FINAL PROGRAM

TMS2011

140th Annual Meeting & Exhibition

February 27 - March 3, 2011 • San Diego Convention Center
San Diego, California USA

"Linking Science and Technology for Global Solutions"

LEARN • NETWORK • ADVANCE

Thanks!

to our Corporate Sponsors

ALCOA
Materials Bowl

AZ CHINA
Coffee Break Sponsor

BECHTEL
Light Metals Reception

bp
Tuesday Author's Coffee

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Attendee Info Booth & Signage

HATCH
Monday Morning Coffee Break

KOCH
KOCH CARBON, LLC
Wednesday Author's Coffee

KOPPERS
Exhibit Hall Afternoon Snack Break

Magnesium Elektron
Light Metals Luncheon

JACOBS CONSULTANCY
Young Leader Reception

PAMAS & COMPANY
TMS Awards Banquet

Materials Science
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Tuesday Morning Coffee Break

GE imagination at work
Student Mixer

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Author's Coffee

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SEC CARBON
Wednesday Morning Coffee Break

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Lanyards

B&P PROCESS EQUIPMENT
Exhibit Hall Entrance

HYDRO
Light Metals Luncheon

R&D Carbon
Monday Author's Coffee

SNC·LAVALIN
Aluminum Plenary

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Welcome to the TMS 2011 Annual Meeting & Exhibition!

Dear Colleagues and Friends:

As president of TMS, I welcome our members, exhibitors, and society guests here to sunny San Diego for our 140th annual gathering!

This year, the heart of our annual meeting—technical programming—has grown to four full days! This is an unprecedented opportunity to reap the ultimate in professional development through a robust menu of high quality, engaging presentations. We are also focusing on inspiring a renewed sense of volunteerism as a key to building a bigger and better TMS.

I invite you to visit the Volunteer Concierge booth here at the San Diego Convention Center to learn how to get involved in society activities. Get further engaged by attending the Annual Meeting of Membership on Monday.

Here is a brief synopsis of the other invaluable offerings here at TMS 2011:

Technical & Poster Sessions – Over 70 symposia will spotlight the efforts of some of the world's greatest materials science and engineering minds. Technical areas include Aluminum and Magnesium; Advanced Characterization, Modeling & Materials Performance; High Performance Materials; Materials & Society: Energy & Sustainable Production; Materials Processing & Production; Nanoscale & Amorphous Materials; Professional Development.

Continuing Education – Knowledge is the power that fuels developments in research and builds careers. TMS 2011 features five compelling courses and workshops designed to enhance your conference experience through education.

Networking – Your presence at TMS 2011 contributes to one of the greatest benefits: connecting with colleagues from around the world! Gather with professionals in your field at one of our 12 symposia-related welcome receptions on Sunday evening. Then, join all attendees at the President's Welcoming Reception on Monday and Happy Hour on Tuesday. All receptions will be at the San Diego Convention Center.

Special Lectures – One of the hallmarks of our annual meeting are the special lectures presented by prestigious professionals in the materials field. Whether you attend a luncheon lecture, plenary talk, or awards presentation, you will learn from the accomplishments of your colleagues. 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.

Student Events –The future of TMS is fulfilled by its student members. 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.

Welcome to TMS 2011. Let's make the most of all this conference has to offer.

Sincerely,

George T. "Rusty" Gray III

Table of Contents

MEETING INFORMATION

Full Conference Registration

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

- Technical & Poster Sessions
- Exhibition
- President's Welcoming Reception in the Exhibit Hall
- Symposia-Related Welcome Receptions/Poster Sessions
- Hosted Exhibit Hall Reception
- Young Leaders Tutorial Lecture
- Women in Science Breakfast (pre-registration required)
- Student Poster Contest
- Student Materials Bowl
- Lunch & Learn Sessions

Internet Options

Free wireless access will be available on the upper level of the San Diego Convention Center in the Sails Pavilion (Authors' Coffee area) Sunday - Thursday, and in the Exhibit Hall concession area Monday - Wednesday. **Username:** TMS2011, **Password:** MATERIALS

Cyber Center Internet work stations sponsored by Stellar Materials Inc. will be available in the exhibit hall at the San Diego Convention Center during regular show hours.

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 February 2, 2011. 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.

Audio/Video Recording Policy

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.

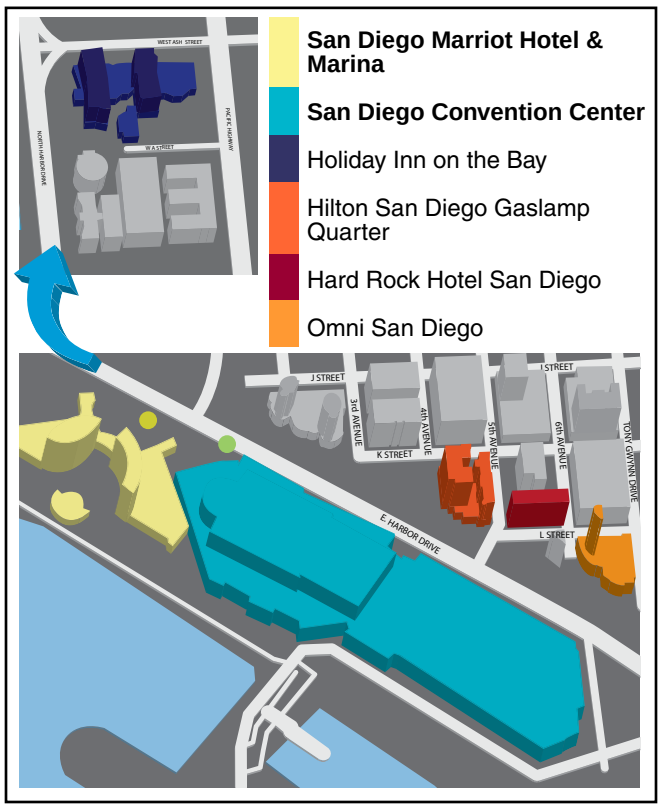
Cell Phone Use

In consideration of attendees and presenters, TMS kindly requests that you minimize disturbances by setting all cell phones or PDA's on "silent" while in meeting rooms.

Recycling

Be Materials Minded!

Join TMS in reusing and recycling. Deposit discarded badges and programs in the bins located in the lobby of the San Diego Convention Center.



Schedule of Events

as of January 18, 2011

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

Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

SATURDAY, FEBRUARY 26

COMMITTEE MEETINGS			
Professional Registration Workshop and Committee Meeting	9 a.m. to 5 p.m.	M	Point Loma

SOCIAL FUNCTIONS			
Cal Poly Materials Engineering Alumni and Friends Get-Together	7 to 10 p.m.	-	Off-Site

SUNDAY, FEBRUARY 27

REGISTRATION	11 a.m. to 7:30 p.m.	C	Exhibit Hall AB1
TMS MEMBER WELCOME CENTER	11 a.m. to 7:30 p.m.	C	Ground Level, Outside Hall A

WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Lead-Free Solder Technology 2011	8:30 a.m. to 5:30 p.m.	C	Room 31C
Proper Anode Baking Furnace Operations-How & Why	8:30 a.m. to 4 p.m.	C	Room 33B
Casting & Solidification of Metals	8:30 a.m. to 4 p.m.	C	Room 33C

STUDENT EVENTS			
Materials Bowl			
Elimination Rounds	noon to 3 p.m.	M	Marina Ballroom G
Championship Round	8:30 p.m.	M	Marina Ballroom G
Student Networking Mixer	9 to 11 p.m.	M	Marina Ballroom E&F

SOCIAL FUNCTIONS			
Fellows and Invited Guests Reception	4:30 to 6:30 p.m.	M	Torrance
Young Leader/New Member Reception	5 to 6 p.m.	M	Solana
Microstructural Processes in Irradiated Materials Poster Reception	6 to 8 p.m.	C	Room 3
Polycrystal Modeling with Experimental Integration Poster Reception	6 to 8 p.m.	C	Ballroom 6C
Frontiers in Solidification Science Poster Session	6 to 8 p.m.	C	Ballroom 6E
Computational Thermodynamics & Kinetics Reception	6 to 8 p.m.	C	Room 9
2011 Functional and Structural Nanomaterials Reception	6 to 8 p.m.	C	Room 8

Schedule of Events

as of January 18, 2011

Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

Neutron and X-Ray Studies of Advanced Materials IV Poster Session	6 to 8 p.m.	C	Room 10
Light Metals Reception	6 to 8 p.m.	C	Room 17A
Magnesium Technology 2011 Reception	6 to 8 p.m.	C	Ballroom 6F
Pb-Free Solders and other Materials for Emerging Interconnect and Packaging Technologies Reception	6 to 8 p.m.	C	Room 7B
Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications Reception	6 to 8 p.m.	C	Room 11B
Materials Processing Fundamentals Poster Session	6 to 8 p.m.	C	Room 12
Silicon Production, Purification and Recycling for Photovoltaic Cells Poster Session	6 to 8 p.m.	C	Room 14A
Characterization of Minerals, Metals and Materials Reception	6 to 8 p.m.	C	Room 14B
Biological Materials Science Reception	6 to 8 p.m.	C	Room 15A
The Second Symposium on the Recycling of Electronic Wastes Poster Session	6 to 8 p.m.	C	Room 15B
Chloride 2011 Poster Session	6 to 8 p.m.	C	Room 19
Surfaces and Heterostructures at Nano or Micro Scale and Their Characterization, Properties and Applications Poster Session	6 to 8 p.m.	C	Room 31B
Approaches for Investigating Phase Transformations At the Atomic Scale Poster Session	6 to 8 p.m.	C	Room 32B
Processing and Properties of Powder-Based Materials Poster Session	6 to 8 p.m.	C	Room 33A

COMMITTEE MEETINGS			
Financial Planning Committee	7 to 9 a.m.	M	Leucadia
Professional Registration Leadership Committee	8 to 10 a.m.	M	Business Suite 3
TMS Board of Directors Orientation	9 to 10 a.m.	M	Point Loma
TMS Board of Directors Meeting	10 a.m. to 1:30 p.m.	M	Point Loma
Recycling & Environmental Technologies Committee	noon to 1:30 p.m.	M	Del Mar
Young Leader Committee Business Meeting	12:30 to 2 p.m.	M	Balboa
Accreditation Committee	12:30 to 2:30 p.m.	M	Solana
Magnesium Committee	1:30 to 3:15 p.m.	M	Rancho Las Palmas
Pyrometallurgy Committee	1:30 to 3 p.m.	M	Carlsbad

Programming Booth

The programming booth will be located in the Ballroom 6 Lobby on the Upper Level of the San Diego Convention Center. TMS staff will be available to answer programming questions or provide participation certificates.

Schedule of Events

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Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

Nominating Committee	2 to 3 p.m.	M	Boardroom
Aluminum Committee	3 to 4:30 p.m.	M	Pacific
Materials Characterization Committee	3 to 5 p.m.	M	Del Mar
Program Committee	3 to 5 p.m.	M	Oceanside
ABET Training Session	3 to 5 p.m.	M	Cardiff
Public & Governmental Affairs Committee	3:30 to 5 p.m.	M	Boardroom
ICME Committee	4 to 5:30 p.m.	M	Rancho Las Palmas
Nanomaterials Committee	4 to 5 p.m.	M	Balboa
Thin Films & Interfaces Committee	4 to 5 p.m.	M	Carlsbad
LMD Council Meeting	4:30 to 6 p.m.	M	Leucadia
Global Innovations Committee	5 to 5:45 p.m.	M	Green Room
Content Development and Dissemination Committee	5 to 7 p.m.	M	Newport Beach
Nanomechanical Materials Behavior Committee	5:45 to 6:45 p.m.	M	Point Loma
Mechanical Behavior of Materials Committee	7 to 8:30 p.m.	M	Point Loma
Alloy Phases Committee	7:30 to 9:30 p.m.	M	Rancho Las Palmas
Phase Transformation Committee	7:30 to 9:30 p.m.	M	Mission Hills

Networking Receptions

Join your colleagues for some informal discussions at these networking events:

Sunday

Symposia-related Welcome Receptions and Poster Sessions

(All receptions are held at the San Diego Convention Center from 6 to 8 p.m.)

- 2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications & Implications ..... Room 8
- Light Metals: Alumina and Bauxite; Aluminum Reduction Technology; Electrode Technology for Aluminium Production ..... Room 17A
- Biological Materials Science ..... Room 15A
- Characterization of Minerals, Metals and Materials ..... Room 14B
- Computational Thermodynamics and Kinetics ..... Room 9
- Magnesium Technology 2011 ..... Room 6F
- Microstructural Processes in Irradiated Materials ..... Room 3
- Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies ..... Room 7B
- Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications ..... Room 11B
- Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tomé ..... Room 6C

Monday

- President's Welcoming Reception ..... 5 to 6:30 p.m. ..... Exhibit Hall

Tuesday

- Happy Hour Reception ..... 5 to 6 p.m. ..... Exhibit Hall

Schedule of Events

as of January 18, 2011

Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

MONDAY, FEBRUARY 28

AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Upper Level, Sails Pavilion
REGISTRATION	7 a.m. to 6 p.m.	C	Exhibit Hall AB1
TMS MEMBER WELCOME CENTER	7 a.m. to 6 p.m.	C	Ground Level, Outside Hall A
GENERAL POSTER SESSION	noon to 6:30 p.m.	C	Exhibit Hall AB1
2011 TMS EXHIBITION			
Exhibit Hours	noon to 6:30 p.m.	C	Exhibit Hall AB1
President's Welcoming Reception	5 to 6:30 p.m.	C	Exhibit Hall AB1
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Lunch & Learn: TMS Annual Meeting of the Membership	12:30 p.m. to 1:30 p.m.	C	Exhibit Hall AB1
POSTER CONTESTS			
Technical Division Student Poster Contest And Biological Materials Science Poster Contest	5 to 6:30 p.m.	C	Exhibit Hall AB1
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	M	Laguna
Women in Science Breakfast	7 to 8 a.m.	M	Marina Ballroom E
UBC Alumni Reception	6 to 7:30 p.m.	M	Newport Beach
Carlos Tome Honorary Symposium Dinner	6 to 9 p.m.	M	Point Loma
Hume-Rothery Symposium Dinner	6 to 9 p.m.	M	Rancho Las Palmas
John T. Berry Honorary Symposium Dinner	6 to 9 p.m.	M	Torrance

Visit the Volunteer Concierge Booth!

Located on the Upper Level of the Convention Center (near the Sails Pavilion)

Learn how to get involved, grow professionally & personally, and give back to your industry through a myriad of TMS activities. Great opportunities include participating on a technical committee, authoring a paper, writing an article for *JOM*, and more!

Stop by to find the right opportunity for you!

TMS

Your Professional Partner for Career Advancement.

Schedule of Events

as of January 18, 2011

Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

COMMITTEE MEETINGS			
Met Trans "A" Board of Review	7 to 8 a.m.	M	Oceanside
Process Technology & Modeling Committee	7 to 8 a.m.	M	Del Mar
Pyrometallurgy Committee / Smelting Technology Symposium Organizing Meeting	8 to 9:30 a.m.	M	Solana
Membership & Student Development Committee	8:30 to 9:45 a.m.	M	Pacific
Graduate Student Advisory Council	9 to 10 a.m.	M	Leucadia
EPD Council Meeting	noon to 2 p.m.	M	Leucadia
Superalloys 2012 Program Committee	noon to 2 p.m.	M	Carlsbad
EMPMD Council Meeting	12:30 to 2 p.m.	M	Solana
Past Presidents' Meeting	2 to 3 p.m.	M	President's Suite
Energy Conversion & Storage Committee	5 to 6 p.m.	C	Room 12
Superalloys 2012 Organizing Committee	5 to 7 p.m.	M	Carlsbad
Advanced Characterization, Testing & Simulation Committee	5:30 to 6:30 p.m.	C	Room 17A
Chemistry & Physics of Materials Committee	5:30 to 6:30 p.m.	C	Room 33A
Nuclear Materials Committee	5:30 to 7 p.m.	C	Room 32B
Surface Engineering Committee	5:30 to 6:30 p.m.	C	Room 17B
Composite Materials Committee	5:45 to 6:45 p.m.	C	Room 4
Biomaterials Committee	6 to 7 p.m.	C	Room 7B
Solidification Committee	6 to 7 p.m.	C	Room 16A
Technical Division Council	6 to 8 p.m.	M	Business Suite 3
Materials & Society Committee	7 to 9 p.m.	M	Pacific
Computational Materials Science & Engineering Committee	8 to 9 p.m.	M	Del Mar
Magnetic Materials Committee	8 to 9 p.m.	M	Cardiff

MONDAY LUNCH & LEARN

TMS Annual Meeting of the Membership

Time: 12:30 to 1:30 p.m.

Lunch & Learn Area, Exhibit Hall
San Diego Convention Center

Speakers:
Garry Warren ..... *2011 TMS President*
George T. "Rusty" Gray III .. *2010 TMS President*
Warren Hunt, Jr. ..... *TMS Executive Director*
Stanley M. Howard..... *TMS Board of Directors, Financial Planning Officer*

Get engaged in your Society! Attend this inaugural meeting to participate in discussions and learn about:

- Recent accomplishments of the society
- Recent and expected financial performance
- Preview of 2011 initiatives
- Strategic projects

Schedule of Events

as of January 18, 2011

Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

TUESDAY, MARCH 1

AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Upper Level, Sails Pavilion
REGISTRATION	7 a.m. to 6 p.m.	C	Exhibit Hall AB1
TMS MEMBER WELCOME CENTER	7 a.m. to 6 p.m.	C	Ground Level, Outside Hall A
GENERAL POSTER SESSION	10:30 a.m. to 6 p.m.	C	Exhibit Hall AB1
2011 TMS EXHIBITION			
Exhibit Hours	10:30 a.m. to 6 p.m.	C	Exhibit Hall AB1
Happy Hour Reception	5 to 6 p.m.	C	Exhibit Hall AB1
POSTER CONTESTS			
Technical Division Student Poster Contest And Biological Materials Science Poster Contest	10:30 a.m. to 6 p.m.	C	Exhibit Hall AB1
STUDENT EVENTS			
Technical Division Student Poster Contest Awards	12:15 to 12:45 p.m.	C	Exhibit Hall AB1
Student Career Forum	3 to 5 p.m.	C	Exhibit Hall AB1
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Young Leaders Tutorial Lecture/Luncheon	noon to 2 p.m.	M	Marina Ballroom E
Lunch & Learn: Energy with Cindy Belt	noon to 2 p.m.	C	Exhibit Hall AB1
TMS-AIME ANNUAL AWARDS BANQUET			
Reception	6:30 to 7:15 p.m.	M	Marina Ballroom Foyer
Dinner and Awards	7:15 to 10 p.m.	M	Marina Ballroom F&G
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	M	Laguna
Acta Materialia, Inc. Board of Governors Luncheon	8 a.m. to 5 p.m.	M	Warner Center
TECHNICAL DIVISION LUNCHEON			
EPD/MPMD Luncheon	noon to 2:15 p.m.	C	Room 6B

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COMMITTEE MEETINGS			
Electronic Packaging & Interconnection Committee	7 to 8 a.m.	M	Solana
Met Trans "B" Board of Review	7 to 8 a.m.	M	Oceanside
MPMD Council Meeting	7 to 9 a.m.	M	Leucadia
Fellows Award Committee	7:30 to 9 a.m.	M	Rancho Las Palmas
Mathewson, Hume-Rothery & IOM/Mehl Awards Subcommittee	7:30 to 9 a.m.	M	Rancho Las Palmas
Chalmers, Smith & Cohen Awards Subcommittee	7:30 to 9 a.m.	M	Rancho Las Palmas
Leadership, Scott, Educator & Practice Awards Subcommittee	7:30 to 9 a.m.	M	Rancho Las Palmas
Acta Materialia, Inc. Board of Governors Meeting	8 a.m. to 5 p.m.	M	Torrance
Honors & Professional Recognition Award Committee	9 to 10 a.m.	M	Rancho Las Palmas
TMS Executive Committee	11:00 a.m. to noon	M	President's Suite
SMD Council Meeting	noon to 2 p.m.	M	Solana
Powder Materials Committee	12:30 to 2 p.m.	C	Room 12
MetSoc/TMS Leadership Meeting	2:30 to 3:30 p.m.	M	Presidents Suite
Women in Materials Science & Engineering Committee	3 to 4:30 p.m.	M	Point Loma
IOMMMS Leadership Meeting	4 to 5 p.m.	M	Leucadia
Energy Committee	5 to 6 p.m.	C	Room 16A
High Temperature Alloys Committee	5:30 to 7 p.m.	M	Carlsbad
Refractory Metals & Materials Committee	5:30 to 6:30 p.m.	M	Del Mar
Shaping & Forming Committee	6 to 8 p.m.	M	Leucadia
Titanium Committee	6 to 7 p.m.	C	Room 17B
Corrosion & Environmental Effects Committee	6:30 to 7:30 p.m.	C	Room 11B

TUESDAY LUNCH & LEARN

Energy Management: Things Your Mother Didn't Teach You

Time: Noon to 2 p.m.

Lunch & Learn Area, Exhibit Hall
San Diego Convention Center

Speakers:

Cindy Belt, consulting energy engineer, previously with Superior Industries and Aleris International

Brajendra Mishra, professor and associate director, Kroll Institute for Extractive Metallurgy and Advanced Coatings & Surface Engineering Laboratory, Colorado School of Mines

Steve Coppinger, director, energy services, CalPortland Company

Schedule of Events

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Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

WEDNESDAY, MARCH 2

AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Upper Level, Sails Pavilion
REGISTRATION	7 a.m. to 5 p.m.	C	Exhibit Hall AB1
TMS MEMBER WELCOME CENTER	7 a.m. to 5 p.m.	C	Ground Level, Outside Hall A
GENERAL POSTER SESSION	10:30 a.m. to 2:30 p.m.	C	Exhibit Hall AB1
2011 TMS EXHIBITION			
Exhibit Hours	10:30 a.m. to 3 p.m.	C	Exhibit Hall AB1
TECHNICAL DIVISION LUNCHEON			
LMD Luncheon	noon to 2:00 p.m.	C	Room 6B
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Lunch & Learn: Materials Cyberinfrastructure	noon to 2 p.m.	C	Exhibit Hall AB1
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	M	Laguna
COMMITTEE MEETINGS			
TMS Board of Directors Meeting	7:30 to 11:30 a.m.	M	Point Loma
TMS Advocacy Strategy Session	noon to 4 p.m.	M	Pacific
PRICM-8 International Organizing Committee	1 to 3 p.m.	M	Solana
Medalist, Hardy & ECFF Awards Subcommittee	3:30 to 5:00 p.m.	M	Oceanside
Aluminum Processing Committee	6:30 to 8 p.m.	M	Leucadia

WEDNESDAY LUNCH & LEARN

Materials Cyberinfrastructure

Time: Noon to 1:50 PM

Lunch & Learn Area, Exhibit Hall
San Diego Convention Center

Speakers:
John Allison, *University of Michigan*..... Noon

The following speakers will provide live demonstrations of computer platforms:

Paul Mason, *ThermoCalc, Inc., Thermocalc*..... 12:30 p.m.
Andy Geltmacher, *Naval Research Laboratory, 3D Materials Atlas*..... 1:10 p.m.
Alejandro Strachan, *Purdue University, NanoHub*..... 1:30 p.m.
Laura Bartolo, *Kent State University, MatDL/MatForge*..... 1:50 p.m.

Schedule of Events

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Key: C San Diego Convention Center M San Diego Marriott Hotel & Marina

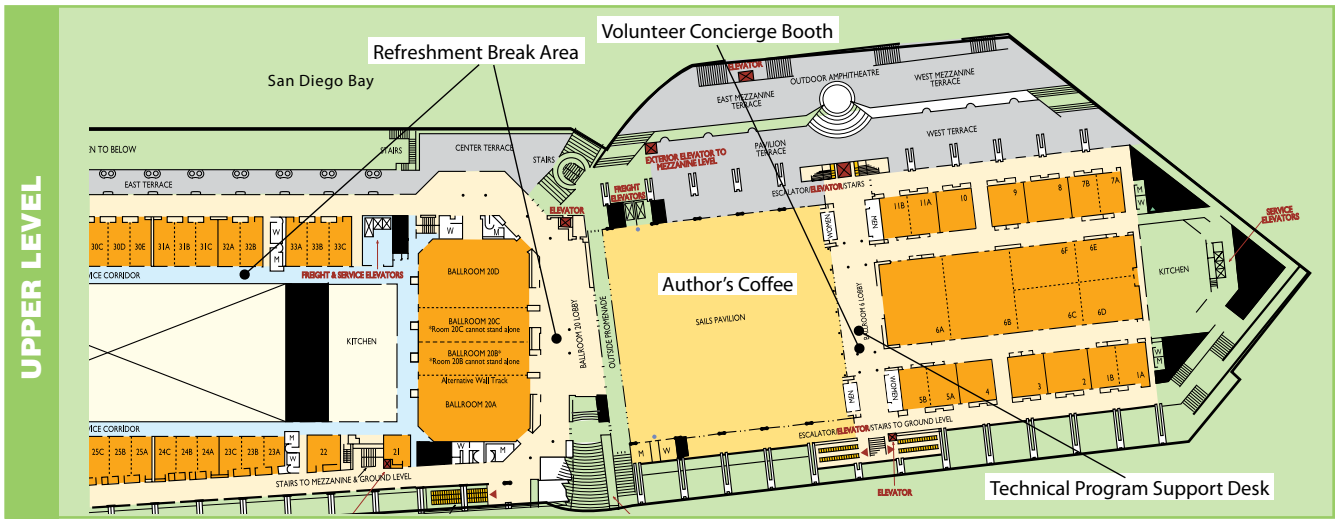
THURSDAY, MARCH 3

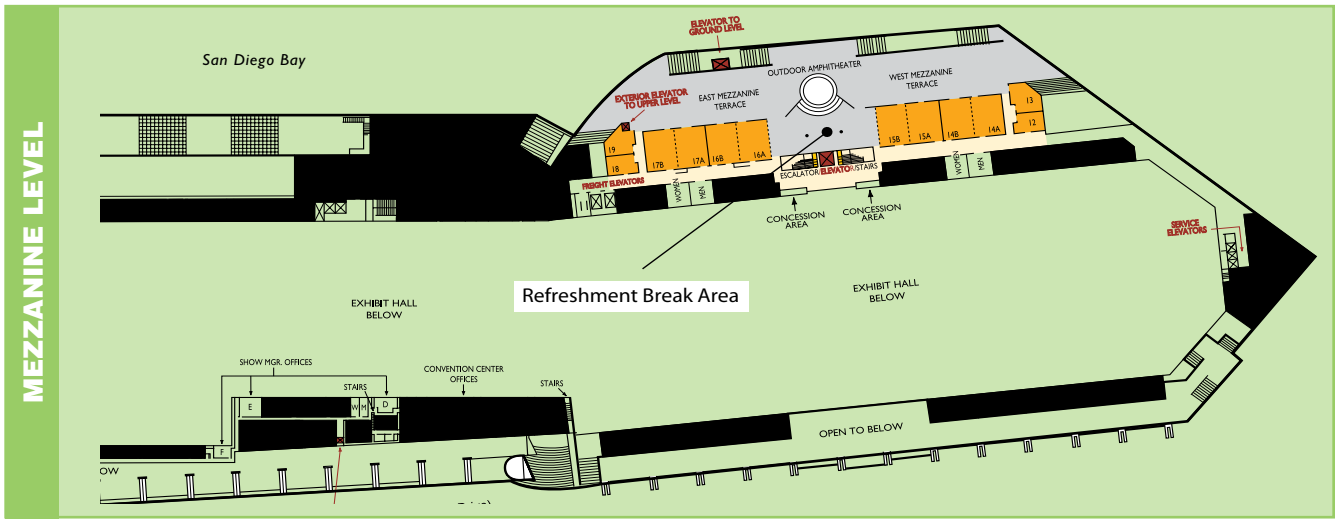
AUTHORS' COFFEE	7:30 to 8:30 a.m.	C	Upper Level, Sails Pavilion
REGISTRATION	7 a.m. to 2:30 p.m.	C	Exhibit Hall AB1
TMS MEMBER WELCOME CENTER	7 a.m. to 2:30 p.m.	C	Ground Level, Outside Hall A
WORKSHOPS, SHORT COURSES, FORUMS & TUTORIALS			
Workshop on the Development of a Reference Self-Diffusion Mobility Database for the Pure Elements	9 a.m. to 3 p.m.	C	Ballroom 6B
SOCIAL FUNCTIONS			
Guest Hospitality	7 to 10 a.m.	M	Lagana
TECHNICAL DIVISION LECTURE			
Extraction & Processing Division Distinguished Lecture	8:30 to 9:10 a.m.	C	Room 16A
COMMITTEE MEETINGS			
Hydrometallurgy & Electrometallurgy Committee	4:45 to 6:15 p.m.	C	Room 16A

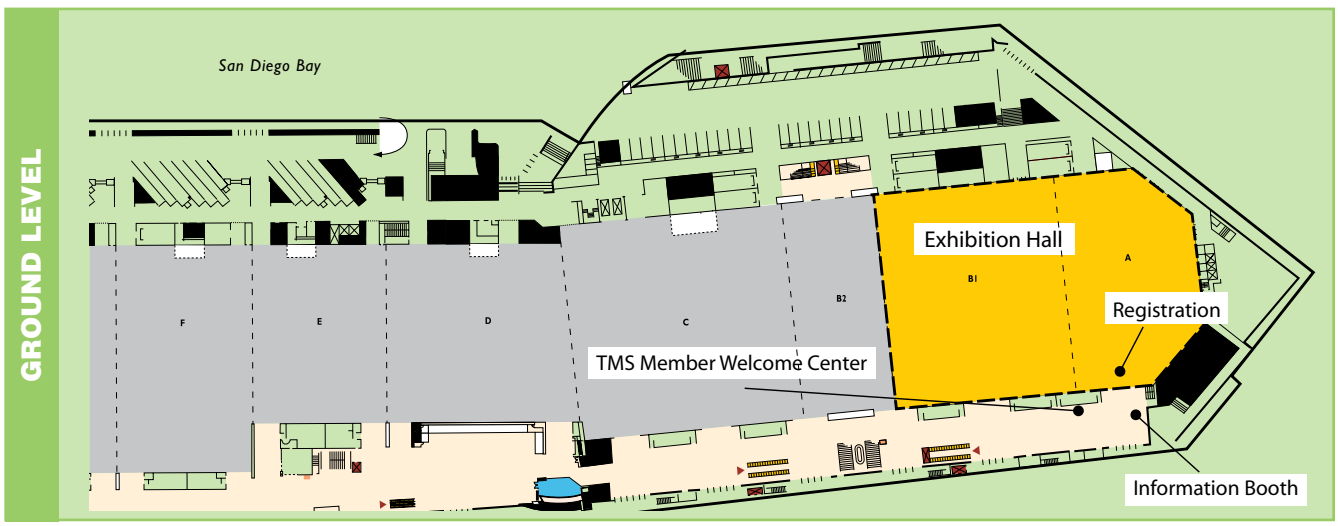
TMS 2011 Fun Facts

4	Full Days of Technical Programming
4	The Total Number of Gaslamps in San Diego's Gaslamp District
7	Technical Themes
12	Welcoming Receptions
25	Years Since the First TMS Exhibition
54	Number of U.S. Navy Ships Docked in San Diego Harbor
Over 68	Countries Represented
70	In Degrees Fahrenheit, the Average Temperature in San Diego
Over 70	Unique Symposia
Over 700	Formal lectures, keynotes, invited and plenary talks
450	Posters
3,397	Presentations
4,000	Population of 'Residents' at the San Diego Zoo

San Diego Convention Center Maps







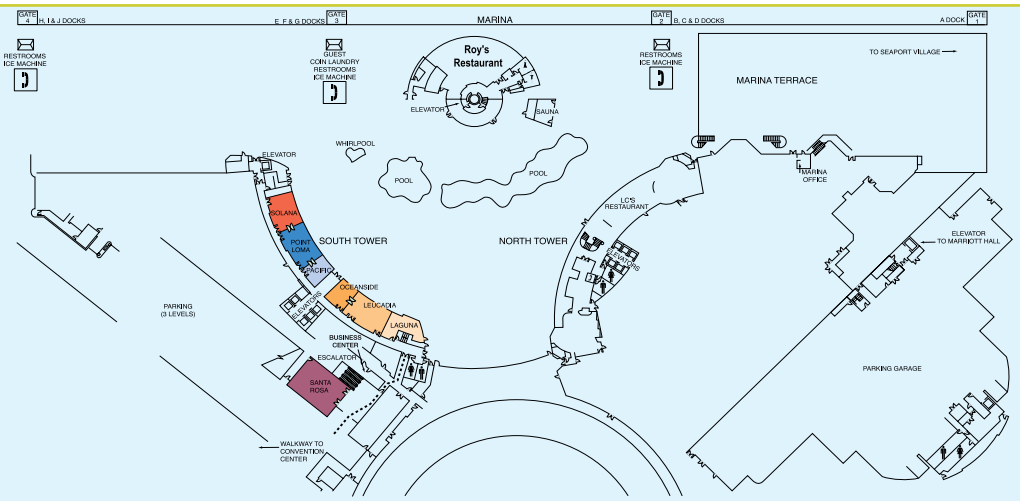
San Diego Marriot Hotel & Marina Maps

SOUTH TOWER LEVEL 1

- SOLANA
- POINT LOMA
- PACIFIC
- OCEANSIDE
- LEUCADIA
- LAGUNA
- SANTA ROSA

LC's RESTAURANT

ROY'S RESTAURANT

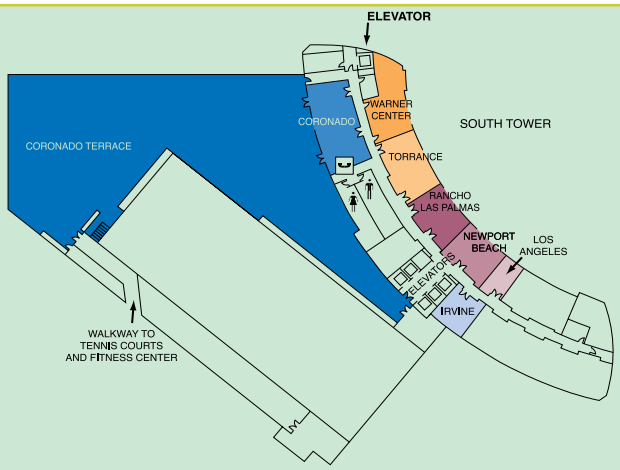


SOUTH TOWER LEVEL 3

- MARINA BALLROOM
- BOARD ROOM
- GREEN ROOM
- MISSION HILLS
- BALBOA
- CARDIFF
- CARLSBAD
- DEL MAR
- ENCINITAS
- BUSINESS SUITES 1,2 & 3

SOUTH TOWER LEVEL 4

- CORONADO TERRACE
- CORONADO
- IRVINE
- WARNER CENTER
- TORRANCE
- RANCHO LAS PALMAS
- NEWPORT BEACH
- LOS ANGELES



MEETING INFORMATION

Lectures & Luncheons

Young Leaders Tutorial Luncheon Lecture

"Integrative Materials-Process-Component Design: A Prospective View"

Tuesday • Noon • Marriott, Marina Ballroom E

Speaker: **Diana Lados**, *Assistant Professor, Worcester Polytechnic Institute, USA*

About the Topic: The challenges in modern materials-process-component design revolve around the successful integration of several important and sometimes competing concepts such as high-performance & reliability, societal impact, and economics. This generates a fertile future of opportunities for the clever materials engineer to develop a holistic approach based on a fundamental understanding in tandem with suitable and sustainable application-driven design and manufacturing strategies. These ideas will be systematically reviewed and discussed in the context of needs and developments, and exciting materials research opportunities will be presented.

