TMS2010

139th Annual Meeting & Exhibition

February 14-18, 2010 • Washington State Convention & Trade Center • Seattle, Washington USA

"Going for the Gold in Materials Technology"

Includes:
Meeting Information
Floor Plans
Exhibition Directory
Technical Program

FINAL PROGRAM

LEARN • NETWORK • ADVANCE

TMS Upcoming Meetings

When it comes to professional development and networking, there is nothing like a face-to-face connection with colleagues. TMS provides members with numerous opportunities for advancing research and collaborating on the latest technology through a series of diverse conferences. Take advantage of these engaging events for the materials science and technology community.

ICMOVPE 2010
Incline Village, NV..... May 23-28..... Hyatt Regency Lake Tahoe

2010 Electronic Materials Conference (EMC10)
Notre Dame, IN..... June 23-25..... University of Notre Dame

Lead-Zinc 2010 (in conjunction with Conference of Metallurgists (COM 2010)
Vancouver, BC, Canada..... October 3-6..... Hyatt Regency Vancouver

7th International Symposium on Superalloys 718 & Derivatives 2010
Pittsburgh, PA..... October 10-13..... Marriott Pittsburgh City Center

Materials Science & Technology 2010 (MS&T)
Houston, TX..... October 17-21..... George R. Brown Convention Center

2011 TMS Annual Meeting & Exhibition
San Diego, CA..... February 27-March 3..... San Diego Convention Center

Co-sponsored Meetings

Copper 2010
Hamburg, Germany..... June 6-10..... Congress Center Hamburg

1st TMS-ABM International Materials Congress 2010 (To be held in conjunction with the 65th Annual Congress of ABM and the 18th IFHTSE Congress)
Rio de Janeiro, Brazil..... July 26-30..... International Rio Hotel

7th Pacific Rim International Conference on Advanced Materials and Processing 2010 (PRICM-7)
Cairns, Australia..... August 1-5..... Cairns Convention Centre

Uranium 2010 Conference
Saskatoon, SK, Canada..... August 15-18..... Delta Bessborough & Sheraton Cavalier

TMS2010
139th Annual Meeting & Exhibition
February 14-18, 2010
Washington State Convention & Trade Center
Seattle, Washington USA

Welcome to the TMS 2010 Annual Meeting & Exhibition!

Dear Colleagues and Friends:

It is wonderful to have all of our esteemed members, exhibitors and guests assembled here in Seattle for the 139th annual meeting of The Minerals, Metals & Materials Society. Your attendance at this annual forum is a testament to the dedication of our members and the steadfast support of industry experts from the materials field. This network of professional exchange will keep the society a global thought leader and move materials science forward.

Please take advantage of these invaluable offerings during the conference:

Technical & Poster Sessions – Nearly 60 symposia will focus on the pioneering efforts of some of the world's brightest and most promising minds. Sessions are offered in dynamic technical areas including aluminum and magnesium, advanced characterization and modeling, electronic materials, high performance structural materials, materials and society, materials processing and production, and nanoscale and amorphous materials.

Continuing Education – Knowledge is the power that fuels developments in research and builds careers. TMS 2010 features 7 compelling courses and workshops designed to enhance your conference experience through education.

Networking – Simply put, there is nothing like being here. Your presence at TMS 2010 offers one of the greatest benefits – connecting with colleagues from around the world! Enjoy casual conversations or attend one of our 11 technical receptions. On Sunday evening, gather with professionals in your field, or join us at the President's Welcoming Reception on Monday and Happy Hour on Tuesday, both held in the exhibit hall.

Special Lectures – One of the hallmarks of the TMS annual meeting is the series of special lectures presented by prestigious professionals in the materials field. Here is this year's agenda: Extraction & Processing/Materials Processing & Manufacturing Joint Lecture; Extraction & Processing Division Distinguished Lecturer; Light Metals Division Lecture, and the Young Leaders Tutorial Lecture. See page 15 for speakers.

Awards Presentation – Celebrating the accomplishments of fellow colleagues builds our society. The TMS and AIME Awards Dinner is a must-attend event on Tuesday evening. See page 16 for a preview.

Exhibition – The movers and shakers in the technology solutions field shine at this all-encompassing showcase. Among the noteworthy exhibitors available to answer questions and demonstrate their wares is the Automobili Lamborghini Advanced Composite Structures Laboratory, Department of Aeronautics & Astronautics, from the University of Washington, which will feature an actual Lamborghini sports car.

Student Events – The future of TMS is alive in its student members. The annual meeting offers budding scientists and engineers the opportunity to network with peers, as well as learn from the pros. Visit the Student Poster Contest and see what students are working on, and enjoy their competitive spirit at the Materials Bowl sponsored by Alcoa. Details are on page 18.

So, how do we possibly summarize all the great things TMS and the annual meeting have to offer? Perhaps our **TMS, MSE & Me Video Contest** participants can show us. See what's on their minds at the winners' announcement, Sunday at 8 p.m. in Room 6C of the convention center.

Get ready to experience TMS 2010. It all starts now!

Sincerely,

Ray D. Peterson
2009 TMS President

Table of Contents

Meeting Perks and Policies

Full Conference Registration

Your full conference badge provides you admission to each of these premier events!

1. Technical & Poster Sessions
2. Exhibition
3. President's Welcoming Reception in the Exhibit Hall
4. Symposia-Related Networking Receptions
5. Hosted Exhibit Hall Reception
6. Young Leaders Tutorial Lecture+
7. Women in Science Breakfast Lecture*
8. Student Poster Contest
9. Student Materials Bowl

+Young Leaders lecture is free. Lunch requires preregistration.
**Breakfast is free; preregistration required.*

Internet Options

Free wireless access will be available to attendees on the 4th and 6th floors of the Washington State Convention & Trade Center.

Policies

Badges

All attendees must wear registration badges at all times during the conference to ensure free 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" may not attend technical sessions.

Refunds

The deadline for all refunds was January 15, 2010. No refunds will be issued at the conference. Fees and tickets are nonrefundable.

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 your cooperation in minimizing disturbances which may occur during technical sessions due to cell phone use. Please place cell phones or other electronic devices in "silent mode" while you are in meeting rooms.

Audio/Video Recording

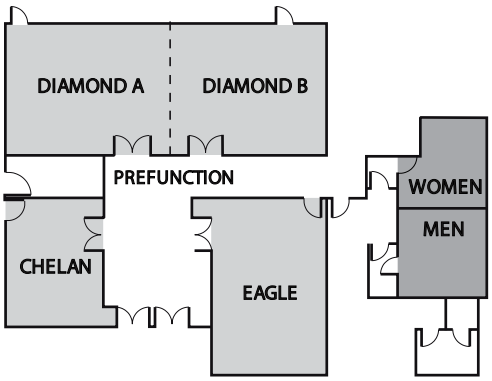
TMS reserves the right to all audio and video reproduction of presentations at TMS sponsored meetings. Recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. Contact TMS Technical Programming at (724) 776-9000, ext. 212, to obtain a copy of the waiver release form.

Photography Notice

By registering for the meeting, all attendees acknowledge that they may be photographed by TMS personnel while at events. Photos may be used for promotional purposes in print and online.

Sheraton Seattle Hotel Floor Plans

LEVEL 1



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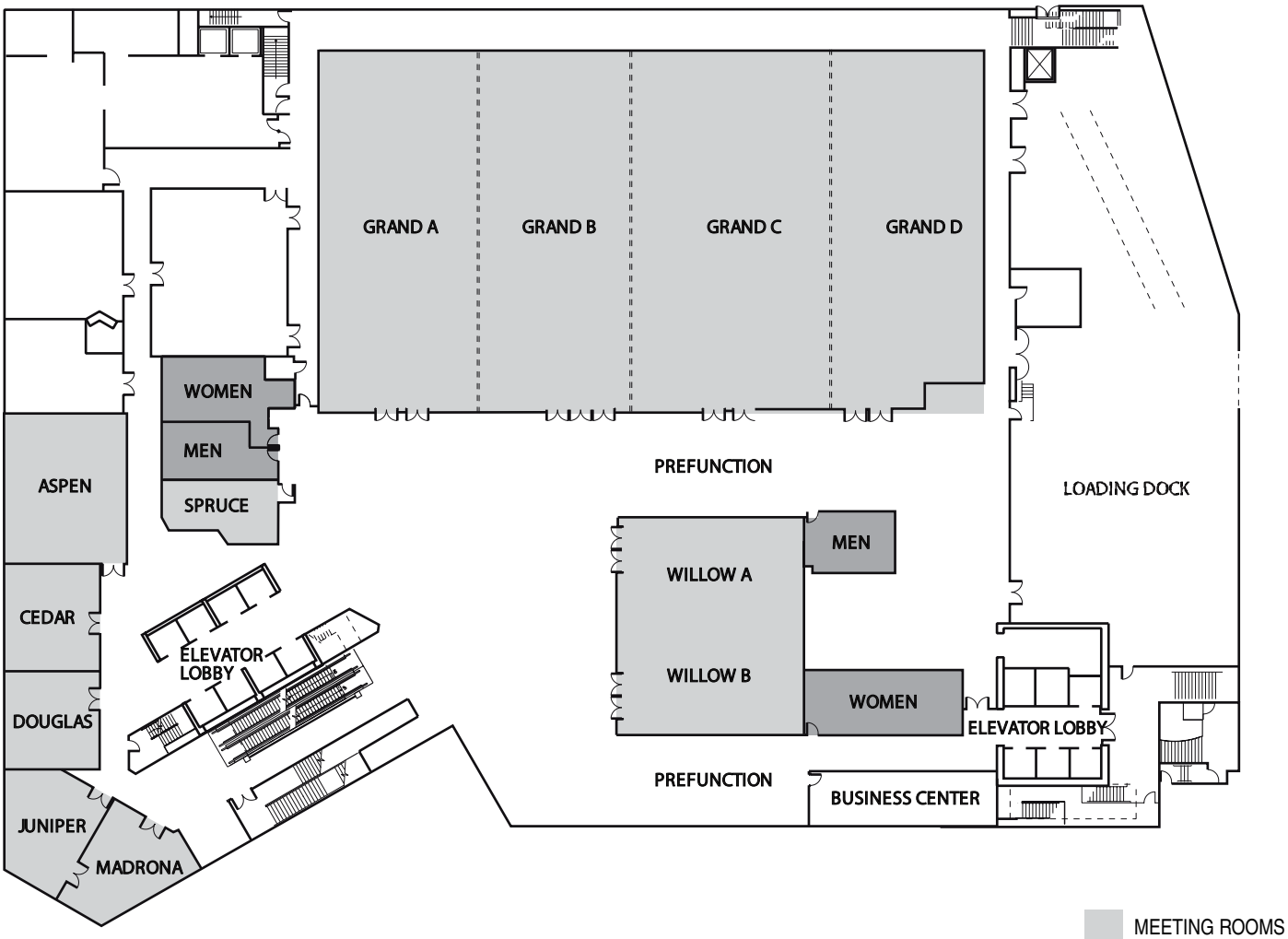
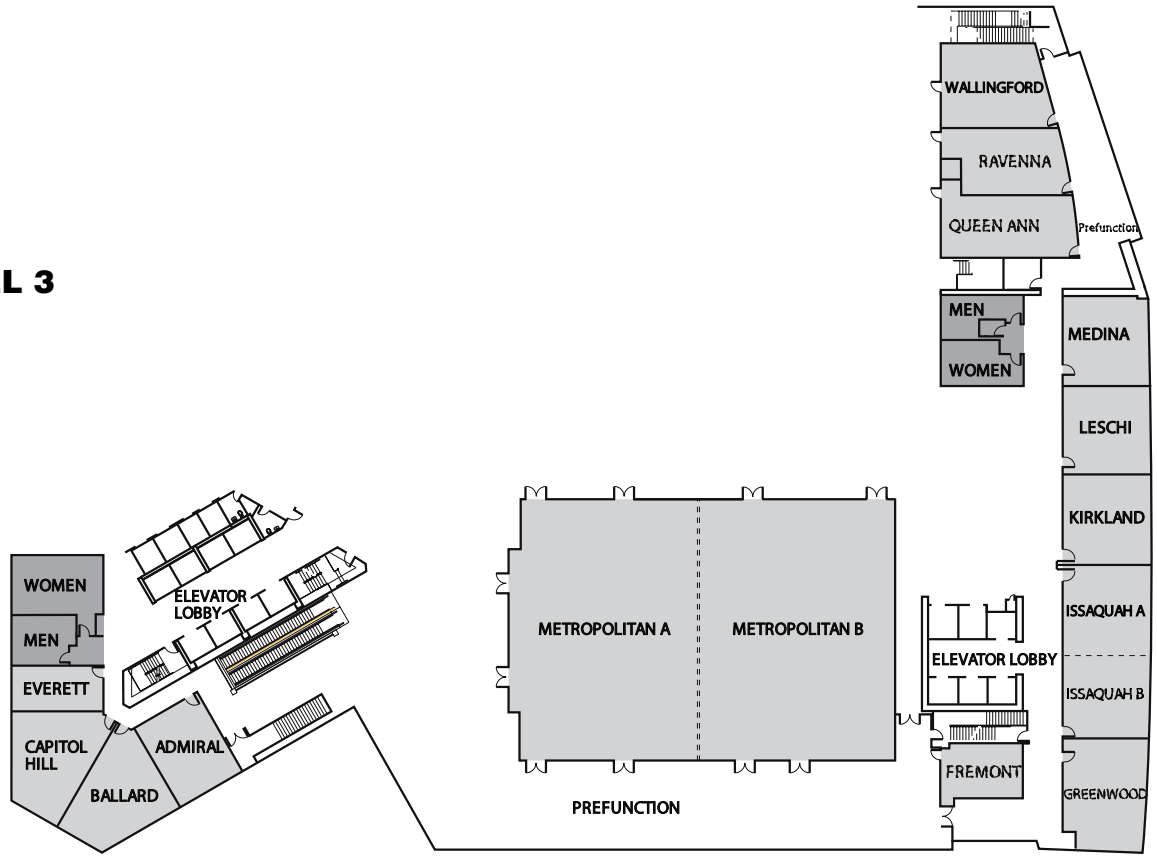


Sheraton Seattle Hotel Floor Plans

LEVEL 3



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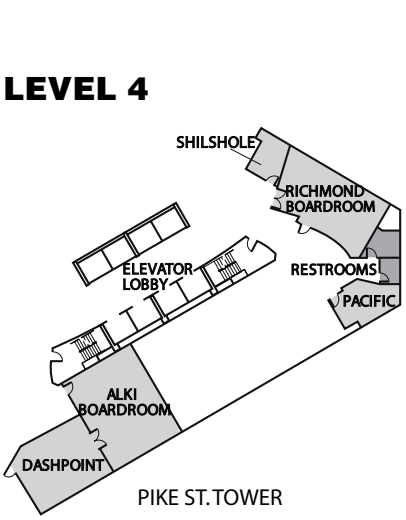

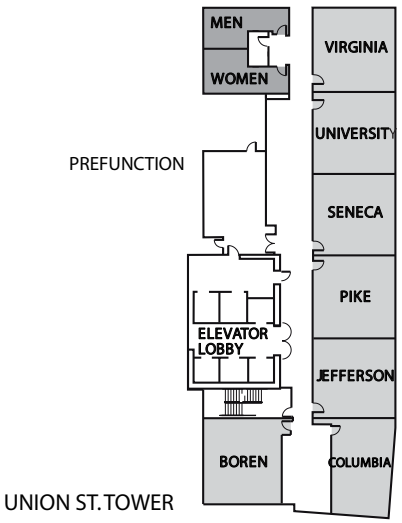

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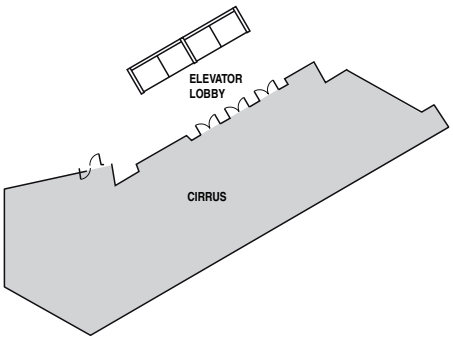
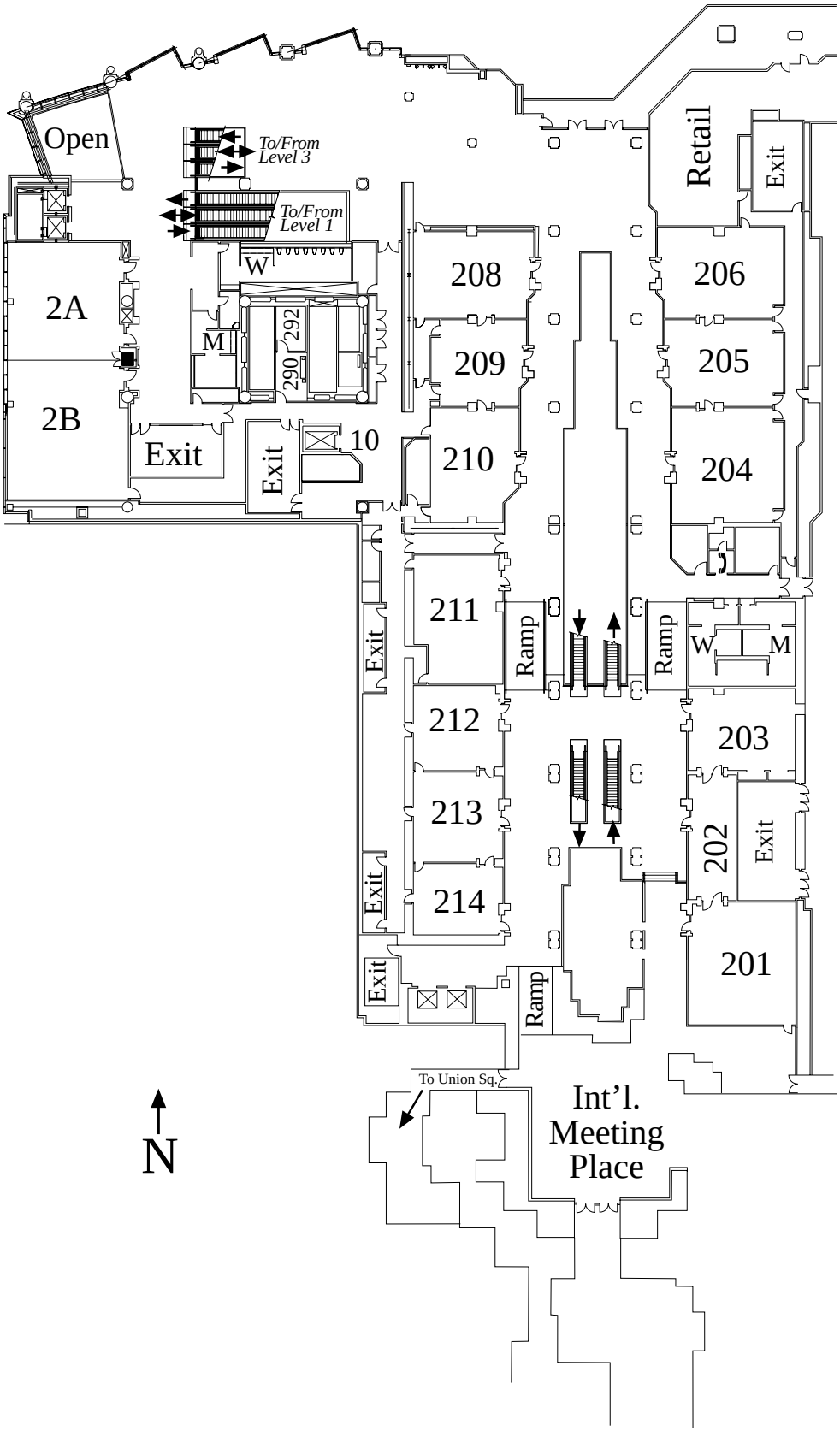


MEETING ROOMS

RESTROOMS

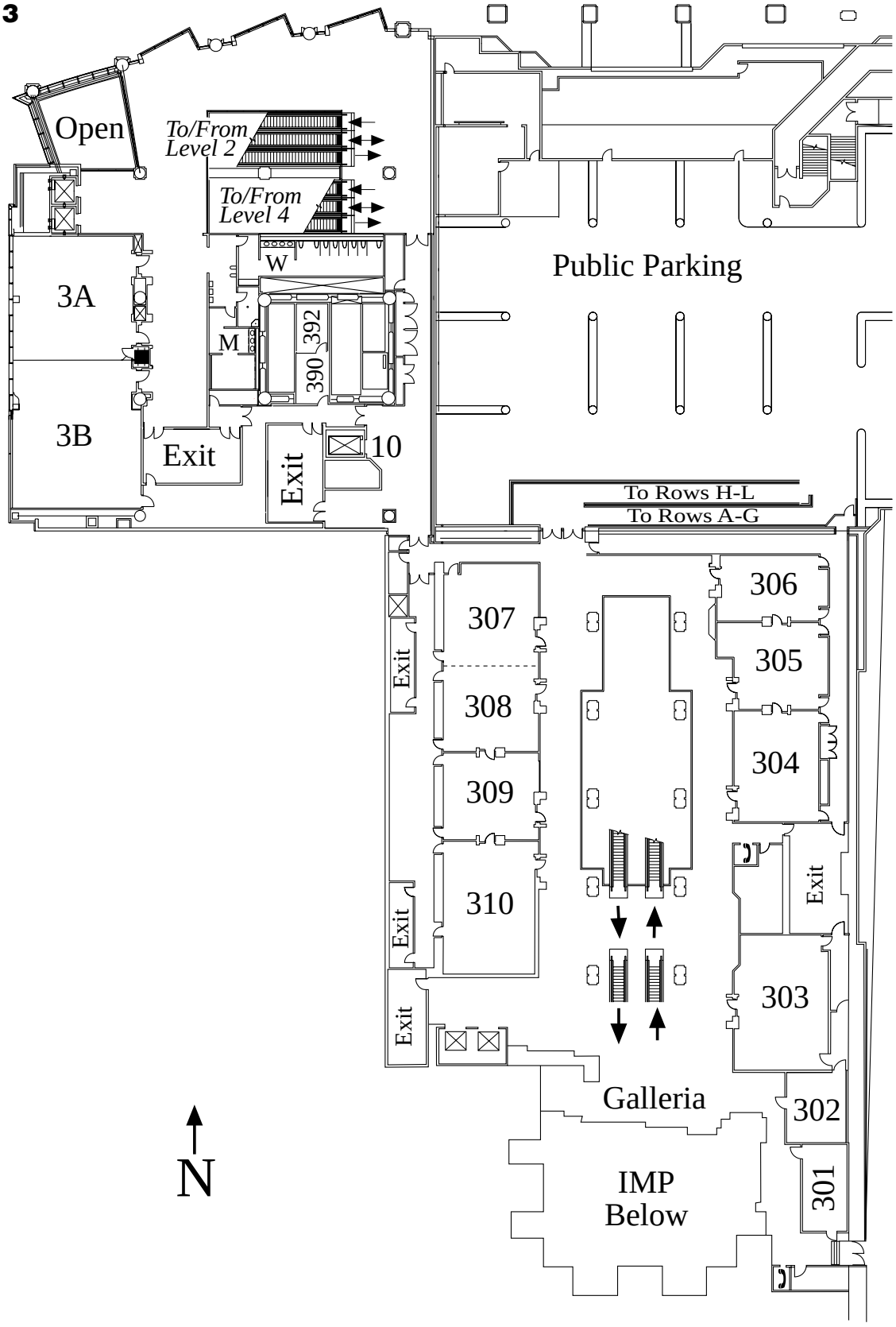
Convention Center Floor Plans

LEVEL 2



Convention Center Floor Plans

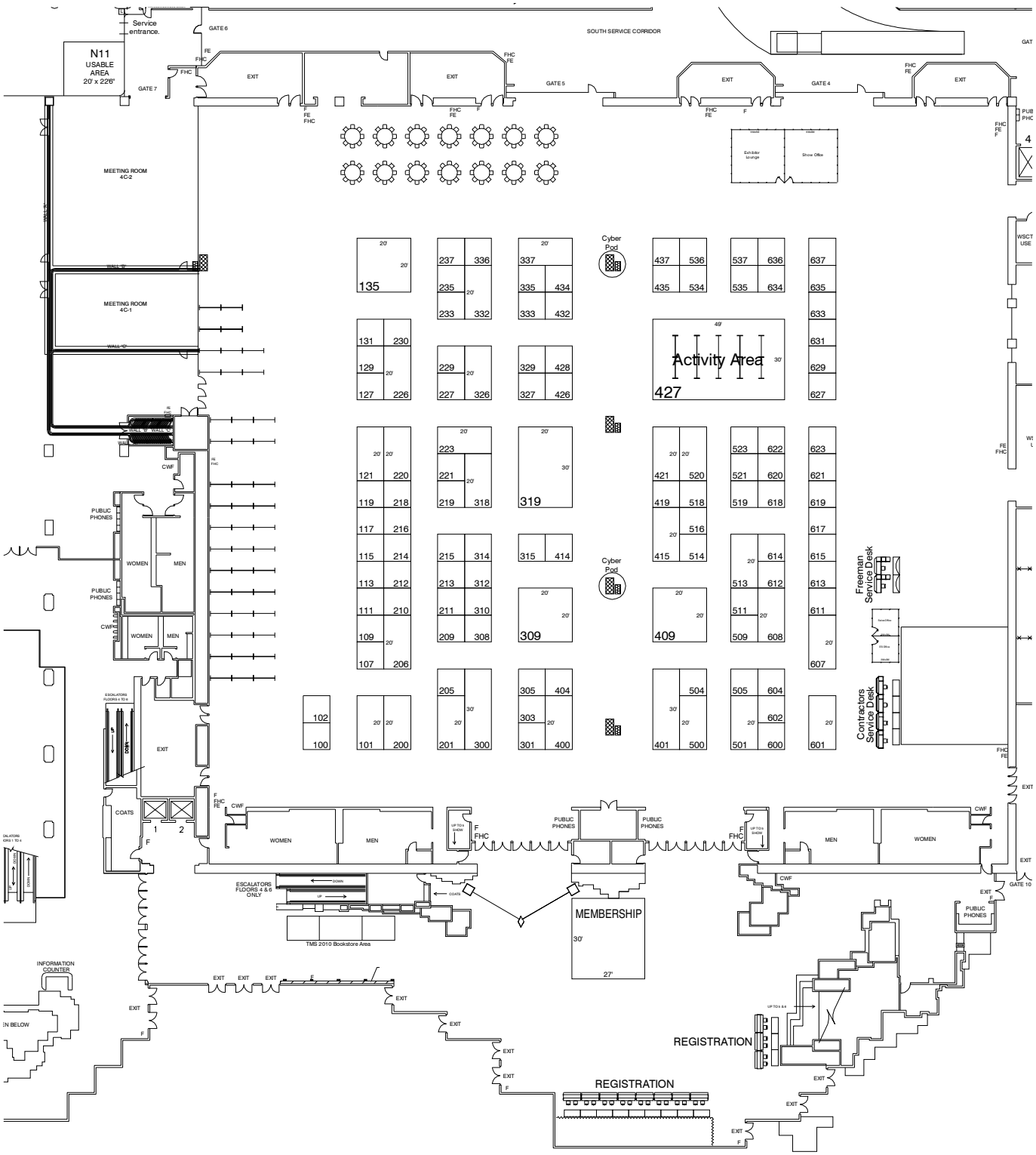
LEVEL 3



Convention Center Floor Plans

EXHIBIT HALL

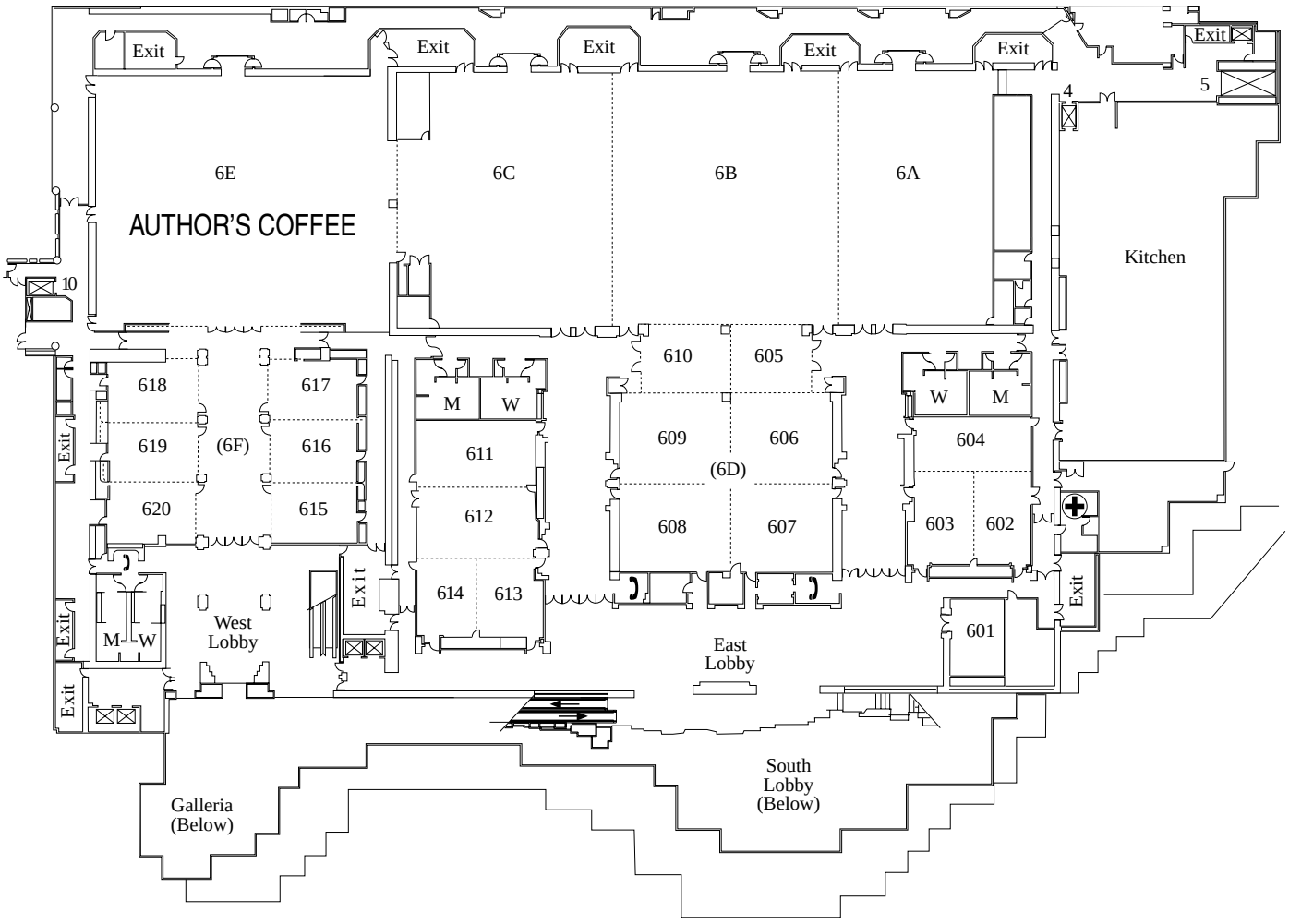
LEVEL 4



Think Green … Place your empty water bottles, soda cans and paper in the recycling bins.

Convention Center Floor Plans

LEVEL 6



Schedule of Events *(as of 1/20/10)*

TMS Meetings and Events are scheduled for the following dates, times, and locations:

Key: C = Washington State Convention & Trade Center S = Sheraton Seattle Hotel

SATURDAY, FEBRUARY 13

FUNCTION	TIME	LOCATION	ROOM
COMMITTEE MEETINGS			
Professional Registration Workshop	9 a.m. to 3 p.m.	S	Ravenna
Professional Registration Committee Meeting	3 to 5 p.m.	S	Ravenna

SUNDAY, FEBRUARY 14

FUNCTION	TIME	LOCATION	ROOM
REGISTRATION	11 a.m. to 7:30 p.m.	C	4th Floor, South Lobby
TMS MEMBER WELCOME CENTER	11 a.m. to 7:30 p.m.	C	4th Floor, South Lobby
TMS, MSE & ME VIDEO CONTEST ANNOUNCEMENT	8 to 8:30 p.m.	C	Room 6C
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Lead Free Solder Technology 2010	8:30 a.m. to 5 p.m.	C	Rooms 2A/2B
Managing Smelter Operations in Turbulent Times	8:30 a.m. to 5 p.m.	C	Room 4C 2
Materials in Nuclear Power Plant Construction	8:30 a.m. to 5 p.m.	C	Room 4C 1
Process Modeling Short Course	8:30 a.m. to 5 p.m.	C	Room 4C 4
Shutdown and Restart of Potlines	8:30 a.m. to 5 p.m.	C	Room 4C 3
ANSWER Tutorial Series: Neutron & Synchrotron Scattering 101	1 to 4:30 p.m.	C	Room 401
STUDENT EVENTS			
Materials Bowl		C	Room 6C
Elimination Rounds	noon to 4 p.m.	C	Room 6C
Championship Round	8:30 p.m.	C	Room 6C
Student Networking Mixer	9 to 11 p.m.	C	Ballroom 6B
SOCIAL FUNCTIONS			
Fellows & Invited Guests Reception	4:30 to 6 p.m.	S	Aspen
Young Leader/New Member Reception	5 to 6 p.m.	S	Douglas
2009 Functional & Structural Nanomaterials: Fabrication, Aluminum Alloys: Fabrication, Characterization & Applications Networking Reception	6 to 8 p.m.	C	Room 615
Biological Materials Science Reception	6 to 8 p.m.	C	Room 205
Characterization of Minerals, Metals, & Materials Reception	6 to 8 p.m.	C	Room 307
Computational Thermodynamics & Kinetics Networking Reception	6 to 8 p.m.	C	Room 308

Schedule of Events

FUNCTION	TIME	LOCATION	ROOM
Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium Networking Reception	6 to 8 p.m.	C	Room 306
Light Metals Networking Reception	6 to 8 p.m.	C	Room 608
Magnesium Technology 2010 Networking Reception	6 to 8 p.m.	C	Room 612
Pb-Free Solders and Emerging Interconnect & Packaging Technologies Networking Reception	6 to 8 p.m.	C	Room 204
Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications Networking Reception	6 to 8 p.m.	C	Room 603
Ultrafine Grained Materials – 6th International Symposium Networking Reception	6 to 8 p.m.	C	Room 606
COMMITTEE MEETINGS			
Financial Planning Committee	7:30 to 8:30 a.m.	S	Greenwood
Professional Registration Leadership Committee	9 to 11 a.m.	S	Everett
TMS Board of Directors Orientation & Briefing	9 a.m. to 1:30 p.m.	S	Aspen
Recycling & Environmental Technologies Committee	noon to 1:30 p.m.	C	Room 208
Young Leader Committee Business Meeting	12:30 to 2 p.m.	S	Issaquah
Accreditation Committee	12:30 to 2:30 p.m.	S	Wallingford
Pyrometallurgy Committee	1 to 2:30 p.m.	C	Room 210
Magnesium Committee	1:30 to 3:15 p.m.	C	Room 304
Nominating Committee	2 to 3 p.m.	S	Kirkland
Thin Films & Interfaces Committee	3 to 4 p.m.	C	Room 211
Aluminum Committee	2:30 to 4 p.m.	C	Room 305
Public & Government Affairs Committee	3 to 4:30 p.m.	S	Everett
Materials Characterization Committee	3 to 5 p.m.	C	Room 203
Program Committee	3 to 5 p.m.	C	Room 208
ABET Training Session	3 to 5 p.m.	S	Greenwood
Electrode Subcommittee	4 to 5 p.m.	C	Room 305
ICME Committee	4 to 5:30 p.m.	C	Room 304
Nanomaterials Committee	4 to 5 p.m.	C	Room 309
Publications Coordinating Committee	4 to 5:30 p.m.	S	Cedar
LMD Council Meeting	4:30 to 6 p.m.	C	Room 209
Global Innovations Committee	5 to 5:45 p.m.	C	Room 301
Hydrometallurgy and Electrometallurgy Committee	5 to 6:30 p.m.	C	Room 210
Nanomechanical Materials Behavior Committee	5:45 to 6:45 p.m.	C	Room 211
Mechanical Behavior of Materials Committee	7 to 8:30 p.m.	C	Room 203
Alloy Phases Committee	7:30 to 9 p.m.	C	Room 210
Phase Transformations Committee	7:30 to 9:30 p.m.	C	Room 208

TMS, MSE & Me Video Contest Awards Ceremony

Nine creative TMS members have produced short film adaptations of their lives in materials science for the "TMS, MSE & Me Video Contest." The top three winners of $2,010, $750 and $250 will be announced during a special presentation of all submissions on Sunday, February 14th at 8 p.m. prior to the Materials Bowl Championship Round at the Washington State Convention & Trade Center, Room 6C. Come and enjoy the show!

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MONDAY, FEBRUARY 15

FUNCTION	TIME	LOCATION	ROOM
AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Ballroom 6E
REGISTRATION	7 a.m. to 6 p.m.	C	4th Floor, South Lobby
TMS MEMBER WELCOME CENTER	7 a.m. to 6 p.m.	C	4th Floor, South Lobby
GENERAL POSTER SESSION	5 to 6:30 p.m.	C	Exhibit Hall
2010 TMS EXHIBITION			
Exhibit Hours	noon to 6:30 p.m.	C	4th Floor
President's Welcoming Reception	5 to 6:30 p.m.	C	Rooms 4A/4B
TECHNICAL DIVISION STUDENT POSTER CONTEST	5 to 6:30 p.m.	C	Exhibit Hall
SOCIAL FUNCTIONS			
Women in Science Breakfast/Lecture	7 to 8 a.m.	S	Grand Ballroom A
Guest Hospitality	7 to 10 a.m.	S	Greenwood
Past Presidents' Brunch	9:30 to 11 a.m.	S	Douglas
California Polytechnic State University Alumni Reception	6:30 to 9 p.m.		Offsite
Colorado School of Mines Alumni Reception	7 to 8 p.m.	S	Aspen
COMMITTEE MEETINGS			
PbZn 2010 Planning Meeting	7 to 8:30 a.m.	S	Everett
Met Trans "A" Board of Review	7 to 8 a.m.	S	Issaquah
Met Trans Joint Commission	8 to 10:30 a.m.	S	Issaquah
Process Technology and Modeling Committee	8 to 9 a.m.	C	Room 210
Superconducting & Magnetic Materials Committee	8 to 9 a.m.	C	Room 208
Membership & Student Development Committee	8:45 to 9:45 a.m.	S	Wallingford
EPD Council Meeting	noon to 2 p.m.	S	Room 208
Seven Springs Int'l Symposium on Superalloys Program Committee	noon to 2 p.m.	S	Cedar
Graduate Student Advisory Council	noon to 1:30 p.m.	S	Wallingford
MetSoc/TMS Leadership Meeting	12:15 to 1:45 p.m.	S	President's Suite
EMPMD Council Meeting	12:30 to 2 p.m.	C	Room 210
TMS Executive Committee	2 to 4 p.m.	S	President's Suite
Seven Springs Int'l Symposium on Superalloys General Organizing Committee	5 to 7 p.m.	S	Cedar
Advanced Characterization, Testing & Simulation Cmt	5:30 to 6:30 p.m.	C	Room 401
Chemistry & Physics of Materials Committee	5:30 to 6:30 p.m.	C	Room 208
Surface Engineering Committee	5:30 to 6:30 p.m.	C	Room 604
Nuclear Materials Committee	5:30 to 7 p.m.	C	Room 310
Composite Materials Committee	5:45 to 6:45 p.m.	C	Room 305
Biomaterials Committee	6 to 7 p.m.	C	Room 210
Solidification Committee	6 to 7 p.m.	C	Room 601
Technical Division Board	6 to 8 p.m.	C	Room 301
Materials & Society Committee	7 to 9 p.m.	S	Issaquah
Computational Materials Science & Engineering Committee	8 to 9 p.m.	C	Room 208

Schedule of Events

TUESDAY, FEBRUARY 16

FUNCTION	TIME	LOCATION	ROOM
AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Ballroom 6E
REGISTRATION	7 a.m. to 6 p.m.	C	4th Floor, South Lobby
TMS MEMBER WELCOME CENTER	7 a.m. to 6 p.m.	C	4th Floor, South Lobby
GENERAL POSTER SESSION	10:30 a.m. to 6 p.m.	C	Exhibit Hall
2010 TMS EXHIBITION			
Exhibit Hours	10:30 a.m. to 6 p.m.	C	4th Floor
Happy Hour Reception	5 to 6 p.m.	C	Exhibit Hall
TECHNICAL DIVISION LUNCHEON & LECTURE			
EPD/MPMD Luncheon	noon to 1:30 p.m.	C	Room 6C
Extraction & Processing Division Distinguished Lecture	1:45 to 2:15 p.m.	C	Room 6C
STUDENT EVENTS			
Technical Division Student Poster Awards	noon to 2:30 p.m.	C	Exhibit Hall
Student Career Forum	3 to 5 p.m.	C	Rooms 4C3
TUTORIAL LECTURE/LUNCHEON			
Young Leaders Tutorial Lecture/Luncheon	noon to 2 p.m.	S	Douglas
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Reliability Excellence Workshop	8 a.m. to 4:30 p.m.	C	Room 4C 1
Furnace Systems Technology 2010 Workshop	8:30 a.m. to 5 p.m.	C	Room 4C 2
TMS-AIME ANNUAL AWARDS BANQUET			
Reception	6:30 to 7:15 p.m.	S	Grand Ballroom (Pre-Function)
Dinner and Awards	7:15 to 10 p.m.	S	Grand Ballroom B, C & D
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	S	Greenwood
Acta Materialia, Inc. Board of Governors Luncheon	noon to 1 p.m.	S	Aspen
COMMITTEE MEETINGS			
Electronic Packaging & Interconnection Committee	7 to 8 a.m.	C	Room 204
Met Trans "B" Board of Review	7 to 8 a.m.	S	Issaquah
MPMD Council Meeting	7 to 9 a.m.	C	Room 210
Acta Materialia, Inc. Board of Governors Meeting	7:30 a.m. to 6 p.m.	S	Cedar
Fellows Award Committee	7:30 to 9 a.m.	S	Kirkland
Hume-Rothery/ACTA Met Awards Committee	7:30 to 9 a.m.	S	Kirkland
IOM/Mehl Awards Committee	7:30 to 9 a.m.	S	Kirkland
Copper 2010 IOC Meeting	8 to 10 a.m.	S	Everett
Honors & Professional Recognition Award Committee	9 to 10 a.m.	S	Kirkland
ASM/TMS Leadership Meeting	noon to 1:30 p.m.	S	President's Suite
SMD Council Meeting	noon to 2 p.m.	C	Room 210
Powder Materials Committee	12:30 to 2 p.m.	C	Room 208
Women in Materials Science & Engineering Committee	3 to 4:30 p.m.	S	Everett
PRICM-7 International Organizing Committee	4 to 6 p.m.	S	Wallingford
Education Committee	5 to 6:30 p.m.	S	Issaquah

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FUNCTION	TIME	LOCATION	ROOM
Energy Committee	5 to 6 p.m.	C	Room 209
Energy Conversion & Storage Committee	5 to 6 p.m.	C	Room 210
Refractory Metals & Materials Committee	5:30 to 6:30 p.m.	C	Room 3B
High Temperature Alloys Committee	5:30 to 7 p.m.	C	Room 212
Titanium Committee	6 to 7 p.m.	C	Room 618
Shaping & Forming Committee	6 to 8 p.m.	C	Room 208
Corrosion & Environmental Effects Committee	6:30 to 7:30 p.m.	C	Room 213

WEDNESDAY, FEBRUARY 17

FUNCTION	TIME	LOCATION	ROOM
AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Ballroom 6E
REGISTRATION	7 a.m. to 5 p.m.	C	4th Floor, South Lobby
TMS MEMBER WELCOME CENTER	7 a.m. to 5 p.m.	C	4th Floor, South Lobby
GENERAL POSTER SESSION	10:30 a.m. to 2:30 p.m.	C	Exhibit Hall
2010 TMS EXHIBITION			
Exhibit Hours	10:30 a.m. to 3 p.m.	C	4th Floor
TECHNICAL DIVISION LUNCHEON			
Light Metals Division Luncheon	noon to 2:15 p.m.	C	Room 6C
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Furnace Systems Technology 2010 Workshop	8:30 a.m. to 5 p.m.	C	Room 4C 2
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	S	Greenwood
COMMITTEE MEETINGS			
TMS Board of Directors Meeting	7:30 a.m. to noon	S	Issaquah
Aluminum Processing Committee	6:30 to 8 p.m.	C	Room 210

THURSDAY, FEBRUARY 18

FUNCTION	TIME	LOCATION	ROOM
AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Ballroom 6E
REGISTRATION	7 to 10 a.m.	C	4th Floor, South lobby
TMS MEMBER WELCOME CENTER	7 to 10 a.m.	C	4th Floor, South lobby
COMMITTEE MEETINGS			
Light Metals Subject Chair Breakfast	7 to 8:30 a.m.	C	Room 209
Worcester Polytechnic Institute Alumni Reception	5:30 to 8 p.m.	S	Everett
FCRD Advanced Materials Development Workshop Planning Meeting	1 to 5 p.m.	S	Aspen

Lectures & Luncheons

Women in Science Breakfast Lecture

"ADVANCing Women in Engineering"

Monday • 7 to 8 a.m. • Sheraton Seattle, Grand Ballroom A

Speaker: **Eve A. Riskin**, associate dean of academic affairs, professor of electrical engineering and director of the ADVANCE Center for Institutional Change, *University of Washington, USA*

About the Topic:

ADVANCE is an initiative of the National Science Foundation intended to improve the climate for success of women in science/technology/engineering/mathematics (STEM) at universities in the United States. At the University of Washington, the program has been in effect since 2001, focusing on faculty recruitment and retention as well as leadership development. Riskin, director of the university's ADVANCE Center for Institutional Change, will discuss the program and highlight some of its successes. Also addressed will be interventions that can improve chances that women STEM faculty will succeed in their careers.

Extraction & Processing/ Materials Processing & Manufacturing Joint Division Luncheon Lecture

"Titanium: Its Attributes, Characteristics and Applications"

Tuesday • Noon to 1:30 p.m. • Washington State Convention & Trade Center, Room 6C

Speaker: **Rodney Boyer**, Boeing Commercial Airplanes, *Seattle, Washington, USA*

About the Topic:

This presentation will focus on the desirable and unique attributes of this alloy system, the types of applications which result from these unique characteristics and a general overview of some of the approaches being taken to reduce the cost, some of which could have an impact on non-aerospace industries. These include techniques such as solid-state and fusion welding, roll-forged shapes, SPF and SPF/DB, new alloys and powder metallurgy.

Extraction & Processing Division Distinguished Lecture

"Alloy Formation during Electrochemical Cementation Reactions"

Tuesday • 1:45 to 2:15 p.m. • Washington State Convention & Trade Center, Room 6C

Speaker: **J. Brent Hiskey**, associate dean, *University of Arizona, USA*

About the Topic:

Metal displacement (cementation) reactions have been important to many hydrometallurgical processes for centuries. For the most part, these reactions involve rather straight-forward electrochemical steps. The deposition of unique alloys by this technique has been reported for several systems. This paper describes these systems and provides an explanation for this phenomenon.

Young Leaders Tutorial Luncheon Lecture

"*Energy Materials – Past, Present, and Future"*

Tuesday • Noon to 2 p.m. • Sheraton Seattle, Douglas Room

Speaker: **Xingbo Liu**, professor of mechanical & aerospace engineering, *West Virginia University, USA*

About the Topic:

This presentation focuses on the history of pursuing improved materials for the need of production and efficient consumption of energy. Discussed will be primary sources of energy prior to the 18th century; how advances in technology, beginning with James Watt's invention of the steam engine, led to coal and other resources being dominant sources of energy; today's energy resources; how the demand of energy has been tremendously increased in recent years with the development of the world's economy; and those of the foreseeable future.

Lectures & Luncheons Cont.

Light Metals Division Luncheon Lecture

"Aluminum – Are We There Yet?"

Wednesday • Noon to 2:15 p.m. • Washington State Convention & Trade Center, Room 6C

Speaker: **Wayne Hale**, executive vice president and CEO, *Century Aluminum, USA*

About the Topic:

With the recession and the associated impact on commodities, industry consultants and pundits continually prognosticate the future of the aluminum industry. The future of a commodity is an uncertain proposition, but usually there is a general consensus on the future trends of the market. For aluminum, the uncertainty of the market continues to generate debate. With a surplus of aluminum on world markets and the current global economic slowdown, the uncertainty regarding the future of the aluminum market has become a strong point of discussion. Optimism of a global recovery, the massive monetary and fiscal liquidity injected worldwide and the strong growth in emerging nations could lead to a surge in demand and an increase in prices. Others believe that the world of high inventories and increasing production will limit the upside. Review of the industry's current position, the necessary milestones and the potential bumps along the way will help answer the vexing question…. "Are we there yet?"

Award Winning Speakers

William Hume-Rothery Award Lecture/Symposium

"How Hume-Rothery's Work Led to Computational Thermodynamics"

Monday • 8:30 a.m. to 9:15 p.m. • Washington State Convention & Trade Center, Room 212

Speaker: **Didier de Fontaine**, Professor Emeritus, *University of California, USA*

Institute of Metals/Robert Franklin Mehl Lecture

"Nature-Inspired Structural Materials" — Biological Materials Science Symposium

Tuesday • 8:35 a.m. to 9:15 a.m. • Washington State Convention & Trade Center, Room 205

Speaker: **Robert Ritchie**, Chua Distinguished Professor of Engineering, *University of California, USA*

Vittorio de Nora Prize Lecture

"Designing Crushing and Grinding Circuits for Improved Energy Efficiency"

Wednesday • 9:50 a.m. to 10:15 a.m. • Washington State Convention & Trade Center, Room 2B

Speaker: **Zeljka Pokrajcic**, *WorleyParsons Services Pty Ltd – Minerals and Metals, Australia*

JIM International Scholar Award Lecture

"Development of Coherent X-Ray Diffraction Microscopy and Its Application in Materials Science"

Wednesday • 12:50 p.m. to 1:05 p.m. • Washington State Convention & Trade Center, Room 303

Speaker: **Yukio Takahashi**, *Osaka University, Japan*

Spotlight Event

TMS Lunch and Learn

"Carbon Fiber Composites Research and Development at Automobili Lamborghini"

Monday • 12:30 p.m. to 1:45 p.m. • Washington State Convention & Trade Center, Room 4C2

Speakers: **Paolo Feraboli, Ph.D.**, assistant professor of Aircraft Materials and Structures and Director, *Automobili Lamborghini Advanced Composite Structures Laboratory, Department of Aeronautics & Astronautics, University of Washington, USA*; **Dr. Luciano DeOto**, senior manager of composites activities for Automobili Lamborghini S.p.A.,Italy

Think Green … Walk from your hotel to the convention center.

Awards Banquet

139th TMS and AIME Awards Presentation

With Installation of the 2010 TMS President

Tuesday, February 16 • Reception: 6:30 to 7:15 p.m.
Dinner and Awards: 7:15 to 10 p.m. • Sheraton Seattle , Grand Ballroom B, C & D
Tickets may be purchased at the TMS registration desk

Ray Peterson
2009 TMS President

George T. "Rusty" Gray III
2010 TMS President

Ian Sadler
2009 AIME President

About the 2010 TMS President
George T. "Rusty" Gray III is laboratory fellow at Los Alamos National Laboratory in Los Alamos, New Mexico, and a member of the National Materials Advisory Board of the U.S. National Academies. Gray has served as team leader of the Dynamic Materials Properties section, where he promoted dynamic structure/property research on materials within the U.S. Department of Energy.

Gray earned his B.S. and M.S. in Metallurgical Engineering from South Dakota School of Mines and Technology and his Ph.D. in metallurgical engineering from Carnegie Mellon University in Pittsburgh. Prior to joining Los Alamos, Gray held a postdoctoral fellowship at the Technische Universitaet Hamburg-Harburg in Germany. His research interests include the substructure evolution and mechanical response of metals, alloys, intermetallics, and composites as a function of microstructure and applied test conditions.

Gray is a member of the TMS Titanium and Mechanical Metallurgy committees and has served as the Structural Materials Division representative to the TMS Program Committee. Gray is also a member of ASM International, the American Physical Society, and the International Scientific Advisory Board of DYMAT Journal.

Society Awards

TMS Fellow Class of 2010
- Jeff DeHosson, *University of Groningen, Netherlands*
- James W. Evans, *Wireless Industrial*
- Technologies, California, *USA*
- Easo P. George, *Oak Ridge National*
- Laboratory, Tennessee, *USA*
- Richard Hoagland, *(Retired) Los Alamos National Laboratory, New Mexico, USA*
- Phillip J. Mackey, *Xstrata Process, Canada*

Alexander Scott Distinguished Service Award
Brajendra Mishra, *Colorado School of Mines, USA*

Application to Practice Award
Carol Handwerker, *Purdue University, Indiana, USA*

Bruce Chalmers Award
Cristoph Beckermann, *University of Iowa, USA*

Champion H. Mathewson Award
Guillaume Reinhart, *Université Paul Cézanne, France*

Early Career Faculty Fellow Award
Xingbo Liu, *West Virginia University, USA*

Educator Award
John Moore, *Colorado School of Mines, USA*

Institute of Metals/Robert Franklin Mehl Award
Robert Ritchie, *University of California, USA*

John Bardeen Award
Eugene Haller, *Lawrence Berkeley National Laboratory, California, USA*

Leadership Award
Donald Gubser, *Naval Research Laboratory, California, USA*

Robert Lansing Hardy Award
Diana Lados, *Worcester Polytechnic Institute, Massachusetts, USA*

William Hume-Rothery Award
Didier de Fontaine, *University of California, USA*

Shri Ram Arora Award
Apu Sarkar, *Bhabha Atomic Research Center, India*

Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries
Zeljka Pokrajcic, *WorleyParsons, Australia*

Division Awards

Electronic, Magnetic & Photonic Materials Division

Distinguished Scientist/Engineer Award
Brent Fultz, *California Institute of Technology*

Distinguished Service Award
Elizabeth Holm, *Sandia National Laboratories, California, USA*

Extraction & Processing Division

Distinguished Lecturer Award
J. Brent Hiskey, *University of Arizona, USA*

Distinguished Service Award
Patrick Taylor, *Colorado School of Mines, USA*

Science Award
Stanko Nikolic, *Xstrata Technology, Canada*
Peter C. Hayes, *University of Queensland, Australia*
Hector Henao, *University of Queensland, Australia*
Evgueni Jak, *University of Queensland, Australia*

Technology Award
Gabriel Riveros, Universided de Chile
Andrzej Warczok, Universided de Chile
Daniel Smith, *ENAMI, Chile*
Ariel Balocchi, *ENAMI, Chile*

Light Metals Division

Distinguished Service Award
Neale Neelameggham, *US Magnesium LLC, Utah, USA*

Aluminum Reduction Award
Patrice Doiron, *Alcoa Inc., Canada*
Stephen Lindsay, *Alcoa Inc., Canada*

Electrode Technology for Aluminum Production Award
Jeremie Lhuissier, *Rio Tinto Alcan, Canada*
Lailah Bezamanifary, *Rio Tinto Alcan, Canada*
Magali Gendre, *Rio Tinto Alcan, Canada*
Marie-Josee Chollier, *Rio Tinto Alcan, Canada*

Light Metals Award
Anthimos Xenidis, *National Technical University of Athens, Greece*
Charalabos Zografidis, *National Technical University of Athens, Greece*
Ioannis Kotsis, *National Technical University of Athens, Greece*
Dmitrios Boufounos, *Aluminium of Greece*

Light Metals Division *JOM* Best Paper Award
Barry Welch, *Welbank Consulting, New Zealand*
Martin Iffert, *Trimet Aluminum AG, Germany*
Maria Skyllas-Kazacos, *University of South Wales*

Magnesium Application Award
Ozgur Duygulu, *TUBITAK Marmara Research Center, Turkey*
Onuralp Yucel, *Istanbul Technical University, Turkey*
Selda Ucuncuoglu, *TUBITAK Marmara Research Center, Turkey*
Gizem Oktay, *TUBITAK Marmara Research Center, Turkey*
Ali Arslan Kaya, *Mugla University, Turkey*
Deniz Sultan Temur, *Tubitak, Turkey*

Magnesium Fundamental Research Award
Alok Singh, *National Institute for Materials Science, Japan*
Julian M. Rosalie, *National Institute for Materials Science, Japan*
Somekawa Hidetoshi, *National Institute for Materials Science, Japan*
Toshiji Mukai, *National Institute for Materials Science, Japan*

Technology Award
Douglas Granger, *Gras Inc., Pennsylvania, USA*

Warren Peterson Cast Shop for Aluminum Production Award
Marc Badowski, *Hydro Aluminium Deutschland GmbH, Germany*
Werner Droste, *Hydro Aluminium Deutschland GmbH, Germany*

Material Processing & Manufacturing Division

Distinguished Service Award
John Smugeresky, *Sandia National Laboratories, California, USA*

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

Structural Materials Division

Distinguished Scientist/EngineerAward
Reinhold Dauskardt, *Stanford University, California, USA*

Distinguished Service Award
Dallis Hardwick, *U.S. Air Force*

Structured Materials Division *JOM* Best Paper Award
Marc A. Meyers, *University of California, USA*
Sirirat Traiviratana, *University of California, USA*
V.A. Lubarda, *University of California, USA*
David J. Benson, *AMSRD-CER-NV-ST-IFT, USA*
Eduardo M. Bringa, *Lawrence Livermore National Laboratory, USA*

Other Awards

AIME Honorary Membership
Y. Austin Chang, *University of Wisconsin, Madison, USA*

AIME 2009 Rossiter W. Raymond Memorial Award
Rajen S.Sidhu, *Intel, Arizona, USA*
Nikhilesh Chawla, *Arizona State University, USA*

AIME Robert Earll McConnell Award
Diran Apelian, *Worcester Polytechnic Institute, Massachusetts, USA*

AIME James Douglas Gold Medal
James C. Williams, *Ohio State University, USA*

Student Events

TMS 2010 features a number of activities designed to captivate and educate young materials science minds. Registered student attendees may participate in any of the following events.

Sunday

Sponsored by ALCOA

2010 Materials Bowl
Elimination Rounds.....noon to 4 p.m..... Washington State Convention & Trade Center, Room 6C
Championship Round.....8:30 p.m..... Washington State Convention & Trade Center, Room 6C

Twelve student teams will not only compete for cash prizes, but will vie for the right to take home the traveling trophy emblazoned with their school name after conquering three rounds of intense, materials science-based trivia questions. In its fourth year, this game show-like event is always a crowd favorite.

Student Networking Mixer .....9 to 11 p.m..... Washington State Convention & Trade Center, Room 6B

The TMS Graduate Student Advisory Council (GSAC) invites TMS members to attend the student mixer! As students, we are eager to meet professionals from industry and academia to learn about their experiences in the real world. The student mixer has a welcoming atmosphere that is ideal for informally meeting new people and having friendly conversations. We sincerely hope that members will stop by and attend the mixer

Monday

Poster Judging.....5 to 6:30 p.m..... Washington State Convention & Trade Center, Exhibit Hall

Undergraduate and graduate students will vie for cash prizes at the annual Student Poster Contest sponsored by the five technical divisions of TMS – Electronic, Magnetic & Photonic Materials; Extraction & Processing; Light Metals; Materials Processing & Manufacturing, and Structural Materials.

Participants in this dynamic and interactive event compete for a $500 prize in each division for the best undergraduate and best graduate poster. A top prize of $1,000 will be awarded for the "Best of Show" poster.

Tuesday

Poster Awards Presentation.....Noon..... Washington State Convention & Trade Center, Exhibit Hall

Student Career Forum.....3 to 5 p.m..... Washington State Convention & Trade Center, Room 4C3
Organized by the TMS Young Leader Committee, this session will feature speakers hailing from a variety of materials science backgrounds and career stages who discuss how to navigate a career path to ultimate goals. Speaker schedule:

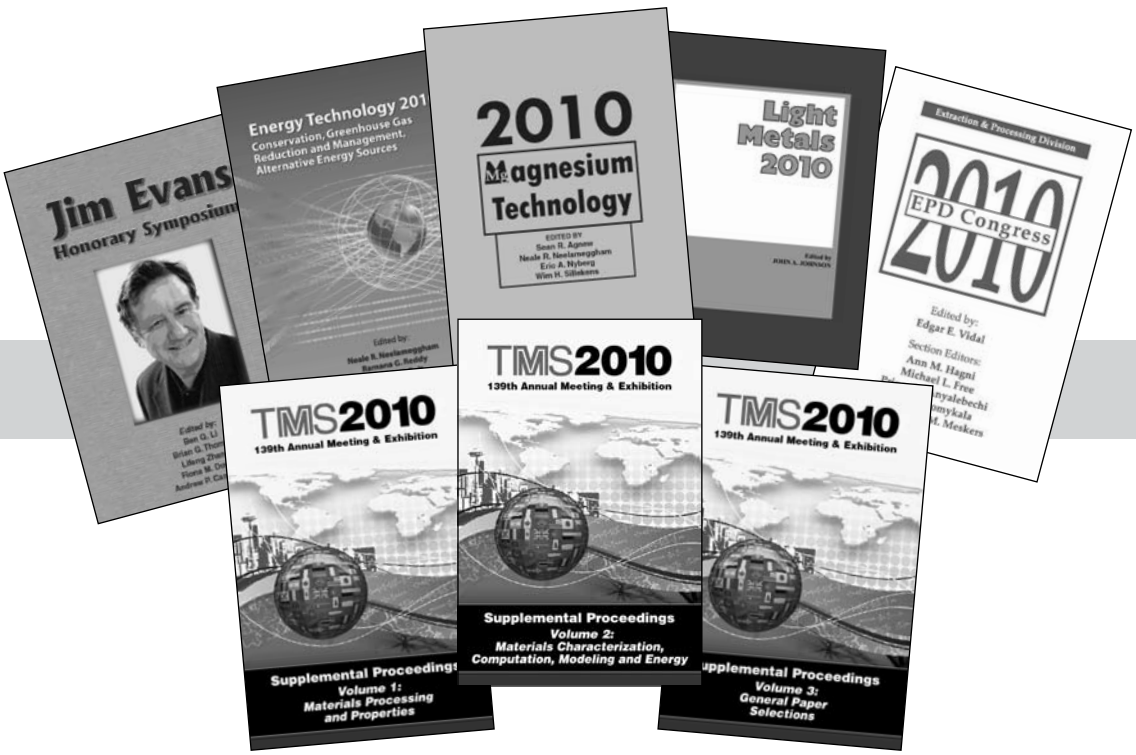
Introduction of Forum and Careers in Policy and Funding Agencies
Speaker: Eric N. Brown, *Los Alamos National Laboratory*. .....3 p.m.
Careers in Academia: Public
Speaker: Dallas Trinkel, *University of Illinois at Urbana-Champagne*. .....3:15 p.m.
Careers at National Laboratories
Speaker: Brad Boyce, *Sandia National Laboratory*. .....3:30 p.m.
Careers in Industry
Speaker: Amy Clarke, *Caterpillar, Inc.* .....3:45 p.m.
Careers in Academia: Private
Speaker: Julia Greer, *California Institute of Technology*. .....4 p.m.
Q&A with Speakers .....4:15 p.m.
TMS Leadership
Speaker: George T. Gray III (2010 TMS Vice President), *Los Alamos National Laboratory*....4:45 p.m.

Proceedings

These new TMS 2010 Annual Meeting books may be purchased on-site at the TMS Bookstore area.

- Magnesium Technology 2010
- Light Metals 2010
- EPD Congress 2010
- Energy Technology 2010: Conservation, Greenhouse Gas Reduction and Management, Alternative Energy
- Jim Evans Honorary Symposium
- Supplemental Proceedings: Volume 1: Materials Processing and Properties
- Supplemental Proceedings: Volume 2: Materials Characterization, Computation, Modeling and Energy
- Supplemental Proceedings: Volume 3: General Paper Selections

Or order online in the TMS Knowledge Resource Center at http://knowledge.tms.org.
TMS members receive a discount!



Collected Proceedings CD-ROM

A collected proceedings CD-ROM containing all TMS 2010 symposia proceedings is available free of charge for all full conference registrants. This valuable resource offers endless use for future research and educational purposes.

Additional copies of the Collected Proceedings CD-ROM may be purchased in the bookstore and on the registration form and will not be available after the meeting. The cost is $150, with a special student rate of $75. All CD-ROMS must be picked up at the meeting. Shipping is not available.

TMS 2010 Leadership

TMS 2009-10 Board of Directors

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TMS2010

139th Annual Meeting & Exhibition

February 14-18, 2010 • Washington State Convention Center • Seattle, Washington USA

EXHIBIT DIRECTORY

Exhibition Hours

Monday • noon to 6:30 p.m.
Tuesday • 10:30 a.m. to 6 p.m.
Wednesday • 10:30 a.m. to 3 p.m.

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Aluminium Times
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Outotec Canada, Ltd.
Riedhammer GmbH
Rio Tinto Alcan
Techmo Car SpA
Thermo Scientific
Thermo Scientific Niton Analyzers
Thermo-Calc Software Inc.

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Nalco

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Innovatherm
ProQuest
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Education
Initiatives Et Projets Industriels SARL
Life Cycle Engineering
Momentum Press
Olympus America, Inc.
Thermo-Calc Software, Inc.

Electrometallurgy
ABB Inc
Industrial Initiatives and Projects
National Institute of Standards and Technology
Proto Manufacturing, Inc.

Electronic Materials
ABB, Inc.
National Institute of Standards and Technology

Energy
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Olympus America, Inc.

Environmental Effects
ECL
Nalco
Opsis
Rio Tinto Alcan

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Opsis

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Nalco
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Thermo-Calc Software, Inc.

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High-Temperature Materials
Compu Therm
Gouda Refractories B.V.
Kabert Industries, Inc.
Mid Mountain Materials, Inc.
National Institute of Standards and Technology
Sente Software, Ltd.

Iron and Steel
Advanced Dynamics Corporation, Ltd.
Hysitron
Life Cycle Engineering
Metallurgical Society of CIM (MetSoc)
National Institute of Standards and Technology
OKAYA (USA), Inc.
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Thermo Scientific
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Joining
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Lead Zinc and Tin
Advanced Dynamics Corporation, Ltd.
China Nonferrous Metal Industry's Foreign Engrg & Construction Co., Ltd. (NFC)
National Institute of Standards and Technology
Techmo Car SpA

Lightweight Materials
ABB Inc
Advanced Dynamics Corporation, Ltd.
International Magnesium Association
Light Metal Age
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National Institute of Standards and Technology
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Magnesium
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International Magnesium Association
Light Metal Age
Magnesium Elektron
Techmo Car SpA

Manufacturing and Markets
Advanced Dynamics Corporation, Ltd.
Almeq Norway AS
C A Picard Intl
Claudius Peters Projects GmbH
Coperion GmbH
CSM Instruments
DesignMecha Co., Ltd.
Gouda Refractories B.V.
Harbin Dongsheng Metal Co., Ltd.
Hencon
Industrial Initiatives and Projects
Innovatherm
Kempe Engineering
Life Cycle Engineering
National Institute of Standards and Technology
NIST Technology Innovation Program
Olympus America, Inc.
Outotec Canada, Ltd.
Rio Tinto Alcan
SunStone

Mechanical Properties
CSM Instruments
DesignMecha Co., Ltd.
Hysitron
Micro Materials, Ltd.
Sente Software, Ltd.

Minerals
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Coperion GmbH
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FL Smidth Minerals
Hencon
Innov - X Systems
OKAYA (USA), Inc.

Modeling and Simulation
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Molten Metal and Solidification
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Hencon
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Outotec Canada, Ltd.
Thermo-Calc Software, Inc.

Nanotechnology
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Hysitron
Micro Materials, Ltd.
Momentum Press
National Institute of Standards and Technology
NIST Technology Innovation Program

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Nuclear Materials
National Institute of Standards and Technology

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OKAYA (USA), Inc.
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Thermal Technology LLC

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Shaping and Forming
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Surface Modification and Coatings
DesignMecha Co., Ltd.
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Thermal Technology LLC

Titanium
Innov - X Systems
National Institute of Standards and Technology
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Thermo-Calc Software, Inc.

Floor Plan

New on the Exhibit Floor!

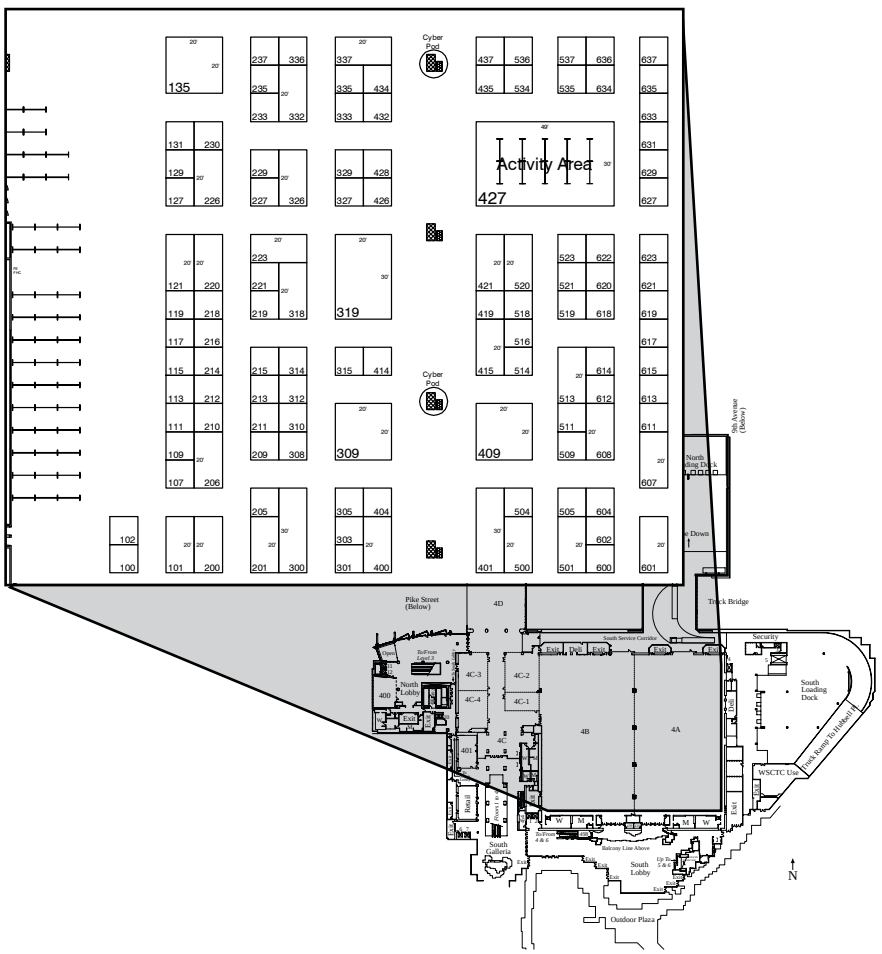
TMS Student Poster Competition
Exhibit Hall Booth 427
View posters during the President's Welcoming Reception
Winners will be announced Tuesday at noon.

General Poster Session
Exhibit Hall Aisle 100
During Exhibit Hours

Lamborghini Viewing
Exhibit Hall Booth 135
During Exhibit Hours

President's Welcoming Reception
Monday from 5 to 6:30 pm

Exhibit Hall Happy Hour
Tuesday from 5 to 6 pm



Company Descriptions

ABB, Inc. (Quebec, QC Canada)
Booth# 513 • www.abb.com/analytical
ABB Analytical Business Unit designs, manufactures and markets high-performance analytical system solutions and spectroradiometers for petroleum, chemical, life science, semiconductor, metallurgy and remote sensing/aerospace markets. Building on its 37 years of experience in analytical instrumentation, the company, through a dedicated team of engineers, offers you the best solutions with its complete range of reliable analytical instruments for inclusions and dissolved hydrogen measurement: AISCAN, LiMCA II, LIMCA CM, Prefil®-Footprinter, PoDFA and Metallographic Analysis Service.

Advanced Dynamics Corporation, Ltd. (St. Bruno, QC Canada)
Booth #426 • www.advanceddynamics.com
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.

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Booth #404 • www.agilent.com/fina/nano

Almeq Norway AS (Langhus, Norway)
Booth #200 • www.almeq.com
ALMEQ Norway AS is an engineering, marketing and production company offering a wide range of equipment to the primary aluminium industry. The focus is on crucible and potshell repair shops. In addition to its own designed equipment, ALMEQ is an exporter and marketing partner for other renowned suppliers.

Among the equipment engineered and produced in Norway are the Crucible Cleaning Machine, Tube Cleaning Machine, Pot Lining Machine, Electric Cathode Preheater, electric drying and preheating systems for crucibles and various potroom equipment.

At TMS 2010, ALMEQ will focus on the Cathode Preheating system and Potlining Machine. We will also display our 3D construction tools, which enable us to show specific details of our equipment.

Aluminium Times (Shoreham By Sea, Great Britain)
Booth #511
Aluminium Times publishes five times a year, serving primary and secondary aluminium producers, rolling mills and extruders throughout the world. The magazine is free to aluminium operators involved in the purchase chain of equipment and materials.

Aluminium Times promotes, through its editorial pages, the aluminium equipment and consumable supplier with editorial features. Each issue contains news, views, features and both company and people profiles. Aluminium Times publishes the industry wall maps and directories. The Aluminium Primary Smelter Map and Directory, for example, is published each July. Published by Modern Media Communications Limited, two sister magazines are Cast Metal & Diecasting Times and Iron & Steel Today.

ALUMINIUM International Journal (Germany)
Booth #601 • www.giesel-verlag.de

Aluminium International Today (Great Britain)
Booth #212 • www.aluminiumtoday.com
ALUMINIUM International, journal for industry, research and applications, is the leading international journal (bilingual: German/English) for more than 80 years. It covers everything that concerns the material, its extraction, processing, recycling and applications. Matters of economics and the ecological consequences of using aluminium are also considered. The scope of the month-by-month reporting includes scientific contributions and condensed information about new technologies and applications. The journal addresses aluminium producers, semis manufacturers, foundries, processors, metal and semis traders and, not least, research institutes concerned with aluminium. ALUMINIUM is circulated in over 40 countries worldwide – made in Germany, distributed to the world.

ATR National Scientific User Facility (Idaho Falls, ID)
Booth #623 • www.inl.gov

B&P Process Equipment (Saginaw, MI)
Booth #401 • www.bpprocess.com
B&P Process Equipment (manufacturers of Baker Perkins machinery) is a supplier of specialized process equipment for the production of carbon paste, energetic materials, plastics, industrial chemicals, and for chemical separation. Many pieces built since the 1930s are still in service. In 1952, the aluminum industry production requirements grew, and the continuous kneader became the preferred method of manufacturing carbon paste. Today, our batch mixers and continuous kneaders are used worldwide in the production of carbon paste. B&P also offers a complete line of continuous pusher centrifuges for liquid/solid separation. B&P also has a joint venture with Battaggion S.R.L., headquartered in Bergamo, Italy, for a broad line of mixing equipment.

Brochot (Tremblay-en-France Cedex, France)
Booth #337 • www.brochot.fr

Buss AG (Pratteln, Switzerland)
Booth #631 • www.busscorp.com

BUSS ChemTech (Prattein 1, Switzerland)
Booth #226 • www.buss-ct.com

C A Picard Intl (Remscheid, Germany)
Booth #314 • www.capicard.com
Carl Aug Picard International specializes in the manufacture of high quality wear parts for continuous kneaders for the manufacture of green anodes used in the primary aluminum industry. Picard manufactures kneading teeth, wearing plates/liners and screw flights out of different, highly wear-resistant qualities.

China Nonferrous Metal Industry's Foreign Engrg & Construction Co. Ltd. (NFC) (Beijing, China)
Booth #421 • www.nfc.com.cn
Founded in 1983, China Nonferrous Metal Industry's Foreign Engineering & Construction Co., Ltd. (NFC) is a state-owned holding company listed on Shenzhen Stock Exchange. As a leading Chinese enterprise engaged in general contracting of overseas nonferrous metal (particularly in 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, etc. It has also been listed on ENR as one of the top 225 international contractors and the top 200 international design firms for consecutive years. In 2007, NFC was awarded ISO 9001 Quality Management System certification. In 2008, NFC was awarded ISO 14001 EMS and OHSMS 28001 certification. With competitive edges in technology and rich experience in EPC contracting, NFC has consistently been dedicated to the global nonferrous metal industry, based on long-standing commitment to good faith and innovation, in the pursuit of excellence. NFC is capable and willing to work with world partners by providing a portfolio of services including technologies, equipment supply and project management.

CIMM Group Co., LTD (DaLian, China)
Booth #618 • www.cimmuk.com
CIMM GROUP is a professional manufacturer, international trade and service provider, and an EPC company engaged in the field of Aluminum, Iron & Steel, Mining and Beneficiation, Petrochemical industry. Our key products are: Aluminum Fluoride, Prebaked Anode, Copper Mould Tube and Material Handling System etc.

VISION
Based on technology, engineering and EPC project, we envision strengthening energy and resource businesses, integrating business sectors of science, industry and trading, to build up a multinational enterprise group of the first class in the world; embracing the great power of love and friendship, making our contributions to the happier homes of prosperity and peace for mankind.

MISSION
Let the world share the first-class equipment, technology and services of China; let China share the first-class equipment, technology and services of the world; let the world share the progress and civilization of mankind; let mankind share the peace and prosperity of the world.

Claudius Peters Projects GmbH (Buxtehude, Germany)
Booth #213 • www.claudiuspeters.com
Claudius Peters Projects GmbH, is headquartered in Buxtehude, near Hamburg, Germany, own manufacturing and R&D, with regional offices in the Americas, Europe, China and the Far East. Claudius Peters Projects offers technologies in the field of material handling and processing, together with turnkey and semi-turnkey systems to a wide range of industries such as aluminium, cement, gypsum and other bulk industries and coal grinding plants, coal pulverizing and injection systems for the global steel industry. Claudius Peters Projects GmbH is a wholly subsidiary of Langley Holdings plc, a privately controlled U.K. engineering group.

Company Descriptions

Colt International (Cuijk, Netherlands)
Booth #434 • www.coltgroup.com
COLT : YOUR SPECIALIST IN GRAVITY VENTILATION
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. Specially for the aluminium industries , Colt is supplier of Static roof Ventilators and air intake louvers for potroom buildings, anode bake buildings and cast houses.

Compu Therm (Madison, WI)
Booth #428 • www.computherm.com
CompuTherm, LLC, expertise in thermodynamics and kinetics, develops computational tools for industrial applications in the broad field of materials science and engineering. In addition, we provide consulting services to materials industries and collaborate with other institutions working on challenging programs. Current products include Pandat, PanEngine, PanOptimizer, PanPrecipitation, PanAl, PanTi, PanNi, PanFe, PanNb, and PanMg. Pandat is a robust, user-friendly software package for multi-component phase diagram calculations. PanEngine is the engine of Pandat, which can be integrated with user's codes to create custom applications. PanOptimizer is used to optimize thermodynamic, kinetic and thermo-physical model parameters from known experimental or calculated data. PanPrecipitation is a kinetic module designed for simulating precipitation kinetics during heat treatment processes. The last six products are multi-component thermodynamic databases for Al, Ti, Ni, Fe, Nb, and Mg, respectively.

Coperion GmbH (Weingarten, Germany)
Booth #520 • www.coperion.com
Coperion GmbH is the competent partner for all bulk materials handling solutions around and within the smelter. The company offers solutions to the aluminium producing industry that have proven to be extremely efficient and reliable. The company supports its customers from the first project concept through a wide range of services for realization and the start-up of bulk materials plants. Those services include retrofit solutions and valuable after-sales support. Coperion has the necessary expertise for every process stage along the entire process chain in manufacturing of primary alumina. In each process step, the challenges demand plenty of experience, specialist competence and flexibility.

CSM Instruments (Needham, MA)
Booth #239 • www.csm-instruments.com
CSM Instruments has been a leader in the development of instruments for advanced materials testing for over 30 years. Our products include hardness testers, scratch testers, and tribometers of varying load ranges. 3D-imaging options are available with the ConScan or AFM objective.

Our focus on research and development helps us to continue our tradition of cutting edge technology and superior performance specifications. We manufacture testing modules that can be configured alone or combined together on a testing platform for a single instrument capable of multiple analysis modes.

In the design of our instruments, we integrate the testing module(s) with imaging module(s) for a seamless testing and imaging process. The modules and microscopes are positioned and synchronized so the instrument automatically moves the point of interest under the appropriate imager with a single click. It also allows us to correlate an optical coating failure (like cracks) to the exact force, depth, and frictional force… that was occurring at that time.

Additionally, we have a thorough sample testing service laboratory.

Cytec Industries Inc. (Prairieville, LA)
Booth #332 • www.cytec.com
Cytec collaborates with alumina 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
- Allow the processing of problematic bauxites
- 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.

DesignMecha Co., LTD (Asan, Korea South)
Booth #627 • **www.designmecha.co.kr**

ECL (Ronchin, France)
Booth #308 • **www.ecl.fr**
With more than 60 years experience, ECL is the world leading smelter equipment manufacturer and is 100% dedicated to the Aluminium Industry. ECL offers complete solutions for the smelter's reduction, carbon, and metal sectors.

From design, manufacturing and erection, through training, maintenance, audit, and refurbishment, ECL provides products and services adapted to the needs and demands of its customers for any reduction technology.

A high level of innovation and an unmatched expertise allow ECL to offer solutions for single machines or complete turnkey projects, which help aluminium smelters in their productivity and EHS efforts.

EDAX Inc. (Mahwah, NJ)
Booth #209 • **www.edax.com**
EDAX provides Results with the Greatest Confidence. EDAX has led the industry as the technical innovator and the world's largest supplier of EDS, EBSD and WDS systems. EDAX integrates these latest technologies in its Trident system. Accurate analytical results require solid foundations and EDAX is the only company to achieve this through Expert ID and the Genesis EDS Apex system. The new Genesis Apex microanalysis system offers superior performance using fundamental physics, rule-based element identification and automated background calculation. EDAX's EBSD Data Collection provides a powerful, easy to use environment for acquiring EBSD data in the SEM. The EBSD Analysis has virtually unlimited potential for interrogating the wealth of information contained in EBSD data. EDAX offers detector solutions to meet all your EBSD needs. The Hikari Detector is a completely integrated CCD-based detector optimized for high speed data collection. Combined with the power of WDS to enhance qualitative and quantitative analysis, EDAX provides today's scientists with the ultimate materials characterization solution, offering vastly improved speed and accuracy.

Eirich Machines Inc (Gurnee, IL)
Booth #312 • **www.eirich.com**
Eirich Machines Inc. of Gurnee, Illinois, is a manufacturer of the Eirich Intensive Mixer, noted for the many advantages it provides the metallurgy industries. Eirich has been providing machines and complete plants to the carbon industry for more than 30 years. A constantly growing number of renowned manufacturers of carbon products all over the world are currently using Eirich equipment.
We offer the latest state-of-the-art technology for coke heating, mixing and re-mixing/cooling of pre-bake and Söderberg anode paste. The capacities of our batchwise and continuous systems range from 10 to nearly 60 tons/hour in a single line. Our latest development is the Eirich Intensive Mixing Cascade (EMC) for the all-intensive preparation of anode paste at the lowest cost and the highest efficiency. For more information on our capabilities, please visit us in booth #312.

ELSEVIER (New York, NY)
Booth #327 • **www.elsevier.com**
As the world's leading publisher of science and health information, Elsevier serves more than 30 million scientists, students and health & information professionals worldwide. Elsevier is committed to making genuine contributions to the science and health communities by providing: World-Class Information: Elsevier publishes trusted, leading-edge Scientific, Technical and Medical (STM) information; Global Dissemination: Elsevier disseminates and preserves STM literature to meet the information needs of the world's present and future scientists and clinicians - linking thinkers with ideas; Innovative Tools: Elsevier develops electronic tools that demonstrably improve the productivity and outcomes of those we serve; Working Together: Elsevier works in partnership with the communities we serve to advance scholarship and improve lives. Visit the Elsevier booth #109 to meet our representatives and learn more about our products. For the latest from Elsevier's Materials Science research publications, download our Materials Science RSS feed at: www.elsevier.com/materials.

Fives Solios (St Germain En Laye, France)
Booth #409 • **www.fivesgroup.com**
As a leading manufacturer, Fives Solios designs and supplies process equipment and turnkey plants for main aluminum producers worldwide for these areas: Reduction area: gas treatment centers and bath processing plants—Fives Solios is well known for providing high quality equipment in terms of performance, reliability, and ease of maintenance. Carbon area: green anode plants including carbon butts processing and pitch fume treatment systems, pitch storage and processing, and firing systems and fume treatment centers for anode baking furnaces—Fives Solios has also developed innovative solutions such as Rhodax for dry material preparation, IMC for paste preparation, Xelios for anode forming, and Eolios for pitch fume treatment. Cast house area: melting and holding furnaces including water cooling systems as well as integration of downstream casting machines and heat treatment furnaces for rolling mills and associated control systems. For more information on Fives Solios, visit www.fivesgroup.com.

Company Descriptions

FLSmidth Minerals (Salt Lake City, UT)
Booth #415 • www.flsmidthminerals.com
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 EXCEL, 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 valuable time on project schedules!

Gillespie & Powers Inc (St Louis, MO)
Booth #300 • www.gillespiepowers.com

GLAMA (Gladbeck, Germany)
Booth #318 • www.glama.de

Gouda Refractories B.V. (Gouda, Netherlands)
Booth #305 • www.goudarefractories.com
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.

Harbin Dongsheng Metal Co., Ltd. (Harbin, China)
Booth #535 • www.sinodongsheng.com
We focus on producing aluminium alloying material (hardener) in the aluminium castinghouse. Our products are as follows: Alloying Tablets and Mini-tablet, for the precise compositional adjustment of Mn, Fe, Ti, Cr, Cu and Ni additions to the aluminium bath; Fast Melting Silicon; ALTi,ALV;other Master Alloy. We are the designers of China National Standard of Alloying Tablet. We also have three plants, already one of the biggest alloying tablets producers in China. We are the long term supplier of these famous aluminium companies. Finally, we have the honor to be the raw material supplier of China Shenzhou airship man-in-space flight project.

Hencon (Ulft, Netherlands)
Booth #432 • www.hencon.nl
HENCON: Your Global Partner
Backed by more than 50 years of experience, Hencon is a worldwide supplier of services and mobile processing equipment for potroom and cast house. In addition to our main plant located in the Netherlands, Hencon has production and service facilities in South Africa, Mozambique, Russia and India. The delivery program covers the complete range of vehicles and vacuum technology equipment needed in potroom and cast houses. In our booth, you will find our new developments with regards to vehicles that reach the latest HSE standards and contribute to the efficiency of primary smelters and cast houses. You will also find our new product line of vacuum technology solutions (mobile and stationary) for the recovery of valuable materials in processing plants and mines. Our services include the support of (start up) customers complete with know-how, repairs and parts geared to specifics for the maintenance of industrial vehicles in an aluminium production environment. Within the group, Hencon Alumina, along with its partners Alcor Technology and Alfa Laval, is producer and supplier of M2M-Unit, which enables alumina refineries to recover remaining alumina values from bauxite residue.

Hertwich Engineering (Toledo, OH)
Booth #423 • www.hertwich.com

Hydro Aluminum Hycast AS (Sunndalsora, Norway)
Booth #608
Hycast is a subsidiary of Hydro Aluminium. Hycast's principle task is to ensure a leading edge for Hydro Aluminium in melt refining and casting technology. The annual turnover for Hycast approximates USD 16-20 mill. Hycast has extensive expertise in aluminium cast house technology. Key competencies include project management, as well as metallurgical, mechanical and electrical (automotive and process control) engineering. Activities within these areas are performed internally, while supplementary services are recruited from selected external partners.Experience has been gained over several years through collaboration not only with Hydro but also with other aluminium companies in numerous projects world-wide. Many involved turnkey supplies, with Hycast being responsible for supervision, installation, commissioning and testing of all equipment and systems supplied. Technology development projects in cooperation with Hydro's R&D and Cast House Support Departments resulted in further competitive advantages. Beginning in November 2009, Hycast's technology and expertise are also available to customers outside Hydro Aluminium.

Hysitron (Eden Prairie, MN)
Booth #400 • www.hysitron.com
As world leader in nanomechanical testing, Hysitron is dedicated to providing testing solutions for nanoscale mechanical characterization. Hysitron's nanomechanical test instruments provide high-speed in-situ SPM imaging in addition to the quantitative measurement of many mechanical properties, including hardness, modulus, fracture toughness, and wear resistance. Our instruments feature advanced techniques such as nanoDMAÿ for time dependent and viscoelastic materials, Modulus Mapping for quantitative large area property mapping, and nanoECRÿ enabling simultaneous electrical and mechanical property measurements. We are excited to demonstrate the TI 950 TriboIndenterÿ nanomechanical test system featuring 25x faster feedback, a nanoNewton to Newton force range, and an unprecedented <30nN noise floor. Stop by our booth to see how the TI 950 redefines the world of nanomechanical testing. Hysitron will also be showcasing the PI 95 and PI 85 PicoIndenterÿ, the truly quantitative depth-sensing indenters capable of direct-observation testing inside a TEM and SEM.

Impec AS (Ovre Ardal, Norway)
Booth #205 • www.impec.no
Impec AS is an innovative supplier of equipment for rodding shops and pot rooms. For more than 30 years, Impec has proven to be a reliable partner for aluminium smelters in operation, maintenance and supplies. We use our experience and process knowledge to design new products based on established technology. This ensures our equipment is designed to fulfill all aspects of rodding shop: process optimization; high quality, reliable products with long lifetimes; low costs in operation and maintenance. Impec has developed and improved a number of new machines all in operation in smelters showing good operation and focus on maintenance. Impec is situated in Norway just outside a Hydro Aluminium smelter. We work on a daily basis with the aluminium industry in Norway, and we are familiar with the industry's demands and needs. The company has so far performed a number of successful projects in the aluminium industry. IMproving Process EffiCiency, the IMPEC way.

Industrial Initiatives and Projects (LA BUISSE, France)
Booth #419

Innov - X Systems (Woburn, MA)
Booth #206
Stop by to check out our handheld XRF with automated GPS-XRF. Handhelds (4W) come equipped with weather-proof, ultra-rugged integrated PC control or our classic removable PDA. Optional vacuum (light element) or camera attachments are available. Our Portable Closed-beam X-50 (10W) operates at up to 25 times the power of most handhelds for solids or liquids. Our handhelds and X-50's are available with Si Pin diode or Si Drift detectors. Applications: Geology, Environmental, Metals & Mining, RoHS & Consumer Regulations (Pb, Hg, As, Cr, Cd) and More. Learn about our Academic Relations Grant program. Innov-X: Home of portable XRF for on-site, in-situ analysis of Mg-U; ppm to 100%.

Innovatherm (Butzbach, Germany)
Booth #336 • www.innovatherm.com

International Magnesium Association (Wauconda, IL)
Booth #235 • http://www.intlmag.org/index.cfm
Founded in 1943, the International Magnesium Association (IMA) is the global voice of the magnesium industry. Its mission is to promote the use of the metal magnesium and to educate both manufacturers and consumers about the numerous options and benefits metal magnesium provides. IMA's members consist of: primary producers of the metal and its alloys, recyclers, foundries, fabricators, end users and suppliers. The IMA serves the industry and its membership through its Annual World Magnesium Conference and other workshops and seminars held worldwide. Other services include: industry advocacy, statistical programs and publications.

Jervis B Webb Co (Farmington, MI)
Booth #326 • www.jerviswebb.com
Webb Aluminium Group, an alliance comprised of Jervis B. Webb Worldwide Company, Webb Australia and Webb-India, has more than 50 years experience providing turnkey systems for aluminium carbon plant production. Our global workforce and advanced technology has made us a leading provider for aluminium companies such as Alcoa, BHP Billiton, Norsk Hydro, Rio Tinto and more. Whether you're constructing a new facility or upgrading an existing plant, Webb Aluminium Group will work with you to design a system that meets your specific needs. We offer cost-effective products and services for your entire carbon plant - from the paste plant to the baking furnace to the rodding shop. Webb Aluminium Group is your single-source supplier for carbon plant production systems.

Kabert Industries Inc (Villa Park, IL)
Booth #435 • www.kabert.com

Company Descriptions

Kempe Engineering (Geelong, VIC Australia)
Booth #223 • www.kempe.com.au
Kempe is the largest provider of asset and maintenance services in the aluminium smelting industry. Kempe has the most extensive product range for the aluminium smelting industry and is one of the top five global suppliers. Kempe works for 30 smelters in 20 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 and in-house construction crews & equipment. With 2,000 employees globally, Kempe supplies products and turnkey projects for Anode Handling & Cleaning, Rodding Shops, Butt Cleaning (hot & cold), Bath Cooling & Processing, plus other Carbon, Potroom & Casthouse equipment.

Life Cycle Engineering (Charleston, SC)
Booth #534 • www.lce.com
Life Cycle Engineering (LCE) is a leading provider of reliability consulting, engineering services and applied technology solutions that help both government and private enterprises achieve sustainable success. Widely recognized as the premier provider of innovative and successfully executed reliability and maintenance solutions worldwide, areas of focus for LCE include: design and engineering, logistics support, information technology applications, program management, change management, education, and holistic implementations of Reliability Excellence (Rx). Founded in 1976, LCE is headquartered in Charleston, South Carolina, with offices across North America. For more information, please visit our Web site at www.LCE.com or call (843) 744-7110.

Light Metal Age (South San Francisco, CA)
Booth #233 • www.lightmetalage.com
Light Metal Age is the pre-eminent magazine of the light metal world. For over 68 years, Light Metal Age has covered primary production and semifabrication of the light metals. The majority of editorial coverage is of aluminum processing and production, but also includes magnesium and titanium. Circulation is international and goes to primary and secondary smelters; casthouses; extrusion operations; rolling mills; sheet, rod, and wire mills; and foundries. Recipients are executives, general managers, plant managers, technicians, metallurgists, chemists, and engineers responsible for fabrication, production, and operations. Some of the editorial topics covered in Light Metal Age include: anode plant; potline technology; smelter/casthouse expansions; secondary aluminum processing and recycling; metallurgy; plant upgrades; metal quality; die design and simulation; rolling mill technology; energy, sustainability, and the environment; and markets and applications. For more information, visit Light Metal Age on the web at: www.lightmetalage.com.

LP Royer, Inc. (Lac-Drolet, QC Canada)
Booth #505 • www.lproyer.com
For all workers in the metallurgic industry, L.P. Royer, celebrating its 75th anniversary, is your "one stop" supplier for specialized and innovative safety footwear. L.P. Royer's specialized safety footwear, including our renowned smelter boots, are designed for ultimate performance in the multiple environment of your industry. 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 protects 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, men and ladies styles, plus extra wide, you will find the best style for you. L.P. Royer products meet CSA ASTM quality standards and CE Marking.

Magnesium Elektron (Madison, IL)
Booth #437 • www.magnesium-elektronusa.com
Magnesium Elektron is a leading supplier of high performance magnesium wrought alloys, sand casting and die casting alloys, powders for numerous applications, recycling services and light metal-related technologies. A division of the Luxfer Group, Magnesium Elektron has 7 manufacturing sites located in North America and Europe and supplies the aerospace, military, commercial and transportation markets. Magnesium Elektron's alloy innovation and collaboration with the US Army has recently led to the establishment of the first Magnesium Armor/Ballistic Plate specification (MIL-DTL-32333). Magnesium Elektron will be promoting several new magnesium alloys in various forms including casting alloy Elektron 21, and wrought alloys WE43 and Elektron 675 in rolled form

Metallurgical Society of CIM (MetSoc) (Montréal, QC Canada)
Booth #315 • www.metsoc.org

Microtrac (Montgomeryville, PA)
Booth #629 • www.microtrac.com

Mid Mountain Materials Inc (Vancouver, WA)
Booth #101 • www.mid-mountain.com

Momentum Press (Bahama, NC)
Booth #221 • **www.momentumpress.net**
Momentum Press was founded in 2007 on the principle of providing the very best information and knowledge on today's advancements in science, engineering, and applied technology. Its aim is to reach practitioners, researchers, educational faculty, and students in engineering, science, and industry with both traditional print media, as well as new, innovative electronically-delivered content. Momentum Press intends to reach those goals by offering its authors and customers a happy alternative to the often impersonal publishing environment so often encountered among today's ever-larger media conglomerates.Momentum Press publishes original scientific and engineering content, with a focus on the North-American, English language market, but with distribution and market presence worldwide. We have sales offices throughout the world, with a particularly strong presence in Asia, North America, and Latin America, as well as Europe and the Middle East.

Nalco (Naperville, IL)
Booth #516 • **www.nalco.com**
As the global leader in Process & Water Treatment, Nalco Company provides essential expertise to the Alumina / Aluminum industry with technically, economically and environmentally sustainable solutions from mine-to-mill. Nalco's on-site, trained engineers help our customers achieve their goals by selecting and implementing optimal water and process technologies to increase recoveries and improve finished product quality, while providing the lowest overall total cost of operation.

National Institute of Standards and Technology (Gaithersburg, MD)
Booth #604 • **www.nist.gov/srm**

NFC (Beijing, China)
Booth #607 • **www.nfc.com.cn**

NIST Technology Innovation Program (Gaithersburg, MD)
Booth #602 • **http://nist.gov/tip**
The Technology Innovation Program (TIP), at the National Institute of Standards and Technology, supports, promotes, and accelerates innovation in the United States by funding high-risk, high-reward research in areas of critical national need. TIP was established as an early stage innovation cost-shared R&D funding program to assist U.S. businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions, pursue transformational research in areas of critical national need identified by TIP. These areas need government attention because the magnitude of the problem is large and societal challenges are not being sufficiently addressed. Single company projects may receive up to $3 million of TIP funding and Joint Venture projects up to $9 million. Subject to funding, TIP anticipates issuing a call for proposals in early 2010. More information about TIP may be found on the web at http://nist.gov/tip.

OKAYA (USA) Inc (Rosemont, IL)
Booth #218 • **http://www.okayausa.com/**
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. This year, we obtained one of the biggest Mn ore mines in Jingxi County, Guangxi province of China. The capacity of this Mn ore mine is more than 3 million tons and our new production line of Mn flakes has also been completed. The new capacity is 30,000 tons per year. By combining the development of these programs with our state-of-the-art production management, technologies and facilities, we can guarantee enough raw material supply at very competitive prices, while also 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 our 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

OLI Systems, Inc. (Morris Plains, NJ)
Booth #504

Olympus America Inc. (Orangeburg, NY)
Booth #210 • **www.olympusamerica.com**
Olympus Scientific Equipment Group - Industrial Microscopes Olympus is a leader in industrial microscopy, with its recognized innovation, optical quality, customer support and training. Olympus industrial microscopes and metrology systems play a vital role in precision R&D, engineering and manufacturing applications in fields as diverse as the aerospace, automotive, electronics, materials science/metallurgy, medical device, photovoltaics, and semiconductor arenas. A newly expanded nationwide service, training and support network enhances the company's dedication to client partnership, helping customers achieve even greater success. Olympus systems are designed and manufactured according to rigorous ISO 9001 and ISO 14001 international standards, demonstrating a commitment to offering the highest quality products and services, with minimal environmental impact. Visit us at www.olympusamerica.com/industrialmicroscopes

Company Descriptions

Opsis (Furulund, Sweden)
Booth #514 • www.opsis.se
Opsis is a worldwide supplier of gas monitoring systems for industrial emissions and process applications and ambient air and industrial fenceline monitoring applications. For 20 years, Opsis has provided the aluminium smelter industry automatic monitoring systems for potroom and duct measurements of Hydrogen Fluoride (HF) and also other components such as ulfur dioxide, nitrogen dioxide, carbon monoxide, carbon dioxide, VOC's and others. Opsis systems use open path UV, FTIR and 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. For open path measurements in the potroom roof vent, potroom instability can cause alignment issues. The Opsis monitoring technology features optional automatic alignment function of the telescopes that will keep the optical paths optimized at all times. Opsis has a worldwide network of technically skilled distributor companies.

Outotec Canada Ltd (Burlington, ON Canada0
Booth #319 • www.outotec.com

PreciMeter (Tempe, AZ)
Booth #201 • www.precimeter.com

Proto Manufacturing Inc. (Ypsilanti, MI)
Booth #519 • www.protoxrd.com

Riedhammer GmbH (Nuernberg, Germany)
Booth #215 • www.riedhammer.de
Since 1925, the company has specialized in the design, construction and commission of highly productive, state- of- the-art Ring Pit Furnaces for baking of first quality anodes and cathodes for the aluminum industry as well as electrodes for the steel industry: more than 185 baking furnaces, in 25 different countries were built or modernized based on this concept. Our reference list includes the major players in the production of primary aluminum with pre-baked technology as well as the top suppliers of electrodes for the steel industry. Beginning in 2004, the Italian Group SACMI acquired 90% of the Riedhammer shares (subsequently increased to 95%). One essential consequence of this association was the development of important synergies between both companies, increasing our technical potentialities and strengthening the financial backup necessary for facing increasing market demands. With the acquisition of the Alesa Anode Baking technology in 2005, Riedhammer continues to advance towards technological maturity and market consolidation to become the only independent supplier worldwide capable to implement anode baking plants with both open and closed top furnaces.

Rio Tinto Alcan (Montreal, QC Canada)
Booth #309 • www.riotintoalcan.com
Building on more than a century of experience and expertise, Rio Tinto Alcan is the 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 (Guildford, Surrey Great Britain)
Booth #414 • www.sentesoftware.co.uk

Shimadzu (Columbia, MD)
Booth #633 • www.ssi.shimadzu.com

STAS (Chicoutimi, QC Canada)
Booth #509 • www.stas.com

SunStone (Beijing, China)
Booth #230 • http://www.sun-stone.com
SunStone was established in 1998 and is registered with independent corporate status. The headquarters is e in Beijing, but there are branch agencies in Tianjin, in Kunshan Jiangsu Province, and Tehran, Iran. Sun Stone also has sister companies in Korea, India and Turkey. We focus on import & export business, domestic business and processing business of Prebaked Carbon Anode and other raw materials and equipments of Aluminum Smelter.

Techmo Car SpA (Limena Padova, Italy)
Booth #310 • www.techmo.it
Techmo is an Italian independent company focused in the engineering and production of special mobile and stationary equipment for the aluminium and nonferrous metals industry. The full range of purpose designed machines covers different types of equipment performing a large number of operations in pot-rooms, rodding shops and cast-houses. The Company's aim is to provide the most innovative, rational, cost effective and user friendly technical solutions. Among the most significant families of mobile equipment are the Multipurpose Anode Changers, Tapping Vehicles, Crust Breakers, Anode Transporters, Crucible Transporters and Tilters, Alumina/ AlF3 Feeding Vehicles, Furnace Charging Vehicles and Furnace Tending Vehicles. Beside its line of purposed designed vehicles, Techmo provides a number of stationary equipment such as Crucible Cleaning Machines, the Crucible Tilting stations and the Anode Butts Cleaning Stations.

Thermo Scientific (Madison, WI)
Booth #523 • www.thermofisher.com

Thermo Scientific Niton Analyzers (Billerica, MA)
Booth #622 • www.thermo.com/niton
When it comes to the accurate analysis of metal alloys, Thermo Scientific Niton XRF analyzers set the industry standard. With a unique library of 400-pluys alloy grades, our handheld XRF instruments provide immediate, nondestructive chemical analysis of aluminum, titanium, and nickel alloys, as well as superalloys, stainless steel, and other metals. These analyzers deliver superior performance in the form of faster analysis, lower detection limits and unparalleled analytical precision. This can mean decreased potential for material mix-ups, as well as instant recovery of lost traceability. Using the Niton® XL3 with GOLDD technology, you not only gain rapid grade identification and lab-quality composition, but also improvements in light element detection, overall sensitivity, and measurement times.

Thermo-Calc Software Inc (McMurray, PA)
Booth #100 • www.thermocalc.com
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 multi-component systems. Calculations are based on thermodynamic databases produced by expert evaluation of experimental data. Databases are available for steels, Ti, Al, Ni-superalloys and other materials. Programming interfaces are available which enable Thermo-Calc to be called directly from in-house developed software or MatLab. DICTRA is used for accurate simulations of diffusion in multi-component alloys. Applications include: homogenization of alloys, microsegregation during solidification, coarsening of precipitates, and welding.

Windhoff Bahn-und Anlagentechnik GmbH (Rheine, Germany)
Booth #521 • www.windhoff.de

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139th Annual Meeting & Exhibition

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TECHNICAL PROGRAM

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2010 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: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Sun PM-Thurs AM Room: 214
February 14, 2010 Location: Washington State Convention Center

Functional Materials with Shape Memory Effect at the Nanoscale: Arteniy Irzhak[1]; Victor Koledov[1]; Vladimir Shavrov[1]; Peter Lega[1]; Alexander Shelyakov[1]; Veronika Afonona[1]; Kristina Akatyeva[1]; Vladimir Kalashnikov[1]; *Pnina Ari-Gur*[2]; [1]Kotelnikov' Institute of Redioengineering and Electronics of RAS (Moscow); [2]Western Michigan University

Mechanical Properties and Consolidation of Binderless Nanocrystalline Niobium Carbide by Rapid Sintering: *In-Jin Shon*[1]; Kee-Do Woo[1]; In-Yong Ko[1]; Kee-Seok Nam[2]; Byung-Ryang Kim[1]; [1]Chonbuk University; [2]Korea Institute of Materials Science

Microstructure and Naocrystaline Film of Fe- Mn Vs Fe-Ni Films: *Bassey Udofot*[1]; [1]NASA/Goddard Space Flight Center

Nanocomposites of Brazilian Organophillic Clays with Natural Rubber: *Guillermo Martín-Cortés*[1]; Fabio Esper[1]; Adriana Silva[2]; Alexandre Dantas[2]; Wildor Hennies[1]; Francisco Valenzuela-Díaz[1]; [1]Polytechnic School-University of São Paulo; [2]BENTONISA – Bentonita do Nordeste S.A

Photochemical Solution Phase Engineering of TiO2 - Based Amphiphilic Nanocrystals: *Gianvito Caputo*[1]; Davide Cozzoli[1]; [1]University of Salento

Properties and Consolidation of Nanostructured MoSi2–Si3N4 from Mechanically Reacted Powder by Rapid Sinte: *In-Jin Shon*[1]; Na-Ra Park[1]; Jin-Kook Yoon[2]; In-Yong Ko[1]; Kee-Seok Nam[3]; Na-Ri Kim[1]; [1]Chonbuk University; [2]Korea Institute of Science and Technology; [3]Korea Institute of Materials Science

Synthesis and Characterization of Nano-Structured Silica from Rice Husk and Its Application as a Heterogeneous Catalyst: *Harini Pattabhiraman*[1]; G. Ramalingam[1]; S. Mittal[1]; S. Bhattacharjee[1]; S. Mandavgane[1]; J. Bhatt[1]; D.Peshwe[1]; [1]Visvesvaraya National Institute of Technology

Synthesis of Nanowires-Enhanced Bulk TE Nanocomposite for High-Efficiency Power Generation: W. Luo[1]; J. Fang[1]; *Timothy Lin*[1]; [1]Aegis Technology Inc.

