

2:45 PM
Waste Heat Integration Potential Assessment through Exergy Analysis in an Aluminum Production Facility: Cassandre Nowicki; Louis Gosselin; Carl Duchesne; Aluminium Research Centre - REGAL, Laval University

3:00 PM Break

3:05 PM
Study on Drying Characteristics of Australian Brown Coal Using Superheated Steam: Tsuyoshi Kiriyama; Shozo Kaneko; Akira Hashimoto; Masafumi Maeda; The University of Tokyo

3:20 PM
Sustainability, Energy Efficiency and CO2 Elimination in Concentrate Drying: Jyri Talja; Shaolong Chen; Hannu Mansikkavirta; Kamera Corporation

3:35 PM
COURSE50 Development of Heat Recovery System from Steelmaking Slag: Yasutaka Ta; Hiroyuki Tobo; Yuuki Hagi; Michihiro Kuwayama; JFE Steel Corporation

3:50 PM
Dry Granulation of Molten Blast Furnace slag and Heat Recovery from Obtained Particles: Qin Yuelin; Lv Xuewei; Bai Chengguang; Qiu Guibao; College of Materials Science & Engineering, Chongqing University

4:05 PM
The Environment Load Assessment of Iron and Steel Producing BF-BOF and EAF Route Process: Hongwu Li; Shengli Tao; Hao Bai; Daqiang Cang; University of Science and Technology

4:20 PM
Aluminum Smelter Waste Heat Recovery Plant (Heat Exchangers Fouling and Corrosion-A Detailed Investigation): Hadi Fanisalek; Mohsen Bashiri; Reza Kamali; Hormozal

Magnesium Technology 2012: Energy and Biomedical / Primary Production
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholtz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Thursday PM Room: Southern V
March 15, 2012 Location: Dolphin Resort

Session Chairs: Wim Sillekens, TNO; Neale Neelameggham, IND LLC

2:00 PM
In-Vitro Corrosion Studies of Bioabsorbable Magnesium Alloys: Poonet Gill; Norman Munroe; Florida International University

2:20 PM
High-Capacity Hydrogen-Based Green-Energy Storage Solutions for the Grid Balancing: Fabrizio D’Errico; Adamo Screnci; Politecnico di Milano; Me Phy Energy SA

2:40 PM
Reaction Sintering of Mg2Si Thermoelectric Materials by Microwave Irradiation: Zhou Cai; Bai Guang; Chongqing University of Science and Technology

3:00 PM
Charge-Discharge Mechanism of MgC Powders and Mg-Li Alloy Thin Film Materials: Jen-Ting Chen; Fei-Yi Hung; Truan-Sheng Lui; Ren-Syuann Xiao; Yi-Wei Tseng; Chih-Hsien Wang; Institute of Nanotechnology and Microsystems Engineering, Center for MicroNano Science and Technology, National Cheng Kung University, Tainan, TAIWAN 701; Department of Materials Science and Engineering, National Cheng Kung University, Tainan, TAIWAN 701.
3:20 PM Break

3:40 PM
Control of Yttrium Diffusion Out of Yttria Stabilized Zirconia During SOM Electrolysis for Magnesium Production: Eric Grotz1; Soobhan Kar Pati1; Jarrod Milstein2; Adam Powell3; Uday Pal4; Boston University; 4Metal Oxygen Separation Technologies

4:00 PM
Study on the Thermodynamic and Experimental Carbothermic Reduction of Garnierite: Tao Qu1; Yang Tian1; Bin Yang1; Bao-Qiang Xu1; Da-Chun Liu1; Yong-Nian Dai1; 1National Engineering Laboratory for Vacuum Metallurgy, Kunming University of Science and Technology

4:20 PM
Mechanism of Carbothermic Reduction of Magnesia and Reverse Reaction: Yang Tian1; Tao Qu1; Bin Yang1; Hong-Xiang Liu1; Cheng-Bo Yang1; Yong-Nian Dai1; 1Kunming University of Science and Technology

THURSDAY PM Room: Southern IV
March 15, 2012 Location: Dolphin Resort

Session Chairs: Alan Luo, GM Global Research and Development; Fabrizio D’Errico, Politecnico di Milano

2:00 PM
Enhancement of Strength and Ductility of Mg96Zn2Y, Rolled Sheet by Controlling Structure and Plastic Deformation: Masahiro Noda1; Yoshiohito Kawamura1; Hiroshi Sakurai2; Kunio Funami3; 1Chiba Institute of Technology; 2Department of Materials Science, Kumamoto University; 3Department of Mechanical Science and Engineering, Chiba Institute of Technology

2:20 PM
Microstructural Characteristics of High Rate Plastic Deformation in Elektron WE43 Magnesium Alloys: Joseph Hamilton1; Sarah Brennan1; Yongho Sohn1; Bruce Davis1; Rick DeLorme2; Kiy Cho3; 1University of Central Florida; 2Magnesium Elektron North America; 3US Army Research Laboratory

2:40 PM
Microstructure and Mechanical Properties of As-Extruded Mg-Sn-Al-Zn Alloys: Sung Hyeok Park1; Young Min Kim1; Chang Dong Yim1; Ha-Sik Kim1; Bong Sun You1; 1Korea Institute of Materials Science

3:00 PM
Tensile Properties of Three Preform-Annealed Magnesium Alloy Sheets: Juming Min1; Jon Carter2; Ravi Verma2; 1Tongji University; 2GM R&D

3:20 PM
The Role of Intermetallics on Creep Behaviour of Extruded Magnesium Alloys: Michelle Fletcher1; Lukas Bichler1; Dimitry Sediako2; 1UBC Okanagan; 2NRC - CNRC

3:40 PM Break

4:00 PM
High Performance Mg-System Alloys for Weight Saving Applications: First Year Results from the GREEN METALLURGY EU Project: Fabrizio D’Errico1; Gerardo Garces Plaza2; Markus Hofer3; Shae Kim4; 1Politecnico di Milano; 2Centro Nacional de Investigaciones Metalúrgicas; 3Buhler AG; 4Korea Institute of Industrial Technology

4:20 PM
Effect of Extrusion Conditions on Microstructure and Texture of Mg-1% Mn and Mg-1.6% Sr Alloys: Hemant Borkar1; Mihir Ban Pekguleryuz2; 1McGill University

4:40 PM
On the Deformed Microstructure of Rolled Mg-2.9Y: Amir Farzadfar1; Mehdi Sanjari2; In-Ho Jung3; Elhachmi Essadiqi4; Stephen Yue5; 1McGill University; 2CANMET

Materials and Fuels for the Current and Advanced Nuclear Reactors: Nuclear Fuels and Materials


Program Organizers: Ramprashad Prabahakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Thursday PM Room: Swan 4
March 15, 2012 Location: Swan Resort

Session Chair: Leah Squires, Idaho National Laboratory

2:00 PM
Neptunium Oxide Reduction Technique: Leah Squires1; Paul Lessing1; James Stuart1; Bryan Forsmann1; 1Idaho National Laboratory; 2Boise State University

2:20 PM
Enthalpy of gamma-delta Transition in Ternary U-Pu-Zr Fuel Alloys: Cynthia Papesh1; Thomas O’Holleran1; Robert Mariani1; Matthew Cromwell1; 1Idaho National Laboratory; 2University of Idaho

2:40 PM
Microstructural Analysis of Ion-Implanted PyC/B-SiC: Rob Coward1; Shyam Dwaraknath1; Mitra Taheri2; 1Drexel University; 2University of Michigan

3:00 PM
Role of Microstructure on Ag and Cs Diffusion in SiC: Tyler Gerczak1; Todd Allen1; 1University of Wisconsin-Madison

3:20 PM
Grain Size Dependence of Radiation Response in Silicon Carbide: Laura Jamison1; Peng Xu1; Kumar Sridharan1; Todd Allen1; 1University of Wisconsin-Madison

3:40 PM Break

3:50 PM
Silver Diffusion in PyC Coated B-SiC: Shyam Dwaraknath1; Gary Was1; 1University of Michigan

4:10 PM
Mechanism of Proton Irradiation-Induced Creep of Pyrolytic Carbon: Anne Campbell1; Gary Was1; 1University of Michigan
3:50 PM Break

4:00 PM
Toward a Better Understanding of the Hydrogen Impact on the Radiation Induced Growth of Zirconium Alloys: Lea Tournadre1; Fabien Onimus2; Jean-Luc Bechade3; Didier Gilson4; Jean-Marc Clouez5; Jean-Paul Maridon6; Xavier Feaugas7; Ovidiu Toader7; CEA; AREVA; Laboratoire d’Etude des Matériaux en Milieux Agressifs (LEMMA); Michigan Ion Beam Laboratory (MIBL)

4:20 PM
Influence of Copper Level on Neutron Irradiation Effects in Low Copper Pressurized Water Reactor Vessel Steels: Hefei Huang1; Bertrand Radiguet2; Patrick Todeschini2; Francois Clémendot2; Philippe Pareige3; GPM UMR CNRS 6634 - Université et INSa du Rouen; EDF R&D MMC; EDF-CEIDRE

4:40 PM
A Synchrotron X-ray Diffraction and Transmission Electron Microscopy Study of Ion-Implantation Induced Microstructure Evolution on the Nuclear-Grade Graphite: E-Wen Huang1; Chang Chung-Kai1; Shuo-Cheng Tsai2; Ji-Jung Kai3; Department of Chemical & Materials Engineering and Center for Neutron Beam Applications, National Central University; Cental University; Department of Engineering and System Science, National Tsing-Hua University

5:00 PM
Investigating the Dissolution of Oxide Particles in ODS Steels under Irradiation: Ceri Williams1; Emmanuelle Marquais2; Paul Bagot1; George Smith1; University of Oxford; University of Michigan

5:20 PM
Effects of Neutron Irradiation on Select MAX Phases: Darin Tallman1; Elizabeth Hoffman1; Dennis Vinson1; Robert Sindelar2; Gordon Kohse3; Michel Barsoum3; Drexel University; Savannah River National Lab; Massachusetts Institute of Technology

5:40 PM
TEM Analysis of the Microstructure Evolution in Ion Irradiated Austenitic Stainless Steels: Alexandre Volgin1; Cedric Pokor2; Brigitte Decamps2; Aurelie Gentils2; Bertrand Radiguet3; Philippe Pareige3; Abderrahim Al-Mazouzi1; EDF R&D; Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse CNRS-IN2P3; Groupe de Physique des Matériaux UMR CNRS 6634

Minerals, Metals and Materials under Pressure: New Materials and Properties
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Phase Transformations Committee Program Organizers: Ellen Cerreta, Los Alamos National Laboratory; Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois, Urbana-Champaign; Vijay Vasudevan, Univ. Cincinnati

Thursday PM  March 15, 2012  Room: Europe 7  Location: Dolphin Resort

Session Chair: Richard Hennig, Cornell University

2:00 PM Invited
Pressure Stabilized Alkali Metal Polyhydrides: Eva Zurek1; University at Buffalo, SUNY
2:30 PM Polaron Hopping in LiFePO4 at Elevated Pressures and Temperatures: Lisa Mauger; Sally Tracy; Jorge Munoz; Hongjin Tan; Hillary Smith; Brent Fultz; ‘California Institute of Technology

2:50 PM Effect of Pressure on the Critical Resolved Shear Stress of MgO Single Crystal: Insights from Numerical Modeling: Philippe Carrez; Jonathan Amodeo; Patrick Cordier; ’Lab. UMET CNRS-8207

3:10 PM High Pressure Study of the Effects of Vacancies on the Lattice Dynamics of B2 FeAl: Matthew Lucas; ‘Air Force Research Laboratory

3:30 PM Amorphization and Nanocrystallization in Boron Carbide and Silicon Carbide Impacted at High-Velocity: Jerry Lasalvia; Eugene Shanholz; ’U.S. Army Research Laboratory

3:50 PM Break

4:00 PM Invited Random Search - A Tool for Discovery at High Pressure: Chris Pickard; ’University College London

4:30 PM Equation of State of Solid Solution Mg2FeAlSiO4 Measured in Diamond Anvil Cell: Shu Huang; Jiuhua Chen; Bin Yang; Vadyum Drozd; Andriy Durygin; ’Florida International University

4:50 PM HPHT Synthesis of Phosphorus Doped Diamond from Triphenylphosphine and Graphite: Bin Tang; Fangli Chi; Ernesto Vallejo; Jiuhua Chen; ’Florida International University

5:10 PM High Pressure X-ray Diffraction Studies for Piezoelectric Materials: Lingping Kong; Zhenhai Yu; Luhong Wang; Haozhe Liu; Wenge Yang; Ho-kwang Mao; ’Carnegie Institution of Washington; ’Argonne National Laboratory; ’Harbin Institute of Technology

Production, Recovery and Recycling of Rare Earth Metals: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Joseph Pomykala, Alter Trading; Oliver Gutfeilch, IFW Dresden

Thursday PM Room: Europe 4 Location: Dolphin Resort

Session Chairs: Lifeng Zhang, Missouri S&T; Joseph Pomykala, Alter Trading; Oliver Gutfeilch, Institute of Metallic Materials

Recent Developments in Biological, Electronic, Functional and Structural Thin Films and Coatings: Process-Properties-Performance Correlations III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee

Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Jian Luo, Clemson University; Xing Yang (Mark) Liu, National Research Council Canada; Nancy Michael, University of Texas at Arlington; Roger Narayan, University of North Carolina and North Carolina State University; Choong-un Kim

Thursday PM Room: Swan 10 March 15, 2012 Location: Swan Resort

Session Chairs: Nuggehalli Ravindra, New Jersey Institute of Technology; Sudhakar Shet, NREL & NJIT

2:00 PM Introductory Comments

2:05 PM Recycling of Rare Earth Metals: A Review: Lifeng Zhang; ’Missouri University of Science and Technology

2:35 PM Hydrogen Processing – a Novel Route for the Recycling of Sintered Nd-Fe-B Magnets: Oliver Gutfeilch; Konrad Guth; ’IFW Dresden

3:05 PM Electrochemical Behaviour of Neodymium in Aqueous Electrolytes: Ralph Suepitz; Kristina Tschulik; Margitta Uhlemann; Ludwig Schultz; ’IFW Dresden

3:35 PM Recovery of Rare Earth Metals via Liquid Metal Extraction: Ryan Ott; Dan Cavanaugh; Warren Straszheim; Matthew Kramer; Larry Jones; ’Ames Laboratory (USDOE); ’Ames Laboratory (USDOE)

4:05 PM Break

4:15 PM Rapid Separation of Rare Earth Elements with Interstitial Polymer Network Ion Exchange Columns: Richard Hammen; John Hammen; Anupam Goyal; ’IntelliMet LLC

4:45 PM Selective Extraction of Neodymium from Nd-Fe-B alloys Using Magnesium: Taek-Soo Kim; Hongjin Chae; Ryan Ott; ’Korea Institute of Industrial Technology (KITECH)