Light Metals Division Luncheon Lecture

"The Intersection of Materials, Design and Manufacturing with Lightweight Materials"

Wednesday • Noon
Convention Center, Room 6B

Speaker: **Anil K. Sachdev**, *Inventor, General Motors Global Research & Development Center, USA*

About the Topic: There is an increasing need for lightweight materials in automotive applications due to their large impact on fuel economy, emissions, and performance. This need also extends to other industries like aerospace and consumer electronics. Sachdev will describe opportunities for lightweight materials from a perspective that includes their properties, product design, and manufacturing, all aimed at driving the total sub-system cost to minimize cost penalty for their pervasive use. Sachdev will also discuss the many challenges that need to be addressed, including improved computational methods to develop higher performance materials including corrosion mitigation; robust materials processing that provides properties with narrow distributions; and manufacturing methods that can produce the designs optimized for minimum mass.

Extraction & Processing/ Materials Processing & Manufacturing Joint Division Luncheon

"Advances in Sulfide Smelting-A Practical Overview"

Tuesday • Noon
Convention Center, Room 6B

Speaker: **David George**, *Principal Advisor of Processing, Technology and Innovation, Rio Tinto, USA*

About the Topic: Over the last 40 years, environmental and cost pressures fostered technology advances that have redefined the copper smelting industry. In the United States, Japan and Europe, the small, primitive and polluting mine site-based smelters have nearly all been shut down. Clean, high capacity, and energy efficient smelting technology is now the standard for new smelters and this technology is rapidly being adopted in China. A review of the last 40 years of technology advances may give some hints about the opportunities for improvement in the coming decades.

Extraction & Processing Division Distinguished Lecture

"The Removal of Arsenic, Selenium and Metals from Aqueous Solution by Iron Precipitation and Reduction Techniques"

Thursday • 8:30 a.m.
Convention Center, Room 16A

Speaker: **Larry Twidwell**, *Professor Emeritus, Montana Tech of the University of Montana, USA*

About the Topic: The removal of arsenic, selenium, and metal species from hydrometallurgical solutions and waste water continues to be an important research topic. This presentation includes a discussion of the research conducted at Montana Tech of the University of Montana over the past 20 years along with current literature studies. The discussion will focus on removal of arsenic by co-precipitation with Fe(III) and Fe(II), co-precipitation with Fe(III) and Al(III), reduction using elemental iron; the removal of selenium by elemental iron and catalysed iron; and the removal of cadmium, copper, nickel, zinc by co-precipitation with Fe(III) and Al(III).

Award-Winning Speakers

William Hume-Rothery Award Lecture

"Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science"

Monday • 8:40 to 9:20 a.m.
Convention Center, Room 31A

Speaker: **John Agren**, *Professor, Royal Institute of Technology, Sweden*

About the Topic: As emphasized by Stokes in 1997, the common assumption of a linear progression from basic research (science) via applied research, to technological innovations (engineering), should be questioned. This presentation will address some of them, as well as the effect of various ordering phenomena on activation barriers, the strength and practical importance of correlation effects, etc.

Institute of Metals/Robert Franklin Mehl Lecture

"The Ubiquitous Interfacial Free Energy in Phase Transformations"

Monday • 10:15 a.m.
Convention Center, Room 32B

Speaker: **David Seidman**, *Walter P. Murphy Professor of Materials Science & Engineering, Northwestern University, USA*

About the Topic: In this talk, the focus is on the diverse roles played by interfacial free energy in phase transformations in multi-component metallic alloys, which are studied experimentally by atom-probe tomography and transmission electron microscopy. The results of simulations employing lattice kinetic Monte Carlo, where the phase transformation is mediated by a vacancy mechanism, will be presented and compared in detail with experimental observations. First-principles calculations of interfacial energies in the same metallic alloys will be discussed in terms of their relevance to the aforementioned.

SPOTLIGHT EVENT

Technical Division Student Poster Contest Awards

Tuesday 12:15 to 12:45 p.m.
Exhibit Hall, San Diego Convention Center

Vittorio de Nora Prize Lecture

"Recycling of Contaminated Aluminum Scrap"

Wednesday • 2:05 p.m.
Convention Center, Room 12

Speaker: **Anne Kvithyld,** *SINTEF, Norway*

Kvithyld holds a doctorate in aluminum recycling and has worked extensively with the decoating of aluminum and other light metals. She is a member of the society's Recycling and Environmental Technologies Committee, and recently organized an aluminum recycling workshop.Through her dedication to aluminum recycling, she has emerged as a respected leader in the light metals professional community.

The Vittorio de Nora Prize was established last year by the TMS Foundation to honor its namesake, who was both a pioneer in the materials processing field and one of the great Italian technologists of the 20th century. Kvithyld will receive a $20,000 cash prize as the recipient of this prestigious award.

About the Topic: Recycling is important in the aluminum industry. Removal of contaminants such as the coat and organic materials—applied for protection and appearance—are the tail that wags the recycling dog. Successful removal of contaminants from scrap would ensure that more aluminum be recycled, minimize losses and prevent downgrading of the resource.

JIM International Scholar Award Winners

"Fracture Mechanism and Toughness in Fine- and Coarse-Grained Magnesium Alloys"

Monday • 12:10 to 12:30 p.m.
Convention Center, Room 6F
(During the Magnesium Technology 2011 Opening Session)

Speaker: **Hidetoshi Somekawa**, *National Institute for Materials Science*

"Crack Tip Dislocations and the Sequential Multiplication Process of Dislocation Sources along the Crack Front Revealed by HVEM-Tomography"

Wednesday • 10 to 10:30 a.m.
Convention Center, Room 32 A
(During the David Pope Honorary Symposium)

Speaker: **Masaki Tanaka**, *Kyushu University*

140th TMS and AIME Dinner, Awards Presentation, and Installation of the 2011 President

Garry Warren, *2011 TMS President*

About 2011 TMS President Garry Warren

Garry Warren is a professor in the Department of Metallurgical and Materials Engineering at the University of Alabama, Tuscaloosa. He joined the university in 1986 after spending eight years as a faculty member at Carnegie Mellon University in Pittsburgh, Pennsylvania. Warren received both a B.S and M.S. in metallurgical engineering from the University of Texas – El Paso and his Ph.D. in metallurgy from the University of Utah.

He has also served in various capacities within the Extraction & Processing Division (EPD), chairing the following committees: Programming, Continuing Education, and Publications, which included editorship of the EPD Congress proceedings for 1994–1996. He is also on the editorial review board for Metallurgical Transactions B, and was the faculty advisor for the University of Alabama Material Advantage Student Chapter. The chapter was named a "Chapter of Excellence" for four consecutive years 1994–1997, and again in 2000.

Warren's research efforts have focused on the electrochemistry and leaching behavior of various sulfide minerals, corrosion behavior of NdFeB permanent magnets, degradation of metal particle recording media, use of electrochemical techniques to evaluate the protective ability of polymers and polymer coatings, and the corrosion of Ti-Al intermetallics.

The TMS-AIME Awards Banquet will be held **Tuesday, March 1, at 7 p.m.** at the **San Diego Marriott Hotel & Marina in Marina Ballrooms F&G**. The event will begin with a reception from 6:30 to 7:15 p.m., followed by dinner and the awards presentation through 10 p.m. After the awards ceremony, 2010 President George T. "Rusty" Gray III will present the annual address to the society. Gray will then introduce 2011 TMS President Garry Warren.

Society Awards

Presented by George T. "Rusty" Gray III

George T. "Rusty" Gray III Gray, the 2010 TMS President, is a laboratory fellow at Los Alamos National Laboratory in Los Alamos, New Mexico. He 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.

TMS Fellows Class of 2011

David Bourell	*University of Texas, USA*
Kazuhiro Hono	*National Institute for Materials Science, Japan*
Marc A. Meyers	*University of California – La Jolla, USA*
Anthony Rollett	*Carnegie Mellon University, USA*
Steven Zinkle	*Oak Ridge National Laboratory, USA*

Application to Practice Award	Brian Thomas, *University of Illinois, USA*
Bruce Chalmers Award	Peter Voorhees, *Northwestern University, USA*
Champion H. Mathewson Award	Christopher Szczepanski, *University Technology Corp / AFRL, USA* Sushant K. Jha, *Universal Technology Corp., USA* James M. Larsen, *U.S. Air Force, USA* J. Wayne Jones, *University of Michigan, USA*
Early Career Faculty Fellow Award	Diana Lados, *Worcester Polytechnic Institute, USA*
Educator Award	Krishan Chawla, *University of Alabama, USA*
Institute of Metals/Robert Franklin Mehl Award	David Seidman, *Northwestern University, USA*
John Bardeen Award	Stephen Pearton, *University of Florida, USA*
Leadership Award	Y. Austin Chang, *University of Wisconsin, USA*
Robert Lansing Hardy Award	Shriram Ramanathan, *Harvard University, USA*
William Hume-Rothery Award	John Agren, *Royal Institute of Technology, Sweden*
Shri Ram Arora Award	Vivek Verma, *Indian Institute of Technology, India*
Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries	Anne Kvithyld, *SINTEF, Norway*

AIME Awards

Presented by Brajendra Mishra

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

AIME Distinguished Service Award Dan Thoma, *Los Alamos National Laboratory, USA*
AIME Rossiter W. Raymond Memorial Award Markus Buehler, *Massachusetts Institute of Technology, USA*

TMS Division Awards

These awards are presented at special technical division events.

Electronic, Magnetic & Photonic Materials Division

Distinguished Scientist/Engineer Award
Long-Qing Chen, *Pennsylvania State University, USA*

Distinguished Service Award
Sinn-wen Chen, *National Tsing Hua University, Taiwan*

EMPMD/*JEM* Best Paper
Christopher Kinney, *University of California – Berkeley, USA*

Extraction & Processing Division

Distinguished Lecturer Award
Larry Twidwell, *Montana Tech of the University of Montana, USA*

Distinguished Service Award
William Imrie, *Bechtel Mining & Metals, Australia*

Science Award
Dimitrios Filippou
Guillaume Hudon
Rio Tinto Iron & Titanium, Canada

Technology Award
Min Zhou
Aidong Wan
Guang Li
Jinchuan Non-Ferrous Metals Corporation, China
Ross Baldock, *Outotec, Australia*
Harry Li, *Ausmelt, Australia*

Light Metals Division

Distinguished Service Award
Halvor Kvande, *Hydro Aluminium AS, Norway*

Technology Award
Adam Gesing, *Gesing Consultants Inc, Canada*

Light Metals Award
Bodil Monsen
Arne Petter Ratvik
SINTEF Materials and Chemistry, Norway
Lorentz Petter Lossius, *Hydro Aluminium – PMT, Norway*

Aluminum Reduction Technology Award
Tian Yingfu, *Chongqing Tiantai Aluminum Industry Co. Ltd, China*
Feng Naixiang
Peng Jianping
Wang Yaowu
Qi Xiquan
Tu Ganfeng
Northeastern University, China

Bauxite & Alumina Award
Joanne Loh
Greta Bodie
Fatima Naim
CSIRO Light Metals Flagship (CSIRO Minerals), Australia

Warren Peterson Cast Shop for Aluminum Production Award
Don Doutre, *Novelis Global Technology Center, Canada*

Energy Best Paper – Professional Award
James E. Miller, *Sandia National Laboratories, USA*

JOM Best Paper Award
Subodh K. Das
Phinix, LLC
John A.S. Green
JASG Consulting USA

Magnesium Best Paper – Application Award
John Grandfield, *Grandfield Technology Pty Ltd, Australia*
Mark Turski
Tim Wilks
Magnesium Elektron, UK
Bruce Davis
Rick DeLorme
Magnesium Elektron North America, USA
Kyu Cho, *U.S. Army Research Laboratory, USA*

Magnesium Best Paper – Fundamental Research Award
Young B. Chun
Christopher Davies
Monash University, Australia

Magnesium Best Paper – Student Award
Jin-kyu Lee
Shae K. Kim
Korea Institute of Industrial Technology, Korea

Material Processing & Manufacturing Division

Distinguished Scientist/Engineer Award
Amit Misra, *Los Alamos National Laboratory, USA*

Structural Materials Division

Distinguished Scientist/EngineerAward
Tresa Pollock, *University of California Santa Barbara, USA*

Distinguished Service Award
Tresa Pollock, *University of California Santa Barbara, USA*

JOM Best Paper Award
Rebecca A. MacKay
Timothy P. Gabb
James L. Smialek
Michael V. Nathal
NASA Glenn Research Center, USA

Student Activities

TMS 2011 features a number of events designed to captivate and educate young materials science minds. Registered student attendees are invited to:

Sunday

2011 Materials Bowl
(Sponsored by Alcoa)

Elimination Rounds Noon to 3 p.m.
Championship Round 8:30 p.m.
Marriott, Marina Ballroom G

Student Networking Mixer
(GE Global Research sponsor)

imagination at work

9 to 11 p.m. • Marriott, Marina Ballroom E&F

The TMS Graduate Student Advisory Council (GSAC) invites TMS members to attend the student mixer. The student mixer has a welcoming atmosphere that is ideal for informally meeting new people and engaging in casual conversations.

Monday

Poster Contest

5 to 6:30 p.m. • Exhibit Hall

Undergraduate and graduate students will vie for cash prizes at the annual TMS Technical Division 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 $500 will be awarded for the "Best of Show" poster in undergraduate and graduate.

Tuesday

Graduate Student Advisory Council

9 to 10 a.m. • Marriott, Leucadia Room

All graduate students are invited to attend the Graduate Student Advisory Council meeting. The council focuses on meeting the unique needs of graduate students within the Material Advantage program and offers graduate students a forum to share their ideas and concerns. Because the meeting is scheduled between sessions, you can participate in the advisory council without missing a technical presentation.

Poster Contest Judging, Best of Show

Exhibit Hall
12:15 p.m.

Student Career Forum

3 to 5 p.m. • Exhibit Hall AB1

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

Early Career Panel
Brad Boyce, *Sandia National Laboratories, USA*
Eric Brown, *Los Alamos National Laboratory, USA*
Amy Clark, *Los Alamos National Laboratory, USA*
Rachel DeLucas, *H.C. Starck, USA*
Paul Edwards, *Boeing Research and Technology, USA*
Julia Greer, *California Institute of Technology, USA*
Subu Nayak, *Science Tomorrow, LLC, USA*
Greg Thompson, *University of Alabama, USA*
Dallas Trinkle, *University of Illinois Urbana-Champaign, USA*
Ben Poquette, *GE Healthcare, USA*

A Note to Student Monitors:
Report to the Programming Desk at 7:15 a.m. each day you are scheduled to monitor session(s) to receive your assignments. There will be a training session each day at 7:50 a.m. After receiving your assignments, you should go to authors' coffee to meet with your session chair(s).

The Valuable Resource that Keeps on Giving...

TMS 2011 Annual Meeting Proceedings

The following proceedings volumes are available from the TMS 2011 Annual Meeting:

- 2nd International Symposium on High-Temperature Metallurgical Processing
- Energy Technology 2011: Carbon Dioxide and Other Greenhouse
  Gas Reduction Metallurgy and Waste Heat Recovery
- EPD Congress 2011
- Friction Stir Welding and Processing VI
- Light Metals 2011
- Magnesium Technology 2011
- Recycling of Electronic Waste II, Proceedings of the Second Symposium
- Sensors, Sampling and Simulation for Process Control
- Shape Casting: Fourth International Symposium 2011
- Supplemental Proceedings: Volume 1: Materials Processing and Energy Materials
- Supplemental Proceedings: Volume 2: Materials Fabrication, Properties, Characterization, and Modeling
- Supplemental Proceedings: Volume 3: General Paper Selections

Attendees may purchase books at the Wiley Bookstore, located in the ground level lobby of the San Diego Convention Center. After the conference, orders can be placed at **www.wiley.com.**

Collected Proceedings CD-ROM

A collected proceedings CD-ROM containing select TMS 2011 presentations is available free of charge for all full conference registrants including TMS members, senior members, recent graduates, nonmember authors, nonmembers and exhibitors. This valuable resource offers endless use for future research and educational purposes.

Additional copies of the Collected Proceedings CD-ROM may be purchased on the Registration Form and will not be available after the meeting. The cost is $150, with a special student rate of $75 plus 8.25% California sales tax. All CD-ROMS must be picked up at the meeting. Shipping is not available.

TMS

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Los Alamos National Laboratory, USA

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Aleris International Inc., USA

Vice President:
Garry Warren,
University of Alabama – Tuscaloosa, USA
Wolfgang Schneider,
Hydro Aluminum GMBH (incoming), Norway

Financial Planning Officer:
Stanley Howard,
South Dakota School of Mines and Technology, USA

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Structural Materials
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EXHIBITION DIRECTORY

TMS2011

25th EXHIBITION

February 27 - March 3, 2011 • San Diego Convention Center
San Diego, California USA

Exhibit Hours

Monday, February 28 .....Noon to 6:30 p.m.
Tuesday, March 1 .....10:30 a.m. to 6 p.m.
Wednesday, March 2.....10:30 a.m. to 3 p.m.

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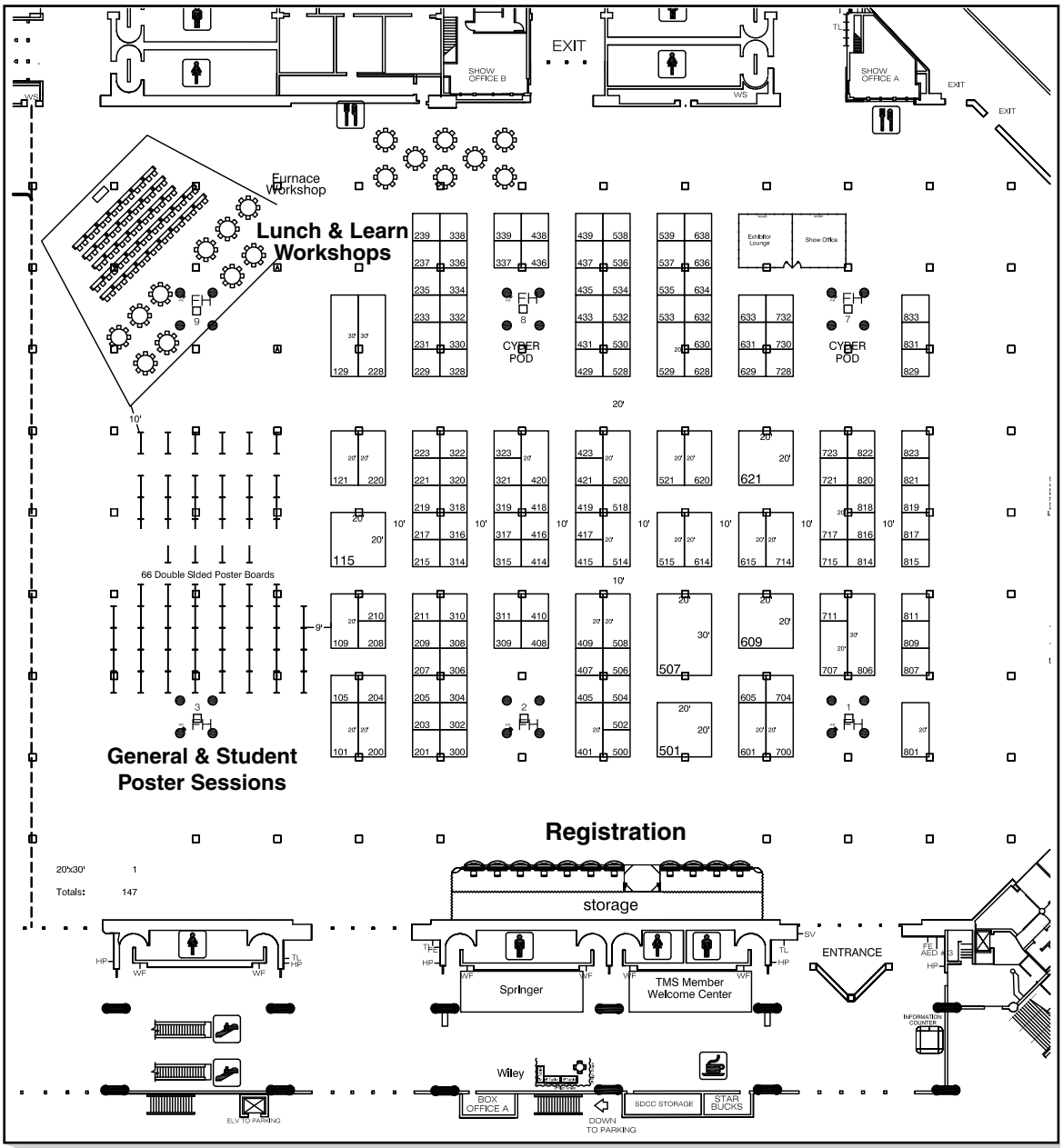
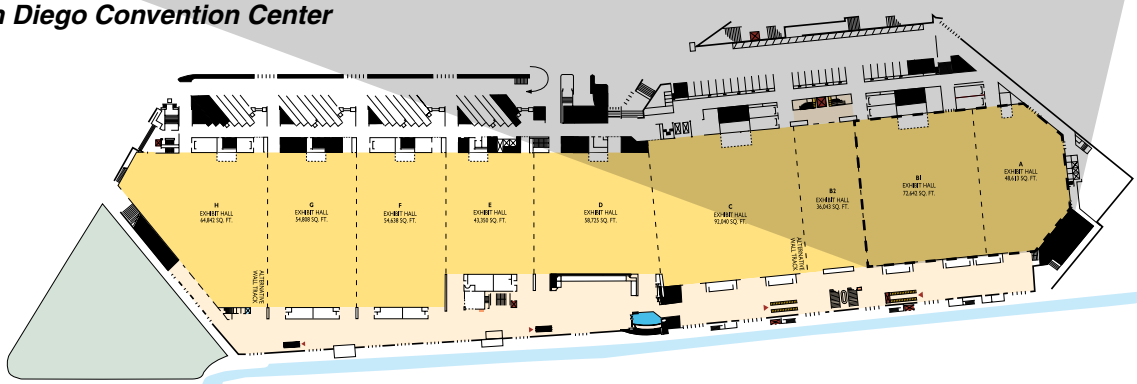


GROUND LEVEL

San Diego Convention Center



Products & Services Index

Aluminum & Magnesium

ABB Bomem
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Aluminum International Journal
B&P Process Equipment
Beijing General Research Institute of Mining & Metallurgy
Boreal Laser
CIMM Group Co., LTD
Colt
Dubal Aluminum Company Ltd.
ECL
EDAX
Fives Solios
FLSmidth Minerals
Hencon
Light Metal Age
Metallurgy and Materials Society of CIM
Outotec
Rio Tinto Alcan
RHI AG
Shanghai Zhengyu Special Alloys Co., Ltd
SLM Co., LTD
Sohar Aluminium
Stratonics, Inc. & Optomec Inc.
Techmo Car S.p.A
Thermo-Calc Software, Inc.

Advanced Characterization, Modeling & Materials Performance

ABB Bomem
Agilent Technologies
ATR National Scientific User Facility
EDAX
FLSmidth Minerals
Metal 7
Micro Materials Ltd.
Microtrac
MTS Systems Corporation
Olympus Innov – X
Stratonics, Inc. & Optomec Inc.
Thermo Scientific Niton Analyzers
Thermo-Calc Software, Inc.

High Performance Materials

Agilent Technologies
ATR National Scientific User Facility
Beijing General Research Institute of Mining & Metallurgy
Chongqing Runji Alloy Co., LTD. / Okaya (U.S.A.), Inc.
CIMM Group Co., LTD
ENERGOPROM Group
Gouda Refractories B.V.
Metal 7
Micro Materials Ltd.
National Institute of Standards and Technology (NIST)
NIST Technology Innovation Program
Parker Hannifin
RHI AG
Veik Thermal Textiles Coating Industrial

Materials & Society: Energy & Sustainable Production

ATR National Scientific User Facility
Boreal Laser
Chongqing Runji Alloy Co., LTD. / Okaya (U.S.A.), Inc.
EDAX
FLSmidth Minerals
Light Metal Age
Metallurgy and Materials Society of CIM
NIST Technology Innovation Program
Olympus Innov – X
Outotec
Rio Tinto Alcan
Sohar Aluminium
Veik Thermal Textiles Coating Industrial

Materials Processing and Production

Advanced Dynamics Corporation Ltd.
Beijing General Research Institute of Mining & Metallurgy
Big C
Boreal Laser
C A Picard International
Chongqing Runji Alloy Co., LTD. / Okaya (U.S.A.), Inc.
CIMM Group Co., LTD
Colt
Cytec Industries Inc.
EDAX
ENERGOPROM Group
Hencon
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Metal 7
Metallurgy and Materials Society of CIM
Micro Materials Ltd.
National Institute of Standards and Technology (NIST)
NIST Technology Innovation Program
Olympus Innov – X
Outotec
Parker Hannifin
RHI AG
Rio Tinto Alcan
Shanghai Zhengyu Special Alloys Co., Ltd
SLM Co., LTD
Techmo Car S.p.A
Thermo-Calc Software, Inc.
Veik Thermal Textiles Coating Industrial

Nanoscale & Amorphous Materials

ABB Bomem
Agilent Technologies
National Institute of Standards and Technology (NIST)

Professional Development

Hencon
Momentum Press
Sohar Aluminium
Stratonics, Inc. & Optomec Inc.

Company Descriptions

ABB **Booth #700**

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's dedicated team of engineers offers the best solutions with its complete range of reliable analytical instruments for inclusions and dissolved hydrogen measurement: AlSCAN, LiMCA II, LIMCA CM, Prefil®-Footprinter, PoDFA and Metallographic Analysis Service.

Advanced Dynamics **Booth #807**

For over four decades, Advanced Dynamics (ADCL) has supplied our global customer base with state-of-the-art material handling systems for carbon plants and cast houses. Our handling technology includes fully automated or semi-automated equipment for anode handling and cleaning, aluminum ingot and T-Bar handling, sawing and packaging systems. We also have experience in specialty systems for the magnesium, copper, zinc, steel and lead industries.

ADCL is a one-stop shop for your material handling needs including mechanical and controls engineering, fabrication, assembly, test and commissioning. Whether you need a new system or upgrades to existing systems or simply individual pieces of equipment, we can help improve your company's productivity. Remember "Our ingenuity delivers productivity" when you think of ADCL for your next project.

Agilent Technologies **Booth #420**

Agilent Technologies, the premier measurement company, offers a wide range of high precision measurement and imaging systems to meet your unique research needs. Agilent's industry-leading nanomechanical testing systems are the world's most accurate flexible and user friendly for nanoscale mechanical testing. Electromagnetic actuation technology allows the systems to achieve unparalleled dynamic range in force and displacement.

Agilent is introducing the compact 8500FE-SEM that has been optimized for low-voltage imaging, extremely high surface contrast, and resolution typically found only in much larger and more expensive field emission microscopes. About the size of a laser printer, the easy-to-install 8500 provides convenient plug-and-play performance. No dedicated facilities are required, only an AC power outlet. The novel scientific-grade system offers several imaging techniques for enhancing surface contrast allowing nanoscale features to be observed. Please stop by the booth for a demonstration.

Almeq Norway AS **Booth #515**

Almex USA **Booth #321**

Alstom **Booth #529**

Alstom is a global leader in the world of power generation, power transmission and rail infrastructure and sets the benchmark for innovative and environmentally friendly technologies.

Alstom builds the fastest train and the highest capacity automated metro in the world. It provides turnkey integrated power plant solutions and associated services for a wide variety of energy sources, including hydro, nuclear, gas, coal and wind, and it offers a wide range of solutions for power transmission, with a focus on smart grids. The Group employs 96,500 people in more than 70 countries, and had sales of over 23 billion* in 2009-10. (*Pro forma figures)

ALUMINIUM International Journal **Booth #308**
(Giesel Verlag GmbH)

ALUMINIUM International, journal for industry, research and applications, is the leading international journal (bilingual: German/English) for more than 80 years.

It deals with 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. www.giesel-verlag.de

Aluminium International Today **Booth #721**

Aluminium International Today is the aluminum industry's leading international publication reporting on aluminum production and processing. Founded in 1989, it provides a wealth of technical features aimed at equipping producers and processors with information on latest developments. Added to this is a digest of industry news, contracts, events, new technology, and conference reports.

Supported by the Aluminium Federation in the UK, Aluminium International Today publishes six times a year in English plus two Chinese issues and two Russian issues. It is the main sponsoring publication for the ALUMINIUM series of exhibitions and conferences in Essen, Shanghai, Mumbai and Chicago. aluminium@quartzltd.com, web www.aluminiumtoday.com.

Company Descriptions

Aluminium Network **Booth #304**

A Global Network for the Primary Aluminium Industry aluminiumNetwork.com is your internet based portal to supply and support you with a wide range of services; your meeting place with like-minded partners who can assist in improving your business and accelerate your project.

The main focus of aluminiumnetwork.com is the primary aluminum industry and it is aimed particularly at:

- Primary producers
- Suppliers of raw materials or intermediates
- Equipment suppliers
- Providers of services, including consulting services and project support.

The AluminiumNetwork.com Consultants / Freelancers data base is the perfect source for independent expertise in all of the engineering disciplines, from alumina through to primary aluminum production, including all the support functions of the process. By providing a global platform, AluminiumNetwork.com is THE place to meet with Consultants and Freelancers within the primary aluminum industry. The clients of AluminiumNetwork.com will have access to the Consultants and Freelancers database and will be able to select their required need by qualification and skills.

Please visit www.AluminiumNetwork.com for detailed information

Aluminum Times **Booth #518**

ATR National Scientific User Facility **Booth #405**

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

Access to facilities is through a solicitation and review process. The kinds of research solicited include, but are not limited to, advanced materials for high performance reactor systems, understanding light water reactor core materials including austenitic steels and nickel alloys, determining properties of material joints after exposure to a neutron irradiation environment and the applicability of nanostructured materials to radiation resistant applications. To learn more about ATR NSUF, please visit our website at: http://atrnsuf.inl.gov.

AUMUMD Holding BV **Booth #504**

B&P Process Equipment **Booth #801**

At B&P Process Equipment, we take our traditional strengths in engineering high-precision, high-reliability machines and add a customized dimension of innovation. We are manufacturers of Continuous anode paste mixers used in Primary aluminum production.

Our new generation mixers have become more nimble, more agile and versatile. Increased efficiency, improved wear life and greater anode density are the benefits of a B&P system. Instead of trying to keep up as your needs change, we're becoming the driving force of change itself. Our products are customer-driven. Each machine is engineered to solve specific problems, meet unique challenges and seize opportunities!

We made the first batch mixer used in anode Paste mixing in 1897. For over 120 years, customer satisfaction has remained the hallmark of the B&P name. Today, when it comes to anode paste mixers, No other supplier brings the longevity, performance and experience that B&P offers the world over.

Beijing General Research Institute of Mining & Metallurgy **Booth #728**

BGRIMM is a premier Chinese technology corporate delivering innovative technologies, diverse products, quality engineering and project management in mineral and material industries. Established as a research institute in 1956, BGRIMM quickly built a reputation for providing technical support in the mining and metallurgy industry. Since 1999, BGRIMM became a large state technology corporation directly under SASAC (State-owned Assets Supervision and Administration Commission of the State Council). Today, BGRIMM has grown into a multi-disciplined technology corporate primarily engaged in providing integrate solutions, advanced material technology and products, and effective engineering service to clients in mineral and material industries.

For the aluminum industry, BGRIMM developed aluminum alloy tablets in 1988, which were then protected by two patents. Ever since then BGRIMM has been delivering the high quality and environmentally-friendly products and most conscientious service. BGRIMM will continue to invest on research and development, manufacturing technology and capacity to support our customers around the world.

Big C **Booth #823**

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

Company Descriptions

Bloom Engineering **Booth #821**

Boreal Laser **Booth #629**

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

BUSS ChemTech **Booth#520**

CANMET Natural Resources Canada **Booth #530**

In collaboration with industry, CANMET–MTL a Federal laboratory of Natural Resources Canada, develops and deploys technologies to improve all aspects of producing and using value-added products from minerals and metals. Specifically, CANMET–MTL focuses on research related to metal processing (casting, forming, joining, advanced materials and prototype development) and maintains in-depth competencies for materials assessment (microstructural characterization, corrosion, physical and mechanical testing) to:

- Achieve higher performance from metal alloys and metal- or mineral-based materials for a wide range of end-use applications
- Develop advanced materials for next-generation vehicles
- Improve the reliability of the energy infrastructure, such as oil and gas pipelines and nuclear power generation systems
- Develop specialized materials for current and future industrial systems to help companies use energy efficiently and reduce air emissions and waste
- Provide sound technical input to standards and codes development
- Promote innovation and enhance the competitiveness of Canada's value-added and related product industries
- Assist firms to use more efficient production techniques, resulting in energy and cost savings.

C.A. PICARD International **Booth #711**

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

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

Center for Advanced Energy Studies **Booth #336**

The Center for Advanced Energy Studies is a research partnership between Boise State University, Idaho National Laboratory, Idaho State University and University of Idaho.

Chongqing Runji Alloys/OKAYA **Booth #809**

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 includes the acquisition last year 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. With the development of these programs along with our state-of-the-art production management, technologies and facilities, we can guarantee enough raw material supply at very competitive price levels while maintaining our high level of quality.

Information about our partners: Okaya (U.S.A.), Inc. is an international trading house that provides representation in North America for Chongqing Runji Alloy Company, LTD. This partnership is an example of Okaya's expansion of 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

Company Descriptions

CIMM Group **Booth #815**

As the company certified by ISO 9001:2008 and the International Projects Contractor accredited by P.R.China, CIMM GROUP is a healthy and fast growing integrated multinational corporation professionally engaged in providing technology, engineering, manufacturing, trade and EPC service in fields of aluminum and Steel, Mineral, Metals and Metallurgy, cement and construction, refinery and petrochemical, ports and shipyards, oil and gas, power generation and transmission, green resource, and energy, etc.

Our main products for aluminum smeltering is Anode blocks, Cathode blocks, Aluminum fluoride, cryolite, silicon nitride bonded silicon carbide blocks, refractory bricks, insulations bricks, CPC, silicon metal, aluminium tablets, etc. which have been supplied to overseas market to establish good and steady relationships with Greece, Brazil, Australia, Egypt, India, Kazakhstan, Turkey, Dubai, etc. The supplied products have a great reputation amoung our customers. CIMM GROUP is always committed to be a trustworthy business partner.

Claudius Peters Projects GmbH **Booth#419**

Colt **Booth #302**

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

The principal activity of Colt is the supply of specialist products and systems in the field of building services with particular emphasis on gravity ventilation and the environmental control of industrial and commercial buildings. Especially for the aluminum industries, Colt is supplier of Static roof Ventilators and air intake louvers for potroom buildings, anode bake buildings and cast houses. The product folio also includes perforated, reinforced fiber walls.