Advances in Composite, Cellular and Natural Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Sun PM-Wed PM Room: 305
February 14, 2010 Location: Washington State Convention Center

Effects of Particle Sizes of Titanium Hydride on Cell Structures for Al Foams: *Lei Wang*[1]; Guangchun Yao[1]; Hongjie Luo[1]; Lisi Liang[1]; Jia Ma[1]; Zhongsheng Hua[1]; [1]Northeastern University

Nanocrystalline Al4Si3C6 Formed in Low Temperature Sinter Processing: *Li Xiaodan*[1]; Zhai Yuchun[1]; Qiu Feng[1]; Zhang Haixin[1]; [1]Institute of Materials and Metallurgy, Northeastern University

On Closed-Cell Aluminum Foam Used as Train Floor and Side Plate: *Lisi Liang*[1]; Guangchun Yao[1]; Yongliang Mu[1]; Lei Wang[1]; [1]Institute of Materials and Metallurgy, Northeastern University

Preparation of Aluminum Matrix Composites Reinforced with Nano-SiC Particles by Stir Casting Technique: *Li Xiaodan*[1]; Zhai Yuchun[1]; Qiu Feng[1]; Zhang Haixin[1]; [1]Institute of Materials and Metallurgy, Northeastern University

Research on Aluminum Foam Railway Noise Barrier: *Lisi Liang*[1]; Guangchun Yao[1]; Lei Wang[1]; Yongliang Mu[1]; Zhongsheng Hua[1]; Jia Ma[1]; [1]Institute of Materials and Metallurgy, Northeastern University

Aluminum 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; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Sun PM-Wed PM Room: 615
February 14, 2010 Location: Washington State Convention Center

A Mechanism-Based Constitutive Model for Alloy IC10: *Hongjian Zhang*[1]; W. Wen[1]; H. Cui[1]; Y. Xu[1]; [1]Nanjing University of Aeronautics and Astronautics

Analysis of Metal Flow Behavior during Friction Welding of Tube to Tube Plate Using an External Tool: *S. Muthukumaran*[1]; S. Senthil Kumaran[1]; [1]National Institute of Technology

Effect of Age Hardening on Corrosion Behavior of Friction Stir Welded AA 2024 Aluminum Alloy: *Muna Abbass*[1]; [1]University of Technology

Effect of Alloying Elements on the Electrochemical Behavior of Al-Si-Mg alloys in Aqueous Solutions: *Maximo Pech-Canul*[1]; Martin Pech-Canul[2]; Marbella Echeverría[1]; Euler Coral-Escobar[1]; Miguel Montoya-Davila[2]; [1]Cinvestav-Merida; [2]Cinvestav-Saltillo

Effect of Friction Stir Processing (FSP) on Particle Erosion Resistance of Casting A384 Aluminum Alloy: *Chung-Wei Yang*[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; Yun-Han Chang[1]; [1]National Cheng Kung University

Effect of Welding Parameters on Microstructure and Properties of 6005A Aluminum Alloy: *Kai Ji*[1]; Guangchun Yao[1]; Guoyin Zu[1]; Jianchao Shi[1]; [1]School of Materials & Metallurgy, Northeastern University

Microstructure and Wear Characterization of HyperEutectic Al-Si FGM: Kiran Aithal[1]; *N. Narendranath*[2]; Vijay Desai[2]; P. G. Mukunda[1]; [1]Nitte Meenakshi Institute of Tcehnology; [2]NITK

Modification of Hypereutectic Al-17.5%Si Alloy by Nd: *Weixi Shi*[1]; Bo Gao[1]; Ganfeng Tu[1]; Yi Hao[1]; Shiwei Li[1]; [1]Northeastern University

Non-Corrosion-Flux-Assisted Wetting and Spreading of Al-Si-Cu-Based Brazing Alloy on 6063 Aluminum: *Yefeng Bao*[1]; G. Zhang[1]; Y, Jiang[1]; [1]Hohai University

Optimization of Ingate Velocity via Gate Design: *Pongsak Dulyapraphant*[1]; Prarop Kritboonyarit[1]; [1]National Metals and Materials Technology Center

Prediction of Bake Hardenability of Aluminum Alloys Al6110 and Al7075 Using Neural Network: *Niloofar Kamkar Zahmatkesh*[1]; Kamran Dehghani[1]; [1]Amirkabir University of Technology

Preparation of Al-Ti-C Master Alloys from TiO2: *Dali Cao*[1]; J. Wang; Z. Shi[1]; Z. Wang[1]; Y. Liu[1]; [1]University of Shenyang Chemical Technology

Process Design and Characterization of Bulk Nanostructured Aluminium Alloy by Equal Channel Angular Pressing (ECAP): P. Shanmugasandaram[1]; N. Narasimhan[1]; *Balasivananda Prabhu*[1]; H. Raja[1]; [1]Anna University

Review of Solidification of Al-Si Alloy under Superhigh Pressure: *Guozhi Zhang*[1]; [1]Northeastern University

Study on Al/P Diffusion Couples at Lower Temperature: *Danqing Yi*[1]; Ying Zhang[1]; [1]Central South University

Study on Recrystallization Behaviors of Alloy IC10 at Elevated Temperature: *Hongjian Zhang*[1]; Weidong Wen[1]; Haitao Cui[1]; Ying Xu[1]; [1]Nanjing University of Aeronautics and Astronautics

Vacuum Thermal Extract Lithium with Coarse Ferrosilicon-Aluminum Alloy Produced by Electro Thermal Process: *Di Yuezhong*[1]; Dong Weiwei[1]; Feng Naixiang[1]; [1]Northeastern University

Biological Materials Science: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Sun PM-Thurs AM Room: 205
February 14, 2010 Location: Washington State Convention Center

Design and Fabrication of Implants for Amputation Prosthesis: *Paul DeVasConCellos*[1]; Vamsi Balla[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; William Dernell[2]; [1]BRC, Washington State University; [2]College of Veterinary Medicine, Washington State University

Electro-Thermally Polarized Hydroxyapatite (HAp) Ceramics: Influence of MgO, ZnO, and SrO Dopants: *Subhadip Bodhak*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

Electrochemical Corrosion Behavior of Gamma TiAl Alloy Modified by Means of Plasma Electrolytic Oxidation: *Laura Lara*[1]; Paul Sundaram[1]; Nannette Diffoot-Carlo[1]; [1]University of Puerto Rico

Fatigue Behavior of Laser Processed Porous Nitinol: *Sheldon Bernard*[1]; Vamsi Balla[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

Fatigue of EBM-Processed Cellular Titanium for Biomedical Applications: *Nikolas Hrabe*[1]; Burkhard Fuchs[2]; Peter Heinl[2]; Carolin Koerner[2]; Rajendra Bordia[1]; [1]University of Washington; [2]University of Erlangen-Nuremberg

In Vitro Wear of Compositionally and Structurally Graded CoCrMo Ti6Al4V Structures: *Stanley Dittrick*[1]; Vamsi Balla[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

Resorbable Tricalcium Phosphates for Bone Tissue Engineering: Influence of SrO Doping: *Ken DeVoe*[1]; Shashwat Banerjee[1]; Amit Bandyopadhyay[1]; Susmita Bose[1]; [1]Washington State University

Tissue Development in Arabidopsis: 3D Shape Analysis for Detection of Cell Type: *Fatma Uyar*[1]; Begum Gulsoy[1]; Jean Christophe Palauqui[2]; Marc De Graef[1]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Institut Jean-Pierre Bourgin

Characterization of Minerals, Metals and Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Sun PM-Thurs AM Room: 307
February 14, 2010 Location: Washington State Convention Center

Atom Probe Tomography Investigation of a Commercial Dual Precipitation Martensitic Steel: *F. Danoix*[1]; R. Danoix[1]; J. Akre[1]; D. Delagnes[2]; A. Grelier[3]; [1]Université de Rouen; [2]Ecole des Mines d'Albi-Carmaux; [3]Aubert & Duval

Characterization of a Greensand Slate from Abaeté – Brazil to the Synthesis of a Potassium Thermophosphate: *Adriana da Silva*[1]; João Sampaio[2]; Francisco Garrido[1]; Marta Medeiros[1]; [1]UFRJ; [2]CETEM

Characterization of High Carbon Equivalent Cast Iron Using Thermal Analysis Curves: *Wenbin Zhou*[1]; Yongshen Yan[1]; Dengke Zheng[1]; Qin Hua[1]; Qijie Zhai[1]; [1]Shanghai University

Characterization of Mechanochemically Synthesized ZrO_2-B_2O_3-Mg System by Thermogravimetry/Differential Thermal Analyses and X-Ray Diffraction Studies: *Duygu Agaogullari*[1]; Fikret Aynibal[1]; Osman C. Demirhan[1]; Ismail Duman[1]; [1]Istanbul Technical University

Early-Stage Formation of Copper Nanoclusters in Model Reactor Pressure Vessel Steel: *Wei Wang*[1]; Bangxin Zhou[1]; Mindong Lin[1]; [1]Institute of Materials, Shanghai University

Effect of Melt Superheat on Structure of Unsteady-State Unidirectionally Solidified Duplex Stainless Steel: *Z.J. Li*[1]; Xiang-ru Chen[1]; Qijie Zhai[1]; [1]Shanghai University

Effect of Mg, Cu and Ni as Alloying Elements on the Dendritic Growth in an Al-7si Cast Alloy: *Aline Hernandez-Garcia*[1]; Alejandro Garcia-Hinojosa[1]; Francisco Esteves-Alcazar[1]; Yvan Houbaert[2]; [1]UNAM; [2]Gent University

Effect of the Aged Heat Treatment on Al-Zn-Mg Alloys, in Texture, Microstructure and Properties of Corrosion: *Aline Hernandez-Garcia*[1]; Bernardo Campillo-Illanes[1]; Francisco Esteves-Alcazar[1]; Sergio Serna[2]; [1]UNAM; [2]CIICAp-UAEM

Effects of Dolomite on Reduction Swelling Properties of Iron Ore Pellets: *Bin Xu*[1]; Tong Hou[1]; Xu-Ling Chen[1]; Qian Li[1]; Tao Jiang[1]; [1]Central South University

Embrittlement of Low Carbon Low Alloy Steel Occurring in the Austenite and γ-Ferrite Regions: Xingjian Gao[1]; Dengfu Chen[1]; *Mujun Long*[1]; Liwei Song[1]; Jian Zhang[1]; Yanyan Bi[1]; Xianguang Zhang[1]; [1]Chongqing University

FIB-Based Experimental Technique to Determine Phase Fractions of Two-Phase γ Titanium Aluminides: *Dennis Peter*[1]; Martin Wagner[1]; Gunther Eggeler[1]; [1]Ruhr University Bochum

High Resolution Analysis of the Microstructure and Chemistry of a High-Strength Al-Zn-Mg-Cu Alloy: *Yi-Yun Li*[1]; Libor Kovarik[2]; Wen-Hsiung Wang[1]; Yung-Fu Hsu[3]; Shan Trong[4]; Michael Mills[2]; [1]National Taiwan University; [2]The Ohio State University; [3]National Taipei University of Technology; [4]Chung-Shan Institute of Science and Technology

Investigation of Life Prediction in Notched Specimens Subjected to Thermomechanical Loadings: *Justin Karl*[1]; [1]University of Central Florida

Investigation of Surface Area Change of Bauxite Particle in Digesting Process by Nitrogen Adsorption: *Li Bao*[1]; Ting'an Zhang[1]; Guozhi Lv[1]; Zhihe Dou[1]; Yongnan Guo[1]; Xujian Wu[1]; Peiyuan Ni[1]; Jia Ma[1]; [1]Northeastern University

Magnetic and Trasport Properties of Half Doped Manganites: Nitta Swamy[1]; *R. Singh*[1]; [1]MATS University, Raipur (C.G)

Mechanical Behavior of Epoxy Composites Reinforced with Acetylation-Treated Coir Fibers: Helvio Santafe[1]; Lucas Costa[1]; Ruben Jesus Rodriguez[1]; Felipe Lopes[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

Microstructural Evolution and Tensile Behavior in Heat-Treated Ti-5111 Alloy: *Vikas Dixit*[1]; John Sosa[1]; Daniel Huber[1]; Peter Collins[1]; Hamish Fraser[1]; [1]The Ohio State University

Microstructural Evaluation of Mullite as a Function of the Parameters of Sintering with Microwave: *Maria Brasileiro*[1]; Daniele Cavalcante[2]; Elieber Bezerra[1]; Romualdo Menezes[1]; Gelmires Neves[1]; Heber Ferreira[1]; Lisiane Santana[1]; [1]Universidade Federal de Campina Grande; [2]Universidade Federal da Paraíba

Novel Techniques for the Investigation of the Mechanical Properties of Single Crystal Iridium: *Douglas Stauffer*[1]; Ryan Major[2]; William Gerberich[1]; [1]University of Minnesota; [2]Hysitron, Inc.

On the Precipitation of the Omega Phase in the Beta Matrix of Titanium Alloys: *Arun Devaraj*[1]; Robert Williams[2]; Soumya Nag[1]; Srinivasan Rajagopalan[2]; Srinivasan Srivilliputhur[1]; Hamish Fraser[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]The Ohio State University

Onset of Void Coalescence Studied by X-Ray Computed Tomography: *Akihide Hosokawa*[1]; David Wilkinson[1]; Eric Maire[2]; [1]McMaster University; [2]INSA-Lyon

Phase Equilibria in the $La_{1-x}Ca_xFeO_{3-d}$ System: *Patrick Price*[1]; Ellen Rabenberg[1]; David Thomsen[1]; Darryl Butt[1]; [1]Bosie State University

Precipitate Characterization in a NiAl-Strengthened Ferritic Steel: *Zhenke Teng*[1]; Michael Miller[2]; Peter Liaw[1]; Chain Liu[1]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

Semi-Automated Characterization of the Gamma Prime Phase in Ni-Based Superalloys via High-Resolution Backscatter Electron Imaging, Segmentation, and Stereology: *Eric Payton*[1]; Patrick Phillips[1]; Michael Mills[1]; [1]Ohio State University

Surface Characterization of Single and Mixed Mineral Systems Using Sedimentation Potential: *Salah Uddin*[1]; Mitra Mirnezami[1]; James Finch[1]; [1]McGill University

Synthesis of Lanthanum Orthophosphate and Polyphosphate in Condensed Phosphoric Acid Solutions: *Naoyuki Hatada*[1]; Yoshitaro Nose[1]; Tetsuya Uda[1]; [1]Kyoto University

Temperature and Orientation Dependence of the Plastic Flow Behavior of Tantalum: *Zhi Duan*[1]; Andrea Hodge[1]; [1]University of Southern California

The Development of Databases Relating Microstructure and Mechanical Properties in Ti-5Al-5Mo-5V-3Cr-0.5Fe (Timetal 555): *John Foltz*[1]; B. Welk[1]; P. Collins[1]; J. Williams[1]; H. Fraser[1]; [1]The Ohio State University

The Effect of Y on the Refinement of Cast and Rapidly Solidified TiAl Alloys: *Zhiguang Liu*[1]; Lihua Chai[1]; Yuyong Chen[1]; [1]Harbin Institute of Technology

The Microstructure and Mechanical Behavior of $Fe_{30}Ni_{20}Mn_{30}Al_{20}$ Alloys: *Xiaolan Wu*[1]; Ian Baker[1]; Hong Wu[1]; Micheal Miller[2]; Kaye Russell[2]; [1]Thayer School of Engineering, Dartmouth College; [2]Materials Science and Technology Division, Oak Ridge National Laboratory

Thermodynamic Research of the Dissolving of Chrysocolla ($Cusio_3 \cdot H_2O$) in the Ammonia-Ammonium Chloride-Water System: *Liu Wei*[1]; Tang Motang[1]; Tang Zhaobo[1]; He Jing[1]; Yang Jianguang[1]; Yang Shenghai[1]; [1]Central South University

Three-Dimensional Atom-Probe Tomography of High-Strength Low-Carbon Steels Containing Multiple Phases: *Mike Mulholland*[1]; David Seidman[1]; [1]Northwestern University

Ultrasonic Characterization of Copper using Wavelet Analysis: *Prasad Shanmugasandaram*[1]; Narayani Narasimhan[1]; Kalayappan Srinivasan[1]; Praveen Selvaraj[1]; [1]Anna University

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: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

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Atomistic Modeling of Solid-Liquid Interfaces Subject to Lateral Stresses: *T. Frolov*[1]; Y. Mishin[1]; [1]George Mason University

Atomistic Simulation of Segregation Coefficient of High Concentration Ni-Cu Alloys: *Harith Humadi*[1]; Jeff Hoyt[1]; Mark Asta[2]; Yang Yang[3]; [1]McMaster University; [2]University of California, Berkeley; [3]East China Normal University

Developing Reliable Interatomic Potentials for HCP Mg-Li Alloys from Ab Initio and Experimental Data: *Alex Welcing*[1]; [1]University of North Texas

Development of Reliable Interatomic Potentials for HCP Mg-Li Alloys from Ab Initio and Experimental Data: *Alex Welcing*[1]; Srinivasan Srivilliputhur[1]; M. Baskes[2]; Alfredo Caro[3]; [1]University of North Texas; [2]Los Alamos National Laboratory; [3]Lawrence Livermore National Laboratory

Diffusion on Al-Type Sites in Intermetallic Phases Having the Tetragonal Al_4Ba Structure: Gary Collins[1]; *Randal Newhouse*[1]; Samantha Cawthorne[1]; [1]Washington State University

Effects of Tempering on Fe-Atom Vibrations in Martensitic Steel: *Lisa Mauger*[1]; Brent Fultz[1]; [1]California Institute of Technology

First-Principles Calculations on Impurity Substituted Cementite: *Chaitanya Krishna Ande*[1]; Marcel Sluiter[2]; [1]Materials Innovation Institute, Delft University of Technology; [2]Delft University of Technology

Grain Boundary and Interfacial Energy Database for Fe in a Suitable Form for Simulation of Microstructure Evolution: *Hyun-Kyu Kim*[1]; Seong Gyoon Kim[2]; Byeong-Joo Lee[1]; [1]POSTECH; [2]Kunsan National University

Grain Growth Stagnation due to Grain Boundary Roughening: *Elizabeth Holm*[1]; Stephen Foiles[1]; [1]Sandia National Laboratories

Kinetics of ALN Precipitation in the Ferrite Phase Field of Microalloyed (HSLA) Steels: *Rene Radis*[1]; E. Kozeschnik[1]; [1]Vienna University of Technology

Kinetics of Corrosive Defects Formed on Au Substrates Accompanied by Alkanethiol Monolayer Assembly in the Presence of Oxygen: *Zhong Cao*[1]; Pu-Ni Zeng[1]; Xiao-Chuan He[1]; Dao-Chang Huang[1]; Ling Zhang; [1]Changsha University of Science and Technology

Modeling of Cementite Formation in Extra and Ultra Low Carbon Steels: Jong Min Choi[1]; Bong June Park[1]; Sung Il Kim[2]; Kyung Sub Lee[1]; *Kyung Jong Lee*[1]; [1]Hanyang University; [2]POSCO

Modeling of Phase Transformation Behaviors by Cementite Formation at Isothermal Bainite Transformation Region in TRIP-Assisted Steels: B. J. Park[1]; J. M. Choi[1]; S. Il Kim[2]; *Kyung Jong Lee*[1]; [1]Hanyang University; [2]POSCO

Monte Carlo Simulation of Multiferroic BiFeO3: *Yang Yang*[1]; Jiangyu Li[1]; [1]University of Washington

Multiscale Modelling of Grain Growth in Nanocrystalline Iron: *Tomasz Wejrzanowski*[1]; Krzysztof Kurzydlowski[1]; [1]Warsaw University of Technology

Phase Field Modeling of Grain Size Dependent Particle Pinning: *Sina Shahandeh*[1]; Matthias Militzer[1]; [1]University of British Columbia

Phase Field Modelling of Austenite Formation from a Ferrite-Carbide Lamella Structure: *Hamid Azizi-Alizamini*[1]; Matthias Militzer[1]; Warren Poole[1]; [1]UBC

Phase Field Simulations of Growth and Coarsening of Electrocatalyst Particles: *Megna Shah*[1]; Scott Barnett[1]; Peter Voorhees[1]; [1]Northwestern University

Simulation of Austenite-Martensite Interface and Hysteresis in Microstructures: *Chi Hou Lei*[1]; [1]University of Washington

The Effect of Quenched-in Vacancies on the Kinetics of Coherent Cu-Precipitation in Fe-Cu Alloys: *Ivan Holzer*[1]; Ernst Kozeschnik[2]; [1]Graz University of Technology; [2]Vienna University of Technology

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Sun PM-Wed PM Room: 306
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Deformation in Two-Phase Titanium Alloys Studied by Surface Strain Mapping Techniques: R. Sandala[1]; J. Quinta da Fonseca[1]; *Michael Preuss*[1]; [1]University of Manchester

Delamination in Al-Li Alloys: *Armand Beaudoin*[1]; Roy Crooks[2]; Sean Hamel[1]; Mark Hernquist[1]; Russell McDonald[1]; Wes Tayon[1]; [1]University of Illinois at Urbana-Champaign; [2]National Institute of Aerospace

In-Situ 3D Observation of Short Crack Propagation in Titanium Alloys: *Soran Birosca*[1]; J. Y. Buffiere[2]; M. Preuss[1]; [1]University of Manchester; [2]Universite de Lyon

Kinetics Aspects of Phase Transformation in a Ti-Al-Nb Gamma+Sigma Alloy: *Sonalika Goyel*[1]; M. Kesler[1]; O. Rios[1]; D. Cupid[2]; H. Seifert[2]; F. Ebrahimi[1]; [1]University of Florida; [2]Freiberg University of Mining and Technology

Jim Evans Honorary Symposium: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Sun PM-Thurs AM Room: 620
February 14, 2010 Location: Washington State Convention Center

Session Chair: Jae-Chun Lee, Korea Institute of Geoscience and Mineral Resources

A Novel Process for Separating Silver from Waste Lead-Free Solder: *Byung-Su Kim*[1]; Jae-chun Lee[1]; [1]Korea Institute of Geoscience and Mineral Resources (KIGAM)

Separation of Ag and Cu from Waste Pb-Free Tin Solder by Nitric Acid Leaching: *Kyoungkeun Yoo*[1]; Jae-chun Lee[1]; Soo-kyoung Kim[1]; Jinki Jeong[1]; [1]Korea Institute of Geoscience and Mineral Resources (KIGAM)

Magnesium Technology 2010: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

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February 14, 2010 Location: Washington State Convention Center

Assessing Data in Support of Structure-Processing-Property Relationships in Mg-Alloy Design: *Kim Ferris*[1]; Dumont Jones[2]; [1]Pacific Northwest National Laboratory; [2]Proximate Technologies, LLC

Complex Microstructure Consisting Precipitates and Long Periodic Stacking (LPS) Phases in Mg97Zn1Y2-X (Ce, Nd, Sm)X Alloys: *JongBeom Lee*[1]; Toyohiko J Konno[2]; Kenji Hiraga[2]; [1]Tohoku University; [2]Institute for Materials Research, Tohoku University

Effect of CaO and Al Contents on Tensile Properties of Creep Resistant Eco-Mg Alloys: *Jung ho Seo*[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

Effect of Microstructure and Texture on Property of Friction Stir Processed Mgnesium Alloy AZ31B: *Wei Yuan*[1]; Rajiv Mishra[1]; [1]Missouri University of Science and Technology

Effect of Zr Addition on Microstructural Evolution and Mechanical Properties of Mg-Zn-Y Alloy: *JoonSeok Kyeong*[1]; WonTae Kim[2]; DoHyang Kim[1]; [1]Yonsei University; [2]Cheongju University

Experimental and Computational Simulation of the Post-Warm Forming Constitutive Behavior of AZ31: *Frederick Polesak*[1]; Babak Raeisinia[1]; Sean Agnew[1]; [1]University of Virginia

Experiments and Modeling of Fatigue in an Extruded Magnesium Alloy: *J. Gibson*[1]; J. Jordon[1]; M. Horstemeyer[1]; [1]Mississippi State University

Fatigue Crack Propagation Behavior of Wrought Mg-Zn Alloys: *Kyosoo Song*[1]; Hwa Chul Jung[1]; Kwang Seon Shin[1]; [1]Seoul National University

Finite Element Simulation of Mg Warm Sheet Forming Operations: *Babak Raeisinia*[1]; Louis Hector[2]; Paul Krajewski[2]; Sean Agnew[1]; [1]University of Virginia; [2]GM

Generic Materials Property Data Storage and Retrieval for Alloy Material Applications: *Dumont Jones*[1]; Kim Ferris[2]; [1]Proximate Technologies, LLC; [2]Pacific Northwest National Laboratory

In-Situ Scanning Electron Microscopy Comparison of Deformation Behavior between AZ31 and WE43 Magnesium Alloys: *Tomoko Sano*[1]; Bruce Davis[2]; Richard DeLorme[2]; Kyu Cho[1]; [1]US Army Research Lab; [2]Magnesium Elektron North America Inc.

Microstructure and Corrosion Properties of Rapidly Solidified Mg-Zn-Y-X Alloys: S.W. Nam[1]; Do H. Kim[1]; H.K. Lim[1]; *W. T. Kim*[1]; D.H. Kim[1]; [1]Cheongju University

Phase Structures and Phase Relationships of the Alloys of Mg-Zn-La System at 400°: *Mingli Huang*[1]; [1]School of Materials and Metallurgy, Northeastern University

Recovery and Static Recrystallization of Magnesium Alloy AZ31: *Zohreh Keshavarz*[1]; Aiden Beer[1]; [1]Deakin University

Role of Quasicrystalline Phase in Mechanical Properties of Mg-Sn-Zn-Al Alloys: *Young Kyun Kim*[1]; Do Hyung Kim[1]; Joon Seok Kyeong[1]; Won Tae Kim[2]; Do Hyang Kim[1]; [1]Yonsei University; [2]Cheongju University

Texture and Anisotropy of Continuous Cast(CC) and Direct Chill Cast (DC) AZ31 Magnesium Sheets: *Sooho Kim*[1]; Raja Mishra[1]; Jon Carter[1]; [1]GM R&D Center

Thermo-Mechanical Processing Design of Mg Alloys with High Strength and Formability via Twin-Roll Casting: G.T. Bae[1]; *D. Li*[1]; H. Garmestani[1]; K.-H. Kim[2]; J.H. Bae[2]; Nack J. Kim[2]; [1]Georgia Institute of Technology; [2]Pohang University of Science and Technology

Ultra Light Metallic Armor (ULMA)- Magnesium Hard Alloys as the Defense against Modern Warfare Threats: *Rick Delorme*[1]; Bruce Davis[1]; Kyu Cho[2]; Jonathan Montgomery[2]; [1]Magnesium Elektron North America; [2]Army Research Laboratory

Void Nucleation and Growth Behavior of Mg Alloy: A Study by X-Ray Microtomography and Finite Element Analysis: *Ji Hoon Yoo*[1]; Dae Ha Lim[1]; Jae-Hong Lim[1]; Jung Ho Je[1]; Hyoung Seop Kim[1]; [1]Postech

Neutron and X-Ray Studies of Advanced Materials III: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Sun PM-Thurs AM Room: 303
February 14, 2010 Location: Washington State Convention Center

X-Ray Characterization of the a-Si/HfO2 Interface: *Sandeep Kohli*[1]; [1]Colorado State University

Pb-Free Solders and 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: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Sun PM-Thurs AM Room: 204
February 14, 2010 Location: Washington State Convention Center

Session Chairs: Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology

Characterization of Metal Whisker Growth in Sn-Based Solders: Guangchen Xu[1]; *Dongyue Zhang*[1]; Hu Hao[1]; Mengke Zhao[1]; Yaowu Shi[1]; Fu Guo[1]; [1]Beijing University of Technology

Impression Creep of Pb: *Fuqian Yang*[1]; Rong Chen[1]; [1]University of Kentucky

Interfacial Reaction and Joint Reliability of Electrodes Bonded with Transverse Ultrasonic: *Jong-Bum Lee*[1]; Jong-Gun Lee[1]; Seung-Boo Jung[1]; [1]Sungkyunkwan University

Mechanical Properties of Intermetallic Properties in Lead-Free Solder Materials: *Chandra Rao Bhesetti*[1]; K.Y. Zeng[2]; V. Kripesh[3]; [1]National University of Singapore, Department of Mechanical Engineering - and - A*STAR (Agency for Science, Technology and Research), Institute of Microelectronics; [2]National University of Singapore, Department of Mechanical Engineering; [3]A*STAR (Agency for Science, Technology and Research), Institute of Microelectronics

Microvoid Formation at Solder-Copper Interfaces during Annealing: A Systematic Study of the Root Cause: *Santosh Kumar*[1]; Carol Handwerker[1]; Joseph Smetana[2]; David Love[3]; James Watkowski[4]; Richard Parker[5]; [1]Purdue University; [2]Alcatel-Lucent; [3]Sun Microsystems, Inc.; [4]MacDermid Inc; [5]Delphi Electronics & Safety

Observations of IMC Formation for Au Wire Bonds to Al Pads: John DeLucca[1]; *John Osenbach*[1]; Frank Baiocchi[1]; [1]LSI Corporation

Optimization of Solutions to Electrodeposit Sn-Based Pb-Free Solders: *Neda Dalili*[1]; Anqiang He[1]; Qi Liu[1]; Douglas Ivey[1]; [1]University of Alberta

Orientation Imaging Studies of Sn3.0Ag0.5Cu Solder Joint with Various Ni Doping after Aging: *Tae-Kyu Lee*[1]; Kuo-Chuan Liu[1]; Kai-Jheng Wang[2]; Jo-Mei Wang[2]; Chien-Fu Tseng[2]; Jenq-Gong Duh[2]; [1]CISCO; [2]National Tsing Hua University

Polycrystalline Sn Whisker Growth: *Aleksandra Dimitrovska*[1]; Radovan Kovacevic[1]; [1]SMU

Solidification of the Sn-Cu-Ag Eutectic Alloy: *Yoshiko Takamatsu*[1]; Hisao Esaka[1]; Kei Shinozuka; [1]National Defense Academy

Study of Emerging New Interconnect Methods: How Far SMT Will Go: *Idelcio Cardoso*[1]; Josineto Costa[1]; [1]INdT

Study of UBM Consumption in Flip Chip Solder Joints with Local Temperature Control: *Ting-Li Yang*[1]; Y. L. Lin[1]; H. Y. Chuang[1]; C. Robert Kao[1]; [1]National Taiwan University

Study on Paste Printing for Electronics: Rafael Mancosu[1]; Ocileide Silva[1]; *Renato Bonadiman*[1]; [1]Nokia Technology Institute

The Effect of Temperature on the Critical Cu Concentration in SnCu/Ni Reaction: *Pei-Hsuan Wu*[1]; C. Robert Kao[1]; [1]National Taiwan University

Thermal and Electrical Evaluation of GaAs Flip-Chip after Thermal Reliability Test: *Young-Chul Lee*[1]; Jong-Woong Kim[1]; Kwang-Seok Kim[1]; Seung-Boo Jung[1]; [1]Sungkyunkwan University

Surface Engineering for Amorphous-, Nanocrystalline-, and Bio-Materials: Poster Session

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; Arvind Agarwal, Florida International Univesity; Sudipta Seal, University of Central Florida; Narendra Dahotre, University of Tennessee

Sun PM-Tues PM Room: 604
February 14, 2010 Location: Washington State Convention Center

Pulse Electrodeposition of Bio-Coatings: *Tushar Borkar*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Sun PM-Thurs AM Room: 603
February 14, 2010 Location: Washington State Convention Center

Session Chairs: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi

A Molecular Dynamics Study of a Deformation Behavior of Nanocrystalline Palladium: *Dmitriy Bachurin*[1]; Peter Gumbsch[1]; [1]University of Karlsruhe

A Multi-Scale Approach in Understanding Grain Boundary (GB) Effects on Fatigue Crack Initiation from the Energies of Slip-GB Interactions: *Michael Sangid*[1]; Huseyin Sehitoglu[1]; [1]University of Illinois, Urbana-Champaign

Ab Initio Study of the Core Structure and Kinks of Screw Dislocations in Fe and W: *Lisa Ventelon*[1]; François Willaime[1]; Emmanuel Clouet[1]; Mihai-Cosmin Marinica[1]; [1]CEA

Accurate Description of Elastic Properties of Random Alloys with Minimum Supercell Sizes: *Johann von Pezold*[1]; Alexey Dick[1]; Martin Friák[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

Computer Simulation of the Two-Nanoparticles Agglomeration: *Ilya Karkin*[1]; Yuri Gornostyrev[1]; Lidia Karkina[1]; [1]Institute of Metal Physics

Dislocation-Based Modeling of Yield Strength of Multilayer Thin Films with Nanoscale Microstructures: *Qizhen Li*[1]; [1]University of Nevada, Reno

Effect of Chemical Composition and Applied Stresses on the Martensitic Transformation in NiAl: *G. P. Pun*[1]; Y. Mishin[1]; [1]George Mason University

Evaluation of Phason Elastic Constants from HRTEM Image of a Dislocation in Icosahedral Quasicrystals: *Yeong-Gi So*[1]; Yasushi Kamimura[1]; Keiichi Edagawa[1]; [1]Institute of Industrial Science, University of Tokyo

Molecular Dynamics Simulation of Reactions Forming Ni-Al Nanoparticles: *Alexander Evteev*[1]; Elena Levchenko[1]; Daniel Riley[2]; Irina Belova[1]; Graeme Murch[1]; [1]The University of Newcastle; [2]The University of Melbourne

New Tools and Methods for Analyzing Deformed Materials: Woosong Choi[1]; Yong Chen[1]; Stefanos Papanikolaou[1]; *James Sethna*[1]; [1]Cornell University

Partitioning and Site Preference of Rhenium or Ruthenium in Model Ni-Based Superalloys: An Atom-Probe Tomographic and First-Principles Study: *Yang Zhou*[1]; Zugang Mao[1]; Christopher Booth-Morrison[1]; David Seidman[1]; [1]Northwestern University

Pd_2Ni Surface-Sandwich Ordering at the Nanoscale: Atomistic Simulations and First-Principles Calculations: *Elena Levchenko*[1]; Alexander Evteev[1]; Irina Belova[1]; Graeme Murch[1]; [1]The University of Newcastle

Quantitative Analysis and CPFEM Simulation of Deformation System Activity in Commercial Purity Ti Deformed in Tension: *Yiyi Yang*[1]; Leyun Wang[1]; Philip Eisenlohr[2]; Yunjo Ro[2]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung GmbH

Role of Artificial Neural Networks in Materials Science Research: *N. S. Reddy*[1]; Jae Sang Lee[1]; Y.M. Koo[1]; [1]GIFT, POSTECH, Pohang, Korea

Sliding Behavior of Favoured and Non-Favoured Boundaries in Zinc: *Askar Sheikh-Ali*[1]; [1]Kazakh-British Technical University

Structure and Energetics of the Stacking Faults in Austenitic FeMn Alloys Studied by First Principles Calculations: *Alexey Dick*[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

The Influence of Substitutional Solutes on Nucleation of Dislocations from Cracktips in Alpha-Fe: *Peter Gordon*[1]; Neeraj Thirumalai[1]; [1]ExxonMobil Research and Engineering

Thermodynamic Study of the Neptunium-Zirconium System: *Saurabh Bajaj*[1]; Andres Garay[2]; Raymundo Arroyave[1]; Cem Sevik[1]; Tahir Cagin[1]; Patrice Turchi[3]; [1]Texas A&M University; [2]CINVESTAV Queretaro; [3]Lawrence Livermore National Laboratory

Ultrafine Grained Materials – Sixth International Symposium: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Sun PM-Wed PM Room: 606
February 14, 2010 Location: Washington State Convention Center

Session Chair: Terry Lowe, Manhattan Scientifics, Inc.

Anisotropy of the Fracture Behaviour of Severly Deformed Iron and a Pearlitic Rail Steel: *Anton Hohenwarter*[1]; Christoph Kammerhofer[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

Crystal Plasticity Simulation of Equal Channel Angular Pressing of Aluminium Single Crystals with Different Initial Orientations: *Guanyu Deng*[1]; Cheng Lu[2]; Lihong Su[1]; Xianghua Liu[3]; Kiet Tieu[2]; [1]University of Wollongong and Northeastern University; [2]University of Wollongong; [3]Northeastern University

Deformation and Microstructure of Ferrous Alloy Processed by Continuous Shear Drawing: Chul Won Lee[1]; Young Gun Ko[2]; Seung Namgung[1]; *Kang Min Lee*[1]; Dong Hyuk Shin[1]; [1]Hanyang University; [2]Yeungnam University

Deformation Characteristics Evaluation of Modified Equal Channel Angular Pressing Processes: *Ji Hoon Yoo*[1]; Seung Chae Yoon[1]; Anumalasetty Venkata Nagasekhar[2]; Hyoung Seop Kim[1]; [1]POSTECH; [2]The University of Queensland

Deformation Twinning in Boron Carbide Particles: *Ying Li*[1]; Yonghao Zhao[1]; Wei Liu[1]; Zhihui Zhang[1]; Rustin Vogt[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis

Equal Channel Angular Pressing of Al-Mg Bimetal: *Sapthagireesh Subbarayan*[1]; Hans Roven[1]; [1]NTNU

Evaluation of Ultra-Fine Grained Magnesium Alloy - AZ31 Processed through Constrained Groove Pressing Severe Plastic Deformation Technique: BalaSivanandha Prabhu[1]; *D. Sathish Kumar*[1]; Preethi Balan[1]; Jayanthi Shanmugam[1]; A. Sekar[1]; [1]Anna University

Experimental and Finite Analyses of Pressure Effect on the Plastic Deformation and Microstructural Evolution of Copper during High Pressure Torsion: *Eun Yoo Yoon*[1]; Soo Hyun Joo[1]; Chong Soo Lee[1]; Hyoung Seop Kim[1]; [1]POSTECH

Experimental Studies of Subsurface Strains and Microstructures in Severe Plastic Deformation by Machining: *Yang Guo*[1]; Matthew Hudspeth[1]; Srinivasan Chandrasekar[1]; [1]Purdue University

Fabrication of Nanostructured Bulk Copper with High Strength and High Conductivity (HSHC): Microstructure and Properties: *Timothy Lin*[1]; [1]Aegis Technology Inc.

Finite and Experimental Analyses of Ultrafine Microstructure Evolution and Plastic Deformation of Copper under Various Pressures by High Pressure Torsion: *Eun Yoo Yoon*[1]; Soo Hyun Joo[1]; Dong-Wook Kim[1]; Nack J. Kim[2]; Chong Soo Lee[1]; Hyoung Seop Kim[1]; [1]POSTECH; [2]Center for Advanced Aerospace Materials

Finite Element Analyses of Plastic Deformation Behavior on the Geometry Effect during High Pressure Torsion: *Soo Hyun Joo*[1]; Chong Soo Lee[1]; Hyoung Seop Kim[1]; [1]POSTECH

Forced Atomic Mixing of Immiscible Ternary Alloys during Severe Plastic Deformation: *Nhon Vo*[1]; Robert Averback[1]; Thuy Nguyen[2]; Michael Campion[1]; Shankar Sivaramakrishnan[1]; Brad Stumphy[1]; Pascal Bellon[1]; [1]University of Illinois, Urbana-Champaign; [2]Hanoi University of Technology

Geometry Effect Study on Plastic Deformation Behavior during High Pressure Torsion with Finite Element Method: *Soo Hyun Joo*[1]; Chong Soo Lee[1]; Hyoung Seop Kim[1]; [1]POSTECH

Improving Strength and Ductility of Ultra-Fine Grained 5052 Al Alloy by Cryogenic and Warm Rolling: *Ui Gu Kang*[1]; Jong Chul Lee[1]; Shin Woong Joung[1]; Won Jong Nam[1]; [1]Kookmin University

Interstitial-Assisted Strengthening Mechanism of Ultrafine Grained Pure Aluminium Processed by ECAP: *Lihong Su*[1]; Cheng Lu[2]; Guanyu Deng[1]; Lizi He[3]; Xudong Sun[3]; Kiet Tieu[2]; [1]University of Wollongong and Northeastern University; [2]University of Wollongong; [3]Northeastern University

Microstructure and Properties of Ultrafine-Grained Steel Produced by Warm Compression of Martensite: *Xin Zhao*[1]; [1]Zhengzhou Institute of Aeronautics

Nanostructured Commercially Pure Titanium Prepared via Cryomilling and High Pressure Torsion (HPT): *Osman Ertorer*[1]; Ying Li[1]; Yonghao Zhao[1]; Ruslan Valiev[2]; Enrique Lavernia[1]; [1]University of California - Davis; [2]Ufa State Aviation Technical University

Reported Ductilities in Ultrafine Grain Metals and Confusion Regarding Measurement: Kaoru Yamamoto[1]; *Amit Ghosh*[1]; [1]University of Michigan

Spheroidization of High-Carbon Steel Processed by Equal Channel Angular Pressing: Seung Namgung[1]; Chul Won Lee[1]; Dong Hyuk Shin[1]; *Jae Sik Lee*[2]; Young Gun Ko[2]; [1]Hanyang University; [2]Yeungnam University

Strain Hardening Behavior of Ultra-Fine Grained 5083 Aluminum Alloy: *Troy Topping*[1]; Ying Li[1]; Zhihui Zhang[1]; Enrique Lavernia[1]; [1]University of California, Davis

Texture and Microstructure Evolution in Ultrafine Grained AZ31 Processed by EX-ECAP: *Milos Janecek*[1]; Sangbong Yi[2]; Radomir Kuzel[1]; Jitka Vratna[1]; Karl Kainer[2]; [1]Charles University; [2]GKSS Research Centre

The Effect of Friction Stir Welding on the Microstructure and Mechanical Behavior of Continuously Equal-Channel Angular Pressed (CECAP) A5052 Alloy Sheets: *Nilesh Kumar*[1]; Rajiv Mishra[1]; Gaurav Mohanty[2]; Santosh Karthik[2]; Krishna Rajan[2]; [1]Missouri University of Science & Technology; [2]Iowa State University

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Electrical Properties of Nanomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Monday AM Room: 214
February 15, 2010 Location: Washington State Convention Center

Session Chair: Jud Ready, Georgia Tech; Seung H. Kang, Qualcomm Inc

8:30 AM Introductory Comments

8:35 AM Invited
Schottky Diodes on Nanowires of Cadmium Telluride and Copper Indium Diselenide Embedded in Porous Alumina Templates: *Vijay Singh*[1]; [1]University of Kentucky

8:55 AM
Electronic Transfer in Molecular Nanostructures: *Karel Kral*[1]; [1]Inst. Phys. ASCR, v.v.i.

9:15 AM
Effect of the Nanocrystalline Structure of Metallic Cathodes on the Efficiency of Ion-Induced Electron Emission: *Radik Mulyukov*[1]; Rinat Khisamov[1]; Konstantin Nazarov[1]; Yulai Yumaguzin[2]; Ayrat Nazarov[1]; [1]Institute for Metals Superplasticity Problems, Russian Academy of Sciences; [2]Bashkiria State University

9:35 AM
Electrical Conductance of Single TiO2 Nanotube Devices: *Jie Huang*[1]; Dongkyu Cha[1]; Mingun Lee[1]; Moon Kim[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

9:55 AM
Enhancing Electrical Performance of Solution Processed Doped ZnO Film by Nanowire Alignment: *Sujay Phadke*[1]; Jung-Yong Lee[1]; Jack West[2]; Alberto Salleo[1]; [1]Stanford University; [2]Stanford University/Sequoia High School

10:15 AM Break

10:25 AM
3D Carbon Nanotube based Photovoltaic Devices: *Jack Flicker*[1]; Jud Ready[2]; [1]Georgia Institute of Technology; [2]Georgia Tech Research Institute

10:45 AM
CuO Nanowire-Co3O4 Nanoparticle Heterostructures for the Development of Multi-Functional Photocatalyst: Wenwu Shi[1]; *Nitin Chopra*[1]; [1]The University of Alabama

11:05 AM
CNT Based Thermoelectric Devices for Energy Harvesting: *David Lashmore*[1]; Tom VanVechten[1]; Jennifer Mann[1]; Cory Timoney[1]; Ian Wilson[1]; [1]Nanocomp

11:25 AM
Synthesis of Tin Filled Carbon Nanotubes and Their Application to Lithium Ion Batteries: Raj Das Gupta[1]; Carsten Schwandt[1]; *Derek Fray*[1]; [1]University of Cambridge

11:45 AM
Radar Absorption Properties of Radar Absorbing Structures Composite Filling with Carbon Nanotubes: *Zhengquan Zhang*[1]; Tiehu Li[1]; [1]Northwestern Polytechnical University

12:05 PM
Study of the AC Conductivity Affected by Crystallization and CNFs for PVDF/CNF Composite Thin Films: *Lili Sun*[1]; Bin Li[1]; Weihong Zhong[1]; Yan Zhao[2]; [1]Washington State University; [2]Beihang University

12:25 PM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Natural Materials and Polymer Matrix Composites

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Monday AM Room: 305
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Lorna Gibson, Massachusetts Institute of Technology; Amy Johnson, University of Illinois at Urbana-Champaign

8:30 AM
Alpha-helical Protein Networks Are Self-Protective and Flaw-Tolerant: *Markus Buehler*[1]; [1]Massachusetts Institute of Technology

8:50 AM
Mechanical Behavior of Natural Sisal Fibers: Flavio Silva[1]; *Nik Chawla*[1]; Romildo Toledo Filho[2]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]Civil Engineering Department, COPPE, Universidade Federal do Rio de Janeiro

9:10 AM
Development of Eco-Friendly Brake Friction Composites: *Yafei Lu*[1]; Baoting Suo[1]; Hui Wang[1]; Yimei Lu[1]; [1]Beijing University of Chemical Technology

9:30 AM
Energy Attenuation Capability of Woven Natural Silk (WNS)/Epoxy Composites Plates Subjected to Drop-Weight Impacts: *Albert Uchenna Ude*[1]; Che Husna Azhari[1]; Kamauzzaman Sopian[1]; [1]The National University of Malaysia (UKM)

9:50 AM
Strain Rate Effects on the Deformation Behavior of Particles in Epoxy-Based Composites: *Bradley White*[1]; Jonathan Spowart[2]; Jennifer Jordan[3]; Naresh Thadhani[1]; [1]Georgia Institute of Technology; [2]AFRL/RXLMD; [3]AFRL/RWME

10:10 AM Break

10:30 AM
Reactive Polymeric Nanocomposites: *Christopher Crouse*[1]; Christian Pierce[1]; Jonathan Spowart[1]; [1]Air Force Research Laboratory

10:50 AM Invited
B/SiOx Nanonecklace Reinforced Nanocomposites by Unique Mechanical Interlocking Mechanism: Xinyong Tao[1]; Jie Liu[1]; Goutam Koley[1]; *Xiaodong Li*[1]; [1]University of South Carolina

11:10 AM
A Review of Fiber Waviness and Its Effect on Material Properties: *Bryan Allison*[1]; Jeff Evans[1]; [1]University of Alabama in Huntsville

11:30 AM
Structure and Capability of TiB2/UHMWPE Composite Shielding Material for Nuclear Radiation: Xiaozhou Cao[1]; Xiangxin Xue[1]; Ting'an Zhang[1]; *Xianwei Hu*[1]; [1]Northeastern University

Aluminum Alloys: Fabrication, Characterization and Applications: Development and Application

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Monday AM Room: 615
February 15, 2010 Location: Washington State Convention Center

Session Chair: John Chinella, U.S. Army Research Laboratory

8:30 AM
High Strength and High Temperature Aluminum Alloys for High Performance Applications: *Awadh Pandey*[1]; Jonathan Spowart[1]; [1]Pratt & Whitney Rocketdyne

8:50 AM
Scandium/Zirconium Modified Aluminum Alloys for Improved Mechanical and Corrosion Properties: *Jennifer Gaies*[1]; [1]NSWC Carderock Division

9:10 AM
TRIMAL 52® - A New Aluminium Alloy for High Performance Spaceframe Construction: *Marcel Rosefort*[1]; Horst Gers[2]; Thomas Koehler[1]; Jana Ehrke[1]; Dirk Schnapp[2]; Hubert Koch[1]; [1]Trimet Aluminium AG; [2]Honsel AG

9:30 AM
High-Temperature Fatigue Deformation Behavior of Heat-Resistant Aluminum Alloy for Automobile Parts: Jong-Soo Park[1]; Si-Young Sung[2]; Bum-Suk Han[2]; Chang-Yeol Jung[3]; *Kee-Ahn Lee*[4]; [1]Center for Advanced Green Materials Technology, Andong National University; [2]Korea Automotive Technology Institute; [3]Korea Institute of Industrial Technology; [4]Department of Advanced Material Science and Engineering, Andong National University

9:50 AM Break

10:05 AM
Optimized Heat Treatment Sequence for AA 6061: *Christian Zelger*[1]; Josef Schnitzlbaumer[1]; Ramona Prillhofer[1]; Josef Enser[1]; Carsten Melzer[1]; [1]AMAG Rolling

10:25 AM
Microstructure, Mechanical Characterization and Hot Tensile Behaviour of Al-Zn-Mg Modified Alloys: Paola Leo[1]; *Emanuela Cerri*[1]; Hugh J. McQueen[2]; [1]University of Salento; [2]Concordia University

10:45 AM
Cast Aluminum Housings in Electrical Fires: *Joel Liebesfeld*[1]; [1]Countermeasure Security, Inc.

11:05 AM
Influence of the Grain Size on the IGC, Crack Propagation and Fracture Toughness Behaviour of Aa2024-T3 Sheet Material: *Josef Berneder*[1]; Reinhard Rachlitz[1]; Carsten Melzer[1]; Helmut Antrekowitsch[2]; Peter Uggowitzer[3]; [1]AMAG Rolling; [2]University of Leoben; [3]ETH Zürich

11:25 AM
Microstructure and Mechanical Properties of Age-Hardening Al-Li-Sc-Yb, Al-Li-Sc, and Al-Sc Alloys: *Matthew Krug*[1]; David Seidman[1]; David Dunand[1]; [1]Northwestern University

Biological Materials Science: Bio-inspired Materials Design and Processing I: Macromolecular Concepts and Applications

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Monday AM Room: 205
February 15, 2010 Location: Washington State Convention Center

Session Chair: John Nychka, University of Alberta

8:30 AM Introductory Comments by John A. Nychka, 2010 Lead Organizer

8:35 AM Keynote
From Materials Science to Medicine Using Genetically Engineered Peptides: *Mehmet Sarikaya*[1]; [1]University of Washington

9:15 AM
Electronic Transport through Solid-Binding Peptides: *Yuhei Hayamizu*[1]; Marketa Hnilova[1]; Ersin Emre Oren[1]; Chao Zhong[1]; Candan Tamerler[1]; Marco Rolandi[1]; Mehmet Sarikaya[1]; [1]University of Washington

9:35 AM
Computational Biomimetic Design of Materials Specific Peptides: *Ersin Emre Oren*[1]; Ram Samudrala[1]; John S. Evans[2]; Malcolm L. Snead[3]; Martha J. Somerman[1]; Candan Tamerler[4]; Mehmet Sarikaya[1]; [1]University of Washington; [2]New York University; [3]University of Southern California; [4]Istanbul Technical University

9:55 AM
Bridging Inorganic Nanoparticles and Biomolecules via Genetically Engineered Peptides: *Turgay Kacar*[1]; Marketa Hnilova[1]; Banu Taktak[2]; Yuhei Hayamizu[1]; Ersin Emre Oren[1]; John Evans[3]; Candan Tamerler[1]; Mehmet Sarikaya[1]; [1]University of Washington; [2]Istanbul Technical University; [3]New York University

10:15 AM Break

10:25 AM
Peptide-Mediated Formation of Hybrid Metallic Nanostructures: *Marketa Hnilova*[1]; Hanson Fong[1]; Banu Taktak[2]; Turgay Kacar[1]; Candan Tamerler[1]; Mehmet Sarikaya[1]; [1]University of Washington; [2]Istanbul Technical University

10:45 AM
In Situ Biomineralization Using Peptides via SPR and QCM: *Brandon Wilson*[1]; Eugene Ngai[1]; James Park[1]; Mustafa Gungormus[1]; Marketa Hnilova[1]; Candan Tamerler[2]; Mehmet Sarikaya[1]; [1]University of Washington; [2]Istanbul Technical University

11:05 AM
Self-Mineralized/Self Assembled Peptide-Based Hydrogels as Scaffolds for Tissue Regeneration: *Mustafa Gungormus*[1]; Monica Branco[2]; Hanson Fong[1]; Candan Tamerler[1]; Joel Schneider[2]; Mehmet Sarikaya[1]; [1]University of Washington; [2]University of Delaware

11:25 AM
Peptide-Based Biofunctionalization of Implant Materials: *Dmitriy Khatayevich*[1]; Mustafa Gungormus[1]; Christopher So[1]; Sibel Cetinel[2]; Hong Ma[1]; Alex Jen[1]; Candan Tamerler[2]; Mehmet Sarikaya[1]; [1]University of Washington; [2]Istanbul Technical University

11:45 AM
Directed Assembly and Fabrication by Materials Selective Fusion Protein-Peptides: *Candan Tamerler*[1]; Mehmet Sarikaya[2]; [1]Istanbul Technical University; [2]University of Washington

Bulk Metallic Glasses VII: Structures and Mechanical Properties I

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: 213
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Takeshi Egami, University of Tennessee; Peter Liaw, University of Tennessee

8:30 AM Keynote
Mechanical Failure and Glass Transition: *Takeshi Egami*[1]; Pengfei Guan[2]; Mingwei Chen[2]; [1]University of Tennessee; [2]WPI-AIMR, Tohoku University

9:00 AM
Embrittlement of Bulk Metallic Glasses: *Golden Kumar*[1]; Dale Conner[2]; Jan Schroers[1]; [1]Yale University; [2]California State University

9:10 AM Invited
Anelastic Deformation of a Metallic Glass: *Michael Atzmon*[1]; Jong Doo Ju[1]; Dongchan Jang[2]; [1]University of Michigan; [2]Caltech

9:30 AM
In situ X-Ray Diffraction Investigations of Cu-Zr Bulk Metallic Glasses under Applied Stress: *Norbert Mattern*[1]; Jozef Bednarcik[2]; Gang Wang[1]; Juergen Eckert[1]; [1]IFW Dresden; [2]DESY Hamburg

9:40 AM Invited
Structure – Property Relationship in Bulk Metallic Glasses: *Evan Ma*[1]; [1]Johns Hopkins University

10:00 AM Break

10:10 AM Invited
Defects and Plastic-Deformation Modes of Bulk-Metallic Glasses: *Yuri Petrusenko*[1]; Alexander Bakai[1]; Ivan Neklyudov[1]; Igor Mikhailovskij[1]; Sergij Bakai[1]; Peter K. Liaw[2]; Lu Huang; Tao Zhang[3]; [1]National Science Center - Kharkov Institute of Physics and Technology; [2]Department of Materials Science and Engineering, The University of Tennessee; [3]Department of Materials Science and Engineering, Beijing University of Aeronautics and Astronautics

10:30 AM Invited
Structural Features of BMG under Mechanical Deformation: *Wojciech Dmowski*[1]; Andrew Chuang[1]; Peter Liaw[1]; Yang Ren[1]; Jon Almer[1]; Takeshi Egami[1]; [1]University of Tennessee

10:50 AM
(Fe,Co)-Based BMGs with Small Cu Additions: *Mihai Stoica*[1]; Ran Li[1]; Stefan Roth[1]; Jürgen Eckert[1]; Gavin Vaughan[2]; Alain Yavari[3]; [1]IFW Dresden; [2]ESRF Grenoble; [3]INP Grenoble

11:00 AM Invited
Irreversible Structural Changes with Cyclic Loading in Zr Based Amorphous Alloys: *Despina Louca*[1]; Peng Tong[1]; Gongyao Wang[2]; Peter Liaw[2]; Yoshihiko Yokoyama[3]; [1]University of Virginia; [2]University of Tennessee; [3]Tohoku University

11:20 AM
Effect of Plastic Deformation History on the Subsequent Mechanical Behavior of a Bulk-Metallic Glass: A High-Energy Synchrotron X-Ray Scattering Study: *Feng Jiang*[1]; Dongchun Qiao[1]; Yang Ren[2]; Wojtek Dmowski[1]; Gongyao Wang[1]; Yangdong Wang[3]; Takeshi Egami[1]; Peter Liaw[1]; Hahn Choo[1]; [1]University of Tennessee; [2]Argonne National Laboratory; [3]Northeastern University

11:30 AM Invited
Atomic-Scale Mechanisms of Tension-Compression Asymmetry in a Metallic Glass: Lianyi Chen[1]; B. Z. Li[1]; X. D. Wang[1]; Feng Jiang[2]; H. Franz[3]; Ren Yang[4]; Peter Liaw[2]; *Jianzhong Jiang*[1]; [1]Zhejiang University; [2]University of Tennessee; [3]HASYLAB at DESY; [4]Argonne National Laboratory

11:50 AM
Thermomechanical Behavior of Cu50Hf41.5Al8.5 Bulk Metallic Glass Following Cyclic and Static Elastic Compression in Different Loading Directions: Arif Mubarok[1]; *Rainer Hebert*[1]; [1]University of Connecticut

12:00 PM
Static and Dynamic Observation of Shear Bands in Metallic Glasses: *Eun Soo Park*[1]; Frans Spaepen[2]; [1]Seoul National University; [2]Harvard University

12:10 PM
Effect of Stress State on Flow at Bulk Metallic Glass Interfaces: *Nicholas Hutchinson*[1]; Dan Campbell[1]; Katharine Flores[1]; [1]The Ohio State University

Characterization of Minerals, Metals and Materials: Characterization of Iron and Steel I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Monday AM Room: 307
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Donato Firrao, Politecnico di Torino

8:30 AM Introductory Comments

8:35 AM
Nano-Scale Characterization of Carbon Partitioning from Supersaturated Plates of Ferrite: *Francisca Caballero*[1]; Mike Miller[2]; Carlos Garcia-Mateo[1]; [1]CENIM-CSIC; [2]ORNL

8:55 AM
Nondestructive Characterization of Microstructure and Properties of Steel Products: *Jagdish Pandey*[1]; Manish Raj[1]; Nikhiles Bandyopadhyay[1]; [1]Tata Steel Ltd.

9:15 AM
Role of Microstructure and Composition in Resisting Hydrogen Embrittlement of Fastener Grade Steels: *Nicholas Nanninga*[1]; Lloyd Heldt[2]; Karl Rundman[2]; [1]NIST; [2]Michigan Technological University

9:35 AM
2D Imaging of Nano-Hardness and Phase Characterization in Steel by Noncontact Optical Photodeflection Microscopy: *Nelida Mingolo*[1]; Oscar Martínez[1]; Ulises Crossa Archiopoli[2]; [1]Universidad de Buenos Aires; [2]Tolket SRL

9:55 AM
Characterization of AISI 4340 Steel Formed by Direct Metal Deposition Process: *Jyotirmoy Mazumder*[1]; Sudip Bhattacharyya[1]; [1]University of Michigan

10:15 AM
Classification and Rating of Inclusions in a High Carbon Steel: M. Faraji[1]; R. Thackray[1]; I. Todd[1]; *P. Tsakiropoulos*[1]; [1]The University of Sheffield

10:35 AM
Inspecting and Analyzing Microstructural Homogeneity in Grey Cast Iron: *M. David Hanna*[1]; [1]General Motors R&D Center

10:55 AM
An Approach for Graphite Nodules Detection in Ductile Cast Iron: *Ali-Reza Kiani-Rashid*[1]; S.A. Rounaghi[1]; [1]Ferdowsi University of Mashhad

11:15 AM
As-Cast Microstructures of Aluminum Containing Ductile Cast Irons: *Ali-Reza Kiani-Rashid*[1]; A Shayesteh-Zeraati[2]; H. Naser-Zoshki[3]; M.R. Yousef-Sani[1]; [1]Ferdowsi University of Mashhad; [2]Sharif University of Technology; [3]Iran University of Science and Technology

11:35 AM Concluding Comments

11:40 AM Question and Answer Period

Coatings for Structural, Biological, and Electronic Applications: Processing Techniques and Characterization

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ; Choong-un Kim, University of Texas at Arlington; Nancy Michael, University of Texas at Arlington

Monday AM Room: 309
February 15, 2010 Location: Washington State Convention Center

Session Chair: Gregory Krumdick, Argonne National Labs

8:30 AM Introductory Comments

8:35 AM Invited
Morphological Evolution during the Annealing and Growth of Polycrystalline Films: *Ramanathan Krishnamurthy*[1]; Mikko Haataja[2]; [1]Purdue University; [2]Princeton University

9:05 AM
Synthesis of Amorphous Al-Co-Ce Alloys via Atomization and Mechanical Milling: *Zhihui Zhang*[1]; Ying Li[1]; Yizhang Zhou[1]; Enrique Lavernia[1]; [1]University of California Davis

9:25 AM Invited
Microstructure and Mechanical Properties of Vanadium Oxide-Based Coatings on Steel Substrates Prepared by Pulsed Laser Deposition: Andreas Jahja[1]; *Paul Munroe*[2]; [1]Materials Science and Engineering; [2]Materials Science and Engineering, University of New South Wales

9:55 AM Break

10:10 AM Invited
Method of Characterizing Pore Structure in Porous Coating Layer Using a Simple Voltammetry: *Nancy Michael*[1]; Woong-Ho Bang[1]; Choong-Un Kim[1]; [1]University of Texas at Arlington

10:40 AM
The Effect of Aging Time on the Properties of Sol-Gel Derived Nanostructure Fluorapatite Powder and Coating: *Ehsan Mohammadi Zahrani*[1]; M. H. Fathi[2]; Akram Alfantazi[1]; [1]The University of British Columbia; [2]Isfahan University of Technology

11:00 AM Invited
Microstructure and Mechanical Properties of Yttria-stablized Zirconia Coatings Produced By Electrophoretic Deposition and Microwave Sintering: *Wei Wang*[1]; Shiqiang Qian[1]; [1]Shanghai University of Science Engineering

11:30 AM Invited
Carrier Concentration Tuning and Enhanced Photoelectrochemical Response of Bandgap-Reduced Cu and Ga Co-Doped P-Type ZnO Films: *Sudhakar Shet*[1]; Kwang-Soon Ahn[2]; Heli Wang[1]; Todd Deutsch[1]; Nuggehalli Ravindra[3]; Yanfa Yan[1]; John Turner[1]; Mowafak Al-Jassim[1]; [1]National Renewable Energy Laboratory; [2]Yeungnam University; [3]New Jersey Institute of Technology

12:00 PM
Research on Nano Fe2O3 Film Coated on Surface of 3D-Meshwork SiC by Sol-Gel Method: *Yu Liang*[1]; Wu Yanjun[1]; Ru Hongqiang[1]; Yue Xinyan[1]; Li Jingyang[1]; [1]Texture of Materials, Ministry of Education, College of Materials and Metallurgy, Northeastern University,

Computational Thermodynamics and Kinetics: Diffusion and Defects

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: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

Monday AM Room: 308
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Controlling Diffusion in Semiconductor Nanostructures by Size and Dimensionality: *James Chelikowsky*[1]; [1]University of Texas

9:00 AM Invited
Compositional Point Defect Evaluation Using Diffusion Multiples: *Ji-Cheng Zhao*[1]; Xuan Zheng[2]; David Cahill[2]; [1]The Ohio State University; [2]University of Illinois at Urbana-Champaign

9:30 AM Invited
Diffusion in Alloys and Intercalation Compounds from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

10:00 AM
Ab Initio Modeling of Interstitial Diffusion in bcc Fe: *Marcel Sluiter*[1]; [1]TU Delft

10:20 AM Break

10:30 AM Invited
First-principles Approach to Transition States of Diffusion: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

11:00 AM
Quantifying the Strength of Point Defect Based Hydrogen Traps in bcc and fcc Iron: *William Counts*[1]; Chris Wolverton[1]; Ron Gibala[2]; [1]Northwestern University; [2]University of Michigan

11:20 AM
Island Shape Controls Magic Size Effect for Heteroepitaxial Diffusion: *Henry Wu*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

11:40 AM
Effects of Spin Transition on Diffusion of Fe^{2+} in Ferropericlase in Earth's Lower Mantle: Saumitra Saha[1]; *Dane Morgan*[1]; Amy Bengtson[2]; [1]University of Wisconsin-Madison; [2]University of Michigan

12:00 PM
Molecular Dynamics Simulation of Self-Diffusion in bcc Metals: *Mikhail Mendelev*[1]; [1]Ames Laboratory

Cost-Affordable Titanium III: Overview and Low Cost Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Monday AM Room: 618
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Henry Rack, Clemson University; James Sears, Quad City Manufacturing Laboratory

8:30 AM
Cost Affordable Developments in Titanium Technology and Applications: *F. H. (Sam) Froes*[1]; M. Ashraf Imam[2]; [1]Institute for Materials and Advanced Processes; [2]Naval Research Lab

8:55 AM
The FFC-Cambridge Process for Titanium Metal Winning: *Carsten Schwandt*[1]; Derek Fray[1]; Gregory Doughty[1]; [1]University of Cambridge

9:20 AM
Direct Electrochemical Reduction of Titanium Dioxide in Molten Salts: *Kevin Dring*[1]; [1]Norsk Titanium

9:45 AM
The Production of Ti Alloy Powder from Chloride Precursors: *James Withers*[1]; J. Laughlin[1]; Y. Elkadi[1]; J. DeSilva[1]; R. Loutfy[1]; [1]MER Corporation

10:10 AM Break

10:25 AM
Quantitative X-Ray Synchrotron Analysis of the FFC Cambridge Process: *Rohit Bhagat*[1]; David Dye[2]; Ben Jackson[2]; Seema Raghunathan[2]; Douglas Inman[2]; Richard Dashwood[1]; [1]The University of Warwick; [2]Imperial College London

10:50 AM
New Methods for Low-Cost Titanium Production: *Ana Maria Martinez*[1]; Karen Osen[1]; Egil Skybakmoen[1]; Ole Kjos[2]; Geir Martin Haarberg[2]; Kevin Dring[3]; [1]SINTEF; [2]NTNU; [3]Norsk Titanium AS

11:15 AM
A Continuous Process to Produce Titanium Utilizing Metallothermic Chemistry: *James Withers*[1]; J. Laughlin[1]; Y. Elkadi[1]; J. DeSilva[1]; R. Loutfy[1]; [1]MER Corporation

11:40 AM
The Electrolytic Production of Ti from a TiO_2 Feed (The DARPA Sponsored Program): *James Withers*[1]; J. Laughlin[1]; Y. Elkadi[1]; J. DeSilva[1]; R. Loutfy[1]; [1]MER Corporation

12:05 PM
The FFC Cambridge Process for Production of Low Cost Titanium and Titanium Powders: *Mark Bertolini*[1]; Lee Shaw[1]; Lucy England[1]; Kartik Rao[1]; James Dean[1]; James Collins[1]; [1]Metalysis

Failure of Small-Scale Structures: Nanowire Behavior

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Marian Kennedy, Clemson Univeristy; Brad Boyce, Sandia National Laboratory; Reinhold Dauskardt, Stanford; Zhiwei Shan, Hysitron Inc

Monday AM Room: 206
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Brad Boyce, Sandia National Laboratories; Molly Kennedy, Clemson University

8:30 AM Invited
Insights from Nanomechanical Testing: Nanoengineering Surfaces, Thin Films, and Nanowires: *Christopher Muhlstein*[1]; [1]The Pennsylvania State University

8:55 AM Invited
Mechanical Behavior of Au Nanowires: *Cynthia Volkert*[1]; B. Roos[1]; B. Kapelle[1]; G. Richter[2]; A. Sedlmayr[3]; D.S. Gianola[4]; R. Mönig[3]; [1]Institute for Materials Physics, University of Göttingen; [2]Max Planck Institute for Metals Research; [3]Institute for Materials Research-II, Forschungszentrum Karlsruhe; [4]Formally at the Institute for Materials Research-II, Forschungszentrum Karlsruhe, currently at the Department of Materials Science and Engineering, University of Pennsylvania

9:20 AM
In-Situ Tensile Deformation of Silver Nanowires: *Junhang Luo*[1]; Jian Yu Huang[2]; Catherine Murphy[3]; Scott Mao[1]; [1]University of Pittsburgh; [2]Sandia National Laboratories; [3]University of South Carolina

9:35 AM
In-Situ TEM Studies of Nanomechanics and Fracture in Nanowires and Nanotubes: *Reza Shahbazian-Yassar*[1]; Hessam Ghasemi[1]; Anahita Pakzad[1]; Kasra Momeni[1]; Anjana Ashtana[1]; Yoke Yap[1]; [1]Michigan Technological University

9:50 AM Break

10:05 AM Invited
Fracture and Deformation in Metallic Nanowires: *Scott Mao*[1]; A. Cao[2]; Y. Wei[2]; [1]University of Pittsburgh; [2]Institute of Mechanics

10:30 AM Invited
In-Situ Atomic Scale Nanomechanics Revealed by a TEM-SPM Platform: *Jianyu Huang*[1]; Junhang Luo[2]; He Zheng[2]; Scott Mao[2]; Nan Li[3]; Jian Wang[3]; Xinghang Zhang[4]; Armit Misra[3]; Yang Lu[5]; Jun Lou[5]; Erik Bitzek[6]; Ju Li[6]; [1]Sandia National Laboratories; [2]University of Pittsburgh; [3]Los Alamos National Laboratories; [4]Texas A&M University; [5]Rice University; [6]University of Pennsylvania

10:55 AM
An In Situ Scanning Electron Microscopy Study of Size Dependent Mechanical Behaviors of Metallic Nanowires: *Cheng Peng*[1]; Yang Lu[1]; Yogi Ganesan[1]; Yongjie Zhan[1]; Jun Lou[1]; [1]Rice University

11:10 AM Invited
Deformation Mechanisms in Quasi-1D Nanostructures: *In Situ* Observations and Measurements during Tensile Testing in Electron Microscopes: *Daniel Gianola*[1]; [1]University of Pennsylvania

11:35 AM Invited
Statistical Effects on Material Strength at Small Length Scales: Shyam Keralavarma[1]; *Ahmed Benzerga*[1]; [1]Texas A&M University

General Abstracts: Materials Processing and Manufacturing Division: Welding

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Global Innovations Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Phase Transformations Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee, TMS: Solidification Committee, TMS: Surface Engineering Committee
Program Organizers: Thomas Bieler, Michigan State University; Corbett Battaile, Sandia National Laboratories

Monday AM Room: 611
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
High Brightness Nd:YAG Laser Welding of Aluminum 5754: *Jyotirmoy Mazumder*[1]; Leslie Pipe[1]; Yi Liu[1]; David Roessler[1]; [1]University of Michigan

8:50 AM
Robotic Welding of Large Floor Panels Made of Light Aluminum Extrusions: *Michel Guillot*[1]; [1]Laval University

9:10 AM
Effects of Novel Processing Techniques on the Fatigue Crack Growth Behavior of 6061 Alloys: *Brendan Chenelle*[1]; Christopher Lammi[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

9:30 AM
Numerical and Experimental Analyses for Effect of Welding Speeds on Cooling Rates in Manual Metal Arc Welding(MMAW): Muna Abbass[1]; *Jalal M. Jalil*[1]; Abbas Sh. Alwan[1]; [1]University of Technology, Baghdad

9:50 AM
The Effect of Welding Speed on the Crystallographic Texture Observed in Friction Stir Welding of Near-Alpha Titanium: *Richard Fonda*[1]; Keith Knipling[1]; [1]Naval Research Laboratory

10:10 AM Break

10:30 AM
Spot Welding of Automotive Steels and Light Metals by Friction Bit Joining: *Michael Miles*[1]; K. Kohkonen[1]; Zhili Feng[2]; [1]BYU; [2]Oak Ridge National Lab

10:50 AM
Ultrasonic Welding a Novel Approach to Friction Spot Welding Dissimilar Aluminum to Steel Automotive Sheets: *Farid Haddadi*[1]; Philip Prangnell[1]; Dimitrios Bakavos[1]; [1]The University of Manchester

11:10 AM
Computational Welding Mechanics: Hardening Models in Welding Simulation: *Amir Masoud Akbari Pazooki*[1]; [1]TU Delft

11:30 AM
Thermo-Mechanical-Metallurgical Simulation of DP600 Steel during Welding: *Amir Masoud Akbari Pazooki*[1]; [1]TU Delft

11:50 AM
Correlation between Shoulder Flow Zone Quality and Material Flow Quantity during Friction Stir Welding of Thick Aluminum Section Using Scroll Shoulder Tool: *David Yan*[1]; Zhan Chen[1]; Guy Littlefair[1]; [1]AUT University

12:10 PM
Distortion Assessment of a Direct Cast Uranium - 6 wt. % Niobium Cylinder: *Hunter Swenson*[1]; Rob Aikin[1]; [1]Los Alamos National Laboratory

General Abstracts: Structural Materials Division: Materials Characterization and Shock Loading

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Composite Materials Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee, TMS: Refractory Metals Committee, TMS: Titanium Committee
Program Organizers: Eric Ott, GE Aviation; Robert Hanrahan, National Nuclear Security Administration; Judith Schneider, Mississippi State University

Monday AM Room: 608
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
Characteristics of High Interstitially Alloyed 18Cr-10Mn Stainless Steels: *Chang-Seok Oh*[1]; Tae-Ho Lee[1]; Heon-Young Ha[1]; Sung-Joon Kim[1]; [1]Korea Institute of Materials Science

8:50 AM
Research on the Thermal Plasticity of the 18Mn-18Cr-0.77N-2Mo High Nitrogen Austenitic Stainless Steel: *Li Wanming*[1]; Li huabing[1]; Jiang Zhouhua[1]; [1]Northeastern University

9:10 AM
An Overview of the Microstructures of High-Strength Two-Phase near-Equi-Atomic FeNiMnAl Alloys: *I. Baker*[1]; Y. Liao[1]; X. Wu[1]; H. Wu[1]; M.K. Miller[2]; K.F. Russell[2]; P.R. Munroe[3]; [1]Dartmouth College; [2]Oak Ridge National Laboratory; [3]University of New South Wales

9:30 AM
Quantitative Measurement of Crack Initiation and Propagation in High Explosives and Mocks: *Carl Cady*[1]; Cheng Liu[1]; Philip Rae[1]; Manuel Lovato[1]; [1]Los Alamos National Laboratory

9:50 AM
Was There a Bomb on Mattei's Aircraft?: *Donato Firrao*[1]; Graziano Ubertalli[1]; [1]Politecnico di Torino

10:10 AM Break

10:20 AM
The Response of Aluminium Alloys to Shock Loading: *Jeremy Millett*[1]; Neil Bourne[1]; Ming Chu[2]; Ian Jones[2]; George Gray III[3]; Gareth Appleby-Thomas[4]; [1]AWE; [2]University of Birmingham; [3]Los Alamos National Laboratory; [4]Cranfield University

10:40 AM
Deformation Behavior of U-6wt%Nb Following Shock Loading: *Adam Farrow*[1]; Heather Volz[1]; George Gray III[1]; Ellen Cerreta[1]; Donald Brown[1]; Carl Cady[1]; Mike Lopez[1]; Ann Kelly[1]; Pallas Papin[1]; [1]Los Alamos National Laboratory

11:00 AM
Mechanical and Computational Investigation of Ni-Al Laminates of Laser-Shock Compression and Spalling: *Chung-Ting Wei*[1]; Vitali Efrem[1]; David Benson[1]; Brian Maddox[1]; Timothy Weihs[1]; Adam Stover[1]; Marc Meyers[1]; [1]University of California, San Diego

11:20 AM
Improvement of Charpy Impact Properties in Heat Affected Zones of API X80 Linepipe Steels Containing Complex Oxides: *Hyo Kyung Sung*[1]; Sang Yong Shin[1]; Woo-Yeol Cha[2]; Kyungshik Oh[2]; Sunghak Lee[1]; [1]POSTECH; [2]POSCO

11:40 AM
Microstructural Analysis of Separations Occurring during Charpy Impact Test of Linepipe Steels: *Seokmin Hong*[1]; Sang Yong Shin[1]; Jin-ho Bae[2]; Kisoo Kim[2]; Sunghak Lee[1]; Nack J. KIM[3]; [1]POSTECH; [2]POSCO; [3]POSTECH GIFT

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Perspectives from Government and Industry

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Monday AM Room: 306
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Deb Whitis, GE Aviation; Rollie Dutton, AFRL-RX

8:30 AM Invited
Future Materials and Process Needs for Commercial Jet Transports: The 21st Century Challenge: *Alan Miller*[1]; [1]Boeing

9:00 AM Invited
Realizing Advances in Aerospace Materials: ONR Perspective: *Julie Christodoulou*[1]; [1]Office of Naval Research

9:30 AM Invited
Modeling in Aerospace Materials and Manufacturing in AFRL: *Mary Kinsella*[1]; Howard W. Sizek[1]; [1]United States Air Force, Air Force Research Laboratory

10:00 AM Break

10:20 AM Invited
Innovations in Aerospace Materials and Manufacturing Process Development: *Robert Schafrik*[1]; [1]GE Aviation

10:50 AM Invited
Global Innovations in Manufacturing Aerospace Materials: A Rolls-Royce Perspective: *Malcolm Thomas*[1]; [1]Rolls-Royce

11:20 AM Invited
The DARPA/DSO Perspective on Materials Science: *Leontios Christodoulou*[1]; [1]Defense Advanced Research Agency

Heterogeneous Nucleation and Initial Microstructure Evolution in Alloys and Colloids: Simulation I

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/ASM: Phase Transformations Committee
Program Organizers: Rainer Schmid-Fetzer, Clausthal University of Technology; Heike Emmerich, RWTH Aachen University; Frans Spaepen, Harvard University; Martin Glicksman, University of Florida; John Perepezko, University of Wisconsin, Madison

Monday AM Room: 614
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Yunzhi Wang, Ohio State University; Frans Spaepen, Harvard School of Engineering and Applied Sciences

8:30 AM Invited
Molecular Dynamics Simulation of Two-Dimensional Nucleation in the Context of Crystal Growth: Dorel Buta[1]; *Mark Asta*[1]; Jeff Hoyt[2]; [1]University of California, Davis; [2]McMaster University

8:55 AM
Molecular Dynamics Simulation of Nucleation Process: *Ramanarayan Hariharaputran*[1]; David Wu[1]; [1]Institute of High Performance Computing, Singapore

9:15 AM
Prefreezing and Heterogeneous Nucleation at the Cu/Pb Solid-Liquid Interface: A Molecular-Dynamics Simulation Study: *Jesus-Pablo Palafox-Hernandez*[1]; Mark Asta[2]; Brian Laird[1]; [1]University of Kansas; [2]University of California at Davis

9:35 AM
Computer Simulation of Solid-Liquid Interfaces in Metals: *Roberto E. Rozas*[1]; Juergen Horbach[1]; [1]German Aerospace Center

9:55 AM
Dissolutive and Reactive Wetting: *James Warren*[1]; Daniel Wheeler[1]; William Boettinger[1]; [1]NIST

10:15 AM Break

10:35 AM Invited
Entropy in Crystal Nucleation of Hard Spheres: *Eli Sloutskin*[1]; Peter Lu[1]; David Weitz[1]; [1]Harvard University

11:00 AM
Analysis of Cluster Statistics in Homogeneous and Heterogeneous Nucleation: *David Wu*[1]; Ramanarayan Hariharaputran[1]; [1]Institute of High Performance Computing

11:20 AM
Phase Behavior and Microstructure of Binary Colloidal Mixtures: *Nina Lorenz*[1]; Hans-Joachim Schöpe[1]; Holger Reiber[1]; Thomas Palberg[1]; Patrick Wette[2]; Ina Klassen[2]; Dirk Holland-Moritz[2]; Dieter Herlach[2]; Tsuneo Okubo[3]; [1]University of Mainz; [2]German Aerospace Center; [3]Institute for Colloidal Organization

11:40 AM
Wall-Induced Structures in Heterogeneous Nucleation: *Fathollah Varnik*[1]; Markus Gross[1]; Suvendu Mandal[1]; [1]ICAMS, Ruhr University Bochum

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Monday AM Room: 212
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Plenary
***William Hume-Rothery Award Winner*: How Hume-Rothery's Work Led to Computational Thermodynamics**: *Didier De Fontaine*[1]; [1]University of California

9:15 AM Invited
Deconstructing the Cluster Expansion: *Juan Sanchez*[1]; Alejandro Diaz-Ortiz[2]; [1]University of Texas at Austin; [2]Max Planck Institute for Metals Research

9:45 AM Invited
The Existence of a Multi-Phase Critical Point in Metastable fcc Ordering Phase Diagrams and Its Influence on Phase Diagram Features, Interfacial Energies and Alloy Properties: *John Cahn*[1]; [1]University of Washington

10:15 AM Break

10:45 AM Invited

What's New in Cluster Expansion?: *Gus Hart*[1]; Rodney Forcade[1]; Tobias Kerscher[2]; Richard Taylor[1]; Lance Nelson[1]; Alejandro Diaz-Ortiz[3]; [1]Brigham Young University; [2]University of Erlangen; [3]Max-Planck Institute for Metals

11:15 AM Invited
Cluster Expansions from Bond-Order Potentials: *Ralf Drautz*[1]; David Pettifor[2]; [1]Ruhr-Universität Bochum; [2]University of Oxford

11:45 AM Invited
Application of Continuous Displacement Cluster Variation Method to Phase Equilibria Calculations: *Tetsuo Mohri*[1]; [1]Hokkaido University

Hydrometallurgy - General Session: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Aqueous Processing Committee
Program Organizer: Michael Free, University of Utah

Monday AM Room: 310
February 15, 2010 Location: Washington State Convention Center

Session Chair: Michael Free, University of Utah

8:30 AM
Highly Selective Oxygen Evolution Anodes for Electrowinning of Metal: *Masatsugu Morimitsu*[1]; Kana Uno[1]; Naoyuki Oshiumi[1]; [1]Doshisha University

8:50 AM
Characteristics of Cathodic Reduction of Oxygen on Gold Electrode: *Yong-bin Yang*[1]; Tao Jiang[1]; Qian Li[1]; Yu-feng Guo[1]; [1]CSU

9:10 AM
Dissolution of Precious Metal Alloys Containing Zinc in Acid Solution: *Hideaki Sasaki*[1]; Takashi Nagai[1]; Masafumi Maeda[1]; [1]Institute of Industrial Science, The University of Tokyo

9:30 AM
Extraction of Copper from Sulfate Leach Solution Containing Minor Metallic Constituents in Mixer Settler Unit: *Vinay Kumar*[1]; Manis Kumar Jha[1]; Manoj Kumar[1]; Jinki Jeong[2]; Jae-chun Lee[2]; [1]National Metallurgical Laboratory; [2]Korea Institute of Geosciences and Mineral Resources (KIGAM)

9:50 AM
Gold and Silver Recovery by Electrocoagulation: *Jose Parga*[1]; Jesus L. Valenzuela[2]; [1]Technology Institute of Saltillo; [2]University of Sonora

10:10 AM Break

10:20 AM
Pressure Leaching of Enargite-Pyrite Concentrates: *Maria Ruiz*[1]; Maria Vera[1]; Rafael Padilla[1]; [1]University of Concepcion

10:40 AM
The Rate-Enhancing Role Provided to Oxygen by Nitrite (N[III]) in Acidic Aqueous Oxidation-Processes: *Gerard Martins*[1]; O. Solak-Gok[1]; [1]Colorado School of Mines

11:00 AM
Halide Chlorine Leaching for Malachite and Chrysocolla Mineral Copper from Western Utah Copper Concentrate Company: *Edgar Blanco*[1]; Mark Dotson[1]; [1]Western Utah Copper Company

International Symposium on High-Temperature Metallurgical Processing: Innovations in Ironmaking

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Jerome Downey, Montana Tech

Monday AM Room: 619
February 15, 2010 Location: Washington State Convention Center

Session Chair: Jaroslaw Drelich, Michigan Technological University

8:30 AM Introductory Comments

8:35 AM Keynote
Development of a Novel Gas-Suspension Ironmaking Technology with Greatly Reduced Energy Consumption and CO_2 Emission: *Hong Yong Sohn*[1]; Moo Eob Choi[1]; [1]University of Utah

9:15 AM
Thermal Equilibrium Calculation and Application of Microwave Heated Ignition (MHI) for Iron Ore Sintering: *Yuanbo Zhang*[1]; Xiaoming Mao[1]; Zhucheng Huang[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University

9:35 AM
Coal-Based Direct Reduction of Iron Concentrate Pellets by Microwave Heating: Wang Xia[1]; *Huang Zhucheng*[1]; [1]Central South University

9:55 AM
Effects of Composite Binder (CB) on Oxidation Behavior of Iron Ore Pellets: *Tao Jiang*[1]; Youming Hu[1]; Yanfang Huang[1]; Guanghui Li[1]; Guihong Han[1]; Yuanbo Zhang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

10:15 AM
Study on Direct Reduction-Separation of Limonite by Microwave Heating: *Zhu-cheng Huang*[1]; Lili Lv[1]; [1]Central South University

10:35 AM Break

10:50 AM
Preparation of Metallized Pellets and Recovery of Tin and Zinc from Tin, Zinc-Bearing Complex Iron Concentrates: Dan Huang[1]; Yuanbo Zhang[1]; Guihong Han[1]; Guanghui Li[1]; *Tao Jiang*[1]; [1]School of Minerals Processing and Bioengineering, Central South University

11:10 AM
Researches on Magnetic Roasting-Separation of Coal-Containing Limonite Pellets by Microwave Heating: Hu Bing[1]; *Huang Zhucheng*[1]; [1]Central South University

11:30 AM
Mathematical Modeling for Side-Blow Combustion Region in Iron Bath Reactor with H2-C Mixture Reduction: *Zhang Bo*[1]; Hong Xin[1]; [1]Shanghai University

11:50 AM
Al-Fe Separation from High Aluminium Content Limonite Ores by Salt-Added Reduction Roasting Process: *Tao Jiang*[1]; Mudan Liu[1]; Na Sun[1]; Guanghui Li[1]; [1]School of Minerals Processing and Bioengineering, Central South University

12:10 PM
A Study on Beneficiation of Low Grade High-Phosphorus Iron Ore: Zhu Deqing[1]; Chun Tiejun[1]; Pan Jian[1]; Wei Xuemei[1]; [1]Central South University

Jim Evans Honorary Symposium: Flow Phenomena in Steel Continuous Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Monday AM Room: 620
February 15, 2010 Location: Washington State Convention Center

Session Chair: Brian Thomas, University of Illinois at Urbana-Champaign

8:30 AM
Jim Evans: A Reflection on his Impact: *Fiona Doyle*[1]; [1]University of California, Berkeley

8:55 AM
Liquid Metal Modelling of Continuous Steel Casting: *Gunter Gerbeth*[1]; Sven Eckert[1]; Klaus Timmel[1]; Xincheng Miao[1]; [1]Forschungszentrum Dresden-Rossendorf

9:20 AM
Experimental and Numerical Simulation of the Mold Region of a Steel Continuous Caster: *Koulis Pericleous*[1]; Zacharias Kountouriotis[1]; Georgi Djambazov[1]; Francois Domgin[2]; Pascal Gardin[2]; [1]University of Greenwich; [2]ArcelorMittal

9:45 AM
Effect of Stopper-Rod Misalignment on Asymmetric Flow and Vortex Formation in Steel Slab Casting: *Seong-Mook Cho*[1]; Go-Gi Lee[2]; Seon-Hyo Kim[1]; Rajneesh Chaudhary[3]; Oh-Duck Kwon[4]; Brian G Thomas[3]; [1]Pohang University of Science and Technology; [2]Research Institute of Industrial Science and Technology; [3]University of Illinois at Urbana-Champaign; [4]POSCO

10:10 AM Break

10:30 AM
Slag Infiltration and Initial Solidification Mechanisms during Continuous Casting: *Pavel Ramirez Lopez*[1]; Peter Lee[1]; Kenneth Mills[1]; [1]Imperial College London

10:55 AM
Control of Fluid Flow, Heat Transfer and Inclusions in Continuous Casting: CFD and Neural Network Studies: *Petri Väyrynen*[1]; Shenqiang Wang[1]; Jukka Laine[1]; Seppo Louhenkilpi[1]; [1]Helsinki University of Technology

11:20 AM
Turbulent Instabilities in a Thin Slab Mold: *Rodolfo Morales*[1]; Saul Hernandez-Garcia[1]; [1]IPN

11:45 AM
Numerical Investigation of the Flow and Steel/Slag Interface Behaviors in Slab Continuous Casting Mold with Electromagnetic Brake and Argon Gas Injection: *Miaoyong Zhu*[1]; Haiqi Yu[1]; [1]Northeastern University

Magnesium Technology 2010: Plenary Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Monday AM Room: 612
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Sean Agnew, University of Virginia; Wim Sillekens, TNO Science and Industry

8:30 AM Introductory Comments

8:35 AM
Magnesium Alloys in Aerospace Applications - Flammability Testing and Results: *Bruce Gwynne*[1]; [1]Magnesium Elektron

9:00 AM Keynote
A Possible Route to Making Magnesium Fit for Hydrogen Storage in Automotive Applications: Vladimir Skripnyuk[1]; Eugene Rabkin[1]; *Yuri Estrin*[2]; Rimma Lapovok[2]; [1]Technion; [2]Monash University

9:30 AM Keynote
Precipitation Strengthening in Magnesium Alloys Containing Rare Earth Elements: *Xiaoqin Zeng*[1]; Wenjiang Ding[1]; Yujuan Wu[1]; Liming Peng[1]; Alan Luo[2]; [1]National Engineering Research Center of Light Alloy Net Forming, Shanghai Jiao Tong University; [2]Materials and Processes Laboratory, General Motors Research and Development Center

10:00 AM Keynote
Thermodynamics and Constitution of Mg-Zn-Ce Alloys: Chen-nan Chiu[1]; Artem Kozlov[2]; Joachim Groebner[2]; *Rainer Schmid-Fetzer*[2]; [1]National Tsing Hua University; [2]Clausthal University of Technology

10:30 AM Break

10:50 AM Keynote
Modeling Temperature and Strain Rate Dependent Inelastic Deformation and Recrystallization in Mg Alloys: *Douglas Bammann*[1]; Esteban Marin[1]; Kiran Solanki[1]; [1]Mississippi State University

11:20 AM
Magnesium Alloys in Army Applications: Past, Current and Future Solutions: *Suveen Mathaudhu*[1]; Eric Nyberg[2]; [1]U.S. Army Research Laboratory; [2]Pacific Northwest National Laboratory

11:45 AM
MagForming - Development of New Magnesium Forming Technologies for the Aeronautics Industry: *Bruce Davis*[1]; Amir Fein[2]; Wolfgang Entelmann[3]; Elke Hombergsmeier[4]; [1]Magnesium Elektron North America; [2]Palbam-AMTS; [3]Airbus-Deutschland; [4]EADS Deutschland GmbH

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: Materials for Clean Coal Power and CCS Systems I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab ; K. Weil, Pacific Northwest National Lab ; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Monday AM Room: 211
February 15, 2010 Location: Washington State Convention Center

Session Chair: Xingbo Liu, West Virginia University

8:30 AM Keynote
Development and Implementation of Materials to Enable Clean Coal Technologies: *Cynthia Powell*[1]; [1]Office of Research and Development, National Energy Technology Laboratory, US Department of Energy

9:10 AM Invited
Ageing and Corrosion in CO2 Rich Flue Gases and Their Influence on the Creep and Fatigue Properties of Superheater Materials: *Axel Kranzmann*[1]; Jürgen Olbricht[1]; Daniela Hünert[1]; Diana Marcano[1]; Wencke Schulz[1]; Werner Österle[1]; Romeo Saliwan-Neumann[1]; Hellmut Klingelhöffer[1]; Gabriele Oder[1]; Ingrid Urban[1]; Birgit Skrotzki[1]; [1]Federal Institute for Materials Research and Testing

9:50 AM
Designing Amine-Based CO2 Sorbents - A Computational and Experimental Study: *John Kitchin*[1]; [1]Carnegie Mellon University

10:10 AM Break

10:40 AM Invited
Deployment of New High Temperature Alloys for Power Generation Systems: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

11:20 AM
Density Functional Theory Study of Grain Boundary Properties in Ni-Base Superalloys: *Kuiying Chen*[1]; Wei-Di Cao; [1]ATI Allvac

11:40 AM
Materials Selection for Steam Turbine Components in Advanced Ultra Supercritical Power Plants: *Jeffrey Hawk*[1]; [1]U.S. Department of Energy

Materials Processing Fundamentals: Solidification and Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizer: Prince Anyalebechi, Grand Valley State University

Monday AM Room: 601
February 15, 2010 Location: Washington State Convention Center

Session Chair: Prince Anyalebechi, Grand Valley State University

8:30 AM
Fe-Mn-Al-C Austenitic Steels Treated by Ca and Ce: *Simon Lekakh*[1]; Von Richards[1]; Angella Schulte; David Van Aken[1]; [1]MST

8:50 AM
Strong Magnetic Field Induced Phase Alignment during Solidification: *Zhi Sun*[1]; Muxing Guo[1]; Jef Vleugels[1]; Omer Van der Biest[1]; Bart Blanpain[1]; [1]Katholieke Universiteit Leuven

9:10 AM
Experimental Analysis of Thermal, Tensile and Microhardness Properties in Directional Solidified ZA, Zn-Ag and ZINAG Alloys: Alicia Ares[1]; Sergio Gueijman[2]; *Carlos Schvezov*[1]; [1]CONICET/FCEQyN-UNaM; [2]FCEQyN-UNaM

9:30 AM
Effects of Solidification Rate and Alloy Composition on the Cast Microstructure of Aluminum Alloy 5182: *Prince Anyalebechi*[1]; [1]Grand Valley State University

9:50 AM Break

10:10 AM
Elaboration and Nanoscale Characterization of a Fe-Y_2O_3 Nanocomposite Prepared by Reactive Ball-Milling and Annealing: *Mathilde Brocq*[1]; Fabrice Legendre[1]; Bertrand Radiguet[2]; Mathieu Couvrat[1]; Fabien Cuvilly[2]; Philippe Pareige[2]; Jean-Marie Lebreton[2]; [1]SRMP - CEA; [2]GPM-Université de Rouen

10:30 AM
The Effect of Boron Addition on the Wear Resistance of High Chromium White Cast Iron: *Cenk Saglam*[1]; Selim Ozavar[2]; Onuralp Yucel[1]; [1]Istanbul Technical University; [2]UMIT Casting

10:50 AM
Novel Current Activated Tip-Based Sintering (CATS) of Advanced Materials: *K. Morsi*[1]; K. Moon[1]; S. Kassegne[1]; R. Ugle[1]; M. Patel[1]; [1]San Diego State University

11:10 AM
Comparison of Microstructural Evolution of Nickel during Conventional and Spark Plasma Sintering: Matthew Luke[1]; Darryl Butt[1]; *Megan Frary*[1]; [1]Boise State University

11:30 AM
Secondary Cooling Technology for Casting of Hypo-Peritectic Steels: Jian Zhang[1]; Chen Dengfu[1]; *Long Mujun*[1]; Wang Shuigen[1]; Bi Yanyan[1]; [1]Chongqing University

11:50 AM
Investigation of a "Swirling" Phenomenon in Tungsten Carbide-Cobalt during Laser Deposition Using In-Situ Thermal Imaging: *Yuhong Xiong*[1]; William Hofmeister[2]; John Smugeresky[3]; Jonathan Nguyen[1]; Jean-Pierre Delplanque[1]; Julie Schoenung[1]; [1]University of California; [2]University of Tennessee Space Institute; [3]Sandia National Laboratories

Mechanical Performance for Current and Next-Generation Nuclear Reactors: Advances in Mechanical Testing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Dylan Morris, NIST; Greg Oberson, Nuclear Regulatory Commission; Nicholas Barbosa, National Institute of Standards & Tech; Wolfgang Hoffelner, Paul Scherrer Institute

Monday AM Room: 201
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Nicholas Barbosa, National Institute of Standards and Technology; Peter Hosemann, LANL

8:30 AM Invited
Small Specimen Test Techniques for Evaluating Properties of Irradiated Materials: *Mikhail Sokolov*[1]; [1]ornl

9:00 AM
Micro and Macro Scale Mechanical Testing and Characterization on Irradiated Structural Materials for Nuclear Application: *Peter Hosemann*[1]; Manuel Pouchon[2]; Yong Dai[2]; Stuart Maloy[1]; [1]LANL; [2]Paul Scherrer Institute

9:20 AM
Microscale Methods for Evaluating Mechanical Behavior of Ion Irradiated Metals at High Damage Levels: *Luke Brewer*[1]; Khalid Hattar[1]; Brad Boyce[1]; Joseph Michael[1]; [1]Sandia National Laboratories

9:40 AM Invited
Small Specimen and in situ Mechanical Test Methods in the US Fusion Reactor Materials Program: *Roger Stoller*[1]; G. Robert Odette[2]; Richard Kurtz[3]; Mikhail Sokolov[1]; Yutai Katoh[1]; Thak Sang Byun[1]; Anton Moeslang[4]; [1]Oak Ridge National Laboratory; [2]University of California; [3]Pacific Northwest National Laboratory; [4]FZK Karlsruhe

10:10 AM Break

10:25 AM Invited
Mechanical Testing of Core Fast Reactor Materials for the Advanced Fuel Cycle Initiative: *Stuart Maloy*[1]; Tobias Romero[1]; Mychailo Toloczko[2]; Thak-sun Byun[3]; [1]Los Alamos National Laboratory; [2]PNNL; [3]ORNL

10:55 AM
Damage Related Information Contained in Small Material Volumes of Advanced Nuclear Plants: *Wolfgang Hoffelner*[1]; Manuel Pouchon[1]; Jiachao Chen[1]; Maria Samaras[1]; [1]Paul Scherrer Institute

11:15 AM
Studying the Effect of Carbon on DU-Mo Foil Fabrication Using Small-Scale Specimen Testing: *Ramprashad Prabhakaran*[1]; Douglas Burkes[1]; Amy DeMint[2]; Jack Gooch[2]; Dennis Keiser[1]; Daniel Wachs[1]; Indrajit Charit[3]; [1]Idaho National Laboratory; [2]Y-12 National Security Complex; [3]University of Idaho

11:35 AM
Mechanical Properties of Fresh and Irradiated Monolithic U-Mo Fuels: *Ramprashad Prabhakaran*[1]; Douglas Burkes[1]; Dennis Keiser[1]; Daniel Wachs[1]; Adam Robinson[1]; Jan-Fong Jue[1]; Indrajit Charit[2]; [1]Idaho National Laboratory; [2]University of Idaho

11:55 AM
Structural Modifications and Mechanical Degradation of Ion Irradiated Glassy Polymer Carbon: *Malek Abunaemeh*[1]; Mohammad Seif[1]; Lumin Wang[2]; Ibidapo Ojo[1]; Young Yang[3]; Claudiu Muntele[1]; Abdulla Elsamadicy[4]; Daryush ILA[1]; [1]Alabama A&M University; [2]University of Michigan; [3]University of Wisconsin; [4]University of Alabama in Huntsville

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Plasticity and Strength of Nanostructured and Nanoscale Materials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Monday AM Room: 304
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Douglas Spearot, University of Arkansas; Stephen Foiles, Sandia National Laboratories

8:30 AM Invited
Molecular Dynamics Simulation of the Deformation of an Equilibrated Nanograined Metal: *Stephen Foiles*[1]; [1]Sandia National Laboratories

9:00 AM
Analysis of Dislocation Twin-Interaction in Deformed Nanocrystalline fcc Metals: *Karsten Albe*[1]; Alexander Stukowski[1]; Diana Farkas[2]; [1]TU Darmstadt; [2]VirginiaTech

9:20 AM
Dislocation Nucleation and Starvation in Metallic Nanowires: *Scott Mao*[1]; A. Cao[2]; Y Wei[2]; [1]University of Pittsburgh; [2]Institute of Mechanics

9:40 AM
Dislocation Nucleation from Grain Boundaries in Nanocrystalline Pd and Pd-Au Studied by Molecular Dynamics Simulations: *Jonathan Schaefer*[1]; Alexander Stukowski[1]; Karsten Albe[1]; [1]TU Darmstadt

10:00 AM
Orientation Dependent Plasticity in Metal Nanowires under Torsion: *Christopher Weinberger*[1]; Wei Cai[1]; [1]Stanford University

10:20 AM Break

10:40 AM Invited
Slip Transmission Mechanisms for Glide Dislocations across Dissimilar Metallic Interfaces: *Jian Wang*[1]; Richard Hoagland[1]; John Hirth[1]; Amit Misra[1]; [1]LANL

11:10 AM
Molecular Mechanics Simulation of Plastic Deformation in Nanoscale FCC-BCC Multilayered Metallic Composites: *Shuai Shao*[1]; Sergey Medyanik[1]; [1]Washington State University

11:30 AM
Shock Response of Cu-Nb Nanolayer Composites: *Timothy Germann*[1]; Shengnian Luo[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

11:50 AM
Yield Strength in Nanocrystalline Cu during High Strain Rate Deformation: *Nhon Vo*[1]; Robert Averback[1]; Pascal Bellon[1]; Alfredo Caro[2]; [1]University of Illinois, Urbana-Champaign; [2]Lawrence Livermore National Laboratory

12:10 PM
A Quantized Crystal Plasticity Model for Nanocrystalline Metals: Dislocation Source Strengths and Internal Stress: Lin Li[1]; Myoung-Gyu Lee[2]; *Peter Anderson*[1]; Steven Van Petegem[3]; Helena Van Swygenhoven[3]; [1]The Ohio State University; [2]Korea Institute of Materials Science; [3]Paul Scherrer Institute

Neutron and X-Ray Studies of Advanced Materials III: Strain and Dislocation Gradients from Microdiffraction I

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Monday AM Room: 303
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Rozaliya Barabash, ORNL; Hongbin Bei, Oak Ridge National Laboratory

8:30 AM Keynote
Imaging Methods for Mapping Orientations, Plastic Strain and Stresses in Grains: *Henning Poulsen*[1]; [1]Risoe DTU

9:00 AM Invited
Using High Energy X-Ray Experiments and Crystal-Based Simulations to Understand Micromechanical Deformation Behavior of Metallic Polycrystals: *Matthew Miller*[1]; Paul Dawson[1]; Christos Efstathiou[1]; Donald Boyce[1]; Ulrich Lienert[2]; [1]Cornell University; [2]Advanced Photon Source

9:20 AM Invited
Three Dimensional X-Ray Scanning Micro/Nano-Diffraction Probe for High-Pressure Research: *Wenjun Liu*[1]; Ho-kwang Mao[2]; Wenge Yang[2]; Yang Ding[2]; Lin Wang[2]; Przemyslaw Dera[2]; Gene Ice[3]; Paul Zschack[1]; [1]Argonne National Laboratory; [2]Carnegie Institution of Washington; [3]Oak Ridge National Laboratory

9:40 AM
A Facility for μXRD, μXRF and μXAS at the Canadian Light Source: *Renfei Feng*[1]; Morgan Bradford[1]; Stewart McIntyre[2]; [1]Canadian Light Source; [2]University of Western Ontario

9:55 AM Invited
Size Effects in Plasticity Investigated by In Situ Laue Diffraction: *Steven Van Petegem*[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut

10:15 AM Invited
Residual Stress Effects on the Phase-Specific Strains in Directionally-Solidified Nial-Mo Composite under Thermal and Mechanical Loading: *Hongbin Bei*[1]; R Barabash[2]; Easo George[2]; Gene Ice[1]; [1]Oak Ridge National Laboratory; [2]Oak Ridge National Laboratory and University and Tennessee

10:35 AM Break

10:45 AM
X-Ray Micro Beam Probing Pre-Strain Effects on Dislocation and Strain Gradients in the NiAl-Mo Composite: *Rozaliya Barabash*[1]; H Bei[2]; Y. Gao[1]; G. Ice[2]; E. George[1]; [1]Oak Ridge National Laboratory and the University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

11:00 AM Invited
Synchrotron X-Ray Microdiffraction for the Study of Micromechanics of Materials at Nanoscale: *Nobumichi Tamura*[1]; Martin Kunz[1]; Kai Chen[1]; [1]Lawrence Berkeley National Lab.