5:15 PM Effect of Tellurium Reduction and Thermoelectric Properties on Thermoelectric Materials Produced by Rapid Solidification Processes and Hot Extrusion: Hyo-Seob Kim; Taek-Soo Kim; Soon-Jik Hong; ’Kongju National University; ’Korea Institute of Industrial Technology (KITECH)

5:45 PM Study on the Cerium Oxide Prepared by Pyrolysis of Cerium Chloride Solution: Bian Xue; Wu Wenyan; ’Northeastern University

4:30 PM Selective Extraction of Neodymium from Nd-Fe-B alloys Using Magnesium: Taek-Soo Kim; Hongjin Chae; Ryan Ott; ’Korea Institute of Industrial Technology (KITECH)
3:05 PM
Hydrothermal Synthesis of Zinc Oxide Thin Film for Printed Electronics: Ruihong Zhang¹; Carol Handwerker¹; ¹Purdue University

3:25 PM
Spin-Coated Erbium-Doped Silica Sol-Gel Films on Silicon: Sufian Abedrabbo²; Bashar Lahlouhi³; Sudhakar Shet¹; Anthony Fiory¹; Nuggehalli Ravindra³; ¹University of Jordan; ²National Renewable Energy Laboratory; ³New Jersey Institute of Technology

3:55 PM Break

4:10 PM
Influence of Annealing on the Martensitic Transformation and Magnetocaloric Effect in Ni₅₀Mn₃₉Sn₁₂ Ribbons: Dianzhen Wu¹; Sichuang Xue¹; Hongxing Zheng¹; Qijie Zhai¹; ¹Shanghai University

4:30 PM
Metal Diaphragm Based Magnetic Field Sensor: Asahel Banobre¹; Ivan Padron¹; Anthony T. Fiory¹; Nuggehalli M. Ravindra¹; ¹NJIT

4:50 PM
Optical and Electronic Properties of III-V Nitrides: Chiranjivi Lamsal¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

5:10 PM
Application of Expanding Thermal Plasma for Deposition of Hydrogenated Diamond like Carbon Thin Films on Rubber Seals: Ali Reza Eivani¹; Yutao Pei¹; Jeff Th.M. De Hosson²; Teodor Zaharia¹; Richard M.C.M. Van de Sanden³; ¹Materials Innovation Institute (M²i); ²University of Groningen; ³Eindhoven University of Technology
2012 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Nanomaterials Committee

Program Organizers: Jiyoung Kim, University of Texas; David Stolberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Terry Xu, UNC Charlotte

Monday PM  Room: Atlantic Hall
March 12, 2012  Location: Dolphin Resort

U-1: A Facile, One Pot and Completely ‘Green’ Synthesis of Sugar-Reduced Silver Nanoparticles: Lucwaba Yolisa1; Vulyewa Ncapayi1; Odey Akpa1; Sandile Songca1; Oluwafemi Oluwatobi1; Walter Sisulu University

U-2: Analysis of RTS Noise Characteristics in Fin-Type Silicon-Oxide-High-k-Oxide-Silicon (SOHOS) Flash Memory: Seung Dong Yang1; Sang Youl Lee1; Ho Jin Yun1; Kwang Seok Jeong1; Yu Mi Kim2; Jae Sub Oh3; Hi-Deok Lee1; Ga Won Lee1; 1Chungnam National University; 2Nanofab Center

U-3: Atmospheric-Pressure Plasma Sintering of Silver Nanopaste Screen-Printed on PI: Kwang-Seok Kim1; Woo-Ram Myung1; Seung-Boo Jung1; Sungkyunkwan University

U-4: Effects of Calcination Conditions on Particle Size and Morphology of NiFe2O4 Nanoparticles Synthesized by Solid-State Reaction: Zhigang Zhang1; Yihao Liu2; Guangchun Yao2; Di Wu1; Junfei Huang1; 1Northeastern University

U-5: Electrical Characterization in Pillar Type Silicon-Oxide-Nitride-Silicon Flash Memory Using Bandgap Engineering Method: Sang Youl Lee1; Seung Dong Yang1; Jae Sub Oh3; Ho Jin Yun1; Kwang Seok Jeong1; Yu Mi Kim2; Hi Deok Lee3; Ga Won Lee1; 1Chungnam University; 2Chungnam university; National Nanofab Center

U-6: Electrospinning of the Dendritic Polymer (Acrylonitrile /Acrylic Oxide-Silicon Flash Memory Using Bandgap Engineering Method: Sang Youl Lee1; Seung Dong Yang1; Jae Sub Oh3; Ho Jin Yun1; Kwang Seok Jeong1; Yu Mi Kim2; Hi Deok Lee3; Ga Won Lee1; 1Chungnam University; 2Chungnam university; National Nanofab Center

U-11: Nanotechnology Coating of Buildings with Sol–Gel Method: Aref Sadeghi Nik1; Ali Bahari2; MohammadH. Khalilipasha1; Adel Sadeghi Nik1; 1Young Researchers Club, Jouybar Branch, Islamic Azad University, Jouybar, Iran; 2Department of Physics, University of Mazandaran, Babolsar, Iran; 3Dept. of Civil Engineering, Islamic Azad University, Jouybar branch, Jouybar, Iran

U-12: PHB Nanocomposite Microcapsules with Brazilian Smeectic Clays: Francisco Valenzuela-Diaz1; Maria da Silva-Valenzuela1; Wang Shu Hui1; Helio Wiebeck1; 'Universidade de Sao Paulo

U-13: Raman Spectroscopy of Graphene and Plasma Treated Graphene under High Pressure: Ali Hadjikhanian1; Jiuhua Chen1; Santanu Das1; Won-bong Choi1; FIU

U-14: Research on Preparation of Anisotropic Sm2Co17 Nanoflakes by Ball Milling under Magnetic Field: Ying Chang1; Jian Zhao3; Xiaodong Li1; Zhiyong Wei1; Minggang Zhu2; Zhaohui Guo2; Wei Li2; 1Dalian University of Technology; 2China Iron & Steel Research Institute Group

U-15: Room-Temperature Synthesis of Spherical and Flowerlike Ag Nanostructures in Different Solvent: Gouliang Li1; Bing Peng2; Liyuan Chai2; Lei Jiang2; Liyuan Zhang1; 1Central South University; 2Central South University

U-16: Scaling Down High-k Gate Dielectrics for Graphene-Based Device Applications: Srikar Jandhyala1; Greg Mordi1; Jiyoung Kim1; 1University of Texas at Dallas

U-17: Selective Area Atomic Layer Deposition (ALD) with E-Beam Lithography (EBL) on Self-Assembled Monolayers (SAM): Jie Huang1; Mingjun Lee1; Jiyoung Kim1; 1University of Texas at Dallas

U-18: Sensitive Colorimetric Detection of Cysteine in the Presence of Glutathione Using Gold Nanoparticles Aggregation: Ensieh Seyehdosseni1; M.Reza Hormozi-Nezhad2; Chemistry Department, Sharif University of Technology; 1Institute for Nanoscience and Nanotechnology(INST),Sharif University of Technology

U-19: Study on Liquid Sodium with Suspended Nanoparticles

U-20: Study on Liquid Sodium with Suspended Nanoparticles

U-21: Study on Microstructure Control and Atmospheric Corrosion of Micro-alloying Heavy Rail Steel: Wang Xiao Li1; 1University of Science and Technology Beijing

U-22: The Post-Annealing Effects of N-Doped ZnO Films Deposited by the Atomic Layer Deposition: Kwang Seok Jeong1; Yu Mi Kim1; Ho Jin Yun1; Seung Dong Yang1; Sang Youl Lee1; Young Su Kim2; Hi Deok Lee1; Ga Won Lee1; 1Chungnam National University; 2Nanofab Center

U-23: Thermo-mechanical properties investigation of PMMA nanocomposites using functionalized zirconia nanoparticles: Muhammad Sajjad1; 1Vienna University of Technology

U-24: Study on Liquid Sodium with Suspended Nanoparticles

U-25: Study on Liquid Sodium with Suspended Nanoparticles
Alumina and Bauxite: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Benny Raahauge, FLSmidth

Monday PM
March 12, 2012
Room: Atlantic Hall
Location: Dolphin Resort

M-1: Acid Cleaning of Titanium Based Scales Formed on Preheaters in the Bayer Process: Ibrahim Akpinar1; Yasemin Guldogan2; Oktay Uysal2; Göktan Demir1; Meral Baygul1; Yücel Sahin1; Entekno industrial, technological and nano materials ltd.; Entekno Industrial, Technological and Nano Materials Ltd.; Eti Aluminyum A.S.; Anadolu University

M-2: Extracting Alumina from Coal Fly Ash with Ammonium Sulfate Sintering Process: Laishi Li1; Xinqin Liao1; Yusheng Wu1; Yingsong Liu1; Shenyang Aluminum & Magnesium Engineering & Research Institute Co., Ltd.; School of Materials Science and Engineering, Shenyang University of Technology

M-3: Study on Absorption of Low-Concentration SO2 with Basic Slag Intensified by Ultrasonic Wave: Nan Xiang1; Zhang Ting1; Zhang Lu1; Liu Yan1; Lv Guozhi1; Zhao Quiyue1; Northeastern University

Alumina Alloys: Fabrication, Characterization and Applications: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee Program Organizers: Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Zhongdong Long, Kaiser Aluminum

Monday PM
March 12, 2012
Room: Atlantic Hall
Location: Dolphin Resort

L-1: A Study of Microstructural Stability of Friction Stir Welded Joints of Al-Mg Alloys during Subsequent Thermal Exposure: Chun-Yi Lin1; Truan-Sheng Lui1; Li-Hui Chen1; National Cheng Kung University

L-2: Characterization of the Compressive Behaviour of an Al Alloy by X-Ray Computed Tomography: Girolamo Costanza1; F. Mantinco1; Severino Missori1; Maria Elisa Tata1; Andrea Sili2; University of Rome “Tor vergata”; Università di Messina

L-3: Computer Aided Cooling Curve Thermal Analysis of Al-Si-Cu-Mg Alloys: First and Second Derivative Curves: Saied Farahany1; Ali Ourdjini1; Mohd Hasbullah Idris1; Universiti Teknologi Malaysia

L-4: Effect of Co on the Microstructure of Al-20Si-5Fe Alloys: O. Uzun1; M.F. Kilicaslan1; F. Yilmaz2; Soon-Jik Hong2; Gaziosmanpasa University; Kastamonu University; Gaziosmanpa University; Kongju National University

L-5: Effect of Pin Tool Pass on the Quality of Friction Stir Weldment: An Experimental Evaluation: Abdelrahman Shuaib1; Fadi Al Bedour1; Nesar Merah1; Abdulaziz Bazoune1; King Fahd University of Petroleum & Minerals

L-6: Energy Absorption of Aluminum Foam-Filled Tubes under Quasi-Static Axial Loading: Huan Liu1; Guangchun Yao2; Zhaokun Cao2; Northeastern University; Northeastern University

Biological Materials Science Symposium: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division. TMS: Biomaterials Committee Program Organizers: Nima Rahbar, University of Massachusetts Dartmouth; Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego; Molly Gentleman; Texas A&M University

Monday PM
March 12, 2012
Room: Atlantic Hall
Location: Dolphin Resort

G-1: Aging Heat Treatment and Phase Transformations in Ti-Nb-Sn Alloys: Eder Lopes1; Alessandra Crennaso1; Rodrigo Contieri1; Rubens Caram1; University of Campinas

G-2: Corrosion Behavior under Biological Environment of Zr61Ti2Cu25Al12 Amorphous Alloy: Ling Sh1; Xu Zhao1; Qiang He1; Jian Xu1; Institute of Metal Research, Chinese Academy of Sciences

G-3: Effect of Heat Treatment on Oxidation Behavior and Brightness of Oxide Film Formed on Ti-Nb-Ta-Zr Alloy: Eri Miura-Fujigawa1; Soichi Yamada1; Yoshimi Watanabe1; Tohoku University; Nagoya Institute of Technology; Tohoku University

G-4: Effects of Nitrogen Addition on Mechanical Properties of Hot-Forged Biomedical Co–Cr–Mo Alloys with Ultrafine–Grained Microstructures: Kenta Yamanaka1; Manami Mori1; Akihiko Chiba1; Tohoku University; NISS, ARS, LTD.

G-5: Evaluation of Properties of TiO2 Ceramic Dental Block Fabricated by Magnetic Pulsed Compaction (MPC): Hyo-Young Park1; Jin-Sung Choi1; Hye-Seob Kim1; Uk-Hyon Joo1; Jar-Myung Koo1; Soon-Jik Hong1; Kongju National University; BioMaterials Korea Inc

G-6: In Vivo Osteogenic Capability of Rat-Derived Menenchymal Cells Cultured on Biomimetic Hydroxyapatite: Mina Khorami1; Saeed Hesaraki1; Sajad Farhangdoust1; Ali Zamanian1; Hamid Nazarian1; materials and energy research center

G-7: Mechanical Behavior and Corrosion Resistance of Nanostructured Ti97.3Fe18.5Sn15 and Ti97Nb25Zr25 Alloys for Biomedical Applications: Anna Hynowska1; Jordina Fornell1; Eva Pellicer1; Sergio González1; Nele Van Steenberge1; Santiago Surisachi1; María Dolores Baró1; Jürgen Eckert1; Jordi Sort1; Universitat Autònoma de Barcelona
G-8: Nature’s Inspiration: How Do Quills Protect Porcupines?  
Wen Yang; Ekaterina Novitskaya; Sara Bodde; Zherrina Manilay; Christy Chao; Joanna Mckittrick;  
‘Materials Science and Engineering Program, University of California, San Diego; 2Department of Mechanical  
and Aerospace Engineering, University of California, San Diego; 3Brown University  

G-9: Nitinol Commercialization Accelerator – Ohio Third Frontier  
Janet Ghrur; JR Lewandowski; H Lavvafl; M Young; D Schwam; JD McGuiffin-Cawley; MV Nathal; S Padula; JJ Lewandowski;  
‘Case Western Reserve University; ‘Cleveland Clinic; ‘NASA Glenn Research Center  

G-10: Parametric Study of Fibroblast Attachment Kinetics on Fibronectin-Coated Polystyrene Tissue Culture Plates  
Shawn Regis; Sina Yousefian; Nima Rahbar; Sankha Bhowmick; ‘UMass Dartmouth  

G-11: Peptide-Enabled Control of Metal Nanoparticle Bimetalliclization: Marketa Hinlova; Dmitry Khatayevitch; Hanson  
Fong; Candan Tamerler; Mehmet Sarikaya; ‘University of Washington  

G-12: Processing and In Vivo Evaluation of Spark Plasma Sintered A2O3-YSZ-TiO2 Composites  
Ipek Akin; Viorica Simon; Simona Cava; Gulitekin Goller; ‘Istanbul Technical University; 2Babes-Bolyai University; 3University of Oradea  

G-13: Strong Fiber Reinforced Hydrogel Composite: Animesh Agrawal; Sina Yousefian; Nima Rahbar; Paul Calvert;  
‘University of Massachusetts Dartmouth  

G-14: Strontium Releasing And Physicochemical Properties of Novel Calcium Sulfate Bone Substitute Materials  
Saeed Hesaraki; Sajad Farhangdoust; Hasid Bandegani; Mina Khoraami; Ali Zamanian;  
‘materials and energy research center; ‘Materials and Energy Research Center  

Kakpovbia; David Olson; Brajendra Mishra; John Spear; ‘Saudi Aramco; 2Colorado school of Mines  

G-16: Weibull Analysis of the Behavior on Tensile Strength of Bamboo Fiber of the Specimen Dendrocalmus Giganteu: Lucas Martin;  
Nathalia Rosal; Sergio Monteiro; ‘UNEF  

G-17: Wet Chemical Synthesis of Hydroxyapatite from Egg Shells: Mohammad Aftab Akram; Rafaat Hussain; Mohammad Islam;  
‘National University of Sciences and Technology Pakistan; ‘University Teknologi Malaysia, 81310 UTM Skudai, Johor Darul Ta’zim, Malaysia.  