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

Computherm **Booth #309**

Conductix-Wampfler **Booth#204**

Conductix-Wampfler is the world's leading designer and manufacturer of energy and data transmission products. We have specific expertise in "mill-duty" conductor bar, cable festoon systems, cable reeling equipment, and cable chain systems. Our rugged products have been field-tested in the most demanding environments. We also design and build custom slip rings for pot line cranes, rotary casters, and similar equipment. Lastly, we offer a series of push button pendants and radio controls designed for mill use. And we can service what we sell, too, to keep you operations running 24/7/365. If you want the right solution for the applications, contact Conductix-Wampfler. We Move Your Business!

CSM Instruments **Booth#310**

Cytec Industries **Booth #620**

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

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

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

Dantherm Filtration **Booth #314**

Dantherm Filtration / Nederman is a leading supplier of Dust Control and Air Pollution Control solutions for a wide range of industries all over the world. Dantherm Filtration focuses on individual solutions for individual customer needs. Since May 2010 Dantherm Filtration is part of the Swedish Nederman Group. We combine the experience and expertise of the internationally recognized suppliers to provide the customers with high efficiency, unbeatable reliability, low energy consumption, and full compliance with all mandatory requirements. Our focuses are: Foundry industry, non iron-industry, quarry industry, asphalt industry, primary and secondary aluminum industry, waste incineration and waste to energy industry and Cement industry. Our reference list reflects more than 40 years of experience and broad application expertise.

Dubai Aluminium Company **Booth #717**

Dubai Aluminium Company Limited ("DUBAL") owns and operates one of the world's largest primary aluminium smelters. The DUBAL complex comprises a 990,000 mtpa smelter, a 2,350 MW power station (at 30°C), a large carbon plant, casthouse operations, a water desalination plant, and other facilities.

High quality aluminum products are made in three main

forms: foundry alloy for automotive applications; extrusion billet for construction, industrial, transportation and forging purposes in automotive industries; and high purity aluminium for electronics and aerospace. More than 250 customers are served in at least 45 countries predominantly in the Far East, Europe, the ASEAN region, the MENA region, and North America. The company holds ISO 9001, ISO/TS 16949, ISO/IEC 27001, ISO/IEC 20000, ISO 14001 and OHSAS 18001 certification. Over 4,000 people are employed, 22% of whom are UAE Nationals. DUBAL also owns 50% of Emirates Aluminium Company Limited ("EMAL"), a green-field smelter development at Al Taweelah, Abu Dhabi.

EBSD Analytical **Booth #217**

EBSD Analytical offers micro structural analysis services specializing in EBSD and EDS. With over 15 years experience in EBSD, we guarantee the highest quality results with a quick turnaround.

We also specialize in preparation of difficult materials for EBSD analysis. Call us today to see how we can help with your specific needs, whether it is grain size, texture, misorientation, phase ID, local deformation, or any number of additional applications.

ECEFast **Booth # 219**

Temperature sensor manufacturer making "Excalibur" fully swaged sensor for Carbon Bake Furnace Flue application. Featuring long life with zero maintenance, unbreakable and not prone to distortion, the Excalibur offers the lowest cost of ownership of any sensor used in this application to 1190C. Supplied normally in N to provide minimum drift over the operating life, but K is available. Cost is somewhat higher than Inconel 601 tube + wire & bead, but life is more than double with no insert replacement. www.ecefast.com.au

ECL **Booth #500**

With over 60 years experience, ECL is the world leading smelter equipment manufacturer with a long time dedication to the aluminum industry. ECL offers complete solutions for the smelter's reduction, carbon and metal sectors.

From design and manufacturing to erection, through training, maintenance, audit and refurbishment, ECL provides products and services adapted to the needs and demands of its customers, whatever the reduction technology. A high level of innovation and an unmatched expertise allow ECL to offer solutions, from single machines to complete turnkey projects that help aluminum smelters in their productivity and HSE efforts.

EDAX **Booth #223**

EDAX is the technical innovator and the world's largest supplier of EDS, EBSD, WDS and Micro-XRF systems. Smart Features are at the core of our new TEAM EDS system providing analytical intelligence to easily obtain exceptional results. EDAX's EBSD Data Collection provides a powerful and 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. Combined with the power of WDS to enhance qualitative and quantitative analysis, EDAX provide today's scientist with the ultimate materials characterization solution, offering vastly improved speed and accuracy. Orbis provides analytical flexibility for MicroXRF applications. EDAX products provide a powerful and unique combination of elemental and structural information providing a complete solution.

Trident Image Caption: Trident is the ultimate materials characterization tool integrating the latest technologies of EDS, EBSD and WDS. www.edax.com

Eirich Machines, Inc. **Booth #315**

ENERGOPROM Group **Booth #530**

ENERGOPROM MANAGEMENT (EPM) is one of the most efficient companies in non-raw material sector of the Russian economy. We are doing business all over the world, supplying more than 50% of our carbon and graphite products to the world market. EPM's Novocherkassk, Novosibirsk and Chelyabinsk electrode plants manufacture graphite and carbon products for the steel, aluminum, silicon, ferroalloy and other industries. All enterprises of the Company are furnished with up-to-date and highly productive equipment. Our products and applied technologies have no comparison in the world. Our products satisfy the requirements of world standards. In order to boost our competitive capacity, our plants have been comprehensively modernized and rebuilt. We have built new facilities to meet the requirements of the most advanced metallurgical producers, as well as to satisfy the growing global demand for carbon and graphite products.

Company Descriptions

Evans Analytical Group **Booth #311**

Evans Analytical Group (EAG) is the leading provider of surface analysis and materials characterization services to the materials supply chain and to high technology industries. We specialize in providing the widest range of characterization techniques available, such as GDMS, ICPMS, SIMS, SEM, (S) TEM (including EELS and EDS), Auger, XPS and XRD, via our network of laboratories in North America, Asia and Europe.

Our aim is to provide our customers with the most reliable, highest quality data as quickly as possible, to enable them to meet their goals regarding materials development and process optimization. EAG is certified to ISO17025 and ISO9001.

Fives Solios **Booth #609**

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

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

www.fivesgroup.com

FLSmidth **Booth #714**

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

Friggi **Booth #316**

Friggi is a manufacturer of high quality band saws, waterjets and plasma machines. Specialized high-speed machines for rapid cutting of aluminum with tight tolerances.

Gautschi Engineering GmbH **Booth#317**

Gautschi Engineering GmbH is a leading supplier of equipment for primary aluminum casthouses and recycling plants. The product range of Gautschi™ includes:

- Melting – and holding furnaces
- Pusher-type furnaces for rolling slab
- Homogenizing furnaces for extrusion billet and rolling slab
- Multiple chamber furnaces for coil and foil annealing
- Single coil annealing furnaces
- Horizontal D.C. casting plants
- Open mould ingot casting and stacking plants
- Vertical D.C. Casters for extrusion billet and rolling slab
- AIR GLIDE® and AIRSOL VEIL® mould technology

Gillespie & Powers, Inc. **Booth #806**

GLAMA **Booth #615**

Gouda Refractories **Booth #415**

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.

Company Descriptions

Hebei Sitong New Metal Material Co., Ltd — **Booth #109**

As the leading excellent manufacturer of master alloy in China, we mainly produce the followed items:

- Aluminum master alloy: AlTi5B1 AlTi10,AlSr10,AlZr10,AlMn20,AlB4,AlV5
- Shape:Coil, Cut Rod, Waffle, Ingot
- Application: Widely applied in manufacture of Aluminum Profile,Strip, Foil, Castings Electricity, Automobile, Aerospace etc.

This booth is presented in cooperation with Leway International Fairs, one of the leading international exhibition agencies in China. Located in Beijing, Leway has served in over 500 important overseas exhibitions in its eight-year history and has served nearly 2,000 Chinese companies. Leway provides comprehensive one-stop solution services for Chinese companies.

Hencon — **Booth #300**

A profound knowledge of special vehicles, over 50 years of experience, creativity, robustness, stamina and entrepreneurship makes Hencon a world leader in the design, manufacturing and service of special vehicles in the aluminium industry.

Hereaus Electro-Nite — **Booth #621**

Hertwich Engineering — **Booth #506**

Hysitron — **Booth #614**

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 nanoDMA™ for time dependent and viscoelastic materials, Modulus Mapping for quantitative large area property mapping, and nanoECR™ enabling simultaneous electrical and mechanical property measurements. We are excited to demonstrate the TI 950 TriboIndenter™ 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 PicoIndenter™, the truly quantitative depth-sensing indenters capable of direct-observation testing inside a TEM and SEM.

Innovatherm — **Booth#429**

IPI (Initiatives et Projets Industriels) — **Booth#817**

Jervis B. Webb Company — **Booth#508**

Kempe Engineering — **Booth#514**

Light Metal Age — **Booth #417**

Light Metal Age is the pre-eminent magazine of the light metal world. For over 69 years, Light Metal Age has covered primary production and semi fabrication of the light metals aluminum, titanium, and magnesium. Circulation is international and goes to primary and secondary smelters; casthouses; extrusion operations; rolling mills; sheet, rod, and wire mills; and foundries. Coverage of associated metal processes and equipment includes DC casting, anodizing, furnaces and melting, degassing and filtration, automation and instrumentation, and handling. Recipients are executives, general managers, plant managers, technicians, metallurgists, chemists, and engineers responsible for fabrication, production, and operations.

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

L.P. Royer, Inc. — **Booth #414**

Major — **Booth #811**

Maney Publishing — **Booth #304**

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

Specializing in print and electronic journal publishing, Maney is committed to technical and editorial innovation combined with traditional values of quality and collaboration. Maney publishes an impressive collection of highly regarded, peer-reviewed journals covering both niche and general topics in materials science and engineering. Coverage ranges from fundamental research to engineering application and from the extraction and refining of minerals to the characterization, processing and fabrication of materials and their performance in service.

Company Descriptions

Metal 7 **Booth #306**

Metal 7 has been providing services to the primary industry since February 1974, specializing in the design and production of high performance equipment for the primary sector. Metal 7 has a very sound knowledge of the iron ore, aluminum smelter and pulp and paper industries. It distinguishes itself from its competitors due to its expertise in surface engineering. Thanks to its leading expertise, the company stands out from its competitors by proposing extremely sophisticated, high-performance solutions.This competitive edge allows the company to thrive on the international market with numerous important companies in the metallurgical sector, like Aluminerie Alouette, Rio Tinto, ArcelorMittal, Outotec, etc.

Each year, Metal 7 invests important sums in research and development (R&D). These investments are targeted towards developing new coatings and new applications for those coatings, as well as improving the manufacturing processes and the products made by Metal 7.

Metallurgy and Materials Society of CIM **Booth #723**

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

Micro Materials **Booth #718**

The NanoTest system from MML offers a range of methods of materials characterization, including nanoindentation, nano-impact and nano-scratch and wear measurements.

In recent years, MML have pioneered nanomechanical testing in real-world conditions. The NanoTest offers unique testing modules, among them the high temperature testing module, which allows testing of a sample heated up to temperatures of 750°C.

Microtrac **Booth #630**

Our focus is rapid particle size analysis utilizing advanced solid state tri-laser technology. The S3500 line of particle size analyzers provide the broadest size range with compact design from .02 to 3000 microns. Features include rapid wet to dry conversion, advanced Flex software, small footprint, and Turbotrac dry feeder. The Nanotrac Dynamic Light Scatter units are available for nanometer sizing, while the Ultra is for low concentration < 20nm applications. New Blue Laser Technology “Bluewave” next generation is here. Zeta potential, surface area and imaging systems will also be shown.

Momentum Press **Booth #416**

Momentum Press provides the very best information and knowledge on today’s advancements in science, engineering, and applied technology. We publish books in traditional print, as well as electronically, for practitioners, researchers, educational faculty, and students. Some of our bestselling titles include: Alarm Management for Process Control by Doug Rothenberg; Protecting Industrial Control Systems from Electronic Threats by Joe Weiss; and Characterization in Silicon Processing by Yale E. Strausser. We are happy to publish individual authors as well as to work with schools and institutions in publishing such collective works as proceedings, seminar materials, and various types of instructional tools. 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.

MTI Corporation **Booth #528**

MTS Systems Corporation **Booth #819**

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

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

Explore the MTS booth and discover how innovative MTS test solutions and decades of industry expertise can optimize the effectiveness and efficiency of your specific materials research and advanced development program.

NFC **Booth #521**

National Institute of Standards and Technology (NIST) **Booth #322**

NIST Standard Reference Materials supports accurate and compatible measurements by certifying and providing over 1100 Standard Reference Materials with well-characterized composition or properties, or both. SRMs are used to perform instrument calibrations as part of overall quality assurance programs, verify the accuracy of specific measurements and

Company Descriptions

support the development of new measurement methods. The Standard Reference Data Group has provided well-documented numeric data to scientists and engineers for use in technical problem-solving, research, and development. The Calibration Services are designed to help the makers and users of precision instruments achieve high levels of measurement quality and productivity.

NIST Technology Innovation Program Booth #320

The Technology Innovation Program (TIP) at the National Institute of Standards and Technology is a cost-shared, federal funding program to support, promote, and accelerate innovation in the U.S. through high-risk, high-reward research in areas of critical national need. TIP funds innovation research that is expected to transform the Nation's capacity to deal with major societal challenges that are not being addressed. Participants in TIP include U.S. businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions.

NKM Noell Special Cranes GmbH Booth #707

Olympus Innov – X Booth #811

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

Opsis Booth #715

Outotec Booth #507

Outotec develops and provides technology solutions for the sustainable use of Earth's natural resources. As the global leader in minerals and metals processing technology, Outotec has developed several breakthrough technologies. Outotec serves the light metals industries including the provision of cutting-edge alumina refineries and aluminum smelters. The company has over 50 years experience helping customers worldwide in both segments of the aluminum process to reach their goals. What sets Outotec apart from its competition? They are there to help their customers from start to finish in terms of plant design, and they customize solutions to fit a client's specific needs. Outotec's processes and equipment have become industry standards and their references stretch back decades – a track record that has lead to their current reputation as a leading innovative technology partner. The company also offers innovative solutions for the chemical industry, industrial water treatment and the utilization of alternative energy sources.

Parker Hannifin Booth #409

Parker is the world's leading diversified manufacturer of motion and control technologies and systems. Parker provides precision engineered solutions for a variety of commercial mobile, industrial and aerospace markets. We design and manufacture optimal systems using fluid connectors, hydraulics, pneumatics, instrumentation, refrigeration, filters, electromechanical components, and seals required in motion-control systems.

Parker's experience in the aluminum industry spans more than 40 years. Parker has equipped machinery in all phases of aluminum production including smelters, casters and extruders through grinders, rolling mills and strip processing lines, etc.

Proto Manufacturing Inc. Booth #215

Company Descriptions

RHI AG **Booth #816**

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

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

Riedhammer GmbH **Booth #605**

Since 1924 dedicated to the design and construction of furnace plants for carbon products (OPEN as well as CLOSED type), RIEDHAMMER is presently the only independent supplier worldwide being able to deliver complete solutions and technology for baking of anodes, cathodes, electrodes and special carbon products. More than 85 years of experience and know-how guarantee a high economic efficiency and reliability of the plants. In total RIEDHAMMER has executed more than 300 bake furnace projects in 25 countries. Our reference list includes major global players in the production of primary aluminum with pre-baked technology as well as top suppliers of cathodes and electrodes respectively for the aluminum and steel industry.

Rio Tinto Alcan **Booth #501**

Global leader in the aluminium industry
Building on more than a century of experience and expertise, Rio Tinto Alcan is a global leader in the aluminium industry. We supply high quality bauxite, alumina and aluminium worldwide and our AP smelting technology is the industry benchmark. Our enviable hydroelectric power position delivers significant competitive advantages in today's carbon constrained world. Rio Tinto Alcan is the aluminium product group of Rio Tinto, a leading international business involved in each stage of metal and mineral production. The Group is listed on the London Stock Exchange and Australian Securities Exchange under the symbol RIO. Rio Tinto's major products are aluminium, copper, diamonds, coal, iron ore, uranium, gold and industrial minerals.

Romidot Ltd **Booth #401**

Sente Software **Booth #810**

Shanghai Electric Import And Export Co.,Ltd **Booth #210**

Main products include: alloy welding material, coils, aluminum alloy slabs, hot rolled plate, tubes, ground bar, electric steel.
This booth is presented in cooperation with Leway International Fairs, one of the leading international exhibition agencies in China. Located in Beijing, Leway has served in over 500 important overseas exhibitions in its eight-year history and has served nearly 2,000 Chinese companies. Leway provides comprehensive one-stop solution services for Chinese companies.

Shanghai Zhengyu Special Alloys Co., Ltd **Booth #829**

Shanghai Zhengyu Special Alloy Co., Ltd. is one of the Chinese major and professional manufacturers in China. Our main products AlSr, AlTiB, AlTi & aluminum alloy additives etc, are reviewed favorably and accepted widely in world market.

SIMULIA **Booth #408**

SIMULIA is the Dassault Systems brand that delivers a scalable portfolio of Realistic Simulation solutions including the Abaqus product suite for Unified Finite Element Analysis, multiphysics solutions for insight into challenging engineering problems, and lifecycle management solutions for managing simulation data, processes, and intellectual property. By building on established technology, respected quality, and superior customer service, SIMULIA makes realistic simulation an integral business practice that improves product performance, reduces physical prototypes, and drives innovation. Headquartered in Providence, RI, USA, with R&D centers in Providence and in Velizy, France, SIMULIA provides sales, services, and support through a global network of over 30 regional offices and distributors. www.simulia.com

SLM Co., Ltd **Booth #229**

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

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

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

Company Descriptions

Sohar Aluminium **Booth #211**

One of the newest additions to the Middle East's metals circuit and Oman's first foray into the Aluminium industry Sohar Aluminium Company was formed in September 2004. Jointly owned by Oman Oil Company, TAQA and Rio Tinto Alcan, Sohar Aluminium has already won global acclaim for its superior, environmentally-friendly and energy-efficient technology. By implementing decades of industry insight in its design, specification and construction Sohar Aluminium has been created to ensure efficiency, environmental protection and the utmost safety of its workforce. Noteworthy examples include the world's highest known capacity ingot casters and innovative elevated walkways traversing the entire site to keep man and machine separate except when absolutely necessary.
In addition, Sohar Aluminium has since inception achieved 70% Omanisation of its workforce; invested 53% of its total spend in the local market and established a growing network of local downstream companies. In many ways, Sohar Aluminium's development mirrors the Sultanate of Oman's own emergence onto the world stage - driving forward at a formidable pace, but all the while mindful and respectful of its cultural heritage and values.

STAS **Booth #601**

Stratonics, Inc. & Optomec Inc. **Booth #407**

Stratonics, Inc. will exhibit the ThermaViz® Sensor, an innovative two-wavelength imaging pyrometer that provides accurate, high resolution temperature maps for intelligent metals processing in real time. This online imaging pyrometer has been developed to monitor the temperature distribution of the melt pool in laser additive manufacturing processes. ThermaViz, with Windows based analysis software, is now an integrated option to Optomec's LENS technology.

Optomec® is the world-leading provider of additive manufacturing solutions for high performance applications in the Electronics, Solar, Medical, and Aerospace & Defense markets. These systems utilize Optomec's patented Aerosol Jet Printed Electronics technology and LENS powder-metal fabrication technology. The company has a global customer base of more than 100 users that includes many industry-leading manufacturers and Universities.

Stratonics and Optomec will present "On-Line Imaging Pyrometer for Laser Deposition Processing" in the Sensors, Sampling, and Simulation for Process Control Symposium.

Sunstone **Booth #822**

Techmo Car S.p.A **Booth #502**

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

Thermo Scientific **Booth #423**

Thermo Scientific Niton Analyzers **Booth #421**

When it comes to accurate analysis of metal alloys, Thermo Scientific Niton XRF analyzers set the industry standard. With a unique library of 400+ alloy grades, our handheld instruments provide immediate, nondestructive chemical analysis of aluminum, titanium, and nickel alloys; superalloys; stainless steel; and more.They deliver superior performance through faster analysis, lower detection limits, and unparalleled analytical precision, meaning decreased potential for material mix-ups and instant recovery of lost traceability.

Using the Niton® XL3t 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 **Booth #814**

Thermo-Calc Software is a leading developer of software and databases for calculations involving computational thermodynamics and diffusion controlled simulations. Thermo-Calc is a powerful tool for performing thermodynamic calculations for multicomponent systems. Calculations are based on thermodynamic databases produced by expert evaluation of experimental data. Databases are available for 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 multicomponent alloys. Applications include: homogenization of alloys, microsegregation during solidification, coarsening of precipitates, and welding.

Company Descriptions

UES, Inc. **Booth #628**

UES, Inc. is an innovative science and technology company that provides its industry and government customers with superior research and development expertise. We create products and services from our technology breakthroughs and successfully commercialize them.

RoboMet.3D™ is a fully automated, serial sectioning system that generates two-dimensional data for three-dimensional reconstruction.

Robo-Met.3D™ enables more time for data analysis and characterization and ensures repeatable and accurate data is collected in an efficient and cost-effective manner.

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

Veik Thermal Textiles Coating Industrial **Booth #328**

Veik Thermal Textiles Coating Industrial, Our Manufacturing facility is located in China. Here we skillfully produce various styles of PTFE & Silicone coated fiberglass fabric and other products to the highest of professional standards. With advanced technology, strict quality control and unbeatable after-sales service, we can ensure our customers will receive high-quality products.

XIAMEN C&D ALUMINIUM CO., LTD **Booth #208**

Wholly invested by Xiamen C&D INC. (Stock: C&D INC. Code: 600153), Xiamen C&D Aluminium Co., Ltd., is a trade company specializing in aluminum industry. We mostly engage in aluminum products' domestic trading, and importing and exporting for more than ten years. The company has strong overall operational capabilities, rich experience in international trade, and the stable procurement channels and is in the markets of aluminum sheet, coil, profiles, aluminum circle, aluminum foil etc.

This booth is presented in cooperation with Leway International Fairs, one of the leading international exhibition agencies in China. Located in Beijing, Leway has served in over 500 important overseas exhibitions in its eight-year history and has served nearly 2,000 Chinese companies. Leway provides comprehensive one-stop solution services for Chinese companies.

York Linings **Booth #115**

Thanks!

TMS Thanks the Following for their Symposia Support:

Magnetic Materials for Energy Applications	Lake Shore Cryonics, Inc. AMT&C Mitsuyo Shimizu JSPS
David Pope Honorary Symposium	JEOL Co,. Ltd. Shimadzu Co., Ltd. Euro System Tokyo University Hong Kong Polytechnic University
Functional & Structural Nanomaterials	Qualcomm Lead-Free Solder Materials Workshop Nihon Superior

TECHNICAL PROGRAM

TMS2011

140th Annual Meeting & Exhibition

February 27 - March 3, 2011 • San Diego Convention Center
San Diego, California USA

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Magnetocaloric Materials	58	11A				X						
Magnetostrictive Materials	78	11A					X					
Nanocrystalline and Nanocomposite Nd-Fe-B Magnets	140	11A								X		
Nd-Fe-B Sintered Magnets	77	11A					X					
Other Magnets	158	11A									X	
Requirements of Magnetic Materials for Current Technological Applications	159	11A									X	
Soft Magnetic Materials	97	11A						X				

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Massively Parallel Simulations of Materials Response												
Session I	38	1A			X							
Session II	58	1A				X						
Session III	78	1A					X					
Material Science Advances Using Test Reactor Facilities												
Session I	120	3							X			
Materials and Society: Linking Science and Technology for Global Energy Solutions												
Plenary Session	38	11A			X							
Materials for the Nuclear Renaissance II												
Irradiation Effects	59	4				X						
Materials and Welding	39	4			X							
Next Generation Reactors	78	4					X					
Zirconium and Fuel	97	4						X				
Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells												
Materials for Gasification and Turbines I	59	33C				X						
Materials for Gasification and Turbines II	79	33C					X					
Membranes and Materials for Renewable Energies	140	33C								X		
SOFC I - Interconnects	98	33C						X				
SOFC II	121	33C							X			
Materials Processing Fundamentals												
Poster Session	20	12		X	X	X	X	X				
Powders and Composites	80	12					X					
Process Modeling	60	12				X						
Smelting, Refining, and Liquid Processing	98	12						X				
Solidification, Deformation, and Heat Treatment	39	12			X							
Microstructural Processes in Irradiated Materials												
Defects and Defect Processes	40	3			X							
Microstructure Evolution: Experimental	60	3				X						
Microstructure Evolution: Modeling	80	3					X					
Nanostructured Alloys, Mechanical Properties	141	3								X		
Non-Metals	178	3										X
Nuclear Fuel Materials	159	3									X	
Phase Stability	99	3						X				
Poster Session	20	3		X	X	X	X	X	X	X	X	X
Neutron and X-Ray Studies of Advanced Materials IV												
Brent Fultz Honorary Session I: Joint Session with Computational Thermodynamics and Kinetics Sym.	52	9				X						
Complex Materials	81	10					X					
Dislocations, Strains and Stresses I	99	10						X				
Dislocations, Strains and Stresses II	142	10								X		
Dislocations, Strains and Stresses III	160	10									X	
Interfaces, Surfaces, Nanostructures	40	10			X							
Poster Session	21	10		X	X	X	X	X	X	X	X	
Resolving Time	121	10							X			

	Page	Room	Sun. AM	Sun. PM	Mon. AM	Mon. PM	Tue. AM	Tue. PM	Wed. AM	Wed. PM	Thur. AM	Thur. PM
Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies												
Alloy and Microstructure Development	81	7B					X					
Interfaces and Electromigration	142	7B								X		
Next Generation Packaging	41	7B			X							
Poster Session	21	7B		X	X	X	X	X	X	X	X	
Processing and Reliability Issues	161	7B									X	
Thermo-Mechanical Behavior I	100	7B						X				
Thermo-Mechanical Behavior II	122	7B							X			
Whisker Growth	61	7B				X						
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X												
Conductors, Dielectrics, Interconnects, Phase Change Memory, and Polymer Materials	143	7A								X		
Electrode, Ceramic, Optical, Spintronic, and Coating Materials	178	7A										X
Interfacial Reactions of the Pb-Free Solder Joints	123	7A							X			
Phase Equilibria and Transformation of the Pb-Free Solders and Thermoelectric Materials	161	7A									X	
Solder-related Reliability Issues	101	7A						X				
Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications												
Alloy Design and Development	123	11B							X			
Applications of Shape Memory Alloys	162	11B									X	
Characterization of Shape Memory Alloys: Deformation Behavior	41	11B			X							
Characterization of Shape Memory Alloys: Microstructural Transformation	82	11B					X					
Characterization of Shape Memory Alloys: Structure-Property Relationships	61	11B				X						
Effect of Processing on the Properties of Shape Memory Alloys	144	11B								X		
Fundamental and Engineering Modeling of Shape Memory Alloys	101	11B						X				
Poster Session	23	11B		X	X	X	X	X	X	X	X	
Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome												
Dislocation Dynamics, Geomaterials, Nanoscale	124	6C							X			
Emerging Polycrystal Models with Experimental Integration I	42	6C			X							
Emerging Polycrystal Models with Experimental Integration II	163	6C									X	
Hexagonal Materials and Twinning	82	6C					X					
Neutron Diffraction and Prediction of Internal Stresses	62	6C				X						
Orientation Imaging Techniques and Related Models	102	6C						X				
Poster Session	23	6C		X	X	X	X	X	X	X	X	
Steels, Damage	144	6C								X		
Processing and Properties of Powder-Based Materials												
Current-Activated and Conventional Sintering	83	33A					X					
Mechanical Alloying/Milling, Reactions and Consolidation	145	33A								X		
Poster Session	24	33A		X	X	X	X	X	X	X		
Powder and Laser Processing	124	33A							X			
Powder Fabrication and Processing	102	33A						X				
Sintering Science and Technology	63	33A				X						

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Properties, Processing, and Performance of Steels and Ni-Based Alloys for Advanced Steam Conditions												
Alloy Design, Selection, Qualification, and Processing	103	33B						X				
High Temperature Oxidation and Design for Resistance	145	33B								X		
Mechanical Behavior and Physical Metallurgy	125	33B							X			
Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites												
General and Nano-Composites	43	6A			X							
Multimodal, Processing and Microstructure	63	6A				X						
Processing, Microstructure and Mechanical Properties I	84	6A					X					
Processing, Microstructure and Mechanical Properties II	103	6A						X				
Recycling General Session												
Building Materials	179	12										X
Metals	146	12								X		
Waste Utilization	163	12									X	
Refractory Metals 2011												
Molybdenum, Niobium, Tantalum, Rhenium	179	19										X
Refractory Metal-Based Alloys	104	19						X				
Refractory Metal-Based Composites I	146	19								X		
Refractory Metal-Based Composites II	164	19									X	
Tungsten-Based Alloys	125	19							X			
Sensors, Sampling, and Simulation for Process Control												
Liquid Metal Sensing and Online Measurement	147	13								X		
Steel Processing; Online Sensors	180	13										X
Temperature-Related Process Monitoring Systems	164	13									X	
Shape Casting IV: Light Metals Division Symposium in Honor of Prof. John T. Berry												
Methods and Systems	147	15B								X		
Modeling	84	15B					X					
Properties	126	15B							X			
Solidification	104	15B						X				
Silicon Production, Purification and Recycling for Photovoltaic Cells												
Poster Session	24	14A		X	X	X	X	X	X	X	X	X
Session I	165	14A									X	
Session II	180	14A										X
Size Effects in Mechanical Behavior												
Capturing the Size Effect through Modeling and Simulation	105	2						X				
Combined Approaches Applied to Size Scale Dependent Experimental Problems	165	2									X	
In Situ Characterization to Understand Mechanically Driven Size Effects	85	2					X					
Indentation Size Effects	126	2							X			
Observing Size Effects Using the Microcompression Method	148	2								X		
Size Dependent Mechanical Behavior of Nanotwinned and Nanocrystalline Metals	43	2			X							
Size Effects in Multilayer Structures	64	2				X						

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Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Application												
Coatings, Surfaces, and Interfaces II - and - Magnetic Heterostructures I	85	31B					X					
Energy and Catalysis Technologies II - and - Biological Applications	127	31B							X			
Growth, Characterization, and Devices I	44	31B			X							
Growth, Characterization, and Devices II - and - Coatings, Surfaces, and Interfaces I	64	31B				X						
Magnetic Heterostructures II - and - Energy and Catalysis Technologies I	105	31B						X				
Poster Session	24	31B		X								
The Second Symposium on the Recycling of Electronic Wastes												
Management and Technology Overview of Electronic Wastes	65	15B				X						
Poster Session	24	15B				X						
Technologies for the Recycling of Electronic Wastes	44	15B			X							
Thermally Activated Processes in Plastic Deformation												
Deformation Mechanisms and Polycrystal Plasticity	106	1B						X				
Dislocation Ensemble Evolution	86	1B					X					
Grain Boundary Evolution and Dislocation Core Effects	65	1B				X						
Nucleation and Diffusive Processes	45	1B			X							
Ultrasonic Welding for Lightweight Components												
Session I	45	33A			X							
Waste Heat Recovery												
Session I	148	31B								X		

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Poster Session

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

Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Sun PM-Thurs PM
Feb 27-Mar 3, 2011

Room: 8
Location: San Diego Conv. Ctr

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Seong Jin Koh, University of Texas at Arlington; David Stollberg, GTRI

A Novel Type of Carbon Coated Sulfur Nanoparticles for Li/S Batteries: *Yan Yuan*[1]; Elton Cairns[1]; [1]LBNL

Chemical Deposited CdS Nanoparticles on TiO2 Nanotube Arrays: *Amin Azizi*[1]; Mojtaba Hamedi[2]; Seyyed Khatiboleslam Sadrnezhaad[2]; [1]Tulane University; [2]Sharif Univesity of Technology

Chemical Synthesis and Characterization of Manganese Nanoparticles: *Lei Zhang*[1]; David Nikles[1]; Gregory Thompson[1]; [1]University of Alabama

Effect of Mn on AOT Capped CdS Nanoparticles and Thin Films: *Dhanasekaran Venkatesan*[1]; Dorairaj Deepan[2]; Ram Kumar[3]; S. Moorthy Babu[3]; Prabhu Megharaj[4]; Gokula Krishna Muralidharan[2]; Guruhariharan Rajendaran[2]; [1]KTH, Royal Institute of Technology, Sweden; [2]KU Leuven; [3]Anna University Chennai; [4]University of Cincinnati

Preparation and Characterization of ZnS Thin Films Using Chemical Bath Deposition Method: Effects of Deposition Time and Thermal Treatment: *Way-Ming Hsieh*[1]; Kong-Wei Cheng[1]; Shing-jiang Jessie Lue[1]; [1]Chang Gung University

Enhanced Photocatalytic Activity of Modified TiO2 for Degradation of CH2O in Aqueous Suspension: *Tong Haixia*[1]; Yang Daowu[1]; [1]Changsha University of Science and Technology

Fabrication of ITO Nano-Powder: Mingyu Zhang[1]; *Liping Wang*[1]; [1]Central South University

Selective Area ALD Deposition with Nanolithography: *Jie Huang*[1]; Mingun Lee[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

Steel Mesh Coated with Carbon Nanotubes: Its Superhydrophobicity and W/O Emulsion Dewatering Capability: Chee Huei Lee[1]; Nick Johnson[1]; *Jaroslaw Drelich*[1]; Yoke Khin Yap[1]; [1]Michigan Technological University

Synthesis of CuO-NiO Nanopowders via Alkalinization Precipitation Process: R. Roohibakhsh[1]; *H.R. Rezaie*[1]; H. Razavizadeh[1]; [1]Iran University of Science and Technology

Application of Biomass Waste Materials in the Nano Mineral Synthesis: *Abram Bishay*[1]; [1]NMA

Characterization of Hybrid Carbon-Nanotube Composite Interfaces as a Function of Length Scale: *Harry Malecki*[1]; Michael Duffy[1]; Sam Markkula[1]; Marc Zupan[1]; [1]University of Maryland Baltimore County

Development of Polymer-Based Position-Sensitive Photodetectors: *Dmitri Nassyrov*[1]; Malte Schmidt[1]; Ovidio Peña[1]; Alejandro R. Goñi[1]; M. Isabel Alonso[1]; Miquel Garriga[1]; Mariano Campoy-Quiles[1]; [1]Institute of Materials Science of Barcelona (ICMAB-CSIC)

Electrochemical Performances of Nanoporous Carbon Anode for Super Lithium Ion Capacitor: *Zhou Xiangyang*[1]; Lou Shiju[1]; Yang Juan[1]; [1]Central South University

Integration of Surface Treatment Techniques for Uniform and Conformal ALD High-k Dielectric on Graphene: *Greg Mordi*[1]; Srikar Jandhyala[1]; Bongki Lee[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

Microfluidic Synthesis of Nickel Nanoparticles: *Ravindranadh Eluri*[1]; Brian Paul[1]; [1]Oregon State University

Nanowire Rearrangement by the Pick-and-Place Nano-Manipulation Technique: *Mingun Lee*[1]; Jie Huang[1]; Kook-Nyung Lee[2]; Moon Kim[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]Korea Electronics Technology Institute (KETI)

Reactive Nanoparticles for Bacteria Decontamination: *David Stollberg*[1]; [1]Georgia Tech Research Institute

Size Tunable Synthesis of Monodispersed Hexadecylamine –Capped ZnSe Nanoparticles: *Oluwafemi Oluwatobi*[1]; Vuyelwa Ncapayi[1]; Sandile Songca[1]; [1]Walter Sisulu University