11:20 AM Invited
Spatially Resolved Elastic Strains within Bulk Dislocation Cell Structures: What Next?: *Lyle Levine*[1]; Bennett Larson[2]; Peter Geantil[3]; Jon Tischler[2]; Michael Kassner[3]; Wenjun Liu[4]; [1]National Institute of Standards and Technology; [2]Oak Ridge National Laboratory; [3]University of Southern California; [4]Advanced Photon Source

11:40 AM Invited
In-situ X-Ray Diffraction of Brittle and Ductile Nanostructured Materials: *Ralph Spolenak*[1]; [1]ETH Zurich

12:00 PM Invited
Real, Orientation and Reciprocal Space Coverage of 3DXRD at the APS 1-ID Beamline: *Ulrich Lienert*[1]; [1]ANL

12:20 PM
Inverse Analysis of Engineering Neutron Diffraction Data: Seung-Yub Lee[1]; Youngshin Kim[1]; Hyuntae Na[1]; *Ersan Ustundag*[1]; [1]Iowa State University

12:35 PM
Compositional Effects on the Superelasticity of Gum Metal: Russell Talling[1]; *David Dye*[1]; [1]Imperial College

12:50 PM
First ex-situ/in-situ Measurements of Strains/Stresses at Engineering Diffractometer VULCAN at SNS: *Ke An*[1]; H.D. Skorpenske[1]; A.D. Stoica[1]; Dong Ma[1]; Ercan Cakmak[2]; Hahn Choo[2]; X.L. Wang[1]; [1]Oak Ridge National Laboratory; [2]The University of Tennessee

Neutron and X-Ray Studies of Advanced Materials III: Structure from Diffraction

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Monday AM Room: 613
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Emil Zolotoyabko, Technion

8:30 AM Invited
Atomic Structure and Nano-Structure of Natural Bio-Composites: *Emil Zolotoyabko*[1]; [1]Technion

8:50 AM Invited
In-Situ Study of Time and Thickness Dependence of Crystallization of Amorphous TiO_2 Thin Films and Powders: *Radomir Kuzel*[1]; Lea Nichtova[1]; Zdenek Matej[1]; Jindrich Musil[2]; [1]Charles University in Prague, Faculty of Mathematics and Physics; [2]University of West Bohemia in Pilsen

9:10 AM
Lattice Distortion Formations by Low Energy Ar+ Bombardment of Epitaxial Thin Films Grown on Silicone (100): *Paul Rozenak*[1]; [1]Hydrogen Energy Batteries LTD

9:25 AM Invited
Voyaging around Nacre with the X-Ray Shuttle: From Bio-Mineralisation to Prosthetics via Mollusc Phylogeny: *Daniel Chateigner*[1]; M. Morales[1]; L. Lutterotti[1]; [1]Ecole Nationale Supérieure d'Ingénieurs de Caen (ENSICAEN)

9:45 AM Invited
Materials Characterization Using the Hard X-Ray Nanoprobe Beamline at Argonne National Laboratory: *Jörg Maser*[1]; Martin V. Holt[1]; Robert P. Winarski[1]; Volker Rose[1]; Peter Fuesz[1]; Gregory Brian Stephenson[1]; [1]Argonne National Laboratory

10:05 AM Invited
In-Situ Characterization of Creep-Damage by X-Ray Microtomography: Krzysztof Dzieciol[1]; Federico Sket[1]; Thomas Buslaps[2]; Marco di Michiel[2]; *Andras Borbely*[1]; Anke Pyzalla[3]; [1]Max-Planck Institut für Eisenforschung; [2]European Synchrotron Radiation Facility; [3]Helmholtz Zemtrum für Materialien und Energie

10:25 AM Break

10:35 AM
In Situ X-Ray Synchrotron Observations of Steel Phase Transformation under Non-Equilibrium Conditions: *Wanchuck Woo*[1]; Eliot Specht[2]; Zhili Feng[2]; Wei Zhang[2]; Xunli Wang[2]; [1]Korea Atomic Research Institute; [2]Oak Ridge National Laboratory

10:50 AM
Characterization of Hydride Phase Stability in Zirconium Alloys as a Function of Yield Stress with Synchrotron X-Ray Diffraction: *Eric Tulk*[1]; Matthew Kerr[2]; Mark Daymond[1]; [1]Queen's University; [2]US Nuclear Regulatory Commission

11:05 AM
Growth of Anti-Phase Domains in Ternary Feco Alloys under Various Annealing Treatments and Cooling Processes: *Ralph Gilles*[1]; Michael Hofmann[1]; Yan Gao[2]; Frank Johnson[2]; Debashis Mukherji[3]; Christoph Hugenschmidt[1]; Philip Pikart[1]; [1]TU Muenchen; [2]GE Global Research; [3]TU Braunschweig

11:20 AM
Effects of Shot Peening Aluminum Alloy A356.2 Cast Plate with Steel and Glass Shot on the through-Thickness Residual Stresses: A. Ritter[1]; B. Kuhr[1]; C. Hubbard[2]; T. R. Watkins[2]; *Carl Boehlert*[1]; X. Niu[3]; [1]Michigan State University; [2]Oak Ridge National Laboratory; [3]Magna Cosma International

11:35 AM
Residual Stress Analysis of Resistance Spot Welding, FE Modeling and Neutron Diffraction Measurement: *Liang Wang*[1]; Sergio Felicelli[2]; Camden Hubbard[3]; Douglas Bammann[1]; [1]Center For Advanced Vehicular Systems, Mississippi State University; [2]Mechanical Engineering Department, Mississippi State University; [3]Oak Ridge National Laboratory

11:50 AM
Deformation Behavior of Nanocrystalline Co Measured by High-Energy X-Ray Diffraction: *Ryan Ott*[1]; Morris Wang[2]; Matthew Besser[1]; Jon Almer[3]; Matthew Kramer[1]; [1]Ames Laboratory (USDOE); [2]Lawrence Livermore National Laboratory; [3]Argonne National Laboratory

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Electromigration

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Monday AM Room: 204
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Sung Kang, IBM Corp.; K. N. Subramanian, Michigan State University

8:30 AM Introductory Comments by K. L. Lin

8:35 AM Invited
Thermomigration and Creep in Pb-Free Flip Chip Solder Joints: *King-Ning Tu*[1]; [1]University of California, Los Angeles

9:00 AM
Effect of Initial Microstructure on Electromigration Behavior of Eutectic Sn-Pb Solder Joints: *Andre Lee*[1]; Yi-Chih Lee[1]; K.N. Subramanian[1]; [1]Michigan State University

9:15 AM
Effects of Reinforcements Addition on Microstructural Evolution in Eutectic SnBi Solder Joints under Current Stressing: *Ruihong Zhang*[1]; Mengting Han[1]; Fu Guo[1]; Guangchen Xu[1]; [1]Beijing University of Technology

9:30 AM
Electromigration Study of Flip Chip Packages under Extra-High Current Density Tests with Temperature Control: *Jia-Hong Ke*[1]; Yu-Wei Lin[1]; C. R. Kao[1]; [1]Department of Materials Science and Engineering, National Taiwan University

9:45 AM
Interaction between Electromigration and Diffusionally Accommodated Interfacial Sliding at Hetero-Interfaces: *Praveen Kumar*[1]; Indranath Dutta[1]; [1]WSU

10:00 AM Break

10:15 AM
Microstructures and Crystal Orientation of ß-Sn for Sn-Ag and Sn-Cu Solder Joints under Electromigration: *Sun-Kyoung Seo*[1]; Sung K. Kang[2]; Moon Gi Cho[1]; Hyuck Mo Lee[1]; [1]KAIST; [2]IBM T.J. Watson Research Center

10:30 AM
Direct Measurement of Back Stress in Tin Strips under Electromigration by Synchrotron Radiation X-Ray: *Yang Yi Lin*[1]; Albert T. Wu[1]; [1]National Central University

10:45 AM
Discussion on the Mechanism of Electromigration from the Perspective of Electromagnetism: *Peng Zhou*[1]; William Johnson[2]; [1]UC Irvine; [2]MSE, University of Virginia

11:00 AM
Critical Conditions of Electromigration-Induced Cu Dissolution in Pb-Free Solder Joints: *Jung Kyu Han*[1]; King-Ning Tu[1]; [1]UCLA

11:15 AM
TEM Characterization of the Porous Structure Induced by High Current Density in the Flip-Chip Solder Joint: *Ming-Yen Tsai*[1]; Yen-Liang Lin[1]; C. Robert Kao[1]; [1]National Taiwan University

11:30 AM
The Enhanced Growth of Sn Whisker on High Melting Temperature Sn-Pb Solder Joint by Current Stressing: *Ying-Ta Chiu*[1]; Kwang-Lung Lin[1]; Yi-Shao Lai[2]; [1]Department of Materials Science and Engineering, NCKU; [2]Central Labs, Advanced Semiconductor Engineering, Inc., Kaohsiung

11:45 AM
Study of Joule Heating Effects in Lead-Free Solder Joints under Various Current Densities Using Infrared Thermography: *Guangchen Xu*[1]; Fu Guo[1]; Andre Lee[2]; K.N. Subramanian[2]; Neil Wright[2]; [1]Beijing University of Technology; [2]Michigan State University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials IX: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-ming Chen, National Chung Hsing University; Srinivas Chada, Medtronic; Sinn-wen Chen, National Tsing-Hua University; Hans Flandorfer, University of Vienna; A. Lindsay Greer, University of Cambridge; Jae-ho Lee, Hongik University; Kejun Zeng, Texas Instruments; Yee-wen Yen, National Taiwan University of Science and Technology; Wojciech Gierlotka, AGH University of Science and Technology; Chao-hong Wang, National Chung Cheng University

Monday AM Room: 203
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Chih-ming Chen, National Chung Hsing University; Yee-wen Yen, National Taiwan University of Science and Technology

8:30 AM Invited
Evaluation of Current Mode and Additives in Copper Via Filling: Jin-Yong Sim[1]; In-Kyu Lee[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Aerospace University

8:55 AM
Carbon Nano Tube and Nickel Alloys Composite Electroplating: Ho-Kyung Um[1]; Heung-Yeol Lee[2]; Tai-Hong Yim[2]; *Jae-Ho Lee*[1]; [1]Hong Ik University; [2]Korea Institute of Industrial Technology

9:15 AM
A Study on the Microstructure Evolution of Cu/Sn/Cu Bonding Stacks during Bonding and Their Mechanical Properties for the Applications of 3D Packaging: *Byunghoon Lee*[1]; Sang-Su Ha[1]; Jeong-Won Yoon[1]; Hoo-Jeong Lee[1]; Seung-Boo Jung[1]; [1]Sungkyunkwan University

9:35 AM
Effect of Wet Chemical Pretreatment Conditions on Cu-Cu Bonding Characteristics for 3-D IC Stacks: *Jae-Won Kim*[1]; Eun-Jung Jang[1]; Myeong-Hyeok Jeong[1]; Seungmin Hyun[2]; Hak-Joo Lee[2]; Young-Bae Park[1]; [1]Andong National University; [2]Korea Institute of Machinery and Materials

9:55 AM Break

10:15 AM Invited
Tin Whisker Growth in Vacuum Thermal Cycling: *Katsuaki Suganuma*[1]; Alongheng Baated[1]; Seong-Jun Kim[1]; Keun-Soo Kim[1]; Norio Nemoto[2]; Tsuyoshi Nakagawa[3]; [1]Osaka University; [2]JAXA; [3]Nippon Avionics Co., Ltd.

10:40 AM
Growth and Orientation of Tin Whiskers on an Electrodeposited Tin Thin Film under Three-Point Bending: *Chih-ming Chen*[1]; Yu-jen Chen[1]; [1]National Chung Hsing University

11:00 AM
Synthesis of Nanostructured Carbon Materials Using Commercial Paper Phenolic Board: *Yi-Wei Lin*[1]; Chih-ming Chen[1]; [1]National Chung Hsing University

Processing Materials for Properties: Advanced Materials Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Monday AM Room: 617
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Akio Fuwa, Waseda University; Tonya Wolfe, University of Alberta

8:30 AM Keynote
Materials Science for the Next Generation: *David Olson*[1]; Brajendra Mishra[1]; [1]Colorado School of Mines

9:00 AM
Increase Production and Quality Improvement of Electrolytic Copper at Tank House in Naoshima Smelter and Refinery: *Hideki Zen*[1]; Tatsuo Ishida[1]; Makoto Takagi[1]; [1]Mitsubishi Materials Corporation

9:20 AM
Damage of Surface by Impact of Nitrogen Jet under Pressure and Low Temperature: *Hicham Laribou*[1]; Claude Fressengeas[1]; Denis Entemeyer[1]; Véronique Jeanclaude[1]; Abdel Tazibt[2]; [1]Laboratoire de Physique et Mécanique des Matériaux; [2]CRITT TJF&U

9:40 AM
Non-Linear Analytical Practices for Interfacial Phenomena and Nano-Size Microstructural Properties and Behavior: *John Roubidoux*[1]; J.E. Jackson[2]; B. Mishra[1]; D.L Olson[1]; [1]Colorado School of Mines; [2]Generation 2 Materials Technology LLC

10:00 AM
Modernization Project of Onahama Smelter with New "O-SR Process": Osamu Iida[1]; *Teruyuki Matsutani*[1]; Kenji Kiyotani[2]; [1]Mitsubishi Materials Corporation; [2]Onahama Smelting and Refining Company

10:20 AM
Evaluation of Stress Corrosion Cracking Susceptibility of Drill Pipe Steels in CO2 Saturated Aqueous Solutions: *Arshad Bajvani Gavanluei*[1]; Bhola Shaily[1]; B Mishra[1]; D. Olson[1]; [1]Colorado School of Mines

10:40 AM Break

10:50 AM
Promotion of Recyclable Material Treatment at Mitsubishi Prpcess in Naoshima Smelter and Refinery: Tetsuro Sakai[1]; Norio Usami[1]; *Masayuki Kawasaki*[1]; [1]Mitsubishi Materials Corporation

11:10 AM
A Novel Process on Production of Thin Wall Austempered Ductile Iron Heat-Treated in the Mold: *Ali-Reza Kaini-Rashid*[1]; Abolfazl Babakhani[1]; Mohammad Reza. Ziaei[1]; [1]Ferdowsi University of Mashhad

11:30 AM
Remarkable Oxidation Resistance of Nanocrystalline Fe-Cr Alloys: *Raman Singh*[1]; Prabhakar Singh[2]; [1]Monash University; [2]University of Connecticut

11:50 AM
Discrete Element Simulation: An Efficient Tool for Optimizing Powder Processes from the Sintering Stage to the Final Properties: *Christophe Martin*[1]; Xiaoxing Liu[1]; Jean-Jacques Kadjo[1]; Didier Bouvard[1]; [1]Grenoble-INP

12:10 PM
Cold Gas Dynamic Spraying of Titanium: A Reliable and Environmentally Friendly Coating Deposition Process: *Wilson Wong*[1]; Stephen Yue[1]; Eric Irissou[2]; Jean-Gabriel Legoux[2]; [1]McGill University; [2]National Research Council Canada

Refractory Metals 2010: Processing and Properties I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Brian Cockeram, Bechtel-Bettis; Gary Rozak, H.C. Stark

Monday AM Room: 2A
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Brian Cockeram, Bechtel Marine Propulsion Corporation; Gary Rozak, H. C. Starck, Inc.

8:30 AM
Surface Processing of an Iridium Alloy: *Evan Ohriner*[1]; George Ulrich[1]; Roger Miller[1]; Wei Zhang[1]; [1]Oak Ridge National Laboratory

8:55 AM
Effect of Tantalum on the Tensile Impact Ductility and Fracture Behavior of Iridium: *E. P. George*[1]; C. Carmichael[1]; A. Gali[1]; E. Ohriner[1]; [1]Oak Ridge National Laboratory

9:20 AM
Effects of Thermo-Mechanical Processing on Texture and Microstructure of Pure Molybdenum Plates for Optimum Sputtering Performance: *Gary Rozak*[1]; Peter Jepson[1]; [1]HC Starck Inc

9:45 AM
The Role of Stress State and Wrought Processing on the Fracture Toughness and Toughening Mechanisms of Wrought Unalloyed Molybdenum, TZM Molybdenum, ODS Molybdenum, and Molybdenum Alloys: *Brian Cockeram*[1]; [1]Bechtel-Bettis

10:10 AM Break

10:25 AM
Plastic Strain Concentration at Grain Boundaries in a 50Mo-50Re Alloy: *Tongguang Zhai*[1]; Jianhui Xu[2]; [1]University of Kentucky; [2]Smith International

10:50 AM
Processing and Properties of Tungsten-25%Rhenium with and without Hafnium Carbide: *Todd Leonhardt*[1]; James Ciulik[2]; [1]Rhenium Alloys, Inc.; [2]The University of Texas at Austin

11:15 AM
Fracture Behavior of Polycrystalline Tungsten: *Bernd Gludovatz*[1]; Stefan Wurster[1]; Andreas Hoffmann[2]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science / Austrian Academy of Sciences; [2]Plansee Metall GmbH

11:40 AM
Study the Activated Sintering of Tungsten as a Function of Heating Mode: *Avijit Mondal*[1]; Kranti V. Reddy[1]; Anish Upadhyaya[1]; Dinesh Agrawal[1]; [1]Indian Institute of Technology, Kanpur

Solar Cell Silicon: Production and Recyling: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Anne Kvithyld, SINTEF; Gregory Hildeman, Solar Power Industries

Monday AM Room: 2B
February 15, 2010 Location: Washington State Convention Center

Session Chair: Anne Kvithyld, SINTEF

8:30 AM
Electrochemical Production of Affordable Solar Grade Silicon: *Antony Cox*[1]; Derek Fray[1]; [1]University of Cambridge

8:55 AM
Electrorefining of Metallurgical Grade Silicon in Molten Salts: *Geir Martin Haarberg*[1]; Shuihua Tang[1]; Karen Osen[2]; Henrik Gudbrandsen[2]; Sverre Rolseth[2]; Ole Edvard Kongstein[2]; Shulan Wang[3]; [1]Norwegian University of Science and Technology; [2]SINTEF; [3]Northeastern University

9:20 AM
Preparation of High Purity Silicon by Electrolysis-Vacuum Distillation: *Jidong Li*[1]; Mingjie Zhang[2]; Yiyong Wang[1]; [1]School of Materials Science and Engineering; University of Science and Technology Liaoning; [2]School of Metallurgy, Northeastern University

9:45 AM Break

10:20 AM
Hierarchy of Slurry Recycling Options: *Walter Radeker*[1]; [1]CRS Reprocessing Services LLC

10:45 AM
Wetting Properties of Molten Silicon with Graphite Materials: *Arjan Ciftja*[1]; Merete Tangstad[2]; Thorvald Engh[2]; [1]SINTEF; [2]Norwegian University of Science and Technology

11:10 AM
Mechanical Properties of Fine Grained Polysilicon Grown in Fluidized Bed Reactors: *Mohamad Zbib*[1]; David Bahr[1]; Wayne Osborne[2]; Grant Norton[1]; [1]Washington State University; [2]REC Solar Grade Silicon LLC

11:35 AM Panel Discussion
Recycling Needs led by Gregory Hildeman, Solar Power Industries

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Atomic-Level Structure and Composition

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Monday AM Room: 602
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Michael Demkowicz, Massachusetts Institute of Technology; Emmanuelle Marquis, University of Oxford

8:30 AM Invited
Atomic-Scale STEM-EELS Mapping of Structure, Chemistry, Bonds and Electronic Properties across Functional Interfaces: *Christian Colliex*[1]; [1]CNRS

9:00 AM
Atomic Scale Structure and Composition across G/G' Interfaces in Ni-Base Superalloys: *Srinivasan Rajagopalan*[1]; J.Y. Hwang[2]; Soumya Nag[2]; A. Singh[2]; G.B. Viswanathan[3]; J. Tiley[4]; Rajarshi Banerjee[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas; [3]UES Inc.; [4]Air Force Research Laboratory

9:20 AM
Chemomechanical Analysis of Metal Nanoparticle Interfaces under Extreme Environments via Molecular Dynamics Simulations: *Hansohl Cho*[1]; Krystyn Van Vliet[1]; [1]Massachusetts Institute of Technology

9:40 AM
Measurement of the Interface Width by Atom Probe Tomography: *Michael Miller*[1]; Ai Serizawa[1]; [1]ORNL

10:00 AM Break

10:20 AM Invited
Structure and Chemistry of Nanometer-Thick Intergranular Films at Au-Al2O3 Interfaces: *Wayne Kaplan*[1]; Mor Baram[1]; [1]Technion - Israel Institute of Technology

10:50 AM
The Structure of Uranium Dioxide Grain Boundaries and its Influence on Fission Gas Segregation: *Pankaj Nerikar*[1]; Chris Stanek[1]; Blas Uberuaga[1]; Susan Sinnott[2]; [1]Los Alamos National Laboratory; [2]Department of Materials Science and Engineering, University of Florida

11:10 AM
Spatially Resolved Compositional Measurements across Interfaces, Phase Separations, and Non-Conservative Faults in Complex Oxides: Srinivasan Rajagopalan[1]; G.B. Viswanathan[2]; David McComb[3]; Jan Ringnalda[4]; *Hamish Fraser*[1]; [1]The Ohio State University; [2]UES Inc.; [3]Imperial College London; [4]FEI Company

11:30 AM
Nanoscale Characterization of a Nanostructured Fe-Y_2O_3 Composite Material: *Mathilde Brocq*[1]; Bertrand Radiguet[2]; Fabrice Legendre[1]; Fabien Cuvilly[2]; Philippe Pareige[2]; Jean-Marie Lebreton[2]; [1]SRMP - CEA; [2]GPM-Université de Rouen

11:50 AM
Chemical Interface Width and Triple Line Transport in Metallic Multilayers: *Guido Schmitz*[1]; Patrick Stender[1]; Constantin Ene[2]; Henning Galinski[1]; [1]Westf. Wilhelms-Universität; [2]Universität Göttingen

Surface Engineering for Amorphous-, Nanocrystalline-, and Bio-Materials: 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; Arvind Agarwal, Florida International Univesity; Sudipta Seal, University of Central Florida; Narendra Dahotre, University of Tennessee

Monday AM Room: 604
February 15, 2010 Location: Washington State Convention Center

Session Chair: Narendra Dahotre, University of Tennessee

8:30 AM Introductory Comments

8:35 AM Invited
Development of Multi-Functional Nanostructured and Composite Coatings for Tribological Applications: *Ali Erdemir*[1]; [1]Argonne National Laboratory

9:00 AM Invited
The Tribological Behaviour of Graded Nanocrystalline Nickel Coatings: *Sundararajan G*[1]; Nitin Wasekar[1]; [1]ARCI

9:25 AM Invited
Evolution of Microstructure in Laser Clad Coatings Studied by Orientation Imaging Microscopy: *Václav Ocelík*[1]; Ivan Furár[1]; Jeff De Hosson[1]; [1]University Groningen/M2i

9:50 AM
Residual Stresses in PS 304 Tribological Coating: *Pnina Ari-Gur*[1]; Simon Narasimhan[1]; Mark Croft[2]; Zhong Zhong[3]; Thomas Gnäupel-Herold[4]; Malcolm K. Stanford[5]; Christopher DellaCorte[5]; Phillip B. Abel[5]; [1]Western Michigan University; [2]Rutgers University; [3]Brookhaven National Laboratory; [4]National Institute of Standards and Technology; [5]National Aeronautics and Space Administration

10:10 AM
Microstructural Assessment Associated with Micropitting in Rolling Contact Fatigue: *Fang Cao*[1]; Peter Jacobs[1]; Martin Webster[1]; [1]ExxonMobil Research and Engineering

10:30 AM Break

10:45 AM
Engineering Non-Stick, Pro-Stick/Adhesion and Anti-Corrosion Surfaces with Self-Assembled Monolayer of Phosphonate (SAMP) Technology: *Eric Bruner*[1]; [1]Aculon, Inc.

11:05 AM
Anisotropic Nanaofriction Behavior of Aligned Carbon Nanotube Carpet: *Jiangnan Zhang*[1]; Yuekai Sun[1]; Lijie Ci[1]; P.M. Ajayan[1]; Jun Lou[1]; [1]Rice University

11:25 AM
Dry Sliding Wear of Nanocrystalline Al - 12.6 at. % Si: *I. Baker*[1]; M. Gwaze[1]; Y. Sun[1]; A.T. Dohner[1]; A. Grosse[1]; T. Tran[1]; F.E. Kennedy[1]; P.R. Munroe[2]; [1]Dartmouth College; [2]University of New South Wales

11:45 AM
Wear Resistance and Adherence of TiO2 Sol-Gel Thin Films: Miguel Alterach[1]; Pablo Favilla[1]; *Mario Rosenberger*[1]; Alicia Ares[1]; Carlos Schvezov[1]; [1]Universidad Nacional de Misiones - CONICET

12:05 PM
Fretting Corrosion Behaviour of Untreated and Surface Engineered Ti-6Al-4V Alloy: *Satendra Kumar*[1]; Sankara Narayanan TSN[1]; Ganesh Sundara Raman S[2]; Seshadri S.K.[2]; [1]National Metallurgical Laboratory, Madras Centre; [2]Indian Institute of Technology Madras

The Aluminium Industry – Perspectives on our Future: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Geoff Bearne, Rio Tinto Alcan

Monday AM — Room: Ballroom 6A
February 15, 2010 — Location: Washington State Convention Center

Session Chair: Geoff Bearne, Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM Plenary
The Challenges that Aluminium Faces as Material of Choice: Frank Field[1]; [1]Massachusetts Institute of Technology; [2]CRU International Ltd

9:05 AM Plenary
The Strategic Impact of Changing Energy Markets on the Aluminum Industry: Robin Adams[1]; *Kelly Driscoll*[2]; [1]CRU Strategies; [2]CRU International Ltd

9:35 AM Plenary
The Impact of Economic Highs and Lows on Aluminium Smelter Construction: *Cesar Inostroza*[1]; [1]SNC-Lavalin Inc.

10:05 AM Break

10:25 AM Plenary
Challenges and Opportunities Relative to Increased Usage of Aluminum within the Automotive Industry: *Mark W. Verbrugge*[1]; Paul E. Krajewski[1]; Anil K. Sachdev[1]; James G. Schroth[1]; David R. Sigler[1]; Blair E. Carlson[1]; [1]General Motor Research and Development Center

10:55 AM Plenary
Aluminum's Sustainability Strategy: *Steve Williamson*[1]; [1]ARCO Aluminum

11:25 AM Plenary
Aluminum Recycling in a Carbon-Constrained World: Observations and Opportunities: *Subodh Das*[1]; [1]Phinix LLC

11:55 AM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Computational Materials Science I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, Univ of Groningen

Monday AM — Room: 603
February 15, 2010 — Location: Washington State Convention Center

Session Chairs: Adrian Sutton, Imperial College London; David Pope, University of Pennsylvania

8:30 AM Introductory Comments

8:35 AM Charles McMahon

8:50 AM David Pettifor

9:00 AM Keynote
Atomistic Modeling of Defects through the Ages: *Vasek Vitek*[1]; [1]University of Pennsylvania

9:25 AM Invited
Challenges in Modelling TCP Phase Formation in Ni-Based Superalloys: *David Pettifor*[1]; Bernhard Seiser[1]; Thomas Hammerschmidt[2]; Aleksey Kolmogorov[1]; Ralf Drautz[2]; [1]University of Oxford; [2]ICAMS

9:50 AM Invited
Dislocation-Based Simulation of the Migration of Low-Angle Grain Boundaries: *David Srolovitz*[1]; Adele Lim[2]; Mikko Haataja[2]; [1]Yeshiva University; [2]Princeton University

10:15 AM Break

10:40 AM Invited
Discrete Dislocation and Multi-Scale Analyses of Fatigue Crack Growth: *Alan Needleman*[1]; [1]University of North Texas

11:05 AM Invited
Displacive Processes in Systems with BCC Parent Lattice: *Vaclav Paidar*[1]; [1]Institute of Physics AS CR vvi

11:30 AM Invited
Coupling of the Continuum Theory of Dislocations and Structural Phase Transformations at the Mesoscale: *Roman Groger*[1]; Turab Lookman[2]; [1]Academy of Sciences of the Czech Republic; [2]Los Alamos National Laboratory

Three-Dimensional Materials Science VI: Three-Dimensional Crystallography and Grain Boundary Analysis

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Monday AM Room: 401
February 15, 2010 Location: Washington State Convention Center

Session Chairs: David Rowenhorst, U S Naval Research Laboratory; Stuart Wright, EDAX-TSL

8:30 AM Invited
Deriving the Grain Boundary Character Distribution and Relative Grain Boundary Energies from Three Dimensional EBSD Data: *Gregory Rohrer*[1]; [1]Carnegie Mellon University

9:00 AM
Deriving the Relative Grain Boundary Areas and Energies in Nickel from Three Dimensional EBSD Data: *Jia Li*[1]; Gregory Rohrer[1]; Shen Dillion[2]; [1]Carnegie Mellon University; [2] University of Illinois at Urbana-Champaign

9:20 AM
Calculation of Grain Boundary Angles at Triple Junctions in 3D Digitized Microstructures: *Michael Chandross*[1]; Elizabeth Holm[1]; [1]Sandia National Laboratories

9:40 AM Break

10:10 AM Invited
Three-Dimensional Grain Boundary Networks: Modeling and Connections to Experimental Data: *Megan Frary*[1]; [1]Boise State University

10:40 AM
Three Dimensional Analysis of Grain Curvature and Crystallography: *David Rowenhorst*[1]; Alexis Lewis[1]; George Spanos[1]; Gregory Rohrer[2]; Anthony Rollett[2]; [1]US Naval Research Laboratory; [2]Carnegie Mellon University

11:00 AM
Synthesizing Annealing Twins in Three-Dimensional Voxel-Based Microstructures: *Lisa Chan*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

11:20 AM
Crystallographic Orientation Determined from the Pattern of Solidified Structure: *Hisao Esaka*[1]; Kei Shinozuka[1]; [1]National Defense Academy

11:40 AM
3D Monte-Carlo Simulation of Microstructural Evolution upon Heating of Deformed LCB Titanium Alloy: *Sergii Shevchenko*[1]; Orest Ivasishin[1]; Elena Pereloma[2]; Azdiar Gazder[2]; [1]Institute for Metal Physics; [2]University of Wollongong

Ultrafine Grained Materials – Sixth International Symposium: Processing-Microstructure-Properties I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Monday AM Room: 606
February 15, 2010 Location: Washington State Convention Center

Session Chairs: S. Lee Semiatin, U.S. Air Force Research Laboratory; En (Evan) Ma, Johns Hopkins University; Xavier Sauvage, University of Rouen, CNRS; Henry Rack, Clemson University

8:30 AM Introductory Comments

8:35 AM Invited
Superior Properties of Ultrafine-Grained Metals Produced by SPD Processing: *Ruslan Valiev*[1]; [1]Ufa State Aviation Technical University

8:55 AM
Nanostructures and Magnetic Properties of FePd Alloys Processed by Severe Plastic Deformation: *Xavier Sauvage*[1]; Abdelahad Chbihi[1]; Didier Blavette[1]; Dmitry Gunderov[2]; A.G. Popov[3]; [1]University of Rouen, CNRS; [2]Ufa State Aviation Technical University; [3]Institute of Metal Physics

9:10 AM Invited
High Tensile Strength and Ductility in Nanocrystalline and Ultrafine-Grained HCP Cobalt: *Xiaolei Wu*[1]; Yuntian Zhu[2]; [1]Institute of Mechanics, Chinese Academy of Sciences; [2]North Carolina State University

9:30 AM
Effect of Strain Path and Texture on Grain Refinement in Severe Plastic Deformed Copper: *Chengfan Gu*[1]; Laszlo Tóth[2]; Rimma Lapovok[1]; Chris Davies[1]; [1]Monash University; [2]Université Paul Verlaine de Metz

9:45 AM
Superior Grain Refinement via Intelligent ECAE Processing of Materials: *Suveen Mathaudhu*[1]; Laszlo Kecskes[1]; Jae-Taek Im[2]; David Foley[2]; Majid Al-Maharbi[3]; Ibrahim Karaman[2]; K. Ted Hartwig[2]; [1]U.S. Army Research Laboratory; [2]Texas A&M University; [3]Sultan Qaboos University

10:00 AM Invited
High Pressure Torsion of Pure Metals for Universal Plot: Kaveh Edalati[1]; *Zenji Horita*[1]; [1]Kyushu University

10:20 AM Break

10:35 AM Invited
Nanostructures, Grain Refinement and Mechanical Properties in Al–Mg Alloys Subjected to High Pressure Torsion: *Hans Roven*[1]; Manping Liu[2]; Maxim Murashkin[3]; Ruslan Valiev[3]; Tamas Ungár[4]; Levente Balogh[4]; [1]Norwegian University of Science and Technology (NTNU); [2]Shanghai Jiao Tong University; [3]Ufa State Aviation Technical University; [4]Eötvös University

10:55 AM
Crystal Size Influences the Propensity for Deformation Twinning: *Evan Ma*[1]; Ju Li[2]; Qian Yu[3]; Zhiwei Shan[4]; Jun Sun[3]; [1]Johns Hopkins University; [2]University of Pennsylvania; [3]Xi'an Jiaotong University; [4]Hysitron Inc.

11:10 AM
Enhanced Strain Hardenability of Uniform, Submicrocrystalline Dual-Phase Steel Processed via Equal Channel Angular Pressing and Intercritical Annealing: *Young Gun Ko*[1]; C.W. Lee[2]; S. Namgung[2]; D.H. Shin[2]; [1]Yeungnam University; [2]Hanyang University

1:25 AM Invited
Superplasticity in Nanocrystalline Metallic and Ceramic Materials: *Amiya Mukherjee*[1]; [1]University of California

11:45 AM
ECAE Processing of Pure and Mg Alloy Powders: Effect of Confinement, Route, and Temperature: *Laszlo Kecskes*[1]; Kristopher Darling[1]; Micah Gallagher[2]; Suveen Mathaudhu[1]; David Foley[3]; Robert Barber[3]; Karl Hartwig[3]; [1]US Army Research Laboratory; [2]Dynamic Science, Inc.; [3]Texas A&M University

12:00 PM
Shape Memory Characterization of Aged Ti-50.6Ni: *Henry Rack*[1]; Astrid Mueller[1]; Erica Sampson[1]; Ruslan Valiev[2]; [1]Clemson University; [2]Ufa State Aviation Technical University

12:15 PM Invited
The Brittle-To-Ductile Transition in Severely Deformed Low Carbon Steel: *Masaki Tanaka*[1]; Kenji Higashida[1]; Tomotsugu Shimokawa[2]; [1]Kyushu University; [2]Kanazawa University

Ultrafine Grained Materials – Sixth International Symposium: Processing-Microstructure-Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Monday AM Room: 607
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Donald Lesuer, Lawrence Livermore National Laboratory; Megumi Kawasaki, University of Southern California; Challapalli Suryanarayana, University of Central Florida; Zenji Horita, Kyushu University

8:30 AM Introductory Comments

8:35 AM Invited
Flow Stress Anisotropy and Tension-Compression Asymmetry in Ultrafine Grained AZ31B Magnesium Alloy: *Ibrahim Karaman*[1]; Majid Al-Maharbi[1]; David Foley[1]; Irene Beyerlein[2]; K.Ted Hartwig[1]; Suveen Mathaudhu[3]; Laszlo Kecskes[3]; [1]Texas A&M University; [2]Los Alamos National Laboratory; [3]U.S. Army Research Laboratory

8:55 AM
Role of Ultrafine Grain Size in the HCP - FCC Allotropic Transformation in Ti, Zr, and Hf: Uma Seelam[1]; Gagik Barkhordarian[2]; *C. Suryanarayana*[1]; [1]University of Central Florida; [2]GKSS Research Center

9:10 AM
Ultra-High Strength of Nanocrystalline Iron-Based Alloys Produced by High Pressure Torsion: *Tadahiko Furuta*[1]; Shigeru Kuramoto[1]; Tetsu Osuna[1]; Zenji Horita[2]; [1]Toyota Central R & D Labs., Inc.; [2]Kyusyu University

9:25 AM Invited
Fatigue Behavior of Friction Stir Processed Ultrafine Grained Aluminum and Magnesium Alloys: *Rajiv Mishra*[1]; Partha De[1]; Rajeev Kapoor[1]; Wei Yuan[1]; [1]Missouri University of Science and Technology

9:45 AM
Influence of Grain Boundary Character and Strain Rate on the Ductility of Ultrafine Grained AA 5052: *Rajeev Kapoor*[1]; Nilesh Kumar[1]; Rajiv Mishra[1]; [1]Missouri University of Science and Technology

10:00 AM
Fatigue Crack Growth Behaviour of Ultrafine Grained Copper: *Jelena Horky*[1]; Golta Khatibi[1]; Brigitte Weiss[1]; Michael Zehetbauer[1]; [1]Faculty of Physics, University of Vienna

10:15 AM
Implications of Deformation under Constraint in Development of UFG Microstructure in an Austenitic Stainless Steel: Chiradeep Gupta[1]; J. B. Singh[1]; Swetha Mulki[2]; *R. Kapoor*[3]; Apu Sarkar[1]; I. Samajdar[2]; J. K. Chakravartty[1]; [1]Bhabha Atomic Research Centre; [2]Indian Institute of Technology, Powai; [3]Department of Materials Science and Engineering, Missouri University of Science and Technology

10:30 AM Break

10:45 AM Invited
The Ambient-Temperature Mechanical Properties of UFG Ag with Nanotwins Using Microshear Tests: *Michael Kassner*[1]; Andrea Hodge[1]; [1]USC

11:05 AM
Formation of Ultrafine Grains during Friction Stir Processing of Ti-6Al-4V: *Adam Pilchak*[1]; James Williams[2]; [1]Universal Technology Corporation; [2]The Ohio State University

11:20 AM
Coarsening-Induced Fatigue-Crack Initiation in Several Nanocrystalline Nickel Alloys: Henry Padilla[1]; *Brad Boyce*[1]; Paul Kotula[1]; Elizabeth Holm[1]; [1]Sandia National Labs

11:35 AM Poster Preview
Texture and Microstructure Evolution in Ultrafine Grained AZ31 Processed by EX-ECAP: *Milos Janecek*[1]; [1]Charles University

11:40 AM
Effect of Strain Reversals on Processing by High-Pressure Torsion: *Megumi Kawasaki*[1]; Byungmin Ahn[1]; Terence Langdon[1]; [1]University of Southern California

11:55 AM Invited
Strengthening Mechanisms in Deformed and Annealed Nanostructured Metals: *Xiaoxu Huang*[1]; Naoya Kamikawa[2]; Niels Hansen[1]; [1]Risø National Laboratory for Sustainable Energy, Technical University of Denmark; [2]Tohoku University

12:15 PM
Composition and Structure of Nitrogen-Containing Dispersoids in Tri-Modal Metal Matrix Composites: *Clara Hofmeister*[1]; Bo Yao[1]; Yongho Sohn[1]; Timothy Delahanty[2]; Mark van den Bergh[3]; Kyu Cho[4]; [1]University of Central Florida; [2]Pittsburgh Materials Technologies, Inc.; [3]DWA Aluminum Composites; [4]U.S. Army Research Laboratory

12:30 PM
Nano-Scale Strengthening from Grains, Sub-Grains and Particles in Fe-C Alloys: *Donald Lesuer*[1]; Chol Syn[1]; Oleg Sherby[2]; [1]Lawrence Livermore National Laboratory; [2]Stanford University

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Nano-Sensors and Magnetic Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Monday PM Room: 214
February 15, 2010 Location: Washington State Convention Center

Session Chair: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama

2:00 PM Introductory Comments

2:05 PM Invited
Gold Nano-Engineered Mercury Sensor for Alumina Refineries: *Suresh Bhargava*[1]; [1]RMIT University

2:25 PM
Fundamental Studies and On-Chip Integration of Nanoporous Energetic Silicon: *Collin Becker*[1]; Luke Currano[2]; Wayne Churaman[2]; Conrad Stoldt[1]; [1]University of Colorado; [2]U.S. Army Research Lab

2:45 PM
Gas Sensing Behavior of Nanostructured $CoSb_2O_6$ Prepared by a Colloidal Method: *Hector Guillen-Bonilla*[1]; Carlos Michel[2]; Juan Moran-Lazaro[2]; Juan Reyes-Gomez[3]; Dario Pozas-Zepeda[3]; [1]Centro de Enseñanza Tecnica Industrial; [2]Universidad de Guadalajara; [3]Universidad de Colima

3:05 PM
Carbon Dioxide Gas Sensing Properties of $CoSb_2O_6$ Prepared by a Colloidal Method: *Hector Guillen-Bonilla*[1]; Carlos Michel[2]; Juan Moran[2]; Juan Reyes[3]; Dario Pozas[3]; [1]Centro de Enseñanza Tecnica Industrial; [2]Universidad de Guadalajara; [3]Universidad de Colima

3:25 PM
Multi-Walled Carbon Nanotube Sensor Devices for Gas Sensing Applications: Raghu Mangu[1]; Suresh Rajaputra[1]; Srikanth Durgamahanty[1]; Dali Qian[1]; Rodney Andrews[1]; *Vijay Singh*[1]; [1]University of Kentucky

3:45 PM Break

3:55 PM
Electromechanical Coupling Behaviors of Suspended Low Dimensional Materials and Applications to Sensing: *Hao Lu*[1]; Li Song[1]; P.M. Ajayan[1]; Jun Lou[1]; [1]Rice University

4:15 PM
Functionalization of Single TiO2 Nanotubes for Bio-Sensor Applications: *Mingun Lee*[1]; Dongkyu Cha[1]; Jie Hunang[1]; Hyunjung Shin[2]; Moon J. Kim[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]Kookmin University

4:35 PM
Enhanced Irreversibility Field and Critical Current Density in Superconducting NbC Integrated with Aligned Carbon Nanotubes: *Guifu Zou*[1]; Hongmei Luo[2]; Scott Baily[1]; Yingying Zhang[1]; Junyi Zhai[1]; Jie Xiong[1]; Quanxi Jia[1]; [1]Los Alamos National Laboratory; [2]New Mexico State University

4:55 PM
Nanoparticles with Double Perovskite La2BB'O6 Composition: *Yuanbing Mao*[1]; [1]Washington State University

5:15 PM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Cellular and Porous Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Monday PM Room: 305
February 15, 2010 Location: Washington State Convention Center

Session Chairs: David Dunand, Northwestern University; Markus Buehler, Massachusetts Institute of Technology

2:00 PM Keynote
Cellular Materials in Nature: *Lorna Gibson*[1]; Michael Ashby[2]; [1]MIT; [2]Cambridge University Engineering Department

2:40 PM
Multi-Scale Osteointegration of Biphasic Calcium Phosphate Bone Scaffolds: *Amy Wagoner Johnson*[1]; [1]University of Illinois at Urbana-Champaign

3:00 PM
Shape-Memory NiTi Foams: *David Dunand*[1]; [1]Northwestern University

3:20 PM
Mechanical and Biological Properties of Titanium Syntactic Foams: Xiaobing Xue[1]; Victoria Kearns[1]; Rachel Williams[1]; *Yuyuan Zhao*[1]; [1]The University of Liverpool

3:40 PM Break

4:00 PM
Mechanical Behavior of Nanoporous Pt: *Antonia Antoniou*[1]; Dhriti Bhattacharyya[2]; Pat Dickerson[2]; Nathan Mara[2]; [1]Georgia Institute of Technology; [2]Los Alamos National Laboratory

4:20 PM Invited
Elastic Modulus Study of Nanoporous Au Foams: *Andrea Hodge*[1]; Monika Biener[2]; Juergen Biener[2]; [1]University of Southern California; [2]LLNL

4:40 PM
Effect of Partial Filling of Cells on Mechanical Strength of WBK Cores under Compression and Shear: *Ki-Ju Kang*[1]; Jong-Sun Park[1]; [1]Chonnam National University

5:00 PM
Influence of Porosity and Microstructure on Thermal Properties of Laser Processed Ni and Ti6Al4V Alloy: *Felix Espana*[1]; Vamsi Krishna Balla[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

5:20 PM
Mechanical Properties of LCS Porous Steel: Comparison between the Dissolution and Decomposition Routes: *Miao Lu*[1]; Yuyuan Zhao[1]; [1]The University of Liverpool

Alumina and Bauxite: Bayer Process Chemistry and Alumina Quality I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Monday PM Room: 611
February 15, 2010 Location: Washington State Convention Center

Session Chair: Fred Williams, CMIS Corporation

2:00 PM Introductory Comments

2:10 PM
Development of Particle Breakdown and Alumina Strength during Calcination: *Benny Raahauge*[1]; Claus Jensen-Holm[1]; Susanne Wind[1]; [1]FLSmidth Denmark

2:40 PM
Effect of Environmental Light on the Raman Spectrum of Sodium Aluminate Liquors: *Jianguo Yin*[1]; Wangxing Li[1]; Zhonglin Yin[1]; Zhanwei Liu[1]; Zhaohui Su[1]; [1]Zhengzhou Research Institute Aluminum Corporation of China Limited

3:10 PM Break

3:30 PM
Effect of Na_2O on Alumina Leaching and Self-Disintegrating Property of Calcium Aluminate Slag: *Sun Huilan*[1]; Wang Bo[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northearstern University

4:00 PM
Improvement of Product Quality in Circulating Fluidized Bed Calcination: *Cornelis Klett*[1]; Michael Missalla[1]; Roger Bligh[2]; [1]Outotec GmbH; [2]Outotec (Australasia) Pty. Ltd.

Aluminum Alloys: Fabrication, Characterization and Applications: Numerical Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Monday PM Room: 615
February 15, 2010 Location: Washington State Convention Center

Session Chair: Zhengdong Long, Kaiser Aluminum

2:00 PM
Constitutive Relations for Plastic Deformation in a 5754 Sheet: *Lin Hu*[1]; Stephen Banovic[2]; Tim Foecke[2]; Mark Iadicola[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]National Institute of Standards and Technology

2:20 PM
Modeling Processing and Performance of an Al-Zn-Mg Alloy: *John Chinella*[1]; [1]U.S. Army Research Laboratory

2:40 PM
Perturbed Bi-Particle Model of Deformation of Commercial Aluminum Alloys: *Yansheng Liu*[1]; Xiyu Wen[2]; Ranall Bowers[1]; Xiaoxuan Li[1]; Shridas Ningileri[2]; [1]SECAT Inc; [2]University of Kentucky

3:00 PM
Modeling the Solidification under Pressure Casting Process for Aluminum Alloys: *Edward Druschitz*[1]; Alan Druschitz[1]; Robin Foley[1]; [1]University of Alabama at Birmingham

3:20 PM
An Integrated Computational Tool for Precipitation Simulation of Multi-Component Aluminum Alloys: *Weisheng Cao*[1]; Kaisheng Wu[1]; Fan Zhang[1]; Shuanglin Chen[1]; Ying Yang[1]; Y. Austin Chang[2]; Jianzheng Guo[3]; Mark Samonds[3]; [1]CompuTherm LLC; [2]University of Wisconsin - Madison; [3]ESI Group

3:40 PM Break

3:55 PM Invited
2010 LMD Young Leader Professional Development Award Winner: Ultrasonic Welding of Aluminum Wires for Cables Harnesses in the Automotive Industry: *Frank Balle*[1]; Guntram Wagner[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern, Institute of Materials Science and Engineering

4:15 PM
Phase-Field Simulations of Microstructure Formation in A356 during Casting: *Markus Apel*[1]; Antoine Carre[1]; Bernd Böttger[1]; [1]Access e. V.

4:35 PM
Modeling Non-Isothermal Annealing in Precipitate Hardening Aluminum Alloys: Microstructural Simulation: *Panthea Sepehrband*[1]; Shahrzad Esmaeili[1]; Haiou Jin[2]; [1]University of Waterloo; [2]Novelis Global Technology Centre

4:55 PM
Prediction of Microstructure and Mechanical Properties in Aluminum Castings after Heat Treatment: *Jianzheng Guo*[1]; Weisheng Cao[2]; Sam Scott[3]; Tony Kronenberger[4]; Joe Hirvela[4]; [1]ESI US R&D; [2]CompuTherm LLC; [3]ESI Group NA; [4]CPP-Minneapolis

5:15 PM
Study of a Geometrically Necessary Dislocations Field near the Interface of a Deformed Aluminum Bicrystal: *Alankar Alankar*[1]; Ioannis Mastorakos[1]; David Field[1]; [1]Washington State University

Aluminum Reduction Technology: Aluminium Smelter: Environment, Health and Safety

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Monday PM Room: 608
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Bob McCulloch, Bechtel Corporation; Robert Baxter, Bechtel Corp

2:00 PM Introductory Comments

2:05 PM
Modern Potline Gas Treatment Technology for High Amperage Pots - The Alcoa Fjardaal Experience: Alain Moras[1]; Neal Dando[1]; *Bernard Cloutier*[2]; Philippe Dumortier[2]; Hugues Vendette[2]; [1]Alcoa; [2]Solios Environnement Inc.

2:30 PM
Heat Recovery from the Exhaust Gas of Aluminum Reduction Cells: *Martin Fleer*[1]; Odd-Arne Lorentsen[2]; William Harvey[3]; Halldor Palsson[4]; Gudrun Saevarsdottir[3]; [1]Reyst, Reykjavik Energy School of Sustainable Systems; [2]Norsk Hydro; [3]Reykjavik University; [4]University of Iceland

2:55 PM
Increased Energy Efficiency and Reduced HF Emissions with New Heat Exchanger: *Anders Sorhuus*[1]; Geir Wedde[1]; Ketil Rye[2]; Gaute Nyland[2]; [1]Alstom; [2]Alcoa Mosjøen

3:20 PM
Reduction Line-5 DC Electrical Hazard: *Mohsen Shukralla*[1]; [1]Aluminium Bahrain (Alba)

3:45 PM Break

3:55 PM
2008 Global Anode Effect Survey Results: *Jerry Marks*[1]; Chris Bayliss[2]; [1]J. Marks & Associates; [2]International Aluminium Institute

4:20 PM
The Applicability of Carbon Capture and Sequestration in Primary Aluminium Smelters: *Stephan Broek*[1]; Sanjiv Save[1]; [1]Hatch Ltd

4:45 PM
Application of a Method for the Determination of PFC Emissions during Aluminum Pot Startup: *Jean-Nicolas Maltais*[1]; Josette Ross[1]; Alain Marcoux[1]; [1]Rio Tinto Alcan

5:10 PM
Aluminum Fluoride – A Users Guide: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

5:35 PM
Dissolution Behavior of Aluminum Dross in Aluminum Electrolyte: Weiqin Fu[1]; Zhaowen Wang[1]; Youjian Yang[1]; *Xianwei Hu*[1]; [1]Northeastern University

5:55 PM Concluding Comments

Aluminum Reduction Technology: Aluminium Smelter: Equipment

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Monday PM Room: 609
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Kevin Watson, Bechtel Corporation; John (Jack) Judson, Bechtel Corporation

2:00 PM Introductory Comments

2:05 PM
Improving Heat Dissipation and Cell Life of Aged Reduction Lines at Aluminium Bahrain (Alba): *Abdulla Ahmed*[1]; K.S.R. Raghavendra[1]; Barry Welch[2]; [1]Aluminium Bahrain (Alba); [2]University of New South Wales (UNSW) & Welbank, Consulting Limited

2:30 PM
Update on the Evaluation of HF Emission Reduction Using Covered Anode Trays: *Jean-Pierre Gagne*[1]; Rene Minville[1]; Neal R Dando[2]; Gilles Dufour[3]; Mike Gershenzon[2]; Pierre Champoux[3]; Alain Moras[3]; [1]STAS; [2]Alcoa Technical Center; [3]Alcoa Canada

2:55 PM
Automated Anode Gauging: Said Al Maqbali[1]; C. Smith[1]; J. Raman[1]; M. Angirash[1]; S. Abdullah[1]; S. Thirunavukkarasu[1]; R. Kulkarni[1]; P. Marchand[2]; S. David[2]; P. Boucher[2]; [1]Sohar Aluminium Company; [2]ECL™

3:20 PM
Keeping the Pace of Continuous Improvement by Retrofitting Pot Tending Machines: *José Barry*[1]; Fidias Roriguez[1]; Jesus Imery[1]; [1]CVG Venalum

3:45 PM Break

3:55 PM
New Concepts for Bulk Materials Plants for the Aluminium Producing Industry – From Raw Material Receiving to Electrolysis Cells: *Stefan Skirde*[1]; [1]Coperion GmbH

4:20 PM
Alfeed, a New Alumina Feeding System to Aluminium Pots: *Sivert Ose*[1]; Anders Sorhuus[1]; Odd Bjarno[1]; Geir Wedde[1]; [1]Alstom

4:45 PM
Electrolysis Pot J Hooks New Design: Positive Impacts on Performance and Environment: Nicolas Dupas[1]; *Damien Rose*[1]; [1]ECL

5:10 PM
Cleaning and Maintenance of Crucibles and Siphons/Tubes: *Dominique Prive*[1]; Pascal Côté[1]; Robin Boulianne[1]; [1]STAS

5:35 PM
Erosion of Ferrous Alloys by Liquid Aluminum: *Mandeep Sidhu*[1]; Milo Kral[1]; [1]University of Canterbury

5:55 PM Concluding Comments

Biological Materials Science: Bio-inspired Materials Design and Processing II: Bioceramics and Biomineralization

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Monday PM Room: 205
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Amit Bandyopadhyay, Washington State University; Mehmet Sarikaya, University of Washington

2:00 PM Invited
Novel Sol-Gel Bioactive Glasses for Tissue Engineering: John Mitchell[1]; [1]Oregon Health and Science University

2:30 PM
Factors Affecting the Dissolution of Resorbable Bioactive Glasses: Satadru Kashyap[1]; Hamidreza Pirayesh[1]; *John Nychka*[1]; Ding Li[2]; Fuqian Yang[2]; [1]University of Alberta; [2]University of Kentucky

2:50 PM
Mechanical and Biological Characterization of Dense Nanocrystalline HA Consolidated by Field-Assisted Sintering: *Tien Tran*[1]; James Shackelford[1]; Joanna Groza[1]; [1]University of California, Davis

3:10 PM Invited
Nanoscale Calcium Phosphates in Bone Implants and Drug Delivery: *Susmita Bose*[1]; [1]Washington State University

3:40 PM Break

3:50 PM Invited
Crab Shell Osteogenesis: *Otto Wilson*[1]; [1]Catholic University of America

4:20 PM
Unveiling the Formation Mechanism of Pseudo Single-Crystal Aragonite Platelets in Nacre: *Xiaodong Li*[1]; Zaiwang Huang[1]; [1]University of South Carolina

4:40 PM
Osteoinductive Potential of Biphasic Calcium Phosphate Scaffolds with Multi-Scale Porosity: *Amy Wagoner Johnson*[1]; [1]University of Illinois at Urbana-Champaign

5:00 PM
Growth of Nacre in Abalone: *Maria Lopez*[1]; P.Y. Chen[1]; K. Chumbimuni-Torres[1]; J. Wang[1]; J. McKittrick[1]; M.A. Meyers[1]; [1]UCSD

5:20 PM
Bioinspired Synthetic Laminates: *Gustavo Hirata*[1]; Sandra Diaz[1]; Po-Yu Chen[2]; Marc Meyers[2]; Joanna McKittrick[2]; [1]Center for Nanoscience and Nanotechnology; [2]UC San Diego

Bulk Metallic Glasses VII: 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

Monday PM Room: 213
February 15, 2010 Location: Washington State Convention Center

Session Chairs: A. Greer, University of Cambridge; Dan Miracle, Air Force Research Laboratory

2:00 PM Keynote
Anisotropy in Metallic Glasses: *A. Greer*[1]; [1]University of Cambridge

2:30 PM
Condensed Bond Enthalpies in Metallic Elements, Alloys and Compounds: *Dan Miracle*[1]; James Dahlman[2]; Amanda Dahlman[2]; Garth Wilks[3]; [1]Air Force Research Laboratory; [2]SOCHE; [3]General Dynamics, Inc.

2:40 PM Invited
Investigation of Homogeneous and Inhomogeneous Plastic Flow in Metallic Glasses: *Katharine Flores*[1]; Wendelin Wright[2]; Wolfgang Windl[1]; [1]The Ohio State University; [2]Santa Clara University

3:00 PM
Aging and Plastic Flow in Metallic Glasses: Monte Carlo Simulations Based on the Activation-Relaxation Technique: *David Rodney*[1]; Christopher Schuh[2]; [1]Grenoble Institute of Technology; [2]Massachussetts Institute of Technology

3:10 PM Invited
Inhomogeneous to Homogeneous Transition in an Au-Based Metallic Glass during Microcompression at Elevated Temperatures: Shuangxi Song[1]; *T.G. Nieh*[1]; J.C. Huang[2]; J.S.C Jang[3]; [1]The University of Tennessee; [2]National Sun Yet-sen University; [3]National Central University

3:30 PM Break

3:40 PM Invited
Deformation and Fracture Behavior of Metallic Glassy Alloys and Glassy-Crystal Composites: *Dmitri Louzguine*[1]; Alexei Vinogradov[2]; Alain Reza Yavari[3]; Guoqiang Xie[4]; Akihisa Inoue[1]; [1]WPI-AIMR, Advanced Institute for Materials Research, Tohoku University; [2]Department of Intelligent Materials Engineering, Faculty of Engineering; [3]Institut National Polytechnique de Grenoble; [4]Institute for Materials Research, Tohoku University,

4:00 PM
Effects of Hydrogen on Structural and Mechanical Behavior of Zr-Based Bulk-Metallic Glasses: *Chih-Pin Chuang*[1]; Wojciech Dmowski[1]; Yun Liu[2]; Terry Udovic[2]; Yang Ren[3]; Peter Liaw[1]; Jaihung Huang[4]; [1]University of Tennessee; [2]NIST Center for Neutron Research; [3]Advanced Photon Source, Argonne National Lab.; [4]National TsingHua University

4:10 PM Invited
Flow and Fracture Studies on Bulk Metallic Glasses: *John Lewandowski*[1]; [1]Case Western Reserve University

4:30 PM
Structural Defects in Metallic Glass Structures as Shear Transformation Zones: *Dan Miracle*[1]; Garth Wilks[2]; Amanda Dahlman[3]; [1]Air Force Research Laboratory; [2]General Dynamics, Inc.; [3]SOCHE

4:40 PM Invited
Structure of Ca-Mg-Zn Bulk Metallic Glasses: *Oleg Senkov*[1]; Daniel Miracle[1]; Emma Barney[2]; [1]Air Force Research Laboratory; [2]ISIS, Rutherford Appleton Laboratory

5:00 PM
Shear Bands Evolution in Cold-Rolled Bulk Metallic Glasses: Q.P. Cao[1]; J.W. Liu[1]; L.Y. Chen[1]; X.D. Wang[1]; *Jianzhong Jiang*[1]; [1]International Center for New-Structured Materials (ICNSM)

5:10 PM Invited
Sample Size Dependent Deformation in Amorphous Metals: Dominik Tönnies[1]; *Cynthia Volkert*[1]; [1]University of Göttingen

5:30 PM
Understanding Microstructure-Induced Ductility in Porous Bulk Metallic Glasses via Molecular Dynamics Simulations: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

5:40 PM
Viscous Flow and Superplastic Deformation Behavior of Pt-, Pd- and Au-Based Bulk Metallic Glasses: Jinn Chu[1]; *Yen-Chen Chen*[1]; Jason Shian-Ching Jang[2]; Tsong-Ru Tsai[3]; Hidemi Kato[4]; [1]National Taiwan University of Science and Technology; [2]National Central University; [3]National Taiwan Ocean University; [4]Tohoku University

5:50 PM
Indentation Size Effect of Bulk Metallic Glass: A New Observation: *Jae-il Jang*[1]; Byung-Gil Yoo[1]; Jun-Hak Oh[1]; Yong-Jae Kim[1]; [1]Hanyang University

Characterization of Minerals, Metals and Materials: Characterization of Iron and Steel II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Monday PM Room: 307
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Jian Li, CANMET-MTL; Jaroslaw Drelich, Michigan Technological University

2:00 PM Introductory Comments

2:05 PM
Mechanisms of Composite Agglomeration of Fluoric Iron Concentrates: You-ming Hu[1]; *Qian Li*[1]; Guang-hui Li[1]; Yong-bin Yang[1]; Yuan-bo Zhang[1]; Tao Jiang[1]; [1]Central South University

2:30 PM
On Plastic Notch Effects in Quenched and Tempered Steels: Pasquale Russo Spena[1]; *Donato Firrao*[1]; Paolo Matteis[1]; [1]Politecnico di Torino

2:50 PM
Calculating Model Establishing and Application of Nitriding and Denitriding to 304 Stainless Steel in AOD: *Chunfei Shen*[1]; Qiao-lei Shi[1]; Yang Li[2]; Zhou-hua Jiang[2]; [1]Baoshan Iron and Steel Co., LTD; [2]Northeastern University

3:15 PM
Cyclic Deformation Behavior of a Medium Carbon Steel in the VHCF Range: *Dietmar Eifler*[1]; Michael Koster[1]; Guntram Wagner[1]; [1]University of Kaiserslautern

3:40 PM
Methods to Characterize Very Thin Passive Film Formed in SCW Corrosion Tests: *Jian Li*[1]; D. Guzonas[2]; Wenyue Zheng[1]; [1]CANMET-MTL; [2]Atomic Energy of Canada Limited

4:05 PM
Mechanical Properties of Heat Treated HSLA Bolt Steels: *Hamed Fathi Doost*[1]; Ali Nazari[1]; [1]Islamic Azad University (Saveh Branch)

4:30 PM
Effect of Stacking Fault Probability and ε Martensite on Damping Capacity of Fe-16%Mn-2% Si Alloy: *Girish Bm*[1]; Satish Bm[2]; K. Mahesh[2]; [1]MVJ College of Engineering ; [2]East Point College of Engineering and Technology

4:55 PM
Study of Pre-Strain Effect on Indentation Fracture Toughness of HSLA Steel Using Continuum Damage Mechanics: *Sabita Ghosh*[1]; Mita Tarafder[1]; Goutam Das[1]; Soumitra Tarafder[1]; [1]National Metallurgical Laboratory

5:20 PM
The Influence of Different Heat Treatment Cycles on Controlled Surface Graphitization in CK45 Steel: *Ali-Reza Kiani-Rashid*[1]; Y Hamedi[2]; H.R. Shishegar[2]; [1]Ferdowsi University of Mashhad; [2]Sharif University of Technology

5:45 PM Concluding Comments

5:50 PM Question and Answer Period

Coatings for Structural, Biological, and Electronic Applications: Applications of Coatings I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ; Choong-un Kim, University of Texas at Arlington; Nancy Michael, University of Texas at Arlington

Monday PM Room: 309
February 15, 2010 Location: Washington State Convention Center

Session Chair: Nancy Michael, University of Texas

2:00 PM Introductory Comments

2:10 PM Invited
A Load-based Depth-sensing Micro-Indentation Technique for Spallation Detection of Thermal Barrier Coatings: *Bruce Kang*[1]; Jared Tannenbaum[1]; Mary Anne Alvin[2]; [1]West Virginia University; [2]National Energy Technology Lab

2:40 PM
Temperature and Scale Dependent Deformation and Creep Behavior of Polymer Derived Si-C-O Ceramics: *Ming Gan*[1]; Vikas Tomar[1]; [1]Purdue University

3:05 PM Break

3:20 PM Invited
Surface Modification of Nanostructured Materials for Functional Medical Devices: *Roger Narayan*[1]; Nancy Monteiro-Riviere[2]; Robin Brigmon[3]; Michael Pellin[4]; Jeffrey Elam[4]; [1]University of North Carolina & North Carolina State University; [2]North Carolina State University; [3]Savannah River National Laboratory; [4]Argonne National Laboratory

3:50 PM
Preparation of the Biomimetic Calcium Phosphate Coating on CoCrMo Implant Alloys via an Effective Chemical Activation: *Luning Wang*[1]; Jingli Luo[1]; [1]University of Alberta

4:15 PM Invited
Molecular-Scale Surface and Interfacial Coatings Utilizing Self-Assembled Monolayer of Phosphonates (SAMP) Technology: *Eric Bruner*[1]; [1]Aculon, Inc.

4:45 PM
Piezoelectric Measurements and Microstructural Characterization of 'Smart' AlN Thin Films Fabricated by Pulsed Closed Field Unbalanced Magnetron Sputtering: *Masood Hasheminiasari*[1]; J. Lin[1]; J.J. Moore[1]; B. Mishra[1]; [1]Colorado School of Mines

5:10 PM
Plasma Spray Coatings for Aerospace Applications: *David Koch*[1]; D.M. Fell[1]; David Field[1]; [1]Washington State University

5:35 PM
Using Artificial Neural Network to Optimize Thickness and Hardness of TiN Layers Deposited by PACVD Method: Mohammad Sadegh Mahdipoor[1]; Farzad Mahboubi[1]; *Niloofar Kamkar Zahmatkesh*[1]; Mahdi Raoufi[1]; [1]Amir Kabir University

Computational Thermodynamics and Kinetics: Grain Growth

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: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

Monday PM Room: 308
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Abnormal Grain Growth in the Presence of a Static Particle Dispersion: *Elizabeth Holm*[1]; Todd Hoffmann[1]; Anthony Rollett[2]; Christopher Roberts[2]; [1]Sandia National Laboratories; [2]Carnegie Mellon University

2:30 PM Invited
Effect of Stresses on Grain Boundary Thermodynamics: Theory and Atomistic Simulations: T. Frolov[1]; *Y. Mishin*[1]; [1]George Mason University

3:00 PM
Controlling Crystal Structure in Phase Field Crystal Modeling: *Michael Greenwood*[1]; Nikolas Provatas[2]; Joerg Rottler[1]; [1]University of British Columbia; [2]McMaster University

3:20 PM Break

3:30 PM Invited
Molecular Dynamics Simulation of Grain Growth in 3D Nanograined Ni: *Stephen Foiles*[1]; Elizabeth Holm[1]; [1]Sandia National Laboratories

4:00 PM Invited
Evolving Microstructures in Lipid Bilayers: Novel Insights from Materials Science: *Mikko Haataja*[1]; [1]Princeton University

4:30 PM
Twinning Nucleation Mechanisms in Hexagonal-Close-Packed Crystals: *Jian Wang*[1]; John Hirth[1]; Carlos Tome[1]; [1]LANL

4:50 PM
Phase Field Modelling of Austenite Grain Growth in the Heat Affected Zone: *Morteza Toloui*[1]; Matthias Militzer[1]; [1]UBC

5:10 PM
Affinities for Grain Contacts in 3D Grain Growth: *Burton Patterson*[1]; Alan Sprague[1]; Veena Tikare[2]; Cristina Cardona[3]; Daniel Chappell[1]; Robert T. DeHoff[4]; [1]University of Alabama at Birmingham; [2]Sandia National Laboratories, New Mexico; [3]San Diego State University; [4]University of Florida

5:30 PM
Atomistic Comparison of Volume-Dependent Melt Properties from Four Models of Aluminum: *Chandler Becker*[1]; Matthew Kramer[2]; [1]Materials Science and Engineering Laboratory, National Institute of Standards and Technology; [2]Materials and Engineering Physics, Ames Laboratory

Cost-Affordable Titanium III: Low Cost Materials and Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Monday PM Room: 618
February 15, 2010 Location: Washington State Convention Center

Session Chairs: F. H.(Sam) Froes, University of Idaho; M. Ashraf Imam, Naval Research Laboratory

2:00 PM
Applications of the FFC Cambridge Process: *Richard Dashwood*[1]; Rohit Bhagat[1]; Ben Jackson[2]; Randhir Singh[2]; Peter Lee[2]; Douglas Inman[2]; David Dye[2]; Martin Jackson[3]; [1]The University of Warwick; [2]Imperial College London; [3]The University of Sheffield

2:25 PM
Very Low Cost Manufacturing of Titanium Alloy Components: James Withers[1]; *R. Storm*[1]; V. Shapovalov[1]; D. Myers[1]; R. Loutfy[1]; [1]MER Corporation

2:50 PM
Development of High Strength Titanium Alloy Bar Stock from TiH_2 Powder: *Curt Lavender*[1]; Elizabeth Stephens[1]; Eric Nyberg[1]; Vladimir Moxson[2]; Volodymr Duz[2]; [1]Battelle - Pacific Northwest National Laboratory; [2]ADMA Products Inc.

3:15 PM
Titanium Reduction through Carbothermic Reduction and Molten Salt Electrolysis: Xiaohui Ning[1]; Chengjun Gao[1]; Shuqiang Jiao[1]; *Hongmin Zhu*[1]; [1]University of Science and Technolgoy Beijing

3:40 PM Break

3:55 PM
High Temperature Electrolysis of Ti and Its Alloys with a DC-ESR Unit: *Toshihide Takenaka*[1]; Hidetaka Matsuo[1]; Mitsuru Sugawara[1]; Akihiro Matsuyama[1]; Masahiro Kawakami[1]; [1]Toyohashi University of Technology

4:20 PM
Development of Novel Alloying Techniques for Cost-Affordable Titanium: *Peter Collins*[1]; Santhosh Koduri[2]; John Sosa[2]; Hamish Fraser[2]; Jim Sears[1]; [1]Quad Cities Manufacturing Lab; [2]The Ohio State University

4:45 PM
Thermal Plasma Synthesis of Titanium Diboride: *Muralidharan Ramachandran*[1]; Sutham Niyomwas[2]; Ramana Reddy[1]; [1]The University of Alabama; [2]Prince of Songkla University

5:10 PM
Electrochemical Productioin of Titanium from Oxycarbide Anodes: *Ole Kjos*[1]; Geir Haarberg[1]; Ana Martinez[2]; [1]Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry

Electrode Technology for Aluminum Production: Cathodes - Materials and Operation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Monday PM Room: 616
February 15, 2010 Location: Washington State Convention Center

Session Chair: Manfred Banek, SGL Carbon GmbH

2:00 PM Introductory Comments

2:05 PM
Carburation Phenomenons at the Cathode Block/Metal Interface: Martin Lebeuf[1]; Marc-André Coulombe[1]; Patrice Chartrand[2]; Benedicte Allard[3]; *Gervais Soucy*[1]; [1]Université de Sherbrooke; [2]École Polytechnique de Montréal; [3]Carbone Savoie

2:25 PM
Erosion Measurements of High Density Cathode Block Samples through Laboratory Electrolysis with Rotation: *Yoshinori Sato*[1]; Pascal Lavoie[2]; Pretesh Patel[3]; [1]SEC CARBON LTD.; [2]Light Metals Research Center, University of Auckland; [3]The Light Metals Research Centre, University of Auckland

2:45 PM
Thermo-Mechanical Characterisation of Graphitic and Graphitized Carbon Cathode Materials Used in Aluminium Electrolysis Cells: *Donald Picard*[1]; Wadii Bouzemmi[1]; Bénédicte Allard[2]; Houshang Alamdari[1]; Mario Fafard[1]; [1]Aluminium Research Centre - REGAL; [2]Carbone-Savoie

3:05 PM
Electrical Resistance of Graphitic and Graphitized Cathode Materials at Elevated Temperatures: *Jilai Xue*[1]; Jun Zhu[1]; Yunxia Song[1]; [1]Unversity of Science and Technology Beijing

3:25 PM
Development of High Density Graphitized Cathode Blocks for Aluminium Electrolysis Cells: *Sten Yngve Larsen*[1]; Xian-An Liao[1]; Hermann Gran[1]; Stian Madshus[1]; Johan Arnold Johansen[1]; [1]Elkem Carbon AS

3:45 PM Break

4:00 PM
Sodium Diffusion in Cathode Lining in Aluminium Electrolysis Cells: *Zhaohui Wang*[1]; Jørn Rutlin[2]; Tor Grande[1]; [1]Norwegian University of Science and Technology (NTNU); [2]Norsk Hydro Aluminium AS

4:20 PM
Characterization of Sodium Expansion of Industrial Graphitic and Graphitized Cathodes: *Jilai Xue*[1]; Liancheng Wu[2]; Qingsheng Liu[1]; Qingren Niu[2]; Wei Wang[1]; Xin Hou[2]; Jun Zhu[1]; Hua He[2]; [1]University of Science and Technology Beijing; [2]Ningxia Qingtongxia Energy Aluminium Group, China Power Investment Corporation

4:40 PM
Electrochemical Investigation of Potassium Intercalation into Graphite: Dongren Liu[1]; *Wangxing Li*[2]; Zhanhong Yang[1]; Shilin Qiu[2]; Yingtao Luo[2]; [1]Central South university; [2]Zhengzhou Research Institute of Chalco

5:00 PM
Corrosion Resistance of Cathode to NaF-KF-ALF3-Based Electrolyte: *Hengwei Yan*[1]; Wangxin Li[2]; Shilin Qiu[2]; Ji Li[1]; [1]Central South University; [2]Zhengzhou Research Institute of Chalco

5:20 PM
Development Status of Processing Technology for Spent Potlining in China: *Xiping Chen*[1]; [1]Zhengzhou Research Institute of Chalco

Electrometallurgy - General Session: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Aqueous Processing Committee
Program Organizer: Michael Free, University of Utah

Monday PM Room: 310
February 15, 2010 Location: Washington State Convention Center

Session Chair: Michael Free, University of Utah

2:00 PM
A Sandwich Structure Lead-Based Composite Porous Anode for Zinc Electrowinning: Jiang Liangxing[1]; *Lv Xiaojun*[1]; Lai Yanqing[1]; Li Jie[1]; Liu Yexiang[1]; [1]Central South University

2:25 PM
Constant and Pulse Voltage Applications in $CaWO_4$ Reduction: Orhan Goksu[1]; Ishak Karakaya[1]; *Metehan Erdogan*[1]; [1]Middle East Technical University

2:50 PM
Electrochemical Formation of Mg–Li-Y Alloys at Solid Magnesium Electrode from LiCl–KCl –YCl3 Melts: *Pengkai Wang*[1]; Huimin Lu[1]; Feng Shi[1]; [1]Beihang University

3:15 PM
Electrochemistry of Tantalum Pentachloride in the Room Temperature Ionic Liquid 1-Butyl-3-Methy Imidazolium Hexafluorophosphate: *Xiaoxiang Zhang*[1]; Huimin Lu[1]; Tao Zhang[1]; [1]Beihang University

3:40 PM Break

3:50 PM
ZrB2 Produced with Molten Salt Electrolysis: *Selda Özkan*[1]; Servet Timur[1]; Mustafa Urgen[1]; [1]ITU Metallurgical and Materials Engineering Department

4:15 PM
Effects of Ultrasound on Cell Voltage of Aluminum Electrolysis in Cryolite-Alumina Melts: *Jilai Xue*[1]; Shao Hua[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

4:40 PM
Evaluation of the Corrosion Behavior of Laser Welded and GTAW Welded Austenitic Stainless Steel 316L in Lithium Bromide and Comparing the Inhibition Effect of Chromate, Bromate and Molybdate on the Corrosion Behavior of Austenitic Stainless Steel 316L in Lithium Bromide: *Ahmad Momtaz*[1]; [1]German University in Cairo

Failure of Small-Scale Structures: Deformation and Failure

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Marian Kennedy, Clemson Univeristy; Brad Boyce, Sandia National Laboratory; Reinhold Dauskardt, Stanford; Zhiwei Shan, Hysitron Inc

Monday PM Room: 206
February 15, 2010 Location: Washington State Convention Center

Session Chair: Reinhold Dauskardt, Stanford University

2:00 PM Invited
SIZE MATTERS: Nano-Scale Mechanical Properties of Single Crystals, Nanocrystalline Metals, and Amorphous Metallic Glasses: *Julia Greer*[1]; Ju-Young Kim[1]; Dongchan Jang[1]; Michael Burek[2]; [1]California Institute of Technology; [2]University of Waterloo

2:25 PM
The Role of Grain Boundaries in the Creep of Sub-Micrometer Thick Cu and Cu/Si_3N_4 Microbeams at 300 K: *Robert Klassen*[1]; Yong Liu[2]; [1]The University of Western Ontario; [2]Eaton Corporation

2:40 PM Invited
Competing Roles of Deformation and Void Formation during Rapid Thermal Cycling of Metal Interconnects: *Robert Keller*[1]; David Read[1]; Roy Geiss[1]; [1]NIST

3:05 PM
Visualization of Failure Mechanisms in Nanocrystalline Thin Films: Krishna Jonnalagadda[1]; John Sharon[1]; Kevin Hemker[1]; *Kaliat Ramesh*[1]; [1]Johns Hopkins University

3:20 PM
Tuning the Mechanical Properties of a Nanoporous Gold: *Hai-Jun Jin*[1]; Lilia Kurmanaeva[1]; Jörg Weissmüller[1]; [1]Forschungszentrum Karlsruhe GmbH

3:35 PM Break

3:50 PM Invited
Failure of Protein Materials in Extreme Conditions and Disease: *Markus Buehler*[1]; [1]Massachusetts Institute of Technology

4:15 PM
Deformation and Fracture in Human Skin: *Kemal Levi*[1]; Victoria Hsiao[1]; Ruiliang Jia[1]; Reinhold Dauskardt[1]; [1]Stanford University

4:30 PM Invited
Size Dependent Deformation in Polymers - Experiments and Theory: *Chung-Souk Han*[1]; [1]North Dakota State University

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Innovations in Casting Technologies

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Monday PM Room: 306
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Chris Woodward, AFRL-RX; John Miller, TBD

2:00 PM Invited
Advances in the Solidification of Single Crystal Superalloys: *Tresa Pollock*[1]; Clinique Brundidge[1]; Jonathan Madison[1]; Jonathan Miller[2]; [1]University of Michigan; [2]Air Force Research Laboratory

2:30 PM
Direct Digital Manufacturing of Airfoils: *Suman Das*[1]; John Halloran[2]; Wil Baker[3]; [1]Georgia Institute of Technology; [2]University of Michigan; [3]Honeywell Aerospace

2:50 PM
Experimental and Mathematical Modeling Progress on Scanning Laser Epitaxy: A Technique for Growing Single Crystal Superalloys: Michael Kirka[1]; Rohan Bansal[1]; *Suman Das*[1]; [1]Woodruff School of Mechanical Engineering, Georgia Institute of Technology

3:10 PM
Modeling of Grain Selection during Directional Solidification of Superalloy Single Crystal Turbine Blade Casting: Dong Pan[1]; Qingyan Xu[1]; *Baicheng Liu*[1]; Jiarong Li[2]; Hailong Yuan[2]; Haipeng Jin[2]; [1]Tsinghua University; [2]Beijing Institute of Aeronautical Materials

3:30 PM Break

3:50 PM
Prediction of As-Cast Grain Size Distribution from a Model of Equiaxed Solidification with Free Dendrite Transport: *Wajira Mirihanage*[1]; David Browne[1]; [1]University College Dublin

4:10 PM
Damage Tolerant Cast Alloy Ti-5Al-5Mo-5V-3Cr for Aerospace Applications: *Edward Chen*[1]; L.W. Weihmuller[2]; D.R. Bice[1]; G.D. Hall[2]; W.A. Thomas[2]; [1]Transition45 Technologies, Inc.; [2]Bell Helicopter Textron

4:30 PM
Coupling Computational Thermodynamics with Experimental Study for Accelerated Development of Mo-Si-B Based Alloys: *Ying Yang*[1]; Hongbin Bei[2]; Easo George[2]; Jaimie Tiley[3]; Y. Chang[4]; [1]CompuTherm LLC; [2]Oak Ridge National Laboratory; [3]Air Force Research Laboratory; [4]University of Wisconsin-Madison

4:50 PM
Mechanical Properties of TiAl-Based Alloys for High Temperature Applications: *Fereshteh Ebrahimi*[1]; Michael Kesler[1]; Sonalika Goyel[1]; Orlando Rios[1]; Damian Cupid[2]; Hans Seifert[2]; [1]University of Florida; [2]Freiberg University of Mining and Technology

5:10 PM
Development of Ni-Mn-Based Braze Alloys for the Fast Epitaxial Braze Repair of Wide Cracks in Single-Crystalline Nickel-Base Superalloys: *Britta Laux*[1]; Joachim Rösler[1]; [1]Technische Universität Braunschweig

Heterogeneous Nucleation and Initial Microstructure Evolution in Alloys and Colloids: Simulation II

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/ASM: Phase Transformations Committee
Program Organizers: Rainer Schmid-Fetzer, Clausthal University of Technology; Heike Emmerich, RWTH Aachen University; Frans Spaepen, Harvard University; Martin Glicksman, University of Florida; John Perepezko, University of Wisconsin, Madison

Monday PM Room: 614
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Dieter Herlach, DLR; Martin Glicksman, University of Florida

2:00 PM Invited
Heterogeneous Nucleation as a Deterministic Process: *A. Greer*[1]; [1]University of Cambridge

2:25 PM
Heterogeneous Nucleation on Spherical and Flat Catalysing Surfaces: *Ma Qian*[1]; [1]The University of Queensland

2:45 PM
A Phase-Field Simulation Study on Heterogeneous Nucleation in Ti-Al-B Alloys: Janin Eiken[1]; Victor Witusiewicz[1]; Ulrike Hecht[1]; *Markus Apel*[1]; [1]Access e. V.

3:05 PM
A Precipitate Growth Model Based on a Variational Approach: *Qiang Du*[1]; Warren Poole[1]; Mary Wells[2]; [1]University of British Columbia; [2]University of Waterloo

3:25 PM
Effect of Local Stress on Nucleation and Variant Selection during Solid-State Transformation with Symmetry Reduction: Rongpei Shi[1]; Ning Zhou[1]; *Yunzhi Wang*[1]; [1]Ohio State University

3:45 PM Break

4:05 PM Invited
Phase-Field Crystal Modeling of Nucleation, Patterning, and Early-Stage Growth in Colloidal Systems in Two and Three Dimensions: *Laszlo Granasy*[1]; Gyorgy Tegze[1]; Gyula Toth[1]; Frigyes Podmaniczky[1]; Tamas Pusztai[1]; [1]Research Institute for Solid State Physics and Optics

4:30 PM
Nucleation and Successive Microstructure Evolution via Phasefield and Phasefield Crystal Method: *Heike Emmerich*[1]; Ricardo Siquieri[1]; [1]RWTH Aachen

4:50 PM
Ab Initio Determination of Phase-Field Parameters Needed for Scale-Bridging Studies of Nucleation and Microstructure Formation in the Ti-Fe Eutectic System: *Martin Friak*[1]; Juergen Hubert[2]; Heike Emmerich[2]; Antje Schlieter[3]; Uta Kuehn[3]; Juergen Eckert[3]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research; [2]RWTH Aachen University; [3]Institute for Complex Materials at the Leibniz-Institute for Solid State and Materials Research

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Monday PM Room: 212
February 15, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
High Energy X-Ray Scattering Studies of Ordering and Phase Separation in Binary Metallic Alloys: *Harald Reichert*[1]; [1]ESRF

2:30 PM Invited
Phase Separation in Al(Sc)-Based Alloys on a Nanoscale: *David Seidman*[1]; David Dunand[1]; [1]Norhwestern University

3:00 PM
First-Principles Cluster Expansions for Predicting Surface Reconstructions: Wei Chen[1]; *Chris Wolverton*[1]; William Schneider[2]; [1]Northwestern University; [2]University of Notre Dame

3:20 PM
Effects of Temperature and Chemical Order on Phonons in Fe-V Alloys: *Jorge Munoz*[1]; Matthew Lucas[2]; Brent Fultz[1]; [1]California Institute of Technology; [2]Oak Ridge National Laboratory

3:40 PM Break

4:10 PM Invited
Modeling Ni-C Alloys to Study the Growth of Carbon Nanotubes and Graphene Sheets: *François Ducastelle*[1]; Hakim Amara[1]; Christophe Bichara[2]; [1]LEM CNRS-ONERA; [2]CINaM-CNRS

4:40 PM
Equilibria among $R_N Coin_{2+3n}$ Phases (R= La, Ce, Dy) Having $Ho_N Coga_{2+3n}$ Structures: *Randal Newhouse*[1]; Gary Collins[1]; [1]Washington State University

5:00 PM
First Principles Shape Memory Alloy Design: Ni-Ti-X (Pt, Pd) Ternary Systems: *Nicholas Hatcher*[1]; Oleg Kontsevoi[1]; Arthur Freeman[1]; [1]Northwestern University

5:20 PM
Gamma-Gamma' Interfacial Free Energy through In-Silico Nucleation Experiments: *Stefano Angioletti-Uberti*[1]; Mark Asta[2]; Christopher Woodward[3]; Axel van de Walle[4]; Peter Lee[1]; Mike Finnis[1]; [1]Imperial College London; [2]University of California Davis; [3]Air Force Research Laboratory; [4]California Institute of Technology

5:40 PM
Multi-Scale Modeling of Martensite Formation in Fe-Based Solid Solutions: *Alexander Udyansky*[1]; Johann von Pezold[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

International Symposium on High-Temperature Metallurgical Processing: Ceramics and Intermetallics

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Jerome Downey, Montana Tech

Monday PM Room: 619
February 15, 2010 Location: Washington State Convention Center

Session Chair: Jerome Downey, Montana Tech

2:00 PM Keynote
Process Development: Challenges and Driving Forces for Change: *Karl Forwald*[1]; [1]Elkem AS Solar

2:40 PM
Glass Coating for Iron-Based Powder Metallurgy Components: *Adele Garkida*[1]; Jiann-Yang Hwang[2]; Xiaodi Huang[2]; Allison Hein[2]; Zhiwei Peng[2]; [1]Ahmadu Bello University; [2]Michigan Technological University

3:00 PM
Thermodynamic Measurement of Al2O3-B2O3 System by Double Knudsen Cell Mass Spectrometry: *Takashi Nagai*[1]; Masafumi Maeda[1]; [1]The University of Tokyo

3:20 PM
Bonite - A New Raw Material Alternative for Silica-Free High Strength Aluminum Metal Refractories: *Dale Zacherl*[1]; Andreas Buhr[2]; Dagmar Schmidtmeier[2]; Robert McConnell[1]; [1]Almatis, Inc; [2]Almatis GmbH

3:40 PM Break

3:55 PM
On Line Monitoring and Process Parameters Estimation of Multiple Passes Laser Phase Transformation Hardening by Using High-Power Direct Diode Laser: *Soundarapandian Santhanakrishnan*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

4:15 PM
Phase Transformation of Andalusite-Mullite and Its Fiber Reinforcement to Refractory Ceramics: Bowen Li[1]; *Jiann-Yang Hwang*[1]; Wayne Bell[1]; [1]Michigan Technological University

4:35 PM
Thermodynamic Measurement of Rare Earth Metal Systems by Knudsen Cell Mass Spectrometry: *Sho Shirai*[1]; Takashi Nagai[1]; Masafumi Maeda[1]; [1]Institute of Industrial Science, University of Tokyo

4:55 PM
A Technique to Measure Heat of Reaction in TiB2 Reinforced Intermetallic Matrix Composites: *Andrew Baker*[1]; S.L. Kampe[1]; Tony Zahrah[2]; [1]Michigan Tech; [2]Matsys, Inc

5:15 PM
Microwave Synthesis of Nano-Boron Carbide Powder: *Liang Hu*[1]; Huimin Lu[1]; Yi Liu[1]; [1]Beihang University

Jim Evans Honorary Symposium: Cast Shop Aluminum Production Joint Session: Flow and Solidification Phenomena in Nonferrous Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Monday PM Room: 620
February 15, 2010 Location: Washington State Convention Center

Session Chair: Lifeng Zhang, Missouri University of Science and Technology

2:00 PM Introductory Comments

2:10 PM
Coupled Multi-Physics Modeling of Continuous Casting of Steel and DC Casting of Aluminum: *Philippe Thevoz*[1]; Olivier Ludwig[1]; Marco Aloe[1]; [1]Calcom ESI

2:35 PM
Metal Flow and Heat Transfer in Wagstaff® Rapidfill™ Metal Distribution Systems for Billet Dc Casting: *Bin Zhang*[1]; [1]Wagstaff Inc

3:00 PM
Thermal-Fluid-Compositional Model of Electron Beam Casting of Ti-6Al-4V: Riley Shuster[1]; Daan Maijer[1]; *Steven Cockcroft*[1]; Tao Meng[1]; Denis Favez[1]; David Tripp[2]; Stephen Fox[3]; [1]The University of British Columbia; [2]TIMET Morgantown; [3]TIMET Henderson

3:25 PM
The Effect of SF6 on the Surface Tension of AZ91D Magnesium Alloy: Steven Roach[1]; *Hani Henein*[2]; [1]Vale INCO Ltd.; [2]University of Alberta

3:50 PM Break

4:05 PM
Application of Computational Fluid Flow and Experimentations to Improve Horizontal Casting Process Performance at Rio Tinto Alcan: *André Larouche*[1]; [1]Rio Tinto Alcan

4:30 PM
DC Casting of Aluminum Alloys — Importance of Mold Boundary Conditions: *Amir Baserinia*[1]; Harry Ng[1]; David Weckman[1]; Mary Wells[1]; [1]University of Waterloo

4:55 PM
Measurement of As-Cast Residual Stresses in an Aluminium Alloy AA6063 Billet Using Neutron Diffraction: *Jean-Marie Drezet*[1]; Alexander Evans[2]; Christophe Jaquerod[3]; André Phillion[1]; [1]Ecole Polytechnique Federale Lausanne; [2]Paul Scherrer Institut, Villigen; [3]Alcan Aluminium Valais, Sierre

Magnesium Technology 2010: ICME I (Integrated Computational Materials Engineering)

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Monday PM Room: 612
February 15, 2010 Location: Washington State Convention Center

Session Chairs: John Allison, Ford Motor Company; Alan Luo, General Motors Corporation

2:00 PM
Integrated Computational Materials Engineering (ICME) for Magnesium: An International Pilot Project: *John Allison*[1]; Baicheng Liu[2]; Kevin Boyle[3]; Lou Hector[4]; Robert McCune[5]; [1]Ford Motor Company; [2]Tsinghua University; [3]CanMET Materials Technology Laboratory; [4]General Motors R&D Center; [5]Robert C. McCune and Associates

2:20 PM Keynote
Thermodynamic and Elastic Properties of La-X (X=Al,Mg) Intermetallic Compounds from First Principles Calculations: *Louis Hector Jr*[1]; Jan Wrobel[2]; Krzysztof Kurzydlowski[2]; [1]GM R&D Center; [2]Warsaw University of Technology

2:50 PM
Numerical Simulation of Direct Extrusion of Magnesium Alloys: *Wojciech Misiolek*[1]; Luigi DePari[1]; [1]Lehigh University

3:10 PM Keynote
On Modeling the Extrusion Process of Magnesium Alloys: *Esteban Marin*[1]; Stephen Horstemeyer[1]; Clemence Bouvard[1]; Douglas Bammann[1]; Haitham El Kadiri[1]; Paul Wang[1]; [1]Mississippi State University

3:40 PM Break

4:00 PM
Transmutation and Accommodation Effects by Glide Twinning: *Andrew Oppedal*[1]; Haitham El Kadiri[1]; [1]Mississippi State University

4:20 PM
Plasticity in a Rod-Textured Extruded Mg AM30 Alloy: *Q. Ma*[1]; H. El Kadiri[1]; [1]Mississippi State University

4:40 PM
Effect of Grain-Matrix Interaction Stiffness on Slip System Hardening Parameters of a Viscoplastic Self-Consistent Polycrystal Model: *Babak Raeisinia*[1]; Sean Agnew[1]; [1]University of Virginia

5:00 PM
Extracting Post-Uniform Constitutive Behavior from High Temperature Tensile Test Data: *Cyrus Dreyer*[1]; Louis Hector[1]; Sean Agnew[1]; [1]University of Virgina

5:20 PM
Strain Field Measurement during Bending of Extruded Magnesium Alloys: *Adi Ben-Artzy*[1]; Louis Hector[2]; Paul Krajewski[2]; [1]Rotem Ind. ; [2]GM

5:40 PM
Cyberinfrastructure for Integrated Computational Material Engineering: *Tomasz Haupt*[1]; [1]Mississippi State University

Magnesium Technology 2010: Primary Production and Flammability Issues

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Monday PM Room: 613
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Neale Neelameggham, US Magnesium LLC; Adam Powell, Opennovation

2:00 PM
The Magnesium Industry Today: A Global Perspective: *Greg Patzer*[1]; [1]International Magnesium Association

2:20 PM
Magnesium: Bridging Diverse Metal Markets: *Susan Slade*[1]; [1]US Magnesium LLC

2:40 PM
Development of Recyclable Mg-Based Alloys: Nathan Reade[1]; Jerry Sokolowski[1]; Adam Gesing[2]; Carsten Blawert[3]; Daniel Fechner[3]; *Norbert Hort*[3]; [1]University of Windsor; [2]GCI; [3]GKSS

3:00 PM
Preparation of Al-Mg Alloys from MgO by Molten Salt Electrolysis Method: Sh Yang[1]; Fl Yang[1]; *Xianwei Hu*[2]; Zhaowen Wang[2]; Zhongning Shi[2]; Bingliang Gao[2]; [1]Jiangxi University of Science and Technology; [2]Northeastern University

3:20 PM
Effect of KCl on Conductivity of BaF2-LiF-MgF2 Molten Salts: Sh Yang[1]; Fl Yang[1]; Guocheng Wang[1]; Xianwei Hu[2]; Zhaowen Wang[2]; *Zhongning Shi*[2]; Bingliang Gao[2]; [1]Jiangxi University of Science and Technology; [2]Northeastern University

3:40 PM
Powder Metallurgy of Magnesium: Is it Feasible?: *Paul Burke*[1]; Georges Kipouros[1]; [1]Dalhousie University

4:00 PM Break

4:20 PM
Fireproof Evaluation of CaO Added Mg-3Al, Mg-6Al, and Mg-9Al Mg Cast Products: *Jin-Kyu Lee*[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

4:40 PM
Effect of Ca(OH)2 on Oxidation and Ignition Resistances of Pure Mg: *Dong-In Jang*[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

5:00 PM
Research on the Oxidation Behavior of AZ91D-Based Magnesium Alloys: *Hongjie Luo*[1]; [1]Northeastern University

5:20 PM
Low-Cost Zero-Emission Primary Magnesium Production by Solid Oxide Membrane (SOM) Electrolysis: *Adam Powell*[1]; Uday Pal[2]; Steve Derezinski[1]; [1]Metal Oxygen Separation Technologies, Inc.; [2]Boston University

5:40 PM
Corrosion Resistance of Graphite Anode for Magnesium Electrolyzers: *Bing Li*[1]; Jingwei Lou[1]; Can Zhan[1]; Jianguo Yu[1]; [1]East China University of Science and Technology

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: Materials for Clean Coal Power and CCS Systems II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Monday PM — Room: 211
February 15, 2010 — Location: Washington State Convention Center

Session Chairs: David Alman, National Energy Technology Laboratory; Bruce Pint, Oak Ridge National Laboratory

2:00 PM Invited
Competing Fatigue Failure Modes in Structural Alloys and the Implications for Life-Management Approaches: *Michael Caton*[1]; S. K. Jha[2]; J. M. Larsen[1]; [1]US Air Force Research Laboratory; [2]Universal Technology Corporation

2:40 PM Invited
Addressing Materials Processing Issues for USC Steam Turbines: Cast Versions of Wrought Ni-Based Superalloys: *Paul Jablonski*[1]; Christopher Cowen[1]; Phillip Maziasz[2]; Neal Evans[2]; Yuki Yamamoto[2]; [1]National Energy Technology Laboratory; [2]Oak Ridge National Laboratory

3:20 PM
Assessing Cast Alloys for Use in Advanced Ultra-Supercritical Steam Turbines: *Neal Evans*[1]; Yukinori Yamamoto[2]; Philip Maziasz[2]; Paul Jablonski[3]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory; [3]National Energy Technology Laboratory

3:40 PM Break

3:50 PM Invited
High Temperature Corrosion of Fe-Cr, Fe-Al, Fe-Si and Fe-Si-Al Alloys in CO2-H2O Gases: *David Young*[1]; Jianqiang Zhang[1]; Thomas Gheno[1]; Huan Li[1]; [1]University of New South Wales

4:30 PM
Phase Stability of Cast and Wrought IN 740 at Ultra Supercritical Boiler Temperatures: *Christopher Cowen*[1]; Paul Jablonski[1]; Xingbo Liu[2]; [1]United States Department of Energy; [2]West Virginia University

4:50 PM
Development of Friction Stir Welding Technology for Coal and Nuclear Power Applications: *K. Scott Weil*[1]; Glenn Grant[1]; Yuri Hovanski[1]; Curt Lavender[1]; Jens Darsell[1]; [1]Pacific Northwest National Lab

5:10 PM
Interaction of Mechanical Performance and Environmental Compatibility: *Sebastien Dryepondt*[1]; Bruce Pint[1]; [1]Oak Ridge National Laboratory

Materials Processing Fundamentals: Deformation Processing and Heat Treatment

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizer: Prince Anyalebechi, Grand Valley State University

Monday PM — Room: 601
February 15, 2010 — Location: Washington State Convention Center

Session Chair: Prince Anyalebechi, Grand Valley State University

2:00 PM
Mechanical Properties and Their Dependence on Microstructure in Hot-Rolled 3rd Generation Advanced High Strength Steels: *Meghan McGrath*[1]; Dave Van Aken[1]; Von Richards[1]; [1]Missouri University of Science and Technology

2:20 PM
Influence of Direct Aged Treatment on Creep Behaviors of Hot Continuous Rolling GH4169 Superalloy: *Sugui Tian*[1]; Zhenrong Li[1]; Zhonggang Zhao[1]; Liqing Chen[2]; Xianghua Liu[2]; [1]Shenyang University of Technology; [2]Northeast University

2:40 PM
The Effect of Carburizing on the Fatigue Life of 4130 Steel: *Roselita Fragoudakis*[1]; Anil Saigal[1]; [1]Tufts University

3:00 PM
Cast and Wrought Tensile Properties of a 2nd Generation Advanced High Strength Steel (AHSS): *Tracy Frick*[1]; Dave Van Aken[1]; Ryan Howell[1]; [1]Missouri University of Science and Technology

3:20 PM Break

3:40 PM
Microstructure and Mechanical Properties of Multiphase Steel after Quenching and Partitioning: *Thomas Rieger*[1]; Oliver Buelters[2]; Jian Bian[3]; [1]Department of Ferrous Metallurgy, RWTH Aachen University; [2]Institute for Metal Forming, RWTH Aachen University; [3]ThyssenKruppSteel

4:00 PM
Ag Exudation during Internal Oxidation in Various Contact Materials: *Gunther Schimmel*[1]; Bernd Kempf[2]; Markus Rettenmayr[1]; [1]Friedrich-Schiller-University Jena; [2]Umicore AG & Co. KG

4:20 PM
Effects of Phosphorous on the Precipitation Kinetics of κ-carbides in the Fe-30%Mn-9%Al-1%Si-0.9%C-0.5%Mo Alloy System: *Laura Bartlett*[1]; David Van Aken[1]; Kent Peaslee[1]; Ryan Howell[2]; [1]Missouri University of Science and Technology; [2]Army Research Lab

4:40 PM
A Study on Heat Transfer Coefficient Distribution in High Pressure Hydrogen Quenching: *Bowang Xiao*[1]; Gang Wang[1]; Yiming Rong[1]; [1]Worcester Polytechnic Institute (WPI)

5:00 PM
Evolution of Graphite Phase Morphology during Graphitization Process in Hypereutectoid Steels: *Amin Rounaghi*[1]; Payam Shayesteh[1]; Ali-Reza Kiani-Rashid[1]; [1]Ferdowsi University

Mechanical Performance for Current and Next-Generation Nuclear Reactors: Ensuring Lifetime and Reliability

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Dylan Morris, NIST; Greg Oberson, Nuclear Regulatory Commission; Nicholas Barbosa, National Institute of Standards and Technology; Wolfgang Hoffelner, Paul Scherrer Institute

Monday PM Room: 201
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Greg Oberson, U.S. Nuclear Regulatory Commission; Matthew Kerr, US Nuclear Regulatory Commission

2:00 PM Invited
Ensuring the Performance of Nuclear Reactor Pressure Vessels for Long Time Service: *Randy Nanstad*[1]; [1]Oak Ridge National Laboratory

2:30 PM Invited
Experience of the Fossil Industry with the Creep-Strength Enhanced Ferritic Steels: *Jeffrey Henry*[1]; [1]Energy Solutions Group

3:00 PM
Comparative Plant Performance of Stabilized and Non-Stabilized Austenitic Stainless Steels: *Raul Rebak*[1]; [1]GE Global Research

3:20 PM
Effects of Common Alloying Additions on Solidification Cracking of Zirconium Alloys: *Micah Hackett*[1]; George Young[1]; [1]KAPL

3:40 PM
Effect of Neutron Radiation Exposure on Low Cycle Fatigue of 304SS: *Korukonda Murty*[1]; Indrajit Charit[2]; [1]North Carolina State University; [2]University of Idaho

4:00 PM Break

4:15 PM Invited
When the Turtle Can't Get There and the Rabbit Gets Lost: Predicting Low Flux High Fluence RPV Embrittlement: *G. Robert Odette*[1]; Takuya Yamamoto[1]; [1]University of California, Santa Barbara

4:45 PM Invited
Materials Issues Potentially Impacting Long-Term Safe Operations: *C. E. Carpenter*[1]; [1]U.S. Nuclear Regulatory Commission

5:15 PM Invited
Safety Evaluation Challenges for NGNP VHTR Materials of Construction and Components: *Makuteswara Srinivasan*[1]; Amy Hull[1]; Shah Malik[1]; [1]U.S. Nuclear Regulatory Commission

5:45 PM
Gen IV Materials (ASME-DOE Project): *James Ramirez*[1]; [1]ASME

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Plasticity and Strength of Nanostructured and Nanoscale Materials II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Monday PM Room: 304
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Jian Wang, LANL; Edmund Webb, Sandia National Laboratories

2:00 PM Invited
Discrete Dislocation Modeling of the Relaxation of Intrinsic Stress in Thin Films: Can Ayas[1]; *Erik Van der Giessen*[1]; [1]University of Groningen

2:30 PM
A Further Step in Understanding the Plastisity Size-Dependency: 3D Modelling of Solid and Annular Micropillars: *Jaafar El-Awady*[1]; Satish Rao[2]; Christopher Woodward[3]; Dennis Dimiduk[3]; [1]AFRL/UTC; [2]AFRL/UES; [3]AFRL

2:50 PM
Modeling the Statistics of Yield Behavior in Nanopillar Compression and Nanoindentation: *James Morris*[1]; Hongbin Bei[1]; George Pharr[2]; Easo George[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

3:10 PM Invited
Modeling the Mechanical Properties of Gum Metal: *Daryl Chrzan*[1]; Matthew Sherburne[1]; Yuranan Hanlumyuang[1]; Tianshu Li[2]; J. W. Morris, Jr.[1]; [1]University of California, Berkeley; [2]University of California, Davis

3:40 PM Break

4:00 PM
Tensile Deformation of Gold Nanowires: Structural Transitions during Elongation and Breaking Mechanisms: *Francesca Tavazza*[1]; Lyle Levine[1]; Anne Chaka[1]; [1]National Institute of Standards and Technology

4:20 PM
Atomic-Scale Analysis of the Mechanical Behavior of Gold Nanofoams: *Kedarnath Kolluri*[1]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology

4:40 PM
Molecular Dynamics Simulations of Uniaxial Compression of Silicon Nanoparticles: *Lucas Hale*[1]; William Gerberich[1]; Roberto Ballarini[1]; Neville Moody[2]; Xiaowang Zhou[2]; Jonathan Zimmerman[2]; [1]University of Minnesota; [2]Sandia National Laboratories

5:00 PM
Reaction Rate Theory Prediction of Dislocation Nucleation in Aluminum at Room Temperature: *Linh Nguyen*[1]; Derek Warner[1]; [1]Cornell University

Neutron and X-Ray Studies of Advanced Materials III: 2D Materials Science from Diffraction

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Monday PM Room: 303
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Karen Pantleon, Denmark Technical University; Carol Thomson, NIU

2:00 PM Keynote
In Situ X-Ray Scattering Studies of the Polarization Structure of Ultrathin Ferroelectric Films: *Gregory Stephenson*[1]; Matthew Highland[1]; Dillon Fong[1]; Timothy Fister[1]; Paul Fuoss[1]; Jeffrey Eastman[1]; Stephen Streiffer[1]; Carol Thompson[2]; [1]Argonne National Laboratory; [2]Northern Illinois University

2:30 PM Invited
Nucleation, Coarsening, and Coalescence during Layer-by Layer Growth via Pulsed Laser Deposition: Time-Resolved, Diffuse X-Ray Scattering Studies: *Joel Brock*[1]; John Ferguson[1]; Hui-Qiong Wang[1]; Arthur Woll[1]; [1]Cornell University

2:50 PM Invited
The Growth and Formation of Nanostructures at Surfaces: In Situ X-Ray Scattering Studies: *Paul Miceli*[1]; Shawn Hayden[1]; Michael Gramlich[1]; Chinkyo Kim[2]; Edward Conrad[3]; [1]University of Missouri-Columbia; [2]Kyunghee University; [3]Georgia Institute of Technology

3:10 PM Invited
Time-Resolved X-Ray Studies of Materials Processing at Surfaces and Interfaces - Present and Future: *Carol Thompson*[1]; [1]Northern Illinois University

3:30 PM Invited
Two-Dimensional X-Ray Diffraction for Advanced Materials Analysis: *Bob He*[1]; [1]Bruker AXS

3:50 PM Invited
In-Situ X-Ray Diffraction Studies of Microstructure Evolution in Electrodeposits at Room Temperature and Elevated Temperatures: *Karen Pantleon*[1]; [1]Technical University of Denmark

4:10 PM Break

4:20 PM Invited
Strain Profiling in Group-III-Nitride Based Multilayer Systems on Silicon: *Alois Krost*[1]; Rainer Clos[1]; Juergen Blaesing[1]; [1]Otto-von-Guericke University Magdeburg

4:40 PM Invited
Real Time Reciprocal Space Mapping of Nano-Islands Induced by Quantum Confinement: *Hawoong Hong*[1]; Aaron Gray[2]; T.-C. Chianng[2]; [1]Argonne National Lab; [2]University of Illinois at Urbana-Champaign

5:00 PM
Dependence of the Preferred Growth Directions of GaN Nanorods on Polytypism: Sanghwa Lee[1]; Yuri Sohn[1]; *Chinkyo Kim*[1]; Dong Ryeol Lee[2]; Hyun-Hwi Lee[3]; [1]Kyung Hee University; [2]Soongsil University; [3]Pohang Accelerator Lab

5:15 PM
Roentgenograhic Determination of Residual Stresses in Carbonitrided Layers: Angel Zumbilev[1]; *Iliya Zumbilev*[1]; [1]Technical University of Sofia, Plovdiv Branch

5:25 PM Invited
High-Energy X-Ray Measurements of Layered Systems for Energy Applications: *Jonathan Almer*[1]; Di-Jia Liu[2]; B. Harder[3]; K. Faber[3]; [1]Argonne National Laboratory, X-Ray Science Division; [2]Argonne National Laboratory, Chemical Technology Division; [3]Northwestern University, Materials Science and Engineering Department

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior, Failure Mode

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Monday PM Room: 204
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Laura Turbini, Research In Motion; Jenq-Gong Duh, National Tsing Hua University

2:00 PM
Effects of POSS on Impact Behavior of Thermomechanically Fatigued Lead-Free Solder Joints: *Takayuki Kobayashi*[1]; Andre Lee[1]; K.N. Subramanian[1]; [1]Michigan State University

2:15 PM
Influence of Interface Reaction on Out–of–Plane Displacements during Thermal Cycling of Copper–Silicon Bond with an Indium Interlayer: Daniel Gruber[1]; *Nagaraj Chelliah Machavallavan*[1]; Jia Liu[2]; Indranath Dutta[2]; Rishi Raj[1]; [1]University of Colorado; [2]Washington State University

2:30 PM
The Fracture Behavior of Aged Sn-Ag-Cu Solder Joints during High-Strain Rate Loading: *Taehoon You*[1]; Heylim Choi[1]; Eunsik Kim[2]; Jungtak Moon[2]; Heeman Choi[1]; [1]Kookmin University; [2]MK Electron

2:45 PM
Synchrotron Microdiffraction Study of Localized Stress and Surface Evolution in Sn-Cu System: Nitin Jadhav[1]; Eric Buchovecky[1]; Wenjun Liu[2]; Jon Tischler[3]; Gene Ice[3]; Allan Bower[1]; *Eric Chason*[1]; [1]Brown University; [2]Argonne National Laboratory; [3]Oak Ridge National Lab

3:00 PM
Effect of Zn-Containing Flux on the Joint Strength and Microstructure of Sn-3.5Ag Soldering on an Electroless Ni-Au Surface Finish: *Hitoshi Sakurai*[1]; Youichi Kukimoto[2]; Katsuaki Suganuma[1]; [1]Osaka University; [2]Harima Chemicals, Inc.

3:15 PM Break

3:30 PM
Electrochemical Corrosion Behavior of HighTemperature Pb-Free Solders: *Chi-Hang Tsai*[1]; Jenn-Ming Song[1]; [1]National Dong Hwa University

3:45 PM
Joint Strength Enhancement by CNT Inserted Sn3.5Ag Solder Balls: *Young-Ki Ko*[1]; Yoon-Ki Sa[1]; Jung-Hwan Bang[1]; Jeong-Han Kim[1]; Chang-Woo Lee[1]; Sehoon Yoo[1]; [1]KITECH/Micro-Joining Center

4:00 PM
Intermetallic Compounds and Mechanical Properties of Sn-3Ag-0.5Cu and Sn-1Ag-0.5Cu-0.06Ni-0.01Ge Solder Ball Grid Array Packages with ENIG Surface Finish: *Chin-Liang Chen*[1]; Jim Wang[2]; Tung-Han Chuang[1]; [1]National Taiwan University; [2]SHENMAO Technology Inc.

4:15 PM
Internal Strain Evolution during Thermal Cycling in a Row of Lead-Free Solder Joints in a Flip Chip Ball Grid Array Package: *Bite Zhou*[1]; Thomas Bieler[1]; Guilin Wu[2]; Stefan Zaefferer[2]; Tae-Kyu Lee[3]; Kuo-Chuan Liu[3]; [1]Michigan State University; [2]Max-Planck Institut für Eisenforschung; [3]Cisco Systems, Inc.