Computational Thermodynamics and Kinetics:  
Poster Session  
Sponsored by: The Minerals, Metals and Materials Society,  
TMS Electronic, Magnetic, and Photonic Materials Division,  
TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Alloy Phases Committee,  
TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee,  
TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modelling Committee  

Program Organizers: Z-Kui Liu, The Pennsylvania State University; Mark Asta, University of California, Berkeley; James Warren, The National Institute of Standards and Technology; Yunzhi Wang, Ohio State University; Raymundo Arroyave, Texas A & M University; Yu Wang, Michigan Tech  

Monday PM Room: Atlantic Hall  
Location: Dolphin Resort  

C-1: A Kinetic Study of the Leaching of Germanium Dust and Fume by Sulfuric Acid: Wankun Wang; Jinhui Peng; Zebiao Zhang; Lijuan Chu; Guodong Lai;  
‘Kunning University of Science and Technology  

C-2: Continuous Modeling of Microstructure Evolution Coupled with Plastic Activity: Maeva Cottura; Yann Le Bouar; Alphonse Finel; Benoît Appolaire; Samuel Forest;  
‘Laboratoire d’Etude des Microstructures, CNRS/ONERA; 3Mines ParisTech, Centre des Matériaux CNRS UMR 7633  

C-3: Convex Projection to Estimate Heat Content of Cold Charges in Peirce-Smith Converting: Alessandro Navarra; Anna-Maria Pubill  
Melsio; Joël Kapusta; ‘Universidad Católica del Norte; 2Air Liquide; ‘BBA Inc.  

C-4: Effects of Sub-Surface He Bubbles on Tungsten Surface Evolution: Faiza Sojia; Karl Hammond; Niklas Justin; Brian Wirth;  
‘UC Berkeley; ‘University of Tennessee  

C-5: Establishment and Analysis of the Composite Key Stratum Model Layer on the Winkler Foundation: Hongju Pan; Shu-Gang Li;  
Peng-Xiang Zhao; ‘X’ian University of Science and Technology  

C-6: First-Principles-Based Phase Diagram for (Mo xNb(1-x))Si 2  
Lehrer Diagrams  
Jixiang Xu; Qingyan Xu; ‘Xi’an University of Science and Technology  

C-7: Gaseous Nitriding Process Control: Application of Customized Lehrer Diagrams: Mei Yang; Richard Sisson; ‘WPI  

C-8: Intelligent Heat Treating: Simulation of Carburization Process: Lei Zhang; Yingying Wei; Liang He; Richard D Sisson; ‘WPI  

C-9: Molecular Dynamics Simulation Study of the Alloying Reactions of Nanostructured Al/Na Clad Particles System under Thermal Loading: Shijin Zhao; ‘Shanghai University  

C-10: Numerical Simulation of Directionally Solidified Structure of Ti-47Al-2Cr-2Nb Alloy Based on CA Method: Jixiang Xu; Qingyan Xu; Jin Cheng; Hu Zhang; Baocheng Liu; ‘Tsinghua University; 2HeiBing University  

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C-11: Formation Alloys: The Role of Attractive H-H Interactions in Nano-Precipitate C-14: Understanding H Induced Failure Mechanisms in Metallic Alloys: The Role of Attractive H-H Interactions in Nano-Precipitate Formation: Johann von Pezoldt; Alexander Udyansky; Ugur Aydin; Tilmann Hickel; Joerg Neugebauer; Max-Planck-Institut für Eisenforschung GmbH

Deformation, Damage, and Fracture of Light Metals and Alloys: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Fuqian Yang, Univ. of Kentucky; Ke An, Oak Ridge National Laboratory

Monday PM
Room: Atlantic Hall
Location: Dolphin Resort

N-1: Correlation between Melt Quality and Fatigue Properties of 2024, 6063 and 7075: Engin Ton; Ali Tarakci; Derya Disipinar; Pamukkale University; University of Istanbul

Magnesium Technology 2012: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Wim Sillekens, TNO; Norbert Hort, Helmholz-Zentrum Geesthacht; Neale Neelameggham, U.S. Magnesium

Monday PM
Room: Atlantic Hall
Location: Dolphin Resort

K-6: Doping Effect on the Formation Energy of the Basal-Plane Stacking Faults in Binary Mg-X Alloys: First-Principles Calculations: William Yi Wang; Shun Li Shang; Zhi Gang Mei; Yi Wang; Suveen Nigal Mathaudhu; Xi Dong Hui; Zhi-Kui Liu; Pennsylvania State University; US Army Research Office; University of Science and Technology Beijing

K-7: Ductility Improvement in Equal Channel Angular Processed AZ31 Magnesium Alloy: Sonia Modarres-Razavi; David Foley; Ibrahim Karaman; Karl T. Hartwig; Laszlo Kecskes; Suveen Mathaudhu; Vincent Hammond; Texas A&M University; US Army Research Laboratory

K-8: Effect of CaO on Creep Behavior of Magnesium Alloys: Hyun Kyu Lim; Shae K. Kim; KITECH

K-9: Effect of Gadolinium and Yttrium Content on Microstructure and Strength of Mg-Li Alloys: Min Li; Guangchun Yao; Guoyin Zu; Mengxiaochen; Jun Cheng; Qingyuan Zhu; Northeastern University

K-10: Effect of Grain Refinement and Texture Changes Induced by Burnishing on Corrosion Resistance of Magnesium Alloy for Biomedical Applications: Z. Pu; S. Yang; G.-L. Song; O.W. Dillon, Jr.; D. A. Puleo; I.S. Jawahir; University of Kentucky; General Motors

K-11: Effect of Heat Input on Microstructure and Mechanical Properties of Pulsed TIG Welded AZ31 Magnesium Alloys: Ali Reza Amirkhani; Ali Reza Ebrahimi; Rasool Azari Khoroshahbi; Sahand University of Technology

K-12: Effect of Zn Concentration on the Microstructures and Mechanical Properties of Extruded Mg–Y–Gd–Zr Alloys: Jian Meng; Ke Liu; Xin Qu; Deping Zhang; Yangde Li; Changhai Institute of Applied Chemistry, Chinese Academy of Sciences; Dongguan e-ande Co. Ltd

K-13: Effects of Friction Stir Process on the Tensile Properties of AZ61 Magnesium Alloy at Room Temperature to 200 °C: Hsiang-Ching Chen; Tuan-Sheng Liu; Li-Hui Chen; Fei-Yi Hung; National Cheng Kung University

K-14: Enhanced Corrosion Resistance of AE42 Magnesium Alloy Achieved by SPD: Peter Minárik; Robert Kráľ; Miloš Janeček; Charles University in Prague

K-15: Eutectic Formation in Binary Alloys: Morteza Amoorezaei; Rameez Ashraf; David Montiel; Nikolaos Provatas; McMaster University

K-16: Finite Element Analysis of the Evolution of Damage during Equal Channel Angular Pressing of a Mg–3Al–1Zn Alloy: Feng Kang; Jing Tao Wang; Chao Hong Zhang; Ping Cheng; Hai Ying Wu; Jinxin Axle Co., LTD; Nanjing University of Science and Technology

K-17: High Strength Magnesium Alloys as Light Weight Advanced Structural Materials for Automotive and Aerospace Applications: Ankit Gupta; Assistant Manager, Materials Department, Tata Motors Limited, Pant Nagar Works, India

K-18: Hot and Cold Deformation of Twin Roll Cast AZ31 Magnesium Alloy: Modeling and Experiments: Hesamaldin Askari; John Young; Hussein Zbib; David Field; Ghassan Kridli; Mohammed Khaleel; Washington State University; Texas A&M University at Qatar; Pacific Northwest National Laboratory

K-19: Improved Sintering of Mg Powder Metallurgy Compacts by Thermal Pretreatment: Paul Burke; Florian Saint-Lebes; Georges Kipouros; Massachusetts Institute of Technology; ICAM; Dalhousie University
K-20: Influence of Section Thickness on Microstructure and Mechanical Properties of Squeeze Cast Magnesium Alloy AM60: Xuezi Zhang1; Meng Wang1; Zhizhong Sun1; Henry Hu1; 1University of Windsor

K-21: Influence of Zinc-Yttrium Ratio and Cerium on the Mechanical Properties of Hot Rolled and Friction Stir Processed Mg-Zn-Y Alloys: Arun Mohan1; Rajiv Mishra1; Ravi Verma1; 1Missouri University of Science and Technology

K-22: Insights into the Nucleation of Extension Twins in Mg Alloys: Ali Khosravani1; Raja Mishra2; Brent Adams1; David Fullwood1; 1Brigham Young University; 2General Motors

K-23: In Situ Quantitative Tension and Compression Study on Twinning and Detwinning in Submicron-Sized Mg Crystals inside a Transmission Electron Microscopy: Boyu Liu1; Zhwei Shan1; Xiyan Zhang1; Jun Sun1; Evan Ma1; Xi’an Jiaotong University; Chongqing University; 1The Johns Hopkins University

K-24: Investigation of Mechanical Properties of AZ31 Mg Alloys Coated by Plasma Electrolytic Oxidation: Ahmet Ucisk1; Salih Durdu1; Bogazici University

K-25: Investigation of the Corrosion for Mg-Li-xGd-y (x=7, 8, 9, 10, 11 wt% y=1, 2, 3, 4, 5 wt% Alloys: Min Li1; Guangchuan Yao1; Guoyin Zu1; Jun Cheng1; Qingyuan Liu1; Liping Zhou2; 1Northeastern University; 2Central South University

K-26: Magnesium Recycling of Partially Oxidized, Mixed Magnesium-Aluminum Scrap Through Combined Electrorefining and Solid Oxide Membrane (SOM) Electrolysis Processes: Xiaofei Guan1; Peter Zink1; Uday Pal1; 1Boston University

K-27: Measuring Heat Transfer during Twin Roll Casting of Metals: Pedram Mehraram1; Mary Wells1; 1University of Waterloo

K-28: Mg-Rich Region of the Mg-Gd-Al and Mg-Gd-Sn Ternary Phase Diagrams: John Koper1; J.-C. Zhao1; 1The Ohio State University

K-29: Microstructure and Mechanical Properties of Mg-5Sn-5Zn-xCa Alloys: Liu Bin1; 1Shenyang University of Technology

K-30: Microstructure and Mechanical Properties of Nanocrystalline Pure Mg via Cryomilling, Spark Plasma Sintering and Extrusion: Baotlong Zheng1; Troy Topping1; Yuhong Xiong1; Yizhang Zhou1; Suveen Mathaudhu1; Enrique Lavernia1; 1University of California, Davis; U.S. Army Research Office

K-31: Microstructures and Mechanical Properties of Rapidly Solidified Mg-Re Base Alloy Powder Produced by Using LME Method: Hong Jun Chae1; Sun Woo Nam1; Tae Bum Kim1; Taek-Soo Kim1; 1Korea Institute of Industrial Technology

K-32: Microstructure and Texture Effects on the Deformation Behaviors of the Statically Recrystallized Mg-Zn-MM Alloy Sheets: Heon Kang1; SeEun Shin1; DongHyun Bae1; 1Yonsei University

K-33: Modeling of Deformation Behavior of Multiphase Wrought Magnesium: Dongsheng Li1; Curt Lavender1; Eric Lavender1; Xin Sun1; Mohammed Khaleel1; Pacific Northwest National Laboratory

K-34: Nanofatigue Behavior in a Quenched Mg Alloy: Wanguang Xu1; Michael Ferry1; University of New South Wales

K-35: One-Step Approach to Enhance Corrosion Resistance of Coating Layer on AZ91 Mg Alloy via Plasma Electrolytic Oxidation in Electrolyte Containing Ammonium Vanadate: You Chan Jung1; Kang Min Lee1; Sang Il Yoon1; Young Gun Ko1; Dong Hyuk Shin1; 1Hanyang University; 2Yeungnam University

K-36: Phase Dissolution of γ-Mg17Al12 during Homogenization of As-Cast AZ80 Magnesium Alloy and Its Effect on Room Temperature Mechanical Properties: Rahul Kulkarni1; Nityanand Prabhu1; Peter Hodgson1; Bhagwati Kashyap1; 1Indian Institute of Technology Bombay; 2Deakin University, Australia

K-37: Precipitation Formation and Grain Refinement of Mg-Al-Sn Alloy during Hot Deformation: Abu Syed Huumaan Kabir1; Jing Su1; Phuong Vo1; In-Ho Jung2; Stephen Yue3; 1McGill University

K-38: Production of Mg-Ni Alloy by Consumable Cathode Molten Salt Electrolysis: Biao Xue1; Wu Wenyan1; 1Northeastern University

K-39: Quasi-Static and Dynamic Compressive Mechanical Behavior of Coarse Grained and Ultrafine Grained Mg-Y/RE Alloy: Nilesh Kumar1; S. Panigrahi1; R. Mishra1; R. DeLorme1; B. Davis1; R. Howell1; K. Cho1; 1Missouri University of Science & Technology; 2Magnesium Elektron North America Inc.; 3Weapons and Materials Research Directorate

K-40: Secondary Ion Mass Spectrometry for Mg Tracer Diffusion: Issues and Solutions: Jay Tuggle1; Jerry Hunter1; Najag Kulkarni1; Yongho Sohn1; YV; 1Oak Ridge National Laboratory; 1University of Central Florida

K-41: Semisolid Joining of Magnesium AZ91 Alloy by Partial Remelting and Mechanical Stirring: Hossein Aashuri1; Vahid Hossein1; 1Sharif University