Sonochemistry as a Tool for Synthesis of Ion-Substituted Calcium Phosphate Nanoparticles: *Ali Shokuhfar*[1]; Milad Mohebali[1]; [1]K.N.Toosi Univ. of Technology

Structure and Mechanical Stability Studies of Tethered Lipid Bilayer Membranes Assembled on Template-Stripped Gold: *Xi Wang*[1]; Regina Ragan[1]; [1]University of California, Irvine

The Versatility of Catalytic LCVD Technique to Grow Carbon Nanotubes: *Iuliana Soare*[1]; Ion Morjan[2]; Rodica Alexandrescu[2]; Catalin Luculescu[2]; Eugeniu Vasile[3]; Monica Scarisoreanu[2]; Ernest Popovici[2]; Elena Dutu[2]; Lavinia Gavrila Florescu[2]; Ion Voicu[2]; [1]IMT-Bucharest; [2]National Institute for Lasers, Plasma and Radiation Physics; [3]METAV-R&D

Towards Integrated Systems of Nanopillar Devices: *Liang-Chieh Ma*[1]; Seong Jin Koh[1]; [1]University of Texas at Arlington

Zn-Ni Ferrite Spinels via Salt-matrix Heat Treatment: *Amin Azizi*[1]; Seyyed Mohammad Mostafavi[2]; Seyyed Khatiboleslam Sadrnezhaad[2]; Ziarat Ali Nemati[2]; [1]Department of Chemical and Biomolecular Engineering,Tulane University; [2]Department of Materials Science and Engineering, Sharif University of Technology

Development of Hafnia Based Thermal Barrier Coating and Its Microstructural Analysis: *Mohammed Noor-A-Alam*[1]; Chandan Roy[1]; Christopher Bradley[1]; Ahsan Choudhuri[1]; Chintalapalle Ramana[1]; [1]University of Texas at El Paso

Effect of Temperature Schedule on the Particle Size of NiFe2O4 Spinel Nanopowder during Solid-State Reactions: *Zhigang Zhang*[1]; Guangchun Yao[1]; Yihan Liu[1]; Jinjing Du[1]; [1]Northeastern University

Femtosecond Laser-Induced Synthesis of Colloidal AuAg Nanoalloys from Aqueous Mixture of Metallic Ions: *Yuliati Herbani*[1]; Takahiro Nakamura[1]; Shunichi Sato[1]; [1]Institute of Multidisciplinary Research for Advanced Materials/Tohoku University

Interfacial Properties of Cu-Nb Multilayers as a Function of Dislocation/Disconnection Content: *Niaz Abdolrahim*[1]; Ioannis Mastorakos[1]; Hussein Zbib[1]; David Bahr[1]; [1]Washington State University

Investigation of Effect on BET Specific Surface Area of ACF/CNT Composites: Liping Wang[1]; Zhucheng Huang[1]; Mingyu Zhang[1]; [1]Central South University

Synthesis and Characterization of Mullite: *Kasturi Paithankar*[1]; Dipika Barbadikar[1]; Dilip Peshwe[1]; Ashutosh Gandhi[2]; [1]Visvesvaraya National Institute of Technology; [2]Indian Institute of Technology - Madras

Synthesis and Characterization of Nanostructure Forsterite Bioceramic for Tissue Engineering Applications: Fariborz Tavangarian[1]; Rahmatollah Emadi[1]; *Mohammad Hossein Enayati*[1]; [1]Isfahan University of Technology

Synthesis and Microstructure of Bulk Nanostructured Cu by Spark Plasma Sintering of Cryomilled Powders: *Haiming Wen*[1]; Yonghao Zhao[1]; Zhihui Zhang[1]; Ying Li[1]; Osman Ertorer[1]; Enrique Lavernia[1]; [1]University of California, Davis

Synthesis and Sintering of W–Cu-Ag Composite Powders Produced by Co-Precipitation Method: G. Taghavi[1]; *H.R. Rezaie*[1]; H. Razavizadeh[1]; [1]Iran University of Science and Technology

Fe-Based Amorphous-Nanocrystalline Thermal Spray Coatings: B. Movahedi[1]; *M.H. Enayati*[2]; [1]Isfahan University; [2]Isfahan University of Technology

High Performance Dye Sensitized Solar Cells Based on Surfactant Templated Mesoporous Titania Coatings: *Saquib Ahmed*[1]; Dunbar Birnie[1]; Teddy Asefa[1]; [1]Rutgers University

Magnetic Properties of Chemically-Synthesized FeRh/FePt Nanocomposites: *Zhiyong Jia*[1]; R.D.K Misra[1]; [1]University of Louisiana at Lafayette

Optical Gas Sensors for Advanced Coal-Fired Power Plants: *Paul Ohodnicki*[1]; Congjun Wang[1]; Douglas Kauffman[1]; Kristi Kauffman[1]; Christopher Matranga[1]; [1]National Energy Technology Laboratory

Managing High Strength and High Ductility in UFG IF-Steel by ECAE plus Post-ECAE Annealing: *Gencaga Purcek*[1]; Onur Saray[1]; Ibrahim Karaman[2]; Hans Maier[3]; [1]Karadeniz Technical University; [2]Texas A&M University; [3]University of Paderborn

Texture, Dislocation Structure, and Interface Structure of Nanolamellar Metallic Composites Fabricated via Rolling and Accumulated Roll Bonding: *John Carpenter*[1]; Sven Vogel[1]; Thomas Wynn[1]; Robert Dickerson[1]; Rod McCabe[1]; Irene Beyerlein[1]; Nate Mara[1]; [1]Los Alamos National Laboratory

Structural and Dielectric Properties of Polar Polymer Nanocomposites: Mulayam Gaur[1]; [1]Hindustan College of Science and Technology

A Detailed Study of Ozone Process on Graphene for Ozone-Based Atomic Layer Deposition: *Bongki Lee*[1]; Geunsik Lee[2]; Greg Mordi[1]; Srikar Jandhyala[1]; Robert Wallace[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]POSTECH

Graphene-CNT Hybrid Structure Based Transparent and Flexible Field Emission Device: *Indranil Lahiri*[1]; Ved Prakash Verma[1]; Wonbong Choi[1]; [1]Florida International University

Development of Al-TiB2 Nanocomposite: Z. Sadeghian[1]; *M.H. Enayati*[2]; B. Lotfi[1]; P. Beiss[3]; [1]Shahid Chamran University; [2]Isfahan University of Technology; [3]RWTH Aachen University

Polymer-Graphene-Polymer Composite Structured Flexible Nonvolatile Bistable Organic Memeory Devices: *Won Kook Choi*[1]; Dong-Ick Son[1]; [1]Korea Institute of Science and Technology

Hydrogen Production by Reacting Water with Mechanically Milled Composite Aluminum-Metal Oxide Powders: *Paul Dupiano*[1]; Demitrios Stamatis[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

Atomic Scale Investigation of Nano Structures in Ni-Based Superalloy through Advanced Characterization: *Gopal Viswanathan*[1]; Rajarshi Banerjee[2]; R Srinivasan[3]; S Nag[2]; A Shiveley[4]; J Tiley[1]; Hamish Fraser[5]; [1]Air Force Research Laboratory; [2]University of North Texas; [3]ExxonMobil Research and Engineering; [4]UTC, Dayton; [5]The Ohio State University

Thermal Stability and Mechanical Behavior of Cu-Nb and Cu-Nb-Ag Super-Saturated Metastable Solid Solutions Prepared by Mechanical Alloying: *Suhrit Mula*[1]; K. Youssef[2]; M. Atwater[2]; H. Bahmanpour[2]; Ron Scattergood[2]; Carl Koch[2]; [1]North Carolina State University, Raleigh, USA and National Institute of Technology, Rourkela, India; [2]North Carolina State University, Raleigh

Scaling Theory of Continuum Dislocation Dynamics in Two and Three Dimensions: *Yong Chen*[1]; Woosong Choi[1]; Stefanos Papanikolaou[1]; James Sethna[1]; [1]Cornell University

Synthesis and Characterization of Vertically Oriented Sr-doped TiO2 Nanotubes Using Electrochemical Anodization Process: *Hoda Amani Hamedani*[1]; Nageh Khalaf Allam[1]; Hamid Garmestani[1]; [1]Georgia Institute of Technology

Synthesis of W–25 Wt%Cu Composite Powders Using Ammonium Para Tungstate and Copper Nitrate as Precursors: *Mojtaba Babapour Naseri*[1]; [1]Cabok

Effect of Welding on the Fatigue Strength of Welded Joints Using the GMAW Process in Transformation Induced Plasticity Steels (TRIP) Used in the Automotive Industry: *Victor Lopez*[1]; Arturo reyes[1]; Patricia Zambrano[2]; Joaquin Del prado[3]; [1]Corporacion Mexicana de Investigacion en Materiales; [2]Universidad Autonoma de Nuevo Leon; [3]METALSA

Effect of Initial Microstructure on the Processing of Titanium Using Equal Channel Angular Pressing: *Shehreen Dheda*[1]; Nima Farhi[1]; Farghalli Mohamed[1]; [1]University of California, Irvine

Production and Mechanical Properties of Nanostructured Copper and Copper Zinc Alloys: *Mohsen Samadi Khoshkhoo*[1]; Hamed Bahmanpour[2]; Sergio Scudino[1]; Jens Freudenberger[1]; Michael Zehetbauer[3]; Carl Koch[2]; Jürgen Eckert[1]; [1]Leibniz Institute for Solid State and Materials Research (IFW); [2]Department of Materials Science and Engineering, North Carolina State University; [3]University of Vienna

Experimental Investigation of Deformation Mechanisms Present in Ultra-Fine-Grained Metals: *Adam Kammers*[1]; Samantha Daly[1]; [1]The University of Michigan

Thermal Stability of Electrodeposited Nanocrystalline Copper: *Ming-Je Sung*[1]; Farghalli Mohammed[1]; [1]University of California, Irvine

Ultrahigh Strength and Good Ductility in Bulk Nanostructured TWIP Steel: *Hongning Kou*[1]; Jian Lu[2]; [1]The Hongkong Polytechnic University; [2]City University of HongKong

Shear-Induced Nanostructured Zirconium with Unique Mechanical Properties: *Srinivasa Rao Bonta*[1]; Alexander Zhyliaev[2]; María Teresa Pérez Prado[1]; [1]IMDEA Materials; [2]National Center for Metals Research

Industrial Potential of Bulk Nanostructured Metals: *Malgorzata Lewandowska*[1]; Halina Garbacz[1]; Krzysztof Kurzydlowski[1]; [1]Warsaw University of Technology

Progress and Potential of Free Pressure-less Spark Plasma Sintering (FPSPS) Processing: *William Bradbury*[1]; Ridvan Yamanoglu[2]; Wei Li[1]; Randall German[1]; Eugene Olevsky[1]; [1]San Diego State University; [2]Kocaeli University

Microstructure and Mechanical Behavior of Wet-Processed Cu-Zr-Based BMG Composites: *Jonathan Nguyen*[1]; Sangmin Lee[2]; Zhihui Zhang[1]; Ying Li[1]; Troy Topping[1]; Yizhang Zhou[1]; Akihisa Inoue[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Tohoku University

Heterogenity of Microstructure Evolution in NiTi (50 at% Ni) Alloy Severely Deformed by High Pressure Torsion: *Reeti Singh*[1]; Jochen Fiebig[1]; Stefan Ostendorp[1]; Harald Rösner[1]; E.A. Prokofyev[2]; Ruslan Valiev[2]; Sergiy Divinski[1]; Gerhard Wilde[1]; [1]Institute of Material Physics, Westfälische Wihelms-University Münster, Germany; [2]Institute of Physics of Advanced Materials, Ufa State Aviation University, Ufa, Russian Federation

Effect of Repetitive Corrugation and Straightening Rolling on Microstructure and Mechanical Behavior of Metallic Materials: Arya Mirsepasi[1]; *Mahmoud Nili-ahmadabadi*[1]; Mohammad Habibi-parsa[1]; [1]University of Tehran

Deformation Behavior of Bulk Nanostructured Copper and Copper Alloys Processed by Ball Milling and High Pressure Torsion: *Hamed Bahmanpour*[1]; Jelena Horky[2]; Sladjana Kahofer[2]; Ronald O. Scattergood[1]; Carl C. Koch[1]; Michael Zehetbauer[2]; [1]North Carolina State University; [2]Research Group Physics of Nanostructured Materials, University of Vienna

Synthesis of High Strength Nano-Structured Alpha and Beta Tantalum: *Anahita Navid*[1]; Andrea Hodge[1]; [1]University of Southern California

Ultrahigh-Strength Nano-Grained Composites Produced by High-Pressure Torsion: *Kaveh Edalati*[1]; Zenji Horita[1]; [1]Kyushu University

Dry Sliding Wear and Corrosion Behavior of Ultrafine–Grained HSLA Steel Processed Using Multi Axial Forging: *Aditya Padap*[1]; G Chaudhari[1]; S. Nath[1]; [1]Indian Institute of Technology Roorkee

Effects of Boron Carbide Additions on Kinetics of Grain Refinement in Cryomilled Al Powders: *Yuzheng Zhang*[1]; Byungmin Ahn[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

Effect of Precipitation on the Mechanical Properties of Hot Extruded Nanostructured Aluminum Powder Alloys: *Claudemiro Bolfarini*[1]; Mauricio Peres[1]; Joao Fogagnolo[2]; Claudio Kiminami[1]; Walter Botta[1]; Alberto MoreiraJorge[1]; [1]Universidade Federal de São Carlos; [2]Universidade Estadual de Campinas

Mechanical Behavior of Cryomilled Al-B_4C Ultrafine-Grained Metal Matrix Composite Extrusions Attributed to Stress Assisted Grain Growth and Particulate Reinforcement: *Troy Topping*[1]; Cory Smith[2]; Ying Li[1]; Zhihui Zhang[1]; Bhaskar Majumdar[3]; Kyu Cho[4]; Mark van den Bergh[2]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis; [2]DWA Aluminum Composites; [3]New Mexico Tech University; [4]U.S. Army Research Laboratory

Basal-Plane Stacking-Fault Energies of Mg: A First-Principles Study of Li- And Al-Alloying Effects: *Zhao-Hui Jin*[1]; Jian Han[1]; X.-M. Su[1]; Y.T. Zhu[2]; [1]Shanghai Jiao Tong University; [2]North Carolina State University

Effect of Reinforcement Volume Fraction on the Properties of Nanocrystalline Mg Matrix Composite Reinforced with Ti_2AlC: *Babak Anasori*[1]; Shahram Amini[1]; Volker Presser[1]; Michel Barsoum[1]; [1]Drexel University

Effect of the Second Phase Particles on the Grain Refinement of an Al-Si-Mg Alloy Processed by ECAP: *Edgar Garcia-Sanchez*[1]; Edgar Lopez-Chipres[2]; Rafael Colás-Ortiz[1]; [1]FIME-UANL; [2]UJED

Alumina and Bauxite: Alternative Alumina Sources Light Metals Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee

Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Sun PM-Thurs PM
Feb 27-Mar 3, 2011

Room: 17A
Location: San Diego Conv. Ctr

Adsorption of Polyethylene Glycol at the Interface of Dicalcium Silicate – Sodium Aluminate Solution: Yu Haiyan[1]; *Xiaolin Pan*[1]; Zhongke Lu[2]; Tingting Ding[1]; [1]Northeastern University; [2]Shandong Branch, Chalco

The Effect of Cooling Rate on the Leachability of Calcium Aluminate Slags: *Wang Bo*[1]; Sun Huilan[1]; Zhang Xuezheng[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northeastern University

The Effect of Ultrasonic Treatment on Alumina Leaching from Calcium Aluminate Slag: Sun Huilan[1]; *Wang Bo*[1]; Guo Dong[1]; Zhang Xuezheng[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northeastern University

Preparing Polymerized Aluminum-Ferrum Chloride with Red Mud: *Lu Guilin*[1]; Yu Haiyan[1]; Bi Shiwen[1]; [1]School of Sciences; Shenyang University of Technology

Production of Hematite Ore from Red Mud: *Puliyur Krishnaswamy Narasimha Raghavan*[1]; Nand Kumar Kshatriya[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

Extraction of Alumina from Red Mud by Divalent Alkaline Earth Metal Soda Ash Sinter Process: *Shib Narayan Meher*[1]; Ashok Kumar Rout[1]; Balakrushna PadhiI[2]; [1]Kiit University; [2]National Aluminum Company Limited

Study on the Strength of Powders Seed-Percipitated from Sodium Aluminate Solutions: *Gang Xie*[1]; Yu Xiaohua[1]; [1]Technology Center of Yunnan Metallurgy Group Co.Ltd.

The Role of Quasi Web Structure of Nano SiC Whiskers on Strengthen and Density in Bauxite Based Composite Materials: *Ebrahim Karamian*[1]; Ehsan Mohamadi Zahrani[2]; [1]Isfahan University of Technology; [2]Department of Materials Engineering, University of British Columbia

Theory and Experiment on Cooling Strategy during Seeded Precipitation: *Zhanwei Liu*[1]; Wenmi Chen[1]; Wangxing Li[2]; [1]Central South University; [2]Zhengzhou Research Institute of Chalco

Dissolution Kinetics of Silicon from Sintering Red Mud in Pure Water: Xiaohui Li[1]; Kai Huang[1]; *Hongmin Zhu*[1]; [1]University of Science & Technology Beijing

Aluminum Reduction Technology: Light Metals Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Sun PM-Thurs PM
Feb 27-Mar 3, 2011
Room: 17A
Location: San Diego Conv. Ctr

Human Factors in Operational and Control Decision Making in Aluminium Smelters: *Yashuang Gao*[1]; Mark Taylor[1]; John Chen[1]; Michael Hautus[1]; [1]University of Auckland

Approaches for Investigating Phase Transformations at the Atomic Scale: Posters

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Neal Evans, Oak Ridge National Laboratory; Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Chris Wolverton, Northwestern University; David Seidman, Northwestern University; Rajarshi Banerjee, University of North Texas

Sun PM-Tues PM
Feb 27-Mar 1, 2011
Room: 32B
Location: San Diego Conv. Ctr

An Identification Scheme of Grain Boundaries and Construction of Grain Boundary Energy Database: *Byeong-Joo Lee*[1]; [1]Pohang University of Science and Technology

Computing Thermodynamic Properties of FeCr Alloys by Path Sampling Simulations: *Gilles Adjanor*[1]; Manuel Athènes[2]; [1]EDF R&D; [2]CEA-Saclay

Identification of Phase Transformation Using Optical Emission Spectroscopy for Direct Metal Deposition Process: *Lijun Song*[1]; Jyoti Mazumder[1]; [1]University of Michigan

Study of the Interaction of Solutes with Interfaces in Iron Using Density-Functional Theory: *Hao Jin*[1]; Ilya Elfimov[1]; Matthias Militzer[1]; [1]The University of British Columbia

Biological Materials Science: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Sun PM-Thurs AM
Feb 27-Mar 3, 2011
Room: 15A
Location: San Diego Conv. Ctr

A Crystallographic and Textural Perspective of Aging and Diagenetic Degradation of Mechanical Properties on Hard Malacological Paleo-Tissues: *Raúl Bolmaro*[1]; María Bayer[2]; Gonzalo Duarte[1]; Natalia De Vincentis[1]; Sandra Gordillo[2]; [1]IFIR; [2]Universidad Nacional de Córdoba

Antibacterial Microporous Coating Formation on Ti6Al4V Alloy via Micro Arc Oxidation Process: *Faiz Muhaffel*[1]; Eyüp Kayali[1]; Hüseyin Çimenoglu[1]; [1]Istanbul Technical University

Bactericidal Effect of Silver Reinforced Hydroxyapatite and Carbon Nanotubes: *Atif Faiz Mohammed*[1]; Pallavi Kesarwani[2]; Kantesh Balani[1]; [1]Indian Institute of Technology; [2]Visvesaraya National Institute of Technology

Characteristics and Wear Performance of Nitrided Ti6Al7Nb: *Farid Siyahjani*[1]; Huseyin Cimenoglu[1]; [1]Istanbul Technical University

Development of Hydroxyapatite and Silicon Carbide Composites via Thermal Plasma Route: *Atif Faiz Mohammed*[1]; Saroj K Singh[2]; [1]Indian Institute of Technology Kanpur; [2]Institute of Materials and Minerals Technology

Fatigue and Mechanical Properties of Co-Cr Alloy Tube for Stents after Ultrasonic Nanocrystal Surface Modification: *Young Sik Pyun*[1]; Auezhan Amanov[1]; Jun Hyong Kim[1]; Sang Ho Kim[2]; Chae Jong Park[2]; [1]Sun Moon University; [2]M.I.Tech Co., Ltd.

Improvement of Mechanical Properties of Ti-6Al-4V after EDM Surface Treatment for Biomedical Applications: Josef Stráský[1]; Miloš Janecek[1]; *Petr Harcuba*[1]; Jitka Vrátná[1]; Lothar Wagner[2]; Lucie Bacakova[3]; [1]Charles University; [2]Clausthal University of Technology; [3]Institute of Physiology, Academy of Sciences

Investigation of Incorporating Zirconia Particles into Titanium Oxide Coated by Plasma Electrolytic Oxidation: *Ki Ryong Shin*[1]; Kang Min Lee[1]; Young Gun Ko[2]; Dong H. Shin[1]; [1]Hanyang University; [2]Yeungnam University

Laser Hardening of Beta Titanium Alloy (Ti-23Nb-0.7Ta-2Zr-1O) for Biomedical Applications: *Velayutham Nainar*[1]; Geetha Manivasagam[1]; Nandy[2]; Asokamani[1]; [1]VIT University; [2]Defence Metallurgical Research Laboratory

Microwave Augmented Fabrication and Evaluation of CNT-Reinforced Nanohydroxyapatite: M Bilal Khan[1]; Rafaqat Hussain[2]; *Muhammad Aftab Akram*[1]; [1]National University of Sciences and Technology (NUST), SCME; [2]COMSATS

Multifunctional Nanowire Systems for Drug Delivery: *Karla Brammer*[1]; Chulmin Choi[1]; Sungho Jin[1]; [1]UC San Diego

Surface Modification of Bio-implantable Ti-alloy by Hybrid Laser-Arc Processes: *Soundarapandian Santhanakrishnan*[1]; Mehdi Asgharifar[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

Enhanced Functions of Osteoblasts on Nanophase Titania-Coated Nanostructured Austenitic Stainless Steel: *Pavan Challa*[1]; Devesh Misra[1]; [1]University of Louisiana at Lafayette

Design Considerations for Developing Biodegradable Magnesium Implants: *Harpreet Brar*[1]; Benjamin Keselowsky[1]; Malisa Sarntinoranont[1]; Michele Manuel[1]; [1]University of Florida

Characterization of Minerals, Metals and Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Sun PM-Thurs AM
Feb 27-Mar 3, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Sergio Monteiro, UENF; Felipe Perisse Lopes, UENF

A Method for Measuring the Critical Fracture Strain at Any Temperature during the Quenching of Tool Steels: Chao Zheng[1]; *Daniel Watt*[1]; [1]University of Windsor

Effects of Arc Welding Process on Microstructure and Morphology of Flake Graphite in Grey Cast Iron: *Arash Elhami Khorasani*[1]; Alireza Kiani-Rashid[2]; [1]Ferdowsi University of Mashhad; [2]Associated Professor at Material Science and Engineering Dept., Ferdowsi University of Mashhad

Preparation SCR Catalyst Carrier by Using APCVD and Sol-Gel Technology to Load TiO2 on Cordierite Ceramic: *Jian Yang*[1]; Qingcai Liu[1]; Mei Yang[2]; Wei Gao[1]; Wenchang Xi[1]; [1]University of Chongqing; [2]Southwest Petroleum University

Pretreatment of Sulfur and Arsenic Containing Gold Concentrate by Double-Layered Ball Solidification Roast: Jiang Tao[1]; Li Shan[1]; Ge Jie[1]; Qian Li[1]; *Yang Bin*[1]; [1]Central South University

Pullout Tests of Sisal Fibers in Epoxy Matrix for Characterization of Interfacial Shear Stress: *Wellington Inacio*[1]; Artur Pereira[1]; Sergio Monteiro[1]; Fernando Wypych[2]; Rafael Marangoni[2]; [1]State University of the Northern Rio de Janeiro - UENF; [2]UFPR

Shape-Controlled Synthesis of a Novel Precursor for Preparing Rod Silver Powders: *Jing Zhan*[1]; Chuanfu Zhang[1]; Weiyan Jiang[1]; [1]Central South University

Tensile Behavior of Epoxy Composites Reinforced with Continuous and Thinner Ramie Fibers: *Frederico Margem*[1]; Jarbas Bravo[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

Thermo-Mechanical Properties of Epoxy Diamond Abrasive Composites: *Ruben Jesus Rodriguez*[1]; Camila Amaral[1]; [1]Universidade Estadual do Norte Fluminense

Thermodynamic Study on Complex System for Structure-Directed Synthesis of Fibrous Cobalt Powder Precursor: Jing Zhan[1]; *Jianfeng Yue*[1]; Chuanfu Zhang[1]; [1]Central South University

Chloride 2011: Practice and Theory of Chloride-Based Metallurgy: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, Canadian Institute of Metals, TMS Extraction and Processing Division, TMS: Magnesium Committee, TMS: Energy Committee
Program Organizers: Dirk Verhulst, Consultant, Extractive Metallurgy; V.I. (Lucky) Lakshmanan, Process Research Ortech, Inc.

Sun PM-Tues AM
Feb 27-Mar 1, 2011
Room: 19
Location: San Diego Conv. Ctr

Plutonium Removal from Fluoride Spent Salts: *Jerome Serp*[1]; Nathalie Loppinet[1]; Gilles Bourges[1]; [1]CEA

Computational Thermodynamics and Kinetics: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Sun PM-Thurs AM
Feb 27-Mar 3, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chair: Raymundo Arroyave, Texas A&M University

A Heat Management Model for Hardness Uniformity of Multi-Pass Laser Heat Treatment Using Direct Diode Laser: *Soundarapandian Santhanakrishnan*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

Critical Temperature for Grain Boundary Unpinning and Subsequent Grain Growth: *Corentin Guebels*[1]; Phi Thanh[1]; Joanna Groza[1]; Elizabeth Holm[2]; Jean-Pierre Delplanque[1]; [1]University of California, Davis; [2]Sandia National Laboratories

Development of Accurate Models for The Microstructure and Properties of Mixed-Oxide Slags: *Angus Gray-Weale*[1]; Patrick Masset[2]; Aurelie Jacob[1]; [1]Monash University; [2]TU Bergakademie Freiberg

Domain Structures of Nanoparticles in Magnetic Films: *Jianyang Li*[1]; Yan Yang[1]; Yongmei Jin[1]; [1]Michigan Technological University

Engineering Microstructures via General Two-stage Anneals: *Siu Sin Quek*[1]; Marcelo Ciappina[1]; David Wu[1]; [1]Institute of High Performance Computing Singapore

Entropic Stabilization and Retrograde Solubility in β-Zn_4Sb_3: *Gregory Pomrehn*[1]; G. Jeffrey Snyder[1]; Axel van de Walle[1]; [1]California Institute of Technology

Integrating Finite Temperature MagnetismiInto Ab Initio Free Energy Calculations: *Fritz Körmann*[1]; Alexey Dick[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

Phase Equilibria of the La-Ni-Cu Ternary System at 673 K: Thermodynamic Modeling and Experimental Validation: *Xuehui An*[1]; Qian Li[1]; Jieyu Zhang[1]; Shuanglin Chen[2]; Ying Yang[2]; [1]Shanghai Key Laboratory of Modern Metallurgy and Materials Processing, Shanghai University; [2]CompuTherm, LLC

Phase Field Modeling of Static Recrystallization for Deformed Alloys: *Gao Yingjun*[1]; [1]Guangxi University

Solubility Modeling of Methanol Aqueous Solutions in Nafion Membrane at 30-60°C: Hsin-Yi Chen[1]; Shingjiang Jessie Lue[1]; [1]Chang Gung University

Statistical Model of Precipitation Kinetics for Recycled Commercial Aluminum Alloys: *Zhenshan Liu*[1]; Volker Mohles[1]; Olaf Engler[2]; Guenter Gottstein[1]; [1]Institut fuer metallkunde und metallphysik; [2]Hydro Aluminium Deutschland GmbH

Surface Prefreezing and Its Effect on Surface Tension of AuSi Nanoparticles: *Moneesh Upmanyu*[1]; Hailong Wang[1]; [1]Northeastern University

The Application of Thermodynamic Analysis In Preparing the MnZn Ferrites Precursor: *Xue Ping*[1]; Yuan Yaohua[1]; Zhao Peiyu[1]; Chen Xiaofang[1]; [1]Jianghan University

The Effect of Nb on the Amount of Retained Austenite and Strengthening in Cold-Rolled TRIP Steels: *Jong Min Choi*[1]; Bong June Park[1]; Chang Yeon Lee[1]; Seong Ho Han[2]; Kyung Jong Lee[1]; [1]Hanyang University; [2]Automotive Steel Products Research Group, POSCO

Thermodynamic Modeling of LiNO3-NaNO3-KNO3 Ternary Salt for Solar Energy Storage: *Divakar Mantha*[1]; Ramana Reddy[1]; [1]The University of Alabama

Thermodynamic Modeling of S-M (M=Al, Zr, Ti and La) Systems Supported by First-Principles Calculations: *Rongxiang Hu*[1]; Michael Gao[1]; Ömer Dogan[2]; [1]URS at National Energy Technology Laboratory; [2]National Energy Technology Laboratory

Thermodynamics Calculation of CuO-NH3+NH4Cl Solution System: Weilian Zheng[1]; Dan Li[2]; *Zhongliang Xiao*[1]; Qiyuan Chen[2]; Haixia Tong[1]; [1]Changsha University of Science and Technology; [2]Central South University

A Phase-Field Model with a Novel Way of Coupling to Multi Component Thermodynamic Data: *Nils Warnken*[1]; [1]University of Birmingham

A Hybrid MD-kMC Algorithm to Study Diffusion in the Presence of Fields: Effect of Coherent Interfaces: *Enrique Martinez Saez*[1]; Alfredo Caro[1]; [1]LANL

A Phenomenological Model for Prediction of the Martensite Start Temperature in Steels: *Albin Stormvinter*[1]; Annika Borgenstam[1]; [1]KTH Royal Inst. of Technology

New Approach in Simulating Anisotropy in Thin Film Growth: *Solmaz Torabi*[1]; John Lowengrub[1]; [1]University of California Irvine

First Principles Calculation of the α-ZrO_X, 0< X< 1

Phase Diagram: *Benjamin Burton*[1]; A. Van De Walle[2]; [1]NIST; [2]Caltech

Phase Field Crystal Study of Alloys under Irradiation: *Nana Ofori-Opoku*[1]; Jeffrey Hoyt[1]; Nikolas Provatas[1]; [1]McMaster University

A Novel Approach to Modeling Phase Transformations Free of Numerical Anisotropy: *Klemens Reuther*[1]; Markus Rettenmayr[1]; [1]Friedrich-Schiller-University Jena

Electrode Technology for Aluminium Production: Light Metals Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Sun PM-Thurs PM
Feb 27-Mar 3, 2011
Room: 17A
Location: San Diego Conv. Ctr

Cold Water Model Simulation of Aluminum Liquid Fluctuations Induced by Anodic Gas in New Tape of Cathode Structure Aluminum Electrolytic Cell: *Yan Liu*[1]; Ting'an Zhang[1]; Zhihe Dou[1]; Hongxing Wang[1]; Guozhi Lv[1]; Qiuyue Zhao[1]; Naixiang Feng[1]; Jicheng He[1]; [1]Key Laboratory of Ecological Utilization of Multi-metal Intergrown Ores of Ministry of Education & School of Materials and Metallurgy, Northeastern University

Influence of Ultrafine Powder on the Properties of Carbon Anode Used in Aluminum Electrolysis: *Xiao Jin*[1]; Deng Songyun[1]; Li Jie[1]; Lai Yanqing[1]; Liu Yexiang[1]; [1]Central South University

Preparation NiFe2O4 Matrix Inert Anode Used in Aluminum Electrolysis by Adding Nanopowder: *Zhigang Zhang*[1]; Guangchun Yao[1]; Yihan Liu[1]; Xiao Zhang[1]; [1]Northeastern University

Effects of Physical Properties of Anode Raw Materials on the Paste Compaction Behavior: *Kamran Azari Dorcheh*[1]; Hany Ammar[1]; Houshang Alamdari[1]; Donald Picard[1]; Mario Fafard[1]; Donald Ziegler[2]; [1]Université Laval; [2]Alcoa

Frontiers in Solidification Science: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Solidification Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Daniel Lewis, Rensselaer Polytechnic Institute

Sun PM-Tues PM
Feb 27-Mar 1, 2011
Room: 6E
Location: San Diego Conv. Ctr

A Numerical Benchmark on the Prediction of Macrosegregation in Binary Alloys: Hervé Combeau[1]; Michel Bellet[2]; Yves Fautrelle[3]; Dominique Gobin[4]; Eric Arquis[5]; Olga Budenkova[3]; Bernard Dussoubs[1]; Yves Duterrail[3]; Arvind Kumar[1]; Benoît Goyeau[6]; Salem Mosbah[2]; Thibault Quatravaux[1]; Mohamed Rady[5]; Charles-André Gandin[2]; *Miha Založnik*[1]; [1]Institut Jean Lamour, CNRS – Nancy-Université – UPV-Metz; [2]CEMEF, CNRS – Mines-ParisTech; [3]SIMAP, CNRS – INPG – Université Joseph Fourier; [4]FAST, CNRS – Université Pierre et Marie Curie; [5]TREFLE, CNRS – Université de Bordeaux – ENSAM-ParisTech – ENSCPB; [6]EM2C, CNRS – Ecole Centrale Paris

Binary Alloy Solidification at 35 Tesla: *Jason Cooley*[1]; Thomas Ott[1]; Sally Tracy[2]; Tim Tucker[1]; Kristen Collar[3]; Scott Lillard[1]; James Foley[1]; Tyler Wheeler[1]; John Balog[1]; Andrew Duffield[1]; Bobby Pullum[3]; [1]Los Alamos National Laboratory; [2]California Institute of Technology; [3]National High Magnetic Field Laboratory

Dendritic Growth: Phase Field Crystal Vs. Phase Field Simulations: *Tamás Pusztai*[1]; Gyula Tóth[1]; György Tegze[1]; László Gránásy[1]; [1]Research Institute for Solid State Physics and Optics

High Speed Synchrotron Tomography for the *In Situ* Quantification of Pore Evolution during the Solidification of Al-Si-Cu-Fe Alloys: *Chedtha Puncreobutr*[1]; Junsheng Wang[2]; Thomas Connolley[3]; Robert Atwood[3]; Peter Lee[1]; [1]Imperial College London; [2]Ford Research and Advanced Engineering Lab; [3]Diamond Light Source Ltd

In Situ Observations of Rapid Solidification of Metal Thin Films: *Andreas Kulovits*[1]; Jorg Wiezorek[1]; Thomas LaGrange[2]; Bryan Reed[2]; Geoffrey Campbell[2]; [1]University of Pittsburgh; [2]Lawrence Livermore National Laboratory