4:30 PM
Mechanical Shock of Environmentally-Benign Pb-Free Solders: *Kyle Yazzie*[1]; Huiyang Fei[1]; Jason Williams[1]; Dallas Kingsbury[1]; Hanqing Jiang[1]; Pedro Peralta[1]; Nik Chawla[1]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering

4:45 PM
Fatigue-Creep Interaction Damage Theory Based Thermal Fatigue Life Prediction Model for SnAgCu Solder Joints: Yan Chang[1]; *Li Yan*[1]; Liu Na[1]; [1]Beijing University of Technology

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials IX: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-ming Chen, National Chung Hsing University; Srinivas Chada, Medtronic; Sinn-wen Chen, National Tsing-Hua University; Hans Flandorfer, University of Vienna; A. Lindsay Greer, University of Cambridge; Jae-ho Lee, Hongik University; Kejun Zeng, Texas Instruments; Yee-wen Yen, National Taiwan University of Science and Technology; Wojciech Gierlotka, AGH University of Science and Technology; Chao-hong Wang, National Chung Cheng University

Monday PM — Room: 203
February 15, 2010 — Location: Washington State Convention Center

Session Chairs: Jae-Ho Lee, Hongik University; Chao-hong Wang, National Chung Cheng University

2:00 PM Invited
Interfacial Reactions in the Sn-Co/Ni and Sn-Cu-Co/Ni Couples: Yu-kai Chen[1]; *Sinn-wen Chen*[1]; [1]National Tsing Hua University

2:25 PM
Interfacial Reactions of Co/Sn/Cu Sandwich Structure: *Chao-hong Wang*[1]; Chun-yi Kuo[1]; [1]National Chung Cheng University

2:45 PM
Effects of Mechanically Applied Stress on Solid-State Sn/Cu Interfacial Reaction: *Chi-pu Lin*[1]; Chih-ming Chen[1]; [1]National Chung-Hsing University

3:05 PM
Stress Effect Study on Sn-Cu Intermetallic Formation by Four Point Bending Method: Chuo-Cheng Yang[1]; *Ya-Chi Cheng*[1]; Chi-Jia Tong[1]; Ming Tzer Lin[1]; [1]National Chung Hsing University

3:25 PM
Correlation between Solder Wettability and Surface Properties of Deformed Cu Foils: *Yu-Hsiang Hsiao*[1]; Chengyi Liu[1]; [1]National Central University

3:45 PM Break

4:05 PM Invited
Suppressing the Sn-Patch Growth in Ti/Ni(V)/Cu under Bump Metallization with Snagcu Solder after Aging: Kai-Jheng Wang[1]; *Jenq-Gong Duh*[1]; [1]National Tsing Hua University

4:30 PM
Interfacial Reactions of Sn-0.7Cu□Sn-9Zn and Sn-58Bi Lead-Free Solders with the Au/Ni/SUS304 Substrate: *Yee-wen Yen*[1]; Kuen-da Chen[1]; Wei-kai Liou[1]; [1]National Taiwan University of Science and Technology

4:50 PM
Influence of Palladium Thickness on the Solderability between Sn3Ag0.5Cu and Au/Pd/Ni(P) Surface Finish: *Wei-Hsiang Wu*[1]; S. P. Peng[1]; C. H. Lin[1]; C. E. Ho[1]; [1]Yuan Ze University

5:10 PM
Electroless Nickel Plating on Porous Medium: So-Young Chun[1]; Young-Mok Rhym[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Institute of Materials Science

Processing Materials for Properties: Agglomerates and Composite Materials Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Monday PM — Room: 617
February 15, 2010 — Location: Washington State Convention Center

Session Chairs: David Olson, Colorado School of Mines; Greg Oberson, U.S. Nuclear Regulatory Commission

2:00 PM Keynote
Innovations in Processing of Lightweight Metal Matrix Composites: *Ramana Reddy*[1]; [1]The University of Alabama

2:30 PM
Surface Peening Morphology Evaluation in Anodized Aluminum Alloy Rotors: *M. Bilal Khan*[1]; [1]SCME NUST

2:50 PM
Processing of Mullite and Mullite-Zirconia Composites Via Microwave Sintering: *Subhadip Bodhak*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

3:10 PM
SHS Synthesized Aluminum-Titanium Carbide MMC Die Casting Alloys: William Garrett[1]; Cosan Unuvar[1]; *John Moore*[1]; [1]Colorado School of Mines

3:30 PM
Compaction Behavior of Aggregated and Agglomerated Nano-Powder Using Discrete Element Method: *Avinash Balakrishnan*[1]; Christophe Martin[1]; [1]Grenoble-INP

3:50 PM
Effects of Particle Size, Deformation and Heat Treatment Processing on Strength and Ductility of Aluminum-Iron Composite: *Samson Adeosun*[1]; Sanmbo Balogun[1]; Fidelia Ochulor[1]; Wasiu Ayoola[1]; Olatunde Sekunowo[1]; [1]University of Lagos, Akoka

4:10 PM
Features of a Structure and Properties of the Agglomerates Obtained from Rich Ores: *Sereda Borys*[1]; Irina Kruglyak[1]; Aleksandr Zherebtsov[1]; [1]ZSEA

4:30 PM
In situ Neutron Diffraction Study of Solvent-Free Fabrication of Ferromagnetic Core-Shell Fe_3O_4-Carbon Nanocomposite: *Sven Vogel*[1]; Vilas Pol[2]; Luke Daemen[1]; George Chertkov[1]; [1]Los Alamos National Laboratory; [2]Argonne National Laboratory

4:50 PM
Thermal Properties of Advanced Diamond - Metal Matrix Composites: *Vikas Sinha*[1]; Jessica Remmert[2]; Sabyasachi Ganguli[3]; Robert Wheeler[1]; Jonathan Spowart[4]; [1]UES, Inc.; [2]UTC; [3]UDRI; [4]Air Force Research Laboratory

5:10 PM
Effect of Proess Parameters on Powering Characteristics of Galavnneald Materials: *Ram Janam Singh*[1]; Khursid Khan[2]; Shantanu Chakrabarti[2]; [1]NIT Jamshedpur; [2]Tata Steel

5:30 PM
Porous Superelastic NiTi Produced by Sintering with NaCl Space-Holders: *Ampika Bansiddhi*[1]; David Dunand[2]; [1]Kasetsart University; [2]Northwestern University

5:50 PM
Experimental Investigations of the Ti-Fe- Eutectic System Needed for the Further Understanding of the Microstructural Evolution in an Eutectic Alloy at Different Cooling Rates: *Antje Schlieter*[1]; Uta Kühn[1]; Martin Friak[2]; Juergen Hubert[3]; Heike Emmerich[3]; Joerg Neugebauer[2]; Juergen Eckert[1]; [1]IFW Dresden; [2]MPI Düsseldorf; [3]RWTH AAchen

Refractory Metals 2010: Processing and Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Brian Cockeram, Bechtel-Bettis; Gary Rozak, H.C. Stark

Monday PM Room: 2A
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Brian Cockeram, Bechtel Marine Propulsion Corporation; Gary Rozak, H. C. Starck, Inc.

2:00 PM
Tantalum Plates with Controlled Texture: *Dincer Bozkaya*[1]; Peter Jepson[1]; [1]H.C. Starck Inc.

2:25 PM
Analysis of Tantalum Taylor Impact Specimens: *Joel House*[1]; John Bingert[2]; Philip Flater[1]; James O'Brien[3]; William Hosford[4]; Robert DeAngelis[5]; Richard Harris[1]; [1]Air Force Research Laboratory; [2]Los Alamos National Laboratories; [3]O'Brien and Associates; [4]University of Michigan; [5]University of Florida

2:50 PM
Comparison of Optimized Finite Element Crystal Plasticity Model and Tensile Tests of Niobium Single Crystals: *Derek Baars*[1]; Payam Darbandi[1]; Chris Compton[2]; Wenjun Liu[3]; Rozaliya Barabash[4]; Thomas Bieler[1]; [1]Michigan State University; [2]National Superconducting Cyclotron Laboratory; [3]Advanced Photon Source Argonne National Laboratory; [4]Oak Ridge National Laboratory

3:15 PM
Deformation Mechanism for Polycrystal Niobium at Cryogenic Temperature: Payam Darbandi[1]; *Derek Baars*[2]; Saravan Chandrasekaran[3]; Farhang Pourboghrat[3]; Tom Bieler[2]; Chris Compton[4]; [1]Michigan State University; [2]Department of Chemical Engineering and Materials Science, Michigan State University; [3]Department of Mechanical Engineering, Michigan State University; [4]National Superconducting Cyclotron Laboratory, Michigan State University

3:40 PM Break

3:55 PM
Mechanical Properties and Constitutive Modeling of Some Refractory Metals: *Shuh Rong Chen*[1]; G.T. (Rusty) Gray III[1]; [1]Los Alamos National Laboratory

4:20 PM
Chromium Alloys for More Efficient Fossil Energy Conversion Technologies: *Omer Dogan*[1]; Michael Gao[1]; Paul King[1]; [1]DOE National Energy Technology Laboratory

4:45 PM
Strength and Oxidation Resistance of Mo-Si-B Alloys Produced by Reaction Synthesis: *Michael Middlemas*[1]; Joe Cochran[1]; P. Jain[2]; K. S. Kumar[2]; [1]Georgia Institute of Technology; [2]Brown University

5:10 PM
Cyclic Deformation Behavior of Commercially Pure Mo and a Mo-Si-B Solid Solution Alloy: *X Yu*[1]; K.S. Kumar[1]; [1]Brown University

5:35 PM
Tensile Creep of Mo-Si-B Alloys: P. Jain[1]; *Sharvan Kumar*[1]; [1]Brown University

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Thermodynamics and Morphological Stability

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Monday PM Room: 602
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Douglas Medlin, Sandia National Labs; Wayne Kaplan, Technion - Israel Institute of Technology

2:00 PM Invited
Gamma/Gamma Prime Interfacial Free Energies in Nickel-Based Alloys: Atom-Probe Tomographic Experiments and First-Principles Calculations: *David Seidman*[1]; [1]Northwestern University

2:30 PM
Atomic Scale Characterization of Deformation Induced Interfacial Mixing in a Nanostructured Cu/V Composite Wire: *Xavier Sauvage*[1]; Cécile Genevois[1]; Gérald Da Costa[1]; Victor Pantsyrny[2]; [1]University of Rouen, CNRS; [2]Bochvar Institute of Inorganic Materials

2:50 PM
Heterogeneous Nucleation of Nisi2 Epitaxial Growth in Si Nanowires: *Yi-Chia Chou*[1]; Wen-Wei Wu[2]; Lih J. Chen[3]; K. N. Tu[1]; [1]University of California Los Angeles; [2]National Chiao Tung University; [3]National Tsing Hua University

3:10 PM
Metastability and Competition in Grain Boundary Complexion Transitions: *Shen Dillon*[1]; Gregory Rohrer[2]; [1]University of Illinois at Urbana-Champaign; [2]Carnegie Mellon University

3:30 PM
Influence of Grain Boundary Chemistries in Mix-Mobility Thin Film Growth: *Bianzhu Fu*[1]; Gregory Thompson[1]; [1]University of Alabama

3:50 PM Break

4:10 PM Invited
Thermodynamics of Solid-Fluid Interfaces with Non-Hydrostatically Stressed Solids: T. Frolov[1]; *Y. Mishin*[1]; [1]George Mason University

4:40 PM
Grain Boundary Misorientation Instabilities: *W. Craig Carter*[1]; [1]MIT

5:00 PM
On the Thermodynamic Stabilization of Defects in the Framework of a Defactant Concept: *Reiner Kirchheim*[1]; [1]University of Göttingen

5:20 PM
Interfacial Structure and Morphological Evolution of Platinum Nano-Precipitates Embedded in Sapphire: *Melissa Santala*[1]; Velimir Radmilovic[2]; Raquel Guilian[3]; Mark Ridgway[3]; Andreas Glaeser[1]; Ronald Gronsky[1]; [1]University of California; [2]National Center for Electron Microscopy; [3]Australian National University

Surface Engineering for Amorphous-, Nanocrystalline-, and Bio-Materials: 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; Arvind Agarwal, Florida International Univesity; Sudipta Seal, University of Central Florida; Narendra Dahotre, University of Tennessee

Monday PM Room: 604
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Arvind Agarwal, Florida International University; Roger Narayan, North Carolina State University; Narendra Dahotre, University of Tennessee

2:00 PM Introductory Comments

2:05 PM Invited
Assessment of Microbial Biofilm Growth on Nanocrystalline Diamond Coatings Using a CDC Biofilm Reactor: J. S. Lewis[1]; S. D. Gittard[1]; *Roger Narayan*[1]; C. J. Berry[2]; Robin Brigmon[2]; R. Ramamurti[3]; R. N. Singh[3]; [1]University of North Carolina & North Carolina State University; [2]Savannah River National Laboratory; [3]University of Cincinnati

2:30 PM
Wetting Behavior of Laser Synthetic Surface Micro Textures on Ti-6Al-4V for Bioapplication: *Sameer Paital*[1]; Wei He[1]; Claus Daniel[2]; Narendra Dahotre[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory

2:50 PM
Corrosion of the Implant Alloy Ti-45wt.%Nb in Simulated Physical Media: *Daniela Zander*[1]; [1]TU Dortmund

3:10 PM
Corrosion Behaviour Evaluation of Fluoridated Hydroxyapatite/Niobium Filler-Matrix Composite Coating for Hard Tissue Implant: *Ehsan Mohammadi Zahrani*[1]; M. H. Fathi[2]; Akram Alfantazi[1]; [1]The University of British Columbia; [2]Isfahan University of Technology

3:30 PM
Surface Engineering of Titanium Alloy Modified by Plasma-Based Low-Energy Ion Implantation: *M.K. Lei*[1]; Z.L. Wu[1]; Y.X. Ou[1]; T.K. Song[1]; Q. Zhou[1]; [1]Dalian University of Technology

3:50 PM Break

4:05 PM
Surface Nitriding of Ti-6Al-4V for Bio-Implant Application: *Jyotsna Dutta Majumdar*[1]; [1]Indian Institute of Technology Kharagpur

4:25 PM
Nanostructured Bio-Scaffold for Bone Implants, Stents: A Biomedical Evolution: *Shampa Aich*[1]; Chandra Shekhar[1]; Mrinal Mishra[1]; [1]Indian Institute of Technology

4:45 PM
The Effect of Processing Parameters on Surface Properties of Ti6Al7Nb Alloys: *Mert Günyüz*[1]; Murat Baydogan[1]; Huseyin Cimenoglu[1]; Eyup Sabri Kayali[1]; [1]Istanbul Technical University

5:05 PM
Electrodeposition of Hydroxyapatite on Magnesium for Biodegradable Implant Applications: *Satendra Kumar*[1]; M. Jamseh[1]; Sankara Narayanan TSN[1]; [1]National Metallurgical Laboratory, Madras Centre

5:25 PM
Fabrication and Characterization of Tio_2 Films on Ti-6Al-4V by Anodic Oxidation: Maria Vera[1]; Alicia Ares[1]; Mario Rosenberger[1]; Diego Lamas[2]; *Carlos Schvezov*[1]; [1]CONICET-UNaM; [2]CONICET-CITEDEF

5:45 PM
Effect of Laser Surface Treatment on Tribological Behavior and Bioactivity of ASTM F-75 Cobalt Base Alloy: *J.L. Davila*[1]; F. Cepeda Rodriguez[1]; M.F. Trejo Aguirre[1]; [1]Corporación Mexicana De Investigación En Materiales

Sustainable Materials Processing and Production: Motivating Sustainability I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Monday PM Room: 2B
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Markus Reuter, Ausmelt Ltd.; Iver Anderson, Ames Laboratory

2:00 PM Introductory Comments by Iver Anderson

2:10 PM Plenary
A Framework and a New Paradigm for Sustainable Materials Development and Engineering: The Status Quo is not Sustainable!: *Diran Apelian*[1]; [1]Worcester Polytechnic Institute

2:35 PM Plenary
The Sustainable Organization: Fostering the Capacity for Change: *Leith Sharp*[1]; [1]Harvard University

3:00 PM Plenary
Building a Sustainability Strategy into a Consumer Products Business: *Leon H. Bruner*[1]; Peter White[1]; [1]The Procter & Gamble Company

3:25 PM Plenary
Practicing Informed Substitution of Restricted Materials in Electronic Products: Knowing Whether Replacements are Better for the Environment and Human Health: *Helen Holder*[1]; [1]Hewlett-Packard Company

3:50 PM Break

4:05 PM Plenary
Sustainability, a Strategic Opportunity for Umicore: *Mark Caffarey*[1]; [1]Umicore, USA

4:30 PM Plenary
Title Not Available: John Allison[1]; [1]**Ford**

4:55 PM Plenary
Energy (to be confirmed)

5:20 PM Concluding Comments by Markus Reuter

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Computational Materials Science II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, Univ of Groningen

Monday PM Room: 603
February 15, 2010 Location: Washington State Convention Center

Session Chairs: David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; David Pettifor, University of Oxford

2:00 PM Invited
Atomic Level Stresses: *Takeshi Egami*[1]; [1]University of Tennessee

2:25 PM Invited
Molybdenum at High Pressure and Temperature: Melting from Another Solid Phase: *Shao-Ping Chen*[1]; Leonid Burakovsky[1]; A. B. Belonoshko[2]; [1]Los Alamos National Laboratory; [2]The Royal Institute of Technology

2:50 PM Invited
Analytic Bond-Order Potentials Including Magnetism: *Ralf Drautz*[1]; David Pettifor[2]; [1]Ruhr-Universität Bochum; [2]University of Oxford

3:15 PM Invited
Irradiated Point Defects in bcc Transition Metals and Alloys: A Multi-Scale Modeling Review: *Duc Nguyen-Manh*[1]; [1]UKAEA

3:40 PM Break

4:05 PM Invited
Deformations in Nanosized Metallic Glass Systems: *Jeff De Hosson*[1]; C. Chen[1]; Y. Pei[1]; Vasek Ocelik[1]; Dave Matthews[1]; [1]University of Groningen

4:30 PM Invited
Recent Advances and Ongoing Challenges in Accelerated Molecular Dynamics Methods: *Arthur Voter*[1]; [1]Los Alamos National Laboratory

4:55 PM Invited
Bond-Order Potential for Iron: *Matous Mrovec*[1]; Duc Nguyen-Manh[2]; Christian Elsaesser[1]; Peter Gumbsch[1]; David Pettifor[3]; [1]Fraunhofer Institute for Mechanics of Materials; [2]EURATOM/UKAEA Fusion Association; [3]Oxford University

5:20 PM
Core Structure and Kinks of Screw Dislocations in Fe and W from First-Principles: *Lisa Ventelon*[1]; François Willaime[1]; Emmanuel Clouet[1]; Mihai-Cosmin Marinica[1]; [1]CEA

5:35 PM
Core Traction Contribution to the Elastic Energy of a Dislocation: *Emmanuel Clouet*[1]; [1]CEA Saclay

5:50 PM
Ab Initio Study of Extreme Loading Conditions in Transition-Metal Disilicides with the C40 Structure: *Martin Friak*[1]; Dominik Legut[2]; Mojmir Sob[3]; [1]Max Planck Institute for Iron Research; [2]Institute of Physics of Materials, Academy of Sciences of the Czech Republic; [3]Faculty of Science, Masaryk University

6:05 PM
Modeling the Synergetic Interactions between Creep and the Growth of Thermal Scales: *David Wilkinson*[1]; Somaradi Khiev[1]; Andi Limarga[2]; [1]McMaster University; [2]Harvard University

Three-Dimensional Materials Science VI: Processing and Analysis of Large 3D Datasets

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Monday PM Room: 401
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Jeff Simmons, U S Air Force Research Laboratory; Marc De Graef, Carnegie Mellon University

2:00 PM Invited
Archival Storage of Three-Dimensional Data: Mike Jackson[1]; Jeff Simmons[2]; *Marc De Graef*[3]; [1]Bluequartz Software; [2]Air Force Research Laboratory; [3]Carnegie Mellon University

2:30 PM
Data Fusion by Means of Mutual Information and Image Entropy: *Begum Gulsoy*[1]; Jeff Simmons[2]; Marc De Graef[1]; [1]Carnegie Mellon Unversity; [2]Air Force Research Laboratory

2:50 PM
Using Moment Invariants to Assess the Realism of Digitally Constructed Microstructures: Patrick Callahan[1]; Mike Groeber[2]; *Marc De Graef*[1]; [1]Carnegie Mellon University; [2]AFRL/UTC

3:10 PM Break

3:30 PM Invited
Acquisition and Analysis of Gigabyte-Scale Tomographic Spectral Images: *Paul Kotula*[1]; Lysle Serna[1]; [1]Sandia National Laboratories

4:00 PM
Application of Novel Techniques to the Three-Dimensional Characterization of Microstructural Features in Alpha+Beta Titanium Alloys: *John Sosa*[1]; Santhosh Koduri[1]; Vikas Dixit[1]; Peter Collins[1]; Hamish Fraser[1]; [1]The Ohio State University

4:20 PM
Prior Information for Segmentation of Large Serial Section Image Datasets: *Jeff Simmons*[1]; Mary Comer[2]; Ilya Pollak[2]; Marc De Graef[3]; [1]AFRL; [2]Purdue University; [3]Carnegie Mellon University

4:40 PM
Characterization of Complex Three-Dimensional Interconnected Microstructures via the Level-Set Method: *Victor Chan*[1]; Katsuyo Thornton[1]; [1]University of Michigan, Ann Arbor

5:00 PM
Processing of 3D Data Sets from X-Ray Micro-Tomography of Impulse Atomized Powders: Denise Thornton[1]; Jon Johansson[1]; *Arash Ilbagi*[1]; Hani Henein[1]; [1]University of Alberta

Ultrafine Grained Materials – Sixth International Symposium: Mechanical Response

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Monday PM Room: 606
February 15, 2010 Location: Washington State Convention Center

Session Chairs: Josef Zrnik, Comtes FHT Ltd.; Jingtao Wang, Nanjing University of Science and Technology; Buyang Cao, Johns Hopkins University; Y.G. Ko, Yeungnam University

2:00 PM
Deformation Behavior during Tensile Straining of Nano/Ultrafine-Grained Structures Formed by Reversion in Metastable Austenitic Steels: Pavan Venkatasurya[1]; Venkata Ramuni[1]; *Sachin Mali*[1]; Jinesh Shah[1]; Sashank Nayak[1]; Devesh Misra[1]; Mahesh Somani[2]; Penti Karjalainen[2]; [1]University of Louisiana; [2]University of Oulu

2:15 PM
Deformation Behavior of Nanocrystalline Pd-10 At.% Au Alloy Investigated in Compression Mode at Different Temperatures: *Lilia Kurmanaeva*[1]; Yulia Ivanisenko[1]; Elena Tabachnikova[2]; Hans-Jörg Fecht[3]; [1]Institute für Nanotechnologie, Forschungszentrum Karlsruhe; [2]B. Verkin Institute for Low Temperatures Physics and Engineering, National Academy of Science of Ukraine; [3]Institute of Micro and Nanomaterials

2:30 PM Invited
Fatigue Behavior of Highly Nanotwinned Copper: Carla Shute[1]; Benjamin Myers[1]; Sujing Xie[1]; Troy Barbee[2]; Andrea Hodge[3]; *Julia Weertman*[1]; [1]Northwestern University; [2]Lawrence Livermore National Laboratory; [3]University of Southern California

2:50 PM
Influence of Stacking Fault Energy on Microstructures and Mechanical Properties of fcc Metals by Equal Channel Angular Pressing: Yue Zhang[1]; *Jing Tao Wang*[1]; Jin Qiang Liu[1]; [1]Nanjing University of Science and Technology

3:05 PM
Microstructure and Tensile Properties of Ultrafine Grained, TRIP-Aided Low-Carbon Steel: *Young Gun Ko*[1]; C.W. Lee[2]; S. Namgung[2]; D.H. Shin[2]; [1]Yeungnam University; [2]Hanyang University

3:20 PM
Ultra-High Strength Aluminum Nanocomposites: *Julie Schoenung*[1]; [1]University of California, Davis

3:40 PM Break

3:55 PM Invited
Grain Size Effects on Rate Sensitivity of FCC Metals: *K. Ramesh*[1]; Emily Huskins[1]; Buyang Cao[1]; [1]Johns Hopkins University

4:15 PM
Microstructures and Mechanical Properties of Ultrafine Grained Medium Carbon Steel Processed By HPT at Increased Temperature: *Jozef Zrnik*[1]; Reinhard Pippan[2]; Stephan Scheriau[2]; Libor Kraus[1]; [1]Comtes FHT Ltd.; [2]Austrian Academy of Sciences

4:30 PM
Mechanical Evaluation of Heavily Drawn Fe-Ni-Mn Martensitic Steel: Hadi Ghasemi-Nanesa[1]; *Mahmoud Nili Ahmadabadi*[1]; Hassan Shirazi[1]; [1]University of Tehran

4:45 PM Invited
Mechanical Properties of Nanocrystalline Tantalum within a Wide Range of Strain Rates: Zhiliang Pan[1]; Weihua Yin[1]; Xiaolei Wu[2]; Brian Schuster[3]; Laszlo Kecskes[3]; *Qiuming Wei*[1]; [1]University of North Carolina at Charlotte; [2]Institute of Mechanics, CAS; [3]US Army Research Lab

5:05 PM
Deformation Twinning in High-Strain-Rate Sheared Nanocrystalline Aluminum: *Buyang Cao*[1]; Bin Li[1]; Nitin Daphalapurkar[1]; En Ma[1]; K. Ramesh[1]; [1]The Johns Hopkins University

5:20 PM
Methods for Improving Ductility in Nanostructured Titanium Prepared via Powder Metallurgical Routes: *Osman Ertorer*[1]; Troy Topping[1]; Ying Li[1]; Yonghao Zhao[1]; Wes Moss[2]; Enrique Lavernia[1]; [1]University of California - Davis; [2]Toyota Racing Development

5:35 PM
Strain Rate Sensitivity of Ultrafine Grained Boron Carbide Reinforced Aluminum Metal Matrix Composites: *Rustin Vogt*[1]; Zhihui Zhang[1]; Troy Topping[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California, Davis

Ultrafine Grained Materials – Sixth International Symposium: Processing Technologies

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Monday PM Room: 607
February 15, 2010 Location: Washington State Convention Center

Session Chairs: M. Ravi Shankar, University of Pittsburgh; Sergey Dobatkin, A.A. Baikov Institute of Metallurgy and Materials Science of RAS; Gencaga Purcek, Karadeniz Technical University; Deliang Zhang, The University of Waikato

2:00 PM Invited
A New Biaxial Extrusion Method to Create Sheets of Ultrafine Grain Size: *Amit Ghosh*[1]; Rick Lee[1]; [1]University of Michigan

2:20 PM
Ideal Engineering Materials by High Rate Severe Plastic Deformation: *M. Ravi Shankar*[1]; Shashank Shekhar[1]; Jiazhao Cai[1]; [1]University of Pittsburgh

2:35 PM
Mechanical and Dry Sliding Wear Behavior of Ultrafine-Grained AISI1024 Steel Processed Using Multi Axial Forging: Aditya Padap[1]; *Gajanan Chaudhari*[1]; S.K. Nath[1]; [1]IIT Roorkee

2:50 PM Invited
Nanostructured Materials by Mechanical Alloying: New Results on Property Enhancement: *Carl Koch*[1]; Ronald Scattergood[1]; Khaled Youssef[1]; Ethan Chan[1]; Yuntian Zhu[1]; [1]North Carolina State University

3:10 PM
Microstructure and Mechanical Properties of IF-Steel Sheets after Equal-Channel Angular Sheet Extrusion (ECASE) and Subsequent Annealing: *Gencaga Purcek*[1]; Onur Saray[1]; Ibrahim Karaman[2]; [1]Karadeniz Technical University; [2]Texas A&M University

3:25 PM
Severe Plastic Deformation of a Pearlitic Steel by Wire Drawing: *Reiner Kirchheim*[1]; Shoji Goto[1]; Christine Borchers[1]; [1]University of Göttingen

3:40 PM Break

3:55 PM Invited
Strength-Ductility Combination of Nanostructured 316L Stainless Steel Processed by Means of Dynamic Plastic Deformation (DPD): G.Z. Liu[1]; N.R. Tao[1]; *K. Lu*[1]; [1]SYNL, Institute of Metal Res. CAS

4:15 PM
Structure, Texture, and Mechanical Properties of Copper and a Mg-Al-Zn-Mn Alloy after Constrained Groove Pressing: *Sergey Dobatkin*[1]; Vladimir Serebryany[1]; Jozef Zrnik[2]; [1]A.A. Baikov Institute of Metallurgy and Materials Science of RAS; [2]COMTES FHT

4:30 PM
Improvement of Strength and Wear Resistance of Cp-Ti by ECAE and MAO Processes: *Akgun Alsaran*[1]; Gencaga Purcek[1]; Yenal Vangolu[1]; Onur Saray[1]; [1]Ataturk University

4:45 PM Invited
Severe Plastic Deformation Processes for Thin Samples: *Rimma Lapovok*[1]; Arnaud Pougis[2]; Dmitry Orlov[1]; Laszlo Toth[3]; Yuri Estrin[4]; [1]Monash University; [2]CSIRO; [3]Université Paul Verlaine-Metz; [4]Monash University / CSIRO

5:05 PM
Tailoring Materials Properties of Aluminium Alloys by Sandwich-like Structures with Accumulative Roll Bonding: *Tina Hausöl*[1]; Heinz Werner Höppel[1]; Mathias Göken[1]; [1]Friedrich-Alexander-University Erlangen-Nürnberg

5:20 PM
Comparison of the Mechanical Properties for Equally Strained Ultrafine Grained Al 99.5 Produced by Accumulative Roll Bonding and Equal Channel Angular Pressing: *Andreas Böhner*[1]; Verena Maier[2]; Heinz Höppel[1]; Mathias Göken[1]; [1]University of Erlangen-Nuernberg; [2]ZMP

5:35 PM
Synthesis of Bulk Nanostructured and Ultrafine Structured Metallic Materials by Thermomechanical Consolidation of Nanostructured Powders: *Deliang Zhang*[1]; Aamir Mukhter[1]; Amro Gazawi[1]; Vijay Nadakuduru[1]; [1]The University of Waikato

5:50 PM
Preliminary Investigation of Novel Micro-Scale Current Activated Tip-Based Sintering (μ-CATS): *A. El-Desouky*[1]; S. Chang[1]; S. Kassegne[1]; K. Moon[1]; K. Morsi[1]; [1]San Diego State University

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Synthesis of Nanomaterials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Tuesday AM Room: 214
February 16, 2010 Location: Washington State Convention Center

Session Chair: Navin Manjooran, Siemens AG; Jud Ready, Georgia Tech

8:30 AM Introductory Comments

8:35 AM Invited
Oxide Nanostructures: Synthesis, Characterization and Properties Evaluation: *Avanish Srivastava*[1]; [1]National Physical Laboratory

8:55 AM
Effect of Processing Parameters on the Physical, Thermal, and Combustion Properties of Plasma-Synthesized Metallic Nanopowders: *Chris Haines*[1]; Darold Martin[1]; Joseph Paras[1]; Ryan Carpenter[1]; Deepak Kapoor[1]; [1]US Army ARDEC

9:15 AM
Synthesis and Characterization of Single Crystalline Metal Nanowire Rings: *Yongjie Zhan*[1]; Hao Lu[1]; Yang Lu[1]; Cheng Peng[1]; Jiangnan Zhang[1]; Jun Lou[1]; [1]Rice University

9:35 AM
Spontaneous Growth of Novel Hexagonal Mn Nanowhiskers from Hydrogen Activated Laves Phase Alloys: *Erdong Wu*[1]; Xiumei Guo[1]; Wuhui Li[1]; [1]Institute of Metal Research, Chinese Academy of Science

9:55 AM
Geometry Dependence of the Strain-Driven Self-Rolling of Semiconductor Nanotubes: Ik Su Chun[1]; Huan Li[1]; Archana Challa[1]; *K. Jimmy Hsia*[1]; Xiuling Li[1]; [1]University of Illinois at Urbana-Champaign

10:15 AM Break

10:30 AM
Mesoscale Simulations of Self-Assembly of Arbitrarily-Shaped Particles in Bulk and at Fluid-Fluid Interfaces: *Paul Millett*[1]; Yu Wang[2]; [1]Idaho National Laboratory; [2]Michigan Tech

10:50 AM
Morphological Evolution and Coarsening Process of a Strained Heteroepitaxial Thin Film during Constant Deposition: *Solmaz Torabi*[1]; Steve Wise[2]; Peng Zhou[1]; John Lowengrub[1]; [1]University of California Irvine; [2]University of Tennessee, Knoxville

11:10 AM
Development and Characterization of Nanoporous Carbon Coated ZnO Powders Prepared by Pyrolysis of Spray Dried ZnO-PVA Mixtures: *Burak Özkal*[1]; Seyma Duman[1]; Osamu Yamamoto[2]; [1]ITU; [2]Akita University

11:30 AM
Low-Temperature Synthesis of NiFe2O4 Spinel Nanopowder via Solid-State Reactions: *Zhigang Zhang*[1]; Guangchun Yao[1]; Jia Ma[1]; Zhongsheng Hua[1]; Lei Wang[1]; [1]Northeastern University

11:50 AM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Metal Foams

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Tuesday AM Room: 305
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Antonia Antoniou, Georgia Institute of Technology; Ki-Ju Kang, Chonnam National University

8:30 AM
Fabrication of Ti-6Al-4V Open-Cellular Foams by Additive Manufacturing Using Electron Beam Melting: *L. Murr*[1]; S. Gaytan[1]; F. Medina[1]; E. Martinez[1]; L. Martinez[1]; R. Wicker[1]; [1]University of Texas at El Paso

8:50 AM
Compression-Compression Fatigue of LENS-Processed Cellular Titanium: *Nikolas Hrabe*[1]; B. Vamsi Krishna[2]; Amit Bandyopadhyay[2]; Rajendra Bordia[1]; [1]University of Washington; [2]Washington State University

9:10 AM
Properties of Energetic Materials Reinforced by Open-Cell Metal Foams: *Dmitriy Kiselkov*[1]; Ravil Yakushev[1]; [1]Institute of Technical Chemistry

9:30 AM
Microstructural Characterization of PORVAIR Metal Foams: *S. Raj*[1]; Jacob Kerr[2]; [1]NASA Glenn Research Center; [2]Pennsylvania State University

9:50 AM
Formation and Disappearance of Crack-Like Pores for Al Foams Made by PM Route: *Lei Wang*[1]; Guangchun Yao[1]; Xiaoming Zhang[1]; Yihan Liu[1]; Jia Ma[1]; [1]Northeastern University

10:10 AM Break

10:30 AM
Open Celled Bulk Metallic Glass Foam Using Eqaul Channel Angular Pressing: *Marie Cox*[1]; David Dunand[1]; Suveen Mathaudhu[2]; [1]Northwestern University; [2]U.S. Army Research Laboratory

10:50 AM
Mechanical Damping Properties of Al-Si Closed-Cell Aluminum Foam: *Yong Liang Mu*[1]; Guang Chun Yao[1]; Hong Jie Luo[1]; [1]Northeasten University

11:10 AM
Sound Absorption of Closed-Cell Aluminum Foam Fabricated by Melt Foaming Route: Lisi Liang[1]; Yongliang Mu[1]; Lei Wang[1]; Zhongsheng Hua[1]; Jia Ma[1]; *Guangchun Yao*[1]; [1]Institute of Materials and Metallurgy, Northeastern University

11:30 AM
Study on Compressive Properties of Aluminum Foams Reinforced with Short Copper-Coated Carbon Fibers: *Jinjing Du*[1]; Guangchun Yao[1]; Zhuokun Cao[1]; [1]Northeasten University

11:50 AM
The Influence of Cell Shape Anisotropy on the Compressive Property of Closed-Cell Al-Si Alloy Foam: *Yong Liang Mu*[1]; Guan Chun Yao[1]; [1]Northeastern University

Alumina and Bauxite: Bayer Process Chemistry and Alumina Quality II

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Tuesday AM Room: 611
February 16, 2010 Location: Washington State Convention Center

Session Chair: Pat Clement, Alcoa - Point Comfort Operations

8:30 AM Introductory Comments

8:40 AM
Segregation of Alumina – The Challenge for the Aluminium Industry: *Andreas Wolf*[1]; Peter Hilgraf[1]; [1]Claudius Peters Projects GmbH

9:10 AM
Unique High-Temperature Facility for Studying Organic Reactions in the Bayer Process: *Allan Costine*[1]; Joanne Loh[1]; Robbie McDonald[1]; Greg Power[1]; [1]CSIRO Minerals

9:40 AM Break

10:00 AM
Technology Solutions to Increase Alumina Recovery from Aluminogoethitic Bauxites: *Andrey Panov*[1]; Alexander Suss[1]; Alexander Fedyaev[1]; [1]RUSAL VAMI

10:30 AM
New Polymers for Improved Flocculation of High DSP-Containing Muds: *Matthew Davis*[1]; Qi Dai[1]; H.-L. Tony Chen[1]; Matthew Taylor[1]; [1]Cytec Industries

11:00 AM
Some Aspects of Tricalcium Aluminate Hexahydrate Formation on the Bayer Process: *Silvia Franca*[1]; Paulo Braga[1]; Jorge Aldi Lima[2]; Juarez Moraes[2]; Americo Borges[2]; [1]CETEM; [2]Alunorte

Aluminum Alloys: Fabrication, Characterization and Applications: Processing and Texture

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Tuesday AM Room: 615
February 16, 2010 Location: Washington State Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

8:30 AM
Concurrent Precipitation in Continuous Cast Al Alloys: Q. Zeng[1]; *Tongguang Zhai*[1]; [1]University of Kentucky

8:50 AM
Characterization of Novel Microstructures in Al-Ag-Cu Ternary Eutectic: *Amber Genau*[1]; Lorenz Ratke[1]; Markus Köhler[1]; [1]German Aerospace Center

9:10 AM
Evaluation of Process Speed Effect in Aluminium Extrusion by Experiment and Simulations: *Barbara Reggiani*[1]; Lorenzo Donati[1]; Luca Tomesani[1]; [1]University of Bologna

9:30 AM
Processing of Forgings with Fine Crystalline Structure out of Commercial Aluminum Alloys: *Vadim Trifonov*[1]; [1]Institute for Metals Superplasticity Problems, Russian Academy of Sciences

9:50 AM Break

10:05 AM
Growth Morphology of Eutectic under Unidirectional Solidification in Al-13%Si Alloys Containing Strontium and Magnesium: Hengcheng Liao[1]; Wanru Huang[1]; Shengqing Wu[1]; Mingdong Cai[2]; *Qigui Wang*[3]; [1]Southeast University; [2]Exova - Houston Laboratory; [3]Advanced Materials Engineering, GM Powertrain

10:25 AM
Influence of Cold Rolling and Equal-Channel Angular Extrusion on the Microstructural and Mechanical Behaviors of Al-40Zn Alloy: *Gencaga Purcek*[1]; Onur Saray[1]; Ibrahim Karaman[2]; [1]Karadeniz Technical University; [2]Texas A&M University

10:45 AM
Experimental Investigations on Influence of Process Parameters on Weld Strength of Friction Stir Welded Aluminium Alloy: *Krishnaiah Arkanti*[1]; Syed Yousuful Haq[2]; [1]Osmania University; [2]Steel Authority of India Limited

11:05 AM
Optimization of Baking Hardening of Al 5052 Sheet by a Response Surface Method: Atiye Nekahi[1]; Kamran Dehghani[1]; Mohammad Ali Mohammad Mirzaie[2]; *Niloofar Kamkar Zahmatkesh*[1]; [1]Amirkabir University of Technology; [2]Modares University

11:25 AM
Orientation Distribution Plots in a Cold-Rolled Heat-Treated Specimen of Aluminum Alloy 6061: Samuel Adedokun[1]; *Victor Ojo*[2]; [1]University of Lagos, Akoka-Yaba, Lagos, Nigeria; [2]Ladoke Akintola University of Technology

11:45 AM
Comparison of Textures and Microstructures between AA3XXX Hot Bands from Three Different Casting Processes: *Xiyu Wen*[1]; Yansheng Liu[2]; Ningileri Shridas[2]; Tongguang Zhai[1]; Zhong Li[3]; [1]University of Kentucky; [2]Secat, Inc.; [3]Aleris International Inc.

Aluminum Reduction Technology: Hall-Héroult Cell: Technology

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Tuesday AM Room: 608
February 16, 2010 Location: Washington State Convention Center

Session Chair: Alton Tabereaux, Consultant

8:30 AM Introductory Comments

8:35 AM
Development of the AP39: The New Flagship of AP Technology: Olivier Martin[1]; Laurent Fiot[1]; David Munoz[1]; Xavier Berne[1]; Claude Ritter[1]; [1]Rio Tinto Alcan

9:00 AM
DX Pot Technology Powers Green Field Expansion: *Ali Al Zarouni*[1]; Marc Zelicourt[1]; Maryam Al Jallaf[1]; Kamel Alaswad[1]; Arvind Kumar[1]; Abdulla Al Reyami[1]; Vijay Kumar[1]; Dinesh Bakshi[1]; Jose Blasques[1]; Ibrahim Baggash[1]; [1]DUBAL

9:25 AM
New Logistic Concepts for 400 and 500 kA Smelters: *Maarten Meijer*[1]; [1]Hencon

9:50 AM
The Pot Technology Development in China: *Zhu Jia ming*[1]; Yang Xiaodong[1]; Sun Kangjian[1]; [1]SAMI

10:15 AM Break

10:20 AM
The Newly Advancement of SY400 Pot: *Sun Kangjian*[1]; [1]Shenyang Aluminum and Magnesium Engineering and Research Institute

10:45 AM
Successful Commercial Operation of NEUI400 Potline: *Xiquan Qi*[1]; [1]Northeastern University Engineering and Research Institute, Co., Ltd

11:10 AM
Continues Advancement in Lanzhou Smelter: Sun Kangjian[1]; *Jun Chen*[2]; [1]Lanzhou Branch CHALCO; [2]Shenyang Aluminum and Magnesium Engineering and Research Institute

11:35 AM
Baking Start-up and Operation Practices of 400kA Prebaked Anode Pots: *Yungang Ban*[1]; Xiquan Qi[1]; Dingxiong Lv[1]; Jihong Mao[1]; Yu Mao[1]; Zhaowen Wang[1]; Zhongning Shi[1]; Bingliang Gao[1]; Xianwei Hu[1]; [1]Northeastern University Engineering and Research Institute Co. Ltd

12:00 PM Concluding Comments

Biological Materials Science: Mechanical Behavior of Biological Materials I: Nature-inspired Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Tuesday AM Room: 205
February 16, 2010 Location: Washington State Convention Center

Session Chairs: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University

8:30 AM IOM Mehl Award Winner Announcement for Rob Ritchie

8:35 AM Keynote
***Institute of Metals/Robert Franklin Mehl Award Winner*: Nature-Inspired Structural Materials**: *Robert Ritchie*[1]; [1]University of California Berkeley

9:15 AM
Mechanical Properties of Saxidomus Purpuratus Shells: *Yang Wen*[1]; Zhang Guangping[2]; Li Xiaowu[1]; Marc Andre Meyers[3]; [1]Northeastern University; [2]Institute of Metal Research Chinese Academy of Science; [3]University of California, San Diego

9:35 AM
Structure and Mechanical Properties of Armadillo Armor: *Irene Chen*[1]; Y. S. Lin[1]; P.-Y. Chen[1]; Marc Meyers[1]; J. McKittrick[1]; [1]University of California, San Diego

9:55 AM
Battle in the Amazon: Araipamas (Pirarucu) vs. Serrasalmus (Piranha): *Marc Meyers*[1]; Y. S. Lin[1]; P.-Y. Chen[1]; E. A. Olevsky[2]; J. McKittrick[1]; [1]University of California, San Diego; [2]San Diego State University

10:15 AM Break

10:25 AM Invited
Biological Materials, Biomaterials and Biomimetics: *Ulrike Wegst*[1]; [1]Drexel University

10:55 AM
What it Takes to be Light as a Feather: *Sara Bodde*[1]; Joanna McKittrick[1]; Marc Meyers[1]; [1]University of California, San Diego

11:15 AM
Microstructural Features that Toughen Horn: *Katya Novitskaya*[1]; Ana Castro-Ceseña[2]; Luca Tombolato[1]; Po-Yu Chen[1]; Steven Lee[1]; Gustavo Hirata[3]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]Centro de Investigación Científica y de Educación Superior de Ensenada; [3]Center for Nanoscience and Nanotechnology

11:35 AM
Structural Investigations on Demineralized and Deproteinated Bone: *Ana Castro-Ceseña*[1]; Po-Yu Chen[2]; Gustavo Hirata[3]; Damon Toroian[2]; Paul Price[2]; Joanna McKittrick[2]; [1]Centro de Investigación Científica y de Educación Superior de Ensenada; [2]University of California, San Diego; [3]Center for Nanoscience and Nanotechnology

11:55 AM
Arthropod Cuticle: A Biological Multifunctional Composite Used As Template for Multidisciplinary Nano-To-Macro-Scale Hierarchical Modeling: *Martin Friak*[1]; Michal Petrov[1]; Svetoslav Nikolov[1]; Christoph Sachs[1]; Helge Fabritius[1]; Pavlina Elstnerova[1]; Duancheng Ma[1]; Liverios Lymperakis[1]; Dierk Raabe[1]; Sabine Hild[2]; Andreas Zigler[3]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research; [2]Johannes Kepler University Linz; [3]University of Ulm

Bulk Metallic Glasses VII: Alloy Development and Application I

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 AM Room: 213
February 16, 2010 Location: Washington State Convention Center

Session Chairs: J. Eckert, IFW Dresden; Marios Demetriou, California Institute of Technology

8:30 AM Invited
Strengthening of Ti-Base Glass-Forming Alloys by Microstructure Design: *J. Eckert*[1]; [1]IFW Dresden

8:50 AM
Novel Semi-Solid Processing Techniques for Metallic Glass Matrix Composites: *Douglas Hofmann*[1]; Henry Kozachakov[2]; Hesham Khalifa[3]; Joseph Schramm[2]; Marios Demetriou[2]; Kenneth Vecchio[3]; William Johnson[2]; [1]Liquidmetal Technologies; [2]California Institute of Technology; [3]University of California, San Diego

9:00 AM Invited
High Performance Structures Made of Ductile-Phase Reinforced Metallic Glass: *Marios Demetriou*[1]; Joseph Schramm[1]; Douglas Hofmann[1]; William Johnson[1]; [1]California Institute of Technology

9:20 AM
Applications for Amorphous Metals in Reactive Materials: *Alan Brothers*[1]; [1]Mainstream Engineering

9:30 AM Invited
Thermodynamics and Stability of Nanoglasses with Tunable Atomic Structure: Basic Ideas and First Results: *Hans Fecht*[1]; [1]Ulm University

9:50 AM
Nanofabrication with Metallic Glasses: *Golden Kumar*[1]; Shiyan Ding[1]; Jan Schroers[1]; [1]Yale University

10:00 AM Break

10:10 AM Invited
Development of Bulk Metallic Glasses with High Plasticity Using the Surface Nano-Crystallization: *Jian Lu*[1]; Ji Tang Fan[1]; Qing Wang[1]; Yuan Hao Huang[1]; Hao Jiang[1]; [1]The Hong Kong Polytech University

10:30 AM
Bulk Metallic Glasses and the Composites Fabricated by Microwave-Induced Heating and Sintering: *Guoqiang Xie*[1]; Song Li[1]; Dmitri V. Louzguine-Luzgin[1]; Motoyasu Sato[2]; Akihisa Inoue[1]; [1]Tohoku University; [2]National Institute for Fusion Science

10:40 AM Invited
Formation and Properties of New Au-Based Bulk Glassy Alloys with Ultralow Glass Transition Temperature: *Wei Zhang*[1]; Hai Guo[2]; Mingwei Chen[3]; Yasunori Saotome[1]; Chunling Qin[3]; Akihisa Inoue[4]; [1]Institute for Materials Research, Tohoku University; [2]Graduate School, Tohoku University; [3]WPI, Advanced Institute for Materials Research, Tohoku University; [4]Tohoku University

11:00 AM
Nanoglass Formation and Properties Studied by Molecular Dynamics Simulations: *Daniel Sopu*[1]; Karsten Albe[1]; Herbert Gleiter[2]; [1]TU-Darmstadt; [2]Research Center Karlsruhe

11:10 AM
Fabrication and Mechanical Characterization of Zr-Based Bulk-Metallic-Glass-Matrix Composites: *Junwei Qiao*[1]; Yong Zhang[1]; [1]USTB

11:20 AM
Synthesis of $Cu_{50}Zr_{50}$Bulk Metallic Glasses Composites by Spark Plasma Sintering: *Zhihui Zhang*[1]; Troy Topping[1]; Ying Li[1]; Yizhang Zhou[1]; Enrique Lavernia[1]; [1]University of California, Davis

11:30 AM
Synthesis of Amorphous/Amorphous and Amorphous/Crystalline Composites in Phase Separating Gd-Ti-Al-(Co/Cu) Alloys: *Sung Woo Sohn*[1]; Wan Yook[1]; Hye Jeong Chang[2]; Won Tae Kim[3]; Do Hyang Kim[1]; [1]Yonsei University; [2]Oak Ridge National Laboratory; [3]Cheongju University

11:40 AM Invited
Air-Oxidation of a (Zr55Cu30Al10Ni5)98Er2 Bulk Metallic Glass at 350-500°C: *Wu Kai*[1]; P.C. Kao[1]; I.F. Ren[1]; P.C. Lin[1]; Z.H. Hsiao[1]; D.W. Xing[2]; P.K. Liaw[3]; [1]Institute of Materials Engineering, National Taiwan Ocean University; [2]Department of Materials Science, Harbin Institute of Technology; [3]Department of Materials Science and Engineering, The University of Tennessee, Knoxville

12:00 PM
Artificial Microstructures as a Tool Box to Study Shear Band Stabilization in BMG Composites: Golden Kumar[1]; *Jan Schroers*[1]; [1]Yale University

Carbon Dioxide and Other Greenhouse Gas Reduction Metallurgy - 2010: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Neale Neelameggham, US Magnesium LLC; Ramana Reddy, The University of Alabama; Jiann-Yang Hwang, Michigan Technological University; Jean-Pierre Birat, Arcelor Mittal; Kotaro Ogura, Yamaguchi University

Tuesday AM Room: 310
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Mahesh Jha, US Dept of Energy; Lifeng Zhang, Missouri University

8:30 AM Introductory Comments

8:35 AM Invited
Overview of Removal Methods for CO2 and Other Greenhouse Gases and Details of the Method Using Non-Thermal Plasma: Marcela Morvová[1]; *Imrich Morva*[1]; Mario Janda[1]; [1]Comenius University

9:15 AM
DOE's Industrial Energy Efficiency Grand Challenge Solicitation to Support Development of Technologies to Reduce Energy Intensity and Greenhouse Gas Emissions: *Mahesh Jha*[1]; Bhima Sastri[1]; [1]U. S. Department of Energy

9:40 AM
Sunshine to Petrol: A Metal Oxide-Based Thermochemical Route to Solar Fuels: *James Miller*[1]; Richard Diver[1]; Nathan Siegel[1]; Eric Coker[1]; Andrea Ambrosini[1]; Daniel Dedrick[1]; Mark Allendorf[1]; Gary Kellogg[1]; Roy Hogan[1]; Ellen Stechel[1]; Ken Chen[1]; [1]Sandia National Laboratories

10:05 AM Break

10:15 AM
Synthetic Fuel Production Utilizing CO2 Recycling as an Alternative to Sequestration: *Joseph Hartvigsen*[1]; S Elangovan[1]; Lyman Frost[1]; Carl Stoots[2]; James O'Brien[2]; J. S. Herring[2]; Manohar Sohal[2]; Grant Hawkes[2]; [1]Ceramatec Inc; [2]Idaho National Laboratory

10:40 AM
Development of Self-Reduction as the Future of Metals-Making Technology: *Jose Noldin*[1]; D'Abreu José[2]; [1]Tecno-Logos S/A; [2]Catholic University (PUC-Rio)

11:05 AM
Synthesis of Zeolitic Imidazolate Frameworks for Adsorbing Carbon Dioxide: Jinghua Zou[1]; *Huimin Lu*[1]; Min Li[1]; [1]Beihang University

11:30 AM
Photochemical and Photo Electrochemical Conversion of Carbon Dioxide to Methanol Using Nanotubular TiO2: *Manoranjan Misra*[1]; S. Mohapatra[1]; [1]University of Nevada

Cast Shop for Aluminum Production: Grain Refinement, Alloying, Solidification and Shape Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Pierre Le Brun, Alcan Voreppe Research Center

Tuesday AM Room: 609
February 16, 2010 Location: Washington State Convention Center

Session Chair: Rein Vainik, Swerea KIMAB

8:30 AM
On the Mechanism of Grain Refinement by Ultrasonic Melt Treatment in the Presence of Transition Metals: *Dmitry Eskin*[1]; Tetyana Atamanenko[2]; Liang Zhang[2]; Laurens Katgerman[2]; [1]Materials Innovation Institute; [2]Delft University of Technology

8:55 AM
Impurities in Al-5Ti-1B (wt.%) Grain Refiner Rod: Brian McKay[1]; Georg Nunner[1]; Georg Geier[2]; *Peter Schumacher*[1]; [1]University of Leoben; [2]Austrian Foundry Institute

9:20 AM
Experience with Production Scale Usage of Optifine – A High Efficiency Grain Refiner: *John Courtenay*[1]; Rein Vainik[2]; [1]MQP Limited; [2]Swerea KIMAB

9:45 AM
Effects of Cooling Rate on Microstructure in En-Ac43000 Gravity Castings and Related T6 Mechanical Properties: *Ivan Todaro*[1]; Rosario Squatrito[1]; Alessandro Morri[1]; Luca Tomesani[1]; [1]University of Bologna

10:10 AM
Evaluation of Transient Heat Transfer Coefficient Evolution in EN43000 Gravity Castings towards Steel Chills with Different Interface Conditions: Rosario Squatrito[1]; Ivan Todaro[1]; Luca Tomesani[1]; [1]University of Bologna

10:35 AM
In Situ Synchrotron Quantification of Fe-Rich Intermetallic Formation in Al-Si-Cu-Fe Alloys: *Chedtha Puncreobutr*[1]; Junsheng Wang[1]; Peter Lee[1]; [1]Imperial College London

Characterization of Minerals, Metals and Materials: Characterization of Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Tuesday AM Room: 307
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Sergio Monteiro, State University of the Northern Rio de Janeiro – UENF; Donato Firrao, Politecnico di Torino

8:30 AM
Detection of Creep Damage in a Nickel Base Super-Alloy by Nondestructive Means: *Hector Carreon*[1]; [1]UMSNH

8:50 AM
Microstructural, Mechanical and Fatigue Properties of Cobalt Alloys: Giorgio Scavino[1]; Paolo Matteis[1]; Giovanni Mortarino[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

9:10 AM
Reconstruction and Visualization of Multi-Phase Three-Dimensional Microstructure of a Cast Al-Si Base Alloy: *Arun Gokhale*[1]; Harpreet Singh[1]; Yuxiong Mao[1]; Asim Tewari[2]; Anil Sachdev[2]; [1]Georgia Institute of Technology; [2]General Motors Co.

9:30 AM
Phase Separation in Fe-20%Cr-6%Al-0.5%Ti ODS Alloy: *Carlos Capdevila-Montes*[1]; Michael Miller[2]; Felix Lopez[1]; Jesus Chao[1]; Kaye Russell[2]; [1]CENIM-CSIC; [2]ORNL

9:50 AM
Development of a High-Temperature Micro-Indentation Technique for Material Mechanical Property Evaluation up to 1200°C: Jared Tannenbaum[1]; Brody Conklin[1]; *Bruce Kang*[1]; Mary Anne Alvin[2]; [1]West Virginia University; [2]National Energy Technology Lab

10:10 AM
Characterization and Properties of a Stoichiometric NiTiPt High Temperature Shape Memory Alloy: *Fan Yang*[1]; Libor Kovarik[1]; Anita Garg[2]; Michael Kaufman[3]; Santo Padula[2]; Ronald Noebe[2]; Michael Mills[1]; [1]The Ohio State University; [2]NASA Glenn Research Center; [3]Colorado School of Mines

10:30 AM
Estimation of Three-Dimensional Mean Dihedral Angle in a W-Ni-Fe Alloy Liquid-Phase Sintered in Microgravity: Maneel Bharadwaj[1]; Arun Gokhale[1]; *William Goodwin*[2]; [1]Georgia Institute of Technology; [2]University of Tennessee

10:50 AM
Microscopic Analysis of Ni-Cr Alloy Produced by Single Roll Strip Casting: *Sanjeev Das*[1]; J. B. Seol[1]; Y.C. Kim[2]; C. G. Park[1]; [1]POSTECH; [2]Research Institute of Industrial Science and Technology

11:10 AM
Influence of TCP Phase on Enduring Property of Single Crystal Nickle-Based Superalloys: *Tian Sugui*[1]; Qian Benjiang[1]; Li Tang[1]; Wang Minggang[1]; Xie Jun[1]; [1]Shenyang University of Technology

11:30 AM
Structure and Properties of Melt-Spun Ni-Ti Shape Memory Alloy: *Walman Castro*[1]; Carlos Araújo[1]; George Anselmo[1]; [1]Universidade Federal de Campina Grande

11:50 AM
The Modeling and Processes Research of Titan Aluminides Structurization Received by SHS Technology: *Sereda Borys*[1]; Aleksandr Zherebtsov[1]; Yuriy Belokon'[1]; [1]ZSEA

12:10 PM
Influence of Preparing Technologies on Microstructure and Creep Behavior of GH4169 Alloy: *Tian Sugui*[1]; Li Zhenrong[1]; Zhao Zhonggang[1]; Chen Liqing[2]; Liu Xianghua[2]; [1]Shenyang University of Technology; [2]Northeast University

Coatings for Structural, Biological, and Electronic Applications: Metallic Coatings

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ; Choong-un Kim, University of Texas at Arlington; Nancy Michael, University of Texas at Arlington

Tuesday AM Room: 309
February 16, 2010 Location: Washington State Convention Center

Session Chair: Roger Narayan, University of North Carolina

8:30 AM Introductory Comments

8:40 AM
Evaluation of Thermal and Intrinsic Stress in Copper and Tantalum Sputtered Films: *Anahita Navid*[1]; Eric Chason[2]; Andrea Hodge[1]; [1]University of Southern California; [2]Brown University

9:05 AM
Surface Modification of Steel Substrate by Pulsed Laser Deposition Technique: *Shampa Aich*[1]; Saket Ahuja[1]; Lakpathi Banoth[1]; Indranil Manna[1]; [1]Indian Institute of Technology

9:30 AM
A Nucleation and Growth Model for Pulse Plated Trivalent Chromium Deposition: *Yong Choi*[1]; Sik C. Kwon[2]; [1]Sunmoon University; [2]KIMS

9:55 AM Break

10:10 AM
An Investigation on Phase Formations and Microstructures of Ni-Rich NiTi Shape Memory Alloy Thin Films: *B. Geetha Priyadarshini*[1]; Shampa Aich[1]; Madhusudan Chakraborty[1]; [1]Indian Institute of Technology

10:35 AM
Effect of Heat Treatment on the Microstructure and Mechanical Properties of Ti-Mo-N Coating Films: *Shoko Komiyama*[1]; Yuji Sutou[1]; Junichi Koike[1]; [1]Tohoku University

11:00 AM
PVD Coated Hot Work Tool Steels for Tooling Applications in Semi-Solid Processing of Steels: *Duygu Isler*[1]; Yucel Birol[2]; Mustafa Urgen[1]; [1]Istanbul Technical University; [2]TUBITAK

Computational Thermodynamics and Kinetics: Wetting Phenomena I

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: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

Tuesday AM Room: 308
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Grain Boundary Premelting: Insights from Order Parameter Models: *Alain Karma*[1]; Ari Adland[1]; Robert Spatschek[2]; [1]Northeastern University; [2]Ruhr-University

9:00 AM Invited
Molecular Dynamics Simulations of Brazing: *Edmund Webb*[1]; Jeff Hoyt[2]; [1]Sandia National Laboratories; [2]McMaster University

9:30 AM
A Hybrid Phase-Field and ALE Model for Reactive Wetting in Metal/Metal Systems: *Shun Su*[1]; Bruce Murray[2]; Ying Sun[1]; [1]Drexel University; [2]Binghamton University

9:50 AM Break

10:00 AM Invited
Modeling Grain Boundaries: Wetting, Vacancies and Creep: *James Warren*[1]; William Boettinger[1]; [1]NIST

10:30 AM Invited
Atomistic Behavior Driving High Temperature Contact Line Advancement: *Ying Sun*[1]; Edmund Webb[2]; [1]Drexel University; [2]Sandia National Laboratories

11:00 AM
Diffusivity in Al-Cu and Cu-Zr Liquids: *Shihuai Zhou*[1]; Ralph E. Napolitano[2]; [1]Ames Laboratory; [2]Department of Materials Science and Engineering, Iowa State University

11:20 AM
A Study of the Te Melting Line and Solid-Liquid Transitions: *Chuck Henager*[1]; Fei Gao[1]; John Jaffe[1]; [1]PNNL

11:40 AM
Compositional Patterning and Morphological Evolutions in Binary and Ternary Alloys Driven by Irradiation: *Pascal Bellon*[1]; Anoop Damodaran[1]; Daniel Schwen[1]; Robert Averback[1]; [1]University of Illinois

12:00 PM
Irradiation Induced Re-Solution and Growth of Xenon Nano-Bubbles Simulated by First Passage Monte Carlo: *Daniel Schwen*[1]; Robert Averback[1]; [1]University of Illinois

Cost-Affordable Titanium III: Powder Consolidation and Properties I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Tuesday AM Room: 618
February 16, 2010 Location: Washington State Convention Center

Session Chairs: James Withers, Materials and Electrochemical Research Corporation; Derek Fray, University of Cambridge

8:30 AM
Equations for the Compaction of Titanium Powders: *Stephen Gerdemann*[1]; Paul Jablonski[1]; [1]NETL

8:55 AM
Making Titanium Powder Metallurgy a Viable Alternative to Wrought for Manufacturing: *James Sears*[1]; [1]South Dakota School of Mines and Technology

9:20 AM
Development of an Affordable Supply Chain for Meltless Titanium Alloys: *Eric Ott*[1]; Andy Woodfield[1]; Jon Blank[1]; Michael Peretti[1]; David Linger[1]; [1]GE Aviation

9:45 AM
Consolidation Process in Near Net Shape Manufacturing of Armstrong CP-Ti/Ti-6Al-4V Powders: *Yukinori Yamamoto*[1]; Jim Kiggans[1]; Michael Clark[1]; Stephan Nunn[1]; Adrian Sabau[1]; William Peter[1]; [1]Oak Ridge National Laboratory

10:10 AM Break

10:25 AM
Technical Challenges and Solutions for Cost-Efficient Manufacturing of Complex Shape Parts from Ti Alloys via PM HIP: *Victor Samarov*[1]; [1]Synertech PM Inc.

10:50 AM
Cost-Effective Production and Thermomechanical Consolidation of Titanium Alloy Powders: *Deliang Zhang*[1]; Stiliana Raynova[1]; Vijay Nadakuduru[1]; Peng Cao[1]; Brian Gabbitas[1]; Barry Robinson[2]; [1]The University of Waikato; [2]South Auckland Forging Engineering Ltd

11:15 AM
The Impact of Diffusion on Synthesis of High-Strength Titanium Alloys from Elemental Powder Blends: *Orest Ivasishin*[1]; Vadym Bondarchuk[1]; Dmytro Savvakin[1]; [1]G.V. Kurdyumov Institute for Metal Physics, NAS of Ukraine

11:40 AM
In-situ Compression and Sintering of CP-Ti Powder Made by Armstrong Process: *Wei Chen*[1]; Yukinori Yamamoto[2]; William Peter[2]; [1]Michigan State University; [2]Oak Ridge National Lab

Electrode Technology for Aluminum Production: Non-Carbon Materials in Cathodes

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Tuesday AM Room: 616
February 16, 2010 Location: Washington State Convention Center

Session Chair: Arne Ratvik, NTNU

8:30 AM Introductory Comments

8:35 AM
Lower Aluminium Production Cost through Refractory Material Selection: *Ole-Jacob Siljan*[1]; Steinar Slagnes[2]; Anton Sekkingstad[2]; Egil Furu[1]; Sigurd Aaram[1]; Asbjørn Solheim[3]; [1]Hydro Aluminium AS; [2]North Cape Minerals; [3]SINTEF

9:00 AM
Chemical Degradation Map for Sodium Attack in Refractory Linings: *Kati Tschöpe*[1]; Tor Grande[1]; Jørn Rutlin[2]; [1]NTNU; [2]Hydro Aluminium AS

9:25 AM
Reactions in the Bottom Lining of Aluminium Reduction Cells: *Asbjorn Solheim*[1]; Christian Schøning[1]; Egil Skybakmoen[1]; [1]SINTEF

9:50 AM
Sidewall Materials for the Hall-Heroult Process: Reiza Mukhlis[1]; Muhammad Rhamdhani[1]; *Geoffrey Brooks*[1]; [1]Swinburne University of Technology

10:15 AM Break

10:30 AM
Excellent Cryolite Resistance and High Thermal Conductivity SiC Sidewall Material for High-Amperage Aluminium Reduction Cells: *Zhigang Huang*[1]; [1]LIRR

10:55 AM
Structure Design and Deformation Measurements of C/TiB2 Function Gradient Materials for Aluminum Reduction Cathode: *Jilai Xue*[1]; Baisong Li[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

11:20 AM
Electrolysis Expansion Performance of TiB_2-C Composite Cathode in $[K_3AlF_6/Na_3AlF_6]$-AlF_3-Al_2O_3 Melts: Fang Zhao[1]; *Lu Xiao-jun*[1]; Li Jie[1]; Lai Yan-qing[1]; Tian Zhong-liang[1]; [1]School of Metallurgical Science and Engineering, Central South University

Failure of Small-Scale Structures: Deformation Events in Pillars, Films and Other Structures

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Marian Kennedy, Clemson Univeristy; Brad Boyce, Sandia National Laboratory; Reinhold Dauskardt, Stanford; Zhiwei Shan, Hysitron Inc

Tuesday AM Room: 206
February 16, 2010 Location: Washington State Convention Center

Session Chair: Zhiwei Shan, Hysitron Inc.

8:30 AM Invited
Prestraining and Annealing of Gold Micropillars: Strengthening and Weakening Turned Upside Down: *William Nix*[1]; Seok-Woo Lee[1]; [1]Stanford University

8:55 AM Invited
In-situ Micromechanical Testing: *Johann Michler*[1]; [1]EMPA, Swiss Federal Laboratories for Materials Testing and Research

9:20 AM
Investigation of the Deformation Mechanism of Gum Metal by In Situ TEM Nanocompression Testing: *Elizabeth Withey*[1]; Andrew Minor[1]; Shigeru Kuramoto[2]; Daryl Chrzan[1]; John Morris[1]; [1]University of California, Berkeley; [2]Toyota Central R&D Laboratories, Inc.

9:35 AM Invited
A Combined Experimental and Simulation Study to Examine Lateral Constraint Effects in Ni Superalloy Microcrystals: Paul Shade[1]; Robert Wheeler[2]; Yoon-Suk Choi[2]; *Michael Uchic*[3]; Dennis Dimiduk[3]; Hamish Fraser[4]; [1]Universal Technology Corporation; [2]UES, Inc.; [3]Air Force Research Laboratory; [4]The Ohio State University

10:00 AM Break

10:15 AM Invited
Interface Fracture and Fatigue of Thin Metallic Films on Substrates: *Gerhard Dehm*[1]; Megan Cordill[1]; Walther Heinz[2]; Kurt Matoy[3]; F. Dieter Fischer[4]; [1]University of Leoben, Materials Physics; [2]Austrian Academy of Sciences, Erich Schmid Institute of Materials Science; [3]Kompetenzzentrum Automobil- und Industrie-Elektronik GmbH; [4]University of Leoben, Institute for Mechanics

10:40 AM
Buckle Driven Delamination in Thin Gold Film-Compliant Substrate Systems: *Neville Moody*[1]; John Yeager[2]; E. David Reedy[1]; Edmundo Corona[1]; Marian Kennedy[3]; Megan Cordill[4]; David Adams[1]; David Bahr[2]; [1]Sandia National Laboratories; [2]Washington State University; [3]Clemson University; [4]Erich Schmid Institute

10:55 AM
Strain Rate Sensitivity Effects on the Failure of Metal Films on Compliant Substrates: *Megan Cordill*[1]; Gerhard Dehm[1]; [1]University of Leoben

11:10 AM
Fracture Properties of Fuel Cell Membranes: *Ruiliang Jia*[1]; Kemal Levi[1]; Takuya Hasegawa[2]; Jiping Ye[3]; Reinhold Dauskardt[1]; [1]Stanford University; [2]Nissan Motor Co., Ltd; [3]Nissan ARC LTD.

11:25 AM
Exploiting Delamination to Fabricate Microcontact-Printed MEMS: *Corinne Packard*[1]; Vladimir Bulovic[1]; [1]Massachusetts Institute of Technology

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Innovations in Additive Manufacturing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Tuesday AM Room: 306
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Michael Peretti, GE Aviation; Patrick Martin, AFRL-RX

8:30 AM Invited
Additive Manufacturing's Role in Fabrication and Repair of Aerospace Components: *James Sears*[1]; [1]South Dakota School of Mines and Technology

9:00 AM
Advanced Gas Atomization Processing for Ti and Ti Alloy Powder Manufacturing: *Iver Anderson*[1]; James Sears[2]; David Byrd[3]; Joel Rieken[4]; Andrew Heidloff[4]; Mike Glynn[3]; Mark Ward[3]; [1]Ames Laboratory; [2]South Dakota School of Mines and Technology; [3]n/a; [4]Iowa State University

9:20 AM
Cold Spray Characteristics of Ti-6Al-4V Coating: *Ahmad Rezaeian*[1]; Eric Irissou[2]; Steve Yue[1]; [1]McGill University; [2]National Research Council Canada (NRC)

9:40 AM
Additive Manufacturing of Gamma Titanium Aluminide Parts by Electron Beam Melting: Silvia Sabbadini[1]; Oriana Tassa[2]; Paolo Gennaro[3]; *Ulf Ackelid*[4]; [1]Avio SpA; [2]Centro Sviluppo Materiali S.p.A; [3]ProtoCast S.r.l.; [4]Arcam AB

10:00 AM Break

10:20 AM
Properties of Ti-5Al-5Mo-5V-3Cr Samples Produced via Powder Hot-Isostatic-Pressing: *Nick Wain*[1]; Xinjiang Hao[1]; Ravi Swamy[1]; Xinhua Wu[1]; [1]The University of Birmingham

10:40 AM
The Influence of Thermal History on the Microstructure of Laser-Additive-Manufactured Ti-6Al-4V Samples: *Xinhua Wu*[1]; Laura Qian[1]; Junfa Mei[1]; [1]The University of Birmingham

11:00 AM
Fabrication and Characterization of Reticulated, Porous Mesh Arrays and Foams for Aerospace Applications by Additive Manufacturing Using Electron Beam Melting: *Sara Gaytan*[1]; L.E. Murr[1]; F. Medina[1]; E. Martinez[1]; L. Martinez[1]; R.B. Wicker[1]; [1]UTEP

11:20 AM
Properties and Microstructure of Net Shape HIPped Ti6Al4V Components: Kun Zhang[1]; Junfa Mei[1]; *Xinhua Wu*[1]; [1]The University of Birmingham

11:40 AM
Influence of Powder Particle Size on the Microstructure and Properties of HIPped Ti Alloy Powders: *Kun Zhang*[1]; Junfa Mei[1]; Xinhua Wu[1]; [1]The University of Birmingham

Heterogeneous Nucleation and Initial Microstructure Evolution in Alloys and Colloids: Experiment I

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/ASM: Phase Transformations Committee
Program Organizers: Rainer Schmid-Fetzer, Clausthal University of Technology; Heike Emmerich, RWTH Aachen University; Frans Spaepen, Harvard University; Martin Glicksman, University of Florida; John Perepezko, University of Wisconsin, Madison

Tuesday AM Room: 614
February 16, 2010 Location: Washington State Convention Center

Session Chairs: David StJohn, University of Queensland; Heike Emmerich, RWTH Aachen

8:30 AM Invited
Heterogeneous Nucleation in Peritectic Systems: *Rohit Trivedi*[1]; Jongho Shin[1]; John Perepezko[2]; [1]Iowa State University; [2]University of Wisconsin-Madison

8:55 AM
Heterogeneous Nucleation in Charged Colloidal Model Systems Induced by Seeds of Various Shape and Structure: *Hans Joachim Schöpe*[1]; Patrick Wette[2]; Andreas Engelbrecht[1]; Markus Franke[1]; [1]University of Mainz; [2]Deutsches Zentrum für Luft- und Raumfahrt

9:15 AM
Colloids as Model Systems for Undercooled Metallic Melts: *Ina Klassen*[1]; Patrick Wette[1]; Dirk Holland-Moritz[1]; Thomas Palberg[2]; Dieter M. Herlach[1]; [1]German Aerospace Center; [2]Johannes Gutenberg Universität Mainz

9:35 AM
Competition between Heterogeneous and Homogeneous Nucleation near a Flat Wall: Patrick Wette[1]; Hans-Joachim Schöpe[2]; Ina Klassen[1]; *Dieter Herlach*[1]; [1]German Aerospace Center; [2]Johannes Gutenberg Universität Mainz

9:55 AM
Preliminary Investigation of the Nucleation of Si in Entrained Droplets in High Purity Al Alloys: Muhammad Zarif[1]; Brian McKay[1]; *Peter Schumacher*[1]; [1]University of Leoben

10:15 AM Break

10:35 AM Invited
Study of Heterogeneous Nucleation in High Purity Al-Si Alloys with Sr Addition: *Peter Schumacher*[1]; [1]University of Leoebn

11:00 AM
Embryonic Crystallization in Al-Based Marginal Glass Forming Alloys: *Eren Kalay*[1]; Matthew Kramer[1]; Scott Chumbley[1]; Iver Anderson[1]; Ralph Napolitano[1]; [1]Ames Laboratory

11:20 AM
Intrinsic Heterogeneous Nucleation in Eutectic Systems: *Joachim Bokeloh*[1]; Gerhard Wilde[1]; [1]Universität Münster

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Tuesday AM Room: 212
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Ab Initio Modeling of the Lattice Stability of W in the Presence of Interstitials: *Marcel Sluiter*[1]; [1]TU Delft

9:00 AM Invited
Alloy Thermodynamics without Lattice Stability?: *Axel van de Walle*[1]; [1]Caltech

9:30 AM Invited
DFT, CE, CALPHAD and Phase Field, Cooperative Phenomena Powered by DDF: *Suzana Fries*[1]; [1]ICAMS, Ruhr University Bochum

10:00 AM Break

10:30 AM Invited
First-Principles Calculations of Free Energies of Unstable Phases: *Vidvuds Ozolins*[1]; [1]University of California, Los Angeles

11:00 AM
Another View of Phase Diagrams: *John Morral*[1]; Ximiao Pan[1]; [1]Ohio State University

11:20 AM Invited
The Kinetics of Diffusional and Structural Phase Transformations from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

11:50 AM Invited
Vibrational Thermodynamics at High Temperatures: *Brent Fultz*[1]; [1]California Institute of Technology

International Symposium on High-Temperature Metallurgical Processing: Secondary Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Jerome Downey, Montana Tech

Tuesday AM Room: 619
February 16, 2010 Location: Washington State Convention Center

Session Chair: Jiann-Yang Hwang, Michigan Technological University

8:30 AM Keynote
Overcoming the Final Challenges to Initiating Production Treatment of EBR-II Spent Fuel at Idaho National Laboratory: *Michael Simpson*[1]; [1]Idaho National Laboratory

9:10 AM
Recovery of Iron and Zinc from Electric Arc Furnace Dust Using a Microwave Processing Method: *Jiann-Yang Hwang*[1]; Xiang Sun[1]; Xiaodi Huang[1]; [1]Michigan Technological University

9:30 AM
Reduction Behavior of Chromium Oxide in Molten Stainless Steel Slag with Graphite: *Qiuju Li*[1]; [1]Shanghai University

9:50 AM
A Novel Process for Preparing Ferronickel Powder from Laterite Ores: *Guanghui Li*[1]; Mingjun Rao[1]; Tao Jiang[1]; Yuanbo Zhang[1]; Qian Li[1]; [1](School of Minerals Processing and Bioengineering, Central South University

10:10 AM
Phase Equilibria in Ferrous Calcium Silicate Slags: Stanko Nikolic[1]; Hector Henao[2]; *Peter Hayes*[2]; Evgueni Jak[2]; [1]Xstrata Technology; [2]University of Queensland

10:30 AM Break

10:45 AM
Decomposition/Volatilization of Enargite in Nitrogen-Oxygen Atmosphere: *Rafael Padilla*[1]; Alvaro Aracena[1]; Maria Ruiz[1]; [1]University of Concepcion

11:05 AM
Influence of Additives on Dephosphorization of Oolitic Hematite by Direct Reduction Process: *Guanghui Li*[1]; Chaoming Xie[1]; Yuanbo Zhang[1]; Qian Li[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

11:25 AM
Thermodynamic Analysis and Experimental Test of primary Al-Si Alloy Prepared by Carbothermal Reduction of Bauxite Tailings: Yang Dong[1]; *Di Yuezhong*[1]; [1]Northeastern University

11:45 AM
Thermodynamic Study on the Recovery of Vanadium from Low-Vanadium Hot Metal: *Xuemei Qing*[1]; Bing Xie[1]; Qingyun Huang[1]; Jianping Xiao[1]; [1]Chongqing University

12:05 PM
Effect of Damp Grinding on Preparation of Oxidized Pellet from Pyrite Cinders Concentrates: Jianchen Li[1]; Guohua Bai[1]; Guanghui Li[1]; Xiaoqing Zhou[1]; [1]School of Minerals Processing and Bioengineering; Central South University

Jim Evans Honorary Symposium: Flow, Solidification, and Inclusion Behavior in Casting Processes

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Tuesday AM Room: 620
February 16, 2010 Location: Washington State Convention Center

Session Chair: Vaughan Voller, University of Minnesota

8:30 AM Introductory Comments

8:40 AM
Inclusion Motion and Removal in a Steel Slab Continuous Casting Strands under EMBr: *Lifeng Zhang*[1]; Yufeng Wang[1]; [1]Missouri University of Science and Technology

9:05 AM
A General Enthalpy Method for Molding Solidification Phenomena: *Vaughan Voller*[1]; [1]University of Minnesota

9:30 AM
Modelling of Mould Filling in Open Mould Conveyor Ingot Casting: *Vu Nguyen*[1]; Patrick Rohan[1]; John Grandfield[2]; Kevin Naidoo[3]; Kurt Oswald[3]; [1]CSIRO; [2]Grandfield Technology; [3]o.d.t. Engineering

9:55 AM
Influence of a Plunging Liquid Jet on a Dual Alloy Casting: *Autumn Fjeld*[1]; Abdellah Kharicha[1]; Andreas Ludwig[1]; [1]University of Leoben

10:20 AM Break

10:35 AM
Centrifugal Casting of Complex Geometries: Computational Modelling and Validation Experiments: *Diane McBride*[1]; Nick Croft[1]; D. Shevchenko[2]; N. Humphreys[2]; P. Withey[3]; N. Green[2]; Mark Cross[1]; [1]Swansea University; [2]The University of Birmingham; [3]Roll Royce Plc

11:00 AM
Integration of CFD Simulation and Virtual Reality Visualization for Iron and Steel Making: *Chenn Zhou*[1]; [1]Purdue University Calumet

11:25 AM
Surface Tension and Temperature Effect on Ar Bubbles Behavior at the Solid/Liquid Interface of the Steel: *Sang-min Lee*[1]; Sang-joon Kim[1]; Hae-geon Lee[1]; [1]GIFT POSTECH

11:50 AM
Water Model Experiments for Hydrodynamic Forces Acting on Inclusion Particles in Molten Metal under Turbulent Condition: *Takuya Kato*[1]; Shin-ichi Shimasaki[1]; Shoji Taniguchi[1]; [1]Tohoku University

Magnesium Technology 2010: Coatings and Corrosion

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Tuesday AM Room: 612
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Susan Slade, US Magnesium LLC; Robert C. McCune, Robert C McCune & Associates LLC

8:30 AM
Galvanic Corrosion and Stress Corrosion Cracking of Steel and Aluminum Bolts in Magnesium Die Cast Alloy AZ91: *Gerhard Gerstmayr*[1]; Gregor Mori[2]; Wilfried Eichlseder[1]; [1]Chair of Mechanical Engineering, University of Leoben; [2]University of Leoben

8:50 AM
Characterization of Multilayer Coating Prepared by Combining Plasma Electrolyte Deposition and Electroless Copper and BTA Passivity on Magnesium Alloy: *Yongfeng Jiang*[1]; Yefeng Bao[1]; [1]Hohai University

9:10 AM
Enhanced Corrosion Resistance of AZ91 Mg Alloy by Plasma Electrolytic Oxidation with KMnO4: *Dong H. Shin*[1]; In J. Hwang[1]; Ki R. Shin[1]; Kang M. Lee[1]; Bongyoung Yoo[1]; [1]Hanyang University

9:30 AM
Laser Surface Alloying of a Creep Resistant Magnesium Alloy MRI 230D with Al and Al2O3: G. Rapheal[1]; *S. Kumar*[1]; C. Blawert[2]; Narendra B. Dahotre[3]; [1]Indian Institute of Science; [2]GKSS Research Centre; [3]The University of Tennessee

9:50 AM
Corrosion Phenomenon Evaluation of Mg Alloys Using Surface Potential Difference Measured by SKPFM: *Rei Takei*[1]; Hiroyuki Fukuda[1]; Hisashi Imai[1]; Junko Umeda[1]; Katsuyoshi Kondoh[1]; [1]Osaka University

10:10 AM Break

10:30 AM
A Study of Corrosion Film Growth on Pure Magnesium and a Creep-Resistant Magnesium Alloy in an Automotive Engine Coolant: Zhiming Shi[1]; Pankaj Mallick[1]; *Robert McCune*[2]; S. Simko[3]; F. Naab[4]; [1]University of Michigan-Dearborn; [2]Robert C. McCune and Associates; [3]Ford Research Laboratory, Ford Motor Co.; [4]Ion Beam Laboratory, University of Michigan

10:50 AM
Electroless Nickel Phosphorus Plating on AZ31: *Georges Kipouros*[1]; Khalid Shartal[1]; [1]Dalhousie University

11:10 AM
Improving Corrosion Performance of AZ31B Mg Alloy Sheet by Surface Polishing: *Guang-Ling Song*[1]; Zhenqing Xu[2]; [1]GM R&D; [2]Meda Limited Engineering and Technical Service

11:30 AM
Microstructure and Corrosion of AZ91D with Small Amounts of Cerium: *Daniela Zander*[1]; Meredith Heilig[2]; Norbert Hort[3]; Gerald Klaus[4]; Andreas Buehrig-Polaczek[4]; Joachim Gröbner[5]; Rainer Schmid-Fetzer[5]; [1]TU Dortmund; [2]Colorado School of Mines; [3]GKSS Research Centre; [4]Foundry-Institute of RWTH Aachen; [5]TU Clausthal

11:50 AM
Effect of Neodymium Addition on Corrosion Resistance of Mg-Li Alloy: *Min Li*[1]; Guang Chun Yao[1]; Yi Han Liu[1]; Hai Bin Ji[1]; [1]Northeastern University

Magnesium Technology 2010: Creep, Relaxation, Recovery, and Recrystallization

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Tuesday AM Room: 613
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Xiaoqin Zeng, Shanghai Jiao Tong University; Eric Nyberg, Pacific Northwest National Laboratory

8:30 AM
Effect of Aluminum Addition on the Strengthening and High Temperature Deformation Behavior of Mg-3Sn-2CaAlloy: *Pitcheswara Kamineni*[1]; Y.V.R.K. Prasad[1]; Norbert Hort[2]; Karl Kainer[2]; [1]City University of Hong Kong; [2]GKSS Research Centre

8:50 AM
Atomistic Simulation of Grain Boundary Sliding in Mg during High Temperature Deformation: *Hao Zhang*[1]; [1]University of Alberta

9:10 AM
Grain Size Effect on the Dome-Forming Limit and Deformation Mechanism of AZ31B Magnesium Alloy Sheets: *HyungLae Kim*[1]; WonKyu Bang[2]; YoungWon Chang[1]; [1]POSTECH; [2]RIST

9:30 AM
Approaching Bolt Load Retention Behaviour of AS41 through Compliance and Creep Deformation: *Okechukwu Anopuo*[1]; Yuanding Huang[1]; Norbert Hort[1]; Hajo Dieringa[1]; Karl Kainer[1]; [1]GKSS Research Centre

9:50 AM
Grain Boundary Sliding Characteristics of Az31 Alloy Sheet: *Yong-Nam Kwon*[1]; [1]Korea Institute of Materials Science

10:10 AM Break

10:30 AM
Elevated Temperature Tensile Behavior of Extruded Magnesium Sheets: *Paul Krajewski*[1]; Adi Ben-Artzy[2]; [1]General Motors; [2]Rotem Industries Ltd

10:50 AM
Elevated-Temperature Tensile Behavior of a Rapidly Solidified and Reverse Extruded Mg-Zn-Y-Ce-Zr Alloy: *Jon Carter*[1]; Paul Krajewski[1]; Dan Shechtman[2]; [1]General Motors R&D; [2]Technion-Israel Institute of Technology

11:10 AM
Microstructure, Tensile Properties and Creep Resistance of Binary Mg-Rare Earth Alloys: *Mark Gibson*[1]; Suming Zhu[1]; Mark Easton[1]; Jian-Feng Nie[1]; [1]CAST CRC

11:30 AM
The Role of Strain on the Recrystallization Behaviour of Hot Worked and Annealed Magnesium Alloy Mg-3Al-1Zn: *Aiden Beer*[1]; [1]Deakin University

11:50 AM
The Relationships between Grain Boundary Sliding and Grain Orientation in AZ31 Magnesium Alloys at Room Temperature: *Daisuke Ando*[1]; Yuji Sutou[1]; Junichi Koike[1]; [1]Tohoku University

12:10 PM
Texture Change in Pure Mg and Mg-1.5wt%Mn Casting Alloy during Compressive Creep-Deformation: Mert Celikin[1]; D. Sediako[2]; *Mihriban Pekguleryuz*[1]; [1]McGill University; [2]Canadian Neutron Beam Centre, NRC

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: Materials for Hydrogen Production, Storage, and Distribution

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Tuesday AM Room: 211
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Jason P. Trembly, Center for Energy Technology, RTI International; Richard Ricker, NIST

8:30 AM Invited
Co-Production of Pure Hydrogen and Electricity from Coal Syngas via the Steam-Iron Process Using Promoted Iron-Based Catalysts Sub-Pilot Plant Based Studies: *Jason P. Trembly*[1]; Brian S. Turk[1]; Raghubir P. Gupta[1]; [1]Center for Energy Technology, RTI International

9:10 AM
High Permeability Ternary Palladium Alloy Membranes with Improved Sulfur and Halide Tolerances: *Kent Coulter*[1]; J. Douglas Way[2]; David Sholl[3]; Bill Pledger[4]; Gokhan Alptekin[5]; [1]Southwest Research Institute; [2]Colorado School of Mines; [3]Georgia Institute of Technology; [4]IdaTech LLC; [5]TDA Research

9:30 AM
Palladium-hydrogen Interaction in Dislocations: Trapping and Diffusion: *Hadley Lawler*[1]; Dallas Trinkle[1]; [1]University of Illinois, Urbana-Champaign

9:50 AM
Materials Metrology for a Hydrogen Distribution Infrastructure: *Richard Ricker*[1]; Thomas Siewert[1]; Andrew Slifka[1]; David McColskey[1]; David Pitchure[1]; [1]NIST

10:10 AM Break

10:20 AM
Influence of Activation Process on the Hydrogen Storage Properties of Carbon Materials: *Vinay Bhat*[1]; Cristian Contescu[1]; Nidia Gallego[1]; Frederic Baker[1]; [1]Oak Ridge National Lab

10:40 AM
Hydrogen Storage Using Electric Field Enhanced Adsorption: *Jiann-Yang Hwang*[1]; Shangzhao Shi[1]; Xiang Sun[1]; Stephen Hackney[1]; Xuan Li[2]; [1]Michigan Technological University; [2]University of Science and Technology Beijing

11:00 AM
Effect of Hydrogen on the Mechanical Behavior of AISI 4340 and SA372 Steels: Anil Saigal[1]; Junior Aguaze[2]; Gary Leisk[1]; Chris San Marchi[3]; *Douglas Matson*[1]; [1]Tufts University; [2]Boeing Co.; [3]Sandia National Laboratory

11:20 AM
Ni_3Al Foil Catalysts for Hydrogen Production from Methanol: *Ya Xu*[1]; Dong Hyun Chun[2]; Jun Hyuk Jang[3]; Masahiko Demura[1]; Dang Moon Wee[3]; Toshiyuki Hirano[1]; [1]National Institute for Materials Science; [2]Korea Institute of Energy Research; [3]Korea Advanced Institute of Science and Technology

11:40 AM
Interfacial Facture Toughness of α-Al2O3(0001)/β-NiAl(110): *Kuiying Chen*[1]; I. Ofzidani[2]; L. Zhao[3]; [1]National Research Council Canada ; [2]University of Ottawa; [3]National Research Council Canada

Materials Processing Fundamentals: Process Modeling and Measurements

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizer: Prince Anyalebechi, Grand Valley State University

Tuesday AM Room: 601
February 16, 2010 Location: Washington State Convention Center

Session Chair: Prince Anyalebechi, Grand Valley State University

8:30 AM
Finite Element Modeling of the Twin-Roll Strip Casting Process: Application to an AZ31 Magnesium Alloy: *Youliang He*[1]; Elhachmi Essadiqi[1]; [1]Natural Resources Canada

8:50 AM
A Thermodynamic Model and Database for Gaseous Species Dissolved in Molten Multicomponent Slags: *Youn-Bae Kang*[1]; Arthur Pelton[1]; [1]Ecole Polytechnique de Montreal

9:10 AM
Stress Analysis and Deformation Prediction of a Heavy Hydraulic Turbine Blade Casting in Heat Treatment Process: *Jinwu Kang*[1]; [1]Tsinghua University

9:30 AM
Discreate Particle Simulation of Solid Flow in a Blast Furnace: *Hun-je Jung*[1]; Jong-in Park[1]; [1]Inha University

9:50 AM
Ultrasound Removing Oxygen Gas Bubbles on Anode and Reducing Cell Voltage during Pb Electrodeposition: *Jilai Xue*[1]; Yifang Zheng[1]; Jiegang Li[1]; [1]University of Science and Technology Beijing

10:10 AM Break

10:20 AM
Lorentz Force Velocimetry: Fundamentals and Application: *Christian Karcher*[1]; Yuri Kolesnikov[1]; Vitaly Minchenya[1]; Andre Thess[1]; [1]Ilmenau University of Technology

10:40 AM
The Studying of Nonstoichiometric Pyrrhotites Heat Capacity: *Tatyana Chepushtanova*[1]; Vladimir Luganov[1]; Brajenda Mishra[2]; [1]Kazakh National Technical University; [2]CSM

11:00 AM
Multi-Scale Solidification Model for Laser Engineered Net Shaping (LENS) Process: *Hebi Yin*[1]; Sergio Felicelli[1]; [1]Mississippi State University

11:20 AM
Multitechnique Characterization and Prediction of Phase Diagram Topology: *Marcelle Gaune-Escard*[1]; [1]Ecole Polytechnique, CNRS UMR 6595

11:40 AM
High-Strength Spring Steel: *S.A.J. Forsik*[1]; Sangwoo Choi[2]; P.E.J. Rivera-Diaz-del-Castillo[3]; Sybrand van der Zwaag[1]; [1]Delft University of Technology; [2]POSCO Lab.; [3]University of Cambridge

12:00 PM
High Temperature Oxidation of Fe-Cu-Sn Alloys for Surface Hot Shortness: *Lan Yin*[1]; Sridhar Seetharaman[1]; [1]Carnegie Mellon University

Mechanical Performance for Current and Next-Generation Nuclear Reactors: Advances in Modeling for Reactor Conditions

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Dylan Morris, NIST; Greg Oberson, Nuclear Regulatory Commission; Nicholas Barbosa, National Institute of Standards & Tech; Wolfgang Hoffelner, Paul Scherrer Institute

Tuesday AM Room: 201
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Ioannis Mastorakos, Washington State University; Dylan Morris, NIST

8:30 AM Invited
Atomic-Scale Modeling of the Dislocation - Radiation Obstacle Interactions Responsible for Mechanical Property Changes in Irradiated Metals: *Brian Wirth*[1]; Hyon-Jee Lee[1]; [1]University of California, Berkeley

9:00 AM
Multiscale Modeling of Amorphous-Fe and Fe-Ni Systems Used in Extreme Environments such as Nuclear Reactors: *Ioannis Mastorakos*[1]; N. Le[1]; H.M. Zbib[1]; M. Khaleel[2]; [1]Washington State University; [2]Pacific Northwest National Laboratory

9:20 AM
Influence of Hydrostatic Stress on Primary Defect Generation during Displacement Cascade in a-Fe: *Kevin Boyle*[1]; Ronald Miller[2]; [1]CANMET-MTL; [2]Carleton University

9:40 AM
Phase-Field Simulation of Void and Fission-Gas Bubble Evolution in Irradiated Polycrystalline Materials: *Paul Millett*[1]; Anter El-Azab[2]; Michael Tonks[1]; Srujan Rokkam[2]; Dieter Wolf[1]; [1]Idaho National Laboratory; [2]Florida State University

10:00 AM
Modeling the Effect of Stress on Defect Migration and Void Formation Using the Phase Field Method: *Michael Tonks*[1]; Anter El-Azab[2]; Paul Millett[1]; Dieter Wolf[1]; [1]Idaho National Laboratory; [2]Florida State University

10:20 AM Break

10:35 AM
Modelling Steels Used in Nuclear Energy Applications: Maria Samaras[1]; Maximo Victoria[1]; *Wolfgang Hoffelner*[1]; [1]Paul Scherrer Institute

10:55 AM
Universal Scaling of Work Hardening Parameters in Type 316L(N): *Isaac Edwin*[1]; B. K. Choudhary[2]; [1]Pohang University of Science and Technology; [2]Indira Gandhi Centre for Atomic Research

11:15 AM
Experimental Analysis and Computational Modeling of Temperature Dependent Cyclic Plastic Hardening and Strain Controlled Ratcheting: *Koen Janssens*[1]; [1]Paul Scherrer Institute

11:35 AM
Intergranular Thermal Residual Strain in Rolled and Texture-Free a-Uranium: *Don Brown*[1]; James Wollmershauser[2]; Bjørn Clausen[1]; Thomas Sisneros[1]; [1]Los Alamos National Laboratory; [2]University of Virginia

11:55 AM
Evolution of the Thermo-Mechanical Response of Nitride and Oxide Nuclear Fuels through Microstructurally Explicit Models: Manuel Parra Garcia[1]; Kirk Wheeler[1]; Kenneth McClellan[2]; *Pedro Peralta*[1]; [1]Arizona State University; [2]Los Alamos National Laboratory

12:15 PM
First Principles Study of Defects in Uranium.: *Nikolas Antolin*[1]; Oscar Restrepo[1]; John Morral[1]; Wolfgang Windl[1]; [1]Ohio State University

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Plasticity and Strength of Nanostructured and Nanoscale Materials III

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Tuesday AM Room: 304
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State University

8:30 AM
Effects of Vacancies on Dislocation Nucleation in Metals – An Atomistic Simulation Study: *Sergey Medyanik*[1]; Iman Salehinia[1]; [1]WSU

9:00 AM
On Homogeneous Nucleation of Dislocation Loops in Nanocrystalline Materials: *Yuri Estrin*[1]; Vincent Lemiale[2]; Rob O'Donnell[2]; Laszlo Toth[3]; [1]Monash University; [2]CSIRO; [3]Universite de Metz

9:20 AM
Real Space Dislocation Dynamics Model Using the Phase Field Approach: Siu Sin Quek[1]; *Rajeev Ahluwalia*[1]; David Srolovitz[2]; [1]Institute of High Performance Computing Singapore; [2]Yeshiva University

9:40 AM Break

10:00 AM Invited
Dislocation Dynamics Simulations of Thin Film Nanoimprinting: Yunhe Zhang[1]; Erik Van der Giessen[2]; *Lucia Nicola*[1]; [1]Delft University of Technology; [2]University of Groningen

10:30 AM
Microstructural Aspects of Material Strength in Small Volumes: *Amine Benzerga*[1]; P. J. Guruprasad[1]; [1]Texas A&M University

10:50 AM
Temporal Statistics in the Framework of Kinetic Theory of Crystal Dislocations: *Jie Deng*[1]; Mamdouh Mohamed[1]; Anter El-Azab[1]; [1]Florida State University

11:10 AM
Multiscale Simulation of Crystals, Defects and Deformation Using the Phase Field Crystal Model: *Zhi Huang*[1]; Jonathan Dantzig[1]; [1]University of Illinois at Urbana-Champaign

Neutron and X-Ray Studies of Advanced Materials III: Diffuse Scattering I

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Tuesday AM Room: 303
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Zahirul Islam, Argonne National Laboratory; Jan Ilavsky, Argonne National Laboratory

8:30 AM Keynote
X-Ray and Neutron Scattering for the Examination of Micro- and Nanostructured Materials: *Gernot Kostorz*[1]; [1]ETH Zurich

9:00 AM Invited
X-Ray Scattering Investigation of Semiconductor Magnetic Composite Materials: *Vaclav Holy*[1]; Guenther Bauer[2]; Rainer Lechner[2]; [1]Charles University in Prague; [2]J. Kepler University

9:20 AM Invited
Depth Dependent Ordering, Two Length Scale Phenomena and Crossover Behavior in a Defective Skin Layer of V_2H: *Kevin Bassler*[1]; Charo Del Genio[1]; Johann Trenkler[2]; Aleksandr Korzhenevskii[3]; Rozaliya Barabash[4]; Simon Moss[1]; [1]University of Houston; [2]Carl Zeiss SMT AG; [3]Institute of Problems of Mechanical Engineering; [4]Oak Ridge National Laboratory

9:40 AM Invited
Using X-Ray Correlation Spectroscopy to Test Dynamical Scaling: *Mark Sutton*[1]; [1]McGill University

10:00 AM Invited
Pair Distribution Function of Relaxed Se-Clusters inside a Zeolite Structure: *M. Castro-Colin*[1]; T. Baruah[1]; R. Zope[1]; A. Abeykoon[2]; W. Donner[3]; M. Brunelli[4]; S. Moss[2]; A. Jacobson[2]; [1]University of Texas at El Paso; [2]University of Houston; [3]Technische University Darmstadt; [4]ESRF

10:20 AM Invited
Quantification of Void Network Architectures of Suspension Plasma Sprayed Yttria-Stabilized Zirconia Coatings Using Ultra-Small Angle Scattering (USAXS): *Jan Ilavsky*[1]; Ghislain Montavon[2]; Alain Denoirjean[2]; Stéphane Valette[2]; Pierre Fauchais[2]; [1]APS, Argonne National Laboratory; [2]Université de Limoges

10:40 AM Invited
Near-Surface and Bulk Microstructure: A Comparative Study for Ni-Pt and Pt-Rh: *Bernd Schoenfeld*[1]; [1]ETH Zurich

11:00 AM Invited
Complex Intermetallics – The Decisive Role of Weak Reflections: *Walter Steurer*[1]; Thomas Weber[1]; Miroslav Kobas[2]; [1]ETH Zurich; [2]Dectris Ltd.

11:20 AM Break

11:30 AM Invited
Mapping Phonon Dispersions and Anomalies with X-Ray Thermal Diffuse Scattering: *Tai Chiang*[1]; Ruqing Xu[1]; Hawoong Hong[2]; [1]University of Illinois; [2]Argonne National Laboratory

11:50 AM Invited
X-Ray Studies of Structural Effects Induced by Pulsed (30 Tesla), High Magnetic Fields at the Advanced Photon Source: *Zahirul Islam*[1]; [1]Argonne National Laboratory

12:10 PM
Investigation of the Nanoscale Nial Precipitates in the Ferritic Superalloy by USAXS: *Shenyan Huang*[1]; Xin Li[2]; Gautam Ghosh[3]; Jan Ilavsky[4]; Zhenke Teng[1]; Morris E. Fine[3]; Emily Liu[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Rensselaer Polytechnic Institute; [3]Northwestern University; [4]Argonne National Laboratory

12:20 PM Invited
Studies Phase Evolution of Triblock Copolymer Solutions by Small Angle Neutron and X-Ray Scattering: Effects of Molecular Weight, Temperature, Pressure and Salt: *Lixin Fan*[1]; Liang Guo[2]; Papanan Thiyagarajan[3]; [1]Rigaku Innovative Technologies; [2]Argonne National Laboratory; [3]Office of Basic Energy Sciences, U.S. Department of Energy,

12:40 PM
Role of External Stimuli on Phase Transformation in Ferromagnetic Shape-Memory Alloys and Related Properties: *Yandong Wang*[1]; Yang Ren[2]; Zhihua Nie[1]; Gang Wang[3]; Ru Lin Peng[4]; Sten Johanson[4]; Daoyong Cong[5]; Stefen Roth[5]; Tomoyuki Terai[6]; Tomoyuki Kakeshita[6]; Dennis Brown[7]; [1]Beijing Institute of Technology; [2]Argonne National Laboratory; [3]Northeastern University; [4]Linköping University; [5]IFW Dresden; [6]Osaka University; [7]Northern Illinois University

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Reliability (I)

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Tuesday AM Room: 204
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Thomas Bieler, Michigan State University; Fu Guo, Beijing University of Technology

8:30 AM Invited
The Interaction between Imposed Current and Creep of Idealized Snagcu Solder Interconnects: *John Morris*[1]; Christopher Kinney[1]; Xio Linares[1]; Tae-Kyu Lee[2]; [1]University of California - Berkeley; [2]Cisco Systems

8:55 AM
Analysis of Simple Shear of Lead-Free Solder Joints to Examine Heterogeneous Strain and Slip System Activity: Bite Zhou[1]; *Thomas Bieler*[1]; Tae-Kyu Lee[2]; Kuo-Chuan Liu[2]; [1]Michigan State University; [2]Cisco Systems, Inc.

9:10 AM
Bending and Strain/Stress Distribution on Flip Chips Measured by Using Synchrotron X-Ray Laue Microdiffraction: *Kai Chen*[1]; Nobumichi Tamura[1]; Wei Tang[2]; Martin Kunz[1]; King-Ning Tu[2]; [1]LBNL; [2]UCLA

9:25 AM
Wafer Bonding Using an Amorphous Si-Au Eutectic Structure: *Maryam Abouie*[1]; Qi Liu[1]; Douglas G. Ivey[1]; [1]University of Alberta

9:40 AM
Effect of Pb Addition on Creep and Tensile Behavior of SAC 305 Solder: *Jonathon Tucker*[1]; Carol Handwerker[1]; Ganesh Subbarayan[1]; [1]Purdue University

9:55 AM
Impact Testing of Sn3.0Ag0.5Cu Solder with Ti/Ni(V)/Cu under Bump Metallization after Aging at 150 C: *Kai-Jheng Wang*[1]; Jenq-Gong Duh[1]; Bob Sykes[2]; Dirk Schade[2]; [1]National Tsing Hua University; [2]XYZTEC bv

10:10 AM Break

10:25 AM
Modeling of Pb-Free BGA Solder Joint Fatigue Life during Random Vibration: *Fengjiang Wang*[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

10:40 AM
Improved Reliability of Sn-Ag-Cu-In Solder Joint by the Addition of Trace Elements: A-Mi Yu[1]; Mok-Soon Kim[1]; Jong-Hyun Lee[2]; Jeong-Han Kim[3]; *Jun Ki Kim*[3]; [1]Inha University; [2]Seoul National University of Technology; [3]Korea Institute of Industrial Technology

10:55 AM
Improvement of Heat Dissipation in High-Power Light-Emitting Diodes Using Highly Heat Conductive Die-Attach Material: *Chia-ju Chen*[1]; Chih-ming Chen[1]; [1]National Chung Hsing University

11:10 AM
Mechanism of Microstructure Evolution and Fatigue Failure in Lead Free Solder Joint: *Jeong Min Kim*[1]; Woong Ho Bang[1]; Choong-Un Kim[1]; Tae-Kyu Lee[2]; Hongtao Ma[2]; Kuo-Chuan Liu[2]; [1]University of Texas at Arlington; [2]Cisco System Inc.

11:25 AM
Effect of Joule Heating on Thermo-Electromigration Induced Failure in Lead-Free Solder: *Di Xu*[1]; Luhua Xu[1]; Shih-Wei Liang[2]; Stephen Gee[3]; Luu Nguyen[3]; Marshall Andrews[4]; K.N. Tu[1]; [1]UCLA; [2]National Chiao Tung University, Taiwan; [3]National Semiconductor Corporation; [4]High Density Packaging User Group international, Inc

11:40 AM
Effect of Minor Alloying on the Performance of Snagcu Solder Joints under Ball Impact Test: *Yao-Ren Liu*[1]; Jenn-Ming Song[1]; Yi-Shao Lai[2]; Ying-Ta Chiu[2]; [1]National Dong Hwa University, Taiwan; [2]Advanced Semiconductor Engineering, Inc.

11:55 AM
Uncovering the Driving Force for Massive Spalling: *Wei-Ming Chen*[1]; Su-Chun Yang[1]; C. Robert Kao[1]; [1]National Taiwan University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials IX: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-ming Chen, National Chung Hsing University; Srinivas Chada, Medtronic; Sinn-wen Chen, National Tsing-Hua University; Hans Flandorfer, University of Vienna; A. Lindsay Greer, University of Cambridge; Jae-ho Lee, Hongik University; Kejun Zeng, Texas Instruments; Yee-wen Yen, National Taiwan University of Science and Technology; Wojciech Gierlotka, AGH University of Science and Technology; Chao-hong Wang, National Chung Cheng University

Tuesday AM Room: 203
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Alexandre Kodentsov, Eindhoven University of Technology

8:30 AM Invited
New Challenges and Solutions for Metal-Semiconductor Contacts: *Suzanne Mohney*[1]; [1]Pennsylvania State University

8:55 AM Invited
Reaction Diffusion in GaSb/Co Metallization Contacts during Thermal Processing: *Alexandre Kodentsov*[1]; [1]Eindhoven University of Technology

9:20 AM
Development of Advanced Barrierless Interconnect Using Novel Cu Alloy Seed: *Chon-Hsin Lin*[1]; Jinn P. Chu[2]; C.H. Wu[2]; W.K. Leau[3]; [1]Chin-Min Institute of Technology/Environmental Engineering; [2]National Taiwan University of Science and Technology/Graduate Institute of Materials Science and Technology; [3]National Taiwan Ocean University/Institute of Materials Engineering

9:40 AM
The Effect of Arsenic Dopant in Nickel Silicide Formation: *S.Y. Tan*[1]; Yi-Lun Hsia[1]; Hsing-Hung Chen[1]; Ming-Yuan Wu[1]; [1]Chinese Culture University

10:00 AM Break

10:20 AM Invited
Thermal Stability of Advanced Gate Stacks for Microelectronic Devices-the Case of Pt/Gd_2O_3/Si: *Moshe Eizenberg*[1]; Eran Lipp[1]; [1]Technion

10:45 AM
Observations on the Melting of Metallic Nanoparticle Deposites via In-situ Synchrotron Radiation X-Ray Diffraction: Tzu-Hsuan Kao[1]; *Jenn-Ming Song*[2]; In-Gann Chen[1]; Teng-Yuan Dong[3]; Weng-Sing Hwang[1]; [1]National Cheng Kung University, Tainan; [2]National Dong Hwa University, Hualien, Taiwan; [3]National Sun Yat-Sen University, Kaohsiung, Taiwan

11:05 AM
Control of the Interface Traps in Hf-Based Gate Dielectric Films on Silicon: *S.Y. Tan*[1]; Yi-Lun Hsia[1]; Ming-Yuan Wu[1]; Hsing-Hung Chen[1]; [1]Chinese Culture University

11:25 AM
Phase Stability and Phase Transformations, in the Ternary Cd-Sb-Zn: Application to the Growth of a Thermoelectric Material: *Jean Claude Tedenac*[1]; Ya Liu[1]; [1]ICG

11:45 AM
Mechanical Properties of (Ni, Cu)3Sn4 Ternary Crystal Structure Using First-Principle Calculation: *Feng Gao*[1]; Jianmin Qu[1]; [1]Northwestern University

Processing Materials for Properties: Advanced Steel Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Tuesday AM Room: 617
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Florian Kongoli, FLOGEN Technologies Inc; Sven Vogel, Los Alamos National Laboratory

8:30 AM Keynote
Control Microstructures in Iron-Based Alloys by Directional Recrystallization: *Z. W. Zhang*[1]; G. Chen[1]; H. Bei[2]; G. L. Chen[3]; C. T. Liu[4]; [1]Nanjing University of Science and Technology; [2]Oak Ridge National Laboratory; [3]USTB; [4]Auburn University

9:00 AM
Casting Practice for High-Carbon Nitrogen-Alloyed Chromium-Manganese Austenitic Stainless Steels: Meredith Heilig[1]; *Brajendra Mishra*[1]; Manuel Marya[2]; David Olson[1]; [1]Colorado School of Mines; [2]Schlumberger Reservoir Completion Center

9:20 AM
The State of the Indian Steel Industry: *Sanak Mishra*[1]; [1]Arcelor Mittal India

9:40 AM
Processing and Electrochemical Corrosion Resistance of a Nanocrystalline Fe-20Cr Alloy: Rajeev Gupta[1]; *Raman Singh*[1]; Carl Koch[2]; [1]Monash University; [2]North Carolina State University

10:00 AM Break

10:10 AM
Towards Modelling of Phase Transformation and Mechanical Properties in Hot Rolled Dual Phase Steel: *Piyada Suwanpinij*[1]; Krishnendu Mukherjee[1]; Marcel Graf[1]; Ulrich Prahl[1]; Wolfgang Bleck[1]; Rudolf Kawalla[2]; [1]RWTH Aachen University; [2]Institute for Metal Forming (IMF), Freiberg University of Mining and Technology

10:30 AM
A Novel Asymmetric Rolling Method for Controlling Texture of Plates and Sheets: *Dincer Bozkaya*[1]; Peter Jepson[1]; [1]H.C. Starck Inc.