K-42: Severe Plastic Deformation of Magnesium Alloys by Machining: Saurabh Basu1; M. Ravi Shankar1; 1University of Pittsburgh

K-43: Slip and Twin Behavior of Magnesium Single Crystals: Ming Zhe Bian1; Kwang Seon Shin1; 1Magnesium Technology Innovation Center, Seoul National University

K-44: Stress Corrosion Cracking Susceptibility of Ultrafine Grained AZ31: Gaurav Aragde1; Wei Yuan1; Kumar Kandasamy1; Rajiv Mishra1; 1Missouri University of Science and Technology

K-45: The Effect of Precipitation on the Mechanical Properties of Extruded AZ80: Ran Liu1; Jing Wang1; De Yin1; Nanjing University of Sci & Tech

K-46: The Investigation of Twin Interface Structure in AZ31 Magnesium Alloys: Daizuke Ando1; Yuji Sutou1; Junichi Koike1; 1Tohoku University

Materials Processing Fundamentals: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Process Technology and Modeling Committee

Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Antoine Allannore, MIT; Cong Wang, Saint-Gobain High Performance Materials

Monday PM Room: Atlantic Hall
March 12, 2012 Location: Dolphin Resort

Q-1: A Physical Model for Growth of Graphene Layers from Metallic Melts: Shaohin Amini1; Haamun Kalaantari2; Reza Abbaschian2; 1University of California Riverside; 2University of California Riverside

Q-2: A Way to Control Distortion of Metal Parts during Heat Treatment Process: Yuan Lu1; Jin-wu Kang2; Tisinghua Univ

Q-3: Analysis of Open Forging of Cylindrical Blanks between Two Flat Die Surfaces: Ahmed Elkholy1; Dhati Almutairi1; 1Kuwait University
Q-4: Effects of Tempering on the Microstructure and Hardness of a Spray-Formed Hot Work Tool Steel: Wang Cunlong; 1Guangdong University of Technology

Q-5: Hot Deformation Behavior of Nb Microalloyed Coiled Tubing Steel: Zhendong Zhang1; Haitao Zhou1; Xianghua Liu1; Sijun Li1; Guofei Si2; Bingyu Zhang1; 1Northeastern University; 2Central South University; 1Laiwu Iron and Steel Corp

Q-6: Investigation of the Relationship of the Melt Structures and Solidification Behaviors of Cu-Sb70 Alloy Exploded by Electrical Resistivity Method: Yun Xi1; Jin Yu1; Li-Na Mao1; Fang-Qiu Zu1; 1Hefei University of Technology

Q-7: Microstructure of A1203/YAG/ZrO2 Eutectic In Situ Composite Prepared by Laser Floating Zone Melting: Kan Song1; Jun Zhang1; Xiaoqiao Jia1; Haijun Su1; Lin Liu1; Hengzhi Fu1; 1Northwestern Polytechnical university ; 2Northwestern Polytechnical university

Q-8: Net Shape Manufacturing of a Novel Cermet Using Self-Propagating High Temperature Synthesis: Yi Tan1; 1University of Pristina

Q-9: Response Surface Methodology for the Optimization of the Dehydration Curve of Scheelite Concentrate by Microwave Heating: Lei Guo1; Libo Zhang1; Jinhui Peng1; Xinhui Duan2; Xin Wang1; 1Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

Q-10: Study on Inclusions in 65Mn Thin Slabs Produced by a CSP Process: Yi Tan1; Huigai Li1; 1Shanghai University, Shanghai,China.

Q-11: The Optimization of Copper Utilization during Decoppering of Technical Lead: Ahmet Hashia1; Izet Zeqiri1; Bajram Hashia1; Mursel Ramia1; 1University of Pristina

Materials Research in Microgravity: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee

Program Organizers: Robert Hyers; 1University of Massachusetts; Hani Henein, University of Alberta; Valdis Bogjarevics, University of Greenwich; James Downey, NASA; Douglas Matson, Tufts University; Achim Seidel, Astrum; Daniela Voss, ESA

Monday PM Room: Atlantic Hall
Location: Dolphin Resort

B-1: Advanced Optical Systems for Materials Science Experiments under Microgravity: Martin Naegle1; Michael Baumgarten1; Wolfgang Soellner1; Achim Seidel1; 1OptoPrecision GmbH; 2Astrom

B-2: Containerless Processing on ISS: Ground Support Program for EML: Stefan Schneider1; Rainer Willnecker1; Angelika Diefenbach1; 1DLR MUSC

B-3: Directional Solidification Experiments on Board the ISS Using MSL: Daniela Voss1; 2ESA

B-4: EML - A Multi-User Electromagnetic Levitation Facility for Containerless Processing Experiments onboard the ISS: Achim Seidel1; Wolfgang Soellner1; Christian Stenzel1; 1Astrom

B-5: EML Experiments on Board the ISS: Daniela Voss1; 2ESA

B-6: Fluid Flow in Phase Selection Experiments Using Electromagnetic and Electrostatic Levitation: Briana Tomboulian1; Robert Hyers1; Douglas Matson2; 1University of Massachusetts; 2Tufts University

B-7: FMF: An MSL Furnace Insert for Float-zone Crystal Growth on the ISS: Adam Hess1; Arne Croell1; Jan Zähringer1; Christian Stenzel1; Dirk Bräuer1; Harald Sauermann1; 1University of Freiburg; 2Astrium; 3Technical University Freiberg

B-8: High-precision Temperature Control of a Crystal Growth Furnace at 1500°C: Christian Stenzel1; Arne Croell1; Adam Hess1; Dirk Bräuer1; Harmut Sauermann1; 1University of Freiburg; 2Astrium; 3Technical University Freiberg

B-9: Inductive Measurement Device for Microgravity Electromagnetic Levitation: Georg Lohoose1; Haugli Brillo1; 2German Aerospace Center, DLR

B-10: In-Situ Observation of Directional Solidification Processes in Transparent Materials on the ISS: Daniela Voss1; 2ESA

B-11: Investigation of Thermocapillary Convection of High Prandtl Number Fluid under Microgravity: Ruquan Liang1; 1Northeastern University

B-12: Modeling for ISS Experiments on Transient Nucleation in Glass- and Quasicrystal-Forming Melts: Xiaoyi He1; Kenneth Kelton1; Robert Hyers1; 2University of Massachusetts; 3Washington University

B-13: Real Time In-Situ Observations of Equiaxed Dendrite Coherency in Al-Cu Alloys Using High Brilliance 3rd Generation Synchrotron Sources: Andrew Murphy1; David Brown1; Wajira Mihirange1; Ragnvald Mathiesen1; University College Dublin; 2Norwegian University of Science and Technology

B-14: Surface Tension and Viscosity of Ni-Al Catalytic Precursor Alloys Measured by the Oscillating Drop Method on Different Microgravity Platforms: Rainer Wunderlich1; Hans-Joerg Fecht1; 1Universitaet Ulm

B-15: Truncated Dual Cap Nucleation Site Development: Douglas Matson1; Paul Sander1; 2Tufts University

B-16: XRMON Modules on Sounding Rockets: Daniela Voss1; 2ESA

Mechanical Behavior at Nanoscale I: Poster Session


Program Organizers: Scott Mao, University of Pittsburgh; Julia R Greer, California Institute of Technology ; Jianyu Huang, Center for Integrated Nanotechnologies; Marc Legros, CEMES-CNRS; Ting Zhu, Georgia Institute of Technology

Monday PM Room: Atlantic Hall
Location: Dolphin Resort

A-1: Atomistic Prediction of Precipitate Strengthening in Nanoscale Metallic Multilayers: Naz Abdolrahim1; Ioannis Mastorakos1; Hussein Zbib2; 1Washington State University

A-2: Atomistic Simulations of the Adhesion of Alumina/epoxy Interfaces Using ReaxFF: Fidel Valez Mackenzie1; Barend Thijssen1; 1Delft University of Technology

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POSTERS

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A-3: Characterization of Coherence Limits in Si/Ge Core-Shell Nanowires Using Molecular Dynamics: Yumi Park1; Alejandro Strachan1; Purdue University

A-4: Controlling the Lithiation Induced Strain and Charging Rate in Nanowire Electrodes by Coating: Lijiang Zhang1; Xiaohua Liu1; Yang Liu2; Shan Huang1; Ting Zhu1; Lijian Gui2; Scott X. Mao1; Zhizhen Ye1; Chongmin Wang1; John P. Sullivan1; Jianyu Huang1; University of Pittsburgh; 2Sanda National Laboratories; 3Georgia Institute of Technology; 4Tsinghua University; 5Zhejiang University; 6Pacific Northwest National Laboratory

A-5: Dislocation-Interface Interaction Mechanisms in Nanoscale Laminates with Enhanced Interface Models: Firas Akashelt; S. M. Yead Jewel1; Tuskegee University

A-6: Effect of Hydrogen on Surface Subsurface Deformation during Indentation of Pipeline Steel: Moo Young Seok1; In-Chul Choi1; Yong-Jae Kim1; Dong-Woo Sah2; Jae-il Jiang1; Hanyang university, 1GIFT, POSTECH

A-7: Effects of Focused-Ion-Beam Irradiation and Prestraining on Oriented Nanotwinned Ag Films: Kaorui Kurokata1; Brian Maddox2; Bruce Remington2; Eduardo Bringa3; Megumi Skinner3; 1National Institute of Science and Technology (AIST); 2Max-Plank Institute of Solid State Research; 3Johns Hopkins University

A-9: Investigation of the Crystal Structure on the Nanomechanical Properties of Pulsed Laser Deposited NbN Thin Films: Cody Wright1; M. A. Mamun1; A Farha1; H Elsayed-Alislam1; A. Elmustafa1; Old Dominion University; 2Cukurova University

A-10: Investigation of the Indentation Size Effect in FCC Metals Using Activation Volume Analysis: David Stegal1; A Elmustafa1; Old Dominion University

A-11: Laser Compression of Nanocrystalline Tantalum: Chia-Hui Lu1; Brian Maddox2; Bruce Remington2; Eduardo Bringa3; Megumi Skinner3; 1National Institute of Science and Technology (AIST); 2Max-Plank Institute of Solid State Research; 3Johns Hopkins University

A-12: Lithiation Induced Embrittlement of Multi-Walled Carbon Nanotubes: Yang Liu1; He Zheng1; Xiaohua Liu1; Shan Huang1; Ting Zhu1; Jiang Wei2; Akhiro Kushima1; Nicholas Hudak1; Xu Huang1; Sulin Zhang1; Scott Mao2; Xiao Feng Qian2; Ju Li1; Jian Yu Huang1; Sandra National Laboratories; 2University of Pittsburgh; 3Georgia Institute of Technology; 4University of Pennsylvania; 5Pennsylvania State University; 6Massachusetts Institute of Technology

A-13: Mechanical Anisotropy and Texture in Caliber Rolled Twinning-Induced Plasticity Steels: Young Soo Chun1; Junmo Lee2; You-Hwan Lee2; Kyung-Tae Park2; Chong Soo Lee3; 1POSTECH; 2POSCO; 3Hanbat Nat’l Univ.

A-14: Mechanical Behavior and Thermal Stability of Differently Oriented Nanotwinned Ag Films: Daniel Bufford1; Xinghang Zhang1; Haiyan Wang1; 1Texas A&M University

A-15: Mechanical Behavior for Different Cutting Directions on Copper and Rhodium Single Crystals: Seisuke Kano1; Atushi Korenaga1; 1National Institute of Science and Technology (AIST)

A-16: Mechanical Properties and Deformation Mechanism of Nanostructured Two-Phase Fe59Ni29Mn20Al12 Alloy: Xiaolian Wu1; I. Baker1; Dartmouth College

A-17: Mechanical Properties of Nanostructured TiAIN Based Coatings: Sai Pramod Pemmasani1; Koteswararao Rajulapathi1; Ramakrishna M1; Krishna Valleti2; Ravi Chandra Gundakaram2; Shrikant V Joshi2; 1University of Hyderabad; 2International Advanced Research Centre for Powder Metallurgy and New Materials

A-18: Mechanics of Individual Amorphous Carbon Nanoparticles from Experiment and Simulation: Eric Bucholz1; Susan Sinnott1; 1University of Florida

A-19: Micromechanical Testing of Nanocrystalline BCC Metals: Jonathan Ligda1; Brian Schuster1; Qiuming Wei2; 1UNC Charlotte; 2Army Research Laboratory

A-20: Microstructural Changes Across Shear Bands in Nanotwinned Cu Foils Deformed at Room Temperature and 77K: Timothy Farnish1; Andrea Hodge1; 1University of Southern California

A-21: Nano-Compression Testing of Freestanding Tetragonal Ni3Al Particles: Bin Gan1; Robert Maafi2; Julia R. Greer3; Sammy Tin1; 1Illinois Institute of Technology; 2California Institute of Technology

A-22: Nanoindentation Investigation of VO2 Films Synthesized by Reactive Bias Target Ion Beam Deposition (RBTIBD): Cody Wright1; M. A. Mamun1; D. N. Nimbipeti1; Wei Cao1; D. Gu1; H. Baumgart1; Jiwei Lu1; H. Elsayed-Alislam1; Old Dominion University

A-23: Nanomechanical Behavior of Teflon-MWCNT Bilayer Films: Rachel Schoepner1; Anqi Qu1; Douglas Stauffer2; Ryan Major3; Jack Skinner1; Thomas Zifet1; Greg O’Bryan1; Andrew Vance1; William Gerberich1; David Bailey1; Neville Moody1; 1Washington State University; 2Hysitron Inc.; 3Sanda National Laboratories; 4University of Minnesota

A-24: Nanomechanical Properties of Atomic Layer Deposition Sb2Te3 Thin Films: Cody Wright1; M. A. Mamun1; D. Gu1; D Nimbipeti1; H Baumgart1; H Robinson1; V Kochergin1; A. Elmustafa1; Old Dominion University; 2Virginia Tech University; 3MicroXact

A-25: NanoMechanics Properties of Hydrogen Implanted AIN for Layer Transfer by Ion-Induced Splitting: Cody Wright1; M Mamum1; K Tapily1; O Moutanabbir1; D Gu1; H Baumgart1; A. Elmustafa1; Old Dominion University; 2Max-Plank Institute

A-26: Phase Field Dislocation Dynamics in Confined Volumes: Lei Lei1; Marisol Koslowski1; Purdue University

A-27: Processing of ta-C Protective Films on Mold for Glass Lens: Seungkeun Oh1; Youngman Kim1; 1Chonnam National University

A-28: Size and Asperity Height Effect on the Contact Hardness in Nanoscale Metallic Asperities Contact: Molecular Dynamics Study: Hojin Kim1; Alejandro Strachan1; Purdue University

A-29: Size Dependence of Mechanical Properties of Refractory Carbides: Sara Kiani1; Suneel Kodambaka1; Jenn-Ming Yang1; 1UCLA

A-30: Size Effects of Single-Crystal Magnesium: Microcompression Experiments and Modeling: Cynthia Byer1; KT Ramesh1; 1Johns Hopkins University

A-31: Strong Sample-Dimension Dependence of Submicro-Sized Single Crystal Mo Pillars: Ling Huang1; Qingjie Li1; Zhiwei Shan1; Ju Li1; Jun Sun1; Evan Ma1; Xi’an Jiaotong University; 2Massachusetts Institute of Technology; 3Johns Hopkins University
A-32: Temperature Effect on Displacement Burst of Iron Nano-Particles: Qing-Jie Li1; Ling Huang1; Christopher R. Weinberger2; Zhi-Wei Shan2; Ju Li1; Jun Sun1; Evan Ma4; 1Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University; 2Sandia National Laboratories; 2Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, MIT; 2Department of Materials Science and Engineering, Johns Hopkins University

A-33: The Role of Stacking Fault Energy and Deformation Twinning on the Indentation Size Effect of FCC Pure Metals and Alloys: David Stegall1; A Elmustafa1; 1Old Dominion University

A-34: Time-Dependent Mechanical Behavior of Indium Nanopillars: In-Chul Choi1; Yong-Jae Kim1; Moo-Young Seok1; Ting Y. Tsui2; Jae-II Jang1; 1Hanyang University; 2University of Waterloo

Mechanical Behavior Related to Interface Physics: Poster Session
Program Organizers: Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Izabela Szlufarska, University of Wisconsin-Madison; Zhiwe Shan, Xi’an Jiaotong University

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E-1: Delamination Characterization of Bonded Interface Using Surface Based Cohesive Model: Manivannan Ramamurthi1; Young Suk Kim1; 1Kyungpook National University, Daegu, South Korea.