Measurement of the Minimum-Undercooling Spacing of In-In_2Bi Eutectic Alloys Using Real-Time Videomicroscopy in Thin-Sample Directional Solidification: *Sabine Bottin-Rousseau*[1]; Silvère Akamatsu[2]; Gabriel Faivre[2]; [1]UPMC / CNRS; [2]INSP

Morphology of Graphite Formation from Melt: *Shaahin Amini*[1]; Haamun Kalaantari[1]; Reza Abbaschian[1]; [1]University of California Riverside

Multicomponent Segregation Path with Solid and Liquid Diffusion Coupled with Thermodynamic Equilibrium Calculations: *Charles-Andre Gandin*[1]; Haithem Ben Hamouda[1]; Hongwei Zhang[2]; Damien Tourret[1]; [1]MINES-ParisTech; [2]Northeastern University

Solidification Processing via Contactless Electromagnetic Acoustic Transmission (EMAT) Driven by High Magnetic Fields: *Orlando Rios*[1]; John Wilgen[1]; Roger Kisner[1]; Gerard Ludtka[1]; Gail Mackiewicz Ludtka[1]; [1]Oak Ridge National Laboratory

Three-Dimensional Characterization and Modeling of Solidified Microstructures of Magnesium-Based Alloys: *Mingyue Wang*[1]; Tao Jing[1]; Nikhilesh Chawla[2]; [1]Tsinghua University; [2]Arizona State University

Theoretical and Computational Study of Lamellar Three-Phase Patterns in a Model Ternary Eutectic System: *Abhik Choudhury*[1]; Mathis Plapp[2]; Britta Nestler[1]; [1]Institute of Materials and Processes; [2]Ecole Polytechnique

Magnesium Technology 2011: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Sun PM-Thurs PM
Feb 27-Mar 3, 2011

Room: 6F
Location: San Diego Conv. Ctr

Session Chair: Eric Nyberg, Pacific Northwest National Laboratory

Interdiffusion in the Mg-Al System and Intrinsic Diffusion in ß (Al3Mg2) Phase: *Sarah Brennan*[1]; Katrina Bermudez[1]; Nagraj Kulkarni[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Oak Ridge National Laboratory

High Strain-Rate Behaviour of Die Casting Magnesium-Aluminium Alloys: N.V. Dudamell[1]; F. Gálvez[2]; *M.T. Pérez-Prado*[1]; [1]Madrid Institute for Advanced Studies in Materials (IMDEA Materials); [2]ETS Ingenieros de Caminos

High-Temperature Elastic Properties of Two Wrought Magnesium Alloys: *Matt Freels*[1]; Elena Garlea[2]; Jonathan Morrell[2]; Miladin Radovic[3]; Peter Liaw[1]; [1]Department of Materials Science and Engineering, University of Tennessee; [2]Applied Technologies Division, Y-12 National Security Complex; [3]Department of Mechanical Engineering, Texas A&M University

Development and Characterization of New AZ41 and AZ51 Magnesium Alloys: *Md Ershadul Alam*[1]; Han Samson[2]; Abdelmagid Hamouda[1]; Quy Nguyen[2]; Manoj Gupta[2]; [1]Qatar University; [2]National University of Singapore

Edge-Wise Determination of Compression Strength in Magnesium Alloy Sheet: *Eric Nyberg*[1]; Curt Lavender[1]; Elizabeth Stephens[1]; Richard Davies[1]; Robert Klingensmith[2]; [1]Pacific Northwest National Laboratory; [2]DOE Academies Creating Teacher Scientists

The Grain-Size Dependence of Fatigue Failure Mechanism in Tension Cycles in AZ31 Mg Alloys: *Daisuke Ando*[1]; Junichi Koike[1]; Yuji Sutou[1]; [1]Tohoku Univercity

Effect of 15kHz Ultrasonic Treatment on Purification of Magnesium Alloy Melts: *Qichi Le*[1]; [1]Northeastern University

The Effect of Different Physical Fields on the Process of Direct Chill Casting for AZ80 Magnesium Alloy Billets: *Zhiqiang Zhang*[1]; Qichi Le[1]; Jianzhong Cui[1]; [1]Northeastern University

Extrusion-Processed Mg-Zn-Al-(Y) Base Alloys with Dispersion of Quasicrystal Phase: *Guangyin Yuan*[1]; Jian Tong[1]; Hua Huang[1]; Wenjiang Ding[1]; [1]Shanghai Jiao Tong University

Engineering a More Efficient Zirconium Grain Refiner For Magnesium: *Srinath Viswanathan*[1]; Partha Saha[1]; David Foley[2]; K. Ted Hartwig[2]; [1]University of Alabama; [2]Texas A&M University

Severe Plastic Deformation Temperature Influences on Texture Development in AZ31B Magnesium: *David Foley*[1]; Sonia Modarres Razavi[1]; K.T. Hartwig[1]; Laszlo Kecskes[2]; Ibrahim Karaman[1]; Suveen Mathaudhu[2]; [1]Texas A&M University; [2]U.S. Army Research Lab

Microstructure and Mechanical Properties of Mg-1.7Y-1.2Zn Sheet Processed by Hot Rolling and Friction Stir Processing: *V. Jain*[1]; J.Q. Su[2]; R.S. Mishra[2]; R. Verma[3]; A. Javaid[4]; M. Aljarrah[4]; E. Essadiqi[4]; [1]Division of Engineering Materials, National Physical Laboratory, CSIR, New Delhi 110012, India; Center for Friction Stir Processing and Department of Materials Science and Engineering, Missouri University of Science and Technology, Rolla, MO 65409, USA; [2]Center for Friction Stir Processing and Department of Materials Science and Engineering, Missouri University of Science and Technology, Rolla, MO 65409, USA; [3]General Motors R&D Center, Warren, MI 48090, USA; [4]Materials Technology Laboratory-CANMET, Ottawa, Ontario K1A 0G1, Canada

Texture Evolution in Large Strain Extrusion Machining of Magnesium Alloy AZ31B: *Dinakar Sagapuram*[1]; Mert Efe[1]; Wilfredo Moscoso[1]; Kevin Trumble[1]; Srinivasan Chandrasekar[1]; [1]Purdue University

The Microstructure and Mechanical Properties of Cast Mg-5Sn Based Alloys: Mahsa Keyvani[1]; Reza Mahmudi[1]; *Ghazal Nayyeri*[1]; [1]University of Tehran

Effects of Misch Metal on Microstructure and Mechanical Properties of Mg-Nd Alloys: *Bo Keon Kwon*[1]; Il Hwan Choi[1]; Kwang Seon Shin[1]; [1]Magnesium Technology Innovation Center / Seoul National University

A Study on Combined Effect of Forging and Ageing in Mg-Y-RE Magnesium Alloy: *S. K. Panigrahi*[1]; R.S. Mishra[1]; K. Kumar[1]; R. DeLorme[2]; B. Davies[2]; R. A. Howell[3]; K. Cho[3]; [1]Centre for Friction Stir Welding and Material science and Engineering; [2]Magnesium Elektron North America Inc.; [3]Manufacturing and Materials Technology Branch, Army Research Laboratory

Effect of Cooling Rate and Chemical Modification on the Tensile Properties of Mg-5wt. % Si Alloy: F. Mirshahi[1]; M. Meratian[1]; *M. Mohammadi Zahrani*[1]; E. Zahrani[1]; [1]Isfahan University of Technology

On Predicting the Channel Die Compression Behavior of HCP Magnesium AM30 using Crystal Plasticity FEM: *Q. Ma*[1]; E.B. Marin[1]; A. Antonyraj[1]; Y. Hammi[1]; H. El Kadiri[1]; P.T. Wang[1]; M.F. Horstemeyer[1]; [1]Mississippi State University

Hardening of Pure Magnesium Due to Higher Order Deformation Twins: *Fumiaki Hiura*[1]; Marek Niewczas[1]; [1]McMaster University

Slip and Twin Behavior in Magnesium Single Crystals: *Ming Zhe Bian*[1]; Kwang Seon Shin[1]; [1]Seoul National University

Investigation of Microhardness and Microstructure of AZ31 Alloy after High-Pressure Torsion (HPT): *Jitka Vrátná*[1]; Miloš Janecek[1]; Petr Harcuba[1]; Robert Král[1]; Hyoung Seop Kim[2]; [1]Charles University; [2]Chungnam National University

Plastic Deformation of Magnesium Alloy Subjected to Compression-First Cyclic Loading: *Soo Yeol Lee*[1]; Michael A. Gharghouri[2]; John H. Root[2]; [1]The University of British Columbia; [2]National Research Council Canada

Dislocation Slip and Stacking Fault Formation during Cold Deformation of Mg and Mg-Y Alloys: *Stefanie Sandlöbes*[1]; Stefan Zaefferer[1]; Igor Schestakow[1]; Sangbong Yi[2]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]GKSS-Forschungszentrum Geesthacht GmbH

Investigation of Dynamic Recrystallization Mechanisms during Hot Deformation of a Mg Alloy: *Zhenzhen Yu*[1]; Hahn Choo[1]; Tamás Ungár[2]; Levente Balogh[2]; Edward Kenik[3]; [1]University of Tennessee; [2]Eötvös University; [3]Oak Ridge National Laboratory

High Strain-Rate Behaviour in a Weakly Textured Extruded Mg-Mn-Nd (MN11) Alloy: *N.V. Dudamell*[1]; F. Gálvez[2]; S. Yi[3]; J. Bohlen[3]; D. Letzig[3]; M.T. Pérez-Prado[1]; [1]Madrid Institute for Advanced Studies in Materials (IMDEA Materials); [2]Universidad Politécnica de Madrid; [3]GKSS Research Center

The Effect of Strain Rate on Flow Behavior and Microstructure Evolution of AZ31 Mg Alloys: *Mehdi Sanjari*[1]; S.A. Farzadfar[1]; S. Yue[1]; E. Essadiqi[2]; [1]McGill University, Department of Materials Engineering; [2]CANMET - Materials Technology Laboratory

Microstructure and Texture Effects on the Deformation Behaviors of the Statically Recrystallized Mg-Zn-MM Alloy Sheets: *Heon Kang*[1]; Beomsoo Shin[1]; Donghyun Bae[1]; [1]yonsei university

The Mechanical Response of a Magnesium Alloy under a Range of Biaxial Loading Conditions: *Philip Tomlinson*[1]; Warren Poole[1]; Chad Sinclair[1]; [1]University of British Columbia

Microstructural Investigations into Novel Alloys Based on The Mg-Y-Nd System: *Andy Williams*[1]; Mark Rainforth[1]; Brad Wynne[1]; Bruce Davis[2]; [1]University of Sheffield; [2]Magnesium Elektron USA

Deformation Behavior and Microstructure Evolution during the Hot Compression of AM50 Mg Alloy by Cooling Slope: *Dae-Hwan Kim*[1]; Seung-Hwa Choi[1]; Hee-Kyeong Kim[1]; Su-Gun Lim[1]; [1]i-Cube Center, Engineering Research Institute, Gyeongsang National University

Deformation Characteristics of Thixoprocessed Mg Sheet Alloy: *Muammer Koc*[1]; Ryan Snell[1]; Omer Cora[1]; John Cheng[2]; [1]Virginia Commonwealth University; [2]Thixomat

Texture Evolution in As-Cast AZ31 Magnesium Alloy Sheet under Various Rolling and Annealing Conditions: *Jun-ho Park*[1]; Hyun-Sik Choi[1]; Ju-Heon Kim[2]; Dong-Ik Kim[2]; Kyu Hwan Oh[1]; Heung Nam Han[1]; [1]Seoul National University; [2]Korea Institute of Science and Technology

Texture Development in Rolled Mg Alloy Sheets: *Hyun-Sik Choi*[1]; Jun-Ho Park[1]; Se-Jong Kim[1]; Dong Nyung Lee[1]; Heung Nam Han[1]; [1]Seoul National University

Effect of Differential Speed Rolling on Texture Evolution of Mg-4Zn-1Gd Alloy: *Myeong-shik Shim*[1]; Jun ho Bae[1]; Dong-wook Kim[1]; Byeong-chan Suh[1]; Sunghak Lee[1]; Nack Joon Kim[1]; [1]POSTECH

Texture and Microstructure Control of AZ91 Mg Alloy Sheet by High Speed Rolling: *Akinori Hashimoto*[1]; Tetsuo Sakai[1]; Hiroshi Utsunomiya[1]; [1]Osaka University

Cavitation Behavior of AZ31 Sheet during Gas Blow Forming: Yong-Nam Kwon[1]; *Wonkyu Bang*[2]; [1]Korea Institute of Materials Science; [2]RIST

Mechanical and Terminal Ballistic Properties of Magnesium Yttrium Rare Earth WE43 Alloy Rolled Plate: *Richard DeLorme*[1]; Bruce Davis[1]; Jonathan Montgomery[2]; Tyrone Jones[2]; Kyu Cho[2]; [1]Magnesium Elektron North America; [2]U.S. Army Research Laboratory

A Development of Mg Alloy Reinforced by Quasicrystalline Phase: J.S. Kyeong[1]; *Won Tae Kim*[2]; D.H. Kim[1]; [1]Yonsei University; [2]Cheongju University

Nano-Structured Mg-Al-Zn Alloy via Cryomilling and Spark Plasma Sintering: *Baolong Zheng*[1]; Osman Ertorer[1]; Ying Li[1]; Troy Topping[1]; Yizhang Zhou[1]; Chi Tsao[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]National Cheng Kung University

Microstructure Evolution in AZ61L During TTMP and Subsequent Annealing Treatments: *Tracy Berman*[1]; William Donlon[1]; Raymond Decker[2]; Jack Huang[2]; Tresa Pollock[3]; J. Wayne Jones[1]; [1]University of Michigan; [2]nanoMAG, LLC.; [3]University of California, Santa Barbara

Fine Scale Microstructure and Deformation Behavior of AZ61L: *Ramasis Goswami*[1]; Khershed Cooper[2]; Ray Decker[3]; Steve LeBeau[3]; [1]SAIC/Naval Research Laboratory; [2]Naval Research Laboratory; [3]nanoMAG LLC

Role of Secondary phases for Improved Plasticity in Mg-based Bulk Metallic Glass Composites: Je-In Lee[1]; *Eun Soo Park*[1]; [1]Seoul National University

Microstructural Characteristics and Charge-Discharge Behavior of Mg-Li-C System Materials: *Hung Fei-Yi*[1]; [1]Institute of Nanotechnology and Microsystems Engineering, Center for Micro/Nano Science and Technology, National Cheng Kung University

Modeling the Corrosive Effects of Various Magnesium Alloys Exposed to Two Saltwater Environments: *Holly Martin*[1]; M. Horstemeyer[1]; Paul Wang[1]; [1]Center for Advanced Vehicular Systems, Mississippi State University

Corrosion Performance of Mg-Ti Alloys Synthesized By Magnetron Sputtering: Zhenqing Xu[1]; *Guang-Ling Song*[2]; Daad Haddad[1]; [1]MEDA engineering and technical services; [2]GM Global Research &Development

Structure and Mechanical Properties of Magnesium-Titanium Solid Solution Thin Film Alloys Prepared by Magnetron-Sputter Deposition: Daad Haddad[1]; *Guang-Ling Song*[2]; Yang-Tse Cheng[3]; [1]MEDA Engineering and Technical Services LLC; [2]GM Global Research &Development; [3]Chemical and Materials Engineering, University of Kentucky

The Influence of Sol-Gel Coatings on the Corrosion Resistance of Magnesium and AZ91D: *Daniela Zander*[1]; Anna Pipetz[1]; [1]TU Dortmund

Effect of Adding SiO2-Al2O3 Sol into Anodizing Bath on Corrosion Resistance of Oxidation Film on Magnesium Alloy: *Huicong Liu*[1]; Liqun Zhu[1]; Weiping Li[1]; [1]Beihang University, Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering

Effect of Zirconium Oxide on Corrosion Properties of Mg Alloy Subjected to Plasma Electrolytic Oxidation: *In Jun Hwang*[1]; Byung Uk Lee[1]; Young Gun Ko[2]; Dong H. Shin[1]; [1]Hanyang University; [2]Yeungnam University

Weight Function and Stress Intensity Factors of Friction Stir Spot Welds of Magnesium AZ31 Alloy: *Tian Tang*[1]; Mark F. Horstemeyer[2]; Brian Jordan[2]; Paul Wang[2]; [1]Mississippi State University; [2]National Chung Hsing University

Friction Stir Welding of Magnesium Alloy AZ31B-H24 Rolled Plate: *Richard DeLorme*[1]; Jonathan Perrett[2]; Bruce Davis[1]; Kyu Cho[3]; [1]Magnesium Elektron North America; [2]TWI; [3]Army Research Laboratory

Monotonic and Fatigue Behavior of Mg AZ31 in Friction Stir Spot Welds: An International Benchmark Test in the "Magnesium Front End Research and Development" Project: B Badarinarayan[1]; S Behravesh[2]; S Bhole[3]; D Chen[3]; H Patel[3]; M Horstemeyer[4]; H Jahed[2]; *J Jordon*[5]; S Lambert[2]; X Su[6]; Y Yang[7]; [1]Hitachi America Limited; [2]University of Waterloo; [3]Ryerson University; [4]Mississippi State University; [5]The University of Alabama; [6]Ford Motor Co; [7]Institute for Metals Research

Materials Processing Fundamentals: Poster Session

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

Sun PM-Tues PM Room: 12
Feb 27-Mar 1, 2011 Location: San Diego Conv. Ctr

Session Chair: Prince Anyalebechi, Grand Valley State University

Change of Iron Content in Metal Pad and Potling Failure during Start-up Period of Aluminum Reduction Cells: *Yongliang Wang*[1]; Jilai Xue[1]; Jun TIE[1]; [1]Unversity of Science and Technology Beijing

Preparation and Characterization of Porous Ni-Ti Alloys: *Luxing Feng*[1]; Jilai Xue[1]; Jun Zhu[1]; Yuanling Gao[1]; Chen Dong[1]; [1]Unversity of Science and Technology Beijing

Production Technology of Cored Wire Used For Liquid Metal Treatment in Steel Plants (Part-I): *Pradeep Kumar Maitra*[1]; [1]Dipaly Consultants

Recent Improvements at Mount Isa Copper Smelter: *Pengfu Tan*[1]; [1]Xstrata Copper

Surface Treatment of Aluminum Alloys by Atmospheric Plasma Arc Discharge: *Mehdi Asgharifar*[1]; Rouzbeh Sarrafi[1]; Radovan Kovacevic[1]; [1]Reseach Center for Advanced Manufacturing, Southern Methodist University

Ultrasound-Assisted Electrolysis in NaOH Solution for Hydrogen Generation: *Jigang Li*[1]; Jilai Xue[1]; Zhenjun Chen[1]; Lei Zhang[1]; Yifang Zheng[1]; Jun Zhu[1]; [1]Unversity of Science and Technology Beijing

Microstructural Processes in Irradiated Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Sun PM-Thurs PM Room: 3
Feb 27-Mar 3, 2011 Location: San Diego Conv. Ctr

Session Chairs: Dane Morgan, University of Wisconsin; Yasuyoshi Nagai, Tohoku University; Shenyang Hu, Pacific Northwest National Laboratory

Characterization of Swift Heavy Ion and Proton Damage in CeO2: *Peng Xu*[1]; Tony Schulte[1]; Todd Allen[1]; [1]University of Wisconsin

Growth Behavior of Dislocation Loops in CeO_2 Irradiated with Krypton: *Bei Ye*[1]; Jeffrey Rest[2]; Jerome Jonnet[3]; Wei-Ying Chen[1]; Mark Kirk[2]; Abdellatif Yacout[2]; James F. Stubbins[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Laboratory; [3]Delft University of Technology

Stoichiometric Dependence of Oxygen Diffusivity in $La_xCe_{1-x}O_{2-x/2}$: *Aaron Oaks*[1]; Di Yun[1]; Bei Ye[1]; Wei-Ying Chen[1]; James Stubbins[1]; [1]University of Illinois, Urbana-Champaign

Irradiation Behavior of the Interaction Product of U-Mo Fuel Particle Dispersion in an Al Matrix: *Yeon Soo Kim*[1]; Gerard Hofman[1]; [1]Argonne National Laboratory

Atomistic Validation of Kinetic Methodology via Multiscale Simulation of Nuclear Fuels: *Z. Insepov*[1]; J. Rest[1]; G. Hofman[1]; A. Yacout[1]; A.Yu. Kuksin[2]; G.E. Norman[2]; S.V. Starikov[2]; V.V. Stegailov[2]; A.V. Yanilkin[2]; [1]Argonne National Laboratory; [2]Joint Institute for High Temperatures

Application of Phase-Field Mothod in Predicting the Kinetics of Microstructure Evolution in Irradiated Materials: Yulan Li[1]; *Shenyang Hu*[1]; Chuck H. Henager Jr[1]; Fei Gao[1]; Xin Sun[1]; Mohammad A. Khaleel[1]; [1]Pacific Northwest National Laboratory

Atomic-Scale Modeling of the Sliding Behavior of {110} Twist Grain Boundaries in Alpha-Iron: *Jinbo Yang*[1]; Yuri Osetsky[1]; Roger Stoller[1]; [1]ORNL

Helium Sequestration in Oxide Dispersion Strengthened Steels from First-Principles: *Paul Erhart*[1]; Jaime Marian[1]; [1]Lawrence Livermore National Laboratory

Small Scale Mechanical Testing and Atom Probe Analysis on New Materials for Nuclear Applications: *E. Stergar*[1]; P. Hosemann[1]; A.T. Nelson[2]; Y.Q. Wang[2]; S.A. Maloy[2]; [1]UC Berkeley; [2]Los Alamos National Laboratory

TEM Characterization of the Structure and Composition of Nanofeatures and Oxides in Nanostructured Ferritic Alloys: *Yuan Wu*[1]; Nicholas Cunningham[1]; George Odette[1]; Erich Stergar[1]; Auriane Etienne[1]; Erin Haney[1]; [1]UCSB

Effect of Grain Size and Grain Boundaries on the Proton Irradiation Response of Nanostructured Austenitic Model Alloy: *Yong Yang*[1]; Cheng Sun[2]; Xinghang Zhang[2]; Allen Todd[1]; [1]University of Wisconsin-Madison; [2]Texas A&M University

Friction Stir Welding and Irradiation Effects of Oxide Dispersion Strengthened Alloys: *Chun-Liang Chen*[1]; Asta Richter[2]; R. Kögler[3]; L.T. Wu[4]; [1]Department of Materials Science and Engineering, I-Shou University, Kaohsiung 840, Taiwan; [2]Department of Engineering, Technical University of Applied Sciences Wildau, Bahnhofstrasse 1, 15745 Wildau, Germany; [3]Institute of Ion Beam Physics and Materials Research, Research Center Dresden-Rossendorf (FZD), Bautzner Landstraße 400, 01328 Dresden, Germany; [4]Met Ind Res & Dev Ctr, Kaohsiung 811, Taiwan

Stress Relaxation Behavior of Ferritic ODS Alloys: *Jeoung Han Kim*[1]; Thak Sang Byun[1]; David T. Hoelzer[1]; [1]Oak Ridge National Lab

Role of Microstructural Defect on Radiation Hardening of Ion Irraiated Fe-Cr Binary Alloys: *Hyung-Ha Jin*[1]; Chansun Shin[1]; Junhyun Kwon[1]; [1]Korea Atomic Energy Research Institute

Nanoindentation at Elevated Temperature on Ion Beam Irradiated Advanced Structural Alloys for Nuclear Applications: *Peter Hosemann*[1]; Adrian Harris[2]; Yongqiang Wang[3]; Stuart Maloy[3]; [1]UC Berkeley; [2]Micro Materials; [3]Los Alamos National Laboratory

Ab Initio Calculations on FeNiCr Model Austenitic Alloys: Chemical and Magnetic Disorder Treatment: *Jean-Baptiste Piochaud*[1]; Charlotte Becquart[1]; Christophe Domain[2]; [1]CNRS; [2]EDF-R&D

Response of 321 Analog Austenitic Stainless Steel Microstructure of Reactor Core Internals to Neutron Irradiation in VVER-440: *Jan Michalicka*[1]; [1]Nuclear Research Institute Rez plc.

Evolution of Radiation-induced Precipitates in Proton-irradiated HCM12A: *Zhijie Jiao*[1]; Gary Was[1]; [1]University of Michigan

Examination of Precipitates in T91 and HCM12A Alloy by the Replica Extraction Technique: *Liang Chen*[1]; Vani Shankar[1]; Zhijie Jiao[1]; Lumin Wang[1]; Gary Was[1]; [1]University of Michigan

Effects of Irradiation Dose on Microstructural Evolution and Hardening of High- and Low-Cu Reactor Pressure Vessel Steels: *Akira Kuramoto*[1]; Tomoaki Takeuchi[2]; Takeshi Toyama[1]; Yasuyoshi Nagai[1]; Masayuki Hasegawa[3]; Toshimasa Yoshiie[4]; Nishiyama Yutaka[2]; [1]International Research Center for Nuclear Materials Science, Institute for Materials Research, Tohoku University; [2]Japan Atomic Energy Agency; [3] Institute for Materials Research, Tohoku University; [4]Research Reactor Institute, Kyoto University

Mechanical Properties and Radiation Response of Ultra-Fine Grained Stainless Steels: *J. Gonzalez*[1]; C. Sun[1]; K.T. Hartwig[1]; Y. Yang[2]; T. R. Allen[2]; S. A. Maloy[3]; X. Zhang[1]; [1]Texas A&M University; [2]University of Wisconsin-Madison; [3]Los Alamos National Laboratory

Microstructural Evolution of Cu based Complex Alloys Under Prolonged Particle Irradiation: *Rannesh Lokesh*[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois Urbana Champaign

Evolution of Microstructures in Helium Ion Irradiated MgO/W Multilayers: *Engang Fu*[1]; Yongqiang Wang[1]; Amit Misra[1]; Michael Nastasi[1]; [1]LANL

The Response of Polycrystalline Tungsten to 30keV Helium Ion Implantation at High Temperatures and Its Dependence on the Angle of Incidence: Samuel Zenobia[1]; *Lauren Garrison*[1]; Gerald Kulcinski[1]; [1]University of Wisonsin-Madison

Precipitation in Irradiated W Alloys: *Emmanuelle Marquis*[1]; Colin English[2]; Samuel Humphry-Baker[3]; [1]University of Michigan; [2]University of Oxford; [3]Massachussetts Institute of Technology

In-Situ Transmission Electron Microscopic Study of the E-Beam Damage Process in the Next Generation Nuclear Graphites: *Karthik Chinnathambi*[1]; Josh Kane[1]; Darryl Butt[1]; Rick Ubic[1]; [1]Boise State University

Experimental Study of <c> Component Loops Nucleation and Growth under Charged Particles Irradiation in Recrystallized Zircaloy-4: *Lea Tournadre*[1]; F. Onimus[1]; D. Gilbon[1]; J.-M. Cloue[2]; J.-P. Mardon[2]; X. Feaugas[3]; O. Toader[4]; C. Bachelet[5]; [1]Commissariat à l'Energie Atomique (CEA); [2]AREVA AREVA NP Fuel BusinessUnit10; [3]Laboratoire d'Etude des Matériaux en Milieux Agressifs (LEMMA), Université de La Rochelle; [4]Michigan Ion Beam Laboratory (MIBL), University of Michigan; [5]Centre de Spectrométrie Nucléaire et de Spectroscopie de Masse (CSNSM), Université Paris-sud 11

FIM of Defects in Pt Induced by Neutron Irradiation: *Elena Medvedeva*[1]; Elena Kalinina; Mihail Ivchenko[1]; [1]Institute of Electrophysics, Urals Division of Russian Academy of Sciences

Evolution of the Residual Stresses in Zirconium Nitride Films Irradiated by High-Energy Xe Ions: *Vladimir Uglov*[1]; Sergey Zlotski[1]; Vladimir Skuratov[2]; Aleksandr Sohatsky[2]; Alina Shashok[1]; [1]Belorussian State University; [2]Joint institute for nuclear research

Chemically Bonded Phosphate Ceramics Composites Response to Irradiation: *H. A. Colorado*[1]; C. Hiel[2]; J. M. Yang[1]; H. T. Hahn[1]; J. Pleitt[3]; C. H. Castano[3]; [1]University of California, Los Angeles; [2]Composites Support and Solutions Inc.; [3]Missouri University of Science and Technology, Nuclear Engineering Department

Defect Structures before Steady Void Growth in Austenitic Stainless Steels: *Toshimsa Yoshiie*[1]; Koichi Sato[1]; Xingzhong Cao[1]; Qiu Xu[1]; Troyo Troev[2]; [1]Kyoto University; [2]Bulgarian Academy of Sciences

Ab Initio Calculations of Point Defects in Tungsten: *Lisa Ventelon*[1]; François Willaime[1]; Mihai-Cosmin Marinica[1]; Chu Chun Fu[1]; [1]CEA

Benchmarking of Structural Materials Pre-Selected for Advanced Nuclear Reactors: *P. Salame*[1]; A Zeman[1]; V. Inozemtsev[1]; A. Stanculescu[1]; [1]International Atomic Energy Agency

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

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

Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

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Probing Li-Ni Cation Disorder in $Li_{1-x}Ni_{1+x-y}Al_yO_2$ Cathode Materials by Neutron Diffraction: *Lu Cai*[1]; Zengcai Liu[1]; Ke An[1]; Chengdu Liang[1]; Xun-Li Wang[1]; [1]Oak Ridge National Laboratory

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Poster Session

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

Program Organizers: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Sun PM-Thurs AM
Feb 27-Mar 3, 2011

Room: 7B
Location: San Diego Conv. Ctr

Oxidation Behavior of ENIG and ENEPIG Surface Finish: *C. Li*[1]; H. Chuang[1]; C. Chung[1]; C. Kao[1]; [1]National Taiwan University

Bond Strengths of Au Stud Bumps Joined with Pb-Free Solders: *Young-Kyu Lee*[1]; Chang-Woo Lee[2]; Sehoon Yoo[2]; [1]University of Science & Technology; [2]Korea Institute of Industrial Technology

Joule Heating Effect in Microbumps for 3D IC Packaging: *Yu-Chun Liang*[1]; Chih Chen[1]; [1]National Chiao Tung University

Distribution of Pd within Solder Joints in the Reaction between SAC305 and ENEPIG Surface Finish: *H. Chuang*[1]; J. Ke[1]; C. Chung[1]; C. Li[1]; C. Kao[1]; [1]National Taiwan University

Effect of SnAg Solder Height on Metallurgical Reaction in Microbumps for 3D IC Packaging: *Wei-Chi Sung*[1]; Chih Chen[1]; [1]National Chiao Tung University

Preferred Crystal Orientations of Cu6Sn5 Formed on Ni Substrate: *W. M. Chen*[1]; C. R. Kao[1]; [1]National Taiwan University

Correlation between Elemental Distribution and Shear Impact Resistance in Sn-3.0Ag-0.5Cu Solder Alloy Joints before and after Board Assembly: *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 Systems, Inc.

Investigation of Stress Evolution Induced by High Current Density in Lead-Free Solder Joints Based on X-Ray Diffraction Technique: *Guangchen Xu*[1]; Fu Guo[1]; Hongwen He[2]; Haiyan Zhao[2]; [1]Beijing University of Technology; [2]Tsinghua University

Electromigration Reliability of Sn-Ag-Cu Solder Joints Containing Various Ag Contents: Bo-Zung Chen[1]; Chih-Nan Chen[1]; *Cheng-En Ho*[1]; [1]Yuan Ze University

Solder Thickness Effect on Mechanical and Electrical Reliabilities of Cu Pillar/ Sn-3.5Ag Bump: *Byung-Hyun Kwak*[1]; Myeong-Hyeok Jeong[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.

Supersaturation and Recrystallization in Solder Alloys Induced by Current Stressing: *Kwang-Lung Lin*[1]; Ying-Ta Chiu[1]; Shi-Min Kuo[1]; Chia-Hao Liu[1]; Yi-Shao Lai[2]; [1]National Cheng Kung University; [2]Advanced Semiconductor Engineering, Inc.

The Control Tin Whisker Growth by Lithography Process: *Chien-Hao Su*[1]; Li-Wei Zoul[1]; Hao Chen[1]; Albert T. Wu[1]; [1]National Central University

Simulation on Current Density Distribution in Micro-Bumps with Various UBM and Solder Structures: *Chung Kuang Lin*[1]; Chih Chen[1]; [1]National Chiao Tung University

Phase-Field Simulations of Microstructure and Crystal Orientation Evolution of Intermetallic Compound (Cu_6Sn_5) during Early Stages of Lead-Free Soldering: *Min Soo Park*[1]; Colton Shannon[1]; Raymundo Arroyave[1]; [1]Texas A&M University

Mechanisms of Deformation in Cerium (Ce)-Containing Pb-Free Solders: *Huxiao Xie*[1]; Nikhilesh Chawla[1]; Kabir Mirpuri[2]; Aleks Aleksov[2]; [1]Arizona State University; [2]Intel Corp

Electromigration Failure in Micro-Bumps for 3D IC Packaging: *Hsiang-Yao Hsiao*[1]; Chih Chen[1]; [1]National Chiao Tung University

Interfacial Reactions at Pogo Probe Pins/Sn-Ag-Cu Solder Interfaces: *Mao Gao*[1]; Eric Cotts[1]; [1]Binghamton University

Electro-Migration Behavior of 3-D Flip Chip Packaging by Thermal Compression Bonding with Pb-Free Solder: *Jong-Gun Lee*[1]; Jong-Bum Lee[1]; Jae-Hyun Yoon[1]; Sang-Su Ha[1]; Seung-Boo Jung[1]; [1]Sungkyunkwan University

Interfacial Reaction Comparison between Sn-3.0Ag-0.5Cu Solder Joint Attached to ENIG and ENEPIG Surface Finishes: *Chien-Fu Tseng*[1]; Jenq-Gong Duh[1]; Tae-Kyu Lee[2]; Kuo-Chuan Liu[2]; [1]National Tsing Hua University; [2]Cisco Systems, Inc.

High Bump Resistance of Ultra-Fine-Pitch Microbumps for Three-Dimensional Integrate Circuits Packaging: *Yuan-wei Chang*[1]; Chih Chen[1]; [1]National Chiao Tung University

Joint Properties of Cu-Solder-Cu for Fine Pitch 3D Packaging: *Min-Kyu Han*[1]; Se-Min Park[2]; Sehoon Yoo[1]; Chang-Woo Lee[1]; [1]Korea Institute of Industrial Technology; [2]Chosun University

In-Situ Synchrotron Characterization of Melting, Dissolution and Resolidification in Lead-Free Solder Joints: *Bite Zhou*[1]; Thomas Bieler[1]; Tae-Kyu Lee[2]; Kuo-Chuan Liu[2]; [1]Michigan State University; [2]Cisco Systems, Inc.