10:50 AM
Laser Surface Modification of AISI 410 Stainless Steel with Brass for Enhanced Thermal Properties: *Felix Espana*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

11:10 AM
Development of Ferritic Steels with Increased Strength and Ductility: *Semyon Vaynman*[1]; Monica Kapoor[1]; Dieter Isheim[1]; Gautam Ghosh[1]; Morris Fine[1]; Yip-Wah Chung[1]; [1]Northwestern University

11:30 AM
Effect of Deformation Ratio and Cooling Rate on Mechanical Properties and Microstructure of 0.08wt% C HSLA Steel Microalloyed with Nb and Mo: Taher El-Bitar[1]; *Ahmed Zaky Farahat*[1]; Almosilhy Almosilhy[1]; Ahmed Hegazy[1]; [1]Central Metallurgical Research and Development Institute

11:50 AM
Influence on Non-Metallic Inclusions and Magnetic Properties by Deoxidation Method in Non-Oriented Electrical Steel: *Zhang Feng*[1]; Li Guang-qiang[2]; Chen Xiao[1]; [1]Silicon Steel Department, Baoshan Iron and Steel Co. Ltd; [2]Wuhan University of Science and Technology

Refractory Metals 2010: Oxidation of Alloys and Coatings

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Brian Cockeram, Bechtel-Bettis; Gary Rozak, H.C. Stark

Tuesday AM Room: 2A
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Brian Cockeram, Bechel Marine Propulsion Corporation; Gary Rozak, H. C. Starck, Inc.

8:30 AM
Development of Oxidation Protective Coatings for Molybdenum Alloys: Ridwan Sakidja[1]; Travis Sossaman[1]; *John Perepezko*[1]; [1]University of Wisconsin-Madison

8:55 AM
Refractory Metal Alloys for Ultra High Temperature Applications: *Panayiotis Tsakiropoulos*[1]; [1]The University of Sheffield

9:20 AM
Microstructures and High Temperature Oxidation Behavior of Mo-Ni-Al Alloys: *Pratik Ray*[1]; Travis Brammer[1]; Mufit Akinc[1]; Matthew Kramer[2]; [1]Iowa State University; [2]Ames Laboratory

9:45 AM
Comparison of the Oxidation Behavior of Nb-20Mo-15Si-25Cr and Nb-20Mo-15Si-25Cr-5B Alloys from 700 to 1300°C: *Benedict Portillo*[1]; Shailendra Varma[1]; [1]The University of Texas at El Paso

10:10 AM Break

10:25 AM
Effect of Al on the Oxidation Behavior of Nb-Si-Cr Alloys in Air from 700 to 1300°C: Clemente Parga[1]; *David Alvarez*[1]; Shailendra Varma[1]; [1]The University of Texas at El Paso

10:50 AM
General Chemical Solution Deposition to Epitaxial Growth of Transition Metal (Ti, Nb, V, Ta, etc.) Carbide Films: *Guifu Zou*[1]; Haiyan Wang[2]; Nathan A. Mara[1]; Quanxi Jia[1]; [1]Los Alamos National Laboratory; [2]Texas A&M University

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Mechanical Properties and Interaction with Dislocations

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Tuesday AM Room: 602
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Sylvie Aubry, Stanford University; Kedarnath Kolluri, Massachusetts Institute of Technology

8:30 AM Invited
TEM Analysis of the Structure and Deformation Behavior of an Incommensurate Grain Boundary in Gold: *Ulrich Dahmen*[1]; Jia Ye[1]; Andy Minor[1]; Tamara Radetic[1]; Damien Caliste[2]; Frederic Lancon[2]; [1]NCEM; [2]CEA

9:00 AM
Coupling between Grain Boundary Sliding and Migration: Analysis of Possible Mechanisms: *Askar Sheikh-Ali*[1]; [1]Kazakh-British Technical University

9:20 AM
Structure and Hardness of V/Ag Multi-Layers: *Qiangmin Wei*[1]; Amit Misra[1]; [1]Los Alamos National Lab

9:40 AM
Atomic-Scale Study of Nanoindentation in FCC Crystal with Internal Interface: *Yury Osetskiy*[1]; Anna Serra[2]; Roger Stoller[1]; [1]ORNL; [2]UPC

10:00 AM
Simulations of Dislocation Pile-up at Asymmetric Tilt Boundary in Aluminum: *Steven Valone*[1]; Timothy Germann[1]; Richard Hoagland[1]; Authur Voter[1]; Danny Perez[1]; Zhiqiang Wang[1]; [1]Los Alamos National Laboratory

10:20 AM Break

10:40 AM Invited
Ductility, Interfacial Shear, and Fracture of Cu/Nb Nanolayered Composites: *Nathan Mara*[1]; Dhriti Bhattacharyya[1]; Pat Dickerson[1]; Richard Hoagland[1]; Amit Misra[1]; [1]Los Alamos National Laboratory

11:10 AM
Computer Simulation of Boundary – Dislocation and Boundary – Loop Interactions in the {10-12} Twin in Alpha-Zirconium: *Anna Serra*[1]; David Bacon[2]; [1]Technical University of Catalonia; [2]The University of Liverpool

11:30 AM
Flexible Boundary Condition Methods for Interfaces: Dislocation/Twin-Boundary Interactions: *Maryam Ghazisaeidi*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

11:50 AM
The Behavior of Σ 11, <110> {252}{414} Grain Boundary in Aluminum under Shock Loading by Molecular Dynamics Simulations: Chiara Pozzi[1]; Timothy Germann[2]; *Donato Firrao*[1]; Richard Hoagland[2]; [1]Politecnico di Torino; [2]Los Alamos National Laboratory

12:10 PM
Microstructural Stability and Plastic Deformation in Nanocrystalline Copper Doped with Antimony: Experiments and Molecular Dynamics Simulations: *Douglas Spearot*[1]; Rahul Rajgarhia[1]; Ashok Saxena[1]; [1]University of Arkansas

Surface Engineering for Amorphous-, Nanocrystalline-, and Bio-Materials: 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; Arvind Agarwal, Florida International Univesity; Sudipta Seal, University of Central Florida; Narendra Dahotre, University of Tennessee

Tuesday AM Room: 604
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Indranil Manna, Indian Institute of Technology; Ramki Kalyanaraman, University of Tennessee

8:30 AM Introductory Comments

8:35 AM Invited
Materials Research in the Materials and Surface Engineering Program at the National Science Foundation: *Clark Cooper*[1]; [1]National Science Foundation

9:00 AM Invited
Glass-Forming Metallic Films for Enhancing Mechanical Property of Structural Materials: Cheng-min Lee[1]; *Jinn P. Chu*[1]; Peter K. Liaw[2]; T. G. Nieh[2]; [1]Nation Taiwan University of Science and Technology; [2]The University of Tennessee

9:25 AM Invited
Surface and Bulk Nanostructures for Optical Absorption Enhancement in Thin Si Films: Ritesh Sachan[1]; J. Strader[1]; A.W. Paradies[1]; W. Yueying[1]; H. Uk[1]; H. Garcia[2]; P.D. Rack[1]; G. Duscher[1]; *R. Kalyanaraman*[1]; [1]University of Tennessee-Knoxville; [2]Southern Illinois University

9:50 AM
Formation of Amorphous Metallic Coatings by the LENS™ Process: *Hongqing Sun*[1]; Katharine Flores[1]; [1]The Ohio State University

10:10 AM Invited
Fe-Cr-Mo-Y-B-C Bulk Metallic Glass Coating on AISI 4340 Steel by Laser Surface Cladding: *Indranil Manna*[1]; S. Harimkar[2]; Jyotsna Dutta Majumdar[1]; Manoj Debnath[1]; N. Dahotre[3]; [1]Indian Institute of Technology Kharagpur; [2]Oklahoma State University; [3]University of Tennessee

10:35 AM Break

10:50 AM
Spark Plasma Sintering of Amorphous Coatings on Metallic Substrate: *Ashish Singh*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

11:10 AM
Surface Amorphization in "Chromium-on-Silicon" System Resulted by Compression Plasma Action: *Vladimir Uglov*[1]; Nikolai Kvasov[2]; Yury Petukhou[2]; Valiantsin Astashynski[3]; Anton Kuzmitski[3]; [1]Belarusian State University; [2]Belarusian State University of Informatics and Radioelectronics; [3]B.I. Stepanov Institute of Physics, National Academy of Sciences of Belarus

11:30 AM
Laser and E-Beam Generated Micro-Nanostructures on the Surface of Amorphous Chalcogenide Layers: *Sandor Kokenyesi*[1]; Viktor Takats[2]; Istvan Chernovich[1]; Mihail Trunov[3]; Attila Csik[2]; Csaba Cserhati[1]; [1]University of Debrecen; [2]ATOMKI; [3]Uzhgorod National University

11:50 AM
A High Throw Bright Acid Copper for Rack Plating of Printed Circuit Boards: *Xiao Faxin*[1]; Shen Xiaoni[1]; [1]Henan University of Science and Technology of China

12:10 PM
Electroless Cu Metallization of Carbon Fiber by Precious-Metal Free Process: *Che Dehui*[1]; Yao Guangchun[1]; Liu Kai[1]; Cao Zhuokun[1]; [1]Institute of Materials and Metallurgy, Northeastern University

Sustainable Materials Processing and Production: Motivating Sustainability II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Tuesday AM Room: 2B
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, MIT

8:30 AM Introductory Comments

8:35 AM Keynote
Title Not Available: *Guido Sonnemann*[1]; [1]United Nations Environmental Program (UNEP)

9:00 AM Keynote
Title Not Available: *Jim Puckett*[1]; [1]Basel Action Network

9:25 AM
European Recycling Platform – Experiences from a New Venture: *Hans Korfmacher*[1]; [1]The Procter & Gamble Company

9:50 AM Break

10:05 AM Invited
Scarce Metals and Emerging Technologies: Strategies towards a Sustainable Governance: *Patrick Wäger*[1]; Daniel Lang[2]; [1]Empa; [2]ETH Zürich

10:30 AM
Lithium-Ion Batteries: Examining Material Demand and Recycling Issues: *Linda Gaines*[1]; Paul Nelson[1]; [1]Argonne National Laboratory

10:55 AM
Critical and Strategic Failure of Rare Earth Resources: *James Kennedy*[1]; [1]Wings Enterprises, Inc.

11:20 AM
Motivating Sustainable Material Use through Industry-Level Simulation Modeling of Platinum Stocks and Flows: *Elisa Alonso*[1]; Richard Roth[1]; Frank Field[1]; Randolph Kirchain[1]; [1]MIT

11:45 AM
A Collaborative Tool for Waste Management in the Industry: *Marisa Borges*[1]; Humberto Riella[1]; Paulo Janissek[2]; [1]Universidade Federal de Santa Catarina; [2]Positivo University

12:10 PM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Dislocations I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Tuesday AM Room: 603
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Roman Groger, Academy of Sciences of the Czech Republic; Jeff De Hosson, University of Groningen

8:30 AM Invited
First Principles Study of Dislocation Cores and Solute Interactions: *Christopher Woodward*[1]; Dallas Trinkle[2]; Louis Hector[3]; [1]Air Force Research Laboratory; [2]University of Illinois, Champaign Urbana; [3]General Motors Research and Development Center

8:55 AM Invited
Multiscale Modeling of Cross-Slip: Knowns and Unknowns: *Ladislas Kubin*[1]; Benoit Devincre[1]; [1]CNRS

9:20 AM
Dislocation Nucleation and Re-Ordering of Bicrystal Interfaces: Garritt Tucker[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

9:35 AM
Thermally-Activated Glide of Dislocations at the Atomic Scale in High Peierls Stress Crystals: *David Rodney*[1]; Laurent Proville[2]; [1]Grenoble Institute of Technology; [2]Commissariat a l'Energie Atomique

9:50 AM Invited
Dislocations and Phase Transformations in Energetic Molecular Crystals: *Marc Cawkwell*[1]; [1]Los Alamos National Laboratory

10:15 AM Break

10:35 AM Invited
Determination of Dislocation Type by X-Ray Line Profiles: *Geza Tichy*[1]; [1]Eotvos University, Budapest

11:00 AM
Thermally Activated Glide of Partial Dislocations in Nickel Based Superalloys: Libor Kovarik[1]; Raymond Unocic[1]; Ning Zhou[1]; Yunzhi Wang[1]; *Michael Mills*[1]; [1]The Ohio State University

11:15 AM
Predicting Dislocation Mobility from Explicit Atomistic Details: A Kinetic Monte Carlo Study: *Mukul Kabir*[1]; Timothy Lau[1]; David Rodney[2]; Sidney Yip[3]; Krystyn Van Vliet[1]; [1]Department of Materials Science and Engineering, Massachusetts Institute of Technology; [2]Science et Ingenierie des Materiaux et Procedes, Grenoble Institute of Technology; Department of Materials Science and Engineering, Massachusetts Institute of Technology; [3]Department of Nuclear Science and Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology

11:30 AM
Short Range and Long Range Spatial Correlation Effects on Dislocation Distributions: *Juliette Chevy*[1]; Claude Fressengeas[2]; Mikhail Lebyodkin[2]; Vincent Taupin[2]; Pierre Bastie[3]; Paul Duval[4]; [1]University of Illinois; [2]Université Paul Verlaine-Metz-France; [3]Institut Laue Langevin; [4]Laboratoire de Glaciologie et Géophysique de l'Environnement

11:45 AM
Fractals versus Scaling: Self-Similarity in Dislocation Cell Wall Simulations: Yong Chen[1]; Woosong Choi[1]; Stefanos Papanikolaou[1]; *James Sethna*[1]; [1]Cornell University

Three-Dimensional Materials Science VI: Applications of 3D Microstructural Data

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee

Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Tuesday AM Room: 401
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Anthony Rollett, Carnegie Mellon University; Andrew Geltmacher, U S Naval Research Laboratory

8:30 AM Invited
3D Characterisation of Fatigue Cracks Using X-Ray Tomography: From Synchrotron to Laboratory Sources: *Jean-Yves Buffiere*[1]; Nathalie Limodin[1]; Julien Rethoré[1]; Wolfgang Ludwig[1]; Anthony Gravouil[1]; François Hild[2]; Stéphane Roux[2]; [1]Universite de Lyon INSA LYON; [2]LMT, ENS-Cachan / CNRS / UPMC / PRES UniverSud Paris

9:00 AM Invited
Three-Dimensional Validation of Deformation Simulations: *Corbett Battaile*[1]; Luke Brewer[1]; Remi Dingreville[2]; [1]Sandia National Laboratories; [2]Polytechnic Institute of New York University

9:30 AM
Finite Element Analysis of Large Three-Dimensional Microstructural Datasets: *Alexis Lewis*[1]; M. A. Qidwai[2]; Surya Kalidindi[3]; Stephen Niezgoda[3]; Andrew Geltmacher[1]; [1]Naval Research Laboratory; [2]SAIC; [3]Drexel University

9:50 AM
Stagnation of Thin Film Grain Growth under the Effect of Stress: *Fatma Uyar*[1]; Myrjam Winning[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Max Planck Institute für Eisenforschung

10:10 AM Break

10:30 AM Invited
Permeability Determination via 3D Reconstruction of the Mushy Zone of Nickel-Base Single Crystals: *Jonathan Madison*[1]; Jonathan Spowart[2]; Dave Rowenhorst[3]; Katsuyo Thornton[1]; Tresa Pollock[1]; [1]The University of Michigan; [2]Air Force Research Laboratory; [3]Naval Research Laboratory

11:00 AM
A Phase Field Model of Dual-Phase Multi-Grain Material Applied to Duplex Steel with Experimental Verification: *Stefan Poulsen*[1]; Peter Voorhees[2]; Erik Lauridsen[1]; Wolfgang Ludwig[3]; Richard Fonda[4]; Dorte Jensen[1]; [1]Risø DTU; [2]Northwestern University; [3]European Synchrotron Radiation Facility; [4]U.S. Naval Research Laboratory

11:20 AM
Anisotropic 3D Phase Field Simulations of Grain Growth: A Comparison between Simulation and Experiment: *Ian McKenna*[1]; Mogadalai Gururajan[2]; Stefan Poulsen[3]; Dave Rowenhorst[4]; Erik Lauridsen[3]; Peter Voorhees[1]; [1]Northwestern University; [2]Indian Institute of Technology - Delhi; [3]Risø; [4]Naval Research Laboratory

11:40 AM
Modeling the Effect of Eutectic Nucleation Behavior on Permeability during Solidification of Al-19.5wt%Cu: *Ehsan Khajeh*[1]; Daan Maijer[1]; [1]The University of British Columbia

12:00 PM
Dealloying and Coarsening Behavior of Nanoporous Gold by X-Ray Nanotomography: *Yu-chen Chen*[1]; JaeMock Yi[2]; Wah-Keat Lee[2]; Ian McNulty[2]; Peter Voorhees[1]; David Dunand[1]; [1]Northwestern Univeristy; [2]Advanced Photon Source of Argonne National Lab.

12:20 PM
Microstructures Simulation of Magnesium-Based Alloys during Solidification by Phase-Field Method: *Tao Jing*[1]; Mingyue Wang[1]; [1]Tsinghua University

Ultrafine Grained Materials – Sixth International Symposium: Deformation and Processing Mechanics

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Tuesday AM Room: 607
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Gerhard Wilde, University of Muenster; Rainer Hebert, University of Connecticut; Yulia Ivanisenko, Forschungszentrum Karlsruhe; Matthias Hockauf, Chemnitz University of Technology

8:30 AM
Plasticity and Grain Boundary Diffusion at Small Grain Sizes: *Gerhard Wilde*[1]; Nancy Boucharat[2]; Sergiy Divinsky[1]; Joern Leuthold[1]; Gerrit Reglitz[1]; Harald Roesner[1]; [1]University of Muenster; [2]Research Center Karlsruhe

8:50 AM
Twist Extrusion - Technique for Bulk Ultrafine- and Nanomaterials Obtaining: *Viktor Varyukhin*[1]; Yakov Beygelzimer[1]; Sergey Synkov[1]; [1]Donetsk Institute for Physics and Engineering of NASc of Ukraine

9:05 AM
Plastic Instability during Accumulative Roll Bonding (ARB) of Metallic Multilayers: *Rainer Hebert*[1]; Jyothi Suri[1]; Girija Marathe[1]; [1]University of Connecticut

9:20 AM Invited
Role of Dislocations during Processing and Deformation of Nanocrystalline Materials: *Farghalli Mohamed*[1]; [1]University of California, Irvine

9:40 AM
How do Partials Multiply to Produce Deformation Twins in Nanocrystalline fcc Metals?: *Yuntian Zhu*[1]; [1]North Carolina State University

9:55 AM Break

10:10 AM Invited
Deformation Mechanisms in Multiscale Nanostructured Materials: Yonghao Zhao[1]; Ying Li[1]; Troy Topping[1]; Xiaozhou Liao[2]; Yuntian Zhu[3]; Ruslan Valiev[4]; *Enrique Lavernia*[1]; [1]University of California-Davis; [2]The University of Sydney; [3]North Carolina State University; [4]Ufa State Aviation Technical University

10:30 AM
Information on Deformation Mechanisms in nc Pd-10% Au Inferred from Texture Analysis: *Yulia Ivanisenko*[1]; Werner Skrotzki[2]; Robert Chulist[2]; Lilia Kurmanaeva[1]; Hans-Jörg Fecht[3]; [1]FZK; [2]Technische Universität Dresden; [3]Universität Ulm

10:45 AM Invited
Extending Kocks' Equation for Work Softening in UFG Materials: *Tamás Ungár*[1]; Li Li[2]; Géza Tichy[1]; Hahn Choo[2]; Peter Liaw[2]; [1]Eötvös University Budapest; [2]University of Tennessee

11:05 AM
Plastic Deformation in Nanocrystalline and Ultrafine Carbon Steel: *Rodolfo Rodríguez-Baracaldo*[1]; Jose Antonio Benito Páramo[2]; José Maria Cabrera Marrero[2]; [1]Universidad Nacional de Colombia; [2]Universitat Politècnica de Catalunya

11:20 AM
Microstructure and Creep Properties of Nanocrystalline Oxide Dispersion Strengthened Fe-18Cr-8Ni-2W-0.25Y2O3 Austenitic Steel Synthesized by High Energy Ball Milling and Vacuum Hot Pressing: P. Susila[1]; D. Sturm[2]; M. Heilmaier[3]; B. S. Murty[1]; *Vadlamani Subramanya Sarma*[4]; [1]Indian Institute of Technology Madras; [2]Otto-von-Guericke University Magdeburg; [3]TU Darmstadt; [4]Indian Institute of Technology Madras and North Carolina State University

11:35 AM Invited
Plastic Flow Stability and Detwinning in Cu with Nanoscale Growth Twins: *Amit Misra*[1]; X. Zhang[2]; J. Wang[1]; N. Li[3]; O. Anderoglu[3]; J. Huang[4]; R. Hoagland[1]; J. Hirth[1]; [1]LANL; [2]Texas A&M University; [3]Texas A&M University & LANL; [4]Sandia National Laboratories

11:55 AM
Processing and Oxidation Resistance of Nanocrystalline Fe-Cr Alloys: Rajeev Gupta[1]; *Raman Singh*[1]; Carl Koch[2]; [1]Monash University; [2]North Carolina State University

Ultrafine Grained Materials – Sixth International Symposium: Stability

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Tuesday AM Room: 606
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Kristopher Darling, U.S. Army Research Laboratory; Brady Butler, U.S. Army Research Laboratory; Christopher Saldana, Purdue University; Jane Adams, U.S. Army Research Laboratory

8:30 AM Invited
Thermal Stability of SPD Microstructures: *Günter Gottstein*[1]; Xenia Molodova[1]; [1]RWTH Aachen University

8:50 AM
Mechanical Properties of Nanocrystalline Aluminum Stabilized with Dimondoids: *Khinlay Maung*[1]; Ali Yousefiani[2]; Farghalli Mohamed[1]; James Earthman[1]; [1]UCI; [2]The Boeing Company

9:05 AM
Characterization of Thermally Stable Nanocrystalline Nickel Powders: *Brady Butler*[1]; Kristopher Darling[1]; Bradley Klotz[1]; Matthew Kelly[1]; Micah Gallagher[1]; Eric Klier[1]; [1]U.S. Army Research Laboratory

9:20 AM Invited
Room Temperature Instability of Super Saturated Solid Solution in a Nano Crystalline Al-4Cu Alloy Produced by SPD: *Phil Prangnell*[1]; Joe Robson[1]; Yan Huang[1]; [1]The University of Manchester

9:40 AM
Characterizing Ultrafine Grained Ti-6Al-4V Thermal Stability with Long-Term High-Resolution EBSD: *Andrew Deal*[1]; Radhakrishna Bhat[1]; Richard DiDomizio[1]; Judson Marte[1]; PR Subramanian[1]; [1]GE Global Research

9:55 AM Invited
Microstructural Stability and Damage Evolution in Ultra-Fine Grained Alloys under Cyclic Loading: *Thomas Niendorf*[1]; Hans Maier[1]; Ibrahim Karaman[2]; [1]University of Paderborn; [2]Texas A&M University

10:15 AM Break

10:30 AM Invited
Stability of Nanocrystalline Alloys: *Christopher Schuh*[1]; [1]MIT

10:50 AM
Thermal Stability of Ultra-Fine Grained Ti-6Al-4V Alloys Processed via Multi-Axis Forging: *Radhakrishna Bhat*[1]; Andrew Deal[1]; Richard Didomizio[1]; Judson Marte[1]; Subramanian PR[1]; [1]GE Global Research Center

11:05 AM
Grain Growth Kinetics of Thermally Stabilized Nanocrystalline Fe-Alloys: *Kris Darling*[1]; Brian Schuster[1]; Brady Butler[1]; Suveen Mathaudhu[1]; Laszlo Kecskes[1]; [1]ARL

11:20 AM Invited
Elemental Redistribution Induced by High-Pressure Torsion in Alloys: *Xiaozhou Liao*[1]; Song Ni[1]; Yanbo Wang[1]; Gang Sha[1]; Simon Ringer[1]; Terence Langdon[2]; Yuntian Zhu[3]; [1]The University of Sydney; [2]University of Southern California; [3]North Carolina State University

11:40 AM
Engineering Stored Energy in Ultra Fine Grained Metals Created by Severe Plastic Deformation: M. Ravi Shankar[1]; *Shashank Shekhar*[1]; Jiazhao Cai[1]; [1]University of Pittsburgh

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Synthesis of Nanomaterials II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Tuesday PM Room: 214
February 16, 2010 Location: Washington State Convention Center

Session Chair: Jiyoung Kim, University of Texas - Dallas; David Stollberg, Georgia Tech Research Institute

2:00 PM Introductory Comments

2:05 PM Invited
Nanowires of Phase Change Materials for Memory Applications: Jeong-Soo Lee[1]; Chan Hoon Park[1]; Jung Hyun Cho[1]; Ki Hyun Kim[1]; Yoon-Ha Jeong[1]; *Meyya Meyyappan*[2]; [1]National Center for Nanomaterials Technology; [2]NASA Ames Research Center

2:25 PM
Effects of Process Parameters of ALD on High-k Dielectric Deposition on HOPG for Graphene Based Nanoelectronics: *Greg Mordi*[1]; Bongki Lee[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

2:45 PM
Dual-Gated Graphene Devices with High-k Dielectric Using Ozone-Based Atomic Layer Deposition (ALD): *Bongki Lee*[1]; Greg Mordi[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

3:05 PM
The Interface Characteristics and the Electrical Properties of ZnO/ITO/ZnO Nano Thin Films: Hung Fei-Yi[1]; *K. J. Chen*[2]; S. J. Chang[2]; Z. S. Hu[2]; Y. T. Chen[1]; [1]Institute of Nanotechnology and Microsystems Engineering, Center for Micro/Nano Science and Technology, National Cheng Kung University; [2]Institute of Microelectronics and Department of Electrical Engineering; Center for Micro/Nano Science and Technology, National Cheng Kung University

3:25 PM
Nanotube Grafting on Porous Solids for Multifunctional Applications: *Sharmila Mukhopadhyay*[1]; [1]Wright State University

3:45 PM Break

4:00 PM
Synthesis and Surface Roughening of $CoSb_3$ Nanowires by Electrochemical Methods: *Dat Quach*[1]; Ruxandra Vidu[1]; Pieter Stroeve[1]; Joanna Groza[1]; [1]University of California, Davis

4:20 PM
Intermediate Composition of at wt. % Mn/Ni in Amorphous, Nano or Microcrystalline Alloy Films of Fe-Mn or Fe-Ni Deposited from Aqueous Solution of Simple Salt Bath: *Bassey Udofot*[1]; [1]NASA/Goddard Space Flight Center

4:40 PM
Controlling Composition at the Individual FePt Nanoparticle Level: Chandan Srivastava[1]; David Nikles[1]; *Gregory Thompson*[1]; [1]University of Alabama

5:00 PM
Chemical Vapour Synthesis of Boron Modified Nanocrystalline Anatase Titania for Photocatalytic Applications: *Imteyaz Mohammad*[1]; Subramshu Bhattacharya[1]; Horst Hahn[2]; [1]IIT Madras; [2]Technische Universität Darmstadt

5:20 PM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Metal Matrix Composites

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Tuesday PM Room: 305
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Xiaodong Li, University of South Carolina; T. Venkatesh, Stony Brook University

2:00 PM
Fabrication of Al6061-SiC Composite by a Novel Semisolid Powder Processing: Yufeng Wu[1]; *Gap-Yong Kim*[1]; Iver Anderson[2]; Thomas Lograsso[2]; [1]Iowa State University; [2]Ames Laboratory of US DOE

2:20 PM
Compressive Properties of Closed-Cell Aluminum Foams Reinforced with Fly Ash Particles: *Yong Liang Mu*[1]; Guang Chun Yao[1]; Hong Jie Luo[1]; [1]Northeasten University

2:40 PM
Fabrication of Carbon Nano-Fiber (CNF) Reinforced Aluminum Matrix Composites by Pressureless Infiltration: Effect of Aluminum Coatings on Infiltration Behavior: *Fumio Ogawa*[1]; Tatsuya Hirakawa[2]; Minoru Oda[1]; Chitoshi Masuda[3]; Toshiyuki Nishimura[4]; [1]Graduate school of Waseda University; [2]Waseda University; [3]Kagami Memorial Institute for Materials Science and Technology, Waseda University; [4]National Institute for Materials Science

3:00 PM
Un-Bundled Carbon Nanotubes Reinforced Titanium Composites via Powder Metallurgy Process: *Katsuyoshi Kondoh*[1]; Thotsaphon Threrujirapapong[1]; Hisashi Imai[1]; Junko Umeda[1]; Bunshi Fugetsu[2]; [1]Osaka University; [2]Hokkaido University

3:20 PM
Fabrication of High Strength Pure Ti Matrix Composite Reinforced with Carbon Black Particle via Wet Process: *Thotsaphon Threrujirapapong*[1]; Katsuyoshi Kondoh[2]; Hisashi Imai[2]; Junko Umeda[2]; Bunshi Fugetsu[3]; [1]Graduate School of Enginering, Osaka University; [2]Osaka University; [3]Hokkaido University

3:40 PM Break

4:00 PM
Load Partitioning in Al_2O_3-Al Composites with Three-dimensional Periodic Architecture: *Marcus Young*[1]; Ranjeet Rao[2]; Jon Almer[3]; Dean Haeffner[3]; Jennifer Lewis[2]; David Dunand[1]; [1]Department of Materials Science and Engineering, Northwestern University; [2]Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign; [3]Advanced Photon Source, Argonne National Laboratory

4:20 PM
Bulk Metallic Glass Composites: A New High-Performance Structural Material: *Douglas Hofmann*[1]; Maximilien Launey[2]; Robert Ritchie[3]; William Johnson[4]; [1]Liquidmetal Technologies; [2]Lawrence Berkeley National Laboratory; [3]University of California Berkeley; [4]California Institute of Technology

4:40 PM
Creep and In-situ TEM Investigations of Short Fiber Reinforced Metal Matrix Composites: *Deniz Kurumlu*[1]; Marcus Young[1]; Antonin Dlouhy[2]; Gunther Eggeler[1]; [1]Ruhr Universitaet; [2]Institute of Physical Metallurgy, Academy of Sciences of the Czech Republic

5:00 PM
Creep Behavior of Aluminum Based Nanocomposites Reinforced with Multi-Walled Carbon Nanotubes: *Hyunjoo Choi*[1]; Jaehyuck Shin[1]; Donghyun Bae[1]; [1]Yonsei University

5:20 PM
Microstructural Evaluation of ZrC Reinforced Al–Cu Matrix Alloy Composites Fabricated by Mechanical Alloying and Vacuum Hot Pressing: *Hulya Kaftelen*[1]; Necip Unlu[1]; Mustafa Ovecoglu[1]; Hani Henein[2]; [1]Istanbul Technical University; [2]University of Alberta

Alumina and Bauxite: Process Improvements and Experiences - Red Side I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Tuesday PM Room: 611
February 16, 2010 Location: Washington State Convention Center

Session Chair: Austin Mooney, Sherwin Alumina

2:00 PM Introductory Comments

2:10 PM
Study on Ore Dressing and Characterization of Different Granulometric Fractions that Compound Bauxite from Pará/Brazil: *Fernanda Silva*[1]; Rachel Santos[1]; João Sampaio[2]; Francisco Garrido[3]; Marta Medeiros[3]; [1]IQ/UFRJ - CETEM; [2]CETEM; [3]IQ/UFRJ

2:40 PM
Autoclave Desilication of Digested Bauxite Slurry in the Flashing Circuit: *Andrey Panov*[1]; Alexander Suss[1]; Irina Paromova[1]; Alexander Damaskin[1]; [1]RUSAL VAMI

3:10 PM
Bauxite Grinding Practices and Options: Anthony Filidore[1]; *John Hadaway*[1]; [1]FLSmidth Minerals

3:40 PM Break

4:00 PM
The Effect of Anatase and Lime on the Transformation of Sodalite to Cancrinite in Bayer Digestion at 250°C: Bingan Xu[1]; *Peter Smith*[1]; Christine Wingate[1]; Lynette De Silva[1]; [1]CSIRO Minerals

4:30 PM
Study on the Rheological Behavior of Crystallized and Crystallized - Amorphous Bauxites: *Carla Barbato*[1]; Silvia França[2]; Marcio Nele[3]; [1]UFRJ/CETEM; [2]Cetem; [3]EQ/UFRJ

Aluminum Alloys: Fabrication, Characterization and Applications: Materials Characterization

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Tuesday PM Room: 615
February 16, 2010 Location: Washington State Convention Center

Session Chair: Zhengdong Long, Kaiser Aluminum

2:00 PM
Structure Evolution and Recrystallization in 7xxx Series Al Alloys: *Jameson Root*[1]; David Field[1]; [1]Washington State University

2:20 PM
Quantification of Marine Aluminum Alloy Sensitization Based upon Thermal Loading: *William Golumbfskie*[1]; Catherine Wong[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]NAVSEA

2:40 PM
Influence of Grain Boundary Sliding on the Ductility of Ultrafine-Grained Al: *Yonghao Zhao*[1]; John F. Bingert[2]; Ying Li[1]; Peiling Sun[3]; Xiaozhou Liao[4]; Yuntian Zhu[5]; Enrique Lavernia[1]; [1]University of California-Davis; [2]Los Alamos National Lab; [3]Feng Chia University; [4]The University of Sydney; [5]North Carolina State University

3:00 PM
Transmission Electron Microscopic Investigation of Sensitized Al-5083: *Ramasis Goswami*[1]; George Spanos[2]; Peter Pao[2]; Ronald Holtz[2]; [1]SAIC/Naval Research Laboratory; [2]Naval Research Laboratory

3:20 PM
Microstructure Evolution of Pre-Strained 3xxx Aluminum Alloys during Annealing: *Payman Babaghorbani*[1]; Nick Parson[2]; Mary Wells[3]; Warren Poole[1]; [1]The University of British Columbia; [2]Rio Tinto Alcan, Arvida Research and Development Centre; [3]University of Waterloo

3:40 PM
Characterization of Hypereutectic Al-19%Si Alloy Solidification Process Using In-Situ Neutron Diffraction and Thermal Analysis Techniques: *Wojciech Kasprzak*[1]; Dimitry Sediako[2]; Mahi Sahoo[1]; Michael Walker[1]; [1]CANMET Materials Technology Laboratory; [2]National Research Council Canada

4:00 PM Break

4:15 PM
Characterization of the Spacing Selection in AlCu Alloys: *Sebastian Gurevich*[1]; Morteza Amoorezaei[1]; Nikolas Provatas[1]; [1]McMaster University

4:35 PM
Development of Al-Si Alloy by Optimizing Modifiers and Grain Refiners: *Saeed Farahany*[1]; Ali Ourdjini[1]; Mohd Hasbullah Idris[1]; [1]UTM University

4:55 PM
Patterning Surface Precipitation in Al-Cu Alloys via Localized Loading: *Jack Franklin*[1]; Jennifer Lukes[1]; [1]University of Pennsylvania

5:15 PM
Refinement of Hypereutectic Al-Si Alloy by Ca3P2: Ying Zhang[1]; Wangxing Li[1]; Danqing Yi[2]; Zhiseng Ren[1]; Xianghui Cang[1]; *Jianhong Yang*[1]; [1]Zhengzhou Research Institute of CHALCO; [2]Central South University

Aluminum Reduction Technology: Hall-Héroult Cell: Energy Conservation Through Cell Design and Process Improvements

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Tuesday PM Room: 608
February 16, 2010 Location: Washington State Convention Center

Session Chair: William Imrie, Bechtel Corporation

2:00 PM Introductory Comments

2:05 PM
Wettable Athodes: An Update: *Rudolf Pawlek*[1]; [1]TS+C

2:30 PM
Wettability of Liquid Aluminum on Carbon/Graphite/TiB2 Composite Cathode Materials: *Jilai Xue*[1]; Xing Chen[1]; [1]University of Science and Technology Beijing

2:55 PM
Study on the New Reduction Technology for Energy Saving: *Fengqin Liu*[1]; Songqing Gu[1]; [1]Chalco

3:20 PM
Effect of Atmosphere-Changing Sintering on the Corrosion Resistance of 17Ni/(10nio-Nife$_2$O$_4$) Cermet Inert Anode: Liu Kai[1]; Tian Zhongliang[1]; Li Jie[1]; Lai Yanqing[1]; Zhang Hongliang[1]; *Lü Xiao-jun*[1]; [1]School of Metallurgical Science and Engineering, Central South University

3:45 PM Break

3:55 PM
Liquidus Temperatures of Cryolite Melts with Low Cryolite Ratio: Alexei Apisarov[1]; Alexander Dedyukhin[1]; *Elena Nikolaeva*[1]; Pavel Tin'ghaev[1]; Olga Tkacheva[1]; Alexander Redkin[1]; Yurii Zaikov[1]; [1]Institute of High Temperature Electrochemistry

4:20 PM
Industrial Test of Low-Voltage Energy-Saving Aluminum Reduction Technology: Li Jie[1]; *Lü Xiao-jun*[1]; Lai Yan-qing[1]; Xie Chang-chun[2]; Zhang Hong-liang[1]; Xiao Jin[1]; Ding Feng-qi[1]; Liu Shi-wen[3]; Guo Qi-feng[3]; Li Yun-long[3]; [1]School of Metallurgical Science and Engineering, Central South University; [2]Hunan Zhongda Yexiang Technology Co., Ltd; [3]Qiya Aluminum (Group) Co, Ltd

4:45 PM
New Cathodes in Aluminum Reduction Cells: *Feng Naixiang*[1]; Tian Yingfu[2]; Peng Jianping[1]; Wang Yaowu[1]; Qi Xiquan[3]; Tu Ganfeng[3]; [1]Northeastern University; [2]Chongqing Tiantai Aluminum Industry Co., Ltd.; [3]Northeastern University Engineering and Research Institute Co. Ltd.

5:10 PM
Calculation of the Aluminum Flow Field at the Interface of Molten Aluminum and Electrolyte in the New Cathode Aluminum Cells: Jiang Yanli[1]; Peng Jianping[1]; *Feng Naixiang*[1]; Wang Yaowu[1]; Qi Xiquan[2]; [1]Northeastern University; [2]Northeastern University Engineering and Research Institute Co. Ltd.

5:30 PM Concluding Comments

Biological Materials Science: Mechanical Behavior of Biological Materials II: Hard Tissues and their Replacement Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Tuesday PM Room: 205
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Structural Mechanisms for the Inelastic Deformation of Haversian Bone: *Rizhi Wang*[1]; Vincent Ebacher[1]; [1]University of British Columbia

2:30 PM
The Mixed-Mode Fracture of Human Cortical Bone: *Elizabeth Zimmermann*[1]; Maximilien Launey[1]; Holly Barth[1]; Robert Ritchie[1]; [1]Lawrence Berkeley National Laboratory and The University of California at Berkeley

2:50 PM
Looking at the Effects of Radiation Doses on the Fracture Toughness of Human Cortical Bone: *Holly Barth*[1]; Alastair MacDowell[2]; Maximilien Launey[2]; Robert Ritchie[1]; [1]Lawrence Berkeley National Laboratory and University of California, Berkeley; [2]Lawrence Berkeley National Laboratory

3:10 PM
Microscale Uniaxial Compression Testing of Bone Tissue Specimens: Katrina Altman[1]; Stacey Vansickle[1]; Elise Morgan[2]; *Katharine Flores*[1]; [1]The Ohio State University; [2]Boston University

3:30 PM
Nanomechanics of Tropocollagen and Hydroxyapatite Biomaterials with an Account of Collagen Mutations and Varied Hydroxyapatite Textures: *Devendra Dubey*[1]; Vikas Tomar[1]; [1]Purdue University

3:50 PM Break

4:00 PM Invited
Fracture Processes and Mechanisms of Crack Growth Resistance in Human Enamel: D Bajaj[1]; Dwayne Arola[1]; [1]University of Maryland Baltimore County

4:30 PM
Interfacial Failure of Dentin Adhesively Bonded to Quartz-Fiber Reinforced Epoxy: *Renata Melo*[1]; Nima Rahbar[2]; Wole Soboyejo[1]; [1]Princeton University; [2]University of Massachusetts Dartmouth

4:50 PM
Structure and Mechanical Properties of Cementum Biocomposites: *Hanson Fong*[1]; Mustafa Gungormus[1]; Biran Foster[1]; Martha Somerman[1]; Candan Tamerler[1]; Mehmet Sarikaya[1]; [1]University of Washington

5:10 PM
Fabrication and Mechanical Properties of Calcium Phosphate Cements (CPC) for Bone Substitution: *Jingtao Zhang*[1]; Franck Tancret[1]; Jean-Michel Bouler[1]; [1]Université de Nantes

5:30 PM
Tricalcium Phosphates with Srontium Oxide and Zinc Oxide Dopants for Resorbable Bone Grafts: *Johanna Feuerstein*[1]; Shashwat Banerjee[1]; Susmita Bose[1]; Amit Bandhyopadhyay[1]; [1]Washington State University

5:50 PM
Biomimetic Chitosan-Based Nanocomposite Scaffolds for Bone Tissue Engineering: *Wah Wah thein-Han*[1]; Devesh Misra[1]; [1]University of Louisiana

Bulk Metallic Glasses VII: Alloy Development and Application 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: 213
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Katharine Flores, The Ohio State University; Jan Schroers, Yale University

2:00 PM Invited
Processing of Bulk Metallic Glass: *Jan Schroers*[1]; [1]Yale University

2:20 PM
Development of Ti-Based Bulk Glassy Matrix Composites with Excellent Mechanical Performance: *Jin Man Park*[1]; Norbert Mattern[1]; Ka Ram Lim[2]; Do Hyang Kim[2]; Jürgen Eckert[1]; [1]Leibniz Institute for Solid State and Materials Research Dresden; [2]Yonsei University

2:30 PM Invited
Towards a New Class of Biodegradable Implants: Mg-Based Glasses with No Hydrogen Evolution: *Jörg Löffler*[1]; Peter Uggowitzer[1]; Bruno Zberg[1]; [1]ETH Zurich

2:50 PM
Solute Substitution Induced Changes in Structure and Nucleation in an Al-Based Metallic Glass: *Feng Yi*[1]; Paul Voyles[1]; Seth Imhoff[1]; John Perepezko[1]; [1]UW-Madison

3:00 PM Invited
Formation and Characterization of Individual Metallic Glassy Nanowire: *Koji Nakayama*[1]; Yoshihiko Yokoyama[1]; Takahito Ono[1]; Mingwei Chen[1]; Kotone Akiyama[1]; Toshio Sakurai[1]; Akihisa Inoue[1]; [1]Tohoku University

3:20 PM Invited
Role of Ductile β-Phase Dendrite in Optimizing Mechanical Properties of Ti-Based Bulk Metallic Glass Composites: Ka Ram Lim[1]; Jin Man Park[1]; Won Tae Kim[2]; *Do Hyang Kim*[1]; [1]Yonsei University; [2]Cheongju University

3:40 PM Break

3:50 PM Invited
Ductile Hypoeutectic Zr-Cu-Al and Zr-Ni-Cu-Al Bulk Glassy Alloys: *Y. Yokoyama*[1]; K. Fujita[2]; T. Yamasaki[3]; A. Yavari[4]; P. Liaw[5]; A. Inoue[1]; [1]Institute for Materials Research; [2]Department of Mechanical Engineering; [3]School of Engineering; [4]LTPcSIMAP-CNRS; [5]The University of Tennessee

4:10 PM
On Interfacial Bonding in Mg-Cu-Gd Metallic Glass during Spark Plasma Sintering Processing: *Baolong Zheng*[1]; Troy Topping[1]; Yizhang Zhou[1]; Chi Y.A. Tsao[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]National Cheng Kung University

4:20 PM
Effect of Heat Treatment at Semisolid Region on Zr-Based Metallic Glass Matrix Composites: *Takuya Tamura*[1]; Advenit Makaya[1]; Kenji Miwa[1]; [1]National Institute of Advanced Industrial Science and Technology (AIST)

4:30 PM Invited
Improving the Deformation Ability of Bulk Metallic Glasses by Different Approaches: *Ke-Fu Yao*[1]; Sheng-Bao Qiu[1]; Yang Li[1]; Hong-Yu Ding[1]; [1]Tsinghua University

4:50 PM
Thermodynamic Optimization of the Cu-Zr-Ag System and Its Applications to Amorphous Alloy Development: *Dae Hoon Kang*[1]; In-Ho Jung[1]; [1]McGill University

5:00 PM Invited
Study of Microscopic Deformation Behaviors of Bulk Metallic-Glasses: *Yong Yang*[1]; J. Lu[1]; J.C. Ye[1]; [1]The Hong Kong Polytechnic University

5:20 PM Invited
Cooling Process and Cast Structure of Zr-Al-Ni-Cu-Based Bmgs Produced in Various Atmospheres: *Junji Saida*[1]; Albertus Setyawan[1]; Hidemi Kato[1]; Mitsuhide Matsushita[2]; Akihisa Inoue[1]; [1]Tohoku University; [2]JEOL. Co., Ltd

5:40 PM Invited
Recent Progress in High-Entropy Alloys: Jien-Wei Yeh[1]; *Ming-Hung Tsai*[1]; [1]National Tsing Hua University

Cast Shop for Aluminum Production: Furnace Technology and Melt Handling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Pierre Le Brun, Alcan Voreppe Research Center

Tuesday PM Room: 609
February 16, 2010 Location: Washington State Convention Center

Session Chair: Peter Whiteley, Munimula

2:00 PM
Influence of Heating Technology on Melt Quality in Ladles for Road Transportation of Liquid Aluminum Casting Alloys during Holding: *Bernd Prillhofer*[1]; Jens Knaack[1]; [1]AMAG Casting GmbH

2:25 PM
Degreasing of Aluminium Turnings and Implications for Solid-State Recycling: Jirang Cui[1]; *Anne Kvithyld*[2]; Hans Roven[1]; [1]Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry

2:50 PM
Retrofitting Aluminum Melting Furnaces: *Tom Schmidt*[1]; [1]Otto Junker

3:15 PM
Establishing Operational Parameters of AL-EMS Using Numerical Simulations to Promote Energy Efficiency during Final Heating in Aluminum Furnaces: *Robert Stal*[1]; Ulf Sand[1]; Olof Hjortstam[1]; [1]ABB AB

3:40 PM
Energy Efficiency in Casthouse Furnaces: *Robert Voyer*[1]; Francis Caron[2]; [1]Hatch; [2]Alcoa

4:05 PM
Implementation of a Global Casthouse Furnace Energy Efficiency Program at Rio Tinto Alcan: *Mathieu Roy*[1]; Vincent Goutiere[1]; Claude Dupuis[1]; [1]Rio Tinto Alcan

4:30 PM
Crucible Transfer by Siphoning: A Review of the Benefits and the Latest Technology: Jerry Locatelli[1]; Guangwei Liu[2]; *Andrew North*[2]; [1]Millennium Metals Pty Ltd; [2]Major Furnace Australia Pty Ltd

4:55 PM
Heating and Melting of Single Al Ingots in an Aluminium Melting Furnace: *Jørgen Furu*[1]; Andreas Buchholz[2]; Trond Harald Bergstrøm[3]; Knut Marthinsen[1]; [1]NTNU; [2]Hydro Aluminium Deutschland GmbH; [3]SINTEF Materials and Chemistry

5:20 PM
Optimised Re-Melting by the Use of Low-Temperature Oxyfuel at Hydro Aluminium's Primary Aluminium Casthouse, Øvre Årdal, Norway: *Henrik Gripenberg*[1]; Ken Torvanger[2]; Johannes Lodin[1]; [1]Linde Gases Division; [2]Hydro Aluminium

Characterization of Minerals, Metals and Materials: Characterization of Grain Size, Morphology, Transmittance, and Tomography

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Tuesday PM Room: 307
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Shadia Ikhmayies, University of Jordan; Mingdong Cai, Exova

2:30 PM Introductory Comments

2:35 PM
A Statistical Study of Grain Size, Grain Orientation, and Grain Boundary Misorientation Effects on Deformation Twinning: *Rodney McCabe*[1]; Irene Beyerlein[1]; Laurent Capolungo[2]; Peter Marshall[2]; Carlos Tome[1]; [1]Los Alamos National Laboratory; [2]Georgia Tech

3:00 PM
An Automated Approach for Prior Austenite Grain Size Measurement by EBSD: *Ning Ma*[1]; Russell Mueller[1]; Timothy Anderson[2]; Raghavan Ayer[1]; [1]Corporate Strategic Research, ExxonMobil Research and Engineering Company; [2]ExxonMobil Upstream Research Company

3:25 PM
Linear Measures for Estimating Grain Growth Rates: *Martin Glicksman*[1]; Paulo Rios[2]; Daniel Lewis[3]; [1]University of Florida; [2]Universidade Federal Fluminense; [3]Rensselaer Polytechnic Institute

3:50 PM
Serial Sectioning, X-Ray Tomography, and EBSD Analyses of Martensitic Alloys: *George Spanos*[1]; David Rowenhorst[1]; Richard Fonda[1]; Keith Knipling[1]; Richard Everett[1]; Greg Olson[2]; Stephanie Chan[2]; [1]Naval Research Laboratory; [2]Northwestern University

4:15 PM
Computed Tomography of Titanium Friction Stir Welds: *Jennifer Wolk*[1]; Richard Everett[2]; Lourdes Salamanca-Riba[3]; [1]Naval Surface Warfare Center; [2]Naval Research Laboratory; [3]University of Maryland

4:40 PM
Aberration-Corrected Vector Field Electron Tomography of Magnetic Nano-Structures: Charudatta Phatak[1]; Emma Humphrey[1]; Amanda Petford-Long[2]; *Marc De Graef*[1]; [1]Carnegie Mellon Unversity; [2]Argonne National Laboratory

5:05 PM
Using Transmittance Measurements to Investigate the Interdiffusion through the SnO2/CdS and CdS/CdTe interfaces in SnO2/CdS/CdTe Solar Cells: *Shadia Ikhmayies*[1]; Riyad Ahmad-Bitar[1]; [1]University of Jordan

5:30 PM
The Effect of Aluminum Content on Morphology, Size, Volume Fraction and Number of Graphite Nodules in Ductile Cast-Iron: *Ali-Reza Kiani-Rashid*[1]; A Shayesteh-Zeraati[2]; H Naser-Zoshki[3]; [1]Ferdowsi University of Mashhad; [2]Sharif University of Technology; [3]Iran University of Science and Technology, Tehran,

5:55 PM
Characterization of the Deep Interface Traps in Hf-Based/Si Gate Stacks: *S.Y. Tan*[1]; Yi-Lun Hsia[1]; Ming-Yuan Wu[1]; Hsing-Hung Chen[1]; [1]Chinese Culture University

6:15 PM
Arsenic Dopant Effect in Nickel Silicide Formation for NiSi/Hf-Based/Si Gate Stacks: *S.Y. Tan*[1]; [1]Chinese Culture University

6:35 PM Concluding Comments

6:40 PM Question and Answer Period

Coatings for Structural, Biological, and Electronic Applications: Applications of Coatings II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ; Choong-un Kim, University of Texas at Arlington; Nancy Michael, University of Texas at Arlington

Tuesday PM Room: 309
February 16, 2010 Location: Washington State Convention Center

Session Chair: Nuggehalli Ravindra, NJIT

2:00 PM Introductory Comments

2:10 PM Invited
Experimental Study of Ternary Cobalt Spinal Oxides for Photoelectrochemical Hydrogen Production: *Sudhakar Shet*[1]; Kwang-Soon Ahn[2]; Heli Wang[1]; Nuggehalli Ravindra[3]; Yanfa Yan[1]; John Turner[1]; Mowafak Al-Jassim[1]; [1]National Renewable Energy Laboratory; [2]YeungNam University; [3]New Jersey Institute of Technology

2:40 PM
Effect of Superficially Applied Y2O3 Coating on High Temperature Corrosion Behaviour of Ni-Base Superalloys: Gitanjaly G[1]; *Harpreet Singh*[2]; Satya Prakash[2]; Surendra Singh[2]; [1]National Institute of Technology; [2]Indian Institute of Technology

3:00 PM
Semiconductor Device Integration Utilizing Magnetic Films: *Rene Rivero*[1]; Michael Booty[1]; Anthony Fiory[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

3:20 PM
Crystallization and Thermal Stability of Amorphous and Nanocrystalline TiO_2 Magnetron-Deposited Thin Films Studied by X-Ray Diffraction: *Radomir Kuzel*[1]; Zdenek Matej[1]; Lea Nichtova[1]; Jindrich Musil[2]; [1]Charles University in Prague, Faculty of Mathematics and Physics; [2]University of West Bohemia, Faculty of Applied Sciences

3:40 PM Break

3:55 PM Invited
Spin Coated Er-Doped SiO2 for High Efficiency Waveguide Optical Amplifiers: *Sufian Abedrabbo*[1]; Bashar Lahlouh[1]; Anthony T. Fiory[2]; Nuggehalli Ravindra[2]; [1]University of Jordan; [2]NJIT

4:25 PM
Stellite Coatings on Hot Work Tool Steels for Tooling Applications in Semi-Solid Processing of Steels: *Agca Kayihan*[1]; Yucel Birol[1]; Kemal Demirci[2]; [1]Tubitak Mam; [2]Kobatek Surface Treatment Industry

4:45 PM
Phase Change Materials – An Overview: Maneesh Merwade[1]; Vishal K. Singh[1]; *Arun Ramadass*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

5:05 PM Invited
Organic Coatings to Prevent Molten Metal Explosions: *Alex Lowery*[1]; Joe Roberts[2]; [1]Wise Chem LLC; [2]Pyrotek Inc.

5:35 PM
Diaphragm Coatings to Enhance Performance of Fabry-Perot Sensors: *Ivan Padron*[1]; Anthony Fiory[1]; Nuggehalli M Ravindra[1]; [1]NJIT

Computational Thermodynamics and Kinetics: Wetting Phenomena II

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: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

Tuesday PM Room: 308
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Prefreezing at Heterogeneous Solid-Liquid Interfaces: *Brian Laird*[1]; Ruslan Davidchack[2]; [1]University of Kansas; [2]University of Leicester

2:30 PM Invited
Thinning, Instability and Rupture of Thin Liquid Films in Metal Foam: *Lucien Brush*[1]; [1]University of Washington

3:00 PM
Simulating Surface Energy Anisotropy Using Extended Cahn-Hilliard Model: *Solmaz Torabi*[1]; ZhengZheng Hu[1]; John Lowengrub[1]; [1]University of California Irvine

3:20 PM Break

3:30 PM Invited
Nanoscale Quasi-Liquid Interfacial Films: The Interplay of Premelting, Prewetting and Multilayer Adsorption: *Jian Luo*[1]; [1]Clemson University

4:00 PM
Influence of Local Interface Phenomenon on Coalescence Kinetics Models in Ni-Base Alloys: *Youhai Wen*[1]; Jeff Simmons[2]; Chris Woodward[2]; [1]UES, Inc; [2]AFRL

4:20 PM
Microstructure Engineering via Throttled Nucleation: *David Wu*[1]; Jerry Quek[1]; Kevin Chu[1]; [1]Institute of High Performance Computing

4:40 PM
Phase Field Modeling of Void Microstructure Evolution in Irradiated Metals: *Srujan Rokkam*[1]; Santosh Dubey[1]; Anter El-Azab[1]; Paul Millett[2]; Dieter Wolf[2]; [1]Florida State University; [2]Idaho National Laboratory

5:00 PM
Monte Carlo Potts Simulation of Strain Induced Sub-Grain Structure Formation: *Corentin Guebels*[1]; Tien Tran[1]; Phi Thanh[1]; Joanna Groza[1]; Jean-Pierre Delplanque[1]; [1]University of California, Davis

5:20 PM
Using Size Distributions for Determining Growth Mechanisms of Grain Boundary Precipitates: *Shirley Northover*[1]; [1]The Open University

5:40 PM
Genetic Alloy Design by Nanoprecipitate Control: Stainless Steels and Aluminium Alloys: *Pedro Rivera-Diaz-del-Castillo*[1]; [1]University of Cambridge

Cost-Affordable Titanium III: Powder Consolidation and Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Tuesday PM Room: 618
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Ramana Reddy, University of Alabama; Kevin Dring, Norsk Titanium AS

2:00 PM
Microwave Sintering and Melting of Titanium Powder for Low-Cost Processing: *Ralph Bruce*[1]; Arne Fliflet[2]; Hugo Huey[3]; Chad Stephenson[1]; M. Ashraf Imam[2]; [1]Bethel College; [2]Naval Research Laboratory; [3]HWave, LLC

2:25 PM
Microwave Sintering of Titanium: *Ma Qian*[1]; Shudong Luo[1]; Ming Yan[1]; Graham Schaffer[1]; [1]The University of Queensland

2:50 PM
Reaction Assisted Ultrasonic Consolidated TiNi: *Henry Rack*[1]; Mykola Kulakov[1]; Erica Sampson[1]; [1]Clemson University

3:15 PM
Properties of Conventionally Alloyed and Powder Alloyed Nano-Crystalline Titanium Consolidated Via Spark Plasma Sintering: Christopher Melnyk[1]; Steven Schroeder[1]; David Grant[1]; *Robert Gansert*[2]; [1]California Nanotechnologies; [2]Advanced Materials and Technology Services

3:40 PM Break

3:55 PM
Fabrication of Ultrafine/Nanostructued Ti-TiN/TiC Matrix Composites Using Low-Temperature Back Pressure Equal Channel Angular Pressing: Wei Xu[1]; Xiaolin Wu[1]; Haowen Xie[1]; Jizhong Li[1]; *Kenong Xia*[1]; [1]University of Melbourne

4:20 PM
Stress-Corrosion Cracking and Fatigue Crack Growth Behavior of Ti-6Al-4V Plates Consolidated from Low Cost Powders: *Peter Pao*[1]; M. Ashraf Imam[1]; Robert Bayles[1]; C.R. Feng[1]; [1]Naval Research Laboratory

4:45 PM
Sintering Behavior of TiH2 for Manufacturing of Titanium Alloys and Products: *Zhigang Fang*[1]; Hongtao Wang[1]; Shuming Fang[2]; Jiamin Zhang[2]; [1]University of Utah; [2]CYMCO

5:10 PM
Structure Formation during Preparation of Variable Porosity Ti Foams by Solid State Replication: Yu. Orlova[1]; K. Maekawa[1]; *Henry Rack*[2]; [1]Kyoto University; [2]Clemson University

5:35 PM
Production of a Low-Cost DMD Wire Feedstock by Direct Consolidation of Ti Sponge: *Kevin Dring*[1]; Martin Lefstad[2]; Ola Jensrud[3]; [1]Norsk Titanium; [2]SINTEF - Materials and Chemistry; [3]Sintef Raufoss Manufacturing

Electrode Technology for Aluminum Production: Traditional and Inert Anode Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Tuesday PM Room: 616
February 16, 2010 Location: Washington State Convention Center

Session Chair: Jilai Xue, Unversity of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM
Higher Softening Point Pitch as Anode Binder Pitch: *Robert Wombles*[1]; Stacey McKinney[1]; Thomas Golubic[1]; Kathryn Sickels[1]; [1]Koppers Inc.

2:25 PM
Study of Resistivity – Real Density Correlation in CPC Calcination Control: *Oscar Mascarenhas*[1]; Arun Mathur[1]; Jose Botelho[1]; [1]Goa Petcoke Consultancy Services

2:45 PM
The Comparison between Vertical Shaft Furnace and Rotary Kiln for Petroleum Coke Calcination: Yi Sun[1]; Haifei Xu[1]; *Yubin Wang*[1]; Yinhe Cui[1]; Chaodong Liu[1]; [1]Shenyang Aluminum and Magnesium Engineering and Research Institute

3:05 PM
Prebaked Anode from Coal - Utilization of Coal Extract as a Coke Feedstock: *Maki Hamaguchi*[1]; Noriyuki Okuyama[1]; Nobuyuki Komatsu[1]; Jiro Koide[2]; Keisuke Kano[2]; [1]Kobe Steel, Ltd.; [2]Sumitomo Corporation

3:25 PM
Charcoal in Anodes for Aluminium Production: *Bodil Monsen*[1]; Arne Ratvik[1]; Lorentz Lossius[2]; [1]SINTEF Materials and Chemistry; [2]Hydro Aluminium - PM Technology

3:45 PM Break

4:00 PM
Ball-Milled Materials as Inert Anodes for Aluminum Production in KF-Alf3 Low-Temperature Electrolyte: *Sébastien Helle*[1]; Benoit Brodu[1]; Boyd Davis[2]; Daniel Guay[1]; Lionel Roue[1]; [1]INRS EMT; [2]Kingston Process Metallurgy Inc.

4:20 PM
Corrosion Behaviors of NiFe2O4-NiO-Co3O4 Inert Anodes Materials in Na3AlF6-Al2O3 Melts: *Jilai Xue*[1]; Tao Zeng[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

4:40 PM
Effect of Sintering Parameters on Properties of 18NiO-17(Cu-Ni)-65NiFe2O4 Composite Ceramic Anode: *Jia Ma*[1]; Yao Guang Chun[1]; Bao Li[1]; Zhang Xiao[1]; Ma Jun Fei[1]; [1]Northeastern University

5:00 PM
Research on Preparation and Properties of 18NiO-NiFe2O4 Composite Ceramic Inert Anodes: *Jia Ma*[1]; Yao Guangchun[1]; Bao Li[1]; Zhang Xiao[1]; Ma Junfei[1]; [1]Northeastern University

5:20 PM
Effect of Adding Ni-Fe on Properties of Inert Anodes of NiFe2O4 Based Cermet: *Zhongsheng Hua*[1]; Guangchun Yao[1]; Lei Wang[1]; Zhigang Zhang[1]; Lisi Liang[1]; [1]Northeastern University

Energy Conservation in Metals: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Cynthia Belt, Superior Industries International; Mark Cooksey, CSIRO; Donald Whipple, Bloom Engineering Co Inc; Russell Hewertson, Air Products and Chemicals Inc

Tuesday PM Room: 310
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Mark Cooksey, CSIRO; Russell Hewertson, Air Products and Chemicals Inc

2:30 PM Introductory Comments

2:35 PM
Five Low Cost Methods to Improve Energy Efficiency on Reverberatory Furnaces: *Cynthia Belt*[1]; Ray Peterson[2]; Dave Bequette[1]; [1]Superior Industries International; [2]Aleris International

2:55 PM
Energy Saving in the Foundry Industry by Using the CRIMSON Single Shot up Casting Process: *Mark Jolly*[1]; [1]University of Birmingham

3:15 PM
Energy and Emissions with Oxyfuel: *Thomas Niehoff*[1]; [1]Linde Gas

3:35 PM
Industrial Application Experiences with Microporous Calcium Hexaluminate Insulating Material SLA-92: *Dale Zacherl*[1]; Rainer Kockegey-Lorenz[2]; Andreas Buhr[2]; [1]Almatis, Inc; [2]Almatis GmbH

3:55 PM
Identifying Some Potential Future Hydrometallurgical Processes in Treatment of Nickel Laterites: *Sarveswara Rao Katragadda*[1]; [1]Institute of Minerals and Materials Technology

4:15 PM Concluding Comments

Failure of Small-Scale Structures: Device Failure and Fatigue

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Marian Kennedy, Clemson Univeristy; Brad Boyce, Sandia National Laboratory; Reinhold Dauskardt, Stanford; Zhiwei Shan, Hysitron Inc

Tuesday PM Room: 206
February 16, 2010 Location: Washington State Convention Center

Session Chair: Molly Kennedy, Clemson University

2:00 PM Invited
Nitinol Fatigue – A Review: *Xiao-Yan Gong*[1]; Jixi Zhang[2]; Yanyao Jiang[2]; [1]Medical Implant Mechanics LLC; [2]University of Nevada, Reno

2:25 PM
Failure of Micron-Scale Polysilicon MEMS: Fatigue and Wear Mechanisms: *Daan Hein Alsem*[1]; Robert Ritchie[2]; [1]Lawrence Berkeley National Laboratory; [2]Lawrence Berkeley National Laboratory/University of California at Berkeley

2:40 PM
Finite Element Simulation of Galvanic Corrosion in Silicon Microsystems: *Collin Becker*[1]; Conrad Stoldt[1]; David Miller[2]; [1]University of Colorado; [2]National Renewable Energy Laboratory

2:55 PM
Size-Scale Effects in the Fracture of Polycrystalline Silicon for Microsystems: *Brad Boyce*[1]; E. David Reedy[1]; James Foulk[1]; [1]Sandia National Labs

3:10 PM
Theta-like Specimens to Determine Tensile Strength at the Micro Scale: *Michael Gaither*[1]; Frank DelRio[1]; George Quinn[1]; Richard Gates[1]; Robert Cook[1]; [1]National Institute of Standards and Technology

3:25 PM
Fracture Behavior of Partially-Sintered Ceramics for Electrochemical Cell Applications: *Xiaoxing Liu*[1]; Christophe Martin[1]; Gerard Delette[2]; [1]Grenoble-INP; [2]CEA-Grenoble

3:40 PM
Failure Analysis of Audio Connectors Component Using X-Ray 3D Technology: *Daniele Rolim*[1]; Iramylson Freitas[1]; Idelcio Cardoso[1]; Ocileide Silva[1]; [1]Nokia Institute of Technology

3:55 PM Break

4:10 PM Invited
Mitigation of Wear-Induced Failure of Microsystems by Vapor Phase Lubrication: *Michael Dugger*[1]; [1]Sandia National Laboratories

4:35 PM
In-Situ Microscale Fatigue Study to Determine the Effect of Microstructural Neighborhoods on Crack Initiation Mechanisms and Lifetimes: *Christopher Szczepanski*[1]; Sushant Jha[1]; Bob Wheeler[2]; James Larsen[3]; [1]UTC/AFRL; [2]UES/AFRL; [3]AFRL

General Abstracts: Structural Materials Division: Fatigue and Fracture

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Composite Materials Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee, TMS: Refractory Metals Committee, TMS: Titanium Committee
Program Organizers: Eric Ott, GE Aviation; Robert Hanrahan, National Nuclear Security Administration; Judith Schneider, Mississippi State University

Tuesday PM Room: 3A
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM
Fatigue Crack Growth Mechanisms of Long and Small Cracks in Structural Materials: *Anastasios Gavras*[1]; Christopher Lammi[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

2:20 PM
Novel Methods for Microstructure-Sensitive Probabilistic Fatigue Notch Factor: *William Musinski*[1]; David McDowell[1]; [1]Georgia Institute of Technology

2:40 PM
Effect of Low-Temperature Overload on Fatigue Crack Growth Retardation: Sai Kumar[1]; Jyoti Mohanty[1]; Bipin Verma[1]; *Prabal Ray*[1]; [1]National Institute of Technology, Rourkela

3:00 PM
A Physical Interpretation of Basquin Relation: *Partha De*[1]; Wei Yuan[1]; Rajiv Mishra[1]; [1]Missouri University of Science and Technology

3:20 PM
Effect of Hydrogen on Crack Nucleation in 316 Stainless Steel under Rotating Beam Fatigue Loading Conditions: *Douglas Matson*[1]; Christian Skipper[1]; Gary Leisk[1]; Anil Saigal[1]; [1]Tufts University

3:40 PM Break

3:50 PM
S-N Fatigue and Fatigue Crack Propagation Behaviors of High Manganese Steels: *Jaeki Kwon*[1]; Sanguk Jin[1]; Sangshik Kim[1]; [1]Gyeongsang National University

4:10 PM
Effect of Ca, Mg and Ti-Mg Addition on the Impact Toughness of Heat Affected Zone in Low Carbon Steel: *Jianghua Ma*[1]; Dongping Zhan[1]; Zhouhua Jiang[1]; Jin Yu[1]; Jicheng He[1]; Haijun Shen[2]; [1]Northeastern University; [2]Baoshan Iron & Steel Co., Ltd.

4:30 PM
Development of Layer-Integrated Steels with Superior Strength-Ductility Combination: *Shoichi Nambu*[1]; Masato Michiuchi[1]; Junya Inoue[1]; Toshihiko Koseki[1]; [1]The University of Tokyo

4:50 PM
Fatigue Crack Growth Behavior in a Monocrystalline Ni-Based Superalloy: *Clarissa Yablinsky*[1]; Katharine Flores[1]; Michael Mills[1]; James Williams[1]; [1]The Ohio State University

5:10 PM
The Role of Non-Planar Deformation in Cyclic Softening Following Low Cycle Fatigue of a Ni-Based Superalloy: *Patrick Phillips*[1]; Raymond Unocic[1]; Libor Kovarik[1]; Dan Wei[2]; David Mourer[2]; Michael Mills[1]; [1]Ohio State University; [2]GE Aviation

5:30 PM
Computational Thermodynamics, Neural Networks and Genetic Algorithms: Tools to Design Creep Resistant and Weldable Superalloys: *Franck Tancret*[1]; [1]Université de Nantes

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Innovations in Primary and Secondary Forming - Titanium

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Tuesday PM Room: 306
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Dan Sanders, Boeing Corporation; Lee Semiatin, AFRL-RX

2:00 PM Invited
Severe-Plastic Deformation and Superplasticity of Two-Phase Titanium Alloys: *Lee Semiatin*[1]; G. A. Sargent[2]; A. K. Ghosh[3]; G. A. Salishchev[4]; C. S. Lee[5]; [1]US Air Force Research Laboratory; [2]UES, Inc.; [3]University of Michigan; [4]Belgorod State University; [5]Pohang University of Science and Technology

2:30 PM
Processing, Structure and Properties of Safety Critical Titanium - An Engineering Perspective: *David Rugg*[1]; D. Furrer[2]; M. Glavicic[2]; [1]Rolls-Royce Plc; [2]Rolls-Royce Corporation

2:50 PM
The Effect of Macrozone Formation during Thermo-Mechanical Processing on the Fatigue Response of Commercial Ti-6Al-4V Products: *M.R. Bache*[1]; C. Pleydell-Pearce[1]; [1]Swansea University

3:10 PM
In Situ Observation of Texture Evolution during Rolling and Recrystallisation of Ti-6Al-4V: *Jonnathan Warwick*[1]; R. J. Talling[2]; M. Preuss[2]; D. Dye[1]; [1]Imperial College London; [2]Manchester University

3:30 PM
The Effect of Beta Grain Growth on Alpha Variant Selection in Ti-6Al-4V: G. Obasi[1]; S. Birosca[1]; *Michael Preuss*[1]; [1]University of Manchester

3:50 PM
The Relevance of Twinning during Deformation of Ti-6Al-4V: D.G. Leo Prakash[1]; R. J. Moat[1]; R. Ding[2]; I. Jones[2]; P. Withers[1]; J. Quinta da Fonseca[1]; *Michael Preuss*[1]; [1]University of Manchester; [2]University of Birmingham

4:10 PM Break

4:20 PM
Dislocation Transmission through Interphase Boundaries in Ti-6Al-4V: R. Ding[1]; J. Gong[2]; A.J. Wilkinson[2]; *I. P. Jones*[1]; [1]University of Birmingham; [2]Oxford University

4:40 PM
The Application of Fine Grain Titanium 6Al-4V for Superplastic Forming and Superplastic Forming and Diffusion Bonding of Aerospace Products: *Larry Hefti*[1]; [1]The Boeing Company

5:00 PM
Manufacturing of β-Titanium Ti-10V-2Fe-3Al Spin-Extruded Hollow Shafts for High Strength Power Train Applications in Aerospace and Automotive Industries: *Christian Machai*[1]; Dirk Biermann[1]; [1]Technische Universität Dortmund

5:20 PM
Superplastic Forming and Diffusion Bonding Process Design for Aerospace Component: *Yong-Nam Kwon*[1]; [1]Korea Institute of Materials Science

5:40 PM
Application of Statistical Continuum Mechanics to Guide Processing of Aerospace Materials: *Dongsheng Li*[1]; Hamid Garmestani[1]; [1]Georgia Institute of Technology

Heterogeneous Nucleation and Initial Microstructure Evolution in Alloys and Colloids: Experiment II

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/ASM: Phase Transformations Committee
Program Organizers: Rainer Schmid-Fetzer, Clausthal University of Technology; Heike Emmerich, RWTH Aachen University; Frans Spaepen, Harvard University; Martin Glicksman, University of Florida; John Perepezko, University of Wisconsin, Madison

Tuesday PM Room: 614
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Ma Qian, University of Queensland; John Perepezko, University of Wisconsin - Madison

2:00 PM Invited
Grain Formation: The Interdependence between Grain Growth and Nucleation: *David StJohn*[1]; Ma Qian[1]; Mark Easton[2]; [1]CAST CRC, University of Queensland; [2]CAST CRC, Monash University

2:25 PM Invited
Modeling Transient Growth of Undercooled Solid Nuclei in the Melt: *Markus Rettenmayr*[1]; Marcel Fink[1]; [1]Friedrich-Schiller-University Jena

2:50 PM
Investigation of Heterogeneous Nucleation of the Beta Phase in the System Ti-Al: *Daniel-Hendrik Gosslar*[1]; Christian Hartig[1]; Robert Guenther[1]; Ulrike Hecht[2]; Ruediger Bormann[1]; [1]Hamburg University of Technology; [2]Access e.V.

3:10 PM
Heterogeneous Nucleation and Microstructure Formation in Peritectic Al-Ni Alloys: Evelyn Doernberg[1]; Ricardo Siquieri[2]; Hailin Chen[1]; Heike Emmerich[2]; *Rainer Schmid-Fetzer*[1]; [1]Clausthal University of Technology; [2]RWTH Aachen

3:30 PM
Heterogeneous Nucleation in Liquid Immiscible Alloys: *Markus Koehler*[1]; Lorenz Ratke[1]; [1]German Aerospace Center

3:50 PM Break

4:10 PM
Characterization of the Initial Stages of Phase Separation by Atom Probe Tomography: *Michael Miller*[1]; Ai Serizawa[1]; [1]ORNL

4:30 PM
Nucleation of Strengthening Dispersions in a High-Strength Low-Carbon Steel: *Mike Mulholland*[1]; David Seidman[1]; [1]Northwestern University

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session IV

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Tuesday PM Room: 212
February 16, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Chasing Exotic Binary Alloy Compounds: The Necessary Synergy of Cluster Expansion and High-Throughput Methods: *Stefano Curtarolo*[1]; Gus Hart[2]; Ohad Levy[3]; [1]Duke University; [2]Brigham Young University; [3]NRCN

2:30 PM
Informatics Applications to Electronic Structure Calculations: *Krishna Rajan*[1]; Scott Broderick[1]; Tao Wang[1]; [1]Iowa State University

2:50 PM
The Prediction of Crystal Structure by Combining Machine Learning Knowledge Methods with First Principles Energy Methods: *Gerbrand Ceder*[1]; [1]Massachusetts Institute of Technology (MIT)

3:10 PM Invited
Predicting Solid - Aqueous Equilbria for Materials Design: *Kristin Persson*[1]; [1]LBNL

3:40 PM Break

4:10 PM Invited
Transfer Matrix Approach to Quasi-1D Nanostructures with Cluster Interatomic Interactions: Vasyl Tokar[1]; *Hugues Dreyssé*[2]; [1]Institute of Magnetism of NAS and MES; [2]Universite de Strasbourg, CNRS

4:30 PM
Towards a First-Principles Understanding of the Iron Phase Diagram: *Fritz Körmann*[1]; Alexey Dick[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

International Symposium on High-Temperature Metallurgical Processing: Smelting and Reduction Processes

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Jerome Downey, Montana Tech

Tuesday PM Room: 619
February 16, 2010 Location: Washington State Convention Center

Session Chair: Tao Jiang, Central South University

2:00 PM
Industrial Operation of JAE Nickel Smelting Technology at Jinchuan Nickel Smelter: Min Zhou[1]; Aidong Wan[1]; Guang Li[1]; *Ross Baldock*[2]; Harry Li[2]; [1]Jinchuan Non Ferrous Metals Corp.; [2]Ausmelt Ltd

2:20 PM
Arc Plasma Smelting of Niobium Pentoxide towards Production of Nb Metal: *Bijan Nayak*[1]; Barada Mishra[1]; [1]IMMT

2:40 PM
Carbothermic Reduction of Niobium Concentrate: *Joao Ferreira Neto*[1]; Flavio Beneduce Neto[1]; Cyro Takano[2]; [1]Institute for Technological Research - IPT; [2]University of Sao Paulo

3:00 PM
Volatilization of Antimonite in Nitrogen-Oxygen Atmospheres: *Rafael Padilla*[1]; Gustavo Ramirez[1]; Alvaro Aracena[1]; Maria Ruiz[1]; [1]University of Concepcion

3:20 PM
The Optimization of the Coke and Agglomerte Quantity in Lead Production in "Water-Jacket" Furnace: *Ahmet Haxhiaj*[1]; Egzon Haxhiaj[2]; [1]University of Prishtina; [2]American University in Kosovo

3:40 PM Break

3:55 PM
Influences of MgO on Roasting Properties of Iron Ore Oxidized Pellets: *Xiaohui Fan*[1]; Min Gan[1]; Tao Jiang[1]; Xuling Chen[1]; Lishun Yuan[1]; [1]Central South University

4:15 PM
Research on the Intensifying Reduction Technology Based on Mechanically Activated Ilmenite Ore: *Yufeng Guo*[1]; Hemei Liu[1]; Tao Jiang[1]; Guanzhou Qiu[1]; [1]Central South University

4:35 PM
Study on Reduction Roasting and Separation of Nickeliferous Laterite by Microwave Heating: Yi Lingyun[1]; *Huang Zhucheng*[1]; [1]Central South University

4:55 PM
Study on Preparation of Titanium-Rich Material From Ilmenite by Reduction-Magnetic Separation Process: *Yufeng Guo*[1]; Dan Huang[1]; Guangzhou Qiu[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

5:15 PM
The Kinetics of Oxidation of Tellurium Sulfide Concentrate: *Edgar Blanco*[1]; [1]Western Utah Copper Company

Jim Evans Honorary Symposium: Metal Flow, Bubbles, and Inclusions Behavior in Refining and Reduction Vessels

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Tuesday PM Room: 620
February 16, 2010 Location: Washington State Convention Center

Session Chair: Stavros Argyropoulos, University of Torronto

2:30 PM Introductory Comments

2:40 PM
Plume Characteristics in Gas Stirred Ladles: *Piotr Scheller*[1]; Olena Volkova[1]; Dmitri Ryabov[1]; [1]Freiberg University

3:05 PM
Development of Online Sensors for Bubble Stirred Vessels: *Geoffrey Brooks*[1]; Xiaodong Xu[1]; William Yang[2]; [1]Swinburne University of Technology; [2]CSIRO Minerals

3:30 PM
Fluid Flow and Inclusion Behavior in a Continuous Billet Casting Tundish: *Qinglin He*[1]; Geoff Evans[1]; [1]University of Newcastle

3:55 PM
Physical Modeling of Slab Caster Tundish to Improve Yield and Quality of Steel: *Dipak Mazumdar*[1]; [1]Indian Institute of Technology-Kanpur

4:20 PM Break

4:35 PM
Time Dependent MHD Models for Aluminium Reduction Cells: *Valdis Bojarevics*[1]; Koulis Pericleous[1]; [1]University of Greenwich

5:00 PM
Modeling on Multiphase Fluid Flow in Aluminum Electrolysis Cell: Yufeng Wang[1]; *Lifeng Zhang*[1]; [1]Missouri University of Science and Technology

5:25 PM
Research and Development of Three-Dimensional Electrochemical Reactors at UC Berkeley and ICPF Prague – Overview: *Vladimir Jiricny*[1]; James Evans[2]; [1]Institute of Chemical Process Fundamentals, ASCR,v.v.i.; [2]University of California

5:50 PM
Importance of Microexothermicity in the Assimilation and Recovery of Additions in Liquid Metals: Zhi Li[1]; *Stavros Argyropoulos*[1]; [1]University of Toronto

Magnesium Technology 2010: Fatigue, Failure, and Wear

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Tuesday PM Room: 613
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Michele Manuel, University of Florida; Anumalasetty Nagasekhar, The University of Queensland

2:00 PM
Effect of Shot Peening on High Cycle Fatigue Performance of Mg–10Gd–3Y–0.5Zr Magnesium Alloy: Wencai Liu[1]; *Jie Dong*[1]; Ping Zhang[2]; Li Jin[1]; Wenjiang Ding[1]; [1]Shanghai Jiao Tong University; [2]BTU-Cottbus

2:20 PM
Monotonic and Multiaxial Cyclic Behavior of the Extruded AZ31B Magnesium Alloy: *Jafar Albinmousa*[1]; Hamid Jahed[1]; Steve Lambert[1]; [1]University of Waterloo

2:40 PM
Fatigue Evaluation of Friction Stir Spot Welds in Magnesium Sheets: *J. Jordon*[1]; M. Horstemeyer[1]; Jenna Grantham[1]; [1]Mississippi State University

3:00 PM
Atomistic Simulations of Fatigue Crack Growth and the Influence of Temperature on Fatigue Behavior in Magnesium Crystals: *Tian Tang*[1]; Sungho Kim[1]; Mark F. Horstemeyer[1]; [1]Mississippi State University

3:20 PM
Structure-Property Evaluation of Fatigue Damage in a Magnesium AM30 Alloy: *J. Bernard*[1]; J. Jordon[1]; M. Horstemeyer[1]; H. El Kadiri[1]; [1]Center for Advanced Vehicular Systems, Mississippi State University

3:40 PM Break

4:00 PM
Very High Cycle Fatigue Property of Magnesium Alloy in Axial Loading and Rotating Bending: *Tatsuo Sakai*[1]; Yosuke Nakamori[1]; Noriyuki Ninomiya[1]; Mitsuji Ueda[2]; [1]Ritsumeikan University; [2]KS TECHNOS

4:20 PM
Numerical Modeling of Failure in Magnesium Alloys during Crush Simulations: Jonathan Rossiter[1]; *Kaan Inal*[1]; Raja Mishra[2]; [1]University of Waterloo; [2]General Motors R&D Center

4:40 PM
Dry Sliding Wear Behavior of AE44 Magnesium Alloy Reinforced with Saffil Alumina Fibers: Bin Hu[1]; Liming Peng[1]; Bob Powell[2]; Michael Lukitsch[2]; Anil Sachdev[2]; *Xiaoqin Zeng*[1]; [1]Shanghai Jiao Tong University; [2]General Motors Corporation

5:00 PM
Influence of Cerium on Stress Corrosion Cracking in AZ91D: *Meredith Heilig*[1]; Daniela Zander[2]; David Olson[1]; Brajendra Mishra[1]; Norbert Hort[3]; Gerald Klaus[4]; Andreas Buehrig-Polaczek[4]; Joachim Gröbner[5]; Rainer Schmid-Fetzer[5]; [1]Colorado School of Mines; [2]TU Dortmund; [3]GKSS Research Centre; [4]Foundry-Institute of RWTH Aachen; [5]TU Clausthal

5:20 PM
In-situ Fracture Investigations of YAl_2 Reinforced Magnesium Matrix Composite: *Zhaohua Ling*[1]; Guoqing Wu[1]; Jianku Shang[2]; Sujie Wang[1]; Zheng Huang[1]; [1]Beihang University; [2]University of Illinois, Urbana-Champaign

Magnesium Technology 2010: Magnesium - Rare Earth Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Tuesday PM Room: 612
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Sean Agnew, University of Virginia; Jian-Feng Nie, Monash University

2:00 PM
Development of High Ductility Magnesium-Zinc-Cerium Extrusion Alloys: *Alan Luo*[1]; Raj Mishra[1]; Anil Sachdev[1]; [1]General Motors Corporation

2:20 PM
Effect of Extrusion Temperature on Microstructure and Mechanical Properties of Mg-8.5Gd-2.3Y-1.8Ag-0.4Zr Alloy Solid State Recycled by Hot Extrusion: *Qudong Wang*[1]; Jie Chen[1]; Tao Peng[1]; Zheng Zhao[1]; Wenjiang Ding[1]; [1]National Engineering Research Center of Light Alloy Net Forming, Shanghai Jiao Tong University

2:40 PM
Structure of β_1 precipitates in Mg-Zn based alloys: Co-Existence of $MgZn_2$ and Mg_4Zn_7 Phases: *Alok Singh*[1]; Julian Rosalie[1]; Hidetoshi Somekawa[1]; Toshiji Mukai[1]; [1]National Institute for Materials Science

3:00 PM
Rheological Behavior of Semi-Solid Mg-Y Alloys: *Qiuming Peng*[1]; Yuanding Huang[1]; Norbert Hort[1]; Karl Ulrich Kainer[1]; [1]MagIC – Magnesium Innovation Centre

3:20 PM
The Use of Computer Modeling for Producing DC Cast WE43 Magnesium Alloy Slab: *Mark Turski*[1]; John Grandfield[2]; Tim Wilks[1]; Bruce Davis[3]; Rick DeLorme[3]; [1]Magnesium Elektron; [2]Grandfield Technology Pty Ltd; [3]Magnesium Elektron North America

3:40 PM Break

4:00 PM
Effects of Extrusion Conditions on the Microstructure and Properties of Mg-Zn-Y-RE Alloys: *Jonghyun Kim*[1]; Yoshihito Kawamura[2]; [1]Kumamoto Technology & Industrial Foundation; [2]Kumamoto University

4:20 PM
Effect of Cerium on the Deformation Behavior of Two Mg-Ce Alloys: *Lan Jiang*[1]; Xavier Quelennec[1]; John Jonas[1]; Raja Mishra[2]; [1]McGill University; [2]GM

4:40 PM
Structural Relationships between Monoclinic and Laves Phase Precipitates in Mg-Zn-Y Alloys: *Julian Rosalie*[1]; Hidetoshi Somekawa[1]; Alok Singh[1]; Toshiji Mukai[1]; [1]National Institute for Materials Science

5:00 PM
Exploiting Low Levels of Rare Earth Addition in Mg Extrusion Alloys: *Matthew Barnett*[1]; A.G. Beer[1]; N. Stanford[1]; [1]Deakin University

5:20 PM
Thermodynamic Database Development of Mg Alloys with RE Elements and Its Applications to Mg Alloy Design: *Youn-Bae Kang*[1]; Liling Jin[1]; In-Ho Jung[2]; Arthur D. Pelton[1]; Patrice Chartrand[1]; Carlton D. Fuerst[3]; [1]Ecole Polytechnique de Montreal; [2]McGill University; [3]General Motors

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: SOFC I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Tuesday PM Room: 211
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Teruhisa Horita, AIST; Harry Finklea, West Virginia University

2:00 PM Invited
Degradation of SOFC Anodes and SOFC Performance in Coal Syngas Containing Phosphine: *Harry Finklea*[1]; Oktay Demircan[1]; John Zondlo[1]; Chunchuan Xu[1]; [1]West Virginia University

2:40 PM
Effects of Phosphine on Solid Oxide Fuel Cell Performance and Related Anode Surface Temperature Measurement: Huang Guo[1]; Gulfam Iqbal[1]; *Bruce Kang*[1]; [1]West Virginia University

3:00 PM
Fabrication and Characterization of Thin Film $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ (LSCF) and $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ - $Ce_{0.8}Gd_{0.2}O_{1.9}$ (CGO) Composite Cathodes: *Bainye Angoua*[1]; Elliot Slamovich[1]; [1]Purdue University

3:20 PM
Sintering Performance of YSZ Ceramics with Transition Metal Oxide Sintering Aid: *Stephen Sofie*[1]; M.L. Lifson[1]; C. Law[1]; [1]Montana State University

3:40 PM Break

3:50 PM
Modeling of Total and Topologically Connected Triple Phase Boundaries in Composite Cathodes for Solid Oxide Fuel Cells: *Arun Gokhale*[1]; Shenjia Zhang[1]; [1]Georgia Institute of Technology

4:10 PM
Modeling Solid Oxide Fuel Cells with Mixed Conducting Electrolytes and Anode Functional Layers: *Keith Duncan*[1]; Eric Wachsman[1]; [1]University of Florida

4:30 PM
Modelling the Effect of Dopant Concentration on Lattice Strain and Ionic Conductivity in Fluorite Oxides: *Keith Duncan*[1]; Eric Wachsman[1]; [1]University of Florida

4:50 PM
Simulation of Oxygen Ion Transport in Mixed-Conducting Solid Oxide Fuel Cell Cathode with Complex Microstructure: *Hsun-Yi Chen*[1]; Hui-Chia Yu[1]; Cortney Kreller[2]; James Wilson[3]; Scott Barnett[3]; Stuart Adler[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]University of Washington; [3]Northwestern University

5:10 PM
Reliability Model for Different Configurations of Planar-SOFC Anode under Syngas Contaminants: Gulfam Iqbal[1]; Huang Guo[1]; *Bruce Kang*[1]; [1]West Virginia University

Materials Processing Fundamentals: Smelting, Refining, Aqueous and Liquid Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizer: Prince Anyalebechi, Grand Valley State University

Tuesday PM Room: 601
February 16, 2010 Location: Washington State Convention Center

Session Chair: Prince Anyalebechi, Grand Valley State University

2:30 PM
A Comparative Electrochemical Study of Arsenic Removal from Organic and Inorganic Sources Using Various Sacrificial Electrodes: *Jewel Gomes*[1]; Sanoar Rahman[1]; Srikanth Varma[1]; Kamol Das[1]; David Cocke[1]; [1]Lamar University

2:50 PM
Characterization of Sodium and Bath Penetration in Industrial Graphitic and Graphitized Cathodes: *Jilai Xue*[1]; Liancheng Wu[1]; Gangqiang Jiang[1]; Qingren Niu[1]; Qingsheng Liu[1]; Hou Xin[1]; Jun Zhu[1]; He Hua[1]; [1]University of Science and Technology Beijing

3:10 PM
Analysis and Identification Minerals Present in Rock Samples: *Andrew Appaji*[1]; [1]Noorul Islam University

3:30 PM
Preparation and Degradation Orgnic of TiO2 Coated on Light Ceramic Surface: *Ju Hua*[1]; [1]Harbin Institute of Technology

3:50 PM
Fe-Ni Alloys Formation in Carbonthermal Reduction Process using Laterite Nickel Ore: *Jilai Xue*[1]; Luxing Feng[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

4:10 PM Break

4:30 PM
Active Zinc Oxide Production from Waste Zinc Powder: *Cem Colakoglu*[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

4:50 PM
Preparation of MgO Whisker from Magnesite Tailings: *Li Yue-yuan*[1]; Cui Hong-Xu[1]; Chen Min[1]; [1]Northeastern University

5:10 PM
Remediation of Chicken Processing Wastewater Using Electrochemically Produced Layered Double Hydroxides: *Jewel Gomes*[1]; Daniel Atambo[1]; Manish Rahate[1]; Kamol Das[1]; George Irwin[1]; Hector Moreno[2]; David Cocke[1]; [1]Lamar University; [2]Instituto Tecnologico de la Laguna

5:30 PM
Carbon-Thermal Reduction Process for Making Al-Si Alloys from Al2O3-SiO2 Containing Industrial Wastes: *Jilai Xue*[1]; Yunxia Song[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

Mechanical Performance for Current and Next-Generation Nuclear Reactors: Microstructure and Nanostructure in Reactor Environments

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Dylan Morris, NIST; Greg Oberson, Nuclear Regulatory Commission; Nicholas Barbosa, National Institute of Standards & Tech; Wolfgang Hoffelner, Paul Scherrer Institute

Tuesday PM Room: 201
February 16, 2010 Location: Washington State Convention Center

Session Chair: Wolfgang Hoffelner, Paul Scherrer Institute

2:00 PM Invited
Irradiation Effects in Thin Metal Films – Texture Control and Mechanical Properties: *Ralph Spolenak*[1]; [1]ETH Zurich

2:30 PM
Elevated-Temperature Compression Testing and Characterization of Deformation and Fracture in Sintered ZrN Pellets as Surrogates for PuN Fuels: *Kirk Wheeler*[1]; Pedro Peralta[1]; Kenneth McClellan[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

2:50 PM
High Temperature Oxidation Behavior of Grain-Refined Inconel 617 for VHTRs: Tae Sun Jo[1]; Jeong Hun Lim[1]; Dae-gun Kim[1]; *Young Do Kim*[1]; [1]Hanyang University

3:10 PM
Hot Steam Corrosion Behavior of Ni-Based Superalloys at High Temperature Steam Environments: *Donghoon Kim*[1]; Minu Kim[1]; Hyun Min Lee[1]; Daejong Kim[1]; Changheui Jang[1]; Duk-Joo Yoon[2]; [1]KAIST; [2]KEPRI

3:30 PM
The Cause of Dynamic Strain Aging in Zirconium Alloys: *Young Suk Kim*[1]; Sung Soo Kim[1]; [1]Korea Atomic Energy Research Institute

3:50 PM Break

4:05 PM
The Thermal Stability and Weldability of a Lean Grade of Duplex Stainless Steel: *Julie Tucker*[1]; George Young[1]; [1]Knolls Atomic Power Laboratory

4:25 PM
Microstructural and Mechanical Characteristics of Friction Stir Welded ODS Alloys: *Ramprashad Prabhakaran*[1]; J. Wang[2]; K. Chitrada[3]; W. Yuan[2]; I. Charit[3]; J. Cole[1]; R. Mishra[2]; [1]Idaho National Laboratory; [2]Missouri University of Science and Technology; [3]University of Idaho

4:45 PM
Diffusion of Silver and Gold in Ion Irradiated Glassy Polymeric Carbon: Malek Abunaemeh[1]; *Ibidapo Ojo*[1]; Claudiu Muntele[1]; Daryush Ila[1]; [1]Alabama A&M University

5:05 PM
Late-Blooming Phase Investigation in an Ion Irradiated Fe-1wt.%Mn Alloy: *Estelle Meslin*[1]; Bertrand Radiguet[2]; Philippe Pareige[2]; Alain Barbu[1]; [1]CEA; [2]CNRS/University of Rouen

5:25 PM
The Effects of Stress and Temperature on the Fatigue Crack Growth Behavior and Microstructural Evolution of Alloy 230: *Jatu Burns*[1]; Megan Frary[1]; [1]Boise State University

5:45 PM
High-Temperature Corrosion of YSZ Plasma-Sprayed on Nickel-Alloys in Molten Chloride Salts: *Oscar Quintana*[1]; J. Ernesto Indacochea[1]; Mark Williamson[2]; Christine Snyder[2]; [1]University of Illinois; [2]Argonne National Laboratory

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Nanotubes, Soft Materials and Biomedical Applications

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Tuesday PM Room: 304
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Markus Buehler, Massachusetts Institute of Technology; Michael Chandross, Sandia National Laboratories

2:00 PM Invited
Molecular Scale Modeling of Polymer Nanolithography: *Michael Chandross*[1]; Gary Grest[1]; [1]Sandia National Laboratories

2:30 PM
Atomistic Simulations of the Nanoindentation of Cyclotrimethylene Trinitramine (RDX) (001) Surfaces: *Marc Cawkwell*[1]; Kyle Ramos[1]; Daniel Hooks[1]; [1]Los Alamos National Laboratory

2:50 PM
Atomistic Simulation Studies of Rotational Effects in Double-Wall Carbon Nanotubes: *Iman Salehinia*[1]; Sergey Medyanik[1]; [1]WSU

3:10 PM Invited
Insights into the Mechanical Behaviour of Glassy Polymers through Molecular Dynamic Simulations: *Sumit Basu*[1]; Dhiraj Mahajan[1]; [1]Indian Institute of Technology Kanpur

3:40 PM Break

4:00 PM Invited
Nanomechanical Properties of Human Vimentin Intermediate Filaments: *Markus Buehler*[1]; Zhao Qin[1]; [1]Massachusetts Institute of Technology

4:30 PM
Multi-Scale Model for the Extreme Piezoresistivity in Silicone/Nickel Nanostrand Nanocomposites: Oliver Johnson[1]; *George Kaschner*[2]; Thomas Mason[2]; David Fullwood[1]; Brent Adams[1]; George Hansen[3]; [1]Brigham Young University; [2]Los Alamos National Laboratory; [3]Conductive Composites Company, LLC.

4:50 PM Invited
Nanomechanical Energy Exchange and Dissipation: *Jeffrey Grossman*[1]; P. Alex Greaney[1]; [1]Massachusetts Institute of Technology

5:20 PM
Study of Thermo Mechanical Behavior of Plasma Nano Coated TiNi Shape Memory Alloy (SMA) for Biomedical Applications Using Finite Element Method: *Payodhar Padhi*[1]; Ramakanta Behuria[2]; [1]Hi-Tech Medical College and Hospital; [2]Konark Inistitute of Science and Technology

5:40 PM
Spatial Nonlocality and the Viscosity of Polymer Melts toward their Glassy State: *Ruslan Puscasu*[1]; Billy Todd[1]; Peter Daivis[2]; Jesper Hansen[1]; [1]Swinburne University of Technology; [2]RMIT University

Neutron and X-Ray Studies of Advanced Materials III: Applications of Line Profile Analysis

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Tuesday PM Room: 303
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Emil Zolotoyabko, Technion, Israel; Peter Liaw, University of Tennessee Knoxville

2:00 PM Keynote
X-Ray Line Profile Analysis – An Ideal Tool to Quantify Structural Parameters of Nanomaterials: *Michael Zehetbauer*[1]; Erhard Schafler[1]; Michael Kerber[1]; Sigrid Bernstorff[2]; Tamas Ungar[3]; [1]University of Vienna; [2]Sincrotrone Trieste S.C.p.A.; [3]Eötvös Lorand University Budapest

2:30 PM Invited
In-Situ Synchrotron and Neutron Diffraction Studies of Deformation Behaviors at Small Length Scales: *Xun-Li Wang*[1]; Sheng Cheng[2]; Alexandru Stoica[1]; Joe Horton[1]; C. T. Liu[3]; Peter Liaw[2]; Liang Zuo[4]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]Hong Kong Polytechnic University; [4]Northeastern University

2:50 PM Invited
Neutron Diffraction and Micromechanics Studies of the Fatigue Crack Deformation Behavior: *Yanfei Gao*[1]; Rozaliya Barabash[2]; Lili Zheng[1]; Sooyeol Lee[1]; Hahn Choo[1]; Peter Liaw[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:10 PM Invited
Diffraction Line Profile Analysis for the Study of Transformation Kinetics in Nanocrystalline Materials: *Paolo Scardi*[1]; [1]University of Trento

3:30 PM Invited
Single-Grain Microstructure from Polycrystalline Specimens: *Tamás Ungár*[1]; [1]Eötvös University Budapest

3:50 PM Invited
Evolution of Microstructure during Tensile Deformation of TWIP Steel: X-Ray Line Profile Analysis: *Hahn Choo*[1]; Tamas Ungar[2]; Yang Ren[3]; Sang-Ho Han[4]; [1]University of Tennessee; [2]Eotvos University; [3]Argonne National Laboratory; [4]POSCO

4:10 PM Invited
Neutron Diffraction and EPSC Modeling: *Bjørn Clausen*[1]; Donald Brown[1]; Carlos Tomé[1]; Laurent Capolungo[2]; Sean Agnew[3]; [1]Los Alamos National Laboratory; [2]Georgia Tech-Lorraine; [3]University of Virginia

4:30 PM Break

4:40 PM Invited
Phase Transformation and Tensile Behavior of a Bainite Steel Studied by In Situ Neutron Scatteing and Dilatometry: *Yo Tomota*[1]; Min-Seo Koo[1]; [1]Ibaraki University

5:00 PM Invited
Line Broadening Analysis of High Resolution X-ray Data: *I. Noyan*[1]; Andrew Ying[1]; Conal Murray[2]; [1]Columbia University; [2]IBM Research Division

5:20 PM
Characterization of Pt Nanoparticles by Debye Function Analysis of the X-Ray Diffraction Pattern: *Kenneth Beyerlein*[1]; Paolo Scardi[2]; Bob Snyder[1]; [1]Georgia Institute of Technology; [2]University of Trento

5:30 PM Invited
Protein Powder Diffraction and Materials Science: *Robert Von Dreele*[1]; [1]APS/Argonne National Laboratory

5:50 PM
Quantifying the Evolution of Lattice Strain due to Cyclic Loading in 7075 Aluminum Alloy: *Jay Schuren*[1]; Matthew Miller[1]; Alex Kazimirov[2]; [1]Cornell University; [2]Cornell High Energy Synchrotron Source

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Reliability (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: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Tuesday PM Room: 204
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Rajen Sidhu, Intel Corp.; Alexandre Kodentsov, Eindhoven University of Technology

2:00 PM
Impact of Isothermal Aging on Long Term Reliability of Fine Pitch Ball Grid Array Packages with Sn-Ag-Cu Solder Interconnects: *Tae-Kyu Lee*[1]; Weidong Xie[1]; Kuo-Chuan Liu[1]; Thomas R. Bieler[2]; [1]Component Quality and Technology, Cisco Systems; [2]Chemical Engineering and Materials Science, Michigan State University

2:15 PM
Pb-Free Process Development for Microcircuit Package Assemblies – A University/Industry Design Project Collaboration: *Mike Powers*[1]; Jim Shackelford[2]; Derek Fong[2]; Zi Gwen Kwan[2]; Tammy Leung[2]; Kit-Ying Mak[2]; Enrique Pedron[2]; Raminderdeep Sidhu[2]; Hong-Siang Wei[2]; [1]Agilent Technologies; [2]University of California Davis

2:30 PM
Reliability Evaluation of Cu-Cored Solder Joints: *YunSung Kim*[1]; Eunsik Kim[2]; Heylim Choi[1]; Jungtak Moon[2]; Heeman Choe[2]; [1]Kookmin University; [2]MK Electron Co

2:45 PM
Roles of Service and Materials Parameters on Reliability of Pb-Free, Sn-Based, Solder Joints: *K.N. Subramanian*[1]; Andre Lee[1]; [1]Michigan State University

3:00 PM
Thermal and Mechanical Fatigue Reliability of TiW/Cu and Al/Cu Underbump Metallizations on Glass Substrate: *Yong Jun Oh*[1]; Chul Min Choi[1]; Jae Ho Kim[1]; [1]Hanbat University

3:15 PM
Accelerated Life Prediction of Electrochemical Ion Migration on ENIG Surface Finish Circuit: *Won Sik Hong*[1]; No Chang Park[1]; [1]Korea Electronics Technology Institutue(KETI)

3:30 PM Break

3:45 PM
Space: The Final Frontier for Pb-Free Electronics?: *David Witkin*[1]; [1]The Aerospace Corporation

4:00 PM
Creep Property of Sn-3Ag-0.5Cu-xNi/Au/Ni Joints after Aging: *Chung-Nan Peng*[1]; Jeng-Gong Duh[2]; Tae-Kyu Lee[3]; Kuo-Chuan Liu[3]; Michael Tsai[3]; [1]Department of Materials Science and Engineering, National Tsing Hua University; [2]Department of Materials Science and Engineering, National Tsing Hua University; [3]Interconnect Technology Team Reliability Engineer, Manufacturing Technology Group, CISCO

4:15 PM
Interface Design of Lead-Free Electronic Interconnects: *K.N. Subramanian*[1]; Deep Choudhuri[1]; Andre Lee[1]; [1]Michigan State University

4:30 PM
Study of the Impact Performance of Solder Joints by High-Velocity Impact Tests: *Ning Zhang*[1]; Yao Shi[2]; Fu Yang[3]; [1]Beijing University of Technology and University of Kentucky; [2]Beijing University of Technology; [3]University of Kentucky

4:45 PM
Investigation and Effects of Wafer Bow in Different 3D Stacking Schemes: *Kuan-Neng Chen*[1]; Y. Zhu[2]; W. W. Wu[1]; R. Reif[3]; [1]National Chiao Tung University; [2]IBM T J Watson Research Center; [3]Massachusetts Institute of Technology

5:00 PM
Shear and Bending Fatigue Failure of Lead Free Solder Joint and Fracture Mechanics: *Huili Xu*[1]; Woong Ho Bang[1]; Choong-Un Kim[1]; Tae-Kyu Lee[2]; Hongtao Ma[2]; Kuo-Chuan Liu[2]; [1]University of Texas at Arlington; [2]Cisco System Inc.