E-2: First-Principles Investigation of Grain Boundary Cohesion by Magnesium in Aluminum: Shengjun Zhang1; Oleg Kontsevoi1; Arthur Freeman1; Gregory Olson1; 1Northwestern University

E-3: In-Situ Fracture Toughness Studies in Magnesium Aluminate Spinel: Wanjun Cao1; Animesh Kundu1; Mark McLean1; Martin Harmer1; Richard Vinc1; 1Lehigh University

E-4: Plasticity in Al/Nb Nanoscale Multilayered Materials: Effects of Interface Shear Strength: Arief Budiman1; Youbin Kim1; Kevin Baldwin1; Nathan Mara1; Amit Misra1; Seungmin Han1; 1Los Alamos National Laboratory (LANL); 2KAIST

E-5: Slip Transfer Across a Cu Bicrystal Interface: Alankar Alankar1; Niraj Gupta1; Shivraj Karewar1; Ricardo Lebensohn1; Alfredo Caro1; 1Los Alamos National Laboratory; 2University of North Texas

E-6: The Effects of Aspect Ratios in Liquid Bridge on Surface Driven Flow under Microgravity: Shinichi Yoda1; Satoshi Matsumoto1; Atsushi Komiyama1; 1JAXA; 2Touhoku University

E-7: The In-situ Intrinsic Stress Measurements of Cu and Al Thin Films: Jun Young Yu1; Youngman Kim1; 1Chonnam National University

Nanocomposites: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Garth Wilks, Air Force Research Laboratory; Jonathan Spowart, Air Force Research Laboratory; Meisha Shofner, Georgia Institute of Technology; John Zhanhu Guo, Lamar University

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V-1: Formation of Carbides in the Aluminum Matrix Composites Reinforced by Multi-Walled Carbon Nanotubes: Seunghoon Shin1; Heon Kang1; Donghyun Bae1; 1Yonsei University

V-2: Impact Resistance of Nanostructured Partially Stabilized Zirconia Reinforced Porcelains: Emmi Ngo1; Hanry Yang1; Ricardo Castro1; 1University of California, Davis

V-3: Influence of the Type of Clay on the Morphology of Nanocomposites: André Rodrigues1; Maria Brasilheiro1; Tomas Melo1; Edcleide Araujo2; Ariostvaldo Sobrinho2; Lucio Nobrega2; 1UFC; 2UFCA

V-4: Mechanical Properties of Fe-Based Nanocomposites with Dispersed Multi-Walled Carbon Nanotubes: Ji-Yeon Suh1; Jaehyuck Shin1; Donghyun Bae1; 1Department of Materials Science and Engineering, Yonsei University

V-5: Modeling Elastic Behaviors of Peptide Reinforced Hydrogel Nanocomposites: Jingjing Qiu1; 1Texas Tech University

V-6: Modification of the Temperatures of Phase Transformations of Alumina by the Insertion of MgO and ZrO2: Deise Cristina Rosário1; Douglas Gouveia1; 1University of São Paulo

V-7: Role of Nano-Silica on Alkali-Silica Reactivity of Concrete: Mohammad Islam1; 1UBC

V-8: Thermal Properties of Mg-Nanocomposites Reinforced by CNT in Relation to Pure-Mg: Sardar Iqbal1; 1Southern Illinois Univ, Carbondale
Neutron and X-Ray Studies of Advanced Materials V: Centennial: Poster Session


Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xin-Li Wang, Oak Ridge National Laboratory; Gernot Kostorz, ETH Zurich; Lyle Levine, National Institute of Standards and Technology; Peter Liaw, Univ of Tennessee; Yandong Wang, Beijing Institute of Technology; Brent Fultz, California Institute of Technology

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Funding support provided by: Office of Basic Energy Sciences, U.S. Dept. of Energy, Dr. P. Thiyagarajan

F-1: An Investigation of the Tempering Kinetics and Residual Stress States of a Cryogenically Treated and High Magnetic Field Processed Steel via Neutron Scattering Experiments: Orlando Rios¹; Tom Watkins¹; Ling Yang¹; Alexandru Stocia; Ben Shassere; Don Nicholson; Gerry Ljudka; Gail Ljudka; Oak Ridge National Laboratory

F-2: The Study of Structural Stability for TiSi2 under High Pressure: Chunyu Li¹; Zhenhai Yu¹; Jinggeng Zhao¹; Luhong Wang¹; Tianquan Lü²; Haozhe Liu²; Brookhaven National Laboratory; Argonne National Laboratory; Harbin Institute of Technology

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central Univ; Laura Turbini, Research in Motion; Tung University; Concepts for Inorganics; Go Verizon; Lee; Oak Ridge National Laboratory; John Elmer, Lawrence Livermore National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

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H-1: Effect of Multiple Reflows on Interfacial Reaction and Tensile Property of Sn-xAg-0.5Cu Solder Joints with Cu Substrate: Long-Tai Chen¹; National Cheng Kung University

H-2: Microstructure Change of Au Stud Bumps Joined with Sn-3.5Ag solder with Flip Chip Bonding Parameters: Young-Kyu Lee¹; Won-Myoung Ki¹; Jeong-Han Kim¹; Schoon Yoo²; Chang-Woo Lee³; Micro-Joining Center, Korea Institute of Industrial Technology, Incheon, 406-840, Korea; Dept. of Electronic Packaging Engineering, University of Science & Technology, Daejeon, 305-333, Korea

H-3: Physicochemical Properties of Sn, Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Poster Session Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee Program Organizers: Iver Anderson, Ames Laboratory; Sung Kang, IBM; Albert Wu, National Central Univ; Laura Turbini, Research in Motion; Tung University; Concepts for Inorganics; Go Verizon; Lee; Oak Ridge National Laboratory; John Elmer, Lawrence Livermore National Lab; John Elmer, Lawrence Livermore National Lab; Yan Li, Intel

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Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

O-1: Microstructural Investigations of Ion (KR, XE) Irradiated CE02 and UO2 With and Without Impurities: Brian Kleinfeldt¹; Weiyin Chen¹; Bei Ye¹; Yinbin Mao¹; Aaron Oaks¹; James Stubbins¹; University of Illinois at Urbana-Champaign

H-4: The Different Failure Mechanism of the Ni UBM in the Lead-Free Solder Joints under Current Stressing at Various Temperatures: Chung Kuang Lin¹; Wei An Tsao¹; Chih Chen¹; National Chiao Tung University

H-5: The Electromigration Behavior of NiSn in Sn2.5Ag Solder Joints: Chun-Yi Wu¹; Chih Chen¹; National Chiao Tung University

H-6: Thermal Cycling Test on Sn2.3Ag Microbump with Different UBM Structure after Heat Treatment: Chun-Chieh Mo¹; Yon-Chun Liang¹; Chih Chen¹; National Chiao Tung University; National Chiao Tung University

H-7: Real Time Monitoring of Whisker Growth Failure Using by 3-D Geometry Comb Pattern: Won Sik Hong¹; Chul Min Oh¹; Do Seop Kim¹; Korea Electronics Technology Institute(KETI); Hyundai Motor Company

H-8: Recrystallization-Induced Void Migration in Electroplated Cu Films: Sanghwan Kim¹; Jin Yu¹; KAIST

H-9: Vibration Test at Elevated Temperature for Pb-Free Solders: Yong-Ho Ko¹; Young-Kyu Lee¹; Jeong-Han Kim¹; Schoon Yoo²; Chang-Woo Lee³; Micro-Joining Center, Korea Institute of Industrial Technology, Incheon, 406-840, Korea; Dept. of Electronic Packaging Engineering, University of Science & Technology, Daejeon, 305-333, Korea

H-10: Wettability and Interfacial Microstructure of Pb-Free Sn3.5Ag Alloy Powders on Cu Substrate: Jin Zhao¹; Weipeng Zhang¹; Tingting Song¹; Yulai Gao¹; Qijie Zhai¹; Shanghai university

Radiation Effects in Ceramic Oxide and Novel LWR Fuels: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee Program Organizers: Peng Xu, University of Wisconsin; Jian Gan, Idaho National Laboratory; Ram Devanathan, Pacific Northwest National Laboratory; Edward Lahoda, Westinghouse Electric Company; Michele Manuel, University of Florida; Ramprashad Prabhakaran, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

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Funding support provided by: The Center for Materials Science of Nuclear Fuel, an Energy Frontier Research Center led by the Idaho National Laboratory

O-1: Microstructural Investigations of Ion (KR, XE) Irradiated CE02 and UO2 With and Without Impurities: Brian Kleinfeldt¹; Weiyin Chen¹; Bei Ye¹; Yinbin Mao¹; Aaron Oaks¹; James Stubbins¹; University of Illinois at Urbana-Champaign

TMS 2012 141st Annual Meeting & Exhibition

198 TMS 2011 Annual Meeting Final Program
Randall M. German Honorary Symposium on Sintering and Powder-Based Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: K. Morsi, San Diego State University; Fernand Marquis, Naval Postgraduate School; John Meyer, Iowa State University; Ahmed El-Desouky, San Diego State University; Eugene Olevsky, San Diego State University

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S-1: Effect of Nanosized Cobalt Amounts on WC-Co Sintered Bulks Fabricated by Spark Plasma Sintering (SPS): Joon-Woo Song; Sol Lee; Rumman Md. Rahianuzaman; Hyoun-Seon Hong; Soon-Jik Hong; ‘Kongju National University; 1Institute for Advanced Engineering (IAE)

Recycling General Sessions: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizer: Joseph Pomykala, Alter Trading

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R-1: AMD Treatment Using Rice Husk as Biosorbent: Flávia Silvas; Bianca Medeiros; Daniella Buzzi; José Oliveira; Ivo Schneider; Denise Espinosa; Jorge Tenório; ‘Polytechnic School of São Paulo University; 2Instituto Federal de Educação, Ciência e Tecnologia do Espírito Santo; 3Polytechnic School of São Paulo University; ‘Universidade Federal do Rio Grande do Sul

R-2: Incorporation of Building Rejects in Portland Cement: Shirley Cosin; Francisco Valenzuela Diaz; ‘University of São Paulo

Refractory Metals 2012: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee

Program Organizers: Eric Taleff, The University of Texas at Austin; Todd Leonhardt, Rhenium Alloys Inc; Rachel DeLucas, H.C. Starck; Gary Rozak, HC Starck Inc

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J-1: Effect of Al on the Oxidation Behavior of Alloys from Nb-Cr-Si System: Amanda Gutierrez; Nydia Esparza; Brenda Arellano; Shailendra Varma; 1UTEP

Solid-State Interfaces II: Toward an Atomistic Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Poster Session


Program Organizers: Xiang-Yang Liu, Los Alamos National Lab; Douglas Spearot, University of Arkansas; Guido Schmitz, University of Münster; David Seidman, Northwestern University

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Funding support provided by: Los Alamos National Laboratory

D-1: Adhesion Strength at Cu(111)/c-Alumina(0001) Interfaces with Metal Dopants in Alumina Dispersion-Strengthened Copper: Kelun Zhao; Xuanhui Qu; Shaoyun Liu; ‘Materials Science and Engineering Division, Shenzhen Graduate School, Harbin Institute of Technology; 2State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing; ‘State Key Laboratory for Powder Metallurgy, Central South University

D-2: Atomic Simulation of Doped (La,Y,Mg) α-Alumina Interfaces for Transparent Ceramic Applications: Abhishek Tewari; Sandra Galmartin; Paul Bowen; 1Ecole Polytechnique Federale de Lausanne

D-3: Atomic Simulations of Nanoindentation and Nanoscratching of Thin Films: Xuan Sun; Tzu-Ray Shan; Simon Philipp; Susan Sinnott; 1University of Florida

D-4: Grain Boundary - Dislocation Interaction: Linking Molecular Dynamics and Dislocation Dynamics: Sebastian Echeverri Restrepo; Barend Thijsse; Lucia Nicola; Xiaoming Liu; Erik van der Giessen; 1TU Delft; 2University of Groningen

D-5: In Situ TEM investigation of electrical Current Effect on Aluminum Interconnect: Degang Xie; Zhiwei Shan; 1Center for Advancing Materials Performance from the Nanoscale (CAMP Nano)

D-6: Phase Field Crystal Simulation of Curvature Driven Grain Boundary Migration: Vishal Yadav; Nele Moelans; 1Katholieke Universiteit Leuven

D-7: Quantification of Compositional Effects on Transformation Kinetics in High Strength Low Alloy Steels Using In Situ TEM: Asher Leff; Michael Grimes; Nerea Isasti; Christopher Winkler; Pello Uranga; Mitra Taheri; 1Drexel University; 2Lehigh University; 3University of Navarra

D-8: Segregation-Induced Phase Transformation on Grain Boundaries in Fe-Mn: Michael Herbig; Pyuck-Pa Choi; Dirk Ponge; Dierk Raabe; 1Max-Planck-Institut für Eisenforschung GmbH

D-9: Study of Shear Behavior of Al, TiN, and Their Interface Using ab initio Method: Satyesh Yadav; Xiang-Yang (Ben) Liu; Rampi Ramprasad; Amit Misra; 1Los Alamos National Laboratory; 2Institute of Materials Science, CMBE