Joint Properties of Pb-Free Solder Bumps on Flexible Board: *Won-Myoung Ki*[1]; Sehoon Yoo[1]; Chang-Woo Lee[1]; [1]Korea Institute of Industrial Technology

Effect of Zn Content on the Electrification-Fusion and Failure Behaviors of Sn-xZn Alloys: Gong-An Lan[1]; *Chung-Wei Yang*[2]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University; [2]National Formosa University

High Temperature Gold Based Lead Free Solder: *Heiner Lichtenberger*[1]; [1]Williams Advanced Materials

Study of Interfacial Morphology in Flip Chip Solder Joints under Extra-High Current Density with Local Temperature Control: *Ting-Li Yang*[1]; Jia-Hong Ke[1]; C. Robert Kao[1]; [1]National Taiwan University

Study of PCB Dynamics and Reliability Assessment of BGA's under Shock and Vibration Loading: *Pradosh Guruprasad*[1]; Brian Roggeman[2]; James Pitarresi[1]; [1]Binghamton University; [2]Universal Instruments

Shear Strength and the Weibull Failure Analysis of Sn-Ag-Cu Solder Ball Joints with Different Reflow Processes: *Chung-Wei Yang*[1]; Truan-Sheng Lui[2]; Li-Hui Chen[2]; [1]National Formosa University; [2]National Cheng Kung University

Interfacial Reaction and Elemental Redistribution in Sn3.0Ag0.5Cu-xPd/ENIG Solder Joints after Aging: *I-Tai Wang*[1]; Jenq-Gong Duh[1]; Chin-Yuan Cheng[2]; Jim Wang[2]; [1]National Tsing Hua University; [2]Shenmao Technology Inc.

Microstructure and Brazing Performance of Spray-Formed Si-40Al Alloy Used for Electronic Packaging: *Bin Yang*[1]; [1]University of Science and Technology Beijing

Interfacial Reactions and Physical Properties of the Sn-Cu-Based Lead-Free Solder Joints: *Petr Harcuba*[1]; Miloš Janecek[1]; [1]Charles University in Prague

Effect of Multiple Reflow Processes on the Reliability and Microstructure of Sn-Ag-Cu-In Solder Joint: *A-Mi Yu*[1]; Jae-Won Jang[1]; Mok-Soon Kim[1]; Jong-Hyun Lee[2]; Jun-Ki Kim[3]; [1]Inha University; [2]Seoul National University of Technology; [3]Korea Institute of Industrial Technology

In Situ Stress Measurement by Synchrotron Radiation X-Ray in Pure Tin Stripes and Flip Chip with Microbumps on Silicon Substrates: *Hsueh-Hsien Hsu*[1]; Chun-Yang Tsai[1]; Hsin-Yi Lee[2]; Ching-Shun Ku[2]; Albert T. Wu[1]; [1]National Central University; [2]National Synchrotron Research Center

Microstructure and Native Oxide Scale Characteristics of a Cu-9at.%La Alloy: *Bilge Senturk*[1]; Yong Liu[1]; Joseph Mantese[2]; Pamir Alpay[1]; Mark Aindow[1]; [1]University of Connecticut; [2]United Technologies Research Center

Electromigration Behavior of Sn-In Lead-Free Solder Alloy Under High Current Stress: *Kiju Lee*[1]; Keun-Soo Kim[1]; Katsuaki Suganuma[1]; [1]Osaka University

Multiscale Simulation of Fracture in Lead-Free Solder Joints: *Huiyang Fei*[1]; Kyle Yazzie[1]; Nikhilesh Chawla[1]; Hanqing Jiang[1]; [1]Arizona State University

Thermomigration of Al in Flip-Chip Solder Joints: *Hsiao-Yun Chen*[1]; Chih Chen[1]; [1]National Chiao Tung University

Calculation of Ni/Cu6Sn5 Inter-Diffusion Coefficient and Activation Energy by Using Bulk Cu6Sn5 Substrate: *Kuan Chih Huang*[1]; Yu Hsiang Hsiao[2]; Cheng Yi Liu[2]; Fuh Sheng Shieu[1]; [1]National Chung Hsing University; [2]National Central University

Effects of the Substrate Topography on the Black Pad Formation after Electroless Nickel Immersion Gold (ENIG) Process: *Ji Hee Kim*[1]; Jin Yu[1]; [1]Korea Advanced Institute of Science and Technology

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Poster Session

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Sun PM-Thurs AM
Feb 27-Mar 3, 2011

Room: 11B
Location: San Diego Conv. Ctr

Adaptive Shape Memory Actuator Systems for Applications at Varying Boundary Conditions: Horst Meier[1]; *Alexander Czechowicz*[1]; Sven Langbein[1]; [1]Ruhr-University Bochum

Effect of H in Metals and Alloys: An Application to bcc W and NiTi Alloy: *Amitava Moitra*[1]; Kiran Solanki[1]; [1]Center for Advanced Vehicular Systems

Growth of Oriented Nickel Manganese Gallium Single Crystals via the Bridgman Method: *Douglas Kellis*[1]; K. Ullakko[1]; P. Müllner[1]; [1]Boise State University

Mechanism of Artifact Formation on NiTi Alloy during Metallographic Preparation: *Andreas Undisz*[1]; Klemens Reuther[2]; Helfried Reuther[3]; Markus Rettenmayr[2]; [1]University of Jena; [2]Friedrich-Schiller-University; [3]Research Center Dresden-Rossendorf

Microstructure and Martensitic Transformation Characteristics of CoNiGa High Temperature Shape Memory Alloys: *Ebubekir Dogan*[1]; Ibrahim Karaman[1]; Zhiping Luo[1]; Yuriy Chumlyakov[2]; [1]Texas A&M University; [2]Siberian Physical Technical Institute

Microstructure and Shape Memory Characteristics of Powder Metallurgical Processed TiNiCu Alloys: *Yeon-wook Kim*[1]; Young-soo Chung[2]; Eunsoo Choi Choi[3]; Tae-hyun Nam Nam[4]; [1]Keimyung University; [2]Chungang University; [3]Hongik University; [4]Gyeongsang National Univer

Origin of Non Recoverable Strain in NiTi and NiTiFe Shape Memory Alloys on Thermal Cycling: *Ritwik Basu*[1]; Bikas Maji[2]; Prita Pant[1]; Indradev Samajdar[1]; Madangopal Krishnan[2]; [1]Indian Institute of Technology Bombay; [2]Bhabha Atomic Research Centre, Mumbai

Oxidation Behavior of Sputter-Deposited TiNiPd Sharp Memory Films: *Shiqiang Qian*[1]; [1]School of Materials Engineering, Shanghai University of Engineering Science

Phase Transformations in Sputtered NiMnGa Thin Films: Nishitha Jetta[1]; Steven Rios[1]; Nevin Ozdemir[1]; Ibrahim Karaman[1]; *Xinghang Zhang*[1]; [1]Texas A&M University

Powder Metallurgy Processing of Replicated Ni-Mn-Ga Foams: *Peiqi Zheng*[1]; Bing Ye[1]; Cassie Witherspoon[2]; Peter Müllner[2]; David Dunand[1]; [1]Northwestern University; [2]Boise State University

Relationship between Orientation and Strain of Polycrystalline $Ni_{50}Mn_{29}Ga_{21}$ Samples: *Claudia Hürrich*[1]; Martin Pötschke[1]; Stefan Roth[1]; Bernd Rellinghaus[1]; Ludwig Schultz[1]; [1]IFW Dresden

Standardized Shape Memory Actuators for Axis Drives in Modular Machine Tools: Horst Meier[1]; *Alexander Czechowicz*[1]; Sven Langbein[1]; [1]Ruhr-University Bochum

Study of Magnetic Domain Structures in a Ni-Mn-Ga Alloy by Aberration Corrected Lorentz Transmission Electron Microscopy: *Abhijeet Budruk*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

The Effect of Composition on the Shape Memory and Super Elasticity Effect of Nano-Structured Ni-Ti Thin Films: Maryam Mohri[1]; *Mahmoud Nili-Ahmadabadi*[1]; Hamidreza Rezaeean[1]; [1]university of Tehran

Thermomechanical Treatment Effects on Two-Way Shape Memory in Ti-49.2%Ni Alloy: Fatemeh Daei[1]; *Mahmod Nili-Ahmadabadi*[1]; [1]University of Tehran

Turning of NiTi Based Shape Memory Alloy Using Ultrasonic Vibration: Amir Chegini[1]; *Saeed Tamimi*[2]; Zahra Chegini[1]; Hang Baharuddin[1]; Mehdi Sanjari[3]; [1]Department of Mechanical Engineering; [2]TEMA; [3]Department of Material Science

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Sun PM-Thurs AM
Feb 27-Mar 3, 2011

Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Carlos Tome, Los Alamos National Laboratory; Ricardo Lebensohn, Los Alamos National Laboratory

An Electron Microscopy Study of the Intermetallic Phases in a Hot Dip Galvanize Coating on IF Steel: *Md Zakaria Quadir*[1]; Syahbuddin Syahbuddin[1]; Karen Privat[1]; Charlie Kong[1]; Paul Munroe[1]; [1]University of New South Wales

Deformation Behavior of Steel Alloys under Combined Axial-Torsional Loading: *Dayakar Penumadu*[1]; Akawat Siriruk[1]; Elena Garlea[2]; [1]University of Tennessee; [2]B&W Y-12, L.L.C.

Deformation Localization in Two-Dimensional Single Crystals: *M. Arulkumar*[1]; Sivasambu Mahesh[1]; P. Venkitanarayanan[1]; [1]Indian Institute of Technology, Kanpur

Development of an In-Situ Experimental Technique for Characterizing Strain Localization in Polycrystalline Ni-Base Superalloys: *Jennifer Walley*[1]; Robert Wheeler[2]; Michael Uchic[3]; Michael Mills[1]; [1]The Ohio State University; [2]UES; [3]Air Force Research Laboratory

Evolution of Dislocation Density and Burgers Vector Types with Annealing Temperature in Compressed Texture-Free and Compressed Rolled Beryllium Samples Determined by Diffraction Line Profile Analysis: *Levente Balogh*[1]; Donald Brown[1]; Bjorn Clausen[2]; Diana Donati[2]; Thomas Sisneros[1]; [1]Materials Science and Technology Division, Los Alamos National Laboratory; [2]Los Alamos Neutron Science Center, Los Alamos National Laboratory

EBSD Measurement of Deformation Behavior and Orientation Change in Dual Phase Steel Sheet during Equi-Biaxial Tension: *Do Hyun Kim*[1]; Se-Jong Kim[1]; Anthony Rollett[2]; Heung Nam Han[1]; Kyu Hwan Oh[1]; [1]Seoul National University; [2]Carnegie-Mellon University

Experimental and Simulation Studies on the Texture Evolution during Deformation of ARB Processed Cu-Cu Multilayer: *Suresh Santharam*[1]; Satyam Suwas[1]; Anthony Rollett[2]; [1]Indian Institute of Science; [2]Carnegie Mellon University

Full Field Study of Local Interactions between Twin and Its Parent Grain: *Anand Kanjarla*[1]; Irene Beyerlein[1]; Carlos Tomé[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

Investigation of Texturing and Bending during Asymmetric Rolling of AZ31B: *Jaehyung Cho*[1]; SukBong Kang[1]; [1]Korea Institute of Materials Science

Modelling the Mechanical Behavior of Dual-Phase Steels under Strain Reversal: *Smritikana Dutta*[1]; [1]University of Aveiro

Phase Field Simulation of Static Recrystallization for AZ31 Mg Alloy: *Gao Yingjun*[1]; [1]Guangxi University

Physical Parameters Determination from 3D Phase Field Simulations of Martensitic Transformations in Steels: *Hemantha Yeddu*[1]; John Ågren[1]; Annika Borgenstam[1]; [1]Royal Institute of Technology (KTH)

Residual Stress Concentration and Distribution in Polycrystalline Ceramic Materials Using a 3D Fast Fourier Transform Thermoelastic Method: *Benjamin Anglin*[1]; R Hay[2]; T. A. Parthasarathy[3]; R.A. Lebensohn[4]; A.D. Rollett[1]; [1]Carnegie Mellon University; [2]Air Force Research Laboratory; [3]UES, Inc.; [4]Los Alamos National Laboratory

The Texture Evolution of Interstitial-Free Steel Processed by Different Speed Rolling: *Jordan Suharto*[1]; Jae Sik Lee[1]; Yeon Jin Gil[1]; Young Gun Ko[1]; [1]Yeungnam University

Processing and Properties of Powder-Based Materials: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Sun PM-Wed PM — Room: 33A
Feb 27-Mar 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: K Morsi, San Diego State University

High Temperature Oxidation Behaviors of Fe-Cr-Al Bulk and Powder Sintered Materials: *Kee-Ahn Lee*[1]; Song-Yi Kim[1]; Sung-Hwan Choi[1]; Jung-Yeol Yun[2]; Hye-Moon Lee[2]; Byung-Kee Kim; [1]Andong National University; [2]Korea Institute of Machinery and Materials

Investigation of Engineered Pore Structures in Powdered Metals by Means of Freeze Tape Casting: *David Driscoll*[1]; Adam Weisenstein[1]; Stephen Sofie[1]; [1]Montana State University

Silicon Production, Purification and Recycling for Photovoltaic Cells: Poster Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Anne Kvithyld, SINTEF; Gregory Hildeman, Consultant; Gabriella Tranell, Norwegian University of Science and Technology (NTNU); Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

Sun PM-Thurs PM — Room: 14A
Feb 27-Mar 3, 2011 — Location: San Diego Conv. Ctr

Parallel Developments of a Cellular Automaton - Finite Element Model for the Prediction of Grain Structure in Casting: *Tommy Carozzani*[1]; Charles-André Gandin[1]; Hugues Digonnet[1]; [1]MINES - ParisTech

Study of Pellets and Lumps as Raw Material for Silicon Production: *Elena Dal Martello*[1]; Gabriella Tranell[1]; Sean Gaal[2]; Ola Raaness[2]; Merete Tangstad[1]; Lars Arnberg[1]; Rune Larsen[1]; [1]Norwegian University of Science and Technology; [2]SINTEF

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Poster Session

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Sun PM-Wed AM — Room: 31B
Feb 27-Mar 2, 2011 — Location: San Diego Conv. Ctr

Novel Carbon Nanotubes-Nanoparticle Heterostructures and Their Utilization in Soft Nanocomposite Fabrication: Adrika Venkatanarayan[1]; Wenwu Shi[1]; *Nitin Chopra*[1]; [1]The University of Alabama

Effect of Pulsed Electrodeposition Conditions and Reinforcement Content on Microstructure and Tribological Properties of Nickel Composite Coatings: *Tushar Borkar*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

Spark Plasma Sintering of Amorphous-Crystalline Laminated Composites: Tushar Borkar[1]; *Ashish Singh*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

Mechanical Properties of Grain Boundary-Containing Al Nano-Pillars: *Allison Kunz*[1]; Siddhartha Pathak[1]; Andrew Jennings[1]; Julia Greer[1]; [1]Caltech

Silicon Nanorod Formation for Solar Absorbers Using Nanosphere Lithography: *Blake Whitley*[1]; Faisal Salman[1]; Chris Redden[1]; Anusha Natarajarathinam[1]; Alton Highsmith[1]; Subhadra Gupta[1]; [1]The University of Alabama

Development and Mechanical Characterization of Novel Alumina Based Composites for Reduced Friction and Wear Applications: *Rajeshwari Paluri*[1]; Sudeep Ingole[1]; [1]Texas A&M University

Data Transmission Performance of Graphene Interconnects: *Cengiz Ozkan*[1]; [1]University of California

The Second Symposium on the Recycling of Electronic Wastes: 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: Electronic Packaging and Interconnection Materials Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Jaan Kers, Tallinn University of Technology; Thomas P. Schuman, Missouri University of Science and Technology (Missouri S&T); Markus Reuter, Ausmelt Limited

Sun PM-Mon PM — Room: 15B
Feb 27-28, 2011 — Location: San Diego Conv. Ctr

A Novel Process for Foam Glass Preparation from Waste CRT Panel Glass: Mengjun Chen[1]; Fu-shen Zhang[2]; Jianxin Zhu[2]; [1]Southwest University of Science and Technology (SWUST); [2]Chinese Academy of Sciences

Development of Reproduction of Glass Substrate from Old TFT-LCD Panel: *Sung-Jei Hong*[1]; Jong-Woong Kim[1]; Min-Sun Kim[1]; Tae-Whan Hong[2]; Young-Sung Kim[3]; Nam-Ki Kang[1]; [1]Korea Electronics Technology Institute; [2]ChungJu National University; [3]Seoul National University of Science and Technology

Environmental Leaching Characteristics and Bioavailabilities of Waste Cathode Ray Tube Glass: Mengjun Chen[1]; Fu-Shen Zhang[2]; Jianxin Zhu[2]; [1]Southwest University of Science and Technology (SWUST); [2]Chinese Academy of Sciences

Leaching Toxicity of Pb and Ba Containing in Cathode Ray Tube Glasses by SEP-TCLP: Mengjun Chen[1]; Fu-Shen Zhang[2]; Jianxin Zhu[2]; [1]Southwest University of Science and Technology (SWUST); [2]Chinese Academy of Sciences

Recovery of Copper from Printed Circuit Boards Waste by Bioleaching: *Luciana Yamane*[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]Polytechnic School of São Paulo University

Recovery of Nickel from Leaching Liquor of Printed Circuit Board by Solvent Extraction: *Adriana Santanilla*[1]; Beatriz Campos[1]; Jorge Tenório[1]; Denise Espinosa[1]; [1]Polytechnic School of University of São Paulo

NOTES

2011 Aluminum Plenary Symposium: The 125th Anniversary of the Hall-Héroult Process

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: John Johnson, Johnson's Consulting Group

Monday AM — Room: 6B
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chair: John Johnson, Johnson's Consulting Group

8:30 AM Plenary
Paul Héroult: The Early Days of the European Aluminium Industry: *Claude Vanvoren*[1]; [1]Rio Tinto Alcan

9:05 AM Plenary
Charles Martin Hall and Warren Haupin: Over 100 Years of Technical Innovation: *Gary Tarcy*[1]; [1]Alcoa

9:40 AM Plenary
The Rise and Fall of the Knowledge Base for Aluminium Smelting – The Last 50 Years: *Barry Welch*[1]; [1]University of New South Wales- Australia, and Welbank Consulting Ltd - New Zealand

10:20 AM Break

10:30 AM Plenary
The Early Years of Light Metals, TMS: *Nolan Richards*[1]; [1]Richards & Associates

11:05 AM Plenary
Russian Aluminium Industry: *Peter Polyakov*[1]; Victor Mann[2]; [1]Siberian Federal University; [2]Russian Aluminum Industry

11:35 AM Plenary
Brief Overview of Environmental Control within the Primary Aluminium Industry: *Erik Keul*[1]; [1]ALSTOM Environmental Norway

12:00 PM Plenary
The Future for Aluminium Smelting: *Mark Taylor*[1]; J.J.J. Chen[1]; [1]University of Auckland

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Nanomaterials: General

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Monday AM — Room: 8
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Suveen Mathaudhu, US Army Research Lab

8:30 AM Introductory Comments

8:35 AM Keynote
Materials Research Support at the National Science Foundation: *Alan Ardell*[1]; [1]National Science Foundation

9:05 AM Keynote
Nanostructured Materials Development by the Center for Nanostructured Materials Technology: *Sang-Hee Suh*[1]; [1]KIST, Center for Nanostructured Materials Technology

9:35 AM Invited
Nanomaterials: Research, Development and Technology (R&D&T) Roadmaps - 2020: *Marcel Van De Voorde*[1]; [1]TU Delft

10:05 AM Break

10:20 AM Invited
Nanomaterials Control for Biotech Applications: *Sungho Jin*[1]; [1]UC San Diego

10:50 AM Invited
Can Single-Atom Change Affect Electron Transport Properties of Molecular Nanostructures such as C60 Fullerene?: Xiaoliang Zhong[1]; Ravindra Pandey[1]; Alexandre Rocha[2]; *Shashi Karna*[3]; [1]Michigan Tech; [2]Universidade Federal do ABC; [3]Army Research Lab

11:20 AM Invited
Atomic Layer Deposition - A Modern Tool for Nanoscience: *Mato Knez*[1]; [1]Max-Planck-Institute MSP

11:50 AM
Advancing The Science of Nanomanufacturing: *Khershed Cooper*[1]; [1]Naval Research Laboratory

12:20 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Energy Efficient New Metal Production Technology

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

Monday AM — Room: 18
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Anton Vernigora, Baikal Mining Company LLC

8:30 AM
A Breakthrough Application of Electricity at High Temperature for Steel Production: Molten Oxide Electrolysis: *Antoine Allanore*[1]; Luis Ortiz[1]; Donald Sadoway[1]; [1]MIT

8:50 AM
Intrinsic Hydrogen Reduction Kinetics of Magnetite Concentrate Particles Relevant to a Novel Green Ironmaking Technology: Haitao Wang[1]; *Moo Eob Choi*[1]; Hong Yong Sohn[1]; [1]University of Utah

9:10 AM
A Laboratory Investigation of the Reduction of the Iron Carbonate Bearing Ore to Iron Nugget by Means of the ITmk3 Technology: *Nikolay Panishev*[1]; Rafkat Tahautdinov[1]; Anton Posazhennikov[1]; Vasily Bastrygin[1]; [1]Magnitogorsk Iron & Steel Works

9:30 AM
Prospects of Making Directed Reduction Iron by Microwave Heating: *Linqing Dai*[1]; [1]Kunming University of Science and Technology

9:50 AM
Behavior of Coal-Based Direct Reduction Reaction of Iron Oxide Pellets by Microwave Heating: *Zhu-cheng Huang*[1]; Hua Wang[1]; Bing Hu[1]; Hu Peng[2]; Guang-bin Xia[2]; [1]Central South University; [2]Changsha Syno-Therm Co., Ltd

10:10 AM
Sustainable Developments in High Temperature Mineral and Metals Extraction and Processing: *Florian Kongoli*[1]; Edward O'Brien[1]; S. Llubani[1]; Ian McBow[1]; [1]FLOGEN Technologies Inc

10:30 AM
Carbothermal Reduction of Titanium Concentrate at High Temperature: *Run Huang*[1]; Chenguang Bai[1]; Xuewei Lv[1]; Guibao Qiu[1]; Lei Lei[1]; [1]College of Materials Science and Engineering, Chongqing University

10:50 AM
A Simulation Study on Flue Gas Circulating Sintering (FGCS) for Iron Ores: *Tao Jiang*[1]; Zhenyu Fan[1]; Yuanbo Zhang[1]; Bin Xu[1]; Guanghui Li[1]; Xiaohui Fan[1]; [1]Central South University

11:10 AM
Energy And Exergy Analysis of Different Technologies of Copper, Zinc and Lead Production – Entropy Generation and Thermoecological Cost: *Bozena Boryczko*[1]; Adam Holda[1]; Zygmunt Kolenda[1]; [1]AGH University of Science and Technology

11:30 AM
Optimizations of Preparation for U3O8 by Calcination from Ammonium Durante Using Response Surface Methodology: *Bingguo Liu*[1]; Jinhui Peng[1]; Daifu Huang[1]; [1]Kunming University of Science and Technology

11:50 AM
Microwave Field Attenuation Length and Half-power Depth in Magnetic Materials: *Zhiwei Peng*[1]; Jiann-Yang Hwang[1]; Xiaodi Huang[1]; Matthew Andriese[1]; Wayne Bell[1]; [1]Michigan Technological University

12:10 PM
Vanukov Furnace Technology: Application Experience for Processing Different Types of Raw Materials and General Development Trends: Valentin Bystrov[1]; Valery Paretsky[2]; Anton Vernigora[1]; Rostislav Kamkin[1]; *Alexander Mamaev*[1]; Alexander Kuznetsov[1]; [1]National University of Science and Technology (MISIS); [2]State Research Center of Russian Federation "Gintsvetmet" Insitute

Advances in Science-Based Processing of Superalloys for Cost and Sustainment: Processing Advancements via Modeling and Simulation

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Donna Ballard, US Air Force; David Furrer, Pratt & Whitney; Paul Jablonski, US Department of Energy; Christopher Woodward, Air Force Research Laboratory; Jeff Simmons, AFRL; Mark Blodgett, Wright-Patterson AFB

Monday AM — Room: 33B
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Paul Jablonski, US Department of Energy; Lee Semiatin, US Air Force Research Laboratory

8:30 AM Introductory Comments

8:35 AM Keynote
Nickel-Based Superalloys: Construction, Use and Validation of Numerical Models: *Roger Reed*[1]; [1]University of Birmingham

9:15 AM Invited
Air Force Research Laboratory R&D in Science-Based Superalloy Processing: *Lee Semiatin*[1]; Donna Ballard[1]; David Mahaffey[1]; Jonathan Miller[1]; Jaimie Tiley[1]; Todd Turner[1]; Donald Weaver[1]; Adam Pilchak[2]; JP Thomas[3]; Kyle McClary[4]; Peter Lee[5]; [1]US Air Force Research Laboratory; [2]UTC, Inc; [3]ATI Allvac; [4]Wright State University; [5]Imperial College London

9:45 AM
Recrystallization and Grain Growth of a Hot Pack Rolled Nickel-Base Superalloy: *Adam Pilchak*[1]; S. Semiatin[1]; Donna Ballard[1]; Donald Weaver[1]; [1]Air Force Research Laboratory

10:05 AM Break

10:20 AM
HIP of Ni-Base PM Superalloys- Back to the Future: *Charles Barre*[1]; Viktor Samarov[1]; Dmitry Seliverstov[1]; [1]Synertech PM Inc.

10:40 AM Invited
Microstructural Level Modelling of Freckle Initiation during Directional Solidification: *Peter D. Lee*[1]; Lang Yuan[1]; [1]Imperial College London

11:10 AM Invited
Heat Extraction and Structure Evolution in LMC Single-Crystal Growth: *Jonathan Miller*[1]; Lang Yuan[2]; Michael Eisman[3]; Peter Lee[2]; Tresa Pollock[4]; [1]AFRL/RXLM; [2]Imperial College; [3]Wright State University; [4]University of California, Santa Barbara

11:40 AM
Residual Strain Measurements in a Single-Crystal Nickel-Based Superalloys Turbine Blade using Neutron Diffraction: *Stephane Pierret*[1]; Alexander Evans[1]; Ania Paradowska[2]; Thomas Etter[3]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institute; [2]ISIS; [3]Alstom

12:00 PM
Numerical Simulation of Directional Solidification of Turbine Blade by LMC Process: Ning Tang[1]; *Qingyan Xu*[1]; Baicheng Liu[1]; [1]Tsinghua 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; Zhengdong Long, Kaiser Aluminum; Tongguang Zhai, University of Kentucky

Monday AM — Room: 14A
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chair: Zhengdong Long, Kaiser Aluminum

8:30 AM
Scandium/Zirconium Modified Aluminum Alloys for Improved Mechanical Properties: *Jennifer Gaies*[1]; [1]NSWC Carderock Division

8:50 AM
Continuous Cast Superplastic Grade Aluminum Sheet: *Ravi Verma*[1]; [1]General Motors

9:10 AM
Study of Aluminum Sensitization at Moderately Elevated Temperatures: *William Golumbfskie*[1]; Catherine Wong[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]NAVSEA

9:30 AM
Forming Limit Diagrams for AA5182 after Preform Annealing: Jingjing Li[1]; *John Carsley*[2]; Theresa Lee[2]; S. Jack Hu[1]; [1]University of Michigan; [2]General Motors

9:50 AM
A Positron Annihilation Study of Hot Band of a Continuous Cast AA 2037 Al Alloy after Annealing: Yichu Wu[1]; *Tongguang Zhai*[2]; [1]University of Wuhan; [2]University of Kentucky

10:10 AM Break

10:25 AM
Aluminium-Titanium Alloys for Thermal Spraying: *Christopher Wheatley*[1]; [1]CJ Wiretech Limited

10:45 AM
Hot Tensile Behaviour and Constitutive Analysis of Al-5,5Zn-1,2Mg/Zr Alloys: *Paola Leo*[1]; Emanuela Cerri[1]; Hugh McQueen[2]; [1]Università del Salento; [2]Concordia University

11:05 AM
Production of Continuous Cast 3105 Coil-Stock for Thin Gauge Roller Shutters: *Dionisios Spathis*[1]; John Tsiros[1]; [1]Hellenic Aluminium industry (ELVAL SA)

11:25 AM
Microstructure Evolution of the Modified AA 5083 Alloy: From the As-Cast State to the Final Product: *Endre Romhanji*[1]; Miljana Popovic[1]; Tamara Radetic[1]; [1]University of Belgrade

Aluminum Rolling: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Monday AM
February 28, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chair: Kai Karhausen, Hydro Aluminium

8:30 AM Introductory Comments

8:35 AM Keynote
Simulation of Particle Effects on Recrystallization in Commercial Al Alloys: *Günter Gottstein*[1]; Volker Mohles[1]; Carmen Schaefer[1]; [1]RWTH Aachen University

9:05 AM
Texture Evolution during Symmetric and Asymmetric Rolling of Al-Si-Mg Alloys Fabricated by Twin Roll Casting: *Jaehyung Cho*[1]; Hyung Wook Kim[1]; [1]Korea Institute of Materials Science

9:30 AM
An Investigation of Deformation Behavior of Bimetal Clad Sheets by Asymmetrical Rolling at Room Temperature: *Li Xiaobing*[1]; Zu Guoyin[1]; Deng Qiang[2]; [1]School of Materials and Metallurgy, Northeastern University; [2]Cold rolling company, Pangang group company LTD.

9:55 AM Break

10:15 AM
Parameter Study within the Through-Process-Modeling Chain of AA8xxx-Alloys and Its Validation: *Thiemo Brüggemann*[1]; Volker Mohles[1]; Carmen Schäfer[1]; Günter Gottstein[1]; Kai Karhausen[2]; [1]Institute; [2]Hydro Aluminium Deutschland GmbH

10:40 AM
Coil Build up Compensation during Cold Rolling to Improve Off-Line Flatness: *Lourival Almeida Neto*[1]; Tuggan Ayhan[2]; [1]Achenbach Buschhütten GmbH; [2]Assan Alüminyum

11:05 AM
Through Process Effects on Final Al-Sheet Flatness: *Stefan Neumann*[1]; Kai Karhausen[1]; [1]Hydro Aluminium Dts. GmbH

11:30 AM Concluding Comments

Approaches for Investigating Phase Transformations at the Atomic Scale: Transformation Kinetics and Mechanisms

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Neal Evans, Oak Ridge National Laboratory; Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Chris Wolverton, Northwestern University; David Seidman, Northwestern University; Rajarshi Banerjee, University of North Texas

Monday AM
February 28, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chairs: S. Babu, Ohio State University; Neal Evans, ORNL & Univ. Tennessee, Knoxville

8:30 AM Keynote
Solid-State Diffusion and Transformation Kinetics: *Georges Martin*[1]; [1]Retired

9:10 AM Invited
Atomistic Modeling of Diffusive Phase Transformations Kinetics by Monte Carlo Simulations: *Frederic Soisson*[1]; [1]CEA Saclay

9:35 AM Invited
Chemical Mixing at Hetero-Interfaces Forced by Severe Plastic Deformation: *Pascal Bellon*[1]; Robert Averback[1]; Nhon Vo[1]; Xuan Zhang[1]; Elvan Ekiz[1]; Yinon Ashkenazy[1]; Daniel Schwen[1]; Mohsen Pouryazdan[2]; Horst Hahn[2]; [1]University of Illinois; [2]Karlsruhe Institute of Technology

10:00 AM Break

10:15 AM Keynote
THE INSTITUTE OF METALS LECTURE AND ROBERT FRANKLIN MEHL AWARD WINNER: The Ubiquitous Interfacial Free Energy in Phase Transformations: *David Seidman*[1]; [1]Northwestern University

10:55 AM Invited
Atomic Scale Investigation of Alpha Nucleation in the Beta Matrix of Titanium Alloys: Soumya Nag[1]; Robert Williams[2]; Arun Devaraj[1]; Peter Collins[1]; Gopal Viswanathan[3]; Rajarshi Banerjee[1]; *Hamish Fraser*[2]; [1]University of North Texas; [2]The Ohio State University; [3]Air Force Research Laboratory

11:20 AM
In Situ Studies and Simulations of Rapid, Self-Propagating Phase Transformations in Nanolayer Foils: *Timothy Weihs*[1]; Sara Barron[1]; Todd Hufnagel[1]; Steve Kelly[1]; Michael Falk[1]; Rong Xu[1]; Omar Knio[1]; Francesco Rizzi[1]; Geoffrey Campbell[2]; Judy Kim[3]; [1]Johns Hopkins University; [2]Lawrence Livermore National Lab; [3]Oxford University

11:35 AM
Molecular Dynamics Studies of Phase Transformations during Rapid Heating of Nanolayer Foils: Rongguang Xu[1]; *Michael Falk*[1]; [1]Johns Hopkins University

11:50 AM
Interplay between Interfacial Segregation and Diffusion Shapes the Growth of Gold-Catalyzed Silicon Nanowires: *Moneesh Upmanyu*[1]; Hailong Wang[1]; Luis Zepeda-Ruiz[1]; [1]Northeastern University

12:05 PM
Ta Clustering and Microstructural Evolution in the A1 to L10 Fe52PtX(Ta1-X) Phase Transformation: Diondra Means[1]; Billie Wang[1]; *Gregory Thompson*[1]; [1]University of Alabama

Biological Materials Science: Bio-Inspiration and Bio-Inspired Materials I: Hard Biomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Monday AM
February 28, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Jamie Kruzic, Oregon State University; Candan Tamerler, University of Washington

8:30 AM Introductory Comments

8:35 AM Keynote
Nature-Inspired Hybrid Structural Materials for Bone Repair: *Antoni Tomsia*[1]; [1]Lawrence Berkeley Lab

9:15 AM
Bone Regeneration in CaP Scaffolds: The Complementary Roles of BMP-2 and Microporosity: *Amy Wagoner Johnson*[1]; Samantha Polak[1]; Sheeny Lan Levengood[2]; Aaron Maki[1]; Matthew Wheeler[1]; Sherrie Clark[1]; [1]University of Illinois at Urbana-Champaign; [2]University of Wisconsin, Madison

9:35 AM
Enhanced Functions of Osteoblasts on Biomimetic Nanohydroxyapatite-Grafted Chitosan Scaffolds for Bone Tissue Engineering: *Dilip Depan*[1]; Bhupinder Girase[1]; Pavan Challa[1]; Devesh Misra[1]; [1]University of Louisiana at Lafayette

9:55 AM
Structure and Mechanical Properties of Bioinspired Inorganic/Polymer Multi-Layer Composites: *Gustavo Hirata*[1]; Sandra Payán[1]; Yu-Chen Chan[2]; Po-Yu Chen[3]; Jenq-Gong Duh[2]; Joanna McKittrick[2]; [1]Centro de Nanociencias y Nanotecnología-UNAM; [2]National Tsing Hua University; [3]University of California, San Diego

10:15 AM Break

10:25 AM Invited
Mimicking Bone Formation Using Anionic Polymeric Process-Directing Agents: Taili Thula[1]; *Laurie Gower*[1]; [1]University of Florida

10:55 AM
Bionanomineralization through Genetically Engineered Peptides and Fusion Proteins: *Candan Tamerler*[1]; [1]University of Washington & Istanbul Technical University

11:15 AM
Engineered Mineral-Directing Peptides for Hard Tissue Engineering: *Mustafa Gungormus*[1]; Hanson Fong[1]; Joel Schneider[2]; Candan Tamerler[1]; Mehmet Sarikaya[1]; [1]University of Washington; [2]National Cancer Institute-Frederick

11:35 AM
Structural Characterization of the Mineral Phase in Bony Tissues: A Comparative Study: *Po-Yu Chen*[1]; Maria Lopez[1]; Ekaterina Novitskaya[1]; Marc Meyers[1]; Joanna McKittrick[1]; [1]University of California, San Diego