5:15 PM
Investigating Defects in through-Silicon via (TSV) Chains by Three Dimensional Imaging Reconstruction: *Alphonse-Marie Kamto Tegueu*[1]; Robert Morris[1]; Gregory Thompson[1]; Susan Burkett[1]; [1]The University of Alabama

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials IX: Session IV

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-ming Chen, National Chung Hsing University; Srinivas Chada, Medtronic; Sinn-wen Chen, National Tsing-Hua University; Hans Flandorfer, University of Vienna; A. Lindsay Greer, University of Cambridge; Jae-ho Lee, Hongik University; Kejun Zeng, Texas Instruments; Yee-wen Yen, National Taiwan University of Science and Technology; Wojciech Gierlotka, AGH University of Science and Technology; Chao-hong Wang, National Chung Cheng University

Tuesday PM Room: 203
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Wojciech Gierlotka, AGH Univeristy of Science and Technology; Clemens Schmetterer, University of Vienna

2:00 PM Invited
High Temperature Lead-Free Solder: Solidification Behavior of (Cu,Ni)-Sn-Zn: *Hans Flandorfer*[1]; Clemens Schmetterer[1]; Matthieu Froger[1]; Herbert Ipser[1]; [1]University of Vienna

2:25 PM Invited
Phase Diagrams in Lead-Free Soldering: *Clemens Schmetterer*[1]; Hans Flandorfer[1]; Herbert Ipser[1]; [1]University of Vienna

2:50 PM
Phase Equilibria in the Sn-Ni-Zn Ternary System: *Jaewon Chang*[1]; Sun-Kyoung Seo[1]; Hyuck Mo Lee[1]; [1]KAIST

3:10 PM
Interfacial Reaction between Pure Sn and Cu Foil with Different Cu Grain Sizes: *Jo Mei Wang*[1]; Jenq Gong Duh[1]; [1]National Tsing Hua University

3:30 PM
Interfacial Reactions in the Sn-In-(Zn)/Ag and Sn-In-(Zn)/Ni Couples: *Ching-feng Yang*[1]; Sinn-wen Chen[1]; [1]National Tsing-Hua University

3:50 PM Break

4:00 PM Invited
Enhancement of Heterogeneous Nucleation of β-Sn Phases in Sn-Rich Solders by Adding Minor Alloying Elements with Hexagonal Closed Packed Structures: Moon Gi Cho[1]; Hyun You Kim[1]; Sun-Kyoung Seo[1]; *Hyuck Mo Lee*[1]; [1]KAIST

4:25 PM
Phase diagram and thermodynamic properties of Ag-Cu-In-Sn quaternary system: *Wojciech Gierlotka*[1]; Dominika Jendrzejczyk-Handzlik[2]; [1]Yuan-Ze University; [2]AGH University of Science and Technology

4:45 PM
Interfacial Reaction Effect on Mechanical and Electrical Reliability in Cu/Solder/Cu Bump: *Myeong-Hyeok Jeong*[1]; Jae-Won Kim[1]; Byunghoon Lee[2]; Kiwook Lee[3]; Jaedong Kim[3]; Hoo-Jeong Lee[2]; Young-Bae Park[1]; [1]Andong National University; [2]Sungkyunkwan University; [3]Amkor Technology Korea

5:05 PM
Interaction of Sn-Based Solders with Electroless Nickel Substrates: The Ni-P, Sn-P, and Ni-Sn-P Phase Diagrams: Clemens Schmetterer[1]; Rajesh Ganesan[1]; Adela Zemanova[2]; *Ales Kroupa*[2]; Herbert Ipser[1]; Alan Dinsdale[3]; [1]University of Vienna; [2]Institute of Physics of Materials, ASCR; [3]National Physical Laboratory

5:25 PM
The Interfacial Reactions of Snagin Pb-Free Solders on Cu Substrates: *YuYan Jieng*[1]; Albert T. Wu[1]; [1]National Central University

Processing Materials for Properties: Light Weight Materials Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Tuesday PM Room: 617
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Rachman Chaim, Technion - Israel Institute of Technology; Raman Singh, Monash University

2:00 PM Keynote
Recent Developments in Processing/Structures/Properties Relationships of Titanium Alloys: *Greg Oberson*[1]; Sreeramamurthy Ankem[2]; [1]U.S. Nuclear Regulatory Commission; [2]University of Maryland, College Park

2:30 PM
Effect of Casting Mould on Mechanical Properties of 6063 Aluminium Alloy: *Wasiu Ayoola*; Samson Adeosun[1]; Olujide Sanni[1]; F. Ochulor[1]; [1]University of Lagos

2:50 PM
Ignition Characteristics of Aluminum-Nickel Heterostructures Produced by Ultrasonic Powder Consolidation: *Dinc Erdeniz*[1]; David Colanto[1]; Gokce Gulsoy[1]; Teiichi Ando[1]; [1]Northeastern University

3:10 PM
Improved Formability of Normalized Cold Rolled Aluminum 1200 and 1230 Alloys: *Samson Adeosun*[1]; Sanmbo Balogun[1]; [1]University of Lagos, Akoka

3:30 PM
Studies on the Microstructure, Mechanical and High Temperature Wear Behviour of A356 Alloy with Minor Additions of Copper and Magnesium: *Kori Shivaputrappa*[1]; [1]Visvesvaraya Technological University

3:50 PM
Nanoscratch Behavior of Fine and Ultrafine-Grained Bulk Alumina Fabricated by Spark Plasma Sintering: *Lin Huang*[1]; Yuhong Xiong[1]; Zhihui Zhang[1]; Yonghao Zhao[1]; Wenlong Yao[1]; Amiya Mukherjee[1]; Julie Schoenung[1]; [1]University of California, Davis

4:10 PM
Microstructural Development during Thermo Mechanical Processing of Pipeline Steel: Kawunga Nyirenda[1]; *Hara R. S. Yotam*[1]; [1]The Copperbelt University

4:30 PM
Enhanced Performance of Anti-Reflection Functionality by Nano-Sized Structures Fabricated Using Nano-Imprint Lithography: *Kang-Soo Han*[1]; Ju-Hyun Shin[1]; Heon Lee[1]; [1]Korea University

4:50 PM
From Fantasy to Reality: The Development of Silver Bullet Ammunition: *Kevin Jaansalu*[1]; Michael Briggs[1]; [1]Royal Military College of Canada

5:10 PM
Research on Microstructure and Mechanical Properties of Low Alloy Cast Steel with High Strength/Low Yield Ratio by TMCP Technology: Chi Yu[1]; *Haitao Zhou*[1]; [1]Qinhuangdao Branch, Northeastern University

5:30 PM
Microstructure Characterization of Joining Dissimilar Materials: *Oleg Barabash*[1]; Zhili Feng[1]; Mike Miles[2]; [1]Oak Ridge National Laboratory; [2]Brigham Young University

5:50 PM
Low Stress Viscous Creep in a Ti3Al2.5V Tubing Under Internal Pressurization: Srikant Gollapudi[1]; Indrajit Charit[2]; *Korukonda Murty*[3]; [1]Defence Metallurgical Research Laboratory; [2]University of Idaho; [3]North Carolina State University

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Diffusion, Radiation Damage, and Interaction with Point Defects

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Tuesday PM Room: 602
February 16, 2010 Location: Washington State Convention Center

Session Chair: Y. Mishin, George Mason University

2:00 PM Invited
Interface Enabled Defects Reduction in Helium Ion Irradiated Cu/V Nanolayers: *Xinghang Zhang*[1]; Engang Fu[1]; Amit Misra[2]; [1]Texas A&M University; [2]Los Alamos National Laboratory

2:30 PM
Effects of Solute and Vacancy Segregation on Antiphase Boundary Migration in Fe_3Al with Stoichiometric and Off-Stoichiometeric Composition: *Yuichiro Koizumi*[1]; Samuel Allen[2]; Masayuki Ouchi[1]; Yoritoshi Minamino[1]; [1]Osaka University; [2]Massachusetts Institute of Technology

2:50 PM
A First Principles Study of Hydrogen Trapping at Carbides in Steels: *Sanket Desai*[1]; Neeraj Thirumalai[1]; Peter Gordon[1]; [1]ExxonMobil Research and Engineering

3:10 PM
Mechanisms of Point Defect Migration in CuNb Interfaces: *Kedarnath Kolluri*[1]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology

3:30 PM
Molecular Dynamics and Molecular Statics Studies of Cascade Damage in Twist Grain Boundaries in Copper: *Xian-Ming Bai*[1]; Richard Hoagland[1]; Michael Nastasi[1]; Arthur Voter[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

3:50 PM
Radiation Damage and He Solubility at Semi-Coherent Cu/Nb Interfaces: *Dhriti Bhattacharyya*[1]; Michael Demkowicz[2]; Igor Usov[1]; Richard Hoagland[1]; Amit Misra[1]; [1]Los Alamos National Laboratory; [2]Massachusetts Institute of Technology

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Microstructural Evolution

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Tuesday PM Room: 602
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Nathan Mara, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology

4:10 PM Invited
Towards Improved Representations and Maps of the Grain Boundary Character Distribution: *Christopher Schuh*[1]; Srikanth Patala[1]; [1]MIT

4:40 PM
Grain Boundary Properties in Three Dimensions: *Anthony Rollett*[1]; Gregory Rohrer[1]; Jia Li[1]; Sukbin Lee[2]; Moneesh Upmanyu[3]; Michael Groeber[4]; Michael Uchic[4]; Robert Suter[1]; [1]Carnegie Mellon University; [2]Purdue University; [3]Colorado School of Mines; [4]Air Force Research Laboratory

5:00 PM
Quantification of Microstructure Variability in Surrogates for Oxide Nuclear Fuels and Its Effects on Local Mechanical Properties: *Karin Rudman*[1]; Pedro Peralta[1]; Chris Stanek[2]; Kirk Wheeler[1]; Manuel Parra[1]; Darrin Byler[2]; Kenneth McClellan[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

5:20 PM
Fundamental Derivation of Phase Field Equations for Microstructural Evolution in Metals with Defects: *Santosh Dubey*[1]; Anter El-Azab[1]; [1]Florida State University

Surface Engineering for Amorphous-, Nanocrystalline-, and Bio-Materials: Session IV

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; Arvind Agarwal, Florida International Univesity; Sudipta Seal, University of Central Florida; Narendra Dahotre, University of Tennessee

Tuesday PM Room: 604
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University

2:00 PM Introductory Comments

2:05 PM Invited
Studies on Plasma Surface Nitriding of Interstitial Free Steel: Manoj Debnath[1]; Jyotsna Dutta Majumdar[1]; *Indranil Manna*[1]; [1]Indian Institute of Technology Kharagpur

2:25 PM
Nucleation and Growth of Diamond Thin Films Deposited by a CO_2 Laser-Assisted Combustion-Flame Method: *Travis McKindra*[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

2:45 PM
Stress-Driven Surface Instabilities in Ionic Solids Containing Charged Point Defects: *Steven Henke*[1]; Anter El-Azab[1]; Peter Chung[2]; [1]Florida State University; [2]U.S. Army Research Lab

3:05 PM
The Effect of Frequency of Microarc Oxidation on Surface Properties of 7075 Aluminum Alloys: *Serkan Bozkus*[1]; Murat Baydogan[1]; Huseyin Cimenoglu[1]; Eyup Kayali[1]; [1]Istanbul Technical University

3:25 PM
Study of the Nanocomposites for Superalloy Thermal Barrier Coatings: *Shiqiang Qian*[1]; [1]School of Materials Engineering, Shanghai University of Engineering Science

3:45 PM Break

4:00 PM
Laser Assisted Deposition of AgInSe2 Films on Si(100): *Dinesh Pathak*[1]; [1]GNDU, Amritsar, Physics

4:20 PM
A Novel High Throw Bright Acid Tin Plating of Printed Circuit Boards: *Xiao Faxin*[1]; SHEN xiaoni[1]; [1]Henan University of Science and Technology of China

4:40 PM
A High Speed Electroless Copper Plating Process of Printed Circuit Board from EDTA•2Na-Containing Solution: *Xiao Faxin*[1]; Shen Xiaoni[1]; Niu Fei[2]; [1]Henan University of Science and Technology of China; [2]Central South University of China

5:00 PM
Influence of Process Parameters for Electroless Plating Nickel Alloy Nanoparticles on Carbon Fibers: *Jia Ma*[1]; Yao Guangchun[1]; Bao Li[1]; Zhang Xiao[1]; Ma Junfei[1]; [1]Northeastern University

5:20 PM
Synthesis of Nano Porous CO2 Absorbent for Recycling: *Sachi Kanta Kar*[1]; Payodhar Padhi[2]; [1]Central Tool Room and Training Centre; [2]R&D Centre, Hitech Medical College and Hospital, Bhubaneswar

Sustainable Materials Processing and Production: Measuring Sustainability

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Tuesday PM Room: 2B
February 16, 2010 Location: Washington State Convention Center

Session Chair: Markus Reuter, Ausmelt Ltd

2:00 PM Introductory Comments

2:05 PM Invited
Metrology Needs in Sustainability and Materials Performance: *Richard Ricker*[1]; [1]NIST

2:30 PM
Lighweight Materials for the Automotive: Environmental Impact Analysis of the Use of Composites: *Karel Van Acker*[1]; Ignaas Verpoest[1]; Wim Dewulf[1]; Joost Duflou[1]; [1]K.U.Leuven

2:55 PM
The Challenge of Allocation in LCA: The Case of Open-Loop Recycling: *Elsa Olivetti*[1]; Anna Nicholson[2]; Jeremy Gregory[1]; Randolph Kirchain[1]; [1]MIT; [2]BIO Intelligence Service

3:20 PM
Screening-Level Environmental Burden Assessments for Metals Use in Electronics: A Case Study on the U.S. Printed Wiring Board Industry: *Carl Lam*[1]; Seong-Rin Lim[1]; Oladele Ogunseitan[2]; Julie Schoenung[1]; [1]University of California, Davis; [2]University of California, Irvine

3:45 PM Break

3:55 PM Invited
Agent Based Modeling of Large-Scale Socio-Technical Metal Networks: *I. Nikolic*[1]; Andrew Bollinger[1]; C. Davis[1]; [1]Delft University of Technology

4:20 PM
Toxicity and Resource Depletion Potentials of Light-Emitting Diodes (LEDs): *Seong-Rin Lim*[1]; Daniel Kang[2]; Oladele Ogunseitan[2]; Julie Schoenung[1]; [1]University of California, Davis; [2]University of California, Irvine

4:45 PM
The Many Aspects of Measuring Sustainability - An Industry Perspective: *Christina Meskers*[1]; C. Hagelüken[1]; [1]UMICORE Precious Metals Refining

5:10 PM
Substance Flow Analysis of Cobalt in China: *Xiao Caimei*[1]; Zhong Juya[1]; Guo Xueyi[1]; Tian Qinghua[1]; [1]Central South University

5:35 PM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Mechanical Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Tuesday PM Room: 603
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Takeshi Egami, University of Tennessee; Shao-Ping Chen, Los Alamos National Laboratory

2:00 PM Invited
Rethinking Continuum Plasticity Theory for Crystalline Solids: *John Bassani*[1]; [1]University of Pennsylavnia

2:25 PM Invited
A Comparison of Coulombic and Plastic Shear Faults in Ice: Narayana Golding[1]; *Erland Schulson*[1]; Carl Renshaw[1]; [1]Dartmouth College

2:50 PM Invited
Kinetics of Martensitic Phase Transformation: Molecular Dynamics of Martenstic Phase Transitions: *Graeme Ackland*[1]; Oliver Kastner[1]; [1]University of Edinburgh

3:15 PM
Atomistic Simulations of Hydride Formation and Fracture at the Crack Tip: *Jun Song*[1]; William Curtin[1]; [1]Brown University

3:30 PM
First Principles Calculations of Uranium and Uranium-Zirconium Alloys: *Benjamin Good*[1]; Benjamin Beeler[1]; Chaitanya Deo[1]; Sergey Rashkeev[2]; Maria Okuniewski[2]; Mike Baskes[3]; [1]Georgia Tech; [2]Idaho National Lab; [3]Los Alamos National Lab

3:45 PM Break

4:05 PM Invited
Application of Vitek's Relationship between the Plastic Dissipation and Work Expended on Brittle Decohesion to the Understanding of Hydrogen-Induced Intergranular Cracking: Paul Novak[1]; Rong Yuan[2]; Moshen Dadfarnia[1]; Brian Somerday[3]; *Petros Sofronis*[1]; Robert Ritchie[2]; [1]University of Illinois; [2]University of California-Berkeley; [3]Sandia National Laboratories

4:30 PM Invited
Breakdown of Relationship between Chemical Bonding and Deformation Behavior in Crystalline Materials: *Peter Panfilov*[1]; Yuri Gornostyrev[2]; A. R. Kuznetsov[2]; [1]Ural State University; [2]Institute of Metalphysics of the Ural Branch of RAS and CJSC Institute of Quantum Materials Science

4:55 PM
Transitions of Dislocation Glide to Twinning and Shear Transformation in Shock-Deformed Tantalum: *Luke Hsiung*[1]; Geoffrey Campbell[1]; James McNaney[1]; [1]Lawrence Livermore National Laboratory

5:10 PM
Shock Induced Deformation Substructures and Damage in a Copper Bicrystal: *Ellen Cerreta*[1]; Fang Cao[1]; Irene Beyerlein[1]; Frank Addessio[1]; Carl Trujillo[1]; George Gray[1]; [1]Los Alamos National Laboratory

5:25 PM
Dislocation Dynamics, Static Shocks and Size Effects: *Amine Benzerga*[1]; P. J. Guruprasad[1]; [1]Texas A&M University

5:40 PM
Computer Simulation of the Peierls Stress, Dislocation Dynamics and Dislocation-Loop Interaction in Alpha-Zirconium: Hassan Khater[1]; *Anna Serra*[1]; David Bacon[2]; [1]Technical University of Catalonia; [2]The University of Liverpool

5:55 PM
Multiscale Modeling of Thin Films: Linking Dislocation Dynamics with Macroscopic Mechanical Behavior: *Ray Fertig*[1]; Shefford Baker[2]; [1]Firehole Technologies; [2]Cornell University

6:10 PM
Understanding Some of the Microstructural Reasons for the Small-Scale Mechanical Behavior of Directionally Solidified Mo Micropillars: *E. P. George*[1]; R. I. Barabash[1]; H. Bei[2]; G. E. Ice[2]; [1]Oak Ridge National Laboratory and University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

Three-Dimensional Materials Science VI: 3D Representative Volume Elements and Simulated Microstructures

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Tuesday PM Room: 401
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Alexis Lewis, U S Naval Research Laboratory; Somanth Ghosh, Ohio State University

2:00 PM Invited
The Role of Representative Volume Elements on Homogenized Material Properties for Heterogeneous Solids: *Somnath Ghosh*[1]; [1]The Ohio State University

2:30 PM
Dual Grid Approach for Meshing 3D Images: Stephen Sintay[1]; *Anthony Rollett*[1]; [1]Carnegie Mellon University

2:50 PM
High-Fidelity Hexahedral Mesh Generation for Large 3D Material Microstructures: *Andrew Geltmacher*[1]; Jin Qian[2]; Wenyan Wang[2]; Yongjie Zhang[2]; Alexis Lewis[1]; Siddiq Qidwai[3]; [1]Naval Research Laboratory; [2]Carnegie Mellon University; [3]SAIC

3:10 PM Break

3:30 PM Invited
Evaluation and Generation of Representative Volume Elements - A Characterization and Modeling Based Approach: *Stephen Niezgoda*[1]; David Turner[1]; David Fullwood[2]; Surya Kalidindi[1]; [1]Drexel University; [2]Brigham Young University

4:00 PM
Simulations of Realistic Three-Dimensional Multi-Phase Microstructures: *Arun Gokhale*[1]; Harpreet Singh[1]; Yuxiong Mao[1]; [1]Georgia Institute of Technology

4:20 PM
Synthetic Microstructure Builders for Rare Events: *Michael Groeber*[1]; Jeff Simmons[1]; Mary Comer[2]; [1]AFRL; [2]Purdue

4:40 PM Invited
Distinguishing Statistical and Representative Volume Elements in Structure-Property Simulations: *David McDowell*[1]; [1]Georgia Institute of Technology

Ultrafine Grained Materials – Sixth International Symposium: Characterization and Computational Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Tuesday PM Room: 607
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Yonghao Zhao, University of California - Davis; Scott Mao, University of Pittsburgh; Mahmoud Nili Ahmadabadi, University of Tehran; Malgorzata Lewandoska, Warsaw University of Technology

2:00 PM Invited
Atomistic Simulations of Defect and Microstructure Evolution in Irradiated Nanocrystalline Materials: *Paul Millett*[1]; Yongfeng Zhang[1]; Michael Tonks[1]; Dieter Wolf[1]; [1]Idaho National Laboratory

2:20 PM
EBSD Characterization of ECAE Deformed Nb Single Crystals: *Liang Zhu*[1]; Hugo R.Z. Sandim[2]; Marc Seefeldt[1]; Bert Verlinden[1]; [1]K.U.Leuven; [2]University of Sao Paulo

2:35 PM
Microstructure Evolution through Heavy Compression Aided by Thermodynamic Calculations: Farideh Hajiakbari[1]; *Mahmoud Nili-Ahmadabadi*[1]; Behrang Poorganji[2]; Tadashi Furuhara[2]; [1]Tehran University; [2]Tohoku University

2:50 PM
Prediction of the Stress-Strain Response of the Ultrafine-Grained Nickel Using Multi-Scale Analysis: *Mihaela Banu*[1]; Mitica Afteni[1]; Alexandru Epureanu[1]; Clement Keller[2]; Eric Hug[3]; Anne-Marie Habraken[2]; Laurent Duchene[2]; [1]University of Galati; [2]Universite de Liege; [3]Universite de Caen

3:05 PM Invited
Fracture Behavior Analysis in Hard-To-Deform Materials during Equal Channel Angular Pressing by the Finite Element Method: *Hyoung Seop Kim*[1]; Seung Chae Yoon[2]; Taek Soo Kim[3]; [1]POSTECH; [2]Hyundai HYSCO; [3]KITECH

3:25 PM
Micro-Mechanical Modeling of Damage in IF Steel Strengthened by Severe Plastic Deformation: Nisrin Abdel Al[1]; *Amine Benzerga*[1]; [1]Texas A&M University

3:40 PM
HRTEM and EELS Study on Aluminum Nitride in Nanostructured Al 5083/B4C Metal Matrix Composites: *Ying Li*[1]; Zhihui Zhang[1]; Rustin Vogt[1]; Wei Liu[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis

3:55 PM Break

4:10 PM
Synergic Effects of Grain Refinement and Precipitation Strengthening: *Malgorzata Lewandowska*[1]; Krzysztof Kurzydlowski[1]; Romuald Dobosz[1]; [1]Warsaw University of Technology

4:25 PM
Influence of Specimen Dimensions and Strain Measurement Methods on the Apparent Ductility of Bulk Nanostructured Materials: *Yonghao Zhao*[1]; Troy Topping[1]; Yazhou Guo[2]; Qiuming Wei[2]; Yuntian Zhu[3]; Terence G. Langdon[4]; Enrique Lavernia[1]; [1]University of California-Davis; [2]University of North Carolina-Charlotte; [3]North Carolina State University; [4]University of Southern California

4:40 PM Invited
Avoiding Cracks and Inhomogeneities in Billets Processed by ECAP: *Paulo Cetlin*[1]; Maria Teresa Aguilar[1]; Roberto Figueiredo[2]; Terence Langdon[2]; [1]Federal University of Minas Gerais; [2]University of Southern California

5:00 PM
Multiscale Modeling of Back-Stress Evolution in Equal-Channel Angular Pressing: *Enze Chen*[1]; Laurent Duchêne[2]; Anne-Marie Habraken[2]; Bert Verlinden[1]; [1]Katholieke Universiteit Leuven, Belgium; [2]FNRS Fonds de la Recherche Scientifique, Université de Liège

5:15 PM
Microstructure of Cu And Cu + Zr Samples after ECAP and HPT Deformation Studied by Different Methods: *Radomir Kuzel*[1]; Zdenek Matej[1]; Milos Janecek[1]; Jakub Cizek[1]; Milan Dopita[2]; [1]Charles University in Prague, Faculty of Mathematics and Physics; [2]Institute of Materials Science, TU Bergakademie Freiberg

5:30 PM
Partial Dislocation Nucleation and Travelling in Nanocrystalline Metals: *Scott Mao*[1]; Zhiwei Shan[2]; [1]University of Pittsburgh; [2]Hysitron Inc

5:45 PM
Ultra Fine-Grained Structures Formed in Impact Welding of 6061 Aluminum Alloy and 110 Copper Alloy: *Yuan Zhang*[1]; Glenn Daehn[1]; Suresh Babu[1]; [1]The Ohio State University

Ultrafine Grained Materials – Sixth International Symposium: Microstructural Evolution

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Tuesday PM Room: 606
February 16, 2010 Location: Washington State Convention Center

Session Chairs: Matthias Goeken, University Erlangen--Nürnberg; Mohammed Haouaoui, Texas A&M University; Joel House, U.S. Air Force Research Laboratory; Indranil Roy, Schlumberger

2:00 PM Invited
Atom Probe Tomography: A New Insight into the Partition and Segregation of Solutes in Ultrafine-Grained and Nanocrystalline Al Alloys: *Gang Sha*[1]; Xiaozhou Liao[1]; Rimma Lapovok[2]; Ruslan Valiev[3]; Terence Langdon[4]; Simon Ringer[1]; [1]The University of Sydney; [2]Monash University; [3]Ufa State Aviation Technical University; [4]University of Southern California

2:20 PM
Deformation Induced Grain Growth in Nanostructured Al-Mg Alloy: *Zhihui Zhang*[1]; Xiaolin Wu[2]; Ying Li[1]; Troy Topping[1]; Yizhang Zhou[1]; Wei Xu[2]; Kenong Xia[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]University of Melbourne

2:35 PM Invited
Microstructural Evolution during Processing and Deformation of Ultrafine Grain Metals: *Marc Meyers*[1]; Y.-B. Xu[2]; H. J. Yang[2]; B. K. Kad[1]; [1]UCSD; [2]Institute for Metal Research Chinese Academy of Sciences

2:55 PM
Grain Refinement in Magnesium Alloys Processed by ECAP: Roberto Figueiredo[1]; *Terence Langdon*[1]; [1]University of Southern California

3:10 PM Invited
Microstructure Evolutions in Ti and Zr by Pressure-Induced Phase Transformation under HPT-Straining: *Yoshikazu Todaka*[1]; Hiroaki Azuma[1]; Kensyu Irie[1]; Nozomu Adachi[1]; Yuuki Ohnshi[1]; Minoru Umemoto[1]; [1]Toyohashi University of Technology

3:30 PM Invited
New Strategies to Overcome the Limits in Refinement by Severe Plastic Deformation: *Reinhard Pippan*[1]; Anton Hohenwarter[1]; Andrea Bachmaier[1]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

3:50 PM Break

4:05 PM Invited
Strain Path and Microstructure Evolution during Severe Plastic Deformation (SPD) Processing: *Terry McNelley*[1]; Juan Garcia-Infanta[2]; Srinivasan Swaminathan[3]; Alexandre Zhilyaev[4]; Fernando Carreno[2]; Oscar Ruano[2]; [1]Naval Postgraduate School; [2]Centro Nacional de Investigaciones Metalurgicas; [3]GE Global Research; [4]Centro Nacional de Investigaciones Metalurgicas and Institute for Metals Superplasticity Problems

4:25 PM
Nanoscale Structural Refinement and Deformation Mechanisms in Beta-Type Titanium Alloys: *Mariana Calin*[1]; Wei Xu[2]; Jürgen Thomas[1]; Norbert Mattern[1]; Michael Zehetbauer[3]; Jürgen Eckert[1]; [1]IFW Dresden; [2]University of Melbourne; [3]Universität Wien

4:40 PM
Microstructural Evolution during Cryomilling of B4C Reinforced Al Nanocomposite: *Byungmin Ahn*[1]; Yuzheng Zhang[1]; Rustin Vogt[2]; Zhihui Zhang[2]; Julie Schoenung[2]; Enrique Lavernia[2]; Steven Nutt[1]; [1]University of Southern California; [2]University of California, Davis

4:55 PM
Recrystallization of Tantalum Processed by Equal Channel Angular Pressing: *Joel House*[1]; John Bingert[2]; Philip Flater[1]; James O'Brien[3]; William Hosford[4]; Robert DeAngelis[5]; Richard Harris[1]; [1]Air Force Research Laboratory; [2]Los Alamos National Laboratories; [3]O'Brien and Associates; [4]University of Michigan; [5]University of Florida

5:10 PM
Ultrafine Grain Refinement of Co-29Cr-6Mo Alloys with Considerably Low Stacking Fault Energy during Conventional Hot-Compression Deformation: *Akihiko Chiba*[1]; Kenta Yamanaka[1]; Manami Mori[1]; Shingo Kurosu[1]; Hiroaki Matsumoto[1]; Yunping Li[1]; [1]Tohoku University

5:25 PM Invited
Effect of Interfaces on Microstructural Evolution and Deformation Behavior of Ultrafine Ag-Cu Laminar Nanocomposites: *Nathan Mara*[1]; Dhriti Bhattacharyya[1]; Irene Beyerlein[1]; David Alexander[1]; Carl Necker[1]; [1]Los Alamos National Laboratory

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Synthesis of Nanomaterials III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Wednesday AM Room: 214
February 17, 2010 Location: Washington State Convention Center

Session Chair: Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation

8:30 AM Introductory Comments

8:35 AM
Effect of Milling Parameters on the Structural Stability of Isothermally Heat Treated Nanostructured Al-2.7at. %Ni Mechanically Alloyed Eutectic Powders: *Hanadi Salem*[1]; Mohy Eldin Raged[1]; [1]American University in Cairo

8:55 AM
Influence of the Dispersion Mechanism of Nanostrucutred Al50Ni50 Intermetallic Compound in Al-Matrices on the Consolidation Behavior and Structural Stability: *Hanadi Salem*[1]; Abdel Hamid Abdel Hamid[1]; [1]American University in Cairo

9:15 AM
Fabrication of Aluminum Carbon Nanotube Composites Via High-Energy Milling: *Joseph Paras*[1]; Ryan Carpenter[1]; Deepak Kapoor[1]; Stephen Bartolucci[1]; Tony Zahrah[2]; Rod Rowland[2]; [1]U.S. Army ARDEC; [2]MATSYS Inc.

9:35 AM
Studies on the Mechanical Properties of Al-Mg-SiO_2 Metal-Matrix Nanocomposite Synthesized by Mechanical Alloying: *Nikhil Balachander*[1]; Shashank Shekher[1]; Arun Naik[1]; Jatin Bhatt[1]; D.R. Peshwe[1]; [1]VNIT Nagpur

9:55 AM Break

10:10 AM
Microstructures and Electrochemical Properties of Nanostructured Mg2Ni-Based Compound Containing Nb Additives: *Maryam Mohri*[1]; Seyed Farshid Kashani Bozorg[1]; [1]University of Tehran

10:30 AM
Influence of Using MgCO3 and MgO as Initial Materials on the Synthesis of Pure Nanocrystalline Forsterite Powder: F. Tavangarian[1]; R. Emadi[1]; *Ehsan Mohammadi Zahrani*[2]; [1]Isfahan University of Technology (IUT); [2]The University of British Columbia

10:50 AM
Development of Colloidal Single-Sized Photoluminescent Quanmtum Dots with Bandgap Photoluminescence: *Kui Yu*[1]; Michael Hu[2]; [1]National Research Council Canada; [2]Oak Ridge National Laboratory

11:10 AM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Functional Composite Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Wednesday AM Room: 305
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Nik Chawla, Arizona State University; Katsuyoshi Kondoh, Osaka University

8:30 AM
Piezoelectric Smart Composites: Electromechanical Properties and Design Maps: *T Venkatesh*[1]; [1]Stony Brook University

8:50 AM
Ultrahigh Piezoresistive Effect Induced by Field Emission at Sharp Nano-Tips on the Surface of Spiky Spherical Nickel Powders: *Baoguo Han*[1]; Jinping Ou[1]; [1]Harbin Institute of Technology

9:10 AM
Extreme Piezoresistivity of Silicone/Nickel Nanocomposites for High Resolution Large Strain Measurement: Oliver Johnson[1]; *George Kaschner*[2]; Thomas Mason[2]; David Fullwood[1]; Tommy Hyatt[1]; Brent Adams[1]; Kevin Cole[1]; George Hansen[3]; [1]Brigham Young University; [2]Los Alamos National Laboratory; [3]Conductive Composites Company, LLC.

9:30 AM
Synthesis and Microstructural Evolution of Sic/Si3n4/Si2n2o Nitride Porous Ceramic Composites Processed via HYSYCVD: *Martin Pech-Canul*[1]; Jose Flores-Garcia[1]; [1]Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

9:50 AM
Transformation Plasticity in Rare Earth Orthophosphate/Orthovanadate Solid Solutions: Application to Fiber-Matrix Interphases in CMCs: *Randall Hay*[1]; Geoff Fair[1]; Emmanuel Boakye[2]; Pavel Mogilevsky[2]; Triplicane Parthasarathy[2]; [1]AFRL; [2]UES, Inc.

10:10 AM Break

10:30 AM
Creep and Fatigue Interactions of Haynes 282 at Elevated Temperatures: *Sara Longanbach*[1]; Carl Boehlert[1]; [1]Michigan State University

10:50 AM
Oxidation of NixZry/Zr-4 Composite Surfaces: *Walter Luscher*[1]; Edgar Gilbert[1]; Stan Pitman[1]; [1]Pacific Northwest National Laboratory

11:10 AM
Long Term Thermal Stability of Al_2O_3 Fiber (Sapphire) Reinforced NiAl Composites: *Jia Song*[1]; Weiping Hu[1]; Günter Gottstein[1]; [1]Institute of Physical Metallurgy and Metal Physics, RWTH Aachen University

11:30 AM
Synthesis and Deformation Behavior of Metal-Ceramic Nanolaminates: *Danny Singh*[1]; Nik Chawla[1]; Guanlin Tang[2]; Yu-Lin Shen[2]; Amit Misra[3]; Krishan Chawla[4]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]University of New Mexico/Department of Mechanical Engineering; [3]Los Alamos National Lab/CINT; [4]University of Alabama at Birmingham/Department of Materials Science and Engineering

11:50 AM
Strengthening Behavior of Bilayer and Trilayer Cu-Based Nanocomposites: *Aikaterini Bellou*[1]; Nicole Overman[1]; David Bahr[1]; Hussein Zbib[1]; Ioannis Mastorakos[1]; Amit Misra[2]; [1]Washington State University; [2]Los Alamos National Laboratory

Alternative Energy Resources for Metals and Materials Production Symposium: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Neale Neelameggham, U.S. Magnesium, LLC; Aldo Steinfeld, ETH Zurich; Robert Palumbo, Valparaiso University

Wednesday AM Room: 310
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Ann Hagni, Ann Hagni Consulting, LLC; Robert Palumbo, Valparaiso University

8:30 AM Introductory Comments

8:35 AM Keynote
The Global Scramble for Energy and Mineral Resources--Will the Move Towards Alternative Energy Sources Alleviate Our Import Problems?: *Vincent Matthews*[1]; [1]Colorado Geological Survey

9:30 AM
Conceptual Process Plant Utility Schemes with Hybrid Energy System: *Neale Neelameggham*[1]; [1]US Magnesium LLC

9:50 AM
Advanced Electrochemical Storage R&D at PNNL for Renewable Integration and Utility Applications: *Zhenguo "Gary" Yang*[1]; Cheng Hung[1]; Daiwon Choi[1]; Gordon Graff[1]; Jianzhi Hu[1]; Soowan Kim[1]; Jun Liu[1]; Xiaochun Lu[1]; Kerry Meinhradt[1]; Vince Sprenkle[1]; John Lemmon[1]; Donghai Wang[1]; Guan-Guang Xia[1]; [1]Pacific Northwest National Laboratory

10:10 AM Invited
Metal Ferrite Spinels for Solar-Thermal Water Splitting REDOX Cycles: *Alan Weimer*[1]; [1]University of Colorado

11:05 AM
Solar Thermal Electrolytic Production of Metals from Their Oxides: *Robert Palumbo*[1]; [1]Valparaiso University

11:25 AM
CO2 Mitigation in Extractive Metallurgical Processes Using Concentrated Solar Energy: *Aldo Steinfeld*[1]; [1]ETH Zurich

11:45 AM
Applications of Concentrating Solar Power in Materials Production: *Daniel Cook*[1]; Jordan Mayorga[1]; Joseph Kopp[1]; Robert Boehm[1]; [1]University of Nevada, Las Vegas

12:05 PM
Radio-Thermionic Induced Reactions on Aluminum Based Materials and Their Correlation with Plasmon Formation and Tribocatalytic Mechanisms: *John Elton*[1]; James Cornwell[1]; [1]Protective Systems, Inc.

12:25 PM Concluding Comments

Alumina and Bauxite: Process Improvements and Experiences - Red Side II

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Wednesday AM Room: 611
February 17, 2010 Location: Washington State Convention Center

Session Chair: Shawn Kostelak, Gramercy Alumina

8:30 AM Introductory Comments

8:40 AM
Effect of Digesting Conditions on Physical Properties of Diaspore Red Mud: *Li Bao*[1]; Ting'an Zhang[1]; Zhihe Dou[1]; Guozhi Lv[1]; Xujian Wu[1]; Yongnan Guo[1]; Peiyuan Ni[1]; Jia Ma[1]; [1]Northeastern University

9:10 AM
Extracting Alumina from Coal Flyash through Sodium Aluminate Solution in Soda-Sintering and Acid-Leaching Process: *Jilai Xue*[1]; Li Yan[1]; Yun Zhu[1]; [1]Unversity of Science and Technology Beijing

9:40 AM Break

10:00 AM
Improved Performance of Red Mud Settlers at Worsley Alumina: *Dane Eckart*[1]; John Kildea[2]; Peter Prinsloo[3]; David Nicholson[2]; Everett Phillips[4]; [1]Worsley Alumina Pty Ltd; [2]Nalco Australia Pty Ltd; [3]BHP Billiton; [4]Nalco Company

10:30 AM
Redundancy of Security Filtration: *Peter-Hans ter Weer*[1]; [1]TWS Services and Advice

11:00 AM
Tricalcium Aluminate Hexahydrate (TCA) Synthesis and Characterization: *Mamata Mohapatra*[1]; S. Acharya[1]; [1]Institute of Minerals and Materials Technology

11:30 AM
Effect of Carbide Slag on High Pressure Digestion Properties of Diaspore: *Wang Bo*[1]; Sun Huilan[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northeastern University

Aluminum Alloys: Fabrication, Characterization and Applications: Fatigue and Corrosion

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Wednesday AM Room: 615
February 17, 2010 Location: Washington State Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

8:30 AM
Corrosion-Fatigue Interactions in Hollow AA6XXX Alloy Extrusions: *Nicholas Nanninga*[1]; Calvin White[2]; [1]NIST; [2]Michigan Technological University

8:50 AM
Corrosion Fatigue and Stress-Corrosion Crack Growth in Sensitized Al 5083: *Peter Pao*[1]; Ramasis Goswami[2]; Ronald Holtz[1]; [1]Naval Research Laboratory; [2]SAIC

9:10 AM
Environmental Degradation of SCC-Affected Fatigue Life of High-Strength Aluminum Alloys and Prediction Methodology for Remaining Fatigue Life in Aging Aircraft: *Yooin Jeong*[1]; Hyunjung Lee[2]; Eungyeong Lee[2]; Haksu Kim[2]; Cheolju Lee[1]; Sangshik Kim[2]; [1]Korea Aerospace Industries, LTD.; [2]Gyeongsang National University

9:30 AM
Effect of Heat Treatment on Corrosion Behavior of Aluminum-Lithium Alloy 8090: *Amr Kobeisy*[1]; Ahmed Metwali Abd El-Aziz[1]; Randa Abdel-Karim[2]; Abdel-Aziz Waheed[3]; [1]German University in Cairo; [2]Cairo University; [3]Atomic Energy Authority

9:50 AM
Multi-Axial Fatigue Behaviour of A356-T6: *Matthew Roy*[1]; Yves Nadot[2]; Daan Maijer[1]; [1]The University of British Columbia; [2]Ecole Nationale Supérieure de Méchanique et d'Aérotechnique (ENSMA)

10:10 AM
Processing of Ultra-Fine Grain Structure in Aluminium Alloy by Equal Channel Angular Pressing: Narasimhan Narayani[1]; Prasad Shanmugasandaram[1]; C. K. Gopalakrishnan[1]; R. Hariharan[1]; G. Swarupini[1]; *S. Balasivananda Prabhu*[1]; [1]Anna University

10:30 AM Break

10:45 AM
Fatigue in Friction Stir Welded 7050 Al: *Ashley Teare*[1]; Adam Hein[1]; Aaron Wilkinson[1]; David Field[1]; Tracy Nelson[2]; [1]Washington State University; [2]BYU

11:05 AM
Effects of Multipass Friction Stir Processing on Microstructure and Mechanical Properties of Al-Zn-Mg (7039) Alloy: *Prashant Soni*[1]; Bhagwati Kashyap[1]; N. Prabhu[1]; A.G. Rao[1]; V. Deshmukh[1]; [1]IIT Bombay

11:25 AM
Influences of Tool Pin Profile and Welding Speed on the Formation of Friction Stir Welding of AA7075 and AA5083: *Reza Behnagh*[1]; Mohammad Kazem Besharati[2]; [1]Tehran University; [2]Department of Mechanical Engineering, Tehran University

11:45 AM
Tensile Properties of a Friction Stir Processed Al-Cu 2218 Alloy at Elevated Temperatures and Related Microstructural Characteristics: *Ssu-Ta Chen*[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]Department of Material Science and Engineering, National Cheng Kung University

12:05 PM
Effect of Porosity on the High-Cycle Fatigue Properties of 356 Casting Aluminum Alloy: Young-Jae Lee[1]; Kwang-Jun Euh[2]; Kyu-Sang Cho[3]; *Kee-Ahn Lee*[4]; [1]Center for Advanced Green Materials Technology, Andong National University; [2]Korea Institute of Material Science; [3]Dongyang University; [4]Andong National University

Aluminum Reduction Technology: Hall-Héroult Cell: Processes Modeling and Aluminium Smelter Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Wednesday AM Room: 608
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Marc Dupuis, GéniSim Inc; Daniel Richard, Hatch

8:30 AM Introductory Comments

8:40 AM
Mathematical Modeling of Aluminum Reduction Cell Potshell Deformation: *Marc Dupuis*[1]; [1]GéniSim Inc

9:10 AM
The Use of CFD Simulations to Optimise Ventilation of Potrooms: *André Maarschalkerwaard*[1]; [1]Colt Technology

9:40 AM
Safe and Efficient Traffic Flow for Aluminum Smelters: *Laszlo Tikasz*[1]; Charles Read[1]; Robert Baxter[1]; Rafael Pires[1]; Robert McCulloch[1]; [1]Bechtel

10:10 AM
Development and Application of an ANSYS® Based Thermo-Electro-Mechanical Anode Stub Hole Design Tool: *Marc Dupuis*[1]; [1]GéniSim Inc

10:40 AM Break

10:50 AM
Effects of High Temperatures and Pressures on Cathode and Anode Interfaces in a Hall-Heroult Electrolytic Cell: *Lyne St-Georges*[1]; [1]UQAC

11:20 AM
Design of a Bypass Joint for the Aluminum Reduction Cells.: Yimy Sarkis[1]; [1]Morochos JJ C.A.

11:50 AM
3D Freeze Shape Study of the Aluminum Electrolysis Cells Using Finite Element Method: Cui Xifeng[1]; Zhang Hongliang[1]; Zou Zhong[1]; Li Jie[1]; Lai Yanqing[1]; Xu Yujie[1]; Zhang Hehui[1]; *Lv Xiaojun*[1]; [1]Central South University

12:20 PM Concluding Comments

Aluminum Reduction Technology: Hall-Héroult Cell: Processes Modeling and Measurements

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Wednesday AM Room: 614
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Nobuo Urata, Alumilab; James Evans, University of California, Berkeley

8:30 AM Introductory Comments

8:35 AM
CFD Modelling of Effect of ACD and Anode Size on Alumina Mixing in Aluminium Reduction Cells: Yuqing Feng[1]; *Mark Cooksey*[1]; Phil Schwarz[1]; [1]CSIRO Minerals

9:00 AM
Terminating Anode Effects by Lowering and Raising the Anodes - A Closer Look at the Mechanism: *Jomar Thonstad*[1]; Helmut Vogt[2]; [1]Norwegian University Sc. Technology; [2]TFH, University of Applied Sciences

9:25 AM
Bath Temperature Inference through Soft Sensors Using Neural Networks: *Fabio Soares*[1]; Roberto Limao[2]; Marcos Castro[3]; [1]Exodus; [2]UFPA; [3]Albras

9:50 AM
The Determination of Pot Current Distribution by Measuring Magnetic Fields: Nobuo Urata[1]; *James Evans*[2]; [1]Alumilab; [2]UC, Berkeley

10:15 AM Break

10:25 AM
Busbar Circuit Design and Installation for Boosting Already Boosted Pots: Daniel Champagne[1]; Donald Ziegler[2]; Andre Schneider[1]; *Daniel Richard*[1]; [1]Hatch; [2]Alcoa

10:50 AM
Study of Surface Oscillation of Liquid Aluminum in 168kA Aluminum Reduction Cells with a New Type of Cathode Design: Wang Ziqian[1]; *Feng Naixiang*[1]; Peng Jianping[1]; Wang Yaowu[1]; Qi Xiquan[2]; [1]Northeastern University; [2]Northeastern University Engineering & Research Institute Co. Ltd.

11:15 AM
Modelling and Optimization of Busbar Configuration in Aluminum Electrolysis Cell with Genetic Algorithm: *Mao Li*[1]; [1]Central South University

11:40 AM Concluding Comments

Biological Materials Science: Mechanical Behavior of Biological Materials III: Soft Tissues and Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Wednesday AM Room: 205
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Po-Yu Chen, University of California, San Diego; Roger Narayan, NC State/UNC Chapel Hill

8:30 AM Invited
Using Optical Tweezers to Probe Mechanical Response from Single Molecules to Soft Biological Materials: *Nancy Forde*[1]; [1]Simon Fraser University

9:00 AM Invited
Investigating the Structure-Properties Relationship of the Cornea and Sclera: Brad Boyce[1]; Thao Nguyen[2]; [1]Sandia National Laboratories; [2]Johns Hopkins University

9:30 AM Invited
Polymer Mechanics Models the Fraction of Cartilage Stress Relaxation Not Caused by Fluid Flow: *David Fyhrie*[1]; R. June[2]; Corey Neu[3]; Justin Barone[4]; [1]University of California, Davis; [2]University of California, San Diego School of Medicine; [3]Purdue University; [4]Virginia Technological University

10:00 AM
Stimulated Cellular Response of Novel Hybrid Bimodal Network Elastomers for Soft Tissue Implants: *Wah Wah Thein-Han*[1]; Jinesh Shah[1]; Devesh Misra[1]; [1]University of Louisiana

10:20 AM Break

10:30 AM Keynote
Nanomechanical Properties of Biological Tissues – Pushing the Boundaries of Nanoindentation Testing: *Michelle Dickinson*[1]; [1]Auckland University

11:10 AM
Dynamic Nanoindentation of Articular Cartilage: Oliver Franke[1]; Mathias Göken[2]; Marc Meyers[3]; Karsten Durst[2]; *Andrea Hodge*[4]; [1]MIT; [2]University of Erlangen; [3]University of California, San Diego; [4]University of Southern California

11:30 AM
Nanoindentation of Ultrasoft Biological Materials: *Vinod Nayar*[1]; Andrea Hodge[2]; James Weiland[3]; [1]University of Southern California - Department of Biomedical Engineering; [2]University of Southern California - Department of Aerospace & Mechanical Engineering; [3]University of Southern California - Keck School of Medicine

11:50 AM
Quantitative Viscoelasticity Measurements of Biological Materials by Atomic Force Acoustic Microscopy: *Arnaud Caron*[1]; Ansgar Hohmann[2]; Erhard Stupperich[3]; Franz-Günter Sander[2]; Hans-Jörg Fecht[1]; [1]Institute of Micro- and Nanomaterials, University Ulm; [2]Department of Orthodentics, University Ulm; [3]Institute of Microbiology and Biotechnology, University Ulm

12:10 PM
Multi-Scale Mechanisms of Osteogenesis Imperfecta Disease in Collagenous Tissues: *Markus Buehler*[1]; Alfonso Gautieri[1]; Sebastien Uzel[1]; [1]Massachusetts Institute of Technology

Bulk Metallic Glasses VII: 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: 213
February 17, 2010 Location: Washington State Convention Center

Session Chairs: D. Gary Harlow, Lehigh University; Annett Gebert, Leibniz-Institute for Solid State and Materials Research IFW Dresden

8:30 AM Invited
A Fracture Mechanics Model of Fatigue Crack Propagation in Bulk-Metallic Glasses: Xiaoqing Jin[1]; *Leon Keer*[1]; Gongyao Wang[2]; Peter Liaw[2]; [1]Northwestern University; [2]The University of Tennessee

8:50 AM
Mechanisms of Fatigue Crack Growth in Zr-Based Bulk Metallic Glasses: *Jamie Kruzic*[1]; Sarah Philo[1]; Maximilien Launey[2]; [1]Oregon State University; [2]Lawrence Berkeley National Laboratory

9:00 AM Invited
Effect of Stress Gradient on Fatigue Strength of Zr-Based Bulk Metallic Glass: *Yoshikazu Nakai*[1]; Kohei Fujihara[1]; Naoki Sei[1]; Kunihiro Ando[1]; Bok-Key Kim[2]; [1]Kobe University; [2]Myongji College

9:20 AM
Near-Threshold Fatigue Crack Growth in Metallic Glass Matrix Composites: Kombaiah Boopathy[1]; *Douglas Hofmann*[2]; William Johnson[3]; Upadrasta Ramamurty[1]; [1]Indian Institute of Science; [2]Liquidmetal Technologies; [3]California Institute of Technology

9:30 AM Invited
Fracture and Fatigue of Zr- and Ti-Based Metallic Glass In-situ Matrix Composites: *Maximilien Launey*[1]; Douglas Hofmann[2]; William Johnson[2]; Robert Ritchie[3]; [1]Lawrence Berkeley National Laboratory; [2]California Institute of Technology; [3]University of California Berkeley

9:50 AM
Effects of Laser-Surface Modification on Bending-Fatigue Characteristics of Zr-Based Bulk Metallic Glasses: *Ritesh Sachan*[1]; G.Y. Wang[1]; P.K. Liaw[1]; Ramki Kalyanaraman[1]; [1]University of Tennessee-Knoxville

10:00 AM Break

10:10 AM Invited
Statistical Aspects of Fatigue for Bulk-Metallic Glasses: *D. Gary Harlow*[1]; Gongyao Wang[2]; Peter Liaw[2]; Yoshihiko Yokoyama[3]; [1]Lehigh University; [2]University of Tennessee; [3]Tohoku University

10:30 AM
Zr-Base Glass-Forming Film for Fatigue Property Improvements of 316L Stainless Steel: Jinn Chu[1]; *Cheng-min Lee*[1]; Peter Liaw[2]; [1]Nation Taiwan University of Science and Technology; [2]The University of Tennessee

10:40 AM Invited
Effect of Surface Finishing and Mechanically Induced Defects on the Corrosion of Bulk Metallic Glasses: *Annett Gebert*[1]; [1]Leibniz-Institute for Solid State and Materials Research IFW Dresden

11:00 AM
Fatigue Behavior of Tough Fe-Based Bulk-Metallic Glasses: *Gongyao Wang*[1]; Marios Demetriou[2]; Russell Graves[1]; Peter Liaw[1]; William Johnson[2]; [1]University of Tennessee; [2]California Institute of Technology

11:10 AM Invited
Stress-Assisted Corrosion of Cu-Based Bulk Metallic Glass: Ding Li[1]; *Fuqian Yang*[1]; Peter K. Liaw[2]; [1]University of Kentucky; [2]University of Tennessee

11:30 AM
Biocompatibility of Zr-Based Bulk Metallic Glasses: Effects of Micro-Alloying and Surface Roughness: *Lu Huang*[1]; Zheng Cao[2]; Wei He[2]; Harry Meyer[3]; Peter Liaw[2]; Elena Garlea[4]; Shujie Pang[1]; Tao Zhang[1]; [1]Beijing University of Aeronautics and Astronautics; [2]University of Tennessee, Knoxville; [3]Oak Ridge National Laboratory; [4]Y12 National Security Complex

11:40 AM
Compression-Compression Fatigue Behavior of Zr-Based Bulk-Metallic Glasses: *Gongyao Wang*[1]; P. Liaw[1]; Y. Yokoyama[2]; R. Graves[1]; A. Inoue[2]; [1]University of Tennessee; [2]Institute for Materials Research

11:50 AM Invited
Corrosion Behaviors of Fe41Co7Cr15Mo14C15B6Y2 Bulk Metallic Glass in Sulfuric Acid Solutions: *Jun Shen*[1]; [1]Harbin Institute of Technology

Cast Shop for Aluminum Production: Direct Chill and Conveyor Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Pierre Le Brun, Alcan Voreppe Research Center

Wednesday AM Room: 609
February 17, 2010 Location: Washington State Convention Center

Session Chair: Gerd-Ulrich Grün, Hydro Aluminium Deutschland GmbH

8:30 AM
Microsegregation of Direct Chill Ingot of Super High Strength Aluminum Alloy Cast from Heavily Electromagnetically Stirred Melt: *Takateru Umeda*[1]; Pramote Thirathipviwat[1]; Mawin Suparadist[1]; Hiromi Nagaumi[2]; [1]Chulalongkorn University; [2]Nippon Light Metal

8:55 AM
Utilizing Safety Pit Coating Repair Kits to Prevent Production Stoppages: *Alex Lowery*[1]; Joe Roberts[2]; [1]Wise Chem LLC; [2]Pyrotek Inc.

9:20 AM
Effect of Application of out-of-Phase Electromagnetic Field on Horizorntal Direct Chill Casting of 7075 Aluminum Alloy: *Qingfeng Zhu*[1]; Zhihao Zhao[1]; Xiangjie Wang[1]; Jianzhong Cui[1]; [1]Key Laboratory of Electromagnetic Processing of Materials, Ministry of Education, Northeastern University

9:45 AM
Next Generation of Almex Direct Chill Tooling Systems: *Shaun Hamer*[1]; [1]Almex USA Inc.

10:10 AM
Thermal Assessment of the Casting Operation at IMASA Shop: Claudio Méndez[1]; César Sánchez[1]; Gabriel Plascencia[1]; Marco Rubio[2]; *David Jaramillo*[1]; [1]CIITEC - IPN; [2]IMASA S.A. deC.V.

Characterization of Minerals, Metals and Materials: Characterization of PMC's, Composites, Fibers, Polymers, and Organics

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Wednesday AM Room: 307
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Mingdong Cai, Exova; Jeong Guk Kim, Korea Railroad Research Institute

8:30 AM
Weibull Analysis of Tensile Tested Piassava Fibers with Different Diameters: Denise Cristina Nascimento[1]; Ludy Motta[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

8:50 AM
Thermal Analysis of Curaua Fiber Reinforced Polyester Matrix Composites: Ailton Ferreira[1]; Ruben Jesus Rodriguez[1]; Felipe Lopes[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

9:10 AM
Thermographic Characterization of Damage Evolution in Polymer Matrix Composites: *Jeongguk Kim*[1]; Sung Cheol Yoon[1]; Jung-Seok Kim[1]; Hyuk-Jin Yoon[1]; Sung-Tae Kwon[1]; [1]Korea Railroad Research Institute

9:30 AM
Characterization of the Flexural Properties of Polyester Matrix Composites Reinforced with Continuous Jute Fibers: *Sergio Monteiro*[1]; Leandro Marques[1]; Kestur Satyanarayana[2]; [1]State University of the Northern Rio de Janeiro - UENF; [2]Federal University of Parana (UFPR)

9:50 AM
Charpy Toughness Behavior of Continuous Sisal Fiber Reinforced Polyester Matrix Composites: Wellington Inácio[1]; Felipe Lopes[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

10:10 AM
Evaluation of the Interfacial Strength of Ramie Fibers in Polyester Matrix Composites: Frederico Margem[1]; Felipe Lopes[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

10:30 AM
Patterning Atop Shape Memory Polymers and Their Characterization: Y. Zhao[1]; *Mingdong Cai*[2]; Weimin Huang[1]; T. H. Tong[3]; [1]Nanyang Technological University; [2]Exova Group Ltd and Southeast University; [3]Cornerstone Research Group Inc.

10:50 AM
Characterization of a Natural Biofoam from the Buriti Palm Tree: Lucas Costa[1]; *Sergio Monteiro*[1]; Tammy Portela[1]; Nubia Santos[2]; Cecília Zavaglia[2]; [1]State University of the Northern Rio de Janeiro - UENF; [2]State University of Campinas - UNICAMP

11:10 AM
Characterization of Fibers from Different Parts of the Buriti Palm Tree: Tammy Portela[1]; Lucas Costa[1]; Felipe Lopes[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

11:30 AM
Tensile Properties of Epoxy Composites Reinforced with Continuous Curaua Fibers: Felipe Lopes[1]; Ailton Ferreira[1]; *Sergio Monteiro*[1]; [1]State University of the Northern Rio de Janeiro - UENF

11:50 AM

Characterizing the Mechanical Properties of Wax-Coated Granular Composites: *John Bridge*[1]; Michael Peterson[2]; Ryan Beaumont[3]; [1]Maine Maritime Academy; [2]University of Maine; [3]R.M. Beaumont Corporation

12:10 PM

Mechanical Behavior of Polyester Matrix Composites Reinforced with Continuous Bamboo Fibers: Lucas Costa[1]; *Sergio Monteiro*[1]; Rômulo Loiola[1]; [1]State University of the Northern Rio de Janeiro - UENF

Computational Thermodynamics and Kinetics: Phase Field, CALPHAD and Other Modeling Techniques

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: Computational Materials Science and Engineering Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Dallas Trinkle, Univeristy of Illinois at Urbana-Champaign

Wednesday AM Room: 308
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM

A Phase Field Study on the Growth and the Interaction of Ni_4Ti_3 Precipitates in Niti Shape Memory Alloy: *Wei Guo*[1]; Ingo Steinbach[1]; Christoph Somsen[2]; Gunther Eggeler[2]; [1]Interdisciplinary Centre for Advanced Materials Simulation (ICAMS), Ruhr-University Bochum; [2]Institut für Werkstoffe, Ruhr-University Bochum

8:50 AM

A Mixed-Mode Model for Precipitation in Al-Mg-Si Alloys: *Abbas Bahrami*[1]; Alexis Miroux[2]; Jilt Sietsma[1]; Leo Kestens[1]; [1]Materials Science and Engineering Department, Technical University of Delft (TuDelft); [2]Materials to Innovation Institute (M2i)

9:10 AM

Thermodynamics, Structural Properties and Transformation Behavior of CoNiGa Alloys from First Principles: *Raymundo Arroyave*[1]; Anchalee Junkaew[1]; Andres Garay[1]; Arpita Chari[1]; Chun-Wei Yao[1]; [1]Texas A&M University

9:30 AM

Pressure-Induced Invar Behavior in Pd3Fe: *Michael Winterrose*[1]; Matt Lucas[1]; Alan Yue[1]; Itzhak Halevy[1]; Lisa Mauger[1]; Jorge Munoz[1]; Jingzhu Hu[2]; Michael Lerche[3]; Brent Fultz[1]; [1]Caltech; [2]NSLS; [3]HPSynC

9:50 AM

Explaining the Change in Diffusion Mechanism in the Series of $L1_2$ Phases In_3R (R= Rare-Earth): *John Bevington*[1]; Matthew Zacate[2]; Gary Collins[1]; [1]Washington State University; [2]Northern Kentucky University

10:10 AM

Diffusion of Interstitial and Substitutional Elements in γ/γ' Interface in Ni-Al Superalloys: A First Principles Study: *Priya Gopal*[1]; Peter Wagner[2]; Srinivasan Srivilliputhur[1]; Gregor Mori[2]; [1]University of North Texas, Denton; [2]University of Leoben

10:30 AM Break

10:40 AM

Modelling Ordering Phenomena in Condensed Phases: *Bo Sundman*[1]; Mauro Palumbo[2]; Suzana Fries[2]; [1]CEA; [2]Ruhr University Bochum

11:00 AM

Modeling of Phase Separation in Uranium-Zirconium Alloys via Monte Carlo Methods: *Benjamin Beeler*[1]; Benjamin Good[1]; Chaitanya Deo[1]; Sergey Rashkeev[2]; Maria Okuniewski[2]; Mike Baskes[3]; [1]Georgia Institute of Technology; [2]Idaho National Laboratory; [3]Los Alamos National Laboratory

11:20 AM

Thermodynamics Calculation and Phase-Field Simulation of Morphotropic Phase Boundary in (001) $Bifeo_3$ Thin Films: *Guang Sheng*[1]; Jingxian Zhang[1]; Robert Zeches[2]; Jinxing Zhang[2]; Alexander Melville[3]; Jon Ihlefeld[3]; Venkatraman Gopalan[1]; Darrel Schlom[3]; Lane.W Martin[4]; Ramamoorthy Ramesh[2]; Zi-Kui Liu[1]; Long-Qing Chen[1]; [1]The Pennsylvania State University; [2]University of California, Berkeley; [3]Cornell University; [4]Lawrence Berkeley National Laboratory

11:40 AM

CALPHAD Modeling of the Al-Cr-Ni System Supported by First Principles Calculations: *Wren Chan*[1]; Michael Gao[2]; [1]Carnegie Mellon University; [2]National Energy Technology Laboratory

12:00 PM

Occupancy Probability of a Sublattice of $D0_{22}$-Ni_3V in Ni-Al-V System: Determined by Microscopic Phase Field: *Jing Zhang*[1]; Houchuang Zhuang[1]; Zheng Chen[1]; [1]Northwestern Polytechnical University

12:20 PM

Kinetic Monte Carlo Study of Sputter-Induced Morphological Patterns in Alloy Surfaces: *Bharathi Srinivasan*[1]; Ramanarayan Hariharaputran[1]; [1]Institute of High Performance Computing

Cost-Affordable Titanium III: Creative Processing and Property Enhancement I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Wednesday AM Room: 618
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Curt Lavender, Pacific Northwest National Laboratory; Vasisht Venkatesh, TIMET Inc

8:30 AM

Development Pathways to Low-Cost Engineering Beta Gamma TiAl Alloys: *Young-Won Kim*[1]; [1]Development Pathways to Low-Cost Engineering Beta Gamma TiAl Alloys

8:55 AM

Microstructure and Mechanical Properties of A' Martensite Type Ti-V-Al Alloy after Cold- or Hot Working Process: *Hiroaki Matsumoto*[1]; Hiroshi Yoneda[1]; Kazuhisa Sato[1]; Toyohiko Konno[1]; Akihiko Chiba[1]; [1]Institute for Materials Research, Tohoku University

9:20 AM

Effect of Oxygen on Phase Precipitation and Mechanical Functionality in Ti-29Nb-13Ta-4.6Zr: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Toshikazu Akahori[1]; Harumi Tsutsumi[1]; [1]Tohoku University

9:45 AM

Local Heat Treatment of Titanium Alloys: Microstructure and Mechanical Properties: *Pavlo Markovsky*[1]; [1]G.V. Kurdyumov Institute for Metal Physics, NAS of Ukraine

10:10 AM Break

10:25 AM

The Relative Contribution of Factors Influencing the Flow and Thermal Fields in Electron Beam Casting of Ti-6Al-4V: Tao Meng[1]; *Daan Maijer*[1]; Steven Cockcroft[1]; Riley Shuster[1]; Denis Favez[1]; David Tripp[2]; Stephen Fox[3]; [1]The University of British Columbia; [2]TIMET Morgantown; [3]TIMET Henderson

10:50 AM

The Influence of Surface Treatments and Subsequent Annealing on the Fatigue Performance of Ti-6Al-4V for Biomedical Applications: Milos Janecek[1]; Jaroslav Fencl[2]; Lothar Wagner[3]; Robert Kral[1]; *Josef Strasky*[1]; [1]Charles University; [2]Beznoska, Ltd.; [3]Clausthal University of Technology

11:15 AM
Microstructure-Properties of Cast Ti-5Al-5Mo-5V-3Cr with Elevated Oxygen Levels: *Edward Chen*[1]; D. R. Bice[1]; J. A. Hall[2]; [1]Transition45 Technologies, Inc.; [2]Wah Chang

11:40 AM
Elevated-Temperature Fatigue Behavior of Boron-Modified Ti-6Al-4V: *Wei Chen*[1]; Carl Boehlert[1]; Jane Howe[2]; Seshacharyulu Tamirisakandala[3]; Daniel Miracle[4]; [1]Michigan State University; [2]Oak Ridge National Lab; [3]FMW Composite Systems Inc.; [4]US Air Force

Electrode Technology for Aluminum Production: Anode Green Mill

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Wednesday AM Room: 616
February 17, 2010 Location: Washington State Convention Center

Session Chair: Lorentz Lossius, Hydro Aluminium AS

8:30 AM Introductory Comments

8:35 AM
Use of Eddy Current Separator in Butts Processing: *Juraj Chmelar*[1]; Hogne Linga[1]; [1]Hydro

9:00 AM
From Technology Development to Successful Start-Up and Operations of Sohar: The Potential of the Bi-Eirich Mixing Line: François Morales[1]; Magali Gendre[1]; *Nigel Backhouse*[1]; Berthold Hohl[2]; David Stephenson[3]; Mohammed Al Balushi[3]; [1]Rio Tinto Alcan; [2]Maschinenfabrik Gustav Eirich; [3]Sohar Aluminium

9:25 AM
New Design of Process Area Based on Math Modelling and Simulation for Buss Kneader Principle in the Application of Green Anode Paste Preparation: *Hans-Ulrich Siegenthaler*[1]; Joel Stampfli[1]; [1]Buss AG

9:50 AM
Aluchemie Back to Benchmark: *Patrick Claudel*[1]; Erwin Smits[1]; [1]Aluchemie / Rio Tinto Alcan

10:15 AM Break

10:30 AM
Successful Start up of the Combined Rhodax® and IMC® Processes at the Sohar Smelter: André Pinoncely[1]; Jean Bigot[2]; Christophe Bouche[3]; [1]Solios Carbone; [2]Rio Tinto Alcan; [3]Fives Solios

10:55 AM
Amelios™, A Performance Analysis Tool for Green Anode Plant: Christophe Bouche[1]; Oussama Cherif Idrissi El Ganouni[2]; André Molin[1]; [1]Solios Carbone; [2]Fives

11:20 AM
Anode Paste Plants: Innovative Solution for Optimum Emission Performances: *Hugues Vendette*[1]; [1]Solios Environnement Inc.

General Abstracts: Light Metals Division: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee, TMS: Aluminum Processing Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Wednesday AM Room: 607
February 17, 2010 Location: Washington State Convention Center

Session Chair: Alan Luo, General Motors Research & Development Center

8:30 AM
Alcoa Alumina Refinery Secures Future through Reliability Excellence Efforts: *John Kalpoe*[1]; Keith Johnson[2]; [1]Suralco Alumina Refinery; [2]Life Cycle Engineering

8:50 AM
Application of ECAP on Commercial Purity Aluminum: *Nilufer Evcimen*[1]; Yahya Bayrak[1]; Ahmet Ekerim[1]; [1]Yildiz Technical University

9:10 AM
Assessment of Casting Filling by Modelling Surface Entrainment Events Using CFD: *Mark Jolly*[1]; Carl Reilly[1]; Nick Green[1]; [1]University of Birmingham

9:30 AM
Behavior of MgO during Forming and Leaching Process of Calcium Aluminate Slag: *Wang Bo*[1]; Sun Huilan[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northeastern University

9:50 AM
Effect of Variables on Deposit Characteristics of Aluminum from EMIC-$AlCl_3$ Ionic Liquid Electrolytes: *Debabrata Pradhan*[1]; Ramana Reddy[1]; [1]The University of Alabama

10:10 AM Break

10:30 AM
Effects of Microstructure on Fatigue Crack Growth Behavior of 6061-T6 Wrought Alloys: *Anastasios Gavras*[1]; Brendan Chenelle[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

10:50 AM
Electrochemical Characterization of the Al-Mg Foamed Materials in NaCl Solutions: *S. Valdez*[1]; S. Casolco[2]; H. Castañeda[3]; [1]UNAM-ICF; [2]ITESM-Puebla; [3]Battelle Memorial Institute

11:10 AM
Effect of Variables on Deposit Characteristics of Aluminum from EMIC-$AlCl_3$ Ionic Liquid Electrolytes: *Debabrata Pradhan*[1]; Ramana Reddy[1]; [1]The University of Alabama

11:30 AM
Effects of Volume Percent and Aspect Ratio of Short Carbon Fiber on Mechanical Properties of Reinforced Aluminum Matrix Composites: *Yan Pengfei*[1]; Yao Guangchun[1]; Shi Jianchao[1]; Mu Yongliang[1]; [1]School of Materials & Metallurgy, Northeastern University

11:50 AM
Effective Capital Management – A Case Study: Joe Petrolito[1]; *Martin Richard*[2]; [1]Hatch; [2]Alcoa

General Abstracts: Materials Processing and Manufacturing Division: Microstructure, Characterization, and Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Global Innovations Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Phase Transformations Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee, TMS: Solidification Committee, TMS: Surface Engineering Committee
Program Organizers: Thomas Bieler, Michigan State University; Corbett Battaile, Sandia National Laboratories

Wednesday AM Room: 601
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
Improving Creep Properties through Grain Boundary Engineering: *Milo Kral*[1]; Daniel Drabble[1]; [1]University of Canterbury

9:10 AM
Modeling the Anisotropic Properties of Tantalum Taylor Impact Specimens: *Michael Nixon*[1]; Joel House[1]; Brian Plunkett[1]; Joel Stewart[1]; [1]USAF AFRL

9:30 AM
Neural Networks Modeling of Mechanical Properties in Medium Carbon Steels: *N. S. Reddy*[1]; Jae Sang Lee[1]; Yang Mo Koo[1]; [1]GIFT, POSTECH, Pohang, Korea

9:50 AM
Mathematical Modelling of an Annealing Furnace for Process Control Applications: *Nick Depree*[1]; James Sneyd[1]; S. Taylor[1]; Mark Taylor[1]; M. O'Connor[2]; John Chen[1]; [1]University of Auckland; [2]New Zealand Steel Ltd.

10:10 AM Break

10:30 AM
Dynamic Abnormal Grain Growth in Alpha Iron: *Phi Thanh*[1]; George Kaschner[2]; J.P. Delplanque[1]; Joanna Groza[1]; [1]UC Davis; [2]Los Alamos National Labs

10:50 AM
A Study on the Behavior of Boron in Low Carbon Steel by Neutron Autoradiography: *Dong Jun Mun*[1]; Kyung Chul Cho[1]; Eun Joo Shin[2]; Jae Sang Lee[1]; Yang Mo Koo[1]; [1]Pohang University; [2]Korea Atomic Energy Research Institute

11:10 AM
Flexure Strength and Hydrothermal Degradation of 3mol% Yttria-Stabilized Zirconia (3Y-TZP): Microwave vs. Conventional Sintering: *Kirk Wheeler*[1]; Pedro Peralta[1]; Scott Atkin[2]; [1]Arizona State University; [2]Creative Dental Laboratories

11:30 AM
Novel Pathways to Hydrogen Dissociation and Diffusion on Pd Alloys: *Heather L. Tierney*[1]; Ashleigh E. Baber[1]; John R. Kitchin[2]; E. Charles H. Sykes[1]; [1]Tufts University; [2]Carnegie Mellon University

11:50 AM
An Investigation on the Flow Behavior of Metals when Forging Specimens Having Different Cross Sections: *Bashir Raddad*[1]; [1]University of Alfateh, Mechanical Department

General Abstracts: Structural Materials Division: Non-Ferrous Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Composite Materials Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee, TMS: Refractory Metals Committee, TMS: Titanium Committee
Program Organizers: Eric Ott, GE Aviation; Robert Hanrahan, National Nuclear Security Administration; Judith Schneider, Mississippi State University

Wednesday AM Room: 3A
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
A Creep Rupture Time Model for Anisotropic Creep-Damage of Transversely Isotropic Materials: Calvin Stewart[1]; *Ali Gordon*[1]; [1]University of Central Florida

8:50 AM
Comparison of Deformation Mechanisms for Constant Strain Rate and Creep Testing of a Ni-Based Superalloy: *Hallee Deutchman*[1]; Raymond Unocic[1]; Michael Mills[1]; [1]The Ohio State University

9:10 AM
A Combinatorial Approach to Investigate Solid Solution Hardening in Ni-Based Systems by Nanoindentation: *Oliver Franke*[1]; Karsten Durst[2]; Mathias Göken[2]; [1]MIT; [2]University of Erlangen

9:30 AM
Single-Crystal Solidification of New Co-Al-W Base Superalloys: *Masafumi Tsunekane*[1]; Akane Suzuki[2]; Tresa Pollock[1]; [1]University of Michigan; [2]GE Global Research

9:50 AM Break

10:10 AM
Nucleation of Extension Deformation Twins in α-Ti: *Leyun Wang*[1]; Yiyi Yang[1]; Martin Crimp[1]; Philip Eisenlohr[2]; Darren Mason[3]; Thomas Bieler[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung GmbH; [3]Albion College

10:30 AM
Influence of Grain Boundary Sliding on Diffusion in Yttria Stabilized Tetragonal Zirconia: *Santonu Ghosh*[1]; Sathya Swaroop[2]; Peter Fielitz[3]; Guenter Borchardt[3]; Atul Chokshi[1]; [1]Indian Institute of Science; [2]VIT University; [3]Technische Universitat, Clausthal

10:50 AM
Constitutive Response of Polymers, Filled and Unfilled, as a Function of Temperature and Strain-Rate: *Eric Brown*[1]; Carl Cady[1]; George Gray III[1]; Mathew Lewis[1]; Dana Dattelbaum[1]; [1]Los Alamos National Laboratory

11:10 AM
Shape Memory Behavior of an Ultra-Fine Grained Ti-30Ni-20Pd Alloy through Equal Channel Angular Extrusion (ECAE) Processing: *Rabindra Mahapatra*[1]; Charles Lei[1]; [1]Naval Air Systems Command

11:30 AM
High Temperature Creep-Fatigue Crack Growth Models: *Jeffrey Evans*[1]; [1]University of Alabama in Huntsville

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Innovations in Primary and Secondary Forming - Nickel

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Wednesday AM Room: 306
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Dan Sanders, Boeing Corporation; Lee Semiatin, AFRL-RX

8:30 AM Invited
Technical and Manufacturing Innovations Required to Meet Global Aerospace Requirements for the 21st Century: *Anthony Banik*[1]; [1]ATI Allvac/ Allegheny Technologies

9:00 AM Invited
Some Challenges in Current and Future Superalloy Production: *Lesh Patel*[1]; [1]Special Metals Corp

9:30 AM
Accelerating Insertion of Materials at GE Aviation: Deborah Whitis[1]; *Arturo Acosta*[1]; Shesh Srivatsa[1]; Daniel Wei[1]; [1]General Electric Company

9:50 AM
Constitutive Model of Superplastic and Power-Law Creep Deformation during Isothermal Forging of P/M Alloy René 88DT: *Wen Tu*[1]; Tresa Pollock[1]; [1]University of Michigan

10:10 AM Break

10:30 AM
$\gamma - \gamma' - \delta$ Ternary Eutectic Ni-Base Superalloys Alloys Amenable for Manufacture: Yijing Shi[1]; Alejandro Rodriguez[1]; Mengtao Xie[1]; Randy Helmink[2]; Mark Hardy[3]; *Sammy Tin*[1]; [1]Illinois Institute of Technology; [2]Rolls-Royce Corporation; [3]Rolls Royce plc

10:50 AM
Microstructure and Properties of Platinum-Group-Metal Modified Nickel-Base Superalloys: *Adam Pilchak*[1]; Donald Weaver[2]; Donna Ballard[2]; S. Semiatin[2]; [1]Universal Technology Corporation; [2]Air Force Research Laboratory

11:10 AM
Modelling the Effect of Initial Heat-Treatment on the Creep of Multi-Modal Nickel Superalloys: *James Coakley*[1]; Hector Basoalto[2]; David Dye[1]; [1]Imperial College; [2]QinetiQ

11:30 AM
Flow Behavior of Superalloy 945 during High Temperature Deformation: *Steve Coryell*[1]; Kip Findley[1]; Martin Mataya[1]; [1]Colorado School of Mines

11:50 AM
Microstructure Based Monotonic Stress-Strain Modeling of R-104 as a Function of Temperature: *Sujoy Kar*[1]; Sanjay Sondhi[1]; Daniel Wei[2]; David Mourer[2]; [1]GE Global Research; [2]GE Aviation

12:10 PM
Effects of Temperature, Deformation Strain, and Slow Transfer on the Microstructure and Mechanical Properties of 304L Stainless Steel Forgings: *Nathan Switzner*[1]; Robert Bergen[2]; Jamie McQueen[1]; James Knutson[1]; [1]Honeywell FM&T; [2]Precision Metal Products, Inc

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session V

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Wednesday AM Room: 212
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Order-Disorder in the Phase Field Crystal Model: *Jeffrey Hoyt*[1]; Ken Elder[2]; [1]McMaster University; [2]Oakland University

9:00 AM Invited
Phase Equilibria, Microstructural Evolution and Coarsening Kinetics In "Inverse" Ni_3Ge (γ')-Ni(Ge) (γ) Alloys: *Alan Ardell*[1]; Yong Ma[2]; [1]National Science Foundation; [2]UCLA

9:30 AM Invited
Phase Field Crystals: Atomistic Simulations on Diffusive Timescales: Kuo-An Wu[1]; *Peter Voorhees*[1]; [1]Northwestern University

10:00 AM Break

10:30 AM Invited
Phase Field Modeling of the Martensitic Transition: Intermittent Dynamics and Self-Organized Criticality: *Alphonse Finel*[1]; Oguz Salman[1]; [1]ONERA

11:00 AM Invited
Quantitative Phase-Field Simulations of Growth and Coarsening in Polycrystalline Multi-Component and Multi-Phase Materials: *Nele Moelans*[1]; Liesbeth Vanherpe[2]; Jeroen Heulens[1]; Bert Rodiers[3]; Bart Blanpain[1]; Patrick Wollants[1]; [1]K.U. Leuven, dept. Materials Science and Engineering; [2]K.U. Leuven, Dept. Computer Science; [3]LMS International

11:30 AM
3D-Microstructures at the Atomic Scale: A Monte Carlo Method with Elastic Interactions: *Varvenne Celine*[1]; Alphonse Finel[1]; Mathieu Fevre[1]; Yann Le Bouar[2]; [1]ONERA; [2]CNRS

11:50 AM Invited
Effect of Biaxial Strain on Phase Stability and Microstructure Development in Single-Crystal Films: *Long Qing Chen*[1]; [1]Pennsylvania State University

Jim Evans Honorary Symposium: Primary and Secondary Production of Metals

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Wednesday AM Room: 620
February 17, 2010 Location: Washington State Convention Center

Session Chair: Lifeng Zhang, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:40 AM
Low Cost $TiCl_4$, the Indispensable Compound to Make Titanium: *James Withers*[1]; J. Laughlin[1]; Y. Elkadi[1]; A. Putilin[1]; R. Loutfy[1]; [1]MER Corporation

9:05 AM
The Optimization of the Coke and Agglomerate Quantity in Lead Production in "Water-Jacket" Furnace: *Ahmet Haxhiaj*[1]; Egzon Haxhiaj[2]; [1]University of Prishtina; [2]American University in Kosovo

9:30 AM
Wireless Instrumentation of Aluminum Smelting Operatings: *Dan Steingart*[1]; James Evans[2]; Paul Wright[2]; [1]City College of New York; [2]Wireless Industrial Technologies

9:55 AM Break

10:10 AM
The Development of Product Microstructure "Morphology Maps" and their Significance in Describing the Decomposition of Solids: *Peter Hayes*[1]; [1]University of Queensland

10:35 AM
Development and Application of Dynamic Soft Reduction Technology for Continuous Casting Machine: *Cheng Ji*[1]; Miaoyong Zhu[1]; [1]Northeastern University of China

11:00 AM
Transient Behavior of Inclusion Chemistry, Shape and Structure in Fe-Al-Ti-O Melts: Effect of Titanium/Aluminum Ratio: *Cong Wang*[1]; Sridhar Seetharaman[1]; [1]Carnegie Mellon University

Magnesium Technology 2010: Cast Alloys, Casting, and Grain Refinement

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Wednesday AM Room: 613
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Mei Li, Ford Motor Company; Norbert Hort, GKSS Research Center

8:30 AM
Effects of Section Thicknesses on Tensile Properties of Permanent Mould Cast Magnesium Alloy AJ62: *Jonathan Burns*[1]; Lihong Han[1]; Henry Hu[1]; Xueyuan Nie[1]; [1]University of Windsor

8:50 AM
Growth Restriction Factor Effects near the Surface of High Pressure Die Cast Mg-Al Binary Alloys: *Anumalasetty Nagasekhar*[1]; Carlos Caceres[1]; Mark Easton[2]; [1]The University of Queensland; [2]Monash University

9:10 AM
Strengthening Mechanisms in Mg-Al-Sn Based Alloys: Shaul Avraham[1]; Alexander Katsman[1]; *Menachem Bamberger*[1]; [1]Technion- Israel Institute of Technology

9:30 AM
Numerical Simulation and Experimental Study of Squeeze Casting Magnesium Alloy AM50: *Zhizhong Sun*[1]; Henry Hu[1]; Alfred Yu[1]; [1]University of Windsor

9:50 AM
Section Thickness and the Skin Effect in a High Pressure Die Cast Mg-12%Al Alloy: *Kun Yang*[1]; Anumalasetty Nagasekhar[1]; Carlos Caceres[1]; [1]The University of Queensland

10:10 AM
Investigations on Microstructure and Properties of Mg-Sn-Ca Alloys with 3% Al Additions: Fady Elsayed[1]; Tarek Abuleil[1]; Ahmed Abd El-Aziz[2]; Karl Kainer[1]; *Norbert Hort*[1]; [1]GKSS Forschungszentrum Geesthacht GmbH; [2]Department of Materials Science, German University in Cairo

10:30 AM
Simulation of Stresses during Casting of Binary Magnesium-Aluminum Alloys: Matthew Pokorny[1]; Charles Monroe[1]; *Christoph Beckermann*[1]; Z. Zhen[2]; Norbert Hort[2]; [1]University of Iowa; [2]GKSS Research Centre Geesthacht

10:50 AM
Study on the Microstructure Changes during the In Situ Tensile Processes of as-Cast and Aged Specimens of High-Vacuum Die-Cast Mg-9Al-1Zn Alloy: Jie Song[1]; *Shou-Mei Xiong*[1]; [1]Tsinghua University

11:10 AM
Structure-Property Relationships for Die-Cast Magnesium Alloys: *Jeffrey Wood*[1]; J.P. Weiler[1]; J. Jekl[2]; R. Berkmortel[2]; [1]University of Western Ontario; [2]Meridian Technologies, Inc.

11:30 AM
Grain Refinement of Mg-Al Alloys by Carbon Inoculation: *Yuanding Huang*[1]; Bin Liu[1]; Okechukwu Anopuo[1]; Norbert Hort[1]; Karl Kainer[1]; [1]GKSS Research Center

11:50 AM
A Systematic Study of the Grain Refinement of Magnesium by Zirconium: *Partha Saha*[1]; Katie Lolies[1]; Srinath Viswanathan[1]; Arun Gokhale[2]; Robert Batson[1]; [1]The University of Alabama; [2]Georgia Institute of Technology

12:10 PM
Grain Refinement of AZ91 Alloy by Addition of Ceramic Particles: Dmitry Shepelev[1]; Julia Klemf[1]; Menachem Bamberger[1]; *Alexander Katsman*[1]; [1]Technion

Magnesium Technology 2010: Deformation Mechanisms

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Wednesday AM Room: 612
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Sean Agnew, University of Virginia; Louis Hector Jr, GM R&D Center

8:30 AM
The Evolution of In-Grain Misorientation Axes (IGMA) during Deformation of Wrought Magnesium Alloy AZ31: *Young Chun*[1]; Chris Davies[1]; [1]Monash University

8:50 AM
Influence of Deformation Processing on the Tensile/Compressive Asymmetry in Wrought Mg-3Al-Zn Alloy: *Ran Liu*[1]; De Liang Yin[1]; Jing Tao Wang[1]; [1]Nanjing University of Science and Technology

9:10 AM
Importance of Crystallographic Texture of AZ31B Importance of Crystallographic Texture of AZ31B on Flow Stress Anisotropy and Tension-Compression Asymmetry: *Majid Al-Maharbi*[1]; David Floey[1]; Ibrahim Karaman[1]; Irene Beyerlein[2]; Ted Hartwig[1]; Laszlo Kecskes[3]; Suveen mathaudhu[3]; [1]Texas A&M University; [2]Los Alamos National Laboratory; [3]U.S. Army Research Laboratory

9:30 AM
Mechanical Behavior of AZ31 Due to Texture and Microstructure: *David Foley*[1]; Majid Al-Maharbi[1]; K.T. Hartwig[1]; Ibrahim Karaman[1]; Laszlo Kecskes[2]; Suveen Mathaudhu[2]; [1]Texas A&M University; [2]US Army Research Lab

9:50 AM
Mechanical Anisotropy in Extruded Mg Alloy AM30: Brian Gerard[1]; Adam Niechajowicz[2]; Zbigniew Gronostajski[2]; *Wojciech Misiolek*[1]; [1]Lehigh University; [2]Wroclaw University of Technology

10:10 AM
Implementation of the Anisotropy of Plastic Flow in Inverse Parameter Calculations of the Deformation Behavior of AZ31 Magnesium Alloy: Timo Ebeling[1]; *Christian Hartig*[1]; Rüdiger Bormann[1]; [1]Hamburg University of Technology

10:30 AM
Tensile Mechanical Properties and the Ductile-To-Brittle Transition Behavior of the Mg-Li-Al-Zn Alloy: *Chung-Wei Yang*[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

10:50 AM
The Influence of Sn and Pb Addition on the Tensile Properties of Mg Alloys: *Wei Gao*[1]; Hongmei Liu[1]; [1]The University of Auckland

11:10 AM
Room Temperature Tensile Anisotropy of Extruded Magnesium Plates: *Paul Krajewski*[1]; Adi Ben-Artzy[2]; Raj Mishra[1]; [1]General Motors; [2]Rotem Industries

11:30 AM
Mechanical Properties and Microstructural Analysis of AXJ530 Magnesium Alloy Reinforced with Alumina Fibers: Bin Hu[1]; Liming Peng[1]; Bob Powell[2]; Anil Sachdev[2]; *Xiaoqin Zeng*[1]; [1]Shanghai Jiao Tong University; [2]General Motors Corporation

11:50 AM
Very High Strain Rate Deformation of AZ31b Mg Alloys Using Split Hopkinson Pressure Bar: *Mehdi Sanjari*[1]; Amir Farzadfar[1]; Steve Yue[1]; Elhachmi Essadiqi[2]; [1]McGill; [2]CANMET-MTL

12:10 PM
Observation of Non-Basal Slip in Ductile Deformed MgY Alloys: Igor Schestakow[1]; *Stefanie Sandlöbes*[1]; Sangbong Yi[2]; Stefan Zaefferer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]GKSS-Forschungszentrum - Magnesium Innovation Center (MagIC)

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: SOFC II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Wednesday AM Room: 211
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Fergus, Auburn University

8:30 AM Invited
Advanced Novel Interconnect Coatings for Hermetic Sealing and Mitigation of Cr Volatility in Planar SOFC Stacks: *Jung Pyung Choi*[1]; Scott Weil[1]; Matt Chou[1]; Jeff Stevenson[1]; Gary Yang[1]; Gordon Xia[1]; [1]Pacific Northwest National Laboratory

9:10 AM Invited
Coating of Dense Oxide Layer on the Fe-Cr Alloys for Interconnects of Solid Oxide Fuel Cells: *Teruhisa Horita*[1]; Haruo Kishimoto[1]; Katsuhiko Yamaji[1]; Manuel Brito[1]; Harumi Yokokawa[1]; [1]AIST

9:50 AM
Characterization of Mn-Co Electrodeposition for SOFC Interconnect Applications by QCM: *Junwei Wu*[1]; Ayyakkannu Manivannan[2]; Randall Gemmen[2]; Xingbo Liu[1]; [1]West Virginia University; [2]National Energy Technology Laboratory

10:10 AM Break

10:20 AM Invited
Interactions between (Mn,Co)3O4 SOFC Interconnect Coating Materials and Chromia: *Jeffrey Fergus*[1]; Kangli Wang[1]; Yingjia Liu[1]; [1]Auburn University

11:00 AM
Recent Progress in Cathode/Interconnect Contact Materials R&D for SOFCs at PNNL: *Gordon Xia*[1]; Zigui Lu[1]; Josh Templeton[1]; Gary Yang[1]; Jeffry Stevenson[1]; [1]Pacific Northwest National Laboratory

11:20 AM
The Evolution of Oxide Ridges during Scaling of Fe-22wt%Cr Alloys: *Jingxi Zhu*[1]; Laura Fernandez Diaz[2]; Gordon Holcomb[2]; Paul Jablonski[2]; Christopher Cowen[2]; David Laughlin[1]; Dave Alman[2]; Sridhar Seetharaman[2]; [1]Carnegie Mellon University; [2]National Energy Technology Laboratory

11:40 AM
The Possibility for IT SOFC Interconnector Material Used to Stainless Steel: Kee-Do Woo[1]; *MinSeok Moon*[1]; Eui-pyo Kwon[1]; Myeong-han Yoo[1]; Sang-hyuk Kim[1]; Duck-soo Kang[1]; [1]Chonbuk National University

Modeling of Multi-Scale Phenomena for Batteries: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Perla Balbuena, Texas A&M University, Artie McFerrin Department of Chemical Engineering; Venkat Subramanian, Tennessee Tech University, Department of Chemical Engineering

Wednesday AM Room: 604
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Adrian Sabau, Oak Ridge National Laboratory; Venkat Subramanian, Washington University

8:30 AM Introductory Comments

8:35 AM
Predicting of Surface Morphology Defects in Electrochemical Storage Devices: *Adrian Sabau*[1]; Nancy Dudney[1]; [1]Oak Ridge National Laboratory

9:05 AM
Continuum and Multi-scale Modeling of Performance Curves and Capacity Fade in Lithium-Ion Batteries: Ravi Methekar[1]; Venkatsailanathan Ramadesign[1]; *Venkat Subramanian*[1]; Kejia Chen[2]; Richard Braatz[2]; [1]Tennessee Tech University, Department of Chemical Engineering; [2]University of Illinois at Urbana-Champaign

9:35 AM
Diffusion and Phase Transformations in Lithium Ion Battery Anodes from First Principles: *Jishnu Bhattacharya*[1]; Anton Van der Ven[1]; [1]University of Michigan

10:05 AM Invited
The Solid-Electrolyte-Interface Processes in Lithium-Ion Battery by Atomistic Simulations: *Ken Tasaki*[1]; [1]Mitsubishi Chemical USA

10:50 AM Concluding Comments

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Physics of Defects, Dislocation Nucleation and Fracture I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Wednesday AM Room: 304
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Sulin Zhang, The Pennsylvania State University; Sergey Medyanik, Washington State University

8:30 AM Invited
Nanoscale Modeling of Fracture: *W. Curtin*[1]; S. Chakravarthy[1]; [1]Brown University

9:00 AM
Understanding Scaling Relations in Fracture and Mechanical Deformation of Single Crystal and Polycrystalline Silicon by Performing Atomistic Simulations at Mesoscale: Hansung Kim[1]; *Vikas Tomar*[1]; [1]University of Notre Dame

9:20 AM
Effects of Geometry, Mode Mixity, and Temperature on Dislocation Nucleation in Strained Electronics: Tianlei Li[1]; Jinhaeng Lee[1]; *Yanfei Gao*[1]; [1]University of Tennessee

9:40 AM
Analysis of Genealized Stacking Fault Energy for FCC Fe-Mn Alloys Using Molecular Dynamics Simulation: *Minho Jo*[1]; Y. M. Koo[1]; S. K. Kwon[1]; [1]Graduate Institute of Ferrous Technology, Pohang University of Science and Technology

10:00 AM Break

10:20 AM Invited
Size Effect on the Fracture Behaviors of Si Nanowires in Tension: *Wei Cai*[1]; Keonwook Kang[1]; [1]Stanford University

10:50 AM
Lattice Misorientation Patterns and Strain Gradient Effects in Single Crystals under Spherical Indentation: *Yanfei Gao*[1]; B. Larson[2]; G. Pharr[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

11:10 AM Invited
Nanoscale Fracture in Graphene: *Sulin Zhang*[1]; [1]The Pennsylvania State University

Neutron and X-Ray Studies of Advanced Materials III: Strain and Dislocation Gradients from Microdiffraction II

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Wednesday AM Room: 303
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Dean Haeffner, Argonne National Laboratory; Klaus-Dieter Liss, Australian Nuclear Science and Technology Organisation

8:30 AM Keynote
Strain and Dislocation Density in Barium Titanate by Synchrotron and Laboratory X-Ray Diffraction: *Davor Balzar*[1]; [1]University of Denver

9:00 AM Invited
Using X-Ray Microbeams to Measure Complete Strain Tensors from Dislocation Cell Structures in Deformed Cu: *Michael Kassner*[1]; Peter Geantil[1]; Lyle Levine[2]; Bennett Larson[3]; Jon Tischler[3]; [1]University of Southern California; [2]National Institute of Standards and Technology; [3]Oak Ridge National Laboratory

9:20 AM
Microstructure, Mechanical Behavior and Deformation Mechanisms of Nanocrystalline Ni-50wt%Fe: *Steven Van Petegem*[1]; Julien Zimmermann[1]; Stefan Brandstetter[2]; Xavier Sauvage[3]; Marc Legros[2]; Bernd Schmitt[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]CEMES-CNRS; [3]University of Rouen

9:35 AM Invited
X-Ray Diffraction Microscopy Studies of Microstructure Responses: Christopher Hefferan[1]; Shui Fai Li[1]; Ulrich Lienert[2]; Anthony Rollett[1]; Greg Rohrer[1]; *Robert Suter*[1]; [1]Carnegie Mellon University; [2]Argonne National Laboratory

9:55 AM
Thermo-Mechanical Processing in a Synchrotron Beam: *Klaus-Dieter Liss*[1]; [1]Australian Nuclear Science and Technology Organisation

10:10 AM Invited
Correlation of X-Ray Diffraction Examination of Recovery in Cold-Rolled Aluminum with Dynamic Dislocation-Defect Analysis: *Shig Saimoto*[1]; Joyce Cooley[1]; [1]Queen's University

10:30 AM Break

10:40 AM Invited
FSP-Induced Plastic Deformation and Elastic Strains in Individual Dendrites of the Ni-Based Superalloy from X-Ray Microdiffraction: *Oleg Barabash*[1]; Rozaliya Barabash[1]; Gene Ice[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory

11:00 AM Invited
Synchrotron Microdiffraction Analysis of the Microstructure of Cryogenically Treated High Performance Tool Steels Prior to and after Tempering: *Ning Xu*[1]; Andrea Gerson[1]; Giuseppe Cavallaro[1]; [1]ACeSSS (Applied Centre for Structural and Synchrotron Studies)

11:20 AM Invited
Materials Studies Using High-Resolution Laue X-Ray Microdiffraction: *John Budai*[1]; Wenjun Liu[2]; Jon Tischler[1]; [1]Oak Ridge National Laboratory; [2]Argonne National Lab

11:40 AM
Wear Properties of Single Phase Ti Alloys and Surface Damage Characterization by X-Ray Diffraction: *Eri Miura-Fujiwara*[1]; Hisashi Sato[1]; Gene Ice[2]; Yoshimi Watanabe[1]; [1]Nagoya Institute of Technology; [2]Oak Ridge National Laboratory

11:55 AM Invited
Polychromatic X-Ray Microdiffraction (PXM) Studies of Stress Corrosion Cracking (SCC) in Alloy 600: *Marina Suominen Fuller*[1]; Jing Chao[1]; N. Stewart McIntyre[1]; Sridhar Ramamurthy[1]; Leo Lau[1]; Roger Newman[2]; Anatolie Carcea[2]; Renfei Feng[3]; [1]University of Western Ontario; [2]University of Toronto; [3]Canadian Light Source Inc.

12:15 PM
Crystal Distortion Gradient in the Vicinity of a Grain-Boundary in Plastically Deformed Bicrystals: *Gael Daveau*[1]; Benoit Devincre[1]; Thierry Hoc[2]; Odile Robach[3]; [1]LEM-CNRS/ONERA; [2]MSSMat-Centrale Paris; [3]NRS/CEA-Grenoble

12:25 PM
Grain Rotation and Texture Evolution in Cubic Polycrystals Determined by Synchrotron X-Ray Diffraction: *Kun Yan*[1]; Klaus-Dieter Liss[1]; Rian Dippenaar[2]; [1]The Bragg Institute; [2]University of Wollongong

12:35 PM
2010 JIM International Scholar Award Winner: **Development of Coherent X-Ray Diffraction Microscopy and Its Application in Materials Science**: *Yukio Takahashi*[1]; Y. Nishino[2]; T. Ishikawa[2]; K. Yamauchi[1]; E. Matsubara[3]; [1]Osaka University; [2]RIKEN SPring-8 Center; [3]Kyoto University

Nuclear Energy: Processes and Policies: Material Behavior

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee, TMS: Public and Governmental Affairs Committee
Program Organizers: Brajendra Mishra, Colorado School of Mines; Aladar Csontos, U.S. Nuclear Regulatory Commission; Stuart Maloy, Los Alamos National Laboratory; Jeremy Busby, Oak Ridge National Laboratory; Sue Lesica, U.S. Department of Energy's Office of Nuclear Energy

Wednesday AM Room: 201
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Stuart Maloy, Los Alamos National Laboratory; Jeremy Busby, Oak Ridge National Laboratory

8:30 AM Keynote
Future of Nuclear Energy Research and Development: *Sue Lesica*[1]; [1]U.S. Department of Energy's Office of Nuclear Energy
Abstract not available.

9:05 AM
A Study of the Initial Effects of Irradiation on Nanocluster Stability on ODS Steel: *Alicia Certain*[1]; Jim Bentley[2]; Michael Miller[2]; Jeremy Busby[2]; Robert Ulfig[3]; Todd Allen[1]; Kevin Field[1]; [1]University of Wisconsin-Madison; [2]Oak Ridge National Laboratory; [3]Imago Scientific Instruments

9:30 AM
Fracture and Impact Properties of HT-9 Steel Irradiated to High Dose in FFTF: *Thak Sang Byun*[1]; Stuart Maloy[2]; [1]Oak Ridge National Laboratory; [2]Los Alamos National Laboratory

9:55 AM
In-Plane Anisotropy in Microstructure and Mechanical Behavior of Alloy 617 Following High Temperature Aging: *Kun Mo*[1]; Gianfranco Lovicu[2]; Hsiao-ming Tung[1]; Xiang Chen[1]; James Stubbins[1]; [1]University of Illinois; [2]University of Pisa

10:20 AM Break

10:35 AM
MaRIE; A Proposed Materials Facility at Los Alamos National Laboratory: *Mark Bourke*[1]; [1]Los Alamos National Laboratory

11:00 AM
Microstructural Evolution in Friction Stir Welded MA956 and 14YWT: *Michael West*[1]; Bharat K. Jasthi[1]; William J. Arbegast[1]; David T. Hoelzer[1]; [1]South Dakota School of Mines and Technology

11:25 AM
The Behavior of Precipitate Strengthened Steels under Irradiation: *Peter Hosemann*[1]; Erich Stergar[2]; Stuart Maloy[1]; Harald Leitner[2]; Andrew Nelson[1]; [1]LANL; [2]University of Leoben

11:50 AM
In Situ Synchrotron Study and Computer Modeling of Advanced Nuclear Structural Alloys: *Meimei Li*[1]; Jonathan Almer[1]; Ken Natesan[1]; David Rink[1]; [1]ANL

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Alloy Development

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo , Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu , Intel Corporation

Wednesday AM Room: 204
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Iver Anderson, Iowa State University; Jenn-Ming Song, National Dong Hwa University

8:30 AM Invited
Shock Resistant and Thermally Reliable Low Ag SAC Solders Doped with Mn or Ce: *Ning-Cheng Lee*[1]; Weiping Liu[1]; Adriana Porras[2]; Min Ding[2]; Anthony Gallagher[3]; Austin Huang[4]; Scott Chen[4]; Jeffrey ChangBing Lee[5]; [1]Indium Corporation; [2]Freescale Semiconductor; [3]Motorola Inc; [4]Advanced Semiconductor Engineering Group; [5]IST-Integrated Service Technology Inc

8:55 AM
Effects of Co Addition upon Sn-8.8Zn/Cu and Sn-57Bi/Cu Interfacial Reactions: *Yu-chih Huang*[1]; Sinn-wen Chen[1]; [1]National Tsing Hua University

9:10 AM
High-Temperature Lead-Free Solder Alternatives: Possibilities and Properties: *Vivek Chidambaram*[1]; John Hald[1]; Jesper Hattel[1]; [1]Technical University of Denmark

9:25 AM
Improvement of Wettability and Thermal Properties at Bi Based Alloys: *Minoru Ueshima*[1]; [1]Senju Metal Industry

9:40 AM
Liquid Phase Sintered Solders as Thermal Interface Materials for Conventional and High Temperature Electronic Applications: *Jia Liu*[1]; Paul Rottmann[1]; Shouvik Dutta[1]; Chelliah Nagaraj[2]; Praveen Kumar[1]; Mukul Renavikar[3]; Rishi Raj[2]; Indranath Dutta[1]; [1]Washington State University; [2]University of Colorado; [3]Intel Corp.

9:55 AM
Development of Sn-Ag-Cu-X Alloys for Electronic Assembly: *Adam Boesenberg*[1]; Iver Anderson[2]; Joel Harringa[2]; [1]Iowa State University; [2]Ames Laboratory of US DOE

10:10 AM Break

10:25 AM
On the Mechanism of Retarding Cu3Sn Growth by Ni Addition: *Yi-Wun Wang*[1]; C. Robert Kao[1]; [1]National Taiwan University

10:40 AM
On the Merits of Transient Liquid Phase Bonding as a Substitute for Soldering with High-Pb Alloys: *Alexandre Kodentsov*[1]; [1]Eindhoven University of Technology

10:55 AM
Thermal, Mechanical Stability, and Wetting Behavior of Novel Cerium (Ce)-Containing Pb-Free Solders on Cu and Ni-Au Metallization: *Huxiao Xie*[1]; Ling Jiang[1]; Mukul Renavikar[2]; Nik Chawla[1]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]Intel/ATTD

11:10 AM
Polymers Investigation for 3D IC Stacking Technology: Cheng-Ta Ko[1]; Wei-Chung Lo[1]; *Kuan-Neng Chen*[2]; Huan-Chun Fu[1]; Zhi-Cheng Hsiao[1]; Yu-Hua Chen[1]; [1]Industrial Technology Research Institute; [2]National Chiao Tung University

11:25 AM
Modeling of Reflow Temperatures and Wettability in Lead-Free Solder Alloys Using Hybrid Evolutionary Algorithms: *Chedtha Puncreobutr*[1]; Gobboon Lohthongkum[2]; Prabhas Chongstitvattana[1]; Boonrat Lohwongwatana[2]; [1]Department of Computer Engineering, Faculty of Engineering, Chulalongkorn University; [2]Department of Metallurgical Engineering, Faculty of Engineering, Chulalongkorn University

11:40 AM
Effects of Processing and Amount of Co Addition on Shear Strength and Microstructural Development in Sn-3.0Ag-0.5Cu Solder Joint: *Limin Ma*[1]; Feng Tai[1]; Guangchen Xu[1]; Fu Guo[1]; [1]Beijing University of Technology

Polymer Nanocomposites: Carbon Fibers and Carbon Nanotubes

Sponsored by: The Minerals, Metals and Materials Society
Program Organizer: John Zhanhu Guo, Lamar University

Wednesday AM Room: 309
February 17, 2010 Location: Washington State Convention Center

Session Chairs: John Zhanhu Guo, Lamar University; Carla Leer, Applied Sciences, Inc

8:30 AM Introductory Comments

8:35 AM Keynote
An Assessment of the Science and Technology of Carbon Nanotube Composites: *Tsu-Wei Chou*[1]; Erik Thostenson[1]; Limin Gao[1]; [1]University of Delaware

9:15 AM
Hierarchical Nanocomposites Based on Controlled CNT Arrays: *Wei Chen*[1]; Steven Nutt[1]; [1]University of Southern California

9:35 AM Invited
Study on Damping Properties of Polyetherimide/Graphite Nano-Platelet Composites: *Anthony Perugini*[1]; Bin Li[1]; Weihong Zhong[1]; [1]Washington state university

9:55 AM
Mechanomutable Carbon Nanotube Arrays: *Markus Buehler*[1]; Steven Cranford[1]; [1]Massachusetts Institute of Technology

10:15 AM Break

10:45 AM Invited
Plasma Coating and Magnetic Alignment of Carbon Nanotubes in Polymer Composites: *Donglu Shi*[1]; Hoon Sung Cho[1]; Christopher Huth[1]; Jie Lian[2]; [1]University of Cincinnati; [2]Rensselaer Polytechnic Institute

11:15 AM Invited
Interfacial Interaction among Carbon Nanofibers Reinforced Epoxy Nanocomposites: *Jiahua Zhu*[1]; Suying Wei[1]; John Zhanhu Guo[1]; [1]Lamar University

11:45 AM
Localized Characterization of Carbon Nanotubes and Carbon Nanotube Reinforced Nanocomposites Using Novel Micromechanical Devices: *Yogi Ganesan*[1]; Yang Lu[1]; Cheng Peng[1]; Hao Lu[1]; Roberto Ballarini[1]; Boris Yakobson[1]; Jun Lou[1]; [1]Rice University

12:05 PM
Quantification of Carbon Nanotube Distribution and Property Correlation in Nanocomposites: *Srinivasa Bakshi*[1]; Ruben Batista[1]; Arvind Agarwal[1]; [1]Florida International University

Processing Materials for Properties: Functional Materials Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Wednesday AM Room: 617
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Sreeramamurthy Ankem, University of Maryland; Vikas Sinha, UES, Inc.

8:30 AM Keynote
Melting Behavior of Solid Particles during High Temperature Bath Processing: *Florian Kongoli*[1]; Ian McBow[1]; E. O'Brien[1]; S. Llubani[1]; [1]FLOGEN Technologies Inc

9:00 AM
Direct Reversal Imprint Lithography of Indium-Tin Oxide (ITO) Nanoparticles for Improvement of Light Extraction Efficiency of GaN Based LED Devices: *Ki-Yeon Yang*[1]; Sang-Chul Oh[1]; Kyeong-Jae Byeon[1]; Heon Lee[1]; [1]Korea University

9:20 AM
Fabrication of Photonic Crystal Patterns on GaN-Based Light-Emitting Diodes to Improve Photon Extraction Efficiency: *Kyeong-Jae Byeon*[1]; Eun-Ju Hong[1]; Hyoungwon Park[1]; Kyung-Min Yoon[1]; Joong Yeon Cho[1]; Heon Lee[1]; [1]Korea University

9:40 AM
Indium-Gallium-Zinc-Oxide Based Thin-Film-Transistor for Display Devices.: Sonachand Adhikari[1]; Rajeev Gupta[1]; *Deepak*[1]; Ashish Garg[1]; [1]Indian Institute of Technology Kanpur

10:00 AM
Production and Characterization of ASTM F75 Balls Produced by the Uniform-Droplet Spray Process: *Sudesna Roy*[1]; Teiichi Ando[1]; [1]Northeastern University

10:20 AM Break

10:30 AM
Preparation and Characterization of Microfibrous Entrapped Solid Adsorbents for Desulfurization of Liquid Fuels: *David Cocke*[1]; Mohammad Islam[1]; Jewel Gomes[1]; Eric Peterson[2]; Morgan Reed[1]; Doanh Tran[1]; Hylton McWhinney[3]; [1]Lamar University; [2]Fluor; [3]Prairie View A&M University

10:50 AM
Energy Efficient Sintering of Al/Cu Nanocomposites Using Different Microwave Power Levels: *Shashank Nawathe*[1]; W.L.E. Wong[2]; M. Gupta[2]; [1]University of California, Berkeley; [2]National University of Singapore

11:10 AM
Microstructural Characterization of Shape Memory Alloys for Ferromagnetic Applications: *F. Khalid*[1]; [1]GIK Institute of Engineering Science and Technology

11:30 AM
Anisotropic Crystallization of Uniaxially Pressed Mixed Rare Earth-Iron-Boron Alloys: *Nathaniel Oster*[1]; Iver Anderson[2]; Wei Tang[2]; Yaqiao Wu[2]; Kevin Dennis[2]; Matthew Kramer[2]; R. McCallum[2]; [1]Iowa State University; [2]Ames Lab

11:50 AM
The Effect of Sputtering Parameters on the Phase Formation of Sputtered Tantalum: *Anahita Navid*[1]; Andrea Hodge[1]; [1]University of Southern California

12:10 PM
TiO2 Aggregates for Dye-Sensitized Solar Cells Application: *Qifeng Zhang*[1]; Xiaoyuan Zhou[1]; Christopher Dandeneau[1]; Kwangsuk Park[1]; Supan Yodyingyong[1]; Guozhong Cao[1]; [1]University of Washington

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, Argonne National Laboratory

Wednesday AM Room: 206
February 17, 2010 Location: Washington State Convention Center

Session Chair: Joseph Pomykala, Argonne National Laboratory

8:30 AM
Preliminary Research on Preparation Al-Si-Ti Alloy with Aluminum Ash as Electrolysis Materials: Liu Qingsheng[1]; *Xue Jilai*[2]; Jing Qingxiu[1]; [1]Jiangxi University of Science and Technology; [2]University of Science and Technology Beijing

8:50 AM
Effective Utilization of Wastes Generated in the Integrated Aluminium Production - A Review: *Narasimharaghavan Krishnaswamy*[1]; Nand Kumar Kshatriya[1]; Bibhu Mishra[1]; Ramaswamy Jagannathan[1]; Durba Khasyap[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

9:10 AM
Stabilization of Chromium-Based Slags with MgO: Hugo Cabrera-Real[1]; *Antonio Romero-Serrano*[1]; Beatriz Zeifert[1]; Manuel Hallen-Lopez[1]; [1]IPN

9:30 AM
Preparation of Potassium Ferrate by Hypochlorite Oxidation Method: Guomin Jiang[1]; *Liyuan Chai*[1]; Yunyan Wang[1]; Yude Shu[1]; Min Yue[1]; [1]Central South University

9:50 AM Break

10:00 AM
Isotherm and Kinetics Studies of the Biosorption of Cobalt from Aqueous Solutions by Waste Materials: *Chen Yunnen*[1]; Fan Jingbiao[1]; [1]Jiangxi University of Science and Technology

10:20 AM
Novel Technology for Wastewater Treatment by Biologics in Hydrometallurgical Processes of Lead-Zinc: Qingwei Wang[1]; *Liyuan Chai*[1]; Yunyan Wang[1]; Qingzhu Li[1]; Zhihui Yang[1]; [1]Central South University

10:40 AM
Study on the In-Situ Remediation of Cr-Contaminated Soil by Indigenous Microorganism: *Shunhong Huang*[1]; [1]Hunan Research Institute of Nonferrous Metals, Changsha

11:00 AM
The Optimum Condition for Cr(VI) Bioremediation in Soils Contaminated by Chromate Ore Processing Residue: Changqing Su[1]; *Yonghua Zhu*[1]; Bing Wang[1]; Hangbin Li[1]; Yingping Liao[1]; [1]Central South University

11:20 AM
Thermodynamic Equilibrium of Hydroxyl Complex Ions in Mn2+-H2O System: Fei Pei[1]; *Yunyan Wang*[1]; Liyuan Chai[1]; [1]Central South University

Sustainable Materials Processing and Production: Sustainable Technologies I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Wednesday AM Room: 2B
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Randolph Kirchain, Massachusetts Institute of Technology; Gabrielle Gaustad, Rochester Institute of Technology

8:30 AM Introductory Comments

8:35 AM Keynote
IT and Sustainability: The Power to Transform: *Joe Johnson*[1]; [1]Cisco Systems, Inc.