D-10: The Effect of Molybdenum on Nb,Ti(C,N) Precipitate Evolution and Grain Refinement in a High-Temperature Carburizing Steel: Charles Enloe; John Speer; Kip Findley; 1Colorado School of Mines, Advanced Steel Processing and Products Research Center
POSTERS

T.T. Chen Honorary Symposium on Hydrometallurgy, Electrometallurgy and Materials Characterization: Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS
Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Materials Characterization Committee
Program Organizers: Shijie Wang, Rio Tinto Kennecott Utah Copper; J. E. Dutrizac, CANMET; Michael Free, University of Utah; J. Y. Hwang, Michigan Technological University; Daniel Kim, Rio Tinto Kennecott Utah Copper

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Funding support provided by: Rio Tinto Kennecott Utah Copper, ASARCO, and Freeport McMoRan

P-1: A Kinetics Study on the Hydrometallurgical Recovery of Vanadium from LD Converter Slag in Alkaline Media: Fereshteh Rashchi1; 'University of Tehran
P-2: Annealing Effects in Martensite Transformation Temperature of the Ni-Ti Shape Memory Alloy Rapidly Solidified: Walman Castro1; Carlos de Araújo1; George Anselmo1; 'Universidade Federal de Campina Grande
P-3: As(III) Oxidation with Bacteria and AP: Qiong Deng1; Hong-Jing Yuan1; Yong-Bin Yang1; Tao Jiang1; 'Central South University
P-4: Comprehensive Utilization of Waste Printed Circuit Boards: Yu Xia1; Long-Sheng Yi1; Qi-Ming Feng1; Qian Li1; 'Central South University
P-5: Dephosphorization of Yunnan Refractory High-Phosphorus Low-Manganese Ore by Shaking Table and Hydrometallurgical Processing: Guodong Lai1; Zebiao Zhang1; Jinhui Peng1; Lijuan Chu1; Shixing Wang1; 'Faculty of Metallurgy and Energy Engineering; 'Yunnan Institute of Product Quality Supervision and Inspection
P-6: Dissolution Behavior of Impurities in Scheelite Mine in Oxalic Acid Solutions: Ahshe Kalkapakli1; Sedat Ilhan1; 'Cem Kahraman1; Ibrahim Yusufoğlu1; 'Istanbul University
P-7: Effect of Different Parameters on Synergistic Separation of Nickel and Cadmium from Sulphate Solutions using D2EHPA and Cyanex 302: Atollah Babakhanli1; Fereshteh Rashchi1; Ehsan Vahidi1; Alineza Zakeri1; 'University of Tehran; 'Iran University of Science & Technology
P-8: Electrochemical Reduction with Bacteria and AP: Qian Li1; Weili Xia1; 'Northeastern University
P-9: Evaluation of Banana Fibers Density with Different Diameters: Nathalia Rosa1; Lucas Martins1; Sergio Monteiro1; 'UENF
P-10: Intercalation Studies between Ti-5Ta-2Nb Alloy and 304L Austenitic Stainless Steel Joined by Explosive Cladding Process: Sudha Cheruvathur1; Prasanthi T.N1; Saroja S1; Vijayalakshmi M1; 'Indira Gandhi Centre for Atomic Research
P-11: Leaching S from Pressure Acid Leaching Residue of Zinc Concentrate: Parametric Optimization Using Response Surface Methodology: Lijuan Chu1; Zebiao Zhang1; Peng Peng1; Guodong Lai1; Guo Cheng1; 'Kunning University of Science and Technology; 'University of Minnesota
P-12: Measurement of Contact Angle for Iron Ore Particles: Xiaobo Huang1; Xuewei Lv1; Chenguang Bai1; Rende Zhang1; Maojun Zhou1; 'College of Materials Science and Engineering,Chongqing University; 'Ironmaking plant, Baoshan Iron & Steel Co., Ltd.
P-13: Mixture Design Applied to the Electrochemical Reduction Of CaWO4 to W: Metehan Erdogan1; Ishak Karakaya1; Orhan Gökçe Gökkuş1; 'Department of Metallurgical and Materials Engineering, Middle East Technical University; 'Other
P-14: Preparation and Characterization of PBT/Clay Nanocomposite: Mariana Sartori1; Rene Oliveira1; Francisco Diaz1; Vijaya Rangari1; Angel Ortiz1; Esperidiana Moura1; 'Instituto de Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP; 'Universidade de São Paulo - USP; 'Istituto di Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP
P-15: Removal of Pb(II) by Modified Watermelon Peel Adsorbent: Kai Huang1; Lianyun Liu1; Bo Jiang1; Hongmin Zhu1; 'University of Science and Technology Beijing
P-16: Sulphuric Acid Leaching Germanium from Germanium Dust and Fume: Process Optimization Using Response Surface Methodology: Wankun Wang1; Jinhui Peng1; Zebiao Zhang1; Shixing Wang1; 'Kunning University of Science and Technology
P-17: Surfaces Improvement by Mecano-Chemicals Processes: Itaias Hilerio1; Miguel A. Barrón1; Roberto T. Hernández1; Alejandro Altamirano1; 'UAM Azcapotzalco
P-18: The Effect of Temperature on Complex Permittivity and Microwave Absorption Properties of an Ilmenite Concentrate at 2450MHz: Chenhui Liu1; Libo Zhang1; Jinhui Peng1; Bingguo Liu1; Hongying Xia1; Wei Li1; 'Key Laboratory of Unconventional Metallurgy, Kunning University of Science and Technology
P-19: Thermal Characterization of Jute Fibers by TGA/DTG and DSC: Isabelia Silva1; Victor Silva1; Alice Bevitori1; Sergio Monteiro1; 'UENF
P-20: Thermal Decomposition Kinetics of the Thermal Decomposition Products of Ammonium Heptamolybdiate Tetrahydrate in Air and Inert Gas Atmospheres: Hanfei Causoglu1; Cem Kahraman1; Ibrahim Yusufoğlu1; 'Istanbul University

Ultrafine Grained Materials VII: Poster Session
Program Organizers: Suveen Mathaudhu, U.S. Army Research Office; Xiaoxu Huang, Rise National Laboratory for Sustainable Energy, Technical University of Denmark; Hyoung Seop Kim, POSTECH; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Sciences, Inc.; Ruslan Valiev, Ufa State Aviation Technical University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences; Michael Zehebtbauer, University of Vienna

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T-1: Application of High-Pressure Torsion for Thick Samples: Hideaki Iwaoka1; Zenji Horita1; 'Kyushu University
T-2: Bulk Ultra-fine Grained Materials from Reprocessed Machined Chips: S Giribaskar1; Gouthama1; 'Indian Institute of Technology Kanpur
T-3: Carbide Free Bainitic Steel: Xiaoxu Zhang1; 'McMaster University
T-4: Characterization of Al-Al Laminates Processed by ECAP: Sapthagireesh Subbarayan; Hens Jorgen Roven; NTNU

T-5: Concurrent Structural Evolution of the FCC and BCC Phases in Duplex Stainless Steel Induced by High-Pressure Torsion: Yang Cao; Yanbo Wang; Xiaozhou Liao; Roberto Figueriedo; Simon Ringer; Terence Langdon; Yuntian Zhu; The University of Sydney; Federal University of Minas Gerais; University of Southern California; North Carolina State University

T-6: Dynamic Torsion Deformation of Ultrafine Grained Ferrite-Martensite Steel Fabricated by ECAP: Hyunmin Kim; Young Gun Ko; Dong Hyuk Shin; Sunghak Lee; POSTECH; Yeungnam University; Hanyang University

T-7: Effect of Preheating on Microstructure and Mechanical Properties of Ultrafine Grained AA1050 Deformed by Accumulative Roll Bonding (ARB) Method: Kiyu Cheng; Cheng Lu; Lihong Su; Kiet Tieu; University of Wollongong

T-8: Effects of Ageing after Cryogenic and Warm Rolling on Mechanical Properties of Al 6061 Alloy: Nageswararao Palakuri; Jayaganthan R; IIT Roorkee

T-9: Effects of Ball Milling and High-Pressure Torsion for Improving Mechanical Properties of Al-1203 Nanocomposites: Maki Ashida; Zenji Horita; Kyushu University

T-10: Effects of High-Pressure Torsion Parameters on the Microstructure and Mechanical Properties of Bulk Metallic Glasses: Bal Bhashya; Yanbo Wang; Dongdong Qu; Megumi Kawasaki; Xiaozhou Liao; Simon Ringer; Terence Langdon; Jun Shen; The University of Southern California; Harbin Institute of Technology; University of Southern California

T-11: Engineering Surface Microstructures Using Severe Plastic Deformation in Machining: M. Ravi Shankar; Saurabh Basha; Sepideh Abolghasemi; University of Pittsburgh

T-12: Enhanced Mechanical Properties of Ultrafine Grained Titanium Deposits Fabricated via High-Velocity Impacts of Micron-Sized Particles: Guyeol Bae; Jae-II Jang; Changhee Lee; Hanyang University

T-13: Estimation of Friction under High Pressure – Application to High Pressure Tube Twisting (HPTT): Arnaud Pougis; Jean-Jacques Fundenberger; Laurent Faure; Sylvain Philippion; Roxane Arrufat; Laszlo Toth; University Paul Verlaine

T-14: Evaluation of Hardness Homogeneity and Mechanical Properties in an Aluminum Alloy Processed by High-Pressure Torsion: Shima Sabbaghianrad; Megumi Kawasaki; Terence Langdon; University of Southern California

T-15: Fatigue Behavior of Friction Stir Processed Ultrafine Grained 8242 Al Alloy: Mageshwari Komarasamy; Nilesh Kumar; Rajiv S. Mishra; Missouri University of Science and Technology

T-16: High Strength Al 6061 Alloy by the Application of Cryogenic and Warm Rolling: Ui Gu Kang; HoJin Lee; WonJong Nam; Kookmin Univ.

T-17: Influence of Deformation Route on Microstructure Evolution of Ferrite Steels via Shear Rolling with Differential Speeds: Jae Sik Lee; Johan Suharto; Young Gun Ko; Yeungnam University

T-18: Influence of Texture on the Strength and Fracture Behavior of Severe Plastically Deformed Nickel: Georg Rathmayer; Reinhard Pippan; Irich Schmid Institute of Materials Science

T-19: Influence of Ultrafine Grained Microstructure on the Superplastic Deformation Mechanism of 7075 Al Alloy: Arun Mohan; Partha De; Rajiv Mishra; Missouri University of Science and Technology

T-20: Microstructure and Mechanical Properties of 5005/6061 Laminated Composite Processed by Accumulative Roll Bonding: Lihong Su; Cheng Lu; Guanyu Deng; Kuiyu Cheng; Kiet Tieu; Xudong Sun; University of Wollongong

T-21: Microstructure Evolution in an UFG Al-7Mg Alloy Processed by ECAP during Subsequent Annealing: Min Zha; Yanjun Li; Ragnvald Mathiesen; Hans Roven; Department of Materials Science & Engineering Norwegian University of Science & Technology (NTNU); Sintef, Materials and chemistry; Department of Physics, Norwegian University of Science & Technology (NTNU)

T-22: Novel C-Extrusion towards Ultra-Fine Grained Aluminium: Terje Hals; Hans Roven; Norwegian University of Science and Technology

T-23: Plasmanitriding of HSLA Steels with Ultrafine Grained (UFG) Surface Layers: Jennifer Schuster; Enrico Bruder; Clemens Mueller; TU Darmstadt

T-24: Production of High-Strength Ultra-Fine Grained Joints in AA2014 by Multiple Pass Friction Stir Welding: Geo Harrison; Preetam Anbukarasu; Ganapathy Subramaniam; College of Engineering Guindy, Anna University

T-25: Recrystallization Microstructure and Microtexture in an Ultrafine-Grained AlMgSi Alloy: Aicha Loued; Thierry Baudrin; Francois Brisset; Roberto Figueriedo; Rafik Chemami; Terence Langdon; University Annaba; University Paris-Sud France; Federal University of Minas Gerais; Departments of Aerospace & Mechanical Engineering

T-26: Repetitive Corrugation and Straighting Rolling as a State of the Art Bulk Deformation Procedure: Arya Mirsepasi; Mahmoud Nili-Ahmadabadi; Mohammad Habibi-Parsa; Hadi Ghasemi-Nanesa; University of Tehran

T-27: Scaling up Equal-Channel Angular Pressing and its Effect on Billet Homogeneity: Stephanie Hunger; Martin F.-X. Wagner; Matthias Hockauf; Chemnitz University of Technology

T-28: Severe Plastic Deformation on Surfaces by Exploiting Transitions in MaterialRemoval by Machining: Yang Guo; Narayan Sundaram; Srinivasan Chandrasekar; Purdue University

T-29: Synthesis and Mechanical Properties of Cnt Reinforced Copper Based Nanocomposites: Koteswararao Rajulapati; K Sreelatha; V V S S Srikanth; K Bhanu Sankara Rao; University of Hyderabad

T-30: Synthesis, Microstructure and Mechanical Behavior of Bulk Nanostructured Cu-30%Zn Alloy by Spark Plasma Sintering of Cryomilled Powders: Haining Wu; Troy Topping; Enrique Lavermia; University of California, Davis

T-31: The Effect of Alloying with Hafnium on the Thermal Stability of Chromium Bronze after Severe Plastic Deformation: Daria Shangina; Natalia Bohvar; Sergey Dobatkin; A.A.Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences

T-32: The Effects of Deformation Strain and Temperature on Microstructures and Tensile Properties in a Commercial Purity Aluminiun: ShinWoo Jeong; Ho Jin Lee; Won Jong Nam; Kookmin University
POSTERS

T-33: Transmission Electron Microscopy and Synchrotron X-ray Texture Analysis of BCC Metals Processed by High Pressure Torsion: Jonathan Ligda1; Brian Schuster2; Yang Ren1; Quiming Wei1; 'UNC Charlotte; 'Army Research Laboratory; 'Argonne National Laboratory

T-34: UFG-Surface Layer on DD11 Mild Steel Profiles Produced by Linear Bend Splitting (LBS): Vanessa Kaune1; Clemens Müller2; 'Technische Universität Darmstadt

T-35: Ultrafine Grain Refinement of Biomedical Co-Cr-Mo Alloy from Cryogenic Burnishing for Enhanced Wear Resistance: S. Jung1; Z. Pu2; O.W. Dillon3; D.A. Puleo4; J.C. Outerio2; 'University of Kentucky; 'Catholic University of Portugal

T-36: Unusual Martensite Formation in a UFG Cu-Al Alloy: Guofan Zhang1; Xavier Sauvage2; Jing Tao Wang3; Nong Gao4; Terence. G. Langdon5; 'NUST; 'University of Rouen; 'University of Southampton; 'University of Southern California