11:55 AM
Bone Demineralization and Deproteination Studies: A Biochemical-Kinetic Focus: *Ana Castro*[1]; Ekaterina Novitskaya[2]; Po-Yu Chen[2]; M. del Pilar Sánchez-Saavedra[1]; Gustavo Hirata[3]; Joanna McKittrick[2]; [1]CICESE; [2]UC San Diego; [3]CNyN-UNAM

Bulk Metallic Glasses VIII: 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: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Monday AM
February 28, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Jan Schroers, Yale University; Marios Demetriou, California Institute of Technology

8:30 AM Keynote
Millisecond Thermoplastic Processing of Bulk Metallic Glasses: *William Johnson*[1]; Georg Kaltenboeck[1]; Marios Demetriou[1]; Joe Schramm[1]; [1]California Institute of Technology

9:00 AM
Bulk Metallic Glass: The Smaller the Better: *Golden Kumar*[1]; Jan Schroers[1]; [1]Yale University

9:10 AM Invited
The Production of Iron Based BMGs by Spray Forming: *Claudemiro Bolfarini*[1]; Walter Botta[1]; Claudio Kiminami[1]; [1]Universidade Federal de São Carlos

9:30 AM
Development of Mass Production System for Zr-Based Bulk Glassy Alloys: A. Inoue[1]; *Y. Yokoyama*[1]; [1]Institute for Materials Research

9:40 AM Invited
Ductility Enhancement and Size Enlargement of Bulk Glassy Alloys: H. Tokunaga[1]; K. Fujita[1]; T. Yamasaki[2]; A. Yavari[3]; P. Liaw[4]; A. Inoue[5]; *Y. Yokoyama*[5]; [1]Department of Machine Engineering; [2]Department of Material Science and Engineering; [3]SIMAP-CNRS; [4]University of Tennessee; [5]Institute for Materials Research

10:00 AM Break

10:10 AM Invited
Bulk Metallic Glasses Form Like Plastics: *Jan Schroers*[1]; [1]Yale University

10:30 AM
A Novel Preparation Method for Mg-based BMG Matrix Composite with the In-Situ Ti Dispersoids: Hideki Oka[1]; Takeshi Wada[1]; Kunio Yubuta[1]; *Hidemi Kato*[1]; Akihisa Inoue[1]; [1]Tohoku University

10:40 AM Invited
Novel Net-Shape Processing of Metallic Glass by Rapid Joule Heating: *Marios Demetriou*[1]; Georg Kaltenboeck[1]; Joseph Schramm[1]; William Johnson[1]; [1]California Institute of Technology

11:00 AM Invited
The Effect of Purification on the Glass-Forming Ability of Pd-Cu-Si Alloys: *Ke-Fu Yao*[1]; Sheng-Bao Qiu[1]; Hong-Yu Ding[1]; Yang Li[1]; [1]Tsinghua University

11:20 AM Invited
Processing and Tensile Tests of Amorphous Wires: *Yong Zhang*[1]; [1]University of Science and Technology Beijing

11:40 AM Invited
Formation and Properties of New Zr-Based Bulk Glassy Alloys with High Glass-Forming Ability: *Wei Zhang*[1]; Yanhui Li[2]; Chuang Dong[2]; Akihisa Inoue[1]; [1]Institute for Materials Research, Tohoku University; [2]School of Materials Science and Engineering, Dalian University of Technology

12:00 PM Invited
High Strength Amorphous and Nanocrystalline Ni-W Electrodeposits: *Tohru Yamasaki*[1]; Masako Sonobe[1]; Kazutaka Fujita[2]; Takeyuki Kikuchi[1]; Hye Jung Chang[3]; Do Hyang Kim[3]; [1]University of Hyogo; [2]Ube National College of Technology; [3]Yonsei University

12:20 PM
Synthesis of Plastic Mg-Based Bulk Metallic Glass Matrix Composites by the Bridgman Solidification: *Liang Zhang*[1]; [1]Nanjing University of Science and Technology

Characterization of Minerals, Metals and Materials: Characterization Methods and Synthesis Techniques

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Monday AM
February 28, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Jian Li, CANMET-MTL; Sergio Monteiro, UENF

8:30 AM
Materials with Controlled Microstructural Architecture (MCMA) Fabricated by Electron Beam Melting (EBM): *Sara Gaytan*[1]; Diana Ramirez[1]; Lawrence Murr[1]; Edwin Martinez[1]; Jose Martinez[1]; Daniel Hernandez[1]; Brenda Machado[1]; Frank Medina[1]; Ryan Wicker[1]; [1]UTEP

8:45 AM
Quantifying Damage Accumulation during Ductile Plastic Deformation Using Synchrotron Radiation: *Reeju Pokharel*[1]; Jonathan Lind[1]; Xi Tan[1]; Robert Suter[1]; Anthony Rollett[1]; [1]CMU

9:00 AM
Design and Implementation of Low Cost Measurement System for Determination of Thermal Conductivity Coefficient: *Juan Calderón*[1]; Nora Ramírez[1]; Leobardo López[1]; [1]ITESM Campus Toluca

9:15 AM
Material Performance of TBCs at High Temperature in Moisture-Containing Environments Using a Load-Based Micro-Indentation Technique: *Jared Tannenbaum*[1]; Bruce Kang[1]; Mary Anne Alvin[2]; [1]West Virginia University; [2]National Energy Technology Laboratory

9:30 AM
Raman Spectroscopy of C-A Domain Switching in (001) BaTiO3 Single Crystals under Uniaxial Loading: Carolina Diliegros Godines[1]; *Juan Muñoz - Saldaña*[1]; Molly Gentleman[2]; Amy Bolon[2]; Luis Gutierrez Ladron de Guevara[1]; [1]Cinvestav-Queretaro; [2]Texas A&M University

9:45 AM
Synthetic Generation of Annealing Twins in Three-Dimensional Microstructures: *Lisa Chan*[1]; Michael Groeber[2]; Gregory Rohrer[3]; Anthony Rollett[3]; [1]EDAX-TSL; [2]Air Force Research Laboratory; [3]Carnegie Mellon University

10:00 AM Break

10:15 AM Invited
Experimental Characterization of Negative Thermal Expansion in Oxides: *Fernando Rizzo*[1]; Monica Ari[1]; Bojan Marinkovic[1]; Paula Jardim[1]; Roberto de Avillez[1]; Fabio Furlan Ferreira[2]; [1]PUC Rio de Janeiro; [2]ABC Federal University

10:45 AM
Digital Construction and Characterization of Reticulated Porous Microstructures from Sacrificial Templates: *Jason Kulpe*[1]; Stephanie Lin[2]; Jason Nadler[2]; [1]Georgia Institute of Technology; [2]Georgia Tech Research Institute

11:00 AM
Thermodynamic Measurement of CaO-P2O5-SiO2 System: *Takashi Nagai*[1]; Hisao Kimura[1]; Masafumi Maeda[1]; [1]The University of Tokyo

11:15 AM
Applying Modular DOE to Improve Material Characterization and Performance: *Paul Funkenbusch*[1]; [1]University of Rochester

11:30 AM
Selective Removal of Thiophene from Liquid Fuels over Nickel-Based Nanocrystalline Zinc Oxide: *Mohammad Islam*[1]; Jewel Gomes[1]; Hylton McWhinney[2]; Doanh Tran[1]; Sameer Pallavkar[1]; Md Islam[1]; George Irwin[1]; David Cocke[1]; [1]Lamar University; [2]Praire View A&M University

11:45 AM
Extending the Effective Range of Wilkinson's Method Via a Geometry-Based Pattern Center Correction Algorithm: *Calvin Gardner*[1]; Brent Adams[1]; David Fullwood[1]; [1]Brigham Young University

12:00 PM
Thermodynamical Studies on the Carbothermal Reduction and Nitride Preparing for Vanadium Nitride: *SS Yu*[1]; WX Li[1]; ZL Ji[1]; NX Fu[2]; ZT Sui[2]; [1]Shenyang University of Chemical Technology; [2]Northeastern University

Chloride 2011: Practice and Theory of Chloride-Based Metallurgy: Hydrometallurgy

Sponsored by: The Minerals, Metals and Materials Society, Canadian Institute of Metals, TMS Extraction and Processing Division, TMS: Magnesium Committee, TMS: Energy Committee
Program Organizers: Dirk Verhulst, Consultant, Extractive Metallurgy; V.I. (Lucky) Lakshmanan, Process Research Ortech, Inc.

Monday AM
February 28, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: V. Ram Ramachandran, Consultant; George Demopoulos, McGill University

8:30 AM
Hydrometallurgy of Chlorides: A Review of Recent Developments: *Dirk Verhulst*[1]; Vaikuntam Lakshmanan[2]; [1]Consultant, Extractive Metallurgy; [2]Process Research ORTECH Inc

8:55 AM
Development of a Novel High-Chloride Circuit for the Starfield Resources' Ferguson Lake Project: Mike Dry[1]; Niels Verbaan[2]; Ernesto Bourricaudy[2]; Michael Moran[3]; [1]Arithmetek Inc.; [2]SGS Canada Lakefield; [3]Starfield Resources Inc.

9:20 AM
Synthesis of TiO2 by an Innovative Atmospheric Mixed Chloride Leach Process: *V.I. Lakshmanan*[1]; Ram Sridhar[1]; Raja Roy[1]; [1]Process Research Ortech Inc.

9:45 AM
Solvent Extraction for the Separation into Nickel and Cobalt with Anionic Extractant: *Tomohiko Yokogawa*[1]; Satoshi Matsumoto[1]; Nobuhiro Matsumoto[1]; [1]Sumitomo Metal Mining Co., Ltd.

10:10 AM Break

10:25 AM
Integrated Plant to Recover Zinc, Lead and Silver from Crude Zinc Oxides Applying ZINCEX and PLINT Technologies: *Carlos Frias Gomez*[1]; Gustavo Diaz[1]; Daniel Martin[1]; Francisco Sanchez[1]; Ana Mejias[1]; [1]Tecnicas Reunidas

10:45 AM
N,N´-Tetrasubstituted Malonamide Derivatives and Hydrochloric Acid Solutions: An Interfacial Study: Maria Soledade Santos[1]; Marc Font Cornella[1]; João Nuno Reis[1]; Sandra Santos Reis[1]; *Ana Paiva*[1]; [1]FCUL

11:10 AM
Recovery of Precious Metals from Base Metal Sulfide Ores by a Hydrometallurgical Process: *V.I. Lakshmanan*[1]; Ram Sridhar[1]; Raja Roy[1]; [1]Process Research Ortech Inc.

11:35 AM
Recovery of Precious Metals from Chloride Media Using Microalgae Waste from Biofuel Extraction: *Katsutoshi Inoue*[1]; Kanjana Khunathai[1]; Keisuke Ohto[1]; Hidetaka Kawakita[1]; Kinya Atsumi[2]; Hisaya Kato[2]; [1]Saga University; [2]Denso Corporation

Computational Thermodynamics and Kinetics: Defects: Thermodynamics and Kinetics of Grain Boundaries, Interfaces, Surfaces and Dislocations

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Monday AM — Room: 9
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Kedarnath Kolluri, MIT; Alexey Dick, Max-Planck-Institut für Eisenforschung GmbH

8:30 AM
Grain Boundary Energy in Binary Alloys: *Jonathan Stolle*[1]; Nikolas Provatas[1]; [1]McMaster University

8:45 AM
A First Principles Investigation into Hydrogen-Grain Boundary Binding in bcc Fe: *William Counts*[1]; Ron Gibala[2]; Chris Wolverton[1]; [1]Northwestern University; [2]University of Michigan

9:00 AM
Interaction of Grain Boundaries with Voids: *Stephen Foiles*[1]; [1]Sandia National Laboratories

9:15 AM
On the Interaction of Point Defects with Semicoherent Heterophase Interfaces: *Kedarnath Kolluri*[1]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology

9:30 AM
First Principles Modeling of Dislocation/Twin Boundary and Oxygen Solute Interactions in Ti: *Maryam Ghazisaeidi*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

9:45 AM
Stacking Fault Energies in Fe-Mn-C: Ab Intio Determination of Thermodynamic and Chemical Trends: *Alexey Dick*[1]; Tilmann Hickel[1]; Afshin Abbasi[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

10:00 AM Break

10:15 AM
Topological Characteristics and Events in 3D Grain Growth: *Burton Patterson*[1]; Robert DeHoff[1]; Alan Sprague[2]; Zhiwei Sun[2]; Veena Tikare[3]; [1]University of Florida; [2]University of Alabama at Birmingham; [3]Sandia National Laboratory

10:30 AM
An Inverse Problem in Nucleation and Growth: *Mark Jhon*[1]; Siu Sin Quek[1]; David Wu[1]; [1]Institute of High Performance Computing

10:45 AM
Application of a Monte Carlo Grain Growth Simulation to Test the Growth Path Envelope Analysis Formalism: *Robert DeHoff*[1]; Burton Patterson[1]; Alan Sprague[2]; Zhiwei Sun[2]; Veena Tikare[3]; [1]University of Florida; [2]University of Alabama at Birmingham; [3]Sandia National Laboratory

11:00 AM
Phase Field Simulation of Grain Growth in a System with Dissolving Precipitates: *Sina Shahandeh*[1]; Matthias Militzer[1]; [1]University of British Columbia

11:15 AM
A Phase-Field Model for Recrystallization Grain Growth: Effects of Grain Boundary Energy Anisotropy and Second–Phase Particles: *Mohsen Asle Zaeem*[1]; Haitham El Kadiri[1]; Paul Wang[1]; Mark Horstemeyer[1]; [1]Mississippi State University

11:30 AM
Phase-Field Simulation of Segregation to Stacking Fault (Suzuki Effect) in Co-Ni Based Superalloy: *Yuichiro Koizumi*[1]; Sho Suzuki[1]; Takuma Otomo[1]; Shingo Kurosu[1]; Yunping Li[1]; Hiroaki Matsumoto[1]; Akihiko Chiba[1]; [1]Tohoku University

11:45 AM
Simulating Triple Junction Drag Using a 2D Phase Field Model: *Anthony Johnson*[1]; Peter Voorhees[1]; [1]Northwestern University

12:00 PM
Thermal-Activated Buckling Swapping of Topological Defects in Graphene: *Chun-Wei Pao*[1]; Te-Huan Liu[2]; Chien-Cheng Chang[2]; [1]Research Center for Applied Sciences, Academia Sinica; [2]Institute of Applied Mechanics, National Taiwan University

12:15 PM
Defects in Ferrite: An Ab Initio Based Description of Long-Range Elastic Effects: *Alexander Udyansky*[1]; Johann von Pezold[1]; Alexey Dick[1]; Vladimir Bugaev[2]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Max-Planck-Institut für Metallforschung

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Intermetallics I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Monday AM
February 28, 2011
Room: 32A
Location: San Diego Conv. Ctr

Session Chairs: John Bassani, University of Pennsylvania; Sharvan Kumar, Brown University

8:30 AM Introductory Comments

8:35 AM Invited
What Controls the Choice of the Slip Systems in Different Compounds with B2 Structure: *Vasek Vitek*[1]; Yi-Shen Lin[1]; Miroslav Cak[1]; Vaclav Paidar[2]; [1]University of Pennsylvania; [2]Academy of Sciences of the Czech Republic

9:05 AM Invited
Recent Development of Porous Materials Based on Aluminide Intermetallics: *C. T. Liu*[1]; Yuehui He[2]; Baiyun Huang[2]; [1]Hong Kong Polytechnic University; [2]Central South University

9:35 AM Invited
Size-Affected Flow and Intermittency in Small Ni3Al Crystals: *Dennis Dimiduk*[1]; Michael Uchic[1]; Ed Nadgorny[2]; Satish Rao[3]; Jaafar El-Awady[4]; Paul Shade[4]; Chris Woodward[1]; [1]Air Force Research Laboratory; [2]Michigan Technological University; [3]UES, Inc.; [4]UTC, Inc.

10:05 AM
Plasticity of $L1_2$ Intermetallics: A New Insight Using AFM Observations: *Joël Bonneville*[1]; Christophe Coupeau[1]; [1]University of Poitiers

10:20 AM Break

10:30 AM Invited
Properties of New Cobalt Alloys with High Volume Fractions of Ordered Precipitates: *Tresa Pollock*[1]; Akane Suzuki[2]; [1]University of California Santa Barbara; [2]GE Global Research

11:00 AM Invited
Temperature Dependence of Yield Stress and Dislocation Dissociation in L12-Ordered Intermetallic Compounds: *Haruyuki Inui*[1]; [1]Kyoto University

11:30 AM Invited
Microstructure and Mechanical Properties of Dual Two-Phase Intermetallic Alloys Composed of Geometrically Close Packed Ni_3Al and Ni_3V Structures: *Takayuki Takasugi*[1]; Yasuyuki Kaneno[1]; [1]Osaka Prefecture University

Dynamic Behavior of Materials V: Fundamentals of Dynamic Behavior

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Monday AM
February 28, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chair: Marc Meyers, UCSD

8:30 AM Introductory Comments

8:40 AM Keynote
Impact Testing and Dynamic Behavior of Materials: *Lothar Meyer*[1]; Norman Herzig[1]; Frank Pursche[1]; Shawky Abdel-Malek[1]; [1]Nordmetall GmbH

9:20 AM
Atomistically-Informed Dislocation Dynamics Simulations of High Rate Deformation of Single fcc Crystals: *Zhiqiang Wang*[1]; [1]University of North Texas

9:40 AM
Plastic Response of Low- and High-Energy Grain Boundaries in Copper under Shock Loading: *Christian Brandl*[1]; Timothy Germann[1]; [1]Los Alamos National Laboratory

10:00 AM
Void Initiation, Growth and Collapse in BCC Tantalum: Molecular Dynamics Simulations: *Yizhe Tang*[1]; Eduardo Bringa[2]; Bruce Remington[3]; Marc Meyers[1]; [1]University of California, San Diego; [2]Univ. Nac.Cuyo; [3]Lawrence Livermore National Laboratory

10:20 AM Break

10:30 AM Invited
Atomistic Simulations of Shock-Induced Plasticity in Tantalum: *Eduardo Bringa*[1]; J. Hawreliak[2]; N. Park[3]; A. Higginbotham[4]; [1]CONICET-Universidad Nacional de Cuyo; [2]Lawrence Livermore National Laboratory; [3]AWE; [4]University of Oxford

11:00 AM
The Viscosity of Liquid Tantalum*: *James Belak*[1]; [1]Lawrence Livermore National Laboratory

11:20 AM
"Driving Forces" for Moving Inclusion and Inhomogeneity Boundaries with Transformation Strains: *Xanthippi Markenscoff*[1]; Luqun Ni[1]; [1]University of California, San Diego

11:40 AM
Dynamic-Tensile-Extrusion Response of Polymers: *Eric Brown*[1]; George Gray[1]; [1]Los Alamos National Laboratory

12:00 PM
The Dynamic Constitutive Response of Four Light Metals: Al 7039, Al 5083, Al 5059, and AZ31B: *Sara Perez-Bergquist*[1]; George Gray III[1]; Ellen Cerreta[1]; Carl Trujillo[1]; Mike Lopez[1]; [1]Los Alamos National Laboratory

12:20 PM
Structure and Shear Resistance of an Asymmetric Tilt Grain Boundary as Function of Temperature: *Saryu Fensin*[1]; Mark Asta[2]; Richard Hoagland[1]; [1]Los Alamos National Laboratory; [2]University of California, Berkeley

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fundamentals of Fatigue Damage and Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Monday AM
February 28, 2011
Room: 31C
Location: San Diego Conv. Ctr

Session Chairs: Angus Wilkinson, University of Oxford; Mark Hardy, Rolls Royce

8:30 AM Introductory Comments

8:35 AM Invited
High Resolution EBSD Studies of Fatigued Metals: *Angus Wilkinson*[1]; Philip Littlewood[1]; Benjamin Britton[1]; Phani Karamched[1]; [1]University of Oxford

8:55 AM
A Quantitative Crystallographic Model for Fatigue Crack Propagation through Grain Boundaries: *Wei Wen*[1]; Tongguang Zhai[1]; [1]University of Kentucky

9:15 AM Invited
Cyclic Deformation and Fatigue Cracking Mechanisms of F.C.C. Crystalline Materials: *Zhefeng Zhang*[1]; Peng Li[1]; Peng Zhang[1]; Shen Qu[1]; Zhenjun Zhang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

9:35 AM Invited
The Effect of Pore Position in Depth on Stress Field around the Pore on Sample Surface: Zhiqiang Xu[1]; Wei Wen[2]; *Tongguang Zhai*[2]; [1]Yanshan University; [2]University of Kentucky

9:55 AM Invited
Fatigue Weak-Link Density and Strength Distribution in High Strength Al Wrought and Cast Alloys: *Tongguang Zhai*[1]; Yuanbin Zhang[2]; [1]University of Kentucky; [2]Shandong Jianzhu University

10:15 AM Break

10:25 AM
Effect of Cooling Rate on the Fatigue Life of a Nickel-Base Superalloy Used for Disc Rotor Applications: *Mark Hardy*[1]; Robert Mitchell[1]; Hang-Yue Li[2]; [1]Rolls-Royce plc; [2]University of Birmingham

10:45 AM
An Energy-Based Microstructure Model to Account for Fatigue Scatter in Polycrystals: *Michael Sangid*[1]; Huseyin Sehitoglu[1]; [1]University of Illinois, Urbana-Champaign

11:05 AM
Tail Departure of Log-Normal Grain Size Distribution in 3D Synthetic Microstructures: *Joseph Tucker*[1]; [1]Carnegie Mellon University

11:25 AM
Fatigue Crack Initiation Processes in a Polycrystalline Ni-Base Superalloy: *Jiashi Miao*[1]; Tresa M. Pollock[2]; J. Wayne Jones[1]; [1]University of Michigan; [2]University of California, Santa Barbara

11:45 AM
3D Short Fatigue Crack Investigation Using Diffraction and Phase Contrast Tomography: Michael Herbig[1]; *Wolfgang Ludwig*[1]; Henry Proudhon[2]; Peter Reischig[3]; Andrew King[4]; Jean-Yves Buffière[5]; [1]ESRF / INSA Lyon; [2]MINES ParisTech; [3]ESRF / KIT; [4]GKSS-Research Center; [5]INSA Lyon

Friction Stir Welding and Processing VI: High Temperature Materials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Monday AM
February 28, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: Rajiv Mishra, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:50 AM Keynote
A Decade of Progress in Friction Stirring of High-Temperature Materials: *Carl Sorensen*[1]; [1]Brigham Young University

9:20 AM
Development of Co-Based Alloy FSW Tool for High-Softening-Temperature Materials: *Yutaka Sato*[1]; Masahiro Miyake[1]; Hiroyuki Kokawa[1]; Toshihiro Omori[1]; Kiyohito Ishida[1]; Shinya Imano[2]; Seung Hwan Park[2]; Satoshi Hirano[2]; [1]Tohoku University; [2]Hitachi, Ltd.

9:40 AM
Friction Stir Welding and Processing of Advanced Materials for Coal and Nuclear Power Applications: *Glenn Grant*[1]; Scott Weil[1]; Yuri Hovanski[1]; Jens Darsell[1]; [1]Pacific Northwest National Laboratory

10:00 AM
Friction Stir Welding of Alloy 22: *Bharat Jasthi*[1]; Willaim Arbegast[1]; Stanley Howard[1]; [1]South Dakota School of Mines and Technology

10:20 AM
Effect of Processing Parameters and Post-Weld Microstructure on Friction Stir Welded HSLA-65 Charpy V-Notch Impact Toughness: *Sam Sanderson*[1]; Tracy Nelson[1]; [1]Brigham Young University

10:40 AM
Friction Stir Processing of Cast Inconel 718: *Bharat Jasthi*[1]; Edward Chen[2]; William Arbegast[1]; Matthew Heringer[1]; Douglas Bice[2]; Stanley Howard[1]; [1]South Dakota School of Mines and Technology; [2]Transition45 Technologies, Inc

11:00 AM Break

11:10 AM Invited
Fabrication of Nanostructured Tool Steel Layer by Combination of Laser Cladding and Friction Stir Processing: *Yoshiaki Morisada*[1]; Hidetoshi Fujii[2]; Tadashi Mizuno[3]; Genryu Abe[3]; Toru Nagaoka[1]; Masao Fukusumi[1]; [1]Osaka Municipal Technical Research Institute; [2]Joining and Welding Research Institute, Osaka University; [3]AMC Corporation

11:30 AM Invited
Friction Stir Welding of Oxide Dispersion Strengthened Alloy MA956: *Michael West*[1]; bharat jasthi[1]; Peter Hosemann[2]; Viswanath Sodesetti[1]; [1]South Dakota School of Mines and Technology; [2]University of California at Berkeley

11:55 AM
Friction Stir Processing of Ti-6Al-4V for Grain Size Reduction in Fusion Welds: *Jason Livingston*[1]; Jeff Rodelas[1]; John Lippold[1]; [1]The Ohio State University

12:15 PM
Microstructure and Mechanical Properties of Friction Stir Processed Grade 40 Grey Cast Iron: *Michael West*[1]; Bharat Jasthi[1]; Nicholas Smith[1]; Josiah Oduor[2]; Yong-Ching Chen[3]; [1]South Dakota School of Mines and Technology; [2]University of Tennessee, Knoxville; [3]Cummins Technical Center

Frontiers in Solidification Science: Atomistic Simulations

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Solidification Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Daniel Lewis, Rensselaer Polytechnic Institute

Monday AM
February 28, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Invited
Characterization of the Structure, Thermodynamics and Transport at the Chemically Heterogeneous Cu/Pb Interface by Atomistic Simulation: *Brian Laird*[1]; J. Pablo Palafox-Hernandez[1]; Mark Asta[2]; [1]University of Kansas; [2]University of California-Berkeley

9:00 AM Invited
Finite Size Effects in Molecular Dynamics Simulations of Nucleation and Growth: *James Morris*[1]; Trevor Pate[2]; Lujian Peng[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

9:30 AM Invited
Heterogeneous Nucleation of Solid Al from the Melt: Molecular Dynamics Studies: *Junsheng Wang*[1]; Peter D. Lee[1]; Andrew Horsfield[1]; Peter Brommer[2]; Udo Schwingenschloegl[3]; [1]Imperial College London; [2]Universität Stuttgart; [3]King Abdullah University of Science and Technology

10:00 AM Break

10:15 AM Invited
Molecular Dynamics Simulations of Alloy Rapid Solidification: *Mark Asta*[1]; Harith Humadi[2]; Yang Yang[3]; Brian Laird[4]; Deyan Sun[3]; Jeff Hoyt[2]; [1]University of California, Berkeley; [2]McMaster University; [3]East China Normal University; [4]University of Kansas

10:45 AM Invited
Heterogeneous Nucleation of Liquid at Grain Boundaries: T. Frolov[1]; *Y. Mishin*[1]; [1]George Mason University

11:15 AM Invited
Molecular Dynamics Study of Solid-Liquid Interface Migration in FCC Metals: *Mikhail Mendelev*[1]; [1]Ames Laboratory

Geek Speak on the Hill: Communicating Science to Policy Makers

Sponsored by: The Minerals, Metals and Materials Society, TMS: Public and Governmental Affairs Committee
Program Organizers: Jud Ready, Georgia Tech; Marlit Hayslett, Georgia Tech

Monday AM
February 28, 2011
Room: 17B
Location: San Diego Conv. Ctr

Session Chair: Marlit Hayslett, Georgia Tech

8:30 AM Introductory Comments by Kevin Hemker, Chair, Public and Governmental Affairs Committee

8:35 AM Invited
Recap of Congressional Visit Days: Iver Anderson[1]; [1]Iowa State University

8:55 AM Invited
Legislative Process 101: Arnie Thomas[1]; [1]Senior Vice President, Client Relationships, CQ Rollcall Group

9:15 AM Break

9:30 AM Invited
Case Studies in Reality Colliding with Science-Policy: *Jim Treglio*[1]; [1]Consultant, Technology and Marketing, Molecular Metallurgy

9:50 AM Invited
Communicating Science to Policy Makers: Marlit Hayslett[1]; [1]Director, Office of Policy Analysis and Research

10:10 AM Invited
Tools and Techniques for Being an Effective Communicator: Gina Schatteman[1]; [1]University of Iowa

10:30 AM Break

10:45 AM Panel Discussion
"The Congress shall promote the progress of science..." US Constitution; Article 1, Section 8

Each speaker will participate in a strategic discussion of how members of the materials community can effectively interact with federal, state and local legislatures to influence public policy for the betterment of society.

11:45 AM Concluding Comments

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: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Long Qing Chen, Pennsylvania State University; Sung Kang, IBM Corporation; Mark Palmer, Kettering University

Monday AM
February 28, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM
Charged Point Defect Configurations, Domain Stabilization Effects, and Ferroelectric Aging: *Tianle Cheng*[1]; Yu Wang[1]; [1]Michigan Technological University

8:50 AM
Correlated Nucleation and Self-Accommodating Kinetic Pathway of Ferroelectric Phase Transformation: *Jie Zhou*[1]; Tian-Le Cheng[1]; Yu Wang[1]; [1]Michigan Technological University

9:10 AM
Bipolar Resistive Switching Behavior in Ti/MnO2/Pt Structure for Nonvolatile Memory Devices: Min Kyu Yang[1]; Sun Young Choi[1]; *Jeon Kook Lee*[1]; [1]Korea Institute of Science and Technology

9:30 AM
Preparation and Characterization of Oxide Thin Films for the Resistance Random Access Memory (RRAM) Application: *W. Z. Chang*[1]; J. Chu[1]; S. F. Wang[2]; [1]National Taiwan University of Science and Technology; [2]National Taipei University of Technology

9:50 AM
Investigation of Electronic Properties for Nano-Titania/Metal-Ion-Doped Titania Semiconductor Prepared by Sol-Gel Methods: *Leo Chau-Kuang Liau*[1]; [1]Yuan Ze University

10:10 AM Break

10:30 AM
Effects of Structural Heterogeneities on Magnetization Processes in FePt Crystals: Yan Yang[1]; *Jianyang Li*[1]; Yongmei Jin[1]; [1]Michigan Technological University

10:50 AM
Phase Formation, Microstructure and Magnetic Properties of Rapidly Solidified SmCo Alloys Modified with Hf and C: *Shampa Aich*[1]; Jeffrey Shield[2]; [1]Indian Institute of Technology; [2]University of Nebraska-Lincoln

11:10 AM
Structure and Magnetic Properties Characterization of Electro-Deposited Co37Fe63 Containg Oxygen for Magnetic Recording Applications: *Shereen Elhalawaty*[1]; Ray Carpenter[1]; Jinnie George[2]; Stanko Brankovic[2]; [1]Arizona State University; [2]University of Houston

11:30 AM
High Permeability Co-Hf-Ta Thin Films: *Shu-Wen Huang*[1]; Yuan-Tai Lai[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

11:50 AM
Tungsten Doping Effect on Thermoelectric Properties of Heusler Fe_2VAl Alloy: *Haruka Morishita*[1]; Masashi Mikami[1]; Kimihiro Ozaki[1]; Keizo Kobayashi[1]; [1]National Institute of Advanced Industrial Science and Technology

12:10 PM
The Introduction of Nano-Scale Inclusions in to Bulk MgB2 via Infiltration and Growth Process: *Hari babu Nadendla*[1]; Anthony Dennis[2]; Yunhua Shi[2]; David Cardwell[2]; [1]Brunel University; [2]University of Cambridge

General Abstracts: Light Metals Division: Primary Production and General Issues

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee, TMS: Energy Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Monday AM
February 28, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: Eric Nyberg, Pacific Northwest National Laboratory

8:30 AM
A Model for the Collapse of the World Trade Center: *Christian Simensen*[1]; [1]SINTEF

9:00 AM
Analysis on the Market Developing Conditions of Prebaked Carbon Anodes for the Aluminium Industries: Guanghui Lang[1]; Chunyu Fu[1]; *Ronald Logan*[1]; Yan Li[1]; [1]Sunstone

9:20 AM
Qatalum – Organizational Challenges in Starting up a Modern Smelter: Roald Holten[1]; Lene Solli[1]; *Jan Arve Haugan*[2]; [1]Norsk Hydro; [2]Qatalum

9:40 AM
Building Qatalum – A Large, Modern Smelter: *Tom Rotjer*[1]; Erik Smith[1]; Anton Husøy[1]; [1]Norsk Hydro

10:00 AM
Removal of Fluoride from Waste Water of Aluminium Smelter by Aluminium Ion Loaded Ion Exchange Resin Method: *Balakrushna Padhi*[1]; Arun Kumar Sharma[1]; [1]National Aluminum Company Limited

10:20 AM Break

10:40 AM
Theortical Study of Light Weight Materials on Replacement of Traditional Materials: *Pradeep Raja*[1]; [1]Government College of Technology

11:00 AM
Corrosion Behavior of Cermet Anodes in Na_3AlF_6-K_3AlF_6-based Baths for Low-Temperature Aluminum Electrolysis Cells: *Guihua Wang*[1]; Xiaofei Sun[1]; Wenshan Wang[1]; Deren Wang[1]; Yedong He[1]; [1]University of Science and Technology Beijing

11:20 AM
Quantifying Casting Processing Variability Due to Ingot Source: Primary vs. Secondary: *Darius Singh*[1]; Ian Paine[2]; [1]AUT University; [2]Glucina Alloys Ltd

11:40 AM
Grain Refiner Characteristics of a Novel Chemical Grain Refiner for Al Alloys: *Hari babu Nadendla*[1]; M Nowak[1]; [1]Brunel University

12:00 PM
Modern Trends and Methods for Debottlenecking Primary Aluminum Smelters: *Joe Petrolito*[1]; [1]Hatch

12:20 PM
Preparation of Al-Mg Alloys from MgO in KCl-MgF2-LiF Electrolyte by Molten Salt Electrolysis Method: Fengli Yang[1]; *Sh Yang*[1]; Xianwei Hu[2]; Zhaowei Wang[2]; Zhongning Shi[2]; Bingliang Gao[2]; [1]Jiangxi University of Science and Technology; [2]School of Materials and Metallurgy117#, Northeastern University

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Thermodynamics and Diffusion

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Monday AM
February 28, 2011
Room: 31A
Location: San Diego Conv. Ctr

Session Chairs: Gary Purdy, McMaster University; Staffan Hertzman, Outokumpu Stainless Research Foundation

8:30 AM Introductory Comments

8:40 AM Keynote
WILLIAM HUME-ROTHERY AWARD LECTURE: Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: *John Agren*[1]; [1]Royal Institute of Technology

9:20 AM Invited
Application of Thermodynamic Equilibria and Kinetic Calculations to Phase Transformations in High Performance Stainless Steels: *Staffan Hertzman*[1]; [1]Outokumpu Stainless Research Foundation

9:50 AM Invited
The Implications of Thermodynamic Models on Diffusion Simulations: *Ursula Kattner*[1]; Carelyn Campbell[1]; [1]National Institute of Standards and Technology

10:20 AM Break

10:40 AM Invited
Modeling of Diffusion-Controlled Phase Transformations in Steel: *Joakim Odqvist*[1]; [1]Royal Institute of Technology (KTH)

11:10 AM Invited
A Computationally Based Approach to Homogenizing Advanced Alloys: *Paul Jablonski*[1]; Christopher Cowen[1]; [1]US Department of Energy