9:00 AM Invited
'Slag Valorisation', as an Example of High Temperature Industrial Ecology: *Daneel Geysen*[1]; Peter Jones[1]; Arnout Sander[2]; Yiannis Pontikes[1]; Özlem Cizer[3]; Tom Van Gerven[4]; Marc Craps[5]; Johan Eyckmans[5]; Bart Blanpain[1]; [1]MTM KULeuven; [2]InsPyro; [3]BWK, KULeuven; [4]CIT KULeuven; [5]HUB

9:25 AM
Sustainability Study in Selective Laser Sintering – An Energy Perspective: *Rameshwar Sreenivasan*[1]; David Bourell[1]; [1]The University of Texas at Austin

9:50 AM Invited
2010 Vittorio de Nora Award Winner: **Designing Crushing and Grinding Circuits for Improved Energy Efficiency**: *Zeljka Pokrajcic*[1]; [1]WorleyParsons Services Pty Ltd – Minerals and Metals

10:15 AM Break

10:30 AM
Energy and Environmental Challenges in Aluminium Industry - A Review: *Narasimharaghavan Krishnaswamy*[1]; Bibhu Mishra[1]; Ramaswamy Jagannathan[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.), BALCO Nagar, Korba

10:55 AM
Towards Sustainable Material Usage: Investigating Limits to Secondary Aluminum Sinks: *Gabrielle Gaustad*[1]; Elsa Olivetti[2]; Randolph Kirchain[2]; [1]Rochester Institute of Technology; [2]MIT

11:20 AM
Use of Eco Friendly Alternate Refining Flux in Aluminium Cast House - A Step Towards Sustainable Development: *Narasimharaghavan Krishnaswamy*[1]; Mousumi Kar[1]; T. Prabu[1]; Charulata Mathur[1]; Gautam Dey[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

11:45 AM
Sustainable Electrolysis for Electrowinning and Electrorefining of Metals: *Geir Martin Haarberg*[1]; [1]Norwegian University of Science and Technology

12:10 PM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Grain Boundaries and Interface Structure and Properties: Joint Session with Solid-State Interfaces

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, Univ of Groningen

Wednesday AM Room: 603
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Vaclav Paidar, Institute of Physics AS CR vvi; Alan Needleman, University of North Texas; Antonia Antoniou, Georgia Institute of Technology

8:30 AM Invited
The Simulation of Grain Boundaries in Single Component and Multi-Component Systems: *Adrian Sutton*[1]; Alvin Chua[1]; Nicole Benedek[1]; Lin Chen[1]; Manuel Kurdian[1]; Sebastian von Alfthan[2]; Peter Haynes[1]; Kimmo Kaski[2]; Mike Finnis[1]; [1]Imperial College London; [2]Helsinki University of Technology

8:55 AM Invited
Structure and Properties of Metal/Ceramic Interfaces in Materials Systems: *Manfred Ruehle*[1]; [1]MPI for Metals Research

9:20 AM Invited
Elastic and Anelastic Interface Properties in Martensitic Transformations: *Robert Pond*[1]; John Hirth[2]; [1]University of Exeter; [2]Private Individual

9:45 AM
Response of a Σ 11 Asymmetric Tilt Grain Boundary in Copper to an Applied Shear Stress at Finite Temperatures: *Saryu Fensin*[1]; Mark Asta[1]; Richard Hoagland[2]; [1]University of California, Davis; [2]Los Alamos National Laboratory

10:10 AM Break

10:30 AM Invited
Crystal Symmetry and Burgers-Vector Content of Grain Boundaries: *J. Cahn*[1]; Y. Mishin[2]; [1]National Institute of Standards and Technology; [2]George Mason University

10:55 AM Invited
Temperature Dependence of Grain Boundary Properties: *Stephen Foiles*[1]; Elizabeth Holm[1]; David Olmsted[2]; [1]Sandia National Laboratories; [2]Northeastern University

11:20 AM
Heterophase Segregation on an Atomic Scale: Atom-Probe Tomographic Experiments and First-Principles Simulation: *David Seidman*[1]; [1]Norhwestern University

11:35 AM
Full Delineation of Harrison's Diffusion Kinetics Regimes for Grain Boundary Diffusion: A Monte Carlo Study: *Graeme Murch*[1]; Irina Belova[1]; Thomas Fiedler[1]; [1]The University of Newcastle

Thermo-Mechanical Response of Molecular Solids: Multi-Resolution Theory, Simulations, and Experiments: Polymers and Composites

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division
Program Organizers: Alejandro Strachan, Purdue University; Thomas Sewell, University of Missouri-Columbia; Rodolfo Pinal, Purdue University; Chunyu Li, Purdue University

Wednesday AM Room: 203
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited
Carbon Nanotube Adhesion: Myths and Magic: *R. Pipes*[1]; [1]Purdue University

9:05 AM
Characterization of Material Response to Indentation Process in Composite Materials: *Harsha Yejju*[1]; Alvaro Mendoza[1]; Marisol Koslowski[1]; [1]Purdue University

9:25 AM
Microstructure Sensitive Design Framework for Elastic-Plastic Multi-Phase Materials: *Jacqueline Milhans*[1]; Dongsheng Li[1]; Hamid Garmestani[1]; [1]Georgia Institute of Technology

9:45 AM
Role Loading Conditions on the Mechanical Response of PMMA from Molecular Dynamics: *Eugenio Jaramillo*[1]; Alejandro Strachan[2]; [1]Texas A&M International University; [2]Purdue University

10:05 AM Invited
Multiscale Modeling of Polymer Modified Colloidal Suspensions: *Dmitry Bedrov*[1]; [1]University of Utah

10:35 AM Break

10:50 AM Invited
Implications of Dynamic Heterogeneity for Mechanical Behavior of Glassy Polymers: Grigori Medvedev[1]; *James Caruthers*[1]; [1]Purdue University

11:20 AM Invited
Mechanical Properties of Block Copolymer Self-Assemblies: *Kim Rasmussen*[1]; [1]Los Alamos National Laboratory

11:50 AM
Molecular Dynamics Simulations of Crosslinked EPON862/DETDA Polymers: *Chunyu Li*[1]; Alejandro Strachan[1]; [1]Purdue University

12:10 PM
Role of Interface Thermal Boundary Resistance, Straining and Morphology in Thermal Conductivity of a Set of Si-Ge Superlattices and Biomimetic Si-Ge Nanocomposites: *Vikas Samvedi*[1]; Vikas Tomar[2]; [1]University of Notre Dame; [2]Purdue University

Three-Dimensional Materials Science VI: Novel Tools for 3D Data Acquisition and Analysis - Part I

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee

Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Wednesday AM Room: 401
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Alexis Lewis, U S Naval Research Laboratory; John Budai, Oak Ridge National Laboratory

8:30 AM Invited
3-D Materials Science using Polychromatic Synchrotron X-Ray Microdiffraction: *John Budai*[1]; Jon Tischler[1]; Wenjun Liu[2]; Anthony Rollett[3]; [1]Oak Ridge National Laboratory; [2]Argonne National Lab; [3]Carnegie Mellon University

9:00 AM
Applications of a Local-Electrode Atom-Probe (LEAP) 4000X Si for Obtaining Three-Dimensional Chemical Information with Subnanoscale Resolution: *David Seidman*[1]; [1]Norhwestern University

9:20 AM
Partitioning Behavior of Al and Si in FINEMET Nanocrystalline Soft Magnetic Alloys, as Studied by Atom-Probe Tomography: *Keith Knipling*[1]; Maria Daniil[1]; Matthew Willard[1]; [1]Naval Research Laboratory

9:40 AM
Recent Advances in Atom Probe Tomography for 3D Microstructural Characterization: *Michael Miller*[1]; [1]ORNL

10:00 AM
Atom Probe Studies on the Segregation of C and N in Fe-17%Mn Steels: *Jae-Bok Seol*[1]; Soon-Ki Lee[2]; Chan-gyung Park[3]; [1]POSTECH; [2]POSCO; [3]POSTECH, NCNT

10:20 AM Break

10:50 AM
Correlative Microscopy: 3-D Multiscale Imaging and Modelling: *Farid Tariq*[1]; Ralph Haswell[2]; Peter Lee[1]; David McComb[1]; [1]Imperial College London; [2]Shell Global Solutions International B.V.

11:10 AM
Multi-Scale Characterization of a Ni-Base Single Crystal Turbine Blade: *Michael Groeber*[1]; Dennis Dimiduk[1]; Chris Woodward[1]; Michael Uchic[1]; Rebecca Fahringer[1]; [1]AFRL

11:30 AM
Multi-Length Scale Three Dimensional Characterization of Tantalum Carbide Microstructures: *Robert Morris*[1]; Gregory Thompson[1]; [1]The University of Alabama

11:50 AM
A Crystal-Plasticity FEM Study on Effects of Simplified Grain Representation and Mesh Types on Mesoscopic Deformation Heterogeneities: *Yoon Suk Choi*[1]; Michael Groeber[2]; Dennis Dimiduk[2]; Christopher Woodward[2]; Michael Uchic[2]; Triplicane Parthasarathy[1]; [1]UES, Inc.; [2]Air Force Research Laboratory

Ultrafine Grained Materials – Sixth International Symposium: Young Scientist

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Wednesday AM Room: 606
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Terry Langdon, University of Southern Californis; Suveen Mathaudhu, U.S. Army Research Laboratory; Yuntian Zhu, North Carolina State University; Terry Lowe, Manhatten Scientifics, Inc.

8:30 AM
Grain Growth Kinetics for an Aluminum Based Nanocmposite: *Leyla Hashemi-Sadraei*[1]; Rustin Vogt[1]; Zhihui Zhang[1]; Ying Li[1]; S. Ebrahim Mousavi[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California, Davis

8:45 AM
Influence of High-Pressure Torsion on Hardness of a Supersaturated Al-7136 Alloy: *Zhi Duan*[1]; Xiaozhou Liao[2]; Megumi Kawasaki[1]; Roberto Figueiredo[1]; Terence Langdon[1]; [1]University of Southern California; [2]University of Sydney

9:00 AM
Microstructural Characterization of Ti-6Al-4V Metal Chips by Focused Ion Beam and Transmission Electron Microscopy: *Lei Dong*[1]; Judy Schneider[1]; Jane Howe[2]; [1]Mississippi State University; [2]Oak Ridge National Laboratory

9:15 AM
UFG Aluminum Alloy Tested in Dynamic High Temperature Compression: *Emily Huskins*[1]; K. Ramesh[1]; [1]Johns Hopkins University

9:30 AM
Work-Hardening Stages of AA1070 and AA6060 after Severe Plastic Deformation: *Matthias Hockauf*[1]; Lothar W. Meyer[1]; Ines Schneider[2]; [1]Chemnitz University of Technology; [2]Wehrwissenschaftliches Institut für Werk- und Betriebsstoffe

9:45 AM
Unusual Macro-Structure and Hardness Patterns in Duplex Stainless Steel Processed by High-Pressure Torsion: *Yang Cao*[1]; Yanbo Wang[1]; Saleh Alhajeri[2]; Xiaozhou Liao[1]; Simon Ringer[1]; Terence Langdon[3]; Yuntian Zhu[4]; [1]The University of Sydney; [2]University of Southampton; [3]University of Southern California; [4]North Carolina State University

10:00 AM
Improvement of Strength and Ductility for an AA6065 Aluminium Alloy Achieved by a Combination of Equal-Channel Angular Pressing and Ageing Treatment: Lothar W. Meyer[1]; *Kristin Hockauf*[1]; Matthias Hockauf[1]; Thorsten Halle[1]; [1]Chemnitz University of Technology

10:15 AM Break

10:30 AM
Aging of an Al-Si-Mg Alloy Processed by ECAP: The Effect of the Initial Microstructure: *Edgar Garcia-Sanchez*[1]; Edgar Ortiz-Cuellar[1]; Edgar Lopez-Chipres[2]; Martha P. Guerrero-Mata[1]; Rafael Colás[1]; [1]FIME-UANL; [2]Facultad de Quimica, Univerisdad Juarez del Edo. deDurango

10:45 AM
Grain Size Effect on the Deformation Mechanisms and Mechanical Properties of Gum Metals: *Yanbo Wang*[1]; Xiaozhou Liao[1]; Yonghao Zhao[2]; Enrique Lavernia[2]; Ruslan Valiev[3]; [1]The University of Sydney; [2]University of California, Davis,; [3]Ufa State Aviation Technical University

11:00 AM
Equal Channel Angular Pressing of Pure Gold: *Anumalasetty Nagasekhar*[1]; T. Rajkumar[2]; D. Stephan[2]; Y. Tick-Hon[3]; [1]The University of Queensland; [2]Heraeus Materials Singapore Pte Ltd; [3]University of Toronto

11:15 AM
Synthesis of Bulk Nanostructured Cu via Spark Plasma Sintering and High Pressure Torsion of Cryomilled Powders: *Haiming Wen*[1]; Yonghao Zhao[1]; Osman Ertorer[1]; Troy Topping[1]; Ruslan Valiev[2]; Enrique Lavernia[1]; [1]University of California at Davis; [2]Ufa State Aviation Technical University

11:30 AM
Continuous High Pressure Torsion: *Kaveh Edalati*[1]; Zenji Horita[1]; [1]Kyushu University

11:45 AM
Unconventional ECAE Processing of Magnesium Alloys: *David Foley*[1]; Majid Al-Maharbi[1]; K.T. Hartwig[1]; Ibrahim Karaman[1]; Hans Maier[2]; L.J. Kecskes[3]; Suveen Mathaudhu[3]; [1]Texas A&M University; [2]University of GH Paderborn; [3]US Army Research Lab

12:00 PM
Thermal Stability of Ultrafine Grained 316 Austenitic Stainless Steel: *Auriane Etienne*[1]; Bertrand Radiguet[1]; Ruslan Valiev[2]; Cécile Genevois[1]; Jean-Marie Le Breton[1]; Philippe Pareige[1]; [1]GPM UMR CNRS 6634; [2]Institute of Physics of Advanced Materials

12:15 PM
A Study of the Thermal Stability of Nano-Twinned Copper: *Christopher Saldana*[1]; Sergey Suslov[1]; Matthew Hudspeth[1]; Eric Stach[1]; Srinivasan Chandrasekar[1]; [1]Purdue University

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Characterization of Nanomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Wednesday PM — Room: 214
February 17, 2010 — Location: Washington State Convention Center

Session Chair: Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas

2:00 PM Introductory Comments

2:05 PM
The Investigation on Internal Structure of Spherical Graphites in Ductile Cast Iron by Transmission Electron Microscopy: *Ali-Reza Kaini-Rashid*[1]; Arash Elhami-Khorasani[1]; [1]Ferdowsi University of Mashhad

2:25 PM
Selective Placement of Single Nanoparticles of Different Sizes: *Pradeep Bhadrachalam*[1]; Seong Jin Koh[1]; [1]University of Texas at Arlington

2:45 PM
Activation Energy for Crystallization in Nanocrystalline Exchange Coupled Magnets: *Matthew Willard*[1]; Maria Daniil[2]; B. Hornbuckle[3]; Juan Saavedra[4]; [1]Naval Research Laboratory; [2]George Washington University; [3]University of Alabama - Tuscaloosa; [4]University of Puerto Rico - Mayaguez

3:05 PM
Tunneling Spectroscopy of Colloidal Nanoparticles: *Ramkumar Subramanian*[1]; Pradeep Bhadrachalam[1]; Seong Jin Koh[1]; [1]The University of Texas at Arlington

3:25 PM
Grains Size Effect on Density of Geometrically Necessary Dislocations: *Eduard Kozlov*[1]; Nina Koneva[1]; [1]Tomsk State University of Architecture and Building

3:45 PM Break

4:00 PM
A Comparative Study of Characterization of CNT Turfs by Means of SEM Analysis and Stereological Techniques: *H. Malik*[1]; K. Stephenson[1]; D.F. Bahr[1]; D.P. Field[1]; [1]Washington State University

4:20 PM
Nucleation Energetics and Kinetics of Solidification in Nanoscale Metallic Droplets: *Ritesh Sachan*[1]; J. Strader[1]; H. Krishna[2]; A.K. Gangopadhyay[2]; R. Kalyanaraman[1]; [1]University of Tennessee-Knoxville; [2]Washington University

4:40 PM
Preparation, Characterization and Antibacterial Properties of Ag-Doped MgO/TiO2 Nanoparticles: Guoliang Li[1]; *Peng Bing*[1]; Liyuan Chai[1]; Yajun Gu[1]; [1]Central South University

5:00 PM
Synthesis and Performance Study of Sn-Doped Nanometer Rutile TiO2 Powder: *Wu Daoxin*[1]; [1]Changsha University of Science and Technology

5:20 PM Concluding Comments

Advanced Materials and Fuels Enabling Future Fusion, Fission and Hybrid Reactor Systems: Diagnostics and Structural Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Joseph Farmer, Lawrence Livermore National Laboratory; Thomas M. Anklam, Lawrence Livermore National Laboratory; Magdalena Serrano de Caro, Lawrence Livermore National Laboratory

Wednesday PM — Room: 3A
February 17, 2010 — Location: Washington State Convention Center

Session Chairs: Joseph Farmer, Lawrence Livermore National Laboratory; Magdalena Serrano de Caro, Lawrence Livermore National Laboratory

2:00 PM Introductory Comments

2:05 PM Plenary
MaRIE (Matter-Radiation Interactions in Extremes): An Experimental Facility Concept: *Jack Shlachter*[1]; [1]Los Alamos National Laboratory

2:45 PM Invited
TEM Study of Oxide Nanoparticles in ODS Steels Developed for Radiation Tolerance: *Luke Hsiung*[1]; Michael Fluss[1]; Joshua Kuntz[1]; Bassem El-Dasher[1]; William Choi[1]; Scott Tumey[1]; [1]Lawrence Livermore National Laboratory

3:15 PM Invited
A Small Angle X-Ray Scattering Study of Helium/Nano-Oxide Structure in ODS Steels: *B. S. El-Dasher*[1]; J. D. Kuntz[1]; M. Caro[1]; S. O. Kucheyev[1]; T. Van Buuren[1]; T. M. Willey[1]; A. Kimura[2]; J. Farmer[1]; [1]Lawrence Livermore National Laboratory; [2]Kyoto University

3:40 PM Break

3:50 PM
Atomic Level Characterization of Advanced Radiation Tolerant Steels: *Michael Miller*[1]; D.T. Hoelzer[1]; K.F. Russell[1]; [1]Oak Ridge National Laboratory

4:10 PM Invited
The Corrosion of Oxide Dispersion Strengthened (ODS) Ferritic Steel in Molten Fluoride Salts: *Joseph Farmer*[1]; [1]Lawrence Livermore National Laboratory

4:35 PM
Magnetic Environment-Dependent Migration Pathways of Point Defects in Fe-Cr Alloys: *Duc Nguyen-Manh*[1]; Mikhail Lavrentiev[1]; [1]UKAEA

4:55 PM Invited
Tungsten-Rhenium Super Alloy Development for Ultra High Temperature Space Fission and Fusion Reactors: Jonathan Webb[1]; *Indrajit Charit*[2]; [1]Center for Space Nuclear Research; [2]University of Idaho

5:25 PM Invited
Radiation Damage Study in Mo by in situ TEM/Ion Irradiation and Computer Modeling: *Meimei Li*[1]; Mark Kirk[1]; Pete Baldo[1]; Donghua Xu[2]; Thibault Faney[2]; Brian Wirth[2]; [1]ANL; [2]University of California

5:55 PM Concluding Comments

Advances in Composite, Cellular and Natural Materials: Composites and Modelling

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Yuyuan Zhao, The University of Liverpool; David Dunand, Northwestern University

Wednesday PM Room: 305
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Larry Murr, University of Texas at El Paso; Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

2:00 PM
An Accurate and Efficient Method for Constituent-Based Progressive Failure Modeling of a Woven Composite: *Ray Fertig*[1]; [1]Firehole Technologies

2:20 PM
Micro-Mechanical Modeling and Simulations Composites Using Reconstructed Three-Dimensional Microstructures: *Arun Gokhale*[1]; Arun Sreeranganathan[2]; Harpreet Singh[1]; Yuxiong Mao[1]; [1]Georgia Institute of Technology; [2]Stress Engineering Services Inc

2:40 PM
Size Dependent Ductile Failure Analysis of Particle-Reinforced Composites via Finite Element Modeling of Dislocation Punched Zone: *Yeong Sung Suh*[1]; Yong Bae Kim[1]; Shailendra P. Joshi[2]; K. T. Ramesh[3]; [1]Hannam University; [2]National Singapore University; [3]Johns Hopkins University

3:00 PM
SMT Reflow Jig Material Analysis: *Xin Ma*[1]; [1]Samsung Electronics (Suzhou) Semiconductor Co.Ltd / SESS

3:20 PM
Microstructure in Work-Hardened Micro-Truss Materials Given Post-Forming Annealing Treatments: *Brandon Bouwhuis*[1]; Uta Klement[2]; Glenn Hibbard[1]; [1]University of Toronto; [2]Chalmers Institute of Technology

3:40 PM Break

4:00 PM
Wear Behavior of SiC /Al-Si Alloy Matrix Composites Produced by Squeeze Casting: *Muna Abbass*[1]; [1]University of Technology, Baghdad

4:20 PM
Influence of Heating of Al2O3 Particle with Holding Time Variation to Compactibility of Al/Al2O3 Isotropic Composite: *Widyastuti*[1]; Mochamad Zainuri[1]; Agita Riani[1]; [1]ITS Surabaya

4:40 PM
Effect of Vacuum Degassing on Composites Preparation: *Che Dehui*[1]; Yao Guangchun[1]; Kang Wei[1]; Zhang Xiaoming[1]; [1]Institute of Materials and Metallurgy, Northeastern University

5:00 PM
Fabrication of Carbon Nanotube Grown on Al Powders Reinforced Al Matrix Composite: Chitoshi Masuda[1]; *Fumio Ogawa*[2]; Ryoichi Hirashima[2]; [1]Waseda University; [2]Graduate School of Waseda University

5:20 PM
Diffusion of Liquid Media in Vulkanizats: *Milena Milenova*[1]; Verjinia Aleksandrova[1]; Aleksandar Aleksandrov[1]; Gunai Halil[1]; [1]University of Chemical Technologi and Metallurgy- Sofia

Alumina and Bauxite: Bauxite Characterization and Handling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Wednesday PM Room: 612
February 17, 2010 Location: Washington State Convention Center

Session Chair: Jorge Aldi, Alunorte

2:00 PM Introductory Comments

2:10 PM
Reduction Roasting and Fe-Al Separation of High Iron Content Gibbsite-Type Bauxite Ores: *Guanghui Li*[1]; Na Sun[1]; Jinghua Zeng[1]; Zhongping Zhu[1]; Tao Jiang[1]; [1]School of Minerals Processing & Bioengineering; Central South University

2:40 PM
Study and Application of an Improved Sintering Process with Pre-Drying of Raw Material Slurries: *Hengqin Zhao*[1]; Baozhong Lu[2]; Hualong Ma[1]; [1]Zhengzhou Institute of Multipurpose Utilization of Mineral Resources, CAGS; [2]Shanxi Zhongke PACL Co. Ltd

3:10 PM
Bayer Process and Soda-Lime Sintering Process of Special Diasporic Bauxite with High Silica: *Cao Wenzhong*[1]; Tian Weiwei[1]; Shong Hong[1]; [1]Environmental and Chemical Engineering Institute, Nanchang University

3:40 PM Break

4:00 PM Discussion Time

Alumina and Bauxite: Industry Trends and Issues

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Wednesday PM Room: 611
February 17, 2010 Location: Washington State Convention Center

Session Chair: Benny Raahauge, FLSmidth Denmark

2:00 PM Introductory Comments

2:10 PM
Heat Transfer in the Bayer Process: *Daniel Thomas*[1]; Michael Evans[1]; [1]WorleyParsons

2:40 PM
Sustainable Bauxite Mining - A Global Perspective: Christian Wagner[1]; Bauxite & Alumina Committee of the International Aluminium Institute[1]; [1]International Aluminium Institute

3:10 PM Break

3:30 PM
The Need for Energy Efficiency in Bayer Refining: *Lawrie Henrickson*[1]; [1]WorleyParsons

4:00 PM
A Case for Replication of Alumina Plants: *Anthony Kjar*[1]; [1]Gibson Crest Pty Ltd

Aluminum Alloys: Fabrication, Characterization and Applications: Emerging Technologies

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Subodh Das, Phinix LLC; Steven Long, Kaiser Aluminum Corporation; Tongguang Zhai, University of Kentucky

Wednesday PM Room: 615
February 17, 2010 Location: Washington State Convention Center

Session Chair: Subodh Das, Phinix LLC.

2:00 PM
Microstructure of Ultrasonic Impact Treated Aluminum 5456-H116: *Kim Ngoc Tran*[1]; Elissa Bumiller[1]; Lourdes Salamanca-Riba[2]; [1]Naval Surface Warfare Carderock Division; [2]Univeristy of Maryland

2:20 PM
Charge Weld Effects in High Cycle Fatigue Behavior of a Hollow Extruded AA6082 Profile: *Nicholas Nanninga*[1]; Calvin White[2]; [1]NIST; [2]Michigan Technological University

2:40 PM
Ag Nanoparticles Dispersion on Surface-Modified Al Alloy Porous Body and Their Filtration Properties: Young Ik Seo[1]; Se Hwan An[1]; Dae-gun Kim[1]; Kyu Hwan Lee[2]; *Young Do Kim*[1]; [1]Hanyang University; [2]Korea Institute of Science and Technology

3:00 PM
Incubation Behavior of Hg-LME in Aluminum: Scott Keller[1]; *Ali Gordon*[1]; [1]University of Central Florida

3:20 PM
Recent Advances in FSW Joining of Sheets on Structural Extruded Profiles: *Lorenzo Donati*[1]; [1]University of Bologna

3:40 PM Break

3:55 PM
Adiabatic Shear Localization of Al-Sc Alloy at Extremely High Strain Rates: *Woei-Shyan Lee*[1]; Tao-Hsing Chen[2]; Ging-Ting Lu[1]; [1]Department of Mechanical Engineering, National Cheng Kung University; [2]Center for Micro/Nano Science and Technology, National Cheng Kung University

4:15 PM
Effect of Electric Potential on the Evolution of Defect Substructure and Fracture Surface of Aluminum under Creep: Sergey Konovalov[1]; Oksana Stolboushkina[1]; Yurii Ivanov[2]; Roman Filipiev[1]; *Viktor Gromov*[1]; [1]Siberian State Industrial University; [2]Institute of High Current Electronics Siberian Brach of Russian Academy of Science

4:35 PM
Using Artificial Neural Network to Optimize the Bakehardening of AL2024 and AL7075: *Niloofar Kamkar Zahmatkesh*[1]; Kamran Dehghani[1]; Atiyeh Nekahi[1]; [1]Amirkabir University of Technology

4:55 PM
Defects Producing Formation of Microcracks in Aluminum during Electrochemical Charging with Hydrogen: *Paul Rozenak*[1]; [1]Hydrogen Energy Batteries LTD

Aluminum Reduction Technology: Hall-Héroult Cell: Process Control

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Wednesday PM Room: 608
February 17, 2010 Location: Washington State Convention Center

Session Chair: Alan Phillips, KTD LLC

2:30 PM Introductory Comments

2:40 PM
Continuous Improvement in Aluminium Reduction Cell Process Performance with the ALPSYS® Control System: *Sylvain Fardeau*[1]; Benoît Sulmont[1]; Philippe Vellemans[1]; Claude Ritter[1]; [1]Rio Tinto Alcan

3:10 PM
A Nonlinear Model Based (NMPC) Control Strategy for the Aluminium Electrolysis Process: *Steinar Kolas*[1]; Stein Wasbø[2]; [1]Hydro; [2]Cybernetica AS

3:40 PM
CVG-Venalum Potline Control and Supervisory Integrated System VEN-PCSIS: *Jose Ramones*[1]; Frangil Ramirez[1]; María Colmenares[1]; Jesus Larez[1]; Jesus Gonzalez[1]; [1]CVG Venalum

4:10 PM Break

4:20 PM
Efficient Thermal Balance Strategy Developed by CVG Venalum: *Maria Colmenares*[1]; Adela Ruiz[1]; Jesus Imery[1]; [1]CVG Venalum

4:50 PM
Usage of Fuzzy Logic as a Strategy for the Aluminium Fluoride Addition in Electrolytic Cells: *Fabio Soares*[1]; [1]Exodus

5:20 PM
Development and Application of a Multivariate Process Parameters Intelligence Control Technology for Aluminum Reduction Cells: *Yi Xiaobing*[1]; Tian Qinghong[1]; [1]CHALIECO

5:50 PM Concluding Comments

Biological Materials Science: Surface Engineering: Biomimetics and Biological Applications

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Wednesday PM Room: 205
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Marc Meyers, UCSD; Devesh Misra, University of Louisiana

2:00 PM Invited
Oxide Wettability: Jim Ruud[1]; *Molly Gentleman*[2]; [1]GE Global Research; [2]Texas A&M University

2:30 PM
In situ Biomimetic Ceramic Coatings: Jadid Samad[1]; *John Nychka*[1]; [1]University of Alberta

2:50 PM
Surface Modification of Laser Processed Nitinol: *Sheldon Bernard*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

3:10 PM
Grain Boundary Grooving and Its Effect on Biological Response: *Wah Wah Thein-Han*[1]; Devesh Misra[1]; Mahesh Somani[2]; Pentti Karjalainen[2]; [1]University of Louisiana; [2]University of Oulu

3:30 PM
Interaction of Ti-Fe Based Alloys with L929 Cells: *Arnaud Caron*[1]; Dmitri Louzguine-Luzgin[2]; Franz-Günter Sander[3]; Akihisa Inoue[2]; Hans-Jörg Fecht[1]; [1]Institute of Micro- and Nanomaterials, University Ulm; [2]WPI Advanced Institute for Materials Research, Tohoku University; [3]Department of Orthodentics, University Ulm

3:50 PM Break

4:00 PM
Bone Cell Infiltration in Porous Graphitic Surfaces: Influence of Surface Coatings and Nanotube Grafting: *Sharmila Mukhopadhyay*[1]; Elizabeth Maurer[1]; Saber Hussain[2]; [1]Wright State University; [2]Air Force Research Laboratory

4:20 PM
Bovine Serum Albumin Protein Adsorption and Release on Electrically Polarized Biphasic Calcium Phosphates: *Mohammad Tarafder*[1]; Subhadip Bodhak[1]; Shashwat Banerjee[1]; Amit Bandyopadhyay[1]; Susmita Bose[1]; [1]Washington State University

4:40 PM
Magnetic Nanoparticle Interactions with Hydroxyapatite: *Otto Wilson*[1]; Meron Haimanot[1]; [1]Catholic University of America

5:00 PM
Solid-Binding Peptide-Based Antibacterial Implants: *Hilal Yazici*[1]; Mary Rood[1]; Brandon Wilson[1]; Mustafa Gungormus[1]; Candan Tamerler[1]; Mehmet Sarikaya[1]; [1]University of Washington

5:20 PM
Development of Anti-Microbial Silver Coating on Stainless Steel: *Paul DeVasConCellos*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; Lewis Zirkle[2]; [1]BRC, Washington State University; [2]Surgical Implant Generation Network (SIGN)

Bulk Metallic Glasses VII: 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: 213
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Christopher Schuh, MIT; John Lewandowski, Case Western Reserve University

2:00 PM Invited
Influence of Condensed Bond Enthalpy on Metallic Glass Stability: *Dan Miracle*[1]; Garth Wilks[2]; Amanda Dahlman[3]; [1]AF Research Laboratory; [2]General Dynamics, Inc.; [3]SOCHE

2:20 PM
Model Experiments to Mimic Fracture Surface Features in Metallic Glasses: *Lisa Deibler*[1]; John Lewandowski[1]; [1]Case Western Reserve University

2:30 PM Invited
Modeling the Mechanical Behavior of Metallic Glasses Using STZ Dynamics: Eric Homer[1]; *Christopher Schuh*[1]; [1]MIT

2:50 PM
Continuum Model for Bulk Metallic Glass Composites: *Fadi Abdeljawad*[1]; Mikko Haataja[1]; [1]Princeton University

3:00 PM Invited
Deformation and Failure of Glasses at Nanoscale: *Ju Li*[1]; Erik Bitzek[1]; [1]University of Pennsylvania

3:20 PM
Numerical Deformation Simulations on Bulk Metallic Glasses Using First-Principles Methods: *Lizhi Ouyang*[1]; Despina Louca[2]; Gongyao Wang[3]; Yoshihito Yokoyama[4]; Peter Liaw[3]; [1]Tennessee State University; [2]University of Virginia; [3]University of Tennessee; [4]Tohoku University

3:30 PM Break

3:40 PM Invited
Simulating Poisson Ratio Effects on Shear Banding Behavior in Metallic Glasses: *James Morris*[1]; Takeshi Egami[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

4:00 PM
Reverse Monte Carlo Simulation of Medium-Range Atomic Order in Bulk Metallic Glass Incorporating Fluctuation Electron Microscopy: *Jinwoo Hwang*[1]; Paul Voyles[1]; [1]University of Wisconsin Madison

4:10 PM
Reliability of Methods of Computer Simulation of Structure of Amorphous Alloys: *Mikhail Mendelev*[1]; Mattew Kramer[1]; [1]Ames Laboratory

4:20 PM Invited
Connecting Atomic Structure and Plastic Deformation in Zr-Based Bulk Metallic Glasses: *Paul Voyles*[1]; Jinwoo Hwang[1]; Jonathan Puthoff[1]; Don Stone[1]; [1]University of Wisconsin, Madison

4:40 PM
Computational Studies on Free Volume and Plastic Flow in Metallic Glasses: *Joshua Askin*[1]; Ashwini Bharathula[1]; Wolfgang Windl[1]; Katharine Flores[1]; [1]The Ohio State University

4:50 PM
Structure and Anelastic Relaxation in Metallic Glasses: *Garth Wilks*[1]; Daniel Miracle[1]; Amanda Dahlman[1]; [1]Air Force Research Laboratory

5:00 PM
Avalanches, Size-Effects, and Critical Behavior in Shared Model Metallic Glasses: K. Michael Salerno[1]; *Craig Maloney*[2]; Mark Robbins[1]; [1]Johns Hopkins; [2]Carnegie Mellon University / Civil & Environmental Engineering

5:10 PM Invited
Stress and Temperature Induced Phase Transformation in Zr-Based Metallic Glass via Molecular Dynamics Simulation: *Yunche Wang*[1]; Chun-Yi Wu[1]; Jinn Chu[2]; Yanfei Gao[3]; Peter Liaw[3]; [1]National Cheng Kung University; [2]National Taiwan University of Science and Technology; [3]The University of Tennessee

5:30 PM
Directional Deformation Memory and Orthogonal Bauschinger Effect in Metallic Glasses: *Erik Bitzek*[1]; David Rodney[2]; Ju Li[1]; [1]University of Pennsylvania; [2]Institut Polytechnique de Grenoble

5:40 PM
Atomistic Simulations to Estimate Plasticity of Cu-Zr Bulk Metallic Glasses: *Kyung-Han Kang*[1]; Byeong-Joo Lee[1]; [1]POSTECH

Carbon Management and Carbon Dioxide Reduction: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS Extraction and Processing Division, TMS: Energy Committee
Program Organizers: Subodh Das, Phinix LLC; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, US Magnesium LLC

Wednesday PM Room: 310
February 17, 2010 Location: Washington State Convention Center

Session Chair: Subodh Das, Phinix , LLC

2:00 PM
Upcoming Carbon Management Legislations: Impacts and Opportunities for the Global Aluminum Industry: *Adam Gesing*[1]; Subodh Das[1]; [1]Phinix, LLC

2:30 PM
Cost-Effective Gas Stream Component Analysis Techniques and Strategies for Carbon Capture Systems from Oxy-Fuel Combustion (An Overview): *John Clark*[1]; Danylo Oryshchyn[1]; Thomas Ochs[1]; Steve Gerdemann[1]; Cathy Summers[1]; [1]National Energy Technology Lab

3:00 PM
Strategic Approaches for CO2 Reduction Rate from Fossil Fuel Use in Steel Industry: *Malti Goel*[1]; [1]INSA

3:30 PM
Development of Reverberatory Furnace Using in Copper Scrape Smelting by Reformed Natural Gas: *Mohamed Ahmed Hammad*[1]; [1]CMRDI

4:00 PM Break

4:15 PM
Bauxite Residue Neutralization with Carbon Sequestration: *Luis Venancio*[1]; Emanuel Macedo[2]; Antonio Ernandes Paiva[1]; José Antonio Souza[2]; [1]Federal Institute of Education Science and Technology - Maranháo; [2]Universidade Federal do Pará

4:45 PM
Electrochemical Quartz Crystal Microbalance Study on Carbon Dioxide Adsorption in the Presence of Electrosorbed Hydrogen on Cu-Gold Single Crystals: *Maria Salazar-Villalpando*[1]; [1]National Energy Technology Laboratory

5:10 PM
The Thermal Gas Processing in Pre-Heating Zone of "Water-Jacket" Furnaces in "Trepça": *Ahmet Haxhiaj*[1]; Egzon Haxhiaj[2]; [1]University of Prishtina; [2]American University in Kosovo

5:35 PM
Oxidation Kinetics of Fe-Cr and Fe-V Liquid Alloys under Controlled Oxygen Pressures: *Haijuan Wang*[1]; Nurni Viswanathan[2]; Seshadri Seetharaman[1]; [1]Royal Institute of Technology(KTH), Sweden; [2]Indian Institute of Technology Bombay, Mumbai,India

Cast Shop for Aluminum Production: Cast House Productivity and Strip Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Pierre Le Brun, Alcan Voreppe Research Center

Wednesday PM Room: 609
February 17, 2010 Location: Washington State Convention Center

Session Chair: Philippe JARRY, Unité de Recherches Fonderie ALCAN CRV

2:00 PM
Means of Improving Casthouse Productivity: *Peter Whiteley*[1]; [1]Munimula Technology Pty Ltd

2:25 PM
Estimating the Production Capabilities of Casthouse Equipment Configuration Options: *Phillip Baker*[1]; [1]Hatch Associates

5:50 PM
Electrochemical Characterization of TRC 7072AA for Heat Exchangers: *Aziz Dursun*[1]; Beril Corlu[1]; Canan Inel[1]; Murat Dundar[1]; Rasim Erdogan[1]; Mustafa Ürgen[2]; [1]Assan Aluminium; [2]Istanbul Teknik Üniversitesi

3:15 PM
Influence of the Cooling Water Temperature on Productivity and Product Quality in Twin Roll Casting with Copper Shells: *Mark Badowski*[1]; Eduardo Garate[1]; David Armendariz[1]; [1]Hydro Aluminium

3:40 PM
The Use of Copper Shells by Twin Roll Strip Casters: Aldenir Clemente[1]; John Tsiros[2]; Aristeidis Arvanitis[2]; *Dionisis Spathis*[2]; Hans-Gunter Wobker[3]; [1]Castcom Ltda; [2]Hellenic Aluminium Industry SA (Elval SA); [3]KME Europe

4:05 PM
A TEM Study of the Microstructures of 3003 and 3003-Zr Alloys Produced by Twin Roll Casting: *Beril Corlu*[1]; Ozgur Duygulu[2]; Selda Ucuncuoglu[2]; Gizem Oktay[2]; Aziz Dursun[1]; Murat Dundar[1]; [1]Assan Aluminum; [2]TUBITAK MAM

4:30 PM
Casthouse Design for the Production of Air-Cooled, Low-Profile Aluminium Sows: *Tom Plikas*[1]; Tony Cesta[1]; Lowy Gunnewiek[1]; Michael Trovant[1]; Rui Santiago[1]; Jean Vanasse[2]; [1]Hatch Ltd.; [2]Aluminerie Alouette Inc.

4:55 PM
The Measurement of Heat Flow within a DC Casting Mould: *Arvind Prasad*[1]; John Taylor[1]; Ian Bainbridge[1]; [1]University of Queensland

Characterization of Minerals, Metals and Materials: Characterization of Cu, Zn, Mn, Fe, Au, and Carbon Phases

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Wednesday PM Room: 307
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Tzong Chen, CANMET-MMSL; Yoshitaro Nose, Kyoto University

2:00 PM Introductory Comments

2:10 PM
Ternary Phase Diagram of the Zn-Sn-P System for Fabrication of Znsnp$_2$ Compound Semiconductor: *Yoshitaro Nose*[1]; Noriyuki Tanaka[1]; Tetsuya Uda[1]; [1]Kyoto University

2:35 PM
Microstructure Evolution in Copper-Clad-Steel and Copper-Clad-Aluminum Bimetallic Wires during Drawing Processes: *Taisuke Sasaki*[1]; Robert Morris[1]; Karen Torres[1]; Gregory Thompson[1]; Y. Syarif[2]; D. Fox[2]; [1]University of Alabama; [2]Fushi Copperweld, Inc.

3:00 PM
OIM Characterization of a Jewelry Gold Alloy Subjected to Small-Charge Explosion: Chiara Pozzi[1]; John Bingert[2]; *Donato Firrao*[1]; [1]Politecnico di Torino; [2]Los Alamos National Laboratory

3:25 PM
Characterization of Tin-Rich Copper Anodes from Secondary Copper Refineries: *Tzong Chen*[1]; John Dutrizac[1]; [1]CANMET-MMSL

3:50 PM
Study on the Interface Behavior of Ore Powder in the Organic Media: *Li Dan*[1]; Chen Qiyuan[1]; [1]Central South University

4:15 PM
Synthesis of ZnO/TiO2 and Study on its Photocatalytic Activity: *Wu Daoxin*[1]; [1]Changsha University of Science and Technology

4:40 PM Concluding Comments

4:50 PM Question and Answer Period

Cost-Affordable Titanium III: Creative Processing and Property Enhancement II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; F. H. (Sam) Froes, University of Idaho; Kevin Dring, Norsk Titanium

Wednesday PM Room: 618
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Mitsuo Niinomi, Toyohashi University of Technology; Rodney Boyer, Boeing Commercial Airplanes

2:00 PM
Rapid Consolidation of Ti-6Al-4V Powders by Transformation Superplasticity: Bing Ye[1]; Marc Matsen[2]; *David Dunand*[1]; [1]Northwestern University; [2]The Boeing Company

2:25 PM
Evaluation of Titanium for Vehicle Fuel Economy and Performance Improvement: P.K. Mallik[1]; *Curt Lavender*[2]; Scott Weil[2]; [1]University of Michigan at Dearborn; [2]Battelle - Pacific Northwest National Laboratory

2:50 PM
Titanium Recycling Process by Disproportionation of Titanium Subchloride in Molten Magnesium Chloride: *Taiji Oi*[1]; Toru Okabe[1]; [1]The University of Tokyo

3:15 PM
Modeling Beta-Transus Temperature of Titanium Alloys: *N. S. Reddy*[1]; Chan Hee Park[2]; Chong Soo Lee[2]; [1]GIFT, POSTECH, Pohang, Korea; [2]Department of Materials Science and Engineering, POSTECH

3:40 PM Break

3:55 PM
Study of Ti-6Al-4V in Liquid State by Electrostatic Levitation: *John Li*[1]; Won-Kyu Rhim[1]; William Johnson[1]; [1]Caltech

4:20 PM
Laser Additive Manufacturing of Titanium for Orthopedic Implants: *James Sears*[1]; Dana Medlin[1]; Jacob Fuerst[1]; [1]South Dakota School of Mines & Technology

4:45 PM
Laser Beam Welding of ATI 425 Titanium: *Paul Edwards*[1]; Todd Morton[1]; Greg Ramsey[1]; [1]The Boeing Company

5:10 PM
Heat Treatments for Friction Stir Welded Ti-6Al-4V: *Paul Edwards*[1]; Marc Petersen[1]; [1]The Boeing Company

Electrode Technology for Aluminum Production: Anode Baking/Anode Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Wednesday PM Room: 616
February 17, 2010 Location: Washington State Convention Center

Session Chair: Gudrun Saevarsdottir, Reykjavik University

2:00 PM Introductory Comments

2:05 PM
On the Logistics of Rebuilding an Anode Baking Furnace while Maintaining Operation: *Richard Coulombe*[1]; David Machado[1]; John Ferguson[2]; Darren Carle[2]; [1]Hatch and Associates; [2]Portland Aluminium

2:30 PM
Specific Energy Consumption in Anode Bake Furnaces: Felix Keller[1]; *Peter Sulger*[1]; Markus Meier[1]; Dagoberto Schubert Severo[2]; Vanderlei Gusberti[2]; [1]R&D Carbon Ltd.; [2]PCE Ltda.

2:55 PM
Desulphurisation Control during Anode Baking, Its Impact on Anode Performance and Operational Costs-Alba's Experience: *Hameed Abbas*[1]; Khalil Khaji[1]; Daniel Sulaiman[1]; [1]Aluminium Bahrain

3:20 PM Break

3:35 PM
Development of a New Improved Dry Alumina Scrubber for Emission Control from Anode Bake Furnaces: *Paulo Douglas Vasconcelos*[1]; André Mesquita[2]; [1]Albras Alumínio Brasileiro S.A; [2] Solve Engenharia Ltda

4:00 PM
Baked Anode Density Improvement through Optimization of Green Anode Dry Aggregate Composition: *Khalil Khaji*[1]; Hameed Abbas[1]; [1]Aluminium Bahrain

4:25 PM
Characterization of Surface Topography on Carboxy Reactivity Residue: *Stein Rørvik*[1]; Lorentz Petter Lossius[2]; Hogne Linga[2]; Arne Petter Ratvik[1]; [1]SINTEF Materials & Chemistry; [2]Hydro Aluminium

Federal Funding Workshop

Wednesday PM Room: 602
February 17, 2010 Location: Washington State Convention Center

4:30 PM
Materials Research Support at the Office of Basic Energy Sciences: *John Vetrano*[1]; [1]Program Manager, Division of Materials Science and Engineering, Office of Basic Energy Sciences, Office of Science, Department of Energy

5:00 PM
Materials Research Support at the National Science Foundation: *Alan J. Ardell*[1]; [1]Program Director, Metals and Metallic Nanostructures Division of Materials Research, Directorate of Mathematical and Physical Sciences, National Science Foundation

5:30 PM
The Technology Innovation Program (TIP): *Funding Innovative Research for Critical National Needs*: *Michael A. Schen*[1]; [1]Scientific Advisor to the Director, Technology Innovation Program, NIST

General Abstracts: Electronic, Magnetic and Photonic Materials Division: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Electronic Materials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Superconducting and Magnetic Materials Committee, TMS: Thin Films and Interfaces Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Long Qing Chen, Pennsylvania State University; Sung Kang, IBM Corporation; Mark Palmer, Kettering University

Wednesday PM Room: 308
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM
Multiferroic Fibers by Electrospinning: *Shuhong Xie*[1]; Jiangyu Li[1]; [1]University of Washington

2:25 PM
High-Temperature Thermoelectric Behaviors of Highly Dense Polycrystalline Nonstoichiometry TiOx Ceramics: Yong Liu[1]; Jinle Lan[2]; Bo-Ping Zhang[3]; *Hongmin Zhu*[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing; [2]State Key Laboratory of New Ceramics and Fine Processing, Department of Materials Science and Engineering, Tsinghua University; [3]School of Materials Science and Engineering, University of Science and Technology Beijing

2:45 PM
Microstructure and Temperature Dependence of Ferroelectric Properties of Bi(Mgtio3)-PbTiO3 Ceramics: *Seema Sharma*[1]; D. Hall[2]; [1]Magadh University; [2]Materials Science Center

3:05 PM Break

3:35 PM
Bio-Inspired Methods to Self-Assemble 3D Micro-/Nano-Structures for Energy Harvesting: Huan Li[1]; Xiaoying Guo[1]; *K. Jimmy Hsia*[1]; Ralph Nuzzo[1]; [1]University of Illinois at Urbana-Champaign

3:55 PM
Monitoring Electrode Degradation in Lithium Ion Batteries Using Acoustic Emission: *Kevin Rhodes*[1]; Claus Daniel[2]; Nancy Dudney[2]; Edgar Lara-Curzio[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

4:15 PM
$CuInSe_2$/Si Heterojunctions for Photovoltaic Applications: *Okechukwu Akpa*[1]; Shaik Shoieb[1]; Kalyan Das[1]; [1]Tuskegee University

4:35 PM
The Multi-Level Switching PRAM Device Using Stacked Phase Change Materials Structure: *Sung-Hoon Hong*[1]; Heon Lee[1]; [1]Korea University

General Abstracts: Light Metals Division: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee, TMS: Aluminum Processing Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Wednesday PM Room: 607
February 17, 2010 Location: Washington State Convention Center

Session Chair: Eric Nyberg, Pacific Northwest National Lab

2:00 PM
Enhanced Resistance of Ti-Alloys against Environmental Attack by a Combined Al- and F-Treatment: *Alexander Donchev*[1]; Michael Schütze[1]; Rossen Yankov[2]; Andreas Kolitsch[2]; [1]DECHEMA; [2]FZD

2:20 PM
Fabrication of Aluminum Foam with New Stabilizer Composited by Fly Ashes and Short Copper-Coated Carbon Fibers: *Pei-hong Chen*[1]; Hong-jie Luo[1]; Lei Wang[1]; Yong-liang Mu[1]; [1]Northeastern University

2:40 PM
Fundamental Materials-Design Limits in Ultra Light-Weight Mg-Li Alloys Determined from Quantum-Mechanical Calculations: *Martin Friak*[1]; William Counts[1]; Dierk Raabe[1]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research

3:00 PM
Material Selection for the Lining of Aluminum Holding and Melting Furnaces: *Andy Wynn*[1]; John Coppack[1]; Tom Steele[1]; [1]Thermal Ceramics

3:20 PM
Mechanical Properties and Precipitation Behaviors of Mg-Al-Sn and Mg-Zn-Sn Alloys: *Toyohiko Konno*[1]; JongBeom Lee[1]; Takahiro Ohya[1]; Hyeon-Taek Son[2]; Haguk Jeong[2]; [1]Tohoku University; [2]Korea Institute of Industrial Technology

3:40 PM Break

4:00 PM
Microstructure and Composition Modifications in the Surface Layers of a Mg AZ80 Alloy Induced by Laser Melting: *Kemin Zhang*[1]; Jianxin Zou[2]; [1]Shanghai University of Engineering Science; [2]University of British Columbia

4:20 PM
Multi Sensor Data Fusion for Aluminium Cell Health Monitoring and Control: *Håkon Viumdal*[1]; Ru Yan[2]; Morten Liane[3]; Bjørn Petter Moxnex[4]; Saba Mylvaganam[5]; [1]Telemark Technological Research and Development Centre (tel-tek); [2]Telemark University College; [3]Hydro, Primary Metal Technology; [4]Hydro Aluminium; [5]Telemark Technological Research and Development Centre (tel-tek) and Telemark University College

4:40 PM
Effect of Copper Coatings on the Interfacial between Short Carbon Fiber and Aluminum Matrix: *Yan Pengfei*[1]; Yao Guangchun[1]; Shi Jianchao[1]; Mu Yongliang[1]; [1]School of Materials and Metallurgy, Northeastern University

5:00 PM
Effect of Mg on Microstructure and Mechanical Properties of Copper-Coated Short Carbon Fiber Reinforced Aluminum Alloy Matrix Composite: *Yan Pengfei*[1]; Yao Guangchun[1]; Shi Jianchao[1]; Mu Yongliang[1]; [1]School of Materials and Metallurgy, Northeastern University

General Abstracts: Materials Processing and Manufacturing Division: Synthesis and Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Global Innovations Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Phase Transformations Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee, TMS: Solidification Committee, TMS: Surface Engineering Committee
Program Organizers: Thomas Bieler, Michigan State University; Corbett Battaile, Sandia National Laboratories

Wednesday PM Room: 601
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM
Innovative and Integrated Technologies for the Development of Aeronautic Components: *Nicola Gramegna*[1]; Franco Bonollo[2]; Emilia Della Corte[1]; Fabio Grosselle[2]; Marco Cocco[3]; [1]ENGINSOFT; [2]University of Padova - DTG; [3]AVIO S.p.A.

2:20 PM
Selective Laser Sintering of Magnesium Powder for Fabrication of Compact Structures: *Ng Chi Chung*[1]; [1]The Hong Kong Polytechnic University

2:40 PM
Novel Lead-Free Bronze Bearing Materials Produced by Powder Metallurgy Processing: *Greg Vetterick*[1]; Iver Anderson[1]; Matthew Besser[2]; [1]Ames Laboratory and Iowa State University; [2]Ames Laboratory

3:00 PM
Microstructural Evolution of Cu, Ni and Al Powder Particles Processed by Cold Spray: *Yu Zou*[1]; Ahmad Rezaeian[1]; Eric Irissou[2]; Jean-Gabriel Legoux[2]; Jerzy Szpunar[1]; Stephen Yue[1]; [1]McGill University; [2]National Research Council Canada (NRC)

3:20 PM
Recent Trends in Cold Spray Technology: *Julio Villafuerte*[1]; Bert Jodoin[2]; [1]Centerline Windsor Ltd; [2]University of Ottawa

3:40 PM Break

4:00 PM
Introduction of High-Throughput, Commercial Application, Spark Plasma Sintering (SPS) Technology: *Robert Aalund*[1]; [1]Thermal Technology

4:20 PM
Thermo-Mechanical Behavior of Chemically Bonded Phosphate Ceramic Composites Reinforced with Graphene Nanoplatelets: A Substantial Material Improvement toward Structural Applications: *H. A. Colorado*[1]; C. Hiel[2]; H. T. Hahn[3]; [1]University of California, Los Angeles and Universidad de Antioquia; [2]Composite Support and Solutions Inc.; [3]University of California, Los Angeles

4:40 PM
Kinetics of Lamellar Decomposition in U-Nb Alloys: *Robert Hackenberg*[1]; Heather Volz[1]; Pallas Papin[1]; Ann Kelly[1]; Robert Forsyth[1]; Robert Dickerson[1]; Tim Tucker[1]; [1]Los Alamos National Lab

5:00 PM
Synthesis and Microstructure of TiC/TiN Porous Ceramic Composites Processed via HYSYCVD/Direct Nitridation: *Jose Flores-Garcia*[1]; Martin Pech-Canul[1]; [1]Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

5:20 PM
The Production of BCl_3 Gas from Mechanochemical Reaction Product Containing Elemental Boron and Magnesium Oxide: *Duygu Agaogullari*[1]; Ozge Balci[1]; Ismail Duman[1]; [1]Istanbul Technical University

5:40 PM
Cyclic Oxidation Behavior of Detonation Gun Sprayed Ni-20Cr Coating on a Boiler Steel at 900°C: *Gagandeep Kaushal*[1]; Harpreet Singh Saheet[1]; Satya Prakash[1]; [1]RIMT-Institute of Engineering & Technology

Global Innovations in Manufacturing of Aerospace Materials: The 11th MPMD Global Innovations Symposium: Innovations in Primary and Secondary Forming - Aluminum, Magnesium, and Titanium Aluminides / Innovations in Machining and Joining

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Shaping and Forming Committee, TMS: High Temperature Alloys Committee
Program Organizers: Deborah Whitis, General Electric Company; Thomas Bieler, Michigan State University; Michael Miles, BYU

Wednesday PM Room: 306
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Ron Wallis, Wyman Gordon; David Furrer, Rolls-Royce

2:00 PM
Simulating Hot Gas-Pressure Forming of Light Alloy Sheet Materials: *Eric Taleff*[1]; Louis Hector[2]; Paul Krajewski[2]; [1]The University of Texas at Austin; [2]General Motors Corp.

2:20 PM
Stress Corrosion Behavior of Ti-Al-Nb Intermetallic Alloys Made from Accumulative Roll Bonding and Reaction Annealing: *Peng Qu*[1]; Mona El-Demellawy[2]; Viola Acoff[1]; [1]The University of Alabama; [2]American University of Cairo

2:40 PM
Study on the Asymmetric Cross Rolling of AZ31 Magnesium Alloy: *Bin Chen*[1]; [1]Shanghai Jiaotong University

3:00 PM
Fabrication of Dimensionally-Correct Sheet Metal Components Directly from T-6 Aluminum Alloys and Airframe Applications: Christian Weddeling[1]; Steven Woodward[2]; Bill Carson[3]; *Glenn Daehn*[2]; [1]Technische Universitat Dortmund ; [2]Ohio State University; [3]Cutting Dynamics

3:20 PM
Role of Precipitates in the Actuation Behavior of NiTiPt High Temperature Shape Memory Alloys: *Shipeng Qiu*[1]; Santo Padula II[2]; Ron Noebe[2]; Raj Vaidyanathan[1]; [1]UCF; [2]NASA GRC

3:40 PM Break

3:50 PM Invited
Analysis and Optimization of Aerospace Machining Processes: *Liangji Xu*[1]; [1]The Boeing Company

4:20 PM
Effect of Machining Processes on Low Cycle Fatigue Behavior of a Powder Metallurgy Disk Superalloy: *Jack Telesman*[1]; Pete Kantzos[2]; Tim Gabb[1]; Louis Ghosn[3]; [1]NASA GRC; [2]Honeywell International; [3]Ohio Aerospace Institute

4:40 PM
Investigation a New Method for Produce Favorable Surface Integrity in as Machined Surface of Gamma Titanium Aluminide during HSM Machining: *Sajjad Kolahdouz*[1]; [1]Tehran Polytechnic (Amirkabir University of Technology)

5:00 PM
Material Flow Forming the Shoulder Flow Zone Using Scroll Shoulder Tool during Friction Stir Welding of Thick Section Aluminum Alloys: *David Yan*[1]; Zhan Chen[1]; Guy Littlefair[1]; [1]AUT University

5:20 PM
Effect of Welding Parameters on the Mechanical and Metallurgical Properties of Friction Stir Spot Welded 2024-T351 Aluminum Alloy: *Amin Maki*[1]; Masoud Goodarzi[1]; Shahram Kheirandish[1]; Mohamad Ali Safarkhanian[1]; [1]Iran University of Science and Technology

Hume-Rothery Symposium: Configurational Thermodynamics of Materials: Session VI

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Chris Wolverton, Northwestern University; Mark Asta, University of California, Davis; Gerbrand Ceder, Massachusetts Institute of Technology (MIT)

Wednesday PM Room: 212
February 17, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Bulk and Surface Properties for Solid Oxide Fuel Cell Cathodes: *Dane Morgan*[1]; Yueh-Lin Lee[1]; [1]University of Wisconsin - Madison

2:30 PM Invited
Configurational Design of Functional Oxides: *Hisao Yamauchi*[1]; Maarit Karppinen[1]; [1]Helsinki University of Technology

3:00 PM
Order and Stability of III-V Semiconductor Surface Alloys at Finite Temperature: *John Thomas*[1]; Joanna Mirecki-Millunchick[1]; Normand Modine[2]; Anton Van der Ven[1]; [1]University of Michigan; [2]Sandia National Laboratories

3:20 PM
Stability, Surface Energy and Specific Properties of Al-Based Complex Intermetallics: Esther Belin-Ferré[1]; Jean Marie Dubois[1]; [1]CNRS Institut Jean Lamour

3:40 PM Break

4:10 PM Invited
Simulating Atomic-Scale Phenomena with Colloids: *Frans Spaepen*[1]; [1]Harvard School of Engineering and Applied Sciences

4:40 PM Invited
Molecular Dynamics Simulations of Crystallization in Metallic Glasses: *Diana Farkas*[1]; [1]Virginia Tech

5:10 PM
Structure in Liquid Alloys Investigated by First-Principles Molecular Dynamics Simulations: *Mark Asta*[1]; Haxhimali Tomorr[2]; [1]University of California, Davis; [2]Northwestern University

5:30 PM
Quantum Mechanical Corrections to Simulated Shock Hugoniot Temperatures: *Nir Goldman*[1]; Evan Reed[1]; Larry Fried[1]; [1]Lawrence Livermore National Laboratory

Jim Evans Honorary Symposium: Electrochemical Phenomena

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Wednesday PM Room: 619
February 17, 2010 Location: Washington State Convention Center

Session Chair: Fiona Doyle, University of California, Berkeley

2:00 PM Introductory Comments

2:10 PM
The Application of Electrochemical Techniques to Elucidate the Mechanisms of Copper Chemical Mechanical Planarization (CMP): *Fiona Doyle*[1]; Serdar Aksu[2]; Ling Wang[3]; Shantanu Tripathi[4]; Seungchoun Choi[1]; [1]University of California, Berkeley; [2]Solopower, Inc.; [3]Applied Materials; [4]Intel

2:35 PM
Development of Inert Anodes for Electrowinning in Calcium Chloride – Calcium Oxide Melts: Shuqiang Jiao[1]; *Derek Fray*[1]; [1]University of Cambridge

3:00 PM
Electrochemical Characterization of Nanoparticle Silver Based Zn-AgO Batteries: *Abhinav Gaikwad*[1]; Josh Gallaway[1]; Dan Steingart[1]; [1]City College of New York

3:25 PM
Molten Oxide Electrolysis for Lunar Oxygen Generation Using *in situ* Resources: Alex Vai[1]; *James Yurko*[2]; D. H. Wang[3]; Donald Sadoway[1]; [1]Massachusetts Institute of Technology; [2]Electrolytic Research Corporation; [3]22Ti LLC

3:50 PM Break

4:05 PM
Leaching of Metal Components from Waste PCBs by Electro-Generated Chlorine in Hydrochloric Acid Solution: Eun-young Kim[1]; Min-seuk Kim[1]; *Jae-chun Lee*[1]; Kyoungkeun Yoo[1]; Manoj Kumar[1]; [1]Korea Institute of Geoscience and Mineral Resources (KIGAM)

4:30 PM
Morphology of Zinc Studied under Additive Control within Microfluidic Channels: *Joshua Gallaway*[1]; Abhinav Gaikwad[1]; Dan Steingart[1]; [1]City College of New York

4:55 PM
Direct Write Dispenser Printed Energy Storage Devices: *Christine Ho*[1]; Jay Keist[1]; Ba Quan[1]; Paul Wright[1]; James Evans[1]; [1]University of California, Berkeley

Jim Evans Honorary Symposium: Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Wednesday PM Room: 620
February 17, 2010 Location: Washington State Convention Center

Session Chair: Lifeng Zhang, Missouri University of Science and Technology

2:00 PM Introductory Comments

2:10 PM
Mathematical Modeling of Spooling/Unspooling Stresses in Electricity Distribution Cables: James Evans[1]; *W. Kinzy Jones, Jr*[2]; [1]UC, Berkeley; [2]Amoeba Technologies

2:35 PM
Computational Modeling of Heap Leaching Processes: *Mark Cross*[1]; Chris Bennett[1]; Diane McBride[1]; A. Hernandez[2]; T. N. Croft[1]; J.E. Gebhardt[2]; [1]Swansea University; [2]Process Engineering Resources Inc

3:00 PM
A T-Ψ Potential Formulation for Numerical Simulation of Induction Heating Processes: *Nagy El-Kaddah*[1]; Thinium Natarajan[2]; [1]The University of Alabama; [2]United States Steel Corporation

3:25 PM
Modeling on the Cast Start during Steel Continuous Casting Process: *Yufeng Wang*[1]; Lifeng Zhang[1]; [1]Missouri University of Science and Technology

3:50 PM Break

4:05 PM
Improved Computational Modeling of the Flame Spray Pyrolysis Process for Silica Nanopowder Synthesis: Miguel Olivas-Martinez[1]; *Hong Yong Sohn*[1]; Hee Dong Jang[2]; Terry Ring[1]; [1]University of Utah; [2]Korea Institute of Geoscience and Mineral Resources (KIGAM)

4:30 PM
Global and Local Stability of Magnetically-Levitated Droplets: *Ben Li*[1]; X. Ai[1]; Y. Huo[1]; [1]University of Michigan

4:55 PM
Dynamics of Magnetically Levitated Liquid Droplets: Valdis Bojarevics[1]; *Koulis Pericleous*[1]; Alan Roy[1]; Stuart Easter[1]; [1]University of Greenwich

5:20 PM
Mangetically-Damped Flows: Numerical Simulations and Experimental Measurements: *Ben Li*[1]; X. Bing[1]; Y. Shu[1]; [1]University of Michigan

Magnesium Technology 2010: Effects of Heat Treatment and Casting Process

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Wednesday PM Room: 613
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Elhachmi Essadiqi, CANMET ; Zi-Kui Liu, The Pennsylvania State University

2:00 PM
On Mechanical Properties and Microstructures of TTMP Wrought Mg Alloys: Jack Huang[1]; Tamir Arbel[2]; Laura Ligeski[2]; Jesse McCaffrey[1]; Sanjay Kulkarni[1]; J. Jones[2]; Tresa Pollock[2]; *Raymond Decker*[1]; Steve LeBeau[1]; [1]Thixomat; [2]University of Michigan

2:20 PM
The Effect of Thermomechanical Processing on the Tensile and Fatigue Behavior of Thixomolded® AM60: *Zhe Chen*[1]; B. Kuhr[1]; Alex Ritter[1]; Jack Huang[2]; Ray Decker[2]; Steve LeBeau[2]; Carl Boehlert[1]; [1]Michigan State University; [2]Thixomat

2:40 PM
Influence of the Heat Treatment on Mechanical Properties and Microstructure in LPSO Mg-Zn-Y Alloys: *Masafumi Noda*[1]; Tyuyoshi Mayama[1]; Yoshihito Kawamura[1]; [1]Department of Materials Science, Kumamoto University

3:00 PM
The Effect of Zn Additions on Precipitation Hardening of Mg-Ca Alloys: *Brian Langelier*[1]; Shahrzad Esmaeili[1]; [1]University of Waterloo

3:20 PM
The Recent Developments in Mg-Sn Based Alloy Thermodynamic Database: *Manas Paliwal*[1]; Jina Kim[1]; Daehoon Kang[1]; In-Ho Jung[1]; [1]McGill University

3:40 PM Break

4:00 PM
Influence of Zn Additions on Age Hardening Response and Microstructure of Mg-0.3at.%Ca Alloys: *Keiichiro Oh-ishi*[1]; Chamini Mendis[1]; Ryuichi Watanabe[2]; Kazuhiro Hono[1]; [1]National Institute for Materials Science; [2]Graduate School, University of Tsukuba

4:20 PM
Effect of Aging and Thermomechanical Processes in Twin Roll Cast Mg AZ91 Alloy Sheet: *Ozgur Duygulu*[1]; Selda Ucuncuoglu[1]; Gizem Oktay[1]; Onuralp Yucel[2]; Ali Arslan Kaya[3]; [1]TUBITAK Marmara Research Center; [2]Istanbul Technical University; [3]Mugla University

4:40 PM
Experimental Studies on the As-Cast Microstructure of Mg-Al Binary Alloys with Various Solidification Rates and Compositions: *Dae Hoon Kang*[1]; Manas Paliwal[1]; Elhachmi Essadiqi[2]; In-Ho Jung[1]; [1]McGill University; [2]CANMET-MTL

5:00 PM
Impurity and Tracer Diffusion Studies of Magnesium and Its Alloys: Sarah Brennan[1]; Andrew Warren[1]; Kevin Coffey[1]; *Yongho Sohn*[1]; Nagraj Kulkarni[2]; Peter Todd[3]; [1]University of Central Florida; [2]University of Tennessee; [3]Oak Ridge National Laboratory

5:20 PM
Effect of Alloying and Solidification Rates on Microstructure of Hot Rolled and Annealed Micro-Alloyed Az31 Sheet: *Elhachmi Essadiqi*[1]; Amjad Javaid[2]; Mahmoud Shehata[2]; Teddy Muller[3]; Stephene Yue[4]; Ravi Verma[5]; [1]CANMET ; [2]CANMET; [3]Evry University; [4]McGill University; [5]General Motors

5:40 PM
Texture and Anistropy of Continuous Cast (CC) and Direct Chill Cast (DC) AZ31 Magnesium Sheets: Raj Mishra[1]; *Jon Carter*[1]; Sooho Kim[2]; [1]GM R&D; [2]GM R&D (retired)

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: SOFC, PEM and DMFC

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Wednesday PM Room: 211
February 17, 2010 Location: Washington State Convention Center

Session Chairs: K. Scott Weil, Pacific Northwest National Lab; Rod Borup, Los Alamos National Laboratory

2:00 PM
Kinetics of Oxide Scale Formation on Nicrofer-6025HT at Elevated Temperatures for Advanced Coal Based Power Plants: *Vineet Joshi*[1]; Alan Meier[1]; Scott K. Weil[2]; Jens T. Darsell[2]; [1]Alfred University; [2]Pacific Northwest National Laboratories

2:20 PM
Electrochemical Characterizations of Ni-YSZ Electrode in the Thin NiFe Supported Solid Oxide Fuel Cell: *Kyeong Hyun Kim*[1]; Young Min Park[2]; Haekyoung Kim[1]; [1]Yeung Nam University; [2]Research Institute of Industrial Science and Technology

2:40 PM
Metal-Supported Solid Oxide Fuel Cell: *Gyeong Man Choi*[1]; Hyup Je Cho[1]; Young Min Park[2]; [1]POSTECH; [2]RIST

3:00 PM Invited
Development of Niobium Coated Stainless Steels as Bipolar Plate Materials for PEMFC Stacks: *Sung-Tae Hong*[1]; K Scott Weil[2]; Yong-Zoo You[1]; [1]University of UIsan; [2]Pacific Northwest National Laboratory

3:40 PM Break

3:50 PM Invited
PEM Fuel Cell Material Durability and Degradation: *Rod Borup*[1]; Rangachary Mukundan[1]; John Davey[1]; David Wood[1]; [1]Los Alamos National Laboratory

4:30 PM
Performance of Micro-DMFCs with Two Kinds of Flow Fields: *Yuhao Lu Lu*[1]; Ramana Reddy[1]; [1]The University of Alabama

4:50 PM
Pre-Oxidized and Nitrided Stainless Steel Foil for Proton Exchange Membrane Fuel Cell Bipolar Plates: Michael Brady[1]; Todd Toops[1]; *Peter Tortorelli*[1]; Heli Wang[2]; John Turner[2]; Harry Meyer[1]; Karren More[1]; Fernando Garzon[3]; Tommy Rockward[3]; Don Gervasio[4]; Francisco Estevez[5]; Jim Rakowski[6]; [1]Oak Ridge National Lab; [2]National Renewable Energy Lab; [3]Los Alamos National Lab; [4]Arizona State University; [5]AGNI-GenCell; [6]ATI Allegheny Ludlum

5:10 PM
Effect of Pretreatment and Surface Treatment Conditions on Corrosion Resistance Property in Metallic Bipolar Plate Materials: Kee-Do Woo[1]; *Min-seok Moon*[1]; Eui-pyo Kwon[1]; Sang-hyuk Kim[1]; Duck-soo Kang[1]; Zhiguang Liu[2]; Xiao-peng Wang[1]; [1]Chonbuk National University; [2]Harbin Institute of Technology

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Physics of Defects, Dislocation Nucleation and Fracture II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Wednesday PM Room: 304
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Harley Johnson, University of Illinois; Douglas Spearot, University of Arkansas

2:00 PM Invited
Multiple Time Scale Analysis of the Ion Bombardment Surface Instability: *Harley Johnson*[1]; Kallol Das[1]; Nagarajan Kalyanasundaram[1]; Maryam Ghazisaeidi[1]; Jonathan Freund[1]; [1]University of Illinois

2:30 PM
Stress and Strain near Rough Surfaces and Interfaces: *Lawrence Friedman*[1]; [1]Penn State University

2:50 PM
Saddle-Node Scalings during Dislocation Nucleation in Perfect Crystals under Inhomogeneous Loads: *Asad Hasan*[1]; Craig Maloney[1]; [1]Carnegie Mellon University / Civil & Environmental Engineering

3:10 PM
Phase Stability and Transformations in NiTi from Density Functional Theory Calculations: *Karthik` Guda Vishnu*[1]; Alejandro Strachan[1]; [1]Purdue University

3:30 PM Break

3:50 PM Invited
Coupled Continuum - Density Functional Theory Investigation of Crack-Tip Propagation and Dislocation Nucleation: Arun Nair[1]; *Derek Warner*[1]; Richard Hennig[1]; [1]Cornell University

4:20 PM
Modeling of Magnetic Thin Film with Misfit Dislocations: *Nirand Pisutha-Arnond*[1]; Bo Yang[2]; Dong-Hee Lim[1]; Mark Asta[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]University of California, Davis

4:40 PM
Strain Engineering on Si/Ge Nanoscale Heterostructures: *Yumi Park*[1]; Winnie Tan[1]; Alejandro Strachan[1]; [1]Purdue University

5:00 PM
Anomalous Dissipation in Single-Walled Carbon Nanotube Resonators: *Peter Greaney*[1]; Giovanna Lani[2]; Giancarlo Cicero[3]; Jeffrey Grossman[1]; [1]Massachusetts Institute of Technology; [2]Ecole Polytechnique; [3]Polytechnic of Torino

Neutron and X-Ray Studies of Advanced Materials III: Diffuse Scattering II

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Wednesday PM Room: 303
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Darren Goosens, Australian national University; Yang Ren, Argonne National Laboratory

2:00 PM Keynote
Monte Carlo Simulation of Disorder in the Ag^+ Fast Ion Conductors Pearceite and Polybasite: *Richard Welberry*[1]; [1]Research School of Chemistry

2:30 PM Invited
Monte Carlo Modelling of Diffuse Scattering from Single Crystals: *Darren Goossens*[1]; Aidan Heerdegen[1]; [1]Australian National University

2:50 PM Invited
Phase Transition under High Pressure in Ionic Liquid Based Mixtures: *Hiroshi Abe*[1]; Yusuke Imai[1]; Takefumi Goto[1]; Takahiro Takekiyo[1]; Yukihir Yoshimura[1]; [1]National Defense Academy

3:10 PM Invited
Synchrotron High-Energy X-Ray Study of Advanced Materials with Nano-Scale Structures: *Yang Ren*[1]; Valeri Petkov[2]; Yandong Wang[3]; Zhihua Nie[3]; Dongmei Liu[4]; Peter Liaw[5]; [1]Argonne National Laboratory; [2]Central Michigan University; [3]Beijing Institute of Technology; [4]Northeastern University; [5]University of Tennessee

3:30 PM Invited
Unlocking the 'True' Structure of Complex Materials Using Total Scattering: *Thomas Proffen*[1]; [1]Los Alamos National Laboratory

3:50 PM
X-Ray Diffraction Investigation of Ferroelectric Constitutive Behavior at Multiple Length Scales: Goknur Tutuncu[1]; Mesut Varlioglu[1]; Ulrich Lienert[2]; *Ersan Ustundag*[1]; [1]Iowa State University; [2]Argonne National Laboratory

4:05 PM
Imaging Strains on the Nanoscale with Coherent X-Ray Diffraction Microscopy: *Ross Harder*[1]; Loren Beitra[2]; Steven Leake[2]; Marcus Newton[3]; Ian Robinson[2]; [1]Argonne National Lab; [2]University College London; [3]University of Surrey

4:20 PM Break

4:30 PM Invited
Geometry, Topology and Structure of Amorphous Solids: *Zbigniew Stachurski*[1]; Richard Welberry[1]; [1]Australian National University

4:50 PM Invited
In-Situ Neutron Diffraction Study of B2 CoTi and CoZr: Rupalee Mulay[1]; James Wollmershauser[1]; *Sean Agnew*[1]; [1]University of Virginia

5:10 PM
Influence of Calcium and Strontium Substitution on the Expansion Behaviors and Oxygen Vacancy Concentration of the Lanthanum Ferrite: *David Thomsen*[1]; Patrick Price[1]; Ellen Rabenberg[1]; Darryl Butt[1]; [1]Boise State University

5:20 PM
Application of Small Angle Neutron Scattering to Study the Nucleation and Growth Mechanisms of Thin and Thick Films: *Yong Choi*[1]; B. S. Seong[2]; E. J. Shin[2]; [1]Sunmoon University; [2]KAERI

5:35 PM
Non-Destructive Evaluation of Crack Size and Distribution of Eco-Friendly Trivalent Chromium Deposits for Automobile Industries by Small Angle Neutron Scattering: *Yong Choi*[1]; Sik C. Kwon[2]; Eun J. Shin[3]; Baik S. Seong[3]; [1]Sunmoon University; [2]KIMS; [3]KAERI

5:50 PM
EXAFS Measurements in Fe-Based Magnetostrictive Single Crystals: *Gavin Garside*[1]; Shamita Shitole[1]; Sivaraman Guruswamy[1]; [1]University of Utah

Nuclear Energy: Processes and Policies: Characterization

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee, TMS: Public and Governmental Affairs Committee
Program Organizers: Brajendra Mishra, Colorado School of Mines; Aladar Csontos, U.S. Nuclear Regulatory Commission; Stuart Maloy, Los Alamos National Laboratory; Jeremy Busby, Oak Ridge National Laboratory; Sue Lesica, U.S. Department of Energy's Office of Nuclear Energy

Wednesday PM Room: 201
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Todd Allen, Idaho National Laboratory; Aladar Csontos, US Nuclear Regulatory Commission

2:00 PM Keynote
Characterization of Neutron- and Ion-Irradiated Nano-Structured Ferritic Alloys by TEM: *James Bentley*[1]; David Hoelzer[1]; [1]Oak Ridge National Laboratory

2:35 PM
A Multilab-Multitechnique SANS, APT and TEM Characterization Study of a Reference Nanstructured Ferritic Alloy: *G. Robert Odette*[1]; Nicholas Cunningham[1]; Yuan Wu[1]; Erin Haney[1]; Emmanuelle Marquis[1]; Peter Hosemann[1]; Eric Stergar[1]; [1]UC Santa Batrbara

3:00 PM
Characterization of 14YWT As Atomized, Milled and Annealed Powders and Consolidated Alloys: *Nicholas Cunningham*[1]; Yuan Wu[1]; G. Robert Odette[1]; Erin Haney[1]; [1]UC Santa Barbara

3:25 PM
Development and Characterization of Radiation Tolerant Nanostructured Ferritic Steels: *Michael Miller*[1]; David Hoelzer[1]; Kaye Russell[1]; [1]ORNL

3:50 PM Break

4:05 PM
Characterization of Nano-Scale Particles in Mechanically Alloyed and HIP-ed Oxide Dispersion Strengthened Steels: *Dhriti Bhattacharyya*[1]; Patricia Dickerson[1]; Peter Hosemann[1]; G. Odette[2]; Michael Nastasi[1]; Amit Misra[1]; Stuart Maloy[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

4:30 PM
TEM Characterization of a Monolithic U-Mo Plate-Type Nuclear Fuel: *Dennis Keiser*[1]; JanFong Jue[1]; Bo Yao[2]; Emmanuel Perez[2]; Yongho Sohn[2]; [1]Idaho National Laboratory; [2]University of Central Florida

4:55 PM
Weldability Characteristics of Oxide Dispersion Strengthened Alloys: An Overview: *Kalyan Chitrada*[1]; Ramprashad Prabhakaran[2]; Jiye Wang[3]; Larry Zirker[2]; Mitchell Meyer[2]; James Cole[2]; Korukonda Murty[4]; Rajiv Mishra[3]; Darryl Butt[5]; Megan Frary[5]; Indrajit Charit[1]; [1]University of Idaho; [2]Idaho National Laboratory; [3]Missouri University of Science and Technology; [4]North Carolina State University; [5]Boise State University

5:20 PM
Multi-Scale Characterizations and Formation Mechanism in an ODS Steel Elaborated by Reactive Ball-Milling and Annealing: *Mathilde Brocq*[1]; Fabrice Legendre[1]; Bertrand Radiguet[2]; Marie-Hélène Mathon[3]; Fabien Cuvilly[2]; Philippe Pareige[2]; [1]SRMP - CEA; [2]GPM-Université de Rouen; [3]LLB

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Microstructure, Intermetallics, Whisker(I)

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Wednesday PM Room: 204
February 17, 2010 Location: Washington State Convention Center

Session Chairs: John W. Morris, University of California-Berkeley; Andre Lee, Michigan State University

2:00 PM
A Quantitative Assessment of Microstructural Coarsening of SnAgCu Solders: Effect of Metallization and Thermo-Mechanical History: *Praveen Kumar*[1]; Zhe Huang[1]; Indranath Dutta[1]; Ganesh Subbarayan[2]; Vikas Gupta[3]; [1]WSU; [2]Purdue University; [3]Texas Instruments

2:15 PM
Interfacial Reactions of Sn3.0Ag0.5Cu Solder with Cu-Mn UBM during Aging: *Chien-Fu Tseng*[1]; Jenq Gong Duh[1]; [1]National Tsing Hua University

2:30 PM
Cross-Interaction between Ni and Cu across a High-Lead Solder Joint with Different Solder Volume: *Chih-Chiang Chang*[1]; C. Robert Kao[1]; [1]National Taiwan University

2:45 PM
Current Stressing Effect on Intermetallic Compound Growth Kinetics in Cu Pillar/Sn Bump: Myeong-Hyeok Jeong[1]; Jae-Won Kim[1]; Gi-Tae Lim[1]; Byoung-Joon Kim[2]; Kiwook Lee[3]; Jaedong Kim[3]; Young-Chang Joo[2]; *Young-Bae Park*[1]; [1]Andong National University; [2]Seoul National University; [3]Amkor Technology Korea Inc

3:00 PM
Formation and Growth of Intermetallic Compound (Cu_6Sn_5) at Early Stages in Lead-Free Soldering: *Min Soo Park*[1]; Raymundo Arroyave[1]; [1]Texas A&M University

3:15 PM
Local Mechanical Properties of Cu6Sn5 Intermetallics in Pb-Free Solder Joints by Microcompression Testing of Pillars: *Ling Jiang*[1]; Nik Chawla[1]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering

3:30 PM Break

3:45 PM
Effects of Minor Ni Doping on Interfacial Reaction and Microstructure Variation in the Cu/Sn-3Ag-0.5Cu-xNi/Au/Ni Sandwich Structure: *Chi-Yang Yu*[1]; Jenq-Gong Duh[1]; Tae-Kyu Lee[2]; Michael Tsai[2]; Kuo-Chuan Liu[2]; [1]National Tsing Hua University; [2]CISCO

4:00 PM
Mechanical Properties of Interfacial IMCs in Solder Joints Evaluated by Nanoindentation: *Y.L. Shen*[1]; C. W Su[2]; J. M. Song[2]; S. Y. Chen[1]; [1]National Taiwan University of Science and Technology; [2]National Dong Hwa University

4:15 PM
Kinetics of Intermetallic Compound Formation at the Interface between Sn-3.0Ag-0.5Cu Solder and Cu-Zn Alloy Substrate: *Youngmin Kim*[1]; Hee-Ra Roh[1]; Young-Ho Kim[1]; [1]Hanyang University

4:30 PM
Sn Whiskers and Grain Boundary Sliding: *John Osenbach*[1]; [1]LSI Corporation

4:45 PM
Critical Current Density of Inhibiting the $(Cu,Ni)_6Sn_5$ Formation in the Ni-side of Cu/Solder/Ni Joints: W.H. Wu[1]; H.L. Chung[1]; C.N. Chen[1]; *Cheng-En Ho*[1]; [1]Yuan Ze University

5:00 PM
Interfacial Reactions between near Eutectic Snagcu Solder Alloys and Electrolytic Au/Ni Substrates: *Mao Gao*[1]; Eric Cotts[1]; [1]Binghamton University

5:15 PM
Effect of Ag on the Kirkendall Void Formation in Sn-Ag/Cu Solder Joints: *Sunghwan Kim*[1]; Jin Yu[1]; [1]KAIST

Polymer Nanocomposites: Metals and other Nanoparticles

Sponsored by: The Minerals, Metals and Materials Society
Program Organizer: John Zhanhu Guo, Lamar University

Wednesday PM Room: 309
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Katie Weihong Zhong, Washington State University; Qiang Wang, Institute of Chemical and Engineering Sciences (ICES); Lu Sun, Praxair Electronics

2:00 PM Introductory Comments

2:05 PM Keynote
Effect of Particle Size on the Strength of Nanocomposites: *C. T. Sun*[1]; [1]Purdue University

2:45 PM
Electrically Conductive Nanocomposites with Thermoplastic Polymers: *Nathan Hansen*[1]; George Hansen[1]; Greg Sawyer[2]; [1]Conductive Composites Company; [2]University of Florida

3:05 PM
Effects of Incorporation of Silica and Zirconia Nanoparticles on the Thermal and Thermomechanical Properties of Polymer Nanocomposites: *Muhammad Sajjad*[1]; Thomas Koch[1]; Sabine Seidler[1]; [1]TU Wien

3:25 PM
Electrical Resistance Investigation of Cotton Fabrics after Treating with Polyaniline Solution: *Cem Gunesoglu*[1]; Sinem Gunesoglu[1]; Suying Wei[2]; Zhanhu Guo[2]; [1]Gaziantep University; [2]Lamar University

3:45 PM Break

4:15 PM Invited
Multifunctional Conductive Nanocomposites: Fabrication, Property Analysis and Applications: *John Zhanhu Guo*[1]; Di Zhang[1]; Pallavi Mavinakuli[1]; Jiahua Zhu[1]; Suying Wei[1]; [1]Lamar University

4:40 PM Invited
Magnetic Properties of Some Polyaniline-Based Magnetic Nano-Composites for EMI Applications: *Jayanta Banerjee*[1]; O Perales-Pérez[1]; J. Banerjee[1]; [1]University of Puerto Rico at Mayaguez

5:05 PM
Effect of Nanometer-Sized Titanium Dioxide on the Piezodielectric Effect of Carbon Fiber Sulphoaluminate Cement Composites: *Cheng Xin*[1]; Wang Shoude[1]; [1]University of Jinan

5:25 PM
Design, Synthesis, and Characterization of Polymer Matrix Nanophosphor Composite Scintillators: *Meredith Barta*[1]; Jason Nadler[1]; Zhitao Kang[1]; [1]Georgia Institute of Technology

5:45 PM
Nano-Moldable Polymer-Ceramic Composite: *Isaac Finger*[1]; [1]University of Florida

6:05 PM Concluding Comments

Processing Materials for Properties: Processing-Microstructure-Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Wednesday PM Room: 617
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Ramana Reddy, The University of Alabama; John Moore, Colorado School of Mines

2:00 PM Keynote
Materials Processing Augmentation in Hostile Environments for Hydrocarbon Recovery: *Rashmi Bhavsar*[1]; Indranil Roy[1]; Christian Wilkinson[1]; [1]Schlumberger

2:30 PM
Computational and Experimental Investigation into the Oxidation Behavior of HVOF-Sprayed Cryomilled NiCrAlY Bond Coats: *Kaka Ma*[1]; Jianrong Song[2]; Lianmeng Zhang[2]; Julie Schoenung[1]; [1]University of California, Davis; [2]Wuhan University of Technology

2:50 PM
High Thermal Gradient Directional Solidification and Its Application in the Processing of Nickel-Based Superalloys: *Lin Liu*[1]; [1]Northwestern Polytechnical University

3:10 PM Keynote
In Search of Rapid Processing Routes for CIGS Photovoltaic Absorber Materials: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

3:30 PM
Microstructure and Properties of New Wear Resistant Steel with High Strength and High Toughness: *Li Hongbin*[1]; [1]Baosteel

3:50 PM
Enhanced Electrical and Mechanical Properties of the Heat-Treated Cu-Ni-(Si, Ti) Alloys: *Kwangjun Euh*[1]; Seung Zeon Han[1]; Sangshik Kim[2]; Sung Hwan Lim[3]; [1]Korea Institute of Materials Science; [2]Gyeongsang National University; [3]Kangwon National University

4:10 PM
Preparation and Mechanical Properties of Nanostructured Cryomilled NiCrAlY Alloy Fabricated by Spark Plasma Sintering: *Jianrong Song*[1]; Kaka Ma[2]; Lianmeng Zhang[3]; Julie Schoenung[2]; [1]University of California - Davis and Wuhan University of Technology, China; [2]University of California - Davis; [3]Wuhan University of Technology, China

4:30 PM
Thermal History and Mechanical Behavior of PH13-8Mo Fabricated via LENS®: *Jonathan Nguyen*[1]; Baolong Zheng[1]; Yuhong Xiong[1]; William Hofmeister[2]; John Smugeresky[3]; Yizhang Zhou[1]; Enrique Lavernia[1]; [1]University of California, Davis; [2]University of Tennessee Space Institute; [3]Sandia National Laboratories

4:50 PM
Transformation Induced Plasticity in Fe-Cr-V-C: *Uta Kuehn*[1]; Jan Romberg[1]; Norbert Mattern[1]; Juergen Eckert[1]; [1]IFW

5:10 PM
Accounting for High Temperature Measurements with Changing Effective Emissivity in PTAW Processing: *Tonya Wolfe*[1]; Hani Henein[1]; [1]University of Alberta

5:30 PM
The Role of Microtexture on Fatigue Lifetime Variability and Crack Initiation Mechanisms: *Christopher Szczepanski*[1]; James Larsen[2]; Lee Semiatin[2]; [1]UTC/AFRL; [2]AFRL

Recycling General Sessions: Waste Utilization

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, Argonne National Laboratory

Wednesday PM Room: 206
February 17, 2010 Location: Washington State Convention Center

Session Chair: Jeffrey Spangenberger, Argonne National Laboratory

2:00 PM
Analysis of Light Hydrocarbon Gases in the Pyrolysis and Combustion Processes of Waste Tires: *Joner Alves*[1]; Chuanwei Zhuo[2]; Yiannis Levendis[2]; Jorge Tenorio[1]; [1]University of Sao Paulo; [2]Northeastern University

2:25 PM
Utilization of Brazilian Waste Mica in Preparation of Pigments: *Shirleny Santos*[1]; Silvia Cristina França[2]; Tsuneharu Ogasawara[3]; [1]COPPE/UFRJ/CETEM; [2]CETEM; [3]COPPE/UFRJ

2:50 PM
Effect of Processes in Degraded Decoloration of Frying Oil Treated with Brazilian Clays: Elaine Araújo[1]; *Edcleide Maria Araújo*[1]; Marcus Vinícius Lia Fook[1]; Sara Verusca de Oliveira[1]; Divânia Ferreira Da Silva[1]; Dayanne Diniz De Souza[1]; [1]Federal University of Campina Grande-UFCG

3:15 PM
Reuse of Fired Red Ceramic Brick Waste: *Carlos Maurício Vieira*[1]; Sergio Monteiro[1]; [1]State University of the North Fluminense

3:40 PM
Evaluating the Compressive Strength and Microstructure of Recycled Glass Compacts: *Adele Garkida*[1]; Jiann-Yang Hwang[2]; Xiaodi Huang[2]; Bowen Li[2]; [1]Ahmadu Bello University; [2]Michigan Technological University

4:05 PM Break

4:20 PM
Preparation of Building Material Using Elemental Sulfur and Heavy-Metal Containing Slag: Yanjie Liang[1]; *Liyuan Chai*[1]; Xiaobo Min[1]; Zhihui Yang[1]; Shaohui Yang[1]; Xi Cao[1]; [1]Central South University

4:45 PM
Study on the EMD Residue and Shale for Preparing Solidification Brick: Wang Jia[1]; *Peng Bing*[1]; Chai Li Yuan[1]; Zhang Jin Long[1]; Li Guo Liang[1]; [1]Central South University

5:10 PM
Experimental Study on the EMD Residue Admixture Cementitious Material: Wang Jia[1]; *Peng Bing*[1]; Chai Li Yuan[1]; Zhang Jin Long[1]; Li Guo Liang[1]; [1]Central South University

5:35 PM
Study of Recycling Aggregates of Concrete Waste in Pervious Concrete: *Prakash Parasivamurthy*[1]; KiranKumar BV[1]; Veena Jawali[2]; [1]Dayanada Sagar College of Engineering; [2]B.M.S.College of Engineering

Solid-State Interfaces: Toward an Atomistic-Scale Understanding of Structure, Properties, and Behavior through Theory and Experiment: Thermal, Electrical, and Thermoelectric Behaviors

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
Program Organizers: Michael Demkowicz, Massachusetts Institute of Technology; Douglas Medlin, Sandia National Laboratories; Emmanuelle Marquis, University of Oxford

Wednesday PM Room: 602
February 17, 2010 Location: Washington State Convention Center

Session Chair: Srinivasan Srivilliputhur, University of North Texas

2:00 PM Invited
Theoretical and Simulation-Based Predictions of Grain Boundary Kapitza Resistance in Semi-Conductors: *Sylvie Aubry*[1]; Patrick Schelling[2]; Chris Kimmer[3]; Xiaowang Zhou[4]; Reese Jones[4]; [1]Stanford University; [2]University of Central Florida; [3]University of Louisville; [4]Sandia National Laboratories

2:30 PM Invited
Thermal Conductance of Solid-State Interfaces: *David Cahill*[1]; [1]University of Illinois

3:00 PM
Intrinsic Electric Fields in Nanostructured Oxide Ceramics: Pankaj Nerikar[1]; Christopher Stanek[1]; Susan Sinnott[2]; Simon Phillpot[2]; *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory; [2]University of Florida

3:20 PM
Schottky Barriers at Interfaces between Transition Metals and Strontium Titanate: *Matous Mrovec*[1]; Jan-Michael Albina[1]; Bernd Meyer[2]; Christian Elsaesser[1]; [1]Fraunhofer Institute for Mechanics of Materials; [2]University of Erlangen-Nuernberg

3:40 PM
Role of an Interface on the Thermal and Mechanical Characteristics of Heterogeneous Nanocomposites by Correlating Molecular-Quantum Study Focusing on Nanoscale Diffusion and Defect Formation: *Vikas Samvedi*[1]; Vikas Tomar[2]; [1]University of Notre Dame; [2]Purdue University

4:00 PM
Interfacial Defect Mechanism in the Precipitation of Tetradymite Plates in Rocksalt-Structured Tellurides: *Douglas Medlin*[1]; J. Sugar[1]; [1]Sandia National Labs

Stochastic Methods in Materials Research: Stochastic Methods I: New Algorithms and Model Building

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois, Urbana-Champaign

Wednesday PM Room: 614
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois Urbana-Champaign

2:00 PM Invited
Building Effective Models from Sparse but Precise Data: *Axel van de Walle*[1]; Eric Cockayne[2]; [1]Caltech; [2]NIST

2:30 PM
Statistical Learning and Materials Informatics: *Krishna Rajan*[1]; Chang Sun Kong[1]; Prasanna Balachandran[1]; [1]Iowa State University

2:50 PM Break

3:10 PM Invited
Error Estimation in Density Functional Theory: *Vivien Petzold*[1]; James Sethna[2]; Karsten Jacobsen[1]; [1]Technical University of Denmark; [2]Cornell University

3:40 PM
Applications of Stochastic Geometry for Statistical Representation, Stereological Characterization, Modeling, and Simulations of Material Microstructures: *Arun Gokhale*[1]; [1]Georgia Institute of Technology

4:00 PM
Fractal Analysis of Microstructural Images for Evaluation of HSLA Steel: *Mita Tarafder*[1]; I. Chattoraj[1]; S.K. Das[1]; M. Nasipuri[2]; S. Tarafder[1]; [1]National Metallurgical Laboratory; [2]Jadavpur University

4:20 PM Break

4:40 PM
Two Stochastic Mean-Field Polycrystal Plasticity Methods: *Michael Tonks*[1]; John Bingert[2]; Curt Bronkhorst[2]; Daniel Tortorelli[3]; [1]Idaho National Laboratory; [2]LANL; [3]University of Illinois at Urbana-Champaign

5:00 PM
A Stochastic Continuum Model for Growth and Optimization of Epitaxial Quantum Dot Multilayers: Chandan Kumar[1]; *Lawrence Friedman*[1]; [1]The Pennsylvania State University

5:20 PM
Monte Carlo Method for Electromagnetic Scattering Incorporating Finite Element Methods to Generate Scatter Sources for Nanoscale Inclusions in Composites: *Erik Sapper*[1]; Brian Hinderliter[1]; [1]North Dakota State University

Sustainable Materials Processing and Production: Sustainability in Education

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Wednesday PM Room: 2B
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Diana Lados, Worcester Polytechnic Institute; Adam Powell, Opennovation

2:00 PM Introductory Comments

2:05 PM Invited
Appropriate Technology and Sustainability: *Richard LeSar*[1]; [1]Iowa State University

2:30 PM Invited
Ceramics for Life in Rural Africa: A TMS Grant Update: *Nathan Johnson*[1]; Sara Moser[1]; Andrew Havens[1]; [1]Iowa State University

2:55 PM Invited
Depth through Breadth: Addressing the Grand Challenges of Teaching Sustainability: *Svetlana Nikitina*[1]; [1]Worcester Polytechnic Institute

3:20 PM
Engagement is an Essential Skill in the 21st Century: Dirk van Zyl[1]; [1]University of British Columbia

3:45 PM Break

3:55 PM
Embracing Sustainability in the Materials Engineering Curriculum: Suggestions and Examples to Build Competencies for Today's Materials Engineering Graduate: *Katherine Chen*[1]; Linda Vanasupa[1]; Trevor Harding[1]; Blair London[1]; Richard Savage[1]; [1]Cal Poly State University

4:20 PM
Sustainability and Mineral Resource Utilisation: A Study Guide: *William Rankin*[1]; [1]CSIRO Minerals

4:45 PM Invited
Teaching Design for "Sustainability" on the Basis of Metallurgy and Materials Science: *Markus Reuter*[1]; [1]Ausmelt Limited

5:10 PM
Materials and Society Resources on the Teaching Archive of the Materials Digital Library: *Adam Powell*[1]; Laura Bartolo[2]; Matthew Krane[3]; Edwin Garcia[3]; Lan Li[2]; [1]Opennovation; [2]Kent State University; [3]Purdue University

5:35 PM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Crystal Defects and Mechanical Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, Univ of Groningen

Wednesday PM Room: 603
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Ralf Drautz, Ruhr-Universität Bochum; Petros Sofronis, University of Illinois

2:00 PM Invited
Heating Graphene in a Microscope: *Ju Li*[1]; Liang Qi[1]; Li Feng[1]; Jianyu Huang[2]; Ping Lu[2]; Feng Ding[3]; Boris I. Yakobson[3]; [1]University of Pennsylvania; [2]Sandia National Laboratories; [3]Rice University

2:25 PM Invited
Layer Growth by Ion Bombardment: *Miklos Menyhard*[1]; Peter Sule[1]; Janos Labar[1]; [1]Research Institute for Technical Physics and Materials Science

2:50 PM
The Strength and Deformation of Gum Metal: *John Morris*[1]; Eizabeth Withey[1]; Rohini Sankaran[1]; Andrew Minor[1]; Daryl Chrzan[1]; [1]University of California - Berkeley

3:05 PM
Deformation of Preciptate Platelets in High Strength Aluminum Alloys under High Strain-Rate Compression: K. El-Khodary[1]; William Lee[1]; L. Sun[1]; Bryan Cheeseman[2]; Donald Brenner[1]; *Mohammed Zikry*[1]; [1]North Carolina State University; [2]Army Research Laboratory

3:20 PM Break

3:40 PM Invited
Physical and Mechanical Properties of Co3 (Al,W) with the L12 Structure: *Haruyuki Inui*[1]; Norihiko Okamoto[1]; Katsushi Tanaka[1]; Kyosuke Kishida[1]; Takashi Ohashi[1]; [1]Kyoto University

4:05 PM Invited
Propagation of Shear Transformation Zone at Sound Velocity in Metallic Glass: *Shin Takeuchi*[1]; Yasushi Kamimura[1]; Takaaki Yoshihara[1]; Keiichi Edagawa[1]; [1]Tokyo University of Science

4:30 PM Invited
Multiscale Models of Dislocation Core Structures in Iron and Copper: *Nasr Ghoniem*[1]; A. Takahashi[2]; Z. Chen[3]; N. Kioussis[3]; G. Lu[3]; [1]University of California, Los Angeles; [2]Science University of Tokyo; [3]California State University, Northridge

4:55 PM
Quantum Monte Carlo Calculations for Point Defects in Silicon: *Richard Hennig*[1]; W. Parker[2]; K. Driver[2]; J. Wilkins[2]; [1]Cornell University; [2]The Ohio State University

5:10 PM
Modeling of Point Defect Diffusion in Fe-Cr-Ni Alloys Using Ab-initio Based Multi-Scale Approach: *Samrat Choudhury*[1]; Benjamin Swoboda[1]; Leland Barnard[1]; Julie Tucker[2]; Anton Van der Ven[3]; Todd Allen[1]; Dane Morgan[1]; [1]University of Wisconsin, Madison; [2]Knolls Atomic Power Laboratory; [3]University of Michigan - Ann Arbor

5:25 PM
Computing Ab Initio Free Energy Contributions of Point Defects: *Blazej Grabowski*[1]; Lars Ismer[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

5:40 PM
Ab Initio Modeling of Dislocation/Solute Interactions in Mg: *Joseph Yasi*[1]; Louis Hector[2]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign; [2]General Motors Technical Center

5:55 PM
Embrittlement in Metals: An Atomistic Study of the Hydrogen Enhanced Local Plasticity (HELP) Mechanism: *Johann von Pezold*[1]; Liverios Lymperakis[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

6:10 PM
Atomic Scale Study of the Interaction of Point Defects with Edge and Screw Dislocations in Bcc Iron: *Erin Hayward*[1]; Blas Uberuaga[2]; Chaitanya Deo[1]; Carlos Tome[2]; [1]Georgia Institute of Technology; [2]Los Alamos National Laboratory

6:25 PM
Simulation of Tensile Loading of Ag <110> Nanowires with Extremely Slow Strain Rates Using Accelerated Molecular Dynamics: *Chun-Wei Pao*[1]; Danny Perez[2]; Sriram Swaminarayan[2]; Arthur F. Voter[2]; [1]Research Center for Applied Sciences, Academia Sinica; [2]Los Alamos National Laboratory

6:40 PM
Modeling of Deformation and Microstructure Evolution in Severe Plastic Deformation: *Hyoung Seop Kim*[1]; [1]POSTECH

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Dislocations II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Wednesday PM Room: 604
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Christopher Woodward, Air Force Research Laboratory; Ladislas Kubin, CNRS

2:00 PM Invited
Atomic-Scale Modelling of Dislocation Interaction with Nanoscale Obstacles: *David Bacon*[1]; Yuri Osetsky[2]; [1]University of Liverpool; [2]Oak Ridge National Laboratory

2:25 PM Invited
Multiscale Models of Dislocation Core Structures in Iron and Copper: *N. M. Ghoniem*[1]; A. Takahashi[2]; Z. Chen[3]; N. Kioussis[3]; G. Lu[3]; [1]University of California, Los Angeles; [2]Science University of Tokyo; [3]California State University, Northridge

2:50 PM
Is Dislocation Locking Possible without External Stress?: *Bella Greenberg*[1]; Mike Ivanov[2]; Alexander Patselov[1]; [1]Institute of Metal Physics, Ural Branch, Russian Academy of Sciences; [2]Kurdjumov Institute of Metal Physics, National Academy of Sciences of Ukraine

3:05 PM
Brittle–Ductile Behavior and Dislocation Core Structure in Y- and Co-Based B2 Intermetallics: *Oleg Kontsevoi*[1]; Yuri Gornostyrev[2]; Arthur Freeman[1]; [1]Northwestern University; [2]Institute of Metal Physics

3:20 PM Break

3:40 PM Invited
Structure of Random Tilt Boundaries and Dislocation Emission Behavior under Stress: *Diana Farkas*[1]; Laura Patrick[1]; Nicklas Floyd[1]; [1]Virginia Tech

4:05 PM Invited
Copper Precipitation Strengthening of Iron and Steels. Dislocation Locking Mediated by Phase Instability: *Yuri Gornostyrev*[1]; [1]Institute of Metalphysics of the Ural Branch of RAS and CJSC Institute of Quantum Materials Science, Ekaterinburg, Russia

4:30 PM
A Peierls Model of Atomic Stick-Slip Frictional Behavior: *Yanfei Gao*[1]; [1]University of Tennessee

4:45 PM
Atomistic Modeling of Screw Dislocation Mobility in Alpha-Fe: *Neeraj Thirumalai*[1]; Peter Gordon[1]; Ju Li[2]; Youhong Li[1]; Mikhail Mendelev[3]; Michael Luton[1]; [1]ExxonMobil Research and Engineering; [2]University of Pennsylvania; [3]Ames Laboratory

5:00 PM
Atomistically Informed 3D Dislocation Dynamics Simulations of BCC Ta: *Z. Wang*[1]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory

5:15 PM
Atomistic Investigation and Analysis of Dislocation Precipitate Interactions in Al-Cu Alloys: *Chandra Veer Singh*[1]; Derek Warner[1]; [1]Cornell University

5:30 PM
Atomistic Simulations of Athermal Cross-Slip at Screw Dislocation Intersections in Face-Centered Cubic Nickel: *Satish Rao*[1]; Dennis Dimiduk[2]; El-Awady Jafaar[3]; Triplicane Parthasarathy[1]; Michael Uchic[2]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]UTC

5:45 PM
Dislocation Statistics in FCC Crystals: *Mamdouh Mohamed*[1]; Jie Deng[1]; Anter El-Azab[1]; [1]Florida State University

6:00 PM
Modeling of Magnesium <a> and <c+a> Dislocation Cores by First Principles and EAM Potentials: *Thomas Nogaret*[1]; Joseph A. Yasi[2]; Louis Hector Jr[3]; Dallas Trinkle[2]; William Curtin[1]; [1]Brown University; [2]University of Illinois at Urbana-Champaign; [3]General Motors Technical Center

Thermo-Mechanical Response of Molecular Solids: Multi-Resolution Theory, Simulations, and Experiments: Molecular Solids I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division
Program Organizers: Alejandro Strachan, Purdue University; Thomas Sewell, University of Missouri-Columbia; Rodolfo Pinal, Purdue University; Chunyu Li, Purdue University

Wednesday PM Room: 203
February 17, 2010 Location: Washington State Convention Center

Session Chair: Rodolfo Pinal, Purdue University

2:00 PM Introductory Comments

2:05 PM Invited
Shock-Induced Subgrain Microstructures as Possible Homogenous Sources of Hot Spots and Initiation Sites in Energetic Polycrystals: Julian Rimoli[1]; Ercan Gurses[2]; *Michael Ortiz*[2]; [1]MIT; [2]Caltech

2:35 PM
Shear-Induced Disordering in Small Molecule Organic Crystalline Solid Materials: Modeling, Characterization and Relevance in Pharmaceutical Drug Products: *Peter Wildfong*[1]; [1]Duquesne University

2:55 PM
Thermo-Mechanical and Spectroscopic (TMS) Analyses of Structural Transformation Produced by Mechanical Processing: Derya Cebeci[1]; Diana Guzman[1]; Dea Herrera[2]; Dor Ben-Amotz[1]; *M. Teresa Carvajal*[1]; [1]Purdue University; [2]Facultad de Farmacia, UAEM

3:15 PM
Microstructural Evolution of Molecular Crystals: *Lei Lei*[1]; Marisol Koslowski[1]; [1]Purdue University

3:35 PM Break

3:55 PM
Mechanical Response of Pharmaceutical and Explosive Molecular Single Crystals: *Kyle Ramos*[1]; Daniel Hooks[1]; David Bahr[2]; [1]Los Alamos National Laboratory; [2]Washington State University

4:15 PM
Thermal and Elastic Mechanical Properties of Crystalline 1,3,5-Triamino-2,4,6-Trinitrobenzene (TATB): Dmitry Bedrov[1]; Oleg Borodin[1]; Grant Smith[1]; *Thomas Sewell*[2]; Dana Dattelbaum[3]; Lewis Stevens[3]; [1]University of Utah; [2]University of Missouri-Columbia; [3]Los Alamos National Laboratory

4:35 PM Invited
Thermodynamic Stability and Formation of Multicomponent Molecular Crystals: Chinmay Maheshwari[1]; Rodolfo Pinal[2]; *Nair Rodriguez-Hornedo*[1]; [1]University of Michigan; [2]Purdue University

5:05 PM Invited
Acoustic and Thermal Responses across the Brillouin Zone: *Keith Nelson*[1]; [1]Department of Chemistry, MIT

Three-Dimensional Materials Science VI: Novel Tools for 3D Data Acquisition and Analysis - Part II

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Alexis Lewis, Naval Research Laboratory; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab; Jeff Simmons, AFRL; Stuart Wright, EDAX Inc-TSL

Wednesday PM Room: 401
February 17, 2010 Location: Washington State Convention Center

Session Chairs: George Spanos, U S Naval Research Laboratory; Nik Chawla, Arizona State University

2:00 PM Invited
X-Ray Synchrotron Tomography for Three Dimensional (3D) Microstructure Visualization and Modeling of Deformation in Metal Matrix Composites: Jason Williams[1]; Anna Tosas[1]; Zeke Flom[1]; *Nik Chawla*[1]; Francesco de Carlo[2]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]Argonne National Laboratory/Advanced Photon Source

2:30 PM
Orientation Determination by Laue Diffractometry in a Robomet.3D System: *Abhijeet Budruk*[1]; Clayton Stein[1]; Marc De Graef[1]; [1]Carnegie Mellon Unversity

2:50 PM
Utilizing the New Femtosecond Laser Tomographic Sectioning Technique: Reconstruction and Analysis of Low Volume Fraction Titanium Nitride Particles: *McLean Echlin*[1]; Naji Husseini[1]; John Nees[1]; Tresa Pollock[1]; [1]University of Michigan

3:10 PM
Three-Dimensional (3D) Visualization and Modeling of Reflow Porosity in Pb-Free Solder Joints by Lab-Scale X-Ray Tomography: *Ling Jiang*[1]; Martha Dudek[1]; Jason Williams[1]; Nik Chawla[1]; Luke Hunter[2]; S.H. Lau[2]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]XRadia

3:30 PM Break

4:00 PM
Direct Three Dimensional Characterization of Microstructures in a/ß- and ß-Ti Alloys: *Robert Williams*[1]; Daniel Huber[1]; John Sosa[1]; Santhosh Koduri[1]; Vikas Dixit[1]; Peter Collins[1]; Srinivasan Rajagopalan[1]; Hamish Fraser[1]; [1]The Ohio State University

4:20 PM
3D Characterization, Analysis, and Modeling Tools: *George Spanos*[1]; Andrew Geltmacher[1]; [1]Naval Research Laboratory

4:40 PM
D3D Design Research Tools: *Greg Olson*[1]; [1]Northwestern University

Ultrafine Grained Materials – Sixth International Symposium: Applications and Transitions

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, 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 Laboratory; Mathias Goeken, University Erlangen--Nürnberg; Terence Langdon, University of Southern California; Terry Lowe, Manhattan Scientifics, Inc.; S. Semiatin, Air Force Research Laboratory; Nobuhiro Tsuji, Kyoto University; Yonghao Zhao, University of California - Davis; Yuntian Zhu, North Carolina State University

Wednesday PM Room: 606
February 17, 2010 Location: Washington State Convention Center

Session Chairs: Suveen Mathaudhu, U.S. Army Research Laboratory; Yuntian Zhu, North Carolina State University; Terry Lowe, Manhattan Scientific; Judson Marte, GE Global Research

2:00 PM Awards Presentation

2:10 PM Panel Discussion

2:30 PM Invited
Can SPD Techniques Provide Bulk Ultrafine Grained Functional Materials?: *Michael Zehetbauer*[1]; [1]University of Vienna

2:50 PM
Corrosion and Mechanical Properties of a Steel Processed by SMAT in Contrast to Its Coarse Grained Counterpart: *Indranil Roy*[1]; Christian Wilkinson[1]; Rashmi Bhavsar[1]; Jian Lu[2]; Yuntian Zhu[3]; Farghalli Mohamed[4]; [1]Schlumberger; [2]The Hong Kong Polytechnic University; [3]North Carolina State University; [4]University of California, Irvine

3:05 PM
Eutectic Structure from an Amorphous Al2O3-ZrO2-Y2O3 System by Rapid-Quenching Technique for Potential Hybrid Solar Cell Application: *Young-Hwan Han*[1]; Jondo Yun[2]; Yohei Harada[3]; Taro Makino[3]; Kwang-Ho Kim[1]; Sehun Kwon[1]; Kazuyuki Kakegawa[3]; [1]Pusan National University; [2]Kyungnam University; [3]Chiba University

3:20 PM Invited
Recycling of Titanium Machining Chips by Severe Plastic Deformation Consolidation: P. Luo[1]; H. Xie[1]; M. Paladugu[2]; S. Palanisamy[2]; M. S. Dargusch[2]; *K. Xia*[1]; [1]University of Melbourne; [2]University of Queensland

3:40 PM
Processing of High Temperature Shape Memory Alloy Ni33.7Ti50.3Pd16 via Equal Channel Angular Extrusion: *Mohammed Haouaoui*[1]; Benat Kockar[2]; Kadri C. Atli[1]; Ji Ma[1]; Ibrahim Karaman[1]; [1]Texas A&M University; [2]Hacettepe University

3:55 PM
Enabling Near-Net Shaped Forging of Titanium Aerospace Components by Severe Plastic Deformation: *Judson Marte*[1]; Robin Forbes Jones[2]; [1]GE Global Research; [2]ATI Allvac

4:10 PM Break

4:25 PM Invited
Improved Recrystallized Microstructures in Nb and Ta: *K. Ted Hartwig*[1]; Shreyas Balachandran[1]; Suveen Mathaudhu[2]; [1]Texas A&M University; [2]U.S. Army Research Laboratory

4:45 PM
Deformation Processing of Nanostructured Alloys and Their Application in the Production of Hollow Structures: *Radik Mulyukov*[1]; Oleg Valiakhmetov[1]; Rafail Galeev[1]; Rinat Safiullin[1]; Aleksey Kruglov[1]; Renat Imayev[1]; Ayrat Nazarov[1]; Victor Ivan'ko[2]; [1]Institute for Metals Superplasticity Problems, Russian Academy of Sciences; [2]CJSC "INNOTEKHPROM"

5:00 PM
Design and Realization of High Strength and High Ductility Metallic Nanomaterials: *Jian Lu*[1]; Ai Ying Chen[1]; Hoi Lam Chan[1]; Hong Ning Kou[1]; Lin Li Zhu[1]; Hai Hui Ruan[1]; Ka Po Cheung[1]; [1]The Hong Kong Polytech University

5:15 PM Invited
Potential of Severe Plastic Deformation for Producing Bioimplant Materials: *Yuri Estrin*[1]; [1]Monash University

5:35 PM
Concluding Comments

2010 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Mechanical Properties of Nanomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: David Stollberg, Georgia Tech Research Institute; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas - Dallas; Seong Jin Koh, University of Texas at Arlington; Navin Manjooran, Siemens Corporation; Ben Poquette, Keystone Materials; Jud Ready, Georgia Tech

Thursday AM Room: 214
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Gregory Thompson, University of Alabama; David Stollberg, Georgia Tech Research Institute

8:30 AM Introductory Comments

8:35 AM
Substrate Effect on the Young's Modulus Measurement of TiO2 Nanoribbons by Nanoindentation: *Xiaoxia Wu*[1]; Terry T. Xu[1]; [1]University of North Carolina Charlotte

8:55 AM
Commercializing Unique Molecular-Scale Surface and Interfacial Coatings: *Eric Bruner*[1]; [1]Aculon, Inc.