T-37: Wear Resistance of Nanocrystalline Cu-Diamond Composites Processed by High Pressure Torsion: Eun Yoo Yoon1; Dong Jun Lee1; Taek-Soi Kim1; Ha-Guk Jeong1; Chong Soo Lee1; Hyoung Seop Kim1; 'POSTECH; 'Korea Institute of Industrial Technology (KITECH)

General Poster Session
Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Extraction and Processing Division, TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division

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Room: Atlantic Hall
March 12, 2012
Location: Dolphin Resort

W-1: A Novel Simultaneous Thermal Analysis (STA) Furnace with Tungsten Heating Element for Measurements under High-Purity Inert Gas Atmospheres and High Vacuum: Ekkehard Post1; Bob Fidler2; 'NETZSCH Geraetebau GmbH; 'NETZSCH Instruments North America, LLC

W-2: A Study on Fatigue Strength of Railroad Truck: Sung Cheol Jeon1; Jeongguk Kim1; Sung Hyouk Park1; Dong Hoe Koo1; Kang Youn Choe1; 'Korea Railroad Research Institute

W-3: A Study on Production of Fe-Cr-Ni-Ti Alloys by Metallothermic Processes: Cem Colakoglu1; Murat Alan1; Onuralp Yücel1; 'Istanbul Technical University

W-4: Ab Initio Optical Properties of Orthorhombic CdGeO3: Endelison Albuquerque1; Umberto Fulco1; 'Universidade Federal do Rio Grande do Norte

W-5: An Investigation of the Electrochemical Properties of TiAlCrN PVD Coated in STS316: Min-Seok Moon1; Kee-Do Woo2; Min-Goo Lee2; Je-Ha Oh3; Shin-Jae Kang4; Dae-Up KIM5; 'Chonbuk National University, Jeonju Institute of Machinery Carbon Composites; 'Chonbuk National University, Jeonju Institute of Machinery and Carbon Composites; 'Chonbuk National University, Jeonju Institute of Machinery and Carbon Composites; 'Korea Institute of Industrial Technology

W-6: Atomic Simulations of Oxygen Diffusion in Alumina: Ulrich Aschauer1; Abhishek Tewari1; Paul Bowen1; 'Eidgenössische Technische Hochschule Zurich; 'École Polytechnique Federale de Lausanne

W-7: Bonding between Al and Cu by both Vacuum Hot Pressing and Solid-Liquid Hybrid Sheet Fabrication Process: Kwang Seok Lee1; Yong-Nam Kwon1; 'Korea Institute of Materials Science

W-8: Characterization and Performance of Novel Amorphous Oxide Anodes for Chlorine Evolution in Industrial Electrolysis Using Chloride-Based Solutions: Akari Miwa1; Masatsugu Morimitsu1; 'Doshisha University

W-9: Characterization of an Aged Ti49Ni26Au25 Shape Memory Alloy: Todd Butler1; Mohamed Abdalla2; B. Hornbuckle3; Ronald Noebe4; Glen Bigelow5; Gregory Thompson1; Mark Weaver1; 'Univ of Alabama; 'Tuskegee University; 'NASA Glenn Research Center

W-10: Characterization of Oxide Film Inclusion Defects in Vacuum Cast Ni-Base Superalloy: Max Kaplan1; Gerhard Fuchs1; 'University of Florida

W-11: Combined Cavitation and Particle Erosion of Brass: Amarendra H.J.1; Gajanan Chaudhari1; S.K. Nath1; 'IIT Roorkee

W-12: Determination of Interfacial Heat Transfer and Air-gap Formation during ingot Casting into Permanent Metal Moulds: Jason Swan1; 'University of Birmingham

W-13: Development of 3D Porous Nickel Electrodes for Hydrogen Production: Valentín Pérez-Herranz1; Issac Herráiz-Cardona1; Emma Ortega1; José García-Antón1; 'Universidad Politécnica de Valencia

W-14: Development of Fretting Fatigue Parameter: Hysukjae Lee1; 'Andong National University

W-15: Development of Ru3Ti1-xO2/Ti Anodes by Low Temperature Thermal Decomposition for Nickel Electrowinning: Masaru Matsuda1; Masatsugu Morimitsu1; 'Doshisha University

W-16: Effect of Al2Ca Addition and Mg Content on Microstructure and Tensile Properties of Diecast Al-9Si-2Cu-Mg Alloys: Jung Ho Seo1; Nam-Seok Kim1; Young-Ok Yoon1; Shae K Kim1; 'Korea Institute of Industrial Technology

W-17: Effect of Be and CaO on the Ignition Resistance of Mg Melts: Lee Jin-Kyu1; Yang Won-Seok1; Kim Shae K1; 'Korea Institute of Industrial Technology

W-18: Effect of Ca Addition on Creep and Mechanical Properties in Mg-4Zn Alloys: Gun Young Oh1; Hyan Kyu Lim1; Shae K Kim1; 'KITECH

W-19: Effect of Carbon on Structural Changes in NiAl Phase: Andrzej Janas1; Ewa Olejnik1; Beata Grabowska1; Jacek Nawrocki1; 'AGH University of Science and Technology; 'WSK Rzeszow S.A

W-20: Effect of Carbon on Wear Resistance in Self-Lubricating Fe-Cr-C-Mn-Cu Alloys: Ki Nam Kim1; Myung Chul Park1; Gyeong Su Shin1; Min Ho Shin1; Seon Jin Kim1; 'Hanyang Univ.

W-21: Effect of Dispersed SiC and Y2O3 Particles on the High-Temperature Oxidation of AZ91D Magnesium Alloys: Min Jung Kim1; Chenguang Zhao1; Seulki Kim1; Dong Bok Lee1; 'Sungkyunkwan University

W-22: Effect of Hydrothermal Process on the Relative Surface Area of Porous Ni-Based BMG Foam: Ji Su Kim1; Do-Hyang Kim1; Min-Ha Lee1; 'Kitech; 'Yonsei University

W-23: Effect of Porosity on Room Temperature Thermal Conductivity and Mechanical Properties of Porous Ti2AlC: Liangfa Hu1; Sandip Basu1; Rogelio Benitez1; Ibrahim Karaman1; Miladin Radovic1; 'Materials Science and Engineering Program, Texas A&M University; 'Department of Mechanical Engineering, Texas A&M University

W-24: Effect of Boron Addition on the Microstructure and Mechanical Properties of Titanium: Abhishek Tewari1; Paul Bowen1; 'Eidgenössische Technische Hochschule Zurich; 'École Polytechnique Federale de Lausanne

TMS 2011 Annual Meeting Final Program
W-56: Hidrotalcite with Gentamicine, of the Type Mg0.68Al0.32(OH)2(NO3)0.32•0.1H2O, Formed by Chemical Coprecipitation in Controlled Atmosphere: Hector Hugo Rodriguez-Santoyo1; Omar Martinez-Alvarez2; 1Universidad Politecnica de Guanajuato

W-57: High Temperature Compressive Deformation Behavior of Ni-Fe-Cr-Al Based Porous Metals: Sung-Wan Choi1; Jung-Yeol Yun2; Young-Min Kong1; Byung-Kee Kim1; Kee-Ahn Lee1; 1Andong National University; 2Korea Institute of Materials Science; 1University of Ulsan

W-58: High Temperature Mechanical Behavior Fe-12Cr ODS Containing Nb: SungSoo Kim1; Dae Whan Kim1; Jin Sung Jung1; 1Korea Atomic Energy Research Institute

W-59: Hydrogen Absorption in CexGd1-x Alloys: Joseph Block1; 1NRCN

W-60: Impact of the Sequence of Strain Hardening and Precipitation Hardening on Mechanical Properties of Grade 6201 AlMgSi Alloy: Beata Snyrak1; 1AGH - University of Science and Technology

W-61: Improved Room-Temperature Hydrogen Sensing Characteristics of Nanocrystalline Tin Oxide Through Fabrication of Nanowire Arrays: Rameech McCormack1; Nozomi Shirato1; Amit Kumar1; Umesh Singh1; Hyoung Cho1; Ramki Kalyanaraman1; Sudipta Seal1; 1University of Central Florida - MMEA; 2University of Tennessee Knoxville - MMAE

W-62: Industrial Use of a New Ultrasonic Spray for Cooling and Wet Gas Treatment in the Pyrometallurgical Processes: Milorad Cirkovic1; Veliko Donchev1; Zeljko Kamberovic1; 1Mining and Metallurgy Institute Bor

W-63: Influence of Heat Treatment on the Corrosion of Steels in CCS Environment: Anja Pfennig1; Sabrina Schulze1; Axel Krautzmann1; Thomas Werlitz1; Stephan Wetzlich1; Enrico Billow1; Jan Tietböhl1; Christian Frieslich1; 1HTW Berlin; 2BAM

W-64: Influence of Hf on Inhibiting Precipitation in Ni-rich NiTiPdHf Shape Memory Alloys: Anne Coppa1; Ron Noebe1; Glen Bigelow2; Mark Weaver1; Greg Thompson1; 1The University of Alabama; 2NASA Glenn Research Center

W-65: Influence of Process and Thermo-physical Parameters on the Heat Transfer at Electron Beam Melting of Cu and Ta: Katia Vutova1; Nozomi Shirato1; Amit Kumar1; Umesh Singh1; 1University of Central Florida - MMEA; 2University of Tennessee Knoxville - MAAE

W-66: Infrared Thermographic Characterization of Tensile Fracture in Railway Steels: Jeongguk Kim1; 1Korea Railroad Research Institute

W-67: Investigating Strain-Induced Martensitic Transformation in Steel through In-Situ TEM Test: Yong-Jae Kim1; In-Chul Choi1; Byung-Gil Yoo1; Takahito Ohmura1; Jae-II Kang1; 1Hanyang University; 2National Institute for Materials Science

W-68: Investigation of the Polymer Composite Materials Reinforced by Hybrid Carbon and Basalt Fibers: Nikoloz Chikhradze1; Guram Abashidze1; 1Mining Institute/Georgian Technical University

W-69: Laboratory Testing Results of Kinetics And Processing Technology of the Polymetalllic Sulphate Concentrate Blagojov Kamen - Serbia: Milorad Cirkovic1; Zeljko Kamberovic1; Vlastimir Trujic1; 1Mining and Metallurgy Institute Bor

W-70: Manufacturing and Macroscopic Properties of Cold Sprayed Cu-Ga Coating Material for Sputtering Target: Kee-Ahn Lee1; Young-Min Jin1; Byoeyong-Cheol Choi1; Dong-Yong Park1; Hyoung-Jun Kim1; 1Andong National University; 2Tae-Kwang Tech.; 3RIST

W-71: Material Characterization of TRISO Particles Using Nanoindentation: Jenny Martos1; 1UC Berkeley

W-72: Mechanical Properties of Nanocomposites Based on PA6 Blends: Pankaj Agrawal1; Gustavo Brito1; Baritra Cunha1; Shirley Nobrega1; Edelcide Araújo1; Tomás Mello1; 1Federal University of Campina Grande - UFCG

W-73: Mechanical Behavior of Porous NiAl Fabricated by Unidirectional Solidification: Ji-Woon Lee1; Soong-Keun Hyun1; Mok-Soon Kim1; Takuya Ide1; Hideo Nakajima1; 1Inha University; 2Osaka University

W-74: Microstructural Characterization of Aged MAR-M247(Nb)-Nickel-Based Superalloy: Renato Baldan1; Carlos Nunes1; Gilberto Coelho1; Paulo Ricardo Azevedo Silva1; 1USP - University of São Paulo

W-75: Microstructure and Property Modifications in Mold Steels Treated by Pulsed Electron Beam: Kemin Zhang1; 1Shanghai University of Engineering Science

W-76: Modeling Cyclic Creep Relaxation in Fiber-Reinforced Gasketing Materials: James Williams1; Ali Gordon1; 1University of Central Florida

W-77: Modeling of Al/W Granular Porous Composites during Dynamic Deformation: Karl Oheby1; Vitali Nesterenko1; 1University of Central Florida; 2Engineering Science

W-78: Morphology of Nanocrystalline ZnO Prepared from Aqueous Solutions: Equilberto Galego1; Marielle Serna1; Laligudi Ramanathan1; 1UCSD

W-79: Nanocomposite of Platinum Particle by Liquid Chemical Phase Reduction: Jin Ho Lee1; Jin Woo Kim1; Se Hoon Kim1; Young Do Kim1; 1Hanyang University

W-80: Organic Coatings to Prevent Molten Aluminum Water Explosions in Aluminum Plants: Alex Lowery1; Joe Roberts1; 1Wise Chem LLC; 2Pyrotek Inc.

W-81: Oxidation Resistances of Al2Ca Added Al-5Mg Alloy: Shae K. Kim1; Gun-Young Oh1; Young-Ok Yoon1; 1KITECH

W-82: Phase Decomposition in Isothermally-Aged Fe-Cr Alloys: Victor Lopez-Hirata1; Erika Avila-David1; Hector Dorantes-Rosales1; Maribel Sanceo-Muñoz1; 1Instituto Politecnico Nacional (ESIQIE); 2Instituto Tecnológico de Pachuca

W-83: Physical Modeling on the Effect of Nozzle Clogging on Mold Flow: Szezhou Wu1; 1Wuhan University of Science and Technology

W-84: Plasticity and Fracture of Vintage Steel under Varying Stress-States, Strain Rates and Temperatures: Ruth Hidalgo-Hernandez1; Paul Allison1; Mark Horstemeyer1; Kennan Crane1; 1US ARMY Corps of Engineers -ERDC; 2Mississippi State University

W-85: Polaritons in Photonic Crystal at THz Frequency Range: Umberto Fulco1; Eudenilson Albuquerque1; 1Universidade Federal do Rio Grande do Norte

W-86: Porosity Characterization of Surrogates for Oxide Nuclear Fuels: A Statistical Analysis of Correlations among Grain Boundary Misorientation, Pore Distribution and Processing Conditions.: Robert McDonald1; Karin Rudman1; 1Arizona State University

W-87: Potential Fiberboard Material from Cow Manure and Disposable Water Bottle: Boon-Chai Ng1; Marlene Murray1; Craig Bradford1; 1Wuhan University of Science and Technology
SP-1: Vertically Aligned Carbon Nanotubes as Active Electrodes for Metal Substrate Supercapacitors: Rado Reit 1; Justin Nguyen 1; William Ready 1; Georgia Tech Research Institute

SP-2: Controlling Phase Evolution in Thin Film PZT by Switching pO2 during Crystalzation: Patrick Wanninkhof 1; Sung Wook Min 1; Jacob Jones 1; University of Florida

SP-3: Correlation between Multi-scale Microstructure and Creep Properties of Micron Scale Coarse Gained Solder Interconnects: Subhasis Mukherjee 1; University of Maryland, College Park

SP-4: Effect of Doped Atom Magnetism On electronic Transport through C59X and C60X(X = B and N) Molecular Junctions: Hamidehre Vahanie 1; Mojtaba Yaghobi 1; Zahra Sedaghat 1; Islamic Azad University; 2Islamic Azad University; 3Tehran University of Medical Sciences