11:40 AM Invited
Kinetic Transitions in the Growth of Ferrite during the Decarburization of Alloyed Austenite: *Gary Purdy*[1]; Hatem Zurob[1]; Damon Panahi[1]; Christopher Hutchinson[2]; Yves Brechet[3]; [1]McMaster University; [2]Monash University; [3]Instutute National Polytechnique de Grenoble

Hydrogen Storage in Materials: Theory and Experiment: Session I

Sponsored by: The Minerals, Metals and Materials Society, ASM Materials Science Critical Technology Sector, TMS: Energy Conversion and Storage Committee
Program Organizer: Louis Hector Jr, GM R&D Center

Monday AM
February 28, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chair: Eric Majzoub, University of Missouri - St. Louis

8:30 AM
A Consistent Thermodynamic Description of Hydrogen Diffusion and Defect Interaction in a Material Containing Dislocations, Voids and Micro-cracks: *Kiran Solanki*[1]; Douglas Bammann[1]; [1]Mississippi State University

8:50 AM Invited
Formation of Hydrogen Cottrell Atmosphere in Palladium: Theory and Measurement from Inelastic Neutron Scattering: *Dallas Trinkle*[1]; Hyunsu Ju[1]; Brent Heuser[1]; [1]University of Illinois, Urbana-Champaign

9:30 AM
Effects of Gaseous Impurities in Hydrogen on the Long Term Cycling Stability and Storage Capacity of Li3N: *Joshua Lamb*[1]; Dhanesh Chandra[1]; Wen-Ming Chien[1]; Delphine Phanon[2]; Nicolas Penin[2]; Radovan Cerný[2]; Klaus Yvon[2]; [1]University of Nevada, Reno; [2]University of Geneva

9:50 AM
Analysis of Deformation Twins and the Partially Dehydrogenated Microstructure in Nanocrystalline Magnesium Hydride (MgH2): *David Mitlin*[1]; Mohsen Danaie[1]; Shu Xia Tao[2]; Peter Kalisvaart[1]; [1]University of Alberta and NINT NRC; [2]Eindhoven University of Technology

10:10 AM Break

10:30 AM
Mechanical Properties and Hydrogen Sorption in Mg/Nb Multilayer Films: Byoungsoo Ham[1]; *Xinghang Zhang*[1]; [1]Texas A&M University

10:50 AM
Mg-Based Nanocomposites for Room Temperature Hydrogen Storage: *Mieczyslaw Jurczyk*[1]; Marek Nowak[1]; Leslaw Smardz[2]; Andrzej Szajek[2]; [1]Poznan University of Technology; [2]Polish Academy of Sciences

11:10 AM
Desorption Kinetics of the Alkali Hexahydride Alanates (M2M'AlH6) at Constant Pressure Thermodynamic Driving Forces: *Hongwei Yang*[1]; Andrew Goudy[1]; [1]Delaware State University

11:30 AM
Ammonia Borane at High Pressures: *Jiuhua Chen*[1]; Helene Couvy[1]; Vadym Drozd[1]; Haozhe Liu[2]; Yongzhou Sun[1]; Shah Najiba[1]; [1]Florida International University; [2]Harbin Institute of Technology

11:50 AM
Hydrogen Interactions with Li_3N and Formation of Intermediate Complex Hydride Phases: *Joshua Lamb*[1]; Anjali Talekar[1]; Wen-Ming Chien[1]; Dhanesh Chandra[1]; Delphine Phanon[2]; Nicolas Penin[2]; Radovan Cerný[2]; Klaus Yvon[2]; [1]University of Nevada, Reno; [2]University of Geneva

12:10 PM
Aluminoboranes and Boron Compounds for Hydrogen Storage: *Ji-Cheng Zhao*[1]; Xuenian Chen[1]; Zhenguo Huang[1]; Teshome Yisgedu[1]; Hima Lingman[1]; Beau Billet[1]; Sheldon Shore[1]; [1]The Ohio State University

ICME: Overcoming Barriers and Streamlining the Transition of Advanced Technologies to Engineering Practice -- The 12th MPMD Global Innovations Symposium: Plenary Session and the Integration of ICME

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division
Program Organizers: Paul Mason, Thermo-Calc Software Inc; Mei Li, Ford Motor Company; James Warren, National Institute of Standards and Technology; Jeff Simmons, AFRL

Monday AM
February 28, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chair: Paul Mason, Thermo-Calc Software

8:30 AM Plenary
Integrated Computational Materials Engineering: Current Status and Future Challenges and Opportunities: *John Allison*[1]; [1]Department of Materials Science and Engineering, The University of Michigan

9:05 AM Plenary
Recent Progress of Multi-Scale Modeling of Solidification Process of Shape Casting: *Baicheng Liu*[1]; Tao Jing[1]; Qinyan Xu[1]; Zhiqiang Han[1]; [1]Tsinghua University

9:40 AM Plenary
Microstructure-Based Descriptions of the Deformation of Metals: *Peter Gumbsch*[1]; Daniel Weygand[2]; Stefan Sandfeld[2]; Dirk Helm[1]; Alexander Butz[1]; [1]Fraunhofer IWM; [2]izbs, KIT

10:15 AM Break

10:30 AM Invited
The Development of the ICME Supply-Chain: Route to ICME Implementation and Sustainment: *David Furrer*[1]; [1]Rolls-Royce

10:55 AM Invited
On the Competitive and Pre-Competitive Aspects of ICME in New Technology Insertion - A Material Supplier Perspective: *Robert Bucci*[1]; Mark James[1]; Markus Heinimann[1]; Michael Kulak[1]; [1]Alcoa Technical Center

11:20 AM Invited
Air Force Adoption of ICME for Materials and Manufacturing R&D: *Katherine Stevens*[1]; Chuck Ward[2]; [1]Air Force Research Laboratory; [2]US Air Force

11:45 AM
Cyberinfrastructure Support for Integrated Computational Material Engineering: *Tomasz Haupt*[1]; [1]Mississippi State University

12:05 PM Invited
Building Knowledge Systems for the Design and Processing of Materials with Improved Performance Characteristics: *Surya Kalidindi*[1]; Stephen Niezgoda[1]; Tony Fast[1]; Giacomo Landi[1]; [1]Drexel University

Intelligent Materials and Structural Health Monitoring: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, ASM Materials Science Critical Technology Sector, TMS/ASM: Composite Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Corrosion and Environmental Effects Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Subu Nayak, ScienceTomorrow

Monday AM
February 28, 2011
Room: 33C
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM
Robustness of Ultrasonic Nonlinearity Measurements: *Aurora Zinck*[1]; Krishnan Balasubramanian[2]; Sridhar Krishnaswamy[1]; [1]Northwestern University; [2]IIT Madras

8:55 AM
Impact Monitoring for Composite and Ceramic: *Jyoti Agrawal*[1]; Subu Nayak[1]; [1]ScienceTomorrow

9:20 AM
Nanocomposite Sensing Skins for Damage Identification and Localization: Kenneth Loh[1]; *Bryan Loyola*[1]; [1]University of California, Davis

9:45 AM
Recent Progress on Processing of Amorphous Coatings: *Sandip Harimkar*[1]; [1]Oklahoma State University

10:10 AM
Thermography Detection of Both Crystalline and Amorphous Materials during Cyclic Loading: *P. Liaw*[1]; Gongyao Wang[1]; B. Yang[2]; L. Jiang[3]; Y. Yokoyama[4]; A. Inoue[4]; [1]University of Tennessee; [2]Shell Company; [3]General Electric Global Research Center; [4]Institute for Materials Research

10:35 AM
Differential Signal vs. Differential Sensor in Structural Health Monitoring: *Subu Nayak*[1]; [1]ScienceTomorrow

Magnesium Technology 2011: Opening Session

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Monday AM
February 28, 2011
Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Wim Sillekens, TNO Science and Industry; Suveen Mathaudhu, US Army Research Office

8:30 AM Opening of the Symposium and Presentation of the Best Paper Awards 2010

8:50 AM Keynote
Magnesium in North America: A Changing Landscape: *Susan Slade*[1]; [1]US Magnesium LLC

9:20 AM Keynote
Global Magnesium Research: State-of-the-Art and What's Next?: *Karl Kainer*[1]; [1]GKSS Research Centre Geesthacht

9:50 AM Keynote
Environmental Challenges for the Magnesium Industry: *Robert E. Brown*[1]; [1]Magnesium Assistance Group Inc.

10:20 AM Break

10:40 AM Keynote
Predicting Mg Strength from First-Principles: Solid-Solution Strengthening, Softening, and Cross-Slip: *Dallas Trinkle*[1]; Joseph Yasi[1]; Louis Hector[2]; [1]University of Illinois, Urbana-Champaign; [2]General Motors R&D Center

11:10 AM Keynote
Biodegradable Magnesium Implants - How do They Corrode In-Vivo?: *Frank Witte*[1]; Norbert Hort[2]; Frank Feyerabend[2]; [1]Hannover Medical School; [2]GKSS Research Centre

11:40 AM Keynote
The Next Generation of Magnesium Based Material to Sustain the Intergovernmental Panel on Climate Change Policy: *Fabrizio D'Errico*[1]; Gerardo Garces[2]; Stefano Fare[1]; [1]Politecnico di Milano; [2]Consejo Superior de Investigaciones Científicas (CSIC)

12:10 PM Keynote
JIM INTERNATIONAL SCHOLAR AWARD WINNER: Fracture Mechanism and Toughness in Fine- and Coarse-Grained Magnesium Alloys: *Hidetoshi Somekawa*[1]; Alok Singh[1]; Toshiji Mukai[1]; [1]National Institute for Materials Science

Massively Parallel Simulations of Materials Response: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Diana Farkas, Virginia Tech; Susan Sinnott, University of Florida

Monday AM
February 28, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:40 AM Keynote
Mesoscale Molecular Dynamics with LAMMPS: *Steve Plimpton*[1]; [1]Sandia National Labs

9:20 AM Invited
Implementation of Multi-level Parallelism in LAMMPS for Improved Scaling on PetaFLOP Supercomputers: *Axel Kohlmeyer*[1]; [1]Temple University

9:45 AM Invited
Atoms-to-Continuum (AtC): A User Package for LAMMPS: *Jonathan Zimmerman*[1]; Reese Jones[1]; Jeremy Templeton[1]; Gregory Wagner[1]; [1]Sandia National Laboratories

10:10 AM Break

10:25 AM Invited
Large-scale Excited Electron Molecular Mechanics/Dynamics: *Andres Jaramillo-Botero*[1]; Julius Su[1]; William Goddard[1]; [1]Caltech

10:50 AM Invited
Interface Free Energy of CuNb Multilayers Using Massively Parallel Metropolis Monte Carlo Simulations: *Alfredo Caro*[1]; Enrique Martinez[1]; [1]LANL

11:15 AM Invited
Simulation of Nanofoams under Irradiation: *Eduardo Bringa*[1]; J. Rodriguez-Nieva[2]; J. Monk[3]; D. Farkas[3]; A. Caro[4]; R. Johnson[5]; [1]CONICET-Universidad Nacional de Cuyo; [2]Instituto Balseiro; [3]Virginia Polytechnic Institute and State University; [4]Los Alamos National Laboratory; [5]University of Virginia

11:40 AM
A Two Temperature Model of Radiation Damage in α-Quartz: *Carolyn Phillips*[1]; Rudolph Magyar[2]; Paul Crozier[2]; [1]University of Michigan; [2]Sandia National Laboratories

12:00 PM
Parallel Molecular Dynamics for Radiation Damage Modeling in Structural Materials: *Christophe Domain*[1]; Charlotte Becquart[2]; Ghiath Monnet[1]; Dmitry Terentyev[3]; [1]EDF R&D; [2]UMET, UMR 8207; [3]SCK-CEN

Materials and Society: Linking Science and Technology for Global Energy Solutions: Plenary Session

Sponsored by: The Minerals, Metals and Materials Society, TMS: Materials and Society Committee
Program Organizer: Christina Meskers, Umicore

Monday AM
February 28, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chairs: Iver Anderson, Ames Laboratory; James Foley, Los Alamos National Laboratory

8:30 AM Plenary
A Plan for a Sustainable Future Using Wind, Water, and Sun: *Mark Z. Jacobson*[1]; [1]Stanford University

8:55 AM Plenary
Metallurgical Considerations in the Photovoltaic Module: *Funsho Ojebuoboh*[1]; [1]First Solar, Inc.

9:20 AM Plenary
Electrical Energy Storage for Renewable Integration and Grid Applications: Status, Challenges and Opportunities: *Zhenguo "Gary" Yang*[1]; [1]Pacific Northwest National Laboratory

9:45 AM Plenary
The Rare Earth Contributions to Global Energy Solutions: *Karl Gschneidner*[1]; [1]Iowa State University

10:10 AM Break

10:25 AM Plenary
Materials R&D to Enable a Nuclear Energy Renaissance: *Steven Zinkle*[1]; [1]Nuclear Science and Engineering Directorate Oak Ridge National Laboratory

10:50 AM Plenary
Energy Efficiency Studies: *Ken Somers*[1]; [1]McKinsey

11:15 AM Plenary
Materials Challenges for Solid Oxide Fuel Cells: Application of Metallic Materials and Analysis of Oxide Ionic Diffusion at the Component Interfaces: *Teruhisa Horita*[1]; [1]AIST

11:40 AM Plenary
The Pivotal Role of Materials Science and Engineering for an Energy Efficient and Low Carbon Economy: *Diran Apelian*[1]; [1]Worcester Polytechnic Institute

Materials for the Nuclear Renaissance II: Materials and Welding

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Raul Rebak, GE Global Research; Brian Cockeram, Bechtel-Bettis; Peter Chou, Electric Power Research Institute; Micah Hackett, TerraPower, LLC

Monday AM
February 28, 2011
Room: 4
Location: San Diego Conv. Ctr

Session Chair: Raul Rebak, GE Global Research

8:30 AM Introductory Comments

8:35 AM Invited
Nickel Alloys Used in Nuclear Power Systems: Julie Tucker[1]; *George Young*[1]; Micah Hackett[1]; [1]Knolls Atomic Power Laboratory

9:15 AM
Effect of Residual Stresses on SCC Crack Growth Specimens Fabricated from Weld Metal: *Matthew Kerr*[1]; Mike Hill[2]; Alexandreanu Bogdan[3]; Darrell Dunn[1]; [1]US Nuclear Regulatory Commission; [2]Hill Engineering, LLC; [3]Argonne National Laboritory

9:35 AM
Enhancement of Intergranular Corrosion Resistance of TIG Welded and Laser-surface Melted SUS 304 for Nuclear Power Plants: *Joung Soo Kim*[1]; Chin-Man Chung[1]; Sung-Hoon Baik[1]; Sang-Bae Lee[2]; [1]Korea Atomic Energy Research Institute; [2]Korea Institute of Science and Technology

9:55 AM
Mechanical Properties and Microstructural Evolution of ODS Alloys Joined by Solid State Welding: *Evan Young*[1]; James Carillo[1]; Brian Jaques[1]; Jatu Burns[1]; Larry Zirker[2]; Indrajit Charit[3]; Darryl Butt[1]; Megan Frary[1]; [1]Boise State University; [2]Idaho National Laboratory; [3]University of Idaho

10:15 AM Break

10:25 AM
Laser Welding for Nuclear Power Systems: *Julie Tucker*[1]; Terrance Nolan[1]; George Young[1]; [1]Knolls Atomic Power Laboratory

10:45 AM
Pressure Resistance Welding for Advanced Reactor Applications: *Nathan Jerred*[1]; Larry Zirker[2]; Indrajit Charit[1]; Jim Cole[2]; Brian Jaques[3]; Troy Bradshaw[4]; James Carrillo[3]; Evan Young[3]; Megan Frary[3]; Darryl Butt[3]; Mitch Meyer[2]; K. Murty[4]; [1]University of Idaho; [2]Idaho National Laboratory; [3]Boise State University; [4]North Carolina State University

11:05 AM
Surface Modification of 316L Stainless Steel by a Low Temperature Severe Plastic Deformation Linear Raking Process: *Giovanni Facco*[1]; Shashank Shekhar[1]; Andreas Kulovits[1]; Ravi Shankar[1]; Jorg Wiezorek[1]; [1]University of Pittsburgh

11:25 AM
Serrations in Austenitic Fe-Cr-Ni Alloys: *Young Suk Kim*[1]; Sung Soo Kim[1]; Dae Whan Kim[1]; [1]Korea Atomic Energy Research Institute

11:45 AM
Precipitation and Spinodal Decomposition in a Lean Grade of Duplex Stainless Steel: *Julie Tucker*[1]; George Young[1]; Daniel Eno[1]; [1]Knolls Atomic Power Laboratory

12:05 PM
High Temperature Fracture Toughness of Thermally Aged Inconel 617: Mikhail A. Sokolov[1]; *Randy Nanstad*[1]; [1]Oak Ridge National Laboratory

Materials Processing Fundamentals: Solidification, Deformation, and Heat Treatment

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

Monday AM
February 28, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chair: Prince Anyalebechi, Grand Valley State University

8:30 AM
The Influence of Solidification Rates on Hot Workability and Mechanical Properties of AM60 Magnesium Alloy: *Goran Kugler*[1]; Milan Tercelj[1]; [1]University of Ljubljana, NTF-OMM

8:45 AM
Interplay of Flow and Solidification in a Horizontal Centrifugal Casting: *Autumn Fjeld*[1]; [1]University of Leoben

9:00 AM
On the Homogenization of Cobalt Modified 17-4 PH Stainless Steel: *Arpana Murthy*[1]; Simon Lekakh[1]; Von Richards[1]; David Van Aken[1]; [1]Missouri S&T

9:15 AM
Investigation of the Effects of Solidification Rate and Melt Hydrogen Concentration on Porosity Formation in Aluminum Alloy 2024: *Prince Anyalebechi*[1]; [1]Grand Valley State University

9:30 AM
Characterization of the Microstructure of Commercial-Size Ingots of Aluminum Alloy 3004: *Prince Anyalebechi*[1]; [1]Grand Valley State University

9:45 AM
Expansion and Collapse of Liquid Aluminum Foams: *Zhuokun Cao*[1]; Chuan Li[1]; Hongjie Luo[1]; Guangchun Yao[1]; [1]Northeastern University, China

10:00 AM Break

10:15 AM
Review of Classical Design Methods as Applied to Aluminium Billet Heating with Induction Coils: *Mark Kennedy*[1]; Shahid Akhtar[1]; Jon Bakken[1]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology

10:30 AM
Interactions of Non-metallic Inclusions with Steel and Slag: Thermodynamic Modeling, Experiments and Metallographic Analyses: *Susanne Michelic*[1]; Mario Hartl[1]; Christian Bernhard[1]; [1]University of Leoben

10:45 AM
Liquid Metal Flows under Non-Homogeneous Magnetic Field: Lorentz Force Flowmeters in Metallurgy: *Jurijs Kolesnikov*[1]; Christian Karcher[1]; André Thess[1]; [1]Ilmenau University of Technology

11:00 AM
Study of Bake Hardening Effect on Laser Welded Hot Rolled Bainitic Steel: *Mehdi Asadi*[1]; Heinz Palkowski[1]; Nicole Schlosser[1]; [1]TU Clausthal

11:15 AM
Research on the Combination of Microwave and Heat Pump Drying of Silica Sand: Hao Niu[1]; Yu Li[1]; Ying Lei[1]; Libo Zhang[1]; *Jinhui Peng*[1]; Huilong Luo[1]; Shenghui Guo[1]; [1]Key Laboratory of Unconventional Metallurgy, Ministry of Education

11:30 AM
Surface Modification by Burnishing and Shot Peening Processes: *Syed Hasan*[1]; M.A. Sadiq[1]; G. Rangajanardhan[2]; V Murti[3]; [1]Deccan College of Engg & Tech; [2]J N T U Vijayanagaram; [3]S V I T S

Microstructural Processes in Irradiated Materials: Defects and Defect Processes

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

Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Monday AM
February 28, 2011

Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Gary Was, University of Michigan; Roger Stoller, Oak Ridge National Laboratory

8:30 AM Introductory Comments

8:40 AM Invited
Modeling Point Defect Cluster Behavior and Their Impact on RPV Embrittlement: *Roger Stoller*[1]; [1]Oak Ridge National Laboratory

9:20 AM
Evolution Kinetics and Sink Strength of Interstitial Loops in Irradiated Materials: A Phase-field Model: *Shenyang Hu*[1]; Chuck Henager Jr.[1]; Yulan Li[1]; Fei Gao[1]; Xin Sun[1]; Mohammad Khaleel[1]; [1]Pacific Northwest National Laboratory

9:40 AM
Void Ordering and Swelling Saturation as a "Chicken and Egg Problem": *Stanislav Golubov*[1]; Alexander Barashev[2]; Roger Stoller[1]; [1]ORNL; [2]The University of Liverpool

10:00 AM
Non-Saturable Sinks at Grain Boundaries in Nanostructured Mo-Molecular Dynamics Simulations: *Yongfeng Zhang*[1]; Hanchen Huang[2]; Paul Millett[1]; Michael Tonks[1]; Dieter Wolf[1]; Simon Phillpot[3]; [1]Idaho National Lab; [2]University of Connecticut; [3]University of Florida

10:20 AM Break

10:40 AM
Modelling of Displacement Cascades in Thin Foils of Iron: *Andy Calder*[1]; Yuri Osetsky[2]; David Bacon[1]; Alexander Barashev[1]; [1]University of Liverpool; [2]ORNL

11:00 AM
Stoichiometry Dependence of the Evolution of Irradiated-Induced Defect Clusters in $Ce_xLa_{1-x}O_2$: *Wei-Ying Chen*[1]; Di Yun[2]; Aaron Oaks[1]; Bei Ye[1]; Mark Kirk[2]; James Stubbins[1]; Yinbin Miao[1]; [1]U of Illinois at Champaign-Urbana; [2]Argonne National Lab

11:20 AM
Relevance of fcc-bcc Interface Structure to Defect Properties at Interfaces in Irradiation Environment: *Xiang-Yang Liu*[1]; Richard Hoagland[1]; Michael Demkowicz[2]; Xiang-Ming Bai[1]; Blas Uberuaga[1]; Michael Nastasi[1]; Amit Misra[1]; John Hirth[1]; [1]Los Alamos National Lab; [2]Massachusetts Institute of Technology

11:40 AM
Towards a Unified Framework for Interatomic Potential Development: Application to the Fe-He System: *Mark Tschopp*[1]; Kiran Solanki[1]; Mike Baskes[2]; Mark Horstemeyer[1]; Fei Gao[3]; Xin Sun[3]; Moe Khaleel[3]; [1]Mississippi State University; [2]LANL; [3]PNNL

12:00 PM
A New Directional Model for the Electronic Frictional Forces in Molecular Dynamics Simulations of Radiation Damage in Metals: *Christopher Race*[1]; Daniel Mason[2]; Adrian Sutton[2]; [1]Max-Plank-Institute for Iron Research; [2]Department of Physics, Imperial College London

Neutron and X-Ray Studies of Advanced Materials IV: Interfaces, Surfaces, Nanostructures

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

Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Monday AM
February 28, 2011

Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Dean Haeffner , Argonne National Laboratory; Rozaliya Barabash, Oak Ridge National Laboratory

8:30 AM Keynote
Study of Advanced Materials and Devices Using High-Resolution Hard X-Ray Microscopy: *Jörg Maser*[1]; Martin Holt[1]; Robert Winarski[1]; Volker Rose[1]; Peter Fuesz[1]; Brian Stephenson[1]; [1]Argonne National Laboratory

8:55 AM
Depth-Dependent Strain Gradients and Interface Strength of Submicron Single Crystalline Mo in Brittle or Ductile Environment from 3D Micro-Laue Diffraction: *Rozaliya Barabash*[1]; Hongbin Bei[1]; Yanfei Gao[1]; Oleg Barabash[1]; Gene Ice[1]; [1]Oak Ridge National Laboratory

9:10 AM Invited
Strain Screening by Oxygen Vacancies in $SrTiO_3$: *Joel Brock*[1]; [1]Cornell University

9:30 AM Invited
Structure and Thermal Evolution of a Metallic Glass That Grows from the Melt through a First-Order Transition: *Gabrielle Long*[1]; Karena Chapman[1]; Peter Chupas[1]; Leonid Bendersky[2]; Lyle Levine[2]; Judith Stalick[2]; Frederic Mompiou[3]; John Cahn[4]; [1]Argonne National Laboratory; [2]NIST; [3]CNRS; [4]University of Washington

9:50 AM Invited
Nanosescond Piezoresponse Measurements on Thin Epitaxial Ferroelectric Films at the Hard X-Ray Nanoprobe Beamline: Matthew Highland[1]; Martin Holt[1]; Robert Winarksi[1]; John Pearson[1]; G. Brian Stephenson[1]; Jorg Maser[1]; Stephen Streiffer[1]; Ralu Divan[1]; *Carol Thompson*[2]; [1]Argonne National Laboratory; [2]Northern Illinois University

10:10 AM Invited
Kinetic Studies of Microstructure Evolution in Nanostructured Materials: *Matteo Leoni*[1]; Paolo Scardi[1]; Mirco D'Incau[1]; [1]University of Trento

10:30 AM Keynote
Advances in Neutron and X-ray Micro/Nano Diffraction: *Gene Ice*[1]; [1]Oak Ridge National Laboratory

10:55 AM Break

11:05 AM Invited
Adhesion, Cohesion and Plasticity of Thin Metal Films: *Ralph Spolenak*[1]; [1]ETH Zurich

11:25 AM Invited
X-Ray Diffraction Studies of Structural Transitions in Some Pnictide Superconductors: *Zahirul Islam*[1]; Jiun-Haw Chu[2]; Ian Fisher[2]; [1]Argonne National Laboratory; [2]Stanford University

11:45 AM Invited
X-Ray Diffraction in Short-Period Superlattices: *Emil Zolotoyabko*[1]; [1]Technion

12:05 PM Invited
Wafer Curvature and Stress Measured in-situ for Sputtered WSi2/Si Multilayer Thin Films on Silicon Wafers: K. MacArthur[1]; B. Shi[1]; R. Conley[1]; *Albert Macrander*[1]; A. Genis[2]; L. Zhou[3]; Y-P, Wang[3]; H. Zhou[3]; M. Li[3]; R. Headrick[3]; [1]Argonne National Laboratory; [2]Northern Illinois University; [3]University of Vermont

12:25 PM Invited
Understanding Structural Effects upon Macroscopic Phenomena in Strained Ordered Oxide Films: *Philip Ryan*[1]; Jong Woo Kim[1]; Steve May[2]; Evguenia Karapetrova[1]; [1]Argonne National Laboratory; [2]Drexel University

12:45 PM Invited
Correlation Phenomena in Wurtzite-type GaN-based and ZnO Epilayers: *Alois Krost*[1]; Juergen Blaesing[1]; [1]Otto-von-Guericke University Magdeburg

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Next Generation Packaging

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Monday AM
February 28, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor

8:30 AM Introductory Comments

8:35 AM Keynote
Creation and Manipulation of Aligned Nanowires for Packaging and Circuit Integration: *Sungho Jin*[1]; [1]University of California San Diego

9:15 AM Keynote
All Copper Flip-Chip Interconnect: *Paul Kohl*[1]; Hyo-Chol Koo[1]; Ping Nicole An[1]; Rajarshi Saha[1]; [1]Georgia Institute of Technology

9:55 AM Invited
Plasticity and Reliability: From Unexpected Plasticity-Induced Damages in Advanced Cu Interconnects to Novel Reliability Phenomena in 3-D Interconnect Schemes Using Through-Silicon Vias (TSV) Technology: *Arief Budiman*[1]; Rao Morusupalli[2]; Tae-Kyu Lee[2]; Yu-Lin Shen[3]; Sung-Hwan Hwang[4]; Byoung-Joon Kim[4]; Ho-Young Son[5]; Min-Suk Suh[5]; Qwan-Ho Chung[5]; Kwang-Yoo Byun[5]; Martin Kunz[6]; Nobumichi Tamura[6]; Young-Chang Joo[4]; [1]Los Alamos National Laboratory; [2]Cisco Systems, Inc.; [3]University of New Mexico; [4]Seoul National University; [5]Hynix Semiconductor Inc.; [6]Lawrence Berkeley National Laboratory

10:20 AM Invited
Residual Stress of Si near Through-Silicon-Via Structure for 3-Dimensional Packaging: *Young-Chang Joo*[1]; Arief Budiman[2]; Sung-Hwan Hwang[1]; Byoung-Joon Kim[1]; Ho-Young Son[3]; Min-Suk Suh[3]; Kwang-Yoo Byun[3]; Nobumichi Tamura[4]; Martin Kunz[4]; [1]Seoul National University; [2]Los Alamos National Laboratory; [3]Hynix Semiconductor Inc.; [4]Lawrence Berkeley National Laboratory

10:45 AM Break

10:55 AM Invited
The Effect of Filler-Network Heterogeneity on the Thermal Resistance of Polymeric Thermal Bondlines: *David Rae*[1]; Peter Borgesen[2]; Eric Cotts[2]; [1]Universal Instruments; [2]Binghamton University

11:20 AM Invited
Recent Development of Lead-Free Nano-Solders for Nanowire and Nanoelectronics Assembly: *Zhiyong Gu*[1]; [1]University of Massachusetts Lowell

11:45 AM
Deformation and Interfacial Effects during Thermal Cycling of Cu Filled Through-Silicon Vias (TSV): *Praveen Kumar*[1]; Indranath Dutta[1]; Muhannad Bakir[2]; [1]Washington State University; [2]Georgia Institute of Technology

12:05 PM
Adhesive Selection and Bonding Parameter Optimization for Hybrid Bonding in 3D Integration: *Kuan-Neng Chen*[1]; Chuan-An Cheng[1]; Wen-Chun Huang[1]; Cheng-Ta Ko[1]; [1]National Chiao Tung University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Characterization of Shape Memory Alloys: Deformation Behavior

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Monday AM
February 28, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Ronald Noebe, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida

8:30 AM Welcome and Introductory Remarks

8:35 AM Plenary
Recent Development of High Temperature Shape Memory Alloys for Actuator Applications: *Shuichi Miyazaki*[1]; Hee Young Kim[1]; [1]University of Tsukuba

9:05 AM Invited
Energetics of Plastic Deformation and Transformation in NiTi: *Huseyin Sehitoglu*[1]; Tawhid Ezaz[1]; [1]University of Illinois at Urbana-Champaign

9:25 AM Invited
Deformation of the U-14at% Nb Shape Memory Alloy: Experiments and Modeling: *Robert Field*[1]; Carlos Tomé[1]; Rodney McCabe[1]; Amy Clarke[1]; Donald Brown[1]; Catherine Tupper[1]; [1]Los Alamos National Laboratory

9:45 AM Invited
Observations on the Deformation Characteristics of NiTi: *Santo Padula*[1]; [1]NASA Glenn Research Center

10:05 AM Break

10:15 AM Invited
Modeling and Experimental Study of Simultaneous Creep, Plasticity and Transformation of High Temperature Shape Memory Alloys during Cyclic Actuation: Yves Chemisky[1]; Parikshith Kumar[2]; George Chatzigeorgiou[1]; Ibrahim Karaman[3]; *Dimitris C. Lagoudas*[1]; Glen Bigelow[4]; Ron Noebe[4]; [1]Texas A & M University, Aerospace Engineering; [2]Texas A & M University; [3]Texas A & M University, Mechanical Engineering; [4]NASA Glenn Research Center

10:35 AM
Low Temperature Creep Behavior of Extruded Near-Stochiometric NiTi Alloy: *S. Raj*[1]; Ronald Noebe[1]; [1]NASA Glenn Research Center

10:50 AM
In Situ Observations of Deformation and Fracture in Single Crystal NiTi: *Adam Creuziger*[1]; Laura Bartol[2]; Ken Gall[3]; Wendy Crone[2]; [1]National Institute of Standards and Technology; [2]University of Wisconsin-Madison; [3]Georgia Insititute of Technology

11:05 AM
NiTiHf High-Temperature Shape-Memory Alloys for near Term Applications: *Glen Bigelow*[1]; Sayed Saghaian[2]; Haluk Karaca[2]; Santo Padula[1]; Anita Garg[3]; Darrell Gaydosh[4]; Ronald Noebe[1]; Yuriy Chumlyakov[5]; [1]NASA Glenn Research Center; [2]University of Kentucky; [3]University of Toledo; [4]Ohio Aerospace Institute; [5]Siberian Physical Technical Institute

11:20 AM
Thermo-Mechanical Behavior of Cu-Al-Ni SMA for High Temperature Actuators: *Jose San Juan*[1]; Iñaki Lopez-Ferreño[1]; Tomasz Breczewski[1]; Isabel Ruiz-Larrea[1]; Angel López-Echarri[1]; María Nó[1]; [1]Universidad del Pais Vasco

11:35 AM
Microstructure Analysis and Thermomechanical Behaviour during Superlastic Cycling in Cu-Al-Ni Single Crystals: *Maria Nó*[1]; A. Ibarra[1]; A. López-Echarri[1]; I. Ruiz-Larrea[1]; D. Caillard[2]; J. San Juan[2]; [1]Universidad del Pais Vasco; [2]CEMES-CNRS

11:50 AM
Superelastic Phenomena and Martensite Destabilization in Ni-Mn-Ga Alloys: *Volodymyr Chernenko*[1]; E. Villa[2]; S. Besseghini[3]; J.M. Barandiaran[4]; V. A. L'vov[5]; [1]Universidad del Pais Vasco UPV/EHU - and - Ikerbasque, Basque Foundation for Science; [2]CNR-IENI, C.Promessi Sposi; [3]CNR-IENI, C. Promessi Sposi; [4]Universidad del País Vasco; [5]Institute of Magnetism

12:05 PM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Emerging Polycrystal Models with Experimental Integration I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Monday AM
February 28, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Ricardo Lebensohn, Los Alamos National Laboratory; Alain Molinari, Universite Paul Verlaine - Metz; Grethe Winther, RISOE National Laboratory

8:30 AM Introductory Comments

8:40 AM Keynote
Modeling of Polycrystal Plasticity: A Personal Overview of Past, Present and Future: *Carlos Tome*[1]; [1]Los Alamos National Laboratory

9:25 AM Invited
First Evaluation of ALAMEL - Predictions of Texture-Induced Plastic Anisotropy: *Paul Van Houtte*[1]; Jurij Sidor[2]; Xie Qingge[1]; Laurent Delannay[3]; Bert Van Bael[1]; Leo Kestens[2]; [1]Katholieke Universiteit Leuven; [2]Ghent University; [3]Université Catholique de Louvain

9:50 AM
Microstructural Influences on the Local and Global Deformation of TiAl Polycrystal Investigated by Experiments and Numerical Multi-Scale Approach Incorporating Crystal Plasticity FE Model: *Mohammad Rizviul Kabir*[1]; Liudmila Chernova[1]; Marion Bartsch[1]; [1]German Aerosapce Center (DLR)

10:10 AM Break

10:20 AM Invited
Elastic Viscoplastic Heterogeneous Materials: From the Inclusion Problem to Homogenization Schemes: *Alain Molinari*[1]; Sébastien Mercier[1]; [1]Université Paul Verlaine-Metz

10:45 AM Invited
On New Intermediate Modeling for the Large Viscoplastic and Elastic-Viscoplastic Deformation Behavior