9:15 AM
Fracture Behavior of Co-Rich Nanocrystalline Soft Magnetic Ribbons: *Maria Daniil*[1]; Paul Ohodnicki[2]; Michael McHenry[2]; Matthew Willard[1]; [1]Naval Research Laboratory; [2]Carnegie Mellon University

9:35 AM
Ductility of Bulk Nanostructured Materials: *Yonghao Zhao*[1]; Yuntian Zhu[2]; Enrique Lavernia[1]; [1]University of California-Davis; [2]North Carolina State University

9:55 AM
Evaluation of Fracture Toughness of Carbon Nanotube Reinforced Nano-Aluminum Oxide Via Fractal Approach: *Abhishek Rishabh*[1]; Kantesh Balani[1]; [1]Indian Institute of Technology Kanpur

10:15 AM Break

10:30 AM
Warm Sever Plastic Deformation to Form Nanostructured Surface Layer in IF Steels: *Mohammad Nasirizadeh*[1]; Kamran Dehghani[1]; [1]Amirkabir University

10:50 AM
Bulk Functional Materials Obtained by Shock Waves Compaction of Ultrafine Al and Ti: *Nikoloz Chikhradze*[1]; Constantin Politis[1]; Mikheil Chikhradze[1]; Akaki Gigineishvili[1]; George Oniashvili[1]; [1]Mining Institute/ Georgian Technical University

11:10 AM
Corrosion Rates and Mechanical Properties of Nanocrystalline Materials in Contrast to their Coarse Grained Counterparts: *Indranil Roy*[1]; Shehreen Dheda[2]; Manuel Marya[1]; Farghalli Mohamed[2]; [1]Schlumberger; [2]University of California, Irvine

11:30 AM
Structural Properties of Nanostructured Fe-Co-V Prepared by Mechanical Alloying and Spark Plasma Sintering: *Baolong Zheng*[1]; Randy Dumas[1]; Asit Biswas[2]; Yizhang Zhou[1]; Kai Liu[1]; Dean Baker[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Advanced Powder Solutions, Inc.

11:50 AM
Reticulated Vitreous Carbon Foam Saturated with SiO2 Aerogel for Heat Insulation Purposes: *Liping Shi*[1]; Yesheng Zhong[1]; Xiao dong He[1]; Jia Yu[1]; [1]Harbin Institute of Technology

12:10 PM Concluding Comments

Advanced Materials and Fuels Enabling Future Fusion, Fission and Hybrid Reactor Systems: Hybrid Fission Fuels

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Joseph Farmer, Lawrence Livermore National Laboratory; Thomas M. Anklam, Lawrence Livermore National Laboratory; Magdalena Serrano de Caro, Lawrence Livermore National Laboratory

Thursday AM Room: 3A
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Magdalena Serrano de Caro, Lawrence Livermore National Laboratory; Joseph Farmer, Lawerence Livermore National Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Grain Boundary Structure Effects on Radiation Assisted Segregation and Damage: *Zhe Leng*[1]; David Field[1]; [1]Washington State University

9:05 AM
Materials Behavior under Extreme Conditions: An Aspect from Ab Initio Calculations: *Fei Gao*[1]; H.Y. Xiao[1]; W.J. Weber[1]; [1]Pacific Northwest National Laboratory

9:35 AM
Interatomic Forces in Stainless Steels: *Graeme Ackland*[1]; Derek Hepburn[1]; [1]University of Edinburgh

9:55 AM Invited
Thermo-Mechanical Response of a TRISO Fuel Particle in a Fusion/Fission Engine for Incineration of Weapons Grade Plutonium: *Magdalena Serrano de Caro*[1]; P. DeMange[1]; J. Marian[1]; A. Caro[1]; [1]Lawrence Livermore National Laboratory

10:25 AM
The Evolution and Thermal Recovery of Irradiation Effects in Silicon Carbide: *William J. Weber*[1]; F. Gao[1]; R. Devanathan[1]; Y. Zhang[1]; W. Jiang[1]; [1]Pacific Northwest National Laboratory

10:45 AM Break

10:55 AM Invited
The Synthesis and Sintering of Advanced Fuels: *Brian Jaques*[1]; Daniel Osterberg[1]; Richard Reavis[1]; A. S. Hamdy[1]; Brian Marx[1]; Darryl Butt[1]; [1]Boise State University

11:25 AM
Development of a Continuous CVD Process for TRISO Coating of AGR Fuel: *Clay Richardson*[1]; [1]Babcock and Wilcox

11:45 AM
Interaction of the Fission Product Pd with TRISO Fuel Coatings: *Yufeng Zhang*[1]; D. Hanks[1]; S. Krause[1]; G. Gajjala[1]; T. Hofmann[1]; L. Weinhardt[1]; M. Bär[1]; C. Heske[1]; [1]Department of Chemistry, University of Nevada, Las Vegas

12:05 PM Invited
ZrC Surface Cleaning and Interaction with the Fission Product Ru: *Stefan Krause*[1]; D. Hanks[1]; Y. Zhang[1]; C. Heske[1]; [1]Department of Chemistry, University of Nevada, Las Vegas

12:35 PM Concluding Comments

Alumina and Bauxite: Alumina Precipitation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Carlos Suarez, Hatch Associates Inc; Everett Phillips, Nalco Company

Thursday AM Room: 611
February 18, 2010 Location: Washington State Convention Center

Session Chair: Patrick James, Alumina Partners of Jamaica - Alpart

8:30 AM Introductory Comments

8:40 AM
Study on the Precipitation Kinetics for Improving the Quality of Alumina with Regard to Fines and Attrition Properties: *Narasimharaghavan Krishnaswamy*[1]; Nand Kumar Kshatriya[1]; Supratim Dasgupta[1]; Ramaswamy Jagannathan[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.), BALCO Nagar, Korba

9:10 AM
Wet Oxidation of Bayer Liquor Organics: Reaction Mechanisms: *Jackie Dong*[1]; James Tardio[1]; Joanne Loh[2]; Greg Power[2]; Chris Vernon[2]; Suresh Bhargava[1]; [1]RMIT University; [2]CSIRO Minerals

9:40 AM Break

10:00 AM
The Roles of Adsorption in Hydrate Precipitation: *Joanne Loh*[1]; Greta Brodie[1]; Fatima Naim[1]; [1]Parker Centre/CSIRO Light Metals Flagship (CSIRO Minerals)

10:30 AM
The Microstructure of Aluminum Hydroxide Powders: *Yu Haiyan*[1]; Li Wencheng[1]; Bi Shiwen[1]; [1]Northeastern University

Aluminum Reduction Technology: Hall-Héroult Cell: Raw Materials and Process Control

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Charles Mark Read, Bechtel Corporation; Gilles Dufour, Aluminerie de Deschambault

Thursday AM Room: 608
February 18, 2010 Location: Washington State Convention Center

Session Chair: Charles Mark Read, Bechtel Corporation

8:30 AM Introductory Comments

8:35 AM
Rapid, Non-Destructive Analysis of % Gibbsite in Smelting Grade Alumina: Kerrick Dando[1]; *Neal Dando*[2]; [1]Juniata College; [2]Alcoa

9:00 AM
Alumina Dissolution Rate as Impacted by Ore Pre-Treatments: *Xiangwen Wang*[1]; Jack Sorensen[1]; Neal Dando[1]; Weizong Xu[2]; [1]Alcoa, Inc.

9:25 AM
Processing of Anode Cover Material: *Ingo Eick*[1]; Bruno Rausch[1]; Juraj Chmelar[2]; Ulrich Kohaupt[3]; [1]Hydro Aluminium Deutschland GmbH; [2]Hydro Aluminium Metal; [3]Steinert Elektromagnetbau GmbH

9:50 AM
Statistical Investigation and Modeling of Bath Level in Hall-Héroult Cells: *Jayson Tessier*[1]; Patrice Doiron[1]; [1]Alcoa Deschambault

10:15 AM Break

10:25 AM
In Situ Raman Experimental Study of Ionic Species in Cryolite Melts of Various Composition: Sergey Vassiliev[1]; Veronika Laurinavichute[1]; Zoya Kuz'minova[1]; Galina Tsirlina[1]; Evgeny Antipov[1]; *Alexander Gusev*[2]; Dmitry Simakov[2]; [1]Laboratory for Basic Research in Aluminium Production, M.V.Lomonosov Moscow State University; [2]RUSAL

10:50 AM
In Situ Cell Control: *Michael Schneller*[1]; [1]Consultant

11:15 AM
Determination of Cryolite Ratio of Aluminum Electrolytes: *Bingliang Gao*[1]; Dan Li[1]; Zhongning Shi[1]; Zhaowen Wang[1]; Bijun Ren[2]; [1]Northeastern University, China; [2]Yichuan Power GroupHead Corporation

11:40 AM Concluding Comments

Aluminum Rolling: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Deutschland GmbH

Thursday AM Room: 615
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Kai Karhausen, Hydro Aluminium; Gary Parker, Wise Alloys, LLC

8:30 AM Introductory Comments

8:35 AM
Integrated through Process Modeling Using a Virtual Platform for Materials Processing by the Example of a Multi-Pass Rolling Process: *Thomas Henke*[1]; Markus Bambach[1]; Gerhard Hirt[1]; [1]RWTH Aachen University

8:55 AM
Aluminium Rolling Simulations Considering Interstep Annealing: *Volker Mohles*[1]; [1]RWTH Aachen University

9:15 AM
Grain Interactions and Dislocation Density Evolution during Channel Die Compression of Aluminum: *Alankar Alankar*[1]; Ioannis Mastorakos[1]; David Field[1]; [1]Washington State University

9:35 AM
Impact of Solute State and Precipitations on the Properties of 8xxx Alloys after Cold Rolling and Recrystallization: *Galyna Laptyeva*[1]; Carmen Schäfer[2]; Kai F. Karhausen[1]; Volker Mohles[2]; Günter Gottstein[2]; [1]Hydro Aluminium Deutschland GmbH, R&D; [2]Institute of Physical Metallurgy and Metal Physics-RWTH Aachen

9:55 AM Panel Discussion

10:25 AM Break

10:40 AM
Inspection Systems and Data Warehousing of Informaton: *David Pond*[1]; [1]Automation and Control Technology Inc.

11:00 AM
Expert5i - Intelligent Software Solution for Yield Optimization along the Production Line of Aluminium Flat Rolled Products: Sigrid Hillebrand[1]; Uwe Knaak[1]; *Reinhard Rinn*[1]; [1]ISRA PARSYTEC GmbH

11:20 AM
Possibilities of Laser Meaurement for Aluminum Processing: *Patrick Sonntag*[1]; [1]Nokra GmbH

11:40 AM Panel Discussion

Biological Materials Science: Computational Materials Science

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: John Nychka, University of Alberta; Jamie Kruzic, Oregon State University; Mehmet Sarikaya, University of Washington; Amit Bandyopadhyay, Washington State University

Thursday AM Room: 205
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Nima Rahbar, University of Massachusetts Dartmouth; Devesh Misra, University of Louisiana

8:30 AM Invited
Molecular Bioassemblies as Mechanical Systems: *Richard LeSar*[1]; [1]Iowa State University

9:00 AM Invited
Optimized Design of Porous Titanium for Bio-Medical Applications: Alex Turner[1]; Nikolas Hrabe[1]; *Rajendra Bordia*[1]; [1]University of Washington

9:30 AM
Numerical Analysis of Tesselated Shark Cartilage in Bending: Xiaoxi Liu[1]; Mason Dean[1]; Adam Summers[1]; *James Earthman*[1]; [1]University of California, Irvine

9:50 AM
Binding and Assembly of Material-Specific Peptides on Solid Substrates by Atomic Force Microscopy: *Christopher So*[1]; Megan Noyes[2]; Ersin Oren[1]; Hakim Meskine[3]; Hilal Yazici[4]; Paul Mulheran[3]; Candan Tamerler[4]; John Evans[5]; Mehmet Sarikaya[1]; [1]University of Washington; [2]University of Michigan; [3]University of Strathclyde; [4]Istanbul Technical University; [5]New York University

Bulk Metallic Glasses VII: 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: 213
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Yanfei Gao, The University of Tennessee; Y. Yokoyama, Institute for Materials Research

8:30 AM Invited
Indentation Creep Behavior of Amorphous Selenium and Amorphous Alloys near the Glass Transition Temperature: *Yanfei Gao*[1]; Caijun Su[1]; George Pharr[1]; [1]University of Tennessee

8:50 AM
Crystallization Mechanism in Amorphous Cu-Zr System: *Ilkay Kalay*[1]; Eren Kalay[1]; Matthew Kramer[1]; Ralph Napolitano[1]; [1]Iowa State University / Ames Laboratory

9:00 AM Invited
Tensile Ductility in Metalic Glass: Z.F. Zhang[1]; F.F. Wu[1]; *Scott Mao*[2]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research; [2]University of Pittsburgh

9:20 AM
Crystal Formation at Unusually Low Temperatures: Joachim Bokeloh[1]; Nancy Boucharat[2]; Harald Roesner[1]; *Gerhard Wilde*[1]; [1]University of Muenster; [2]Research Center Karlsruhe

9:30 AM Invited
Evolution of Shear Bands in Bulk Metallic Glass Composite: *G. Chen*[1]; J. L. Cheng[1]; H. Bei[2]; C. T. Liu[2]; [1]Nanjing University of Science and Technology; [2]Oak Ridge National Laboratory

9:50 AM
Deformation Mechanisms in Amorphous-Crystalline Nanocomposites: *Yvonne Ritter*[1]; Karsten Albe[1]; [1]Technische Universitaet Darmstadt

10:00 AM Break

10:10 AM Invited
Dissimilar Mechanical Properties between Various Families of Bulk Metallic Glasses: *Maria D Baró*[1]; Jordina Fornell[1]; Santiago Suriñach[1]; Weihuo Li[2]; Annett Gebert[3]; Jordi Sort[1]; [1]Universitat Autònoma de Barcelona; [2]Anhui University of Technology; [3]IFW Dresden

10:30 AM
Submicron Scale Measurement of Residual-Stress Profiles in Amorphous Materials by the FIB Incremental Slitting Technique: *Bartlomiej Winiarski*[1]; Ali Gholinia[1]; Jiawan Tian[2]; Yoshihiko Yokoyama[3]; Peter Liaw[2]; Philip Withers[1]; [1]University of Manchester; [2]The University of Tennessee; [3]Himeji Institute of Technology

10:40 AM
Heating-Rate-Dependent Crystallization Behavior of a Zr-Based Bulk Metallic Glass: *Hongqing Sun*[1]; Katharine Flores[1]; [1]The Ohio State University

10:50 AM
Influence of Minor Aluminum Concentration Changes in Zirconium-Based Bulk Metallic Glasses on the Elastic, Anelastic, and Plastic Properties: *Arnaud Caron*[1]; Rainer Wunderlich[1]; Dmitri Louzguine-Luzgin[2]; Guoqiang Xie[2]; Akihisa Inoue[2]; Hans-Jörg Fecht[1]; [1]Institute of Micro- and Nanomaterials, University Ulm; [2]WPI Advanced Institute for Materials Research, Tohoku University

11:00 AM
Length Scale Effects on Deformation in a Zr-Based Bulk Metallic Glass: *Ashwini Bharathula*[1]; [1]The Ohio State University

11:10 AM
Effects of Ion-Implantation on Surface Properties and Bioactivity of a Nickel-Free Zr-Based Bulk Metallic Glass: *Lu Huang*[1]; Wei He[1]; Claudiu Muntele[2]; Yoshihiko Yokoyama[3]; Harry Meyer[4]; Daryush Ila[2]; Akihisa Inoue[3]; Tao Zhang[5]; Peter Liaw[1]; [1]University of Tennessee, Knoxville; [2]Alabama A&M University; [3]Tohoku University; [4]Oak Ridge National Laboratory; [5]Beijing University of Aeronautics and Astronautics

Cast Shop for Aluminum Production: Melt Oxidation, Inclusions and Hydrogen

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Pierre Le Brun, Alcan Voreppe Research Center

Thursday AM Room: 609
February 18, 2010 Location: Washington State Convention Center

Session Chair: Richard Chandler, Altek-MDY

8:30 AM
Formation of the Solid Layer on the Top of Molten Aluminum: Lucas Nana Wiredu Damoah[1]; *Lifeng Zhang*[2]; [1]University of Ghana; [2]Missouri University of Science and Technology

8:55 AM
Removal of Solid Inclusions from Molten Aluminium through Ceramic Foam Filtration: *Alma Engelbrecht*[1]; [1]Hycast AS

9:20 AM
Strategies to Reduce Inclusion Input during Liquid Metal Transportation and Melt Distribution while DC Casting of Al Alloys: *Bernd Prillhofer*[1]; Holm Böttcher[1]; Helmut Antrekowitsch[2]; [1]AMAG Casting GmbH; [2]University of Leoben

9:45 AM Break

10:05 AM
A New Multi Stage System of Filtration Employing a Cyclone: *John Courtenay*[1]; Frank Reusch[2]; [1]MQP Limited; [2]Drache Umwelttechnik GmbH

10:30 AM
Hazards Associated with the Use of Bone Ash in Contact with Molten Aluminum: *Don Doutre*[1]; [1]Novelis Global Technology Centre

10:55 AM
In-Situ Measurement of Dissolved Hydrogen during Low Pressure Die Casting of Aluminium: *Matthew Hills*[1]; Mark Henson[1]; Chris Thompson[1]; Barnett Geddes[2]; Carsten Schwandt[3]; R Kumar[3]; Derek Fray[3]; [1]EMC Limited; [2]Foseco; [3]University of Cambridge

11:20 AM
Hycast SIR- A Unique Concept for Inline Melt Refining: *Idar Steen*[1]; Erling Myrbostad[1]; Terje Haugen[1]; Arild Håkonsen[1]; [1]Hycast

Characterization of Minerals, Metals and Materials: Characterization of Micro-, Nano-, and Thin Films

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Thursday AM Room: 306
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Ann Hagni, Ann Hagni Consulting, LLC; Toru Okabe, The University of Tokyo

8:30 AM Introductory Comments

8:35 AM
4-D Microstructural Characterization of Snow and Ice: *I. Baker*[1]; R. Obbard[1]; S. Chen[1]; R. Lomonaco[1]; K. Aho[1]; G. Troderman[1]; T. Cassano[1]; [1]Dartmouth College

9:00 AM
Characterization of Elastic and Mechanical Properties of Materials by Atomic Force Acoustic Microscopy: *Arnaud Caron*[1]; Shanker Ram[2]; Siddhartha Das[3]; Hans-Jörg Fecht[3]; [1]Institute of Micro- and Nanomaterials, University Ulm; [2]Materials Science Center, Indian Institute of Technology, Kharagpur; [3]Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Kharagpur

9:25 AM
Nanoindentation Analysis as a Two-Dimensional Tool for Mapping the Mechanical Properties of Complex Microstructures: *Nicholas Randall*[1]; [1]CSM Instruments

9:50 AM
Characterization of Nanocrystalline CdS:In Thin Films Prepared by the Spray-Pyrolysis Technique: *Shadia Ikhmayies*[1]; Riyad Ahmad-Bitar[1]; [1]University of Jordan

10:15 AM
Characterization of Nanoscale γ' Precipitates in Ni-Base Superalloys: *Gopal Viswanathan*[1]; R. Srinivasan[1]; J. Tiley[2]; Soumya Nag[3]; R. Banerjee[3]; Hamish Fraser[1]; [1]The Ohio State University; [2]Air Force Research Laboratory; [3]University of North Texas

10:40 AM
Chemical Co-Deposited PbS – CuS Thin Film Characterization: Effect of Annealing: Mishark Nnabuchi[1]; *Chinedu Ekuma*[2]; Israel Owate[2]; [1]Ebonyi State University; [2]University of Port Harcourt

11:05 AM
Nanosecond Electrical Discharges between Semiconducting Sulfide Mineral Particles in Water: *Igor Bunin*[1]; Valentine Chanturiya[1]; [1]Research Institute of Comprehensive Exploitation of Mineral Resources RAS

11:30 AM
Quantitative Measurement of Volumes for Nanoparticles by High-Angle Annular Dark-Field Scanning Transmission Electron Microscopy: *Helge Heinrich*[1]; Biao Yuan[1]; [1]University of Central Florida

11:55 AM Concluding Comments

12:00 PM Question and Answer Period

Characterization of Minerals, Metals and Materials: Characterization of Refractories, Clays, Concrete, Interfaces, and Thermodynamics

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizers: Ann Hagni, Geoscience Consultant; Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF; Jiann-Yang Hwang, Michigan Technological University

Thursday AM Room: 307
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Takashi Nagai, The University of Tokyo

8:30 AM Introductory Comments

8:35 AM
Effect of Cold Working on the Thermal Expansion and Mechanical Properties of Fe-29%Ni-17%Co Low Thermal Expansion Alloy: Song-Yi Kim[1]; Jung Namgung[2]; Mun-Chul Kim[2]; *Kee-Ahn Lee*[3]; [1]Center for Advanced Green Materials Technology, Andong National University; [2]RIST; [3]Department of Advanced Material Science and Engineering, Andong National University

8:55 AM
Thermodynamic Measurement of Phosphorus Oxide in Oxide Systems by Double Knudsen Cell Mass Spectrometry: *Takashi Nagai*[1]; Masafumi Maeda[1]; [1]The University of Tokyo

9:15 AM
Characterization of Refractories in Gasification Systems Using Post Mortem Analysis and Thermodynamics: *Kyei-Sing Kwong*[1]; James Bennett[1]; Rick Krabbe[1]; Hugh Thomas[1]; [1]NETL

9:35 AM
The Reception of Ceramic Aluminum Silicate Refractories: *Sereda Borys*[1]; Irina Krugljak[1]; Alexandr Zherebtsov[1]; [1]ZSEA

9:55 AM
Utilization of Aluminum Slag for the Expansion of Lightweight Concrete: Xuan Li[1]; *Jiann-Yang Hwang*[2]; Hee-Joon Jeon[2]; Matthew Andriese[2]; Zheng Zhang[2]; [1]University of Science and Technology Beijing; [2]Michigan Technological University

10:15 AM
Characterization of Vitrified Tile Bodies with Kaolinitic Clay and Nepheline-Syenite: *Carlos Maurício Vieira*[1]; Sergio Monteiro[1]; [1]State University of the North Fluminense

10:35 AM
Systematic Study of Bentonitic Clay and Quaternary Ammonium Salts: Renata Barbosa[1]; Dayanne Souza[1]; Karine Nóbrega[1]; *Edcleide Araújo*[1]; Tomás Mélo[1]; [1]UFCG

10:55 AM
Technological Characterization of Serpentinite Rock from Andorinha (Bahia/Brazil): *Aline Maria Teixeira*[1]; João Sampaio[2]; Francisco Garrido[3]; Marta Medeiros[3]; [1]IQ/UFRJ - CETEM; [2]CETEM; [3]IQ/UFRJ

11:15 AM
Properties and Durability of Ready Mix Repair Mortars in Hot Environment: *Benchaa Benabed*[1]; [1]University of Laghouat

11:35 AM Concluding Comments

11:40 AM Question and Answer Period

Electrode Technology for Aluminum Production: Preheating and Operational Aspects

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Ketil Rye, Alcoa Mosjøen; Morten Sorlie, Alcoa Norway; Barry Sadler, Net Carbon Consulting Pty Ltd

Thursday AM Room: 616
February 18, 2010 Location: Washington State Convention Center

Session Chair: Paulo Douglas Vasconcelos, Albras Alumínio Brasileiro S.A

8:30 AM Introductory Comments

8:35 AM
Loss in Cathode Life Resulting from the Shutdown and Restart of Potlines at Aluminum Smelters: *Alton Tabereaux*[1]; [1]Consultant

8:55 AM
Investigation of the Impact of Pre-Heating, Start-Up and Early Operation on Potlife: *Jayson Tessier*[1]; Carl Duchesne[1]; Gary Tarcy[2]; Claude Gauthier[2]; Gilles Dufour[2]; [1]Laval University; [2]Alcoa Inc

9:15 AM
Evaluation of Mothballing and Subsequent Restarting of Søderberg Cells: *V.Yu. Buzunov*[1]; V. I. Borisov[1]; Ye.G. Masyutin[1]; D.G. Bolshakov[1]; A.A. Pinayev[1]; [1]RUS-Engineering Ltd.

9:35 AM
Analysis of the Coke Bed Preheating Method for Aluminium Cells: *Mohamed Ali*[1]; [1]The Aluminium Company of Egypt

9:55 AM
The Combined Flame and Aluminum Preheating Method: Tian Yingfu[1]; *Feng Naixiang*[2]; Peng Jianping[2]; Wang Yaoyu[2]; Li Jian[3]; [1]Chongqing Tiantai Aluminum Industry Co., Ltd.; [2]Northeastern University; [3]Jianwenyuan Industrial Equipment Company

10:15 AM Break

10:30 AM
Cell Preheat on Full Line Current at Dubal: *Ali Al Zarouni*[1]; Maryam Al Jallaf[1]; Arvind Kumar[1]; K. Alaswad[1]; J. Blasques[1]; [1]DUBAL

10:50 AM
Optimization of the Anode-Stub Contact: Material Properties of Cast Iron: *Bjarte Oye*[1]; Elin Haugland[2]; Jorund Hop[2]; Arne Nordmark[1]; Morten Onsoien[1]; [1]SINTEF; [2]Hydro Aluminium

11:10 AM
Voltage Drop, Stub-Anode Connection, Cast Iron: *Adel Nofal Adel Nofal*[1]; Mohamed Waly[1]; Ahmed Ahmed[1]; Mahmoud Agour[1]; Amr Kandil[1]; Shaher Mohamed[1]; Mohamed Mourad[1]; [1]Aluminium Company of Egypt

General Abstracts: Electronic, Magnetic and Photonic Materials Division: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Electronic Materials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Superconducting and Magnetic Materials Committee, TMS: Thin Films and Interfaces Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Long Qing Chen, Pennsylvania State University; Sung Kang, IBM Corporation; Mark Palmer, Kettering University

Thursday AM Room: 308
February 18, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM
Chemical Vapor Transport Synthesis and Optical Property of Moo_3 Thin Film: Young Jung Lee[1]; Chang Won Park[1]; Dae-Gun Kim[1]; *Young Do Kim*[1]; [1]Hanyang University

8:55 AM
Improved Performance of a Fluorescent Blue Organic Light Emitting Diode with Hole Blocking Materials as Dopants for Transport Layers: Girija Samal[1]; K. N. Narayanan Unni[1]; Saswat Bharat[1]; *Deepak*[2]; [1]Samtel Color Ltd; [2]Indian Institute of Technology Kanpur

9:15 AM
Luminescence of the GaP:N Long-Term Ordered Single Crystals: *Sergei Pyshkin*[1]; John Ballato[2]; Andrea Mura[3]; Marco Marceddu[3]; [1]Academy of Sciences; [2]Clemson University; [3]The University of Cagliari

9:35 AM
Opals, Photonic Band Gap Materials, Pleochroic Refraction, and Monochromatic Lasers: *Michelle Stem*[1]; [1]University of Texas at El Paso

9:55 AM Break

10:15 AM
Coercivity Enhancement of Nd-Fe-B Sintered Magnets by Two-Step Sintering: Se Hoon Kim[1]; Hoon-sup Kim[1]; Jin Woo Kim[1]; Dae-Gun Kim[1]; *Young Do Kim*[1]; [1]Hanyang University

10:35 AM
Structure and Magnetic Properties of Fe-Co-Ni-Zr-B-Cu Nanocrystalline Soft Magnetic Alloys: *Keith Knipling*[1]; Maria Daniil[1]; Matthew Willard[1]; [1]Naval Research Laboratory

General Abstracts: Electronic, Magnetic and Photonic Materials Division: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS: Electronic Materials Committee, TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Superconducting and Magnetic Materials Committee, TMS: Thin Films and Interfaces Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Long Qing Chen, Pennsylvania State University; Sung Kang, IBM Corporation; Mark Palmer, Kettering University

Thursday AM Room: 310
February 18, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM
A Subatomic Particle Electromagnetic Wave Solution In A Simplified Space/Time Environment: *John Elton*[1]; James Cornwell[1]; [1]Protective Systems, Inc.

8:55 AM
Effect of Electroplating Bath Temperature on Sn Surface Morphology: *Uttara Sahaym*[1]; Stephanie Miller[2]; M. Norton[1]; [1]Washington State University; [2]University of Illinois

9:15 AM
Introduction of Digital Field Control System in Skelp Mill, DSP: *Tapas Kanti Dutta*[1]; Goutam Majumder[2]; Suresh Sarkar[2]; Nilay Gupta[2]; Shaktiveer Singh[1]; [1]RDCIS, SAIL; [2]Durgapur Steel Plant, SAIL

9:35 AM
The Photophysics of a Luminescent Ruthenium Polypyridyl Complex with Pendant β-Cylodextrin; pH Modulation of Lifetime and Photoinduced Electron Transfer: *Muath Atmeh*[1]; [1]National University of Ireland

9:55 AM
Materials and Manufacturing Challenges in Hybrid Flexible Electronics: *Khershed Cooper*[1]; [1]NRL

10:15 AM Break

10:35 AM
An Experimental Setup and Procedure for Thermal Resistance Measurements of a Thermal Interface Material: *Kaustubh Kalkundri*[1]; Frank Andros[1]; Bahgat Sammakia[1]; [1]SUNY at Binghamton

10:55 AM
Effect of Isothermal Aging and Thermal Cycling on Interfacial IMC Growth and Fracture Behavior of SnAgCu/Cu Joints: *Xiaoyan Li*[1]; [1]Beijing University of Technology

11:15 AM
Magnetic Properties of New Diluted Ferromagnetic Semiconductors $Pb_{1-x-y}Mg_xCr_yTe$: *Elena Zvereva*[1]; Olga Savelieva[1]; Sergey Ibragimov[1]; Evgeny Slyn'ko[2]; Vasily Slyn'ko[2]; [1]Moscow State University; [2]Institute of Material Science Problems

11:35 AM
Structure and Properties of Metamagnetic Functional Alloys Ni-Mn-In: *Pnina Ari-Gur*[1]; Michael Morris[1]; Gregory Huizenga[1]; Victor Koledov[2]; Vladimir Shavrov[2]; Vladimir Zolotorev[2]; Alexander Kamantsev[2]; Vladimir Khovailo[2]; Fernando M. Araujo-Moreira[3]; Oscar F. de Lima[4]; [1]Western Michigan University; [2]Kotelnikov' Institute of Redioengineering and Electronics of RAS (Moscow); [3]Universidade Federal de São Carlos (Brazil); [4]Universidade Estadual de Campinas (Brazil)

General Abstracts: Light Metals Division: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee, TMS: Aluminum Processing Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Thursday AM — Room: 607
February 18, 2010 — Location: Washington State Convention Center

Session Chair: Alan Luo, General Motors Research and Development Center

8:30 AM
Multistage Fatigue Modeling for Three Wrought Al Alloys: *Yibin Xue*[1]; [1]Utah State University

8:50 AM
Optimised Fatigue Behaviour of Ti-6Al-4V Alloy Components Fabricated by MIM: *Orley Ferri*[1]; Thomas Ebel[1]; Rüdiger Bormann[1]; [1]GKSS - Reasearch Centre

9:10 AM
Structural Analysis of Hot Blow Formed Aluminum Center Pillar with Residual Stress Consideration: *Dongok Kim*[1]; Jinpyeong Kim[1]; Yongmun RYU[1]; [1]KATECH

9:30 AM
Thermo-Mechanical Characterization of Al-Cu-Mg Composites Reinforced with Diboride Particles: *Natalia Cortes*[1]; Pilar Barrado[1]; Sergio De Hoyos[1]; Hermes Calderón[1]; Oscar Suárez[1]; [1]University of Puerto Rico-Mayaguez

9:50 AM
Upgrade and Electrochemical Reduction of TiO2-Rich Slag to Titanium: *Qian Xu*[1]; Ling Sun[1]; Qiu-Shi Song[1]; Wei Xing[1]; Ji-Hong Du[2]; Zheng-Ping Xi[2]; [1]Northeastern University; [2]Northwest Institute for Non-Ferrous Metal Research

10:10 AM Break

10:30 AM
Wear Behaviour of the Newly Developed Biomedical Beta Titanium Alloy (Ti-23Nb-0.7Ta-2Zr-1O): *Sathish Sathyavageeswaran*[1]; M. Venkatesh[1]; Geetha Manivasagam[1]; Asokamani Rajamanickam[1]; T.K. Nandy[2]; [1]VIT University; [2]Defence Metallurgical Research Laboratory

10:50 AM
Friction Stir Spot Welding of Magnesium Alloys: *Qi Yang*[1]; Xiang Li[1]; Ke Chen[1]; [1]Hitachi America, Ltd.

11:10 AM
Study on the Materials of Rolled Al-Mg-Si Alloy Used for the High-Speed Trains: *Kai Ji*[1]; Guangchun Yao[1]; Yongliang Mu[1]; Guoyin Zu[1]; [1]School of Materials & Metallurgy, Northeastern University

11:30 AM
Thermodynamic Design of Ultra-Strong Titanium Alloys Undergoing Plasticity Induced Martensitic Transformations: *Suresh Neelakantan*[1]; Pedro Rivera-Diaz-del-Castillo[2]; Sybrand van der Zwaag[2]; [1]Materials Innovation Institute/Delft University of Technology; [2]Delft University of Technology

General Abstracts: Materials Processing and Manufacturing Division: Forming and Machining

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Global Innovations Committee, TMS: Nanomechanical Materials Behavior Committee, TMS/ASM: Phase Transformations Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee, TMS: Solidification Committee, TMS: Surface Engineering Committee
Program Organizers: Thomas Bieler, Michigan State University; Corbett Battaile, Sandia National Laboratories

Thursday AM — Room: 606
February 18, 2010 — Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
Effect of AWJ Machining Processes on Flexural Properties of CFRP Composites: *T. Briggs*[1]; M. Ramulu[1]; [1]University of Washington

8:50 AM
A Simple Method for Producing Large Tubular Components of Varying Profiles: *Michel Guillot*[1]; Augustin Gakwaya[1]; Xavier Elie-dit-Cosaque[1]; [1]Laval University

9:10 AM
A Study of Electromagnetic Compression of Thin-Walled Steel and Aluminum Tubes: *Anupam Vivek*[1]; Keun-Hwan KIM[2]; Glenn Daehn[1]; [1]Ohio State University; [2]POSCO

9:30 AM
Texture Control for Improving Deep Drawability of Cu Bearing New BH Steel: *Kyu Hwan Oh*[1]; Dong Nyung Lee[1]; Yang Mo Koo[1]; Se Min Park[1]; Sung-il Kim[1]; [1]Graduate Institute of Ferrous Technology, Pohang University of Science and Technology

9:50 AM
Edge Cracking Characterization and Analysis on Advanced Dual Phase Steels: *Xin Wu*[1]; [1]Wayne State University

10:10 AM
Closure of Cylindrical Voids in a Slab under Plane-Strain Compression: Jong Jin Park[1]; *Jae Won Lee*[1]; [1]Hongik University

10:30 AM Break

10:50 AM
Springback Correction by Electromagnetic Deformation in Sheet Metal Fabrication: *Jianhui Shang*[1]; Steve Hatkevich[1]; Larry Wilkerson[1]; Jeremy Westerheide[1]; Allen Jones[1]; [1]American Trim LLC

11:10 AM
Microstructure Evolution and Static Re-Crystallization Kinetics of High Manganese Steel at Hot Rolling Conditions: *Hyukjin An*[1]; Soon Gi Lee[2]; Jong-Kyo Choi[2]; Jae-Sang Lee[1]; Yang-Mo Koo[1]; [1]POSTECH; [2]POSCO

11:30 AM
New High Strength Ductile Bainitic Forging Steels: *Christoph Keul*[1]; Marcus Urban[2]; Martin Fischer[1]; Gerhard Hirt[2]; Wolfgang Bleck[1]; [1]Institute of Ferrous Metallurgy; [2]Institute of Metal Forming

11:50 AM
Superplastic Blow Forming of Steel and Titanium Alloys for Aerospace Parts: *Ho-Sung Lee*[1]; Jong-Hoon Yoon[1]; Yeong-Moo Lee[1]; [1]Korea Aerospace Research Institute

12:10 PM
Cooling Behavior of Lead-Free Bismuth Bronze Produced through the Frozen Mold Casting Process: *Shuji Tada*[1]; Hiroyuki Nakayama[1]; Toshiyuki Nishio[1]; Keizo Kobayashi[1]; [1]National Institute of Advanced Industrial Science and Technology

General Abstracts: Structural Materials Division: Environmental Degradation

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Composite Materials Committee, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee, TMS: Refractory Metals Committee, TMS: Titanium Committee
Program Organizers: Eric Ott, GE Aviation; Robert Hanrahan, National Nuclear Security Administration; Judith Schneider, Mississippi State University

Thursday AM Room: 601
February 18, 2010 Location: Washington State Convention Center

Session Chair: To Be Announced

8:30 AM
Phase Field Modeling of Sintering Process in Thermal Barrier Coating Systems: *Anter El-Azab*[1]; Jie Deng[1]; Karim Ahamed[1]; [1]Florida State University

8:50 AM
High-Temperature Cyclic Oxidation of Pd/Pt-Modified Nial Bond Coats: *Raghavendra Adharapurapu*[1]; Dan Widrevitz[1]; Jun Zhu[1]; Don Lipkin[2]; Voroman Dheeradhada[2]; Tresa Pollock[1]; [1]University of Michigan; [2]General Electric (GRC)

9:10 AM
Role of TM (TM = Pd, Rh, Ir) on Stability and Oxidation Behavior of Ternary β-NiAl: *Travis Brammer*[1]; Pratik Ray[1]; Yi Ye[2]; Matthew Kramer[2]; Mufit Akinc[1]; [1]Iowa State University; [2]Ames Laboratory

9:30 AM
Investigation of the Stress Corrosion Cracking of Carbon Steel in Fuel Grade Ethanol Environments: *Lindsey Goodman*[1]; Xiaoyuan Lou[1]; Preet Singh[1]; [1]Georgia Institute of Technology

9:50 AM
Observation and Detection of Corrosion on Aerospace Bearing Steels in Ester Based Lubricants: *Michael Hurley*[1]; Cole Smith[1]; Darryl Butt[1]; [1]Boise State University

10:10 AM Break

10:20 AM
Assessment of Slag-Aided Deoxidation Process in 3.5crmov Rotor Steel: *June-Seong Park*[1]; Chang-Woo Seo[1]; Seonhyo Kim[1]; [1]POSTECH

10:40 AM
Factors Affecting the Environmental Assisted Cracking Behavior of 2205 Duplex Stainless Steel: *Kevin Chasse*[1]; Di Yang[2]; Preet M. Singh[1]; Richard W. Neu[3]; [1]Georgia Institute of Technology; [2]University of Colorado at Boulder; [3]Georgia Institute of Technology and University of Colorado at Boulder

11:00 AM
Hydrogen Embrittlement of a Bainitic Wheel Steel: *Ren Xuechong*[1]; Liu Fenbin[1]; Su Yanjing[1]; Chu Wuyang[1]; [1]University of Science and Technology Beijing

11:20 AM
Microstructural and Mechanical Aspects of High Nitrogen Steels at Cryogenic Temperature: *Zurui Zhang*[1]; Huabing Li[1]; Zhouhua Jiang[1]; Zhen Li[1]; [1]Northeastern University

11:40 AM
The Relationship between Sliding-Wear Rate and the Microstructure of AISI 1020 Plain-Carbon Steel: Jong Chul Kim[1]; Jun Ki Park[1]; Sul Ki Yi[1]; *Yong-Suk Kim*[1]; [1]Kookmin University

12:00 PM
Dynamic Tensile Extrusion Behavior of DU and U6NB: *Carl Trujillo*[1]; George Gray[1]; Ellen Cerreta[1]; Joel Montalvo[1]; Daniel Martinez[1]; [1]Los Alamos National Laboratory

Jim Evans Honorary Symposium: Beyond Berkeley Times

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division
Program Organizers: Ben Li, University of Michigan; Brian G. Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University of Science and Technology; Fiona Doyle, University of California, Berkeley; Andrew Campbell, WorleyParsons

Thursday AM Room: 620
February 18, 2010 Location: Washington State Convention Center

Session Chair: Ben Li, University of Michigan

8:30 AM Introductory Comments

8:40 AM
Contamination Issues – A Contrast in Industries: *Stanley Siu*[1]; [1]S & V Siu Associates, LLC

9:05 AM
Electrodynamic and Thermal Interaction of Nanoparticles in Hyperthermia Cancer Therapy and Solar Energy Systems: *Ben Li*[1]; [1]University of Michigan

9:30 AM
Metallurgical Design Issues at Cirque du Soleil: *Daniel Cook*[1]; [1]University of Nevada, Las Vegas

9:55 AM
An Electrochemical Technique for Minimizing Soil and Ground Water Contamination by Heavy Metals Leached from Solid Industrial Wastes: Nilesh Shukla[1]; Manoj Harbola[1]; Kali Sanjay[2]; *Rajiv Shekhar*[1]; [1]Indian Institute of Technology; [2]Institute of Minerals & Materials Technology

10:20 AM Break

10:35 AM
Hall Cell MHD Instability: Recent Theoretical Analyses and Experimental Support: *Donald Ziegler*[1]; [1]Alcoa Primary Metals

11:00 AM
Common Modeling Approaches in Displays: Case Studies in Organic Light Emitting Diodes and Plasma Display Panels: *Deepak*[1]; [1]IIT Kanpur

11:25 AM
Modeling Pulsatile Blood Flow in End-to-Side Anastomoses: *Daniel Cook*[1]; Christopher Thompson[2]; [1]University of Nevada, Las Vegas; [2]General Electric

Magnesium Technology 2010: Forming and Welding

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Thursday AM Room: 613
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Amit Ghosh, University of Michigan; Jon Carter, GM R&D

8:30 AM
Test Results and FEA Predictions from Magnesium AZ31 Sheet Beams in Bending and Axial Compression: *David Wagner*[1]; Stephen Logan[2]; Kathy Wang[3]; Tim Skszek[4]; [1]Ford Motor Company; [2]Chrysler LLC; [3]General Motors Corp.; [4]Magna Cosma International

8:50 AM
Microstructure and Mechanical Properties of Magnesium Extrusion Alloys AM30 and AZ31: *Alan Luo*[1]; Joy Forsmark[2]; Xichen Sun[3]; Scott Shook[4]; W.Z. Misiolek[5]; Raj Mishra[1]; [1]General Motors Corporation; [2]Ford Motor Company; [3]Chrysler Group LLC; [4]Timminco Metals; [5]Lehigh University

9:10 AM
Texture Development in a Twin Roll Cast and Warm Rolled ZK60 Magnesium Alloy: *Hongmei Chen*[1]; Huashun Yu[2]; Suk Bong Kang[3]; Guanghui Min[2]; [1]Jiangsu University of Science and Technology; [2]Shandong University; [3]Korea Institute of Materials Science

9:30 AM
Cruciform Geometries for Elevated Temperature Biaxial Testing of Mg AZ31B: Fadi Abu-Farha[1]; *Louis Hector Jr*[2]; [1]Pennsylvania State University; [2]GM R&D Center

9:50 AM
Characterization of Continuous-Cast AZ31B Magnesium Alloy Sheets and Lubricants for Warm-Forming - Friction Effects: *Aashish Rohatgi*[1]; Darrell Herling[1]; Eric Nyberg[1]; [1]Pacific Northwest National Laboratory

10:10 AM Break

10:30 AM
High Strength ZK60 Mg Plate Produced by Grain Refinement and Precipitation during Alternate Biaxial Reverse Corrugation (ABRC) Process and Friction Stir Process (FSP): Bilal Mansoor[1]; Sibasish Mukherjee[1]; *Amit Ghosh*[1]; [1]University of Michigan

10:50 AM
Formability of Mg Alloys at Room Temperature: *D.-W. Kim*[1]; D. H. Kang[2]; S. Kim[3]; G. T. Bae[4]; K. H. Kim[1]; Nack J. Kim[1]; [1]POSTECH; [2]McGill University; [3]General Motors R&D Center; [4]Georgia Institute of Technology

11:10 AM
Dynamic Blankholder Control for the Enhanced Forming Limit of Magnesium Sheets: *Wonkyu Bang*[1]; [1]RIST

11:30 AM
Joining Magnesium to Steel: *Yuri Hovanski*[1]; Glenn Grant[1]; Mike Santella[2]; [1]Pacific Northwest National Laboratory; [2]Oak Ridge National Laboratory

11:50 AM
Accumulative Roll Bonding of Wrought Magnesium Alloy: *H. Nayaka*[1]; B.S.S. Daniel[1]; G.P. Chaudhari[1]; [1]IIT Roorkee

12:10 PM
Mechanical Properties and Corrosion Behavior of Friction Stir Welded Mg/Mg- and Mg/Al-Joints: *Otmar Klag*[1]; Guntram Wagner[1]; Dietmar Eifler[1]; [1]Institute of Materials Science and Engineering / University of Kaiserslautern

Magnesium Technology 2010: ICME II and Biomedical Applications

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Sean Agnew, University of Virginia; Eric Nyberg, Pacific Northwest National Laboratory; Wim Sillekens, TNO; Neale Neelameggham, US Magnesium LLC

Thursday AM Room: 612
February 18, 2010 Location: Washington State Convention Center

Session Chairs: John Allison, Ford Motor Company; Wim Sillekens, TNO Science and Industry

8:30 AM
Two- and Three-Dimensional Cellular Automaton Models for Simulating Dendrite Morphology Evolution of Cast Magnesium Alloys: Liang Huo[1]; *Zhiqiang Han*[1]; Baicheng Liu[1]; [1]Tsinghua University

8:50 AM
Elemental Partitioning and Microstructure of Mg-Al-Ca-Sn Quaternary Alloys: *Jessica TerBush*[1]; Olivia Chen[1]; J.Wayne Jones[1]; Tresa Pollock[1]; [1]University of Michigan

9:10 AM
Numerical Simulation of Flow-Induced Air Entrapment Defects in the High Pressure Die Casting Process: Shuai-Jun Li[1]; *Shou-Mei Xiong*[1]; Bai-Cheng Liu[1]; Mei Li[2]; John Allison[2]; [1]Tsinghua University; [2]Ford Motor Company

9:30 AM
ESPEI: Extensible, Self-Optimizing Phase Equilibrium Infrastructure for Magnesium Alloys: *Shun-Li Shang*[1]; Yi Wang[1]; Zi-Kui Liu[1]; [1]MaterialsInformatics LLC

9:50 AM
Modeling Casting and Heat Treatment Effects on Microstructure in Super Vacuum Die Casting (SVDC) AZ91 Magnesium Alloy: *Mei Li*[1]; Ruijie Zhang[1]; John Allison[1]; [1]Ford Motor Company

10:10 AM
First-Principles Study of Ternary Hcp Solid Solution Phases from Special Quasirandom Structures: Application to Mg-Al-X Alloys: *Dognwon Shin*[1]; Christopher Wolverton[1]; [1]Northwestern University

10:30 AM Break

10:50 AM
Slip andTwinning in Mg Single Crystals: *Erica Lilleodden*[1]; Gyu Seok Kim[1]; Sangbong Yi[1]; Yuanding Huang[1]; Norbert Huber[1]; [1]GKSS Research Center

11:10 AM
Assessing and Modeling the Impact of Initial Microstructure on Dynamic Recrystallization of Sheets: *Frederick Polesak*[1]; Paul Krajewski[2]; Babak Raeisinia[1]; Sean Agnew[1]; [1]University of Virginia; [2]GM

11:30 AM
Modified AZ80 Magnesium Alloys for Biomedical Applications: *Muge Erinc*[1]; [1]TNO

11:50 AM
The Dissolution Behavior of a Mg-Zn-Ca Alloy for Biomedical Applications: *Michele Manuel*[1]; Harpreet Brar[1]; [1]University of Florida

12:10 PM
Controlling the Biodegradation Rate of Magnesium-Based Implants through Surface Nanocrystallization Induced by Cryogenic Machining: *Z. Pu*[1]; D. Puleo[1]; O.W. Dillon, Jr.[1]; I.S. Jawahir[1]; [1]University of Kentucky

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: Batteries and Others

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Thursday AM — Room: 212
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Jeffrey Hawk, U.S. Department of Energy; Xingbo Liu, West Virginia University

8:30 AM Invited
Nanostructured Functional Materials for Energy Conversion and Storage: *Donghai Wang*[1]; [1]Penn State University

9:10 AM
Cathode/Anode Selection and Full Cell Performance for Stationary Li-Ion Battery System: *Daiwon Choi*[1]; Donghai Wang[2]; Vilayanur Viswanathan[1]; Wu Xu[1]; Ji-Guang Zhang[1]; Gary Yang[1]; Gordon Graff[1]; Jun Liu[1]; [1]Pacific Northwest National Laboratory; [2]Penn State University

9:30 AM
Synthesis, Orientation and Electrochemical Properties of Nanostructured $LiMPO_4$(M:Fe, Mn, Co) Cathode for Li-Ion Battery: *Daiwon Choi*[1]; Donghai Wang[2]; In-Tae Bae[3]; Zimin Nie[1]; Jie Xiao[1]; Wu Xu[1]; Ji-Guang Zhang[1]; Gary Z. Yang[1]; Gordon Graff[1]; Jun Liu[1]; [1]Pacific Northwest National Laboratory; [2]Penn State University; [3]State University of New York at Binghamton

9:50 AM Break

10:00 AM
GraphiMetal Coatings on High Thermal Conductivity Graphite Foam to Prevent "Dusting" and Facilitate Solder Joining: *Ben Poquette*[1]; Stephen Kampe[2]; [1]Keystone Materials LLC; [2]Michigan Tech

10:20 AM
The Effect of Stoichiometry and Sintering Temperature on the Thermoelectric Properties of Titanium Cobaltite: *Biprodas Dutta*[1]; Sezhian Annamalai[1]; Rudra Bhatta[1]; Ian Pegg[1]; [1]The catholic University of America

10:40 AM
Specialized Metal Coatings Unleash the Potential of High Thermal Conductivity Graphite Foam: *Ben Poquette*[1]; Stephen Kampe[2]; [1]Keystone Materials LLC; [2]Michigan Tech

11:00 AM
Development of Advanced Low-Temperature Sodium Beta-Alumina Batteries: Xiaochuan Lu[1]; Guanguang Xia[1]; Kerry Meinhardt[1]; John Lemmon[1]; Vince Sprenkle[1]; Zhenguo Yang[1]; [1]Pacific Northwest National Laboratory

Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage: PEM and Batteries

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo Yang, Pacific Northwest National Lab; K. Weil, Pacific Northwest National Lab; Mike Brady, Oak Ridge National Lab; Jay Whitacre, Carnegie Mellon University; Ayyakkannu Manivannan, National Energy Technology Laboratory; Zi-Kui Liu, Penn State University

Thursday AM — Room: 211
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Jay Whitacre, Carnegie Mellon Univeristy; Guozhong Cao, University of Washington

8:30 AM
Alternative Catalyst Supports Based on Metal Carbides: *Susanne Opalka*[1]; [1]United Technologies Research Center

8:50 AM
Nanoscale Tantalum Oxide Based Catalysts for PEM Fuel Cell Applications: *Jin Kim*[1]; Tak-Keun Oh[1]; Yongsoon Shin[1]; K. Scott Weil[1]; [1]Pacific Northwest National Laboratory

9:10 AM Invited
Lithium Ion Batteries: Materials Processing and Mechanical Degradation: *Claus Daniel*[1]; Kevin Rhodes[2]; [1]Oak Ridge National Laboratory and University of Tennessee; [2]University of Tennessee

9:50 AM
Low Cost Aqueous Electrolyte Based Energy Storage: Materials and Performance: *Jay Whitacre*[1]; Sangeun Chun[1]; Sanjeev Sharma[1]; Amul Tevar[1]; Andrew Polonsky[1]; [1]Carnegie Mellon Univeristy

10:10 AM Break

10:20 AM Invited
Sol-Gel Derived Lithium Iron Phosphate Films for Efficient Lithium-Ion Intercalation: Yanyi Liu[1]; Dawei Liu[1]; Qifeng Zhang[1]; Betzaida Garcia[1]; *Guozhong Cao*[1]; [1]University of Washington

11:00 AM
A New Material, Li2Mn2(MoO4)3 for Li-Ion Batteries: Synthesis and Characterization: *K.M. Begam*[1]; S.R.S. Prabaharan[2]; M.S. Michael[3]; [1]Universiti Teknologi PETRONAS; [2]University of Nottingham; [3]SSN Engineering College

11:20 AM
Effect of Co Substitution on the Structural and Electrochemical Behavior of Spinel LiMn2O4: *Rahul Singhal*[1]; Naba Karan[1]; Rajesh Katiyar[1]; Ram Katiyar[1]; [1]University of Puerto Rico

11:40 AM
Mg_3N_2-Li-Mg Cermet Anodes for Lithium Based Batteries: *Alpesh Khushalchand Shukla*[1]; Thomas Richardson[1]; [1]Lawrence Berkeley National Laboratory

Modeling, Simulation, and Theory of Nanomechanical Materials Behavior: Nanoindentation and Contact Mechanics

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Thomas Buchheit, Sandia National Laboratories; Sergey Medyanik, Washington State Univ.; Douglas Spearot, University of Arkansas; Lawerence Friedman, Penn State University; Edmund Webb, Sandia National Laboratories

Thursday AM Room: 304
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Dylan Morris, NIST; Lawrence Friedman, NIST

8:30 AM Invited
Plastic Deformation of Au Particles on a Sapphire Substrate: Dan Mordehai[1]; Eugen Rabkin[1]; *David Srolovitz*[2]; [1]Technion - Israel Institute of Technology; [2]Yeshiva University

9:00 AM
Effect of Temperature on Nano-scale Asperity Contact and Separation in Au: *Jun Song*[1]; David Srolovitz[2]; [1]Brown University; [2]Yeshiva University

9:20 AM
The Strongest Contact and Size Effect in Nanoscale Metal-Metal Contact: Molecular Dynamics Simulation Study: *Hojin Kim*[1]; Alejandro Strachan[1]; [1]Purdue University

9:40 AM Invited
Friction and Adhesion at the Nanoscale: *Izabela Szlufarska*[1]; Yifei Mo[1]; Yun Liu[1]; [1]Universty of Wisconsin

10:10 AM Break

10:30 AM Invited
Dislocation Nucleation, Jerky Flow and Size Effects in Nanoindentation: Wei Wang[1]; Yuan Zhong[2]; Garritt Tucker[2]; Ke Lu[1]; Lei Lu[1]; *David McDowell*[2]; Ting Zhu[2]; [1]Shenyang National Laboratory for Materials Science; [2]Georgia Institute of Technology

11:00 AM
Assessment of the Hertzian Estimate of Plasticity-Initiating Shear Stresses during Nanoindentation: *Dylan Morris*[1]; Li Ma[1]; Lyle Levine[1]; Stefhanni Jennerjohn[2]; David Bahr[2]; [1]NIST; [2]Washington State University

11:20 AM
Atomic-Scale Study of Nanoindentation in Iron and Copper: *Yury Osetskiy*[1]; Chansun Shin[2]; Roger Stoller[1]; [1]ORNL; [2]Korea Atomic Energy Research Institute

11:40 AM
Nanoindentation Simulations to Predict Macroscale Properties of Cement: *Priscilla Fonseca*[1]; [1]Northwestern University

Neutron and X-Ray Studies of Advanced Materials III: Diffraction Analysis of Alloys

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Titanium Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center; Peter Liaw, University of Tennessee; Yandong Wang, Northeastern University

Thursday AM Room: 303
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Jaimie Tiley, Air Force Research Laboratory; Erica Lilleodden, GKSS Research Center

8:30 AM Keynote
Simulating Realistic Conditions and In-Situ Studies Using Neutron Diffraction: *Ron Rogge*[1]; [1]National Research Council

9:00 AM
Why Neutrons to Study Superalloys?: *Ralph Gilles*[1]; Pavel Strunz[2]; Debashis Mukherji[3]; [1]TU Muenchen; [2]Nuclear Physics Institute; [3]TU Braunschweig

9:15 AM
Determining the Impact of Cooling Rate and Aging Times on Nickel Base Super Alloys Using Callibrated XRD Intensity Ratioswhich Courses Were Actually Held?: *Jaimie Tiley*[1]; R Banerjee[2]; [1]AFRL/RXLMD; [2]University of Texas

9:30 AM Invited
Deformation Of Shape Memory Alloys Under Biaxial Loading: *Donald Brown*[1]; Catherine Tupper[2]; Vaidyanathan Raj[3]; Deniece Korzekwa[1]; Sisneros Thomas[1]; Clausen Bjorn`[1]; [1]Los Alamos National Lab; [2]Northwestern University; [3]University of Central Florida

9:50 AM
In-Situ Observation of Strain Evolution in CP-Ti over Multiple Length Scales: *Colleen Bettles*[1]; Peter Lynch[2]; Andrew Stevenson[2]; Dacian Tomus[1]; Mark Gibson[2]; Kia Wallwark[3]; Justin Kimpton[3]; [1]ARC Centre of Excellence for Design in Light Metals, Monash University; [2]CSIRO Materials Science and Engineering; [3]Australian Synchrotron

10:05 AM
Influence of Strain Rate on Mechanical Properties and Crystallographic Texture of Hot-Pressed and Rolled Beryllium: *Thomas Sisneros*[1]; Donald Brown[1]; Bjorn Clausen[1]; Saurabh Kabra[1]; William Blumenthal[1]; [1]Los Alamos National Lab

10:15 AM
In-situ Neutron-Diffraction and Thermal Characterization of Fatigue Behavior: *E-Wen Huang*[1]; Rozaliya Barabash[2]; Bjørn Clausen[3]; Yee-Lang Liu[4]; Ji-Jung Kai[4]; Wenjun Liu[5]; Gene Ice[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory; [4]National Tsing-Hua University; [5]Argonne National Laboratory

10:25 AM
In-situ Neutron Diffraction Experiments as a Guide for Understanding the Microstructure Evolution during Deformation of Complex Materials: *Steven Van Petegem*[1]; Alexander Evans[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut

10:40 AM
Real Time Synchrotron Radiography of High Temperature High Cycle Fatigue Crack Growth in Single-Crystal Nickel-Base Superalloys: *Clinique Brundidge*[1]; Naji Husseini[1]; Erik Hanson[1]; Chris Torbet[1]; Roy Clarke[1]; J. Wayne Jones[1]; Tresa Pollock[1]; [1]University of Michigan

10:50 AM
Evolution of Crystallographic Texture of TRIP Steel under Forming Load Conditions: *Adam Creuziger*[1]; Thomas Gnaeupel-Herold[1]; Tim Foecke[1]; [1]National Institute of Standards and Technology

11:05 AM Break

11:15 AM
Software Tools for the Monitoring, Analysis and Interpretation of Engineering Neutron Diffraction Data: Seung Yub Lee[1]; Youngshin Kim[1]; Hyuntae Na[1]; *Ersan Ustundag*[1]; [1]Iowa State University

11:30 AM
Transformation Pathways in High Temperature Shape Memory Alloy Candidates Based on the NiTi, NiMnGa and ZrCu Alloy Systems: *Mohammed Azeem*[1]; Seema Raghunathan[1]; David Dye[1]; [1]Imperial College

11:45 AM
Martensitic Transformation Induced Plasticity in Nanostructured Steel: A High-Energy X-Ray Diffraction Study: *Sheng Cheng*[1]; Hahn Choo[1]; Yandong Wang[2]; Xun-Li Wang[3]; Jon Almer[4]; Peter Liaw[1]; Young-Kook Lee[5]; [1]University of Tennessee; [2]Northeast University of China; [3]Oak Ridge National Laboratory; [4]Argonne National Laboratory; [5]Yonsei University

12:00 PM
Mechanical Behavior and Microstructure Evolutions in a Nanocrystalline Ni-Fe Alloy: *Li Li*[1]; Tamas Ungar[2]; Yandong Wang[3]; Yang Ren[4]; Hahn Choo[1]; Peter Liaw[1]; [1]Department of Materials Science and Engineering, The University of Tennessee; [2]Department of Materials Physics, Eötvös University; [3]School of Materials Science and Engineering, Beijing Institute of Technology; [4]X-Ray Science Division, Argonne National Laboratory

12:10 PM
Neutron Diffraction Study of the Internal Stress and Strain States of a Single Crystal Superalloy under Different Heat Treatment Conditions: *Erdong Wu*[1]; Guangai Sun[2]; Bo Chen[2]; Sucheng Wang[1]; Thilo Pirling[3]; Darren Hughes[3]; [1]Institute of Metal Research, Chinese Academy of Science; [2]Institute of Nuclear Physics and Chemistry; [3]Institut Laue Langevin

12:25 PM
Understanding the Texture Development during Biaxial Mechanical Loading: *Ercan Cakmak*[1]; Hahn Choo[1]; [1]Department of Materials Science and Engineering, The University of Tennessee

12:35 PM
High Pressure Deformation of Zirconium: *James Wilkerson*[1]; David Weldon[1]; Sven Vogel[1]; Donald Brown[1]; Carlos Tomé[1]; Sébastien Merkel[2]; [1]Los Alamos National Laboratory; [2]Laboratoire de Structure et Propriétés de l'Etat Solide Université de Lille

12:50 PM
Modelling and Characterisation of Gamma Prime (γ') Evolution in a Nickel-Base Superalloy Using Small-Angle Neutron Scattering: *David Collins*[1]; Richard Heenan[2]; Howard Stone[1]; [1]University of Cambridge; [2]ISIS Facility, Rutherford Appleton Laboratory

Nuclear Energy: Processes and Policies: Material Development

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee, TMS: Public and Governmental Affairs Committee
Program Organizers: Brajendra Mishra, Colorado School of Mines; Aladar Csontos, U.S. Nuclear Regulatory Commission; Stuart Maloy, Los Alamos National Laboratory; Jeremy Busby, Oak Ridge National Laboratory; Sue Lesica, U.S. Department of Energy's Office of Nuclear Energy

Thursday AM — Room: 201
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Sue Lesica, US Department of Energy; Mark Bourke, Los Alamos National Laboratory

8:30 AM Keynote
Core Materials Development for Fast Reactors: *Stuart Maloy*[1]; M. Toloczko[2]; J. Cole[3]; Byun[4]; [1]Los Alamos National Laboratory; [2]Pacific Northwest National Laboratory; [3]Idaho National Laboratory; [4]Oak Ridge National Laboratory

9:05 AM
Developments in Powder Production for Nano-Structured Ferritic Alloys: *David Hoelzer*[1]; Jim Bentley[1]; Michael Miller[1]; Brian Wirth[2]; Yong Kim[2]; Matt Ferry[3]; Jean Stewart[3]; [1]Oak Ridge National Laboratory; [2]University of California, Berkeley; [3]Crucible Research

9:30 AM
Growth Kinetics and Phase Development in Diffusion Couples: U-Mo vs. Al-Si: *Emmanuel Perez*[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

9:55 AM
Ion Irradiation of an Ultrafine Grained 316 Austenitic Stainless Steel: *Auriane Etienne*[1]; Bertrand Radiguet[1]; Philippe Pareige[1]; Ruslan Valiev[2]; [1]GPM UMR CNRS 6634; [2]Institute of Physics of Advanced Materials

10:20 AM Break

10:35 AM
Radiation Response of High Temperature, Ultrafine-Precipitation-Strengthened Steel: *Yong Yang*[1]; Todd Allen[1]; [1]University of Wisconsin-Madison

11:00 AM
Friction Stir Welding of Dispersion-Strengthened Alloy MA754: *Jiye Wang*[1]; Wei Yuan[1]; Rajiv Mishra[1]; Indrajit Charit[2]; [1]Missouri University of Science and Technology; [2]University of Idaho

11:25 AM
Development of a Simplified Powder Processing Method for Production of Oxide Dispersion Strengthened Ferritic Alloys: *Joel Rieken*[1]; I. Anderson[2]; M. Kramer[2]; [1]Iowa State University; [2]Ames Laboratory

11:50 AM
Impact of Zirconium Hydride Precipitates on Fracture of Zirconium Alloys: *Matthew Kerr*[1]; Mark Daymond[2]; Richard Holt[2]; Jonathan Almer[3]; Stephanie Stafford[4]; [1]US Nuclear Regulatory Commission; [2]Queen's University; [3]Argonne National Lab; [4]Kinectrics Inc

Pb-Free Solders and Emerging Interconnect and Packaging Technologies: Microstructure, Intermetallics, Whisker (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: Kwang-Lung Lin, National Cheng Kung University; Sung Kang, IBM; Jenq-Gong Duh, National Tsing-Hua University; Laura Turbini, Research In Motion; Iver Anderson, Iowa State University; Fu Guo, Beijing University of Technology; Thomas Bieler, Michigan State University; Andre Lee, Michigan State University; Rajen Sidhu, Intel Corporation

Thursday AM — Room: 204
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: John. W. Osenbach, LSI Corporation; Sinn-Wen Chen, National Tsing Hua University

8:30 AM
Effects of Current Density on the Crystallographic Texture of Sn Based Electrodeposited Films Containing Cu and Pb: *Aaron Pedigo*[1]; Pylin Sarobol[1]; Peng Su[2]; John Blendell[1]; Carol Handwerker[1]; [1]Purdue University; [2]Cisco Systems, Inc

8:45 AM
Interfacial Reaction and Microstructure Variation in the Liquid Reaction of Sn-xAg-Cu Solders on Cu-yZn Substrates: *Chi-Yang Yu*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

9:00 AM
Interfacial Reaction between Sn-Ag-Cu Solder and Cu Base Metal Using Laser Soldering Process: *Hiroshi Nishikawa*[1]; Noriya Iwata[1]; Tadashi Takemoto[1]; [1]Osaka University

9:15 AM
Microstructure and Orientation Evolution Study on Sn-Ag-Cu Solder Joints as a Function of Position in Ball Grid Arrays Using Orientation Image Microscopy: *Tae-Kyu Lee*[1]; Kuo-Chuan Liu[1]; Bite Zhou[2]; Thomas R. Bieler[2]; [1]Cisco Systems, Component Quality and Technology Group; [2]Chemical Engineering and Materials Science, Michigan State University

9:30 AM
Stress and IMC Growth in Annealed and Reflowed Sn-Cu Bilayers and Their Relation to Whisker Kinetics: *Nitin Jadhav*[1]; Gordon Barr[2]; Eric Chason[1]; [1]Brown University; [2]EMC Corporation

9:45 AM
Nucleation and Solidification of Sn in Pb Free, SnAgCu Solder Joints: *Babak Arfaei*[1]; Yan Xing[1]; Eric Cotts[1]; [1]Binghamton University

10:00 AM Break

10:15 AM
Mitigation of the Growth of Tin Whiskers by Surface Treatments: *Chien-Hao Su*[1]; Albert T. Wu[1]; [1]National Central University

10:30 AM
Interfacial Reactions of Cu/Sn3.5Ag/Au Solder Joint under Electromigration: *Tsung-Chieh Chiu*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

10:45 AM
The Relationship between Whisker Growth and Corrosion in Sn-3.0Ag-0.5Cu: *Keith Sweatman*[1]; Takashi Nozu[1]; J Masuda[1]; Masuo Koshi[1]; Tetsuro Nishimura[1]; [1]Nihon Superior Co., Ltd.

11:00 AM
Corrosion Enhanced Sn Whisker Growth: *John Osenbach*[1]; H. L. Reynolds[2]; G. Henshall[3]; R. D. Parker[4]; P. Su[5]; [1]LSI Corporation; [2]Sun Microsystems, Inc.; [3]Hewlett-Packard; [4]Delphi Electronics and Safety; [5]Cisco Systems

11:15 AM
Back-Stress Induced Single Crystal Hillock Growth in Unpassivated and Nanotwinned Copper Lines under Electromigration at Device Operation Temperature: *Hsin-Ping Chen*[1]; King-Ning Tu[1]; Lih J. Chen[2]; Chien-Neng Liao[2]; W.W. Wu[3]; [1]UCLA; [2]NTHU; [3]NCTU

11:30 AM
Microstructure Changes and Physical Properties of the Intermetallic Compounds Formed at the Interface between Sn-Cu Solders and Cu Substrate Due to Minor Additions of Alloying Elements: *Petr Harcuba*[1]; Milos Janecek[1]; [1]Charles University Prague

11:45 AM
Reaction between Sn and Electroplated Cu Foils with Different Orientation: *Tzu Sung Huang*[1]; C. Y. Liu[1]; Hua-wei Tseng[1]; Yu-Hsiang Hsiao[1]; Cheng Tze Liu[1]; [1]National Central University

Polymer Nanocomposites: Fabrication, Characterization, Modeling and Applications

Sponsored by: The Minerals, Metals and Materials Society
Program Organizer: John Zhanhu Guo, Lamar University

Thursday AM — Room: 309
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Jiahua Zhu, Lamar University; Wei Chen, University of Southern California

8:30 AM Introductory Comments

8:35 AM Invited
Negative Permittivity in Polymer Nanocomposites: Influences of Size Distribution of Carbon Nanofiber Networks: *Bin Li*[1]; Weihong Zhong[1]; [1]Washington State University

9:05 AM
Crystallization Behavior of Polymer Nanocomposites: Influence of Pressure and Nanoparticles: *Qiang Yuan*[1]; Jinesh Shah[1]; Juan Chen[1]; Yang Yang[1]; Devesh Misra[1]; [1]University of Louisiana

9:25 AM
Effect of Melt Flow Rate on the Properties of Polypropylene/Bentonite Nanocomposites: Tatianny Alves[1]; Laura de Carvalho[1]; *Eduardo Canedo*[1]; Pamela Cipriano[1]; Vanize Fernandes[1]; [1]UFCG

9:45 AM
Synthesis, Structure and Properties of a Novel Hybrid Bimodal Network Elastomer with Inorganic Cross-Links: *Jinesh Shah*[1]; Qiang Yuan[1]; Juan Chen[1]; Yang Yang[1]; Devesh Misra[1]; [1]University of Louisiana

10:05 AM
Modification of Nanocrystal-Polymer Composite Electrolyte by Ethelene Glycol for Dye-Sensitized Solar Cell: *Yang Ying*[1]; Guo Xueyi[1]; [1]Central South University

10:25 AM Break

10:40 AM
Nanoscale Near-Surface Deformation in Polymer Nanocomposites: *Qiang Yuan*[1]; Jinesh Shah[1]; Yang Yang[1]; Juan Chen[1]; Devesh Misra[1]; [1]University of Louisiana

11:00 AM Invited
Formation and Structural Characterization of Potassium Titanates and the Lattice Potassium Reactivities: Qiang Wang[1]; *Zhanhu Guo*[1]; Jong Shik Chung[2]; [1]Lamar University; [2]POSTECH

11:20 AM
Catalytic Reduction of Nitrates Using Modified Double Layered Hydroxides: *Jewel Gomes*[1]; George Irwin[1]; Kamol Das[1]; Manish Rahate[1]; Doanh Tran[1]; David Cocke[1]; [1]Lamar University

11:40 AM
Molecular Dynamics Simulation of Diffusion of Atmospheric Penetrates in Polydimethylsiloxane (PDMS) and PDMS-Based Nanocomposites: *Alex Sudibjo*[1]; Douglas Spearot[1]; [1]University of Arkansas

12:00 PM
Metallization of Platinum on Polyimide as Counterelectrode for Flexible Dye-Sensitized Solar Cells: *Sheng-Jye Cherng*[1]; Chih-Ming Chen[1]; [1]National Chung Hsing University

Processing Materials for Properties: Polymers, Ceramics and Glasses

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division
Program Organizers: Brajendra Mishra, Colorado School of Mines; Akio Fuwa, Waseda University; Paritud Bhandhubanyong, National Metal and Materials Technology Center

Thursday AM — Room: 617
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Stuart Maloy, Los Alamos National Laboratory; Mychailo Toloczko, Pacific Northwest National Laboratory

8:30 AM Keynote
Transparent Ceramics by Spark Plasma Sintering of Oxide Nanopowders: *Rachman Chaim*[1]; Zhijian Shen[2]; Claude Estournes[3]; [1]Technion - Israel Institute of Technology; [2]Stockholm University; [3]CIRIMAT et Plateforme Nationale CNRS de Frittage Flash

9:00 AM
Direct Laser Deposition of Bulk Metallic Glasses: *Hongqing Sun*[1]; Pete Collins[1]; Hamish Fraser[1]; Katharine Flores[1]; [1]The Ohio State University

9:20 AM
Microscopic Study of Slags from a Secondary Lead Blast Furnace: *Fumito Tanaka*[1]; Yusuke Kimura[1]; Mikio Watanabe[2]; [1]Mitsubishi Materials Corp.; [2]Hosokura Metal Mining Co., Ltd.

9:40 AM
Particle Size Distribution of Natural Montmorillonite Clay Using Dispersion Analysis: *Morgan Reed*[1]; Gary Beall[2]; David Cocke[1]; Jewel Gomes[1]; [1]Lamar University; [2]Texas State University

10:00 AM
Study of Properties of Spinels, Obtained by Hydrothermal Synthesis: *Oscar Restrepo*[1]; Leidy Jaramillo[1]; Ernesto Baena Murillo[1]; [1]National University of Colombia

10:20 AM
Research on the Performance of Environment-Friendly MgO-CaO-ZrO2 Refractories: *Caiyun Lu*[1]; Min Chen[1]; Jingkun Yu[1]; Zhongqiang Sun[2]; [1]Northeastern University; [2]Northeastern University Institute of Metallurgical Technology Co., Ltd

10:40 AM Break

10:50 AM
Synthesis of Spinels by Thermal Spray Flame: *Oscar Restrepo*[1]; Ernesto Baena Murillo[1]; [1]National University of Colombia

11:10 AM
Novel Forming Techniques in Fabrication of Powder-Based Metals via Current Activated Tip-Based Sintering (CATS): *D. Elting*[1]; E. Villar[1]; K. Moon[1]; S. Kassegne[1]; K. Morsi[1]; [1]San Diego State University

11:30 AM
Effects of Sensitizer Length on Radiation Crosslinked Shape-Memory Polymers: *Taylor Ware*[1]; Walter Voit[1]; Ken Gall[1]; [1]Georgia Institute of Technology

11:50 AM
Radiation Crosslinked Polyacrylates with Shape Memory: *Walter Voit*[1]; Taylor Ware[1]; Ken Gall[1]; [1]The Georgia Institute of Technology

12:10 PM
Synthesis of Polyamine PET for the Sulfate Ions Removal in Aqueous Solution: *Haiying Wang*[1]; Liyuan Zhang[1]; Liyuan Chai[1]; Meilan Li[1]; [1]Central South University

Stochastic Methods in Materials Research: Stochastic Methods II: Property Prediction and Material Design

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois, Urbana-Champaign

Thursday AM — Room: 614
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Dallas Trinkle, University of Illinois Urbana-Champaign; Richard Hennig, Cornell University

8:30 AM Invited
Probabilistic Materials Science: Taking AIM: *Greg Olson*[1]; [1]Northwestern University

9:00 AM Invited
The Application of Bayesian Neural Network Modeling for the Prediction of the Tensile and Fracture Toughness Properties in a/ ß Titanium Alloys: *Santhosh Koduri*[1]; Vikas Dixit[1]; Peter Collins[1]; Hamish Fraser[1]; [1]The Ohio State University

9:30 AM
A Stochastic Simulation Study of the Role of Hierarchy in Crack-Initiating Microstructural Arrangements in Fatigue Lifetime Distribution: *Sushant Jha*[1]; Christopher Szczepanski[1]; James Larsen[2]; [1]Universal Technology Corporation; [2]US Air Force Research Laboratory

9:50 AM Break

10:00 AM Invited
Multiscale Design of Solute-Strengthened Aluminum Alloys: *W. Curtin*[1]; G. Leyson[1]; L. Hector[2]; [1]Brown University; [2]GM Technical Center

10:30 AM
Multiscale Entropy Analysis of the Portevin-Le Chatelier Effect in an Al-2.5%Mg Alloy: *Apu Sarkar*[1]; P Barat[2]; P Mukherjee[2]; [1]Bhabha Atomic Research Centre; [2]Variable Energy Cyclotron Centre

10:50 AM
Using Eigenvalue and Information Theory Analysis to Predict Failure in Plastically Deformed Aluminum Sheet: *Mark Stoudt*[1]; Joseph Hubbard[1]; [1]National Institute of Standards and Technology

11:10 AM Break

11:20 AM Invited
Probabilistic Polycrystal Model for Twin Nucleation and Propagation in Zr and Mg: *Carlos Tome*[1]; Irene Beyerlein[1]; Laurent Capolungo[1]; [1]Los Alamos National Laboratory

11:50 AM
Predicting and Validating the Stochastic Effects of Microstructure on Polycrystal Elasticity and Plasticity: *Luke Brewer*[1]; Corbett Battaile[1]; John Emery[1]; [1]Sandia National Laboratories

12:10 PM
Modeling Stochastic Interaction between Fatigue Damage Evolution and Random Heterogeneities: *Yibin Xue*[1]; [1]Utah State University

Sustainable Materials Processing and Production: Sustainable Technologies II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Education Committee
Program Organizers: Christina Meskers, Umicore; Randolph Kirchain, Massachusetts Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Markus Reuter, Ausmelt Limited

Thursday AM — Room: 2B
February 18, 2010 — Location: Washington State Convention Center

Session Chairs: Jeffrey S. Spangenberger, Argonne National Laboratory; Tim Skszek, Magna Cosma Engineering

8:30 AM Introductory Comments

8:35 AM
Lightweight Structural Concrete Incorporating Volcanic Materials for Sustainable Construction: *Khandaker Hossain*[1]; [1]Ryerson University

9:00 AM
Mechanical and Chemical Development of Alkali Activated Slag Fine Aggregate Concrete by Design of Experiment (DOE): *Alexander Moseson*[1]; Aaron Sakulich[1]; Dana Moseson[2]; Ken MacKenzie[3]; M Barsoum[1]; [1]Drexel University; [2]Emerson Resources, Inc.; [3]Victoria University of Wellington

9:25 AM
Dissolution Behavior of Ru into the Na_2O-SiO_2-Al_2O_3 Slag System: *Hiroshi Shuto*[1]; Toru Okabe[1]; Kazuki Morita[1]; [1]University of Tokyo

9:50 AM
New Process for Separation and Recovery of Platinum Group Metals: *Tsuyoshi Yukawa*[1]; Kazuki Morita[1]; Toru Okabe[1]; [1]The University of Tokyo

10:15 AM Break

10:25 AM
Reductive Leaching Behavior of Valuable Metals from Spent Li-Ion Polymer Battery Cathode Material: *Jingu Kang*[1]; Jeong-soo Sohn[2]; Tae-hyun Kim[2]; Young-uk Kim[1]; Dong-hyo Yang[2]; Shun Myung Shin[2]; [1]Korea University of Science and Technology (UST); [2]Korea Institute of Geoscience and Mineral Resources (KIGAM)

10:50 AM
Materialization of Manganese by Selective Precipitation from Used Battery: *Shun Myung Shin*[1]; Jin-gu Kang[2]; Young-Uk Kim[2]; Tae-Hyun Kim[1]; Soo-Kyung Kim[1]; Jeong-Soo Sohn[1]; [1]Korea Institute of Geoscience & Mineral Resources (KIGAM); [2]Korea University of Science & Technology (UST)

11:15 AM
Leaching Studies for the Recovery of Metals from the Waste Printed Circuit Boards (PCBs): *Manis Kumar Jha*[1]; Shivendra[2]; Vinay Kumar[1]; Banshi Dhar Pandey[1]; Rakesh Kumar[1]; Jae-chun Lee[3]; [1]National Metallurgical Laboratory (CSIR), India; [2]Indian Institute of Technology, Kanpur, India; [3]Korea Institute of Geosciences and Mineral Resources, South Korea

11:40 AM Concluding Comments

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Grain Boundaries and Grain Boundary Engineering

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Thursday AM Room: 604
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Kevin Hemker, Johns Hopkins University; Diana Farkas, Virginia Tech

8:30 AM Invited
Modelling and Grain Boundary Engineering for High Performance Photovoltaic Polysilicon: *Tadao Watanabe*[1]; Kota Kido[2]; Sadahiro Tsurekawa[3]; [1]Visiting Professor, Northeastern University, Shenyang, China, formerly Tohoku University (Sendai,Japan); [2]YKK Corp., Japan; [3]Kumamoto University

8:55 AM Invited
Atomic Characterization of Grain Boundary Networks in Poly- and Nano-crystalline Materials and Its Application: *Mo Li*[1]; Tao Xu[1]; [1]Georgia Instiute of Technology

9:20 AM
The Role of Microstructure Scale and Morphology on Mechanical Behavior in FCC Metals: *Remi Dingreville*[1]; Corbett Battaile[2]; Luke Brewer[2]; Elizabeth Holm[2]; [1]Polytechnic Institute of NYU; [2]Sandia National Laboratories

9:35 AM
Scale Invariance in Grain Misorientation Distribution: *Claude Fressengeas*[1]; Benoit Beausir[1]; Nilesh Gurao[2]; Satyam Suwas[2]; Laszlo Toth[1]; [1]University Paul Verlaine - Metz; [2]Indian Institute of Science

9:50 AM Break

10:05 AM Invited
Intermittency and Multiplication-Limited Flow in Microcrystal Deformation: *Dennis Dimiduk*[1]; Ed Nadgorny[2]; Chris Woodward[1]; Michael Uchic[1]; Satish Rao[3]; Paul Shade[4]; [1]Air Force Research Laboratory; [2]Michigan Technological University; [3]UES, Inc.; [4]UTC, Inc.

10:30 AM Invited
Grain Boundary Plane Engineering: Model Experiments: *Pavel Lejcek*[1]; [1]Institute of Physics, AS CR

10:55 AM
Molecular Dynamics Simulations of Atomistic Mechanisms for Grain Boundary Migration in [001] Twist Boundaries: Xinan Yan[1]; *Hao Zhang*[1]; [1]University of Alberta

11:10 AM
Ab Initio Investigation of Grain Boundary Cohesion in Al Alloys: *Shengjun Zhang*[1]; Oleg Kontsevoi[1]; Arthur Freeman[1]; Gregory Olson[1]; [1]Northwestern University

11:25 AM
Role of Grain Boundary Character Distribution on Dynamic Recrystallization Using Monte Carlo Simulations: *Jared Stein*[1]; Megan Frary[1]; [1]Boise State University

11:40 AM
Development of a Microstructure Sensitive Model Which Shows Dislocation Patterning: *Alankar Alankar*[1]; Ioannis Mastorakos[1]; David Field[1]; [1]Washington State University

11:55 AM
Dislocation Dynamics Simulations of Slip System Interactions and Dislocation Boundary Formation: *Benoit Devincre*[1]; Grethe Winther[2]; [1]CNRS-ONERA; [2]Risø National Laboratory

12:10 PM
On the Role of Dislocations during the Martensitic Transformation in NiTi Shape Memory Alloys: *Gunther Eggeler*[1]; Antonin Dlouhy[2]; [1]Ruhr University Bochum; [2]IPM Brno

12:25 PM
Disclinations and Deformation of Hierarchically Twinned Martensite: *Peter Mullner*[1]; Alexander King[2]; [1]Boise State University; [2]Ames Laboratory

12:40 PM
Mesoscale Polycrystal Calculations of Damage Histories in Shock Loaded Metals: John Bingert[1]; *Davis Tonks*[1]; Veronica Livescu[1]; Curt Bronkhorst[1]; [1]Los Alamos National Lab

The Vasek Vitek Honorary Symposium on Crystal Defects, Computational Materials Science and Applications: Grain Boundaries, Dislocations and Mesoscopic Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Mo Li, Georgia Institute of Tech; David Srolovitz, Institute for High Performance Computing, Agency for Science, Technology and Research, Singapore; Adrian Sutton, Imperial College London; Vaclav Paidar, Institute of Physics AS CR vvi; Jeff De Hosson, University of Groningen

Thursday AM Room: 603
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Tadao Watanabe, Visiting Professor, Northeastern University, Shenyang, China, formerly Tohoku University (Sendai,Japan); John Bassani, University of Pennsylavnia

8:30 AM Invited
Shear Stresses, Dislocations and Grain Boundaries: *Kevin Hemker*[1]; [1]Johns Hopkins University

8:55 AM Invited
The Effect of Segregated Sp-Impurities on Grain-Boundary Embrittlement in Nickel: Monika Vsianska[1]; *Mojmir Sob*[1]; [1]Masaryk University, Faculty of Science

9:20 AM
Multi-Time Scale Modeling of the Annealing of Radiation-Induced Defects at Tilt Grain Boundaries: Xian-Ming Bai[1]; Arthur Voter[1]; Richard Hoagland[1]; Michael Nastasi[1]; *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory

9:35 AM
Mesoscale Modeling of Particle Strengthened Interfaces: *Seth Wilson*[1]; A.D. Rollett[1]; [1]Carnegie Mellon University

9:50 AM Break

10:10 AM Invited
Effect of Pre-Melting on Grain Boundary Properties: T. Frolov[1]; *Y. Mishin*[1]; J. W. Cahn[2]; [1]George Mason University; [2]National Institute of Standards and Technology

10:35 AM Invited
Molecular Dynamics and Phase-Field-Crystal Studies of Grain Boundary Premelting in bcc Fe and fcc Ni: *David Olmsted*[1]; Dorel Buta[2]; Ari Adland[1]; Mark Asta[2]; Alain Karma[1]; Stephen Foiles[3]; [1]Northeastern University; [2]University of California, Davis; [3]Sandia National Laboratories

11:00 AM Invited
Lattice Geometry Effects on Ideal Shear Resistance and Dislocation Mobility: *Vasily Bulatov*[1]; Keonwook Kang[2]; Wei Cai[2]; [1]Lawrence Livermore National Laboratory; [2]Stanford University

11:25 AM
Applications of γ-Surfaces in Phase Field Modelling of Dislocations in Ni-Base Superalloys: *Vassili Vorontsov*[1]; Roman Voskoboinikov[1]; Catherine Rae[1]; [1]University of Cambridge

11:40 AM
Phase Field Modeling of Deformation Mechanisms in Ni-Base Superalloys: *Ning Zhou*[1]; Chen Shen[2]; Libor Kovarik[1]; Raymond Unocic[1]; Michael Mills[1]; Yunzhi Wang[1]; [1]The Ohio State University; [2]GE global

11:55 AM
Phase Field Simulations of Brittle Fracture in Composites with Spatially Varying Elastic Moduli: *Rajeev Ahluwalia*[1]; Weili Cheah[2]; [1]Institute of High Performance Computing; [2]Institute of Materials Research and Engineering

12:10 PM
Phase Field Simulations of Elastic Deformation Driven Grain Boundary Migration in Copper: *Michael Tonks*[1]; Paul Millett[1]; Dieter Wolf[1]; [1]Idaho National Laboratory

Thermo-Mechanical Response of Molecular Solids: Multi-Resolution Theory, Simulations, and Experiments: Molecular Solids II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division
Program Organizers: Alejandro Strachan, Purdue University; Thomas Sewell, University of Missouri-Columbia; Rodolfo Pinal, Purdue University; Chunyu Li, Purdue University

Thursday AM Room: 203
February 18, 2010 Location: Washington State Convention Center

Session Chairs: Alejandro Strachan, Purdue University; Chunyu Li, Purdue University

8:30 AM Introductory Comments

8:35 AM Invited
Fundamental Processes in a Prototypical Organic Material: Nitromethane: *Donald Thompson*[1]; [1]University of Missouri-Columbia

9:05 AM
Elastic Deformation Mechanics of Cellulose Nanocrystals: Xiawa Wu[1]; Ryan Wagner[1]; Arvind Raman[1]; *Robert Moon*[2]; Ashlie Martini[1]; [1]Purdue University; [2]US Forest Service/ Purdue University

9:25 AM
Break Down Assessment and Modeling of the Enthalpic Relaxation of Aging Glasses through a Combination of Experiment and Simulation: Chen Mao[1]; Sai Prasanth Chamarthy[2]; *Rodolfo Pinal*[3]; [1]Xenoport, Inc.; [2]Schering-Plough Research Institute; [3]Purdue University

9:45 AM
Transforming Powder Processibility by Particle Surface Engineering: *Calvin Sun*[1]; [1]University of Minnesota

10:05 AM Break

10:25 AM
Multiscale Coarse-Grain Modeling of Nitromethane and RDX: *Sergei Izvekov*[1]; Peter Chung[1]; Betsy Rice[1]; [1]U.S. Army Research Laboratory

10:45 AM
RDX Material Properties Containing Defects: *Lynn Munday*[1]; Peter W. Chung[1]; Betsy Rice[1]; Santiago Solaris[2]; [1]U.S. Army Research Laboratory; [2]University of Maryland

11:05 AM Invited
Unraveling Shock-Induced Chemistry Using Ultrafast Lasers: *David Moore*[1]; [1]Los Alamos National Laboratory

11:35 AM Invited
Engineering of the Thermo-Mechanical Response of Molecular Crystals by Solid Solution Impurity Control: *Daniel Hooks*[1]; [1]Los Alamos National Laboratory

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

Program Organizer: Mark Palmer, Kettering University

Mon PM-Wed PM Room: Exhibit Hall
February 15, 2010 Location: Washington State Convention Center

3D Interconnected Calcium Phosphate Scaffolds for Bone-Tissue Engineering: *Mohammad Tarafder*[1]; Shashwat Banerjee[1]; Vamsi Balla[1]; Amit Bandyopadhyay[1]; Susmita Bose[1]; [1]Washington State University

A Materials Investigation of the UV Degradation of Eco-Friendly, Polypropylene Polymer Composites with Kenaf Fibers: *Christine Carpenter*[1]; Katherine Chen[1]; Christina Blattner[1]; Katie Greenstein[1]; Robert Arens[1]; Edmund Saliklis[1]; [1]Cal Poly State University

A Molecular Dynamics Study of the Tensile Deformation Behavior of Au Nanowires: *Na-Young Park*[1]; Ho-Seok Nam[1]; Pil-Ryung Cha[1]; Seung-Cheol Lee[2]; [1]Kookmin University; [2]Korea Institute of Science and Technology (KIST)

A Study of the High Rate Response of Squeeze Cast Magnesium Alloy AZ91: Phil Gullett[1]; Wilburn Whittington[1]; Michael Fortier[2]; [1]Mississippi State University; [2]University of Rochester

A Study on the Microstructure and Mechanical Properties of the Powder Injection Molded WC-8%Co: *Sung-Hyun Choi*[1]; Kyoung-Rok Do[1]; Sang-Dae Kang[1]; Kwon-Koo Cho[1]; In-Shup Ahn[1]; [1]Gyeongsang National University

A Study on the Microstructures and Electromagnetic Interference Shielding of Sn-Al-Ni Thin Films: Hung Fei-Yi[1]; *Hung Fei-Shuo*[2]; Chiang Che-Ming[2]; Lui Truan-Sheng[3]; [1]Institute of Nanotechnology and Microsystems Engineering, Center for Micro/Nano Science and Technology, National Cheng Kung University; [2]Department of Architecture, National Cheng Kung University; [3]Department of Materials Science and Engineering, National Cheng Kung University

A Study on the Stress Test of Truck Frames for Freight Trains: *Sung Cheol Yoon*[1]; [1]Korea Railroad Research Institute/Railroad Safety Research and Testing Center

A Study on the Structural Design of the Car Body of a Locomotive: *Sung Cheol Yoon*[1]; Jeongguk Kim[1]; Myung Yong Kim[1]; Kang Youn Choe[1]; [1]Korea Railroad Research Institute/Railroad Safety Research and Testing Center

A Study on the Structure and Mechanical Properties of HSS T42 Steel Using Powder Injection Moulding Method (PIM): *Kyoung-Rok Do*[1]; Sung-Hyun Choi[1]; Sang-Dae Kang[1]; Su-gun Lim[1]; In-Shup Ahn[1]; [1]School of Nano and Advanced Materials Engineering, I-Cube Center, K-MEM R&D Cluster

A Thermo-Kinetic Model and Experimental Analysis of Multiple Passes Laser Phase Transformation Hardening by Using High-Power Direct Diode Laser: *Soundarapandian Santhanakrishnan*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

Aerosol Route Synthesis of Copper Oxide Nanoparticles Using Copper Nitrate Solution: Burcak Ebin[1]; Ovgu Gencer[1]; *Sebahattin Gurmen*[1]; [1]Istanbul Technical University

AlGaAs-Based Optical Device Fabricated on Si Substrate Using Microchannel Epitaxy: Shigeya Naritsuka[1]; *Daisuke Kanbayashi*[1]; Takuya Kawakami[1]; Yuhei Ando[1]; Takahiro Maruyama[1]; [1]Meijo University

Ambient Temperature Stress Corrosion Cracking of 304L Stainless Steel: *Swati Ghosh*[1]; Vivekanand Kain[1]; [1]BARC

Anisotropic Behavior of Rolled AZ31 Magnesium under Quasi-Static and High Rate Loading: *Phil Gullett*[1]; Matthew Tucker[1]; [1]Mississippi State University

Analysis of Oxide Formation in High Mn Twinning-Induced Plasticity-Aided Steel during Dew-Point Control: Woong-Pyo Hong[1]; Sung-Il Baik[1]; *Sung-Dae Kim*[1]; Gyo-Sung Kim[2]; Sun-Ho Jeon[2]; Kwang Geun Chin[2]; Chang-Seok Oh[3]; Young-Woon Kim[1]; [1]Seoul National University; [2]POSCO Technical Research Laboratory; [3]Korea Institute of Materials Science

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Comparative Study of Microstructural Characteristics of PM Sintering and Plasma Spraying Coating on a Steel Surface: *Zhang Jie*[1]; WANG Maocai[2]; ZHAI Yuchun[1]; [1]Northeastern University; [2]State Key Laboratory for Corrosion and Protection, Institute of Metal Research, Chinese Academy of Sciences

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Deformation in Shock-Loaded Materials: *Veronica Livescu*[1]; John Bingert[1]; George Gray III[1]; Davis Tonks[1]; [1]Los Alamos National Laboratory

Deformation of High Purity Copper Specimens in Compression between Flat and Grooved Dies: *Bashir Raddad*[1]; Teahert Al-hashani[2]; Mohieldeen Abdel-Rahman[3]; [1]El-Fateh University; [2]Academy of Graduate Studies - School of Applied Sciences and Engineering Department; [3]Minia University

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Effect of Nitrogen Addition on Isothermal Phase Transformation and Mechanical Properties in Biomedical Co-Cr-Mo Alloys: *Shingo Kurosu*[1]; Hiroaki Matsumoto[1]; Akihiko Chiba[1]; [1]Institute for Materials Research, Tohoku University

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Effect of Silicon Addition on the Microstructure and Mechanical Properties of Extruded Mg-Zn Alloys: *Hwa Chul Jung*[1]; Ji Hoon Hwang[1]; Kwang Seon Shin[1]; [1]Magnesium Technology Innovation Center, Seoul National University

Effects of Lamination on Mechanical Behavior of Nano-Structured Aluminum Composite: *Hala Hassan*[1]; Adel El-Shabasy[1]; John Lewandowski[2]; [1]Ain Shams University, Faculty of Engineering; [2]Case Western Reserve University

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Effects of Microstructural and Mechanical Length Scales on Fatigue Crack Propagation in Beta-Annealed Ti-6Al-4V: Thomas Villarreal[1]; Ikshawku Atodaria[1]; *Pedro Peralta*[1]; [1]Arizona State University

Effects of Post-Deformation Annealing Conditions on the Behavior of Lamellar Cementite and the Occurrence of Delamination in High Strength Cold Drawn Pearlitic Steel Wires: Jung Won Lee[1]; *Ui Gu Kang*[1]; Yong Shin Lee[1]; Kyung Tae Park[2]; Wonjong Nam[1]; [1]Kookmin University; [2]Hanbat University

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Fracture and Fatigue of Fe-Based Metallic Glass Ribbons: *Adel El-Shabasy*[1]; Hala Hassan[1]; John Lewandowski[2]; [1]Ain Shams University; [2]Case Western Reserve University

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Grain Boundary Character Distribution and Mechanical Property of an as Cold Rolled High Nitrogen Austenitic Stainless Steel: Wei Yan[1]; *Yin Shan*[1]; Ke Yang[1]; Wei Wang[1]; [1]Institute of Metal Research

Heterogeneous Phase Nucleation and Growth in ß-Ti Alloys: *Robert Williams*[1]; Soumya Nag[2]; Arun Devaraj[2]; Peter Collins[1]; Srinivasan Rajagopalan[1]; Rajarshi Banerjee[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

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Influence of Forming Ratio on Mechanical Properties of Pipe Line: *Amir Abachi*[1]; Mehdi Naderi[1]; Afshin Erfanfar[1]; Reza Shamloo[1]; [1]Safa Rolling and Pipe Mills Co.

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Interfacial Reactions of Pure Sn,Sn-3.0Ag-0.5Cu and Sn-9.0Zn Lead-Free Solders with the Fe-42Ni Substrate: Yu-Ping Hsieh[1]; *Yee-wen Yen*[1]; Chien-Chung Jao[1]; [1]National Taiwan University of Science & Technology

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Joint Strength of Cu-Sn58Bi-Cu Bonding with Cap Bump Thickness Variation: *Yueseon Shin*[1]; Sehyung Lee[1]; Jeonghan Kim[1]; Changwoo Lee[1]; Sehoon Yoo[1]; [1]KITECH/Micro-Joining Center

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Mechanical Properties of the Ti-Nb-X%HA Biomaterials Fabricated by High Frequency Induction Heated Sintering Using High Energy Ball Milled Powders: *Kee-Do Woo*[1]; Sang-hyuk Kim[1]; Duck-soo Kang[1]; Jung-nam Woo[1]; Xiaopeng Wang[1]; Zhiguang Liu[2]; [1]Chonbuk National University; [2]Harbin Institute of Technology

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Modeling the Effect of the Contact Surface Temperature on the Deformation of an Aluminum Pin During A Wear Test: *Mario Rosenberger*[1]; Elena Forlerer[2]; Carlos Schvezov[1]; [1]Universidad Nacional de Misiones; [2]Comisión Nacional de Energia Atómica

Monitoring Particle Pulverization in Composite Silicon Anodes for Lithium Ion Batteries by Acoustic Emission: *Kevin Rhodes*[1]; Claus Daniel[2]; Edgar Lara-Curzio[2]; Nancy Dudney[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

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Plasma-Polymerization of Hexamethylcyclotrisiloxane Using Atmospheric Pressure Dielectric Barrier Discharge: *Gi Taek Kim*[1]; Yoon Kee Kim[1]; [1]Hanbat National University

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Preparation and Characterization of Nanocrystalline Silver Particles: *Burcak Ebin*[1]; Elif Yazici[1]; Sebahattin Gurmen[1]; Burak Ozkal[1]; [1]Istanbul Technical University

Preparation of Iridium Fine Particle by the Effect of Grinding Additive, NaCl: *Young Jin Kim*[1]; Youngsan Ham[1]; Jaeryeong Lee[1]; [1]Kangwon National University

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Producing of Composite Layer of TiO2/Al5083 via Friction Stir Processing: *Reza Behnagh*[1]; Mohamm Kazem Besharati[2]; [1]Tehran University; [2]Department of Mechanical Engineering, Tehran University

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