SP-5: Fabrication and Design of a Thin Film Triode Type Carbon Nanotube Field Emitter as an Electron Source: Graham Sanborn 1; Jud Ready 1; Stephan Turano 1; GT

SP-6: Improving Charge Transfer Characteristic of Graphene for Triodide Reduction in Dye-Sensitized Solar Cells: Santanu Das 1; P Sudhagar 1; Ved Verma 1; Dong Hoon Song 1; Eisuuki Ito 1; S. Y. Lee 1; Yong Soo Kang 1; Wonbong Choi 1; Florida International University; 2Hanyang University; 3RIKEN-ASI

SP-7: Mechanical Behavior of DGEEA-DAPSO Epoxy Networks from Molecular Dynamics Simulations: Abhishek Kumar 1; Veera Sundararaghavan 1; Aerospace Department

SP-8: Nanotechnology and Its Applications: Abhijeet Gaikwad 1; JBIMS

SP-9: New Numerical Method to Calculate the True Optical Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and Solar Cells: Fatihah Besahraoui 1; Oran University

SP-10: Surface Morphology and Phase Distribution of Zn and Zn-Co Alloy Coatings, Obtained by Direct Current: Meysam Heydari 1; Ahmed Touhami 1; University of Texas at Brownsville; 2University of Texas at Brownsville

SP-11: The Temperature and Excitation Intensity Effects on the Photoluminescence Spectra of InAs/InP Quantum Dots: Fatihah Besahraoui 1; Oran University

SP-12: Towards Ultra-thick Battery Electrodes: Aligned Carbon Nanotube – Enabled Architecture: Kara Evanoff 1; Javed Khan 1; Alexander Balandin 1; Alexandre Magasinski 1; W. Jud Ready 1; Thomas Fuller 1; Gleb Tushin 1; Georgia Institute of Technology; 2University of California

SP-13: Applying Taguchi Method for Optimization of Pulsed TIG Welding Process Parameters of AZ31 Magnesium Alloy Weldments: Alireza Amirkhani 1; Ali Reza Ebrahimi 1; Rassooz Azari Khorsheshahi 1; Tekin Joosh Asia Company; 2Sahand University of Technology

EPD 2012 Technical Division Student Poster Contest
Sponsored by: The Minerals, Metals and Materials Society, TMS, TMS Extraction and Processing Division

Monday PM Room: Atlantic Hall Location: Dolphin Resort

SP-14: Aluminum-zinc Dealloying: A Comparative Analysis of Processing Methods for Porous Metals: Rafael Soler-Crespo 1; Elvin
Fatiha Besahraoui: Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and SP-28: New Numerical Method to Calculate the True Optical

Robert Gow: SP-22: Effect of Precipitates on Shear Banding during Deformation of Mg Alloys

Frank Sapienza: SP-29: Oxidation Behavior of Zr56Al16Co28 Metallic Glasses

Manuel 1; 1University of Florida

Al/C Composite: SP-24: Evaluation of the Mechanical Response of a Bcc Mg-Li-

Viswanathan4; Christopher Crouse4; 1Universal Technology Corporation;

Danielle 1; 1University of Puerto Rico

Estremera1; Ulises Barajas-Valdes1; Amarilis Declet1; Oscar Suarez1; Arturo Hernandez-Maldonado1; 1University of Puerto Rico - Mayaguez

SP-16: A Novel Synthesis Method for Titanium Dioxide Pigment – Eliminating Direct CO2 Emissions: Scott Middlemas2; Z. Zak Fang3; Peng Fan4; 1University of Utah

SP-17: Dielectric and Magnetic Losses of Iron Oxides in Microwave Ironmaking: Zhiwei Peng2; 1Michigan Technological University

SP-18: Dimethyl Sulfoxide: An Alternative to NMP for Electrochemical Performance of Cathode Active Materials in Lithium Ion Battery: Ohuvatosin Bankole3; Liu Xu1; 1Southeast University,

SP-19: Electrochemistry of Enzyme in Alkaline Solutions: Robert Gow1; Courtney Young2; Hsin Huang2; Greg Hope2; Yasushi Takaaki3; 1Montana Tech; 1Griffith University; 1Akita University

Wenhuan Cao: SP-26: Application of Computational Thermodynamics and Microscopy

Arturo Hernandez-Maldonado1; 1University of Puerto Rico - Mayaguez

SP-30: Sensitivity Analysis of Crack Initiation Life of a 2-grain Model of Ti-6Al-4V: Daniel Sparkman1; Harry Millwater1; Somnath Ghosh1;

1University of Texas at San Antonio; 2John Hopkins University

SP-31: Effects of Pulsed Magnetic Annealing on the Grain Boundary of Primary Recrystallized Microstructure in the Grain-Oriented Silicon Steel: Junjun Huang1; Lihua Liu1; Xin Xia1; Xiang Jiang1; Lijuan Li1; Qijie Zhai1; 1Shanghai University

SP-32: The Role of Solute Nature on the Deformation Behavior and Texture Evolution in Magnesium Alloys: Zachary Bryan1; Ryan Hooper1; Michele Manuel1; 1University of Florida

SP-33: The Temperature and Excitation Intensity Effects on the Photoluminescence Spectra of InAs/InP Quantum Dots: Fatihah Besahraoui1; 1Oran University

SP-34: X-Ray Radiography of Magnesium MMCs Processed by Electromagnetic Acoustic Transduction: Hunter Henderson1; Zachary Bryan1; Orlando Rios2; Alexander Melin3; Gail Ludtka4; George Lopp5; Yu-Min Su6; Michele Manuel1; 1University of Florida; 2Oak Ridge National Laboratory

Takasaki3; 1Montana Tech; 2University of Alabama

SP-27: A Study of Biodegradable Mg-Ca-Sr Alloys: Ida Berglund1; Harpreet Brar2; Malisa Sarttinnoranont1; Benjamin Keschlowsky1; Michele Manuel1; 1University of Florida

SP-28: New Numerical Method to Calculate the True Optical Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and Solar Cells: Fatihah Besahraoui1; 1Oran University

SP-29: Oxidation Behavior of Zr56Al16Co28 Metallic Glasses: Wenhuai Cao1; jiliang Zhang2; Chan Hung Shek3; 1City University of Hong Kong

MPMD 2012 Technical Division Student Poster Contest

SP-35: Novel Three-Dimensional Printing Technology for Advanced Modeling and Casting of A356 Impeller: Blake Whiteley1; 1The University of Alabama

SP-36: Processing of Aluminum Wires and Its Effect on Their Electrical Properties: Grace Rodriguez1; 1University of Puerto Rico

SP-37: Frequency and Temperature Dependent Dynamic Mechanical Properties of Metal Matrix – Barium Titane Composite: Jack Tikka1; Zachary Bryan1; Jacob Jones1; Michele Manuel1; 1University of Florida

SP-38: Novel Manufacturing Processes for Ultra-fine Grained Microstructure in 9310 Steel: Thomas Kozmel1; 1Illinois Institute of Technology

SP-39: Automatic Combination of Multi-tile EBSD Datasets: Adam Shiveley1; Adam Pilchak2; Paul Shade3; Jay Tiley4; Donna Ballard4; 1Southwestern Ohio Council for Higher Education; 2United States Air Force

SP-40: Electro-Chemical Mechanical Polishing (ECMP) For Electron Microscopy: Kevin Shiveley1; Jay Tiley2; Adam Shiveley3; Gopel Viswanathan4; Christopher Crouse5; 1Universal Technology Corporation; 2University of Texas at San Antonio; 3John Hopkins University

SP-41: Synthesis and Characterization of Nacre-inspired Nanocomposites: Omar Rodriguez-Negron1; Carlos Morales-del Valle1; Ruth Hidalgo-Hernandez1; Paul Allison1; Robert Moser1; Mei Chandler1; Charles Weiss1; Phillip Malone1; 1UPRM/ ARMY ERDC; 2UPRM; 3ARMY ERDC

SP-42: Synthesis and Properties of Bulk Graphene NanoPlatelets Consolidated by Spark Plasma Sintering: Andy Nieto1; 1Florida International University

LMD 2012 Technical Division Student Poster Contest

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division

Monday PM
March 12, 2012
Room: Atlantic Hall
Location: Dolphin Resort

SP-20: Feasibility Study of the Fabrication of a Niobium Diboride/Aluminum Composite: Jose Moreno Quiles2; Neshma Lopez2; 1University of Puerto Rico - Mayaguez

SP-21: Mechanical Behavior of Cast Mg AZ31-B Alloy Produced by Magnetic Suspension Melting Process: Paige Boehmcke1; Nagy El-Kaddah1; Aeriel Murphy1; 1Univ of Alabama

SP-22: Effect of Precipitates on Shear Banding during Deformation of Mg Alloys: Frank Sapienza1; Zachary Bryan1; Michele Manuel1; 1UF

SP-23: The Effect of Scandium Additions on the Degradation Behavior of Magnesium in Simulated Body Fluid: Nancy Nguyen1; Harpreet Brar1; Michele Manuel1; 1University of Florida

SP-24: Evaluation of the Mechanical Response of a Bcc Mg-Li-Al Composite: Ryan Hooper1; Zachary Bryan1; Michele Manuel1; 1University of Florida

SP-25: Experiments and Modeling of Low-Cycle Fatigue of Extruded 6061 Aluminum Alloy: Andrew Brummer1; J Jordon1; 1The University of Alabama

SP-26: Application of Computational Thermodynamics and Precipitation Kinetics to Light Weight Al Alloy Design: Danielle Belsito3; Richard Sisson3; 1Worcester Polytechnic Institute

SP-27: A Study of Biodegradable Mg-Ca-Sr Alloys: Ida Berglund1; Harpreet Brar2; Malisa Sarttinnoranont1; Benjamin Keschlowsky1; Michele Manuel1; 1University of Florida

SP-28: New Numerical Method to Calculate the True Optical Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and Solar Cells: Fatihah Besahraoui1; 1Oran University

SP-29: Oxidation Behavior of Zr56Al16Co28 Metallic Glasses: Wenhuai Cao1; jiliang Zhang2; Chan Hung Shek3; 1City University of Hong Kong

SP-30: Sensitivity Analysis of Crack Initiation Life of a 2-grain Model of Ti-6Al-4V: Daniel Sparkman1; Harry Millwater1; Somnath Ghosh1;
SP-43: Characterization and Quantification of X65, X80, and X100 Pipeline Steels for Statistical Microstructural Analysis: Elisa Duesing1; Elizabeth Rust2; Brian Welk1; Dan Huber1; John Sosa2; Hamish Fraser1; 1Center for the Accelerated Maturation of Materials; 2The Ohio State University

SP-44: Analysis of Hafnium Addition Effects to Microstructural and Mechanical Properties in the Nickel-Titanium-Hafnium System for Shape-Memory Optimization: Blake Whitley1; The University of Alabama

SP-45: Design of pH and Thermal Sensitive Hydrogels for Catheter Based Minimally Invasive Heart Surgery: Min Zhang1; James Bush1; Travis Busbee1; Zhenqing Li1; Jianjun Guan1; 1Ohio State Univ

SP-46: Serial Sectioning and 3D Reconstruction of Grains to Obtain Metric and Topological Properties: Amy Adams1; David Rule1; Veena Tikare1; Burton Patterson1; Robert DeHoff1; 1University of Florida

SP-47: Atomistic Prediction of Precipitate Strengthening in Nanoscale Metallic Multilayers: Niaa Abidalrahim1; Ioannis Mastorakos1; Hussein Zbib1; 1Washington State University

SP-48: A Review of First-Principles Investigations of Iron Based Alloys Using DFT: Krista Kalac1; Julia Medvedeva1; 1Missouri S&T

SP-49: Characterization of Transformation Toughening in Shape Memory Alloy Reinforced Composites: Fatmata Barrie1; Michele Manuel1; 1University of Florida

SP-50: Creep Deformation Mechanisms in Grade 91 Steel: Triratna Shrestha1; Indrajit Charr1; Mehdi Basirat1; Gabriel Potirniche1; Karl Rink1; 1University of Idaho

SP-51: Crystal Structure and Disorder of Refractory High-Entropy Alloys: Soanyadipta Maiti1; Walter Steurer1; 1ETH Zurich; 2ETH Zurich

SP-52: Design of Aluminum-Based Metal Matrix Composite with Self-Healing Capabilities: Charles Fisher1; Michele Manuel1; 1University of Florida

SP-53: Analysis of Serrated Flow in Ni-10Pd during High Temperature Instrumented Microindentation: Bin Gan1; Sammy Tin1; 1Illinois Institute of Technology

SP-54: High Temperature Deformation of Ti-Al-Nb-Cr-Mo Alloys: Glenn Bean1; Fereshteh Ebrahimi1; Hans Seifert1; Michele Manuel1; 1University of Florida; 2Karlsruhe Institute of Technology

SP-55: Influence of Austenite Stability on Steel Low Cycle Fatigue Response: Greg Lehnhoff1; Kip Findley1; 1Colorado School of Mines

SP-56: Mechanical Characterization of Hierarchical Biological Structures: Rogie Rodriguez1; Wayne Hodo2; Paul Allison2; Mei Chandler1; Jen Seiter2; Aimee Poda1; Mark Chappell1; Brandon Lafferty2; 1UPRM/US Army ERDC; 2US Army Corps of Engineers

SP-57: New Numerical Method to Calculate the True Optical Absorption of Hydrogenated Nanocrystalline Silicon Thin Films and Solar Cells: Fatiha Besahraoui1; 1Oran University

SP-58: Recycling of the Alloy AZ91D Departing from Scrap in the Shape of Shavings Contaminated with Mineral Oil: Roberto Lucchi1; Roger López Padilla1; Universidad Tecnológica Nacional Facultad Regional Córdoba

SP-59: Rheological Performance and Compressive Strength of Superplasticized Mortar Cements with SiO2 Nanoparticles Additions: Luis Zapata1; Genock Portela1; O. Marcelo Suárez1; Orlando Carasquillo2; Universidad of Puerto Rico, Mayagüez; 2US Army Corps of Engineers

SP-60: Atom Probe Tomography of Simulated Fission Product Segregation in CeO2: Billy Valderrama1; Hunter Henderson1; In-Wook Park1; Jianling Lin1; John Moore2; Clarissa Yablinsky3; Todd Allen4; Michele Manuel1; 1University of Florida; 2Colorado School of Mines; 3Univeristy of Wisconsin-Madison

SP-61: The Development of Nanostructured In2O3 Oxide by Electron Stimulated Oxidation on InP and InSb Surfaces: Fatiha Besahraoui1; 1Oran University

SP-62: The Temperature and Excitation Intensity Effects on the Photoluminescence Spectra of InAs/InP Quantum Dots: Fatiha Besahraoui1; 1Oran University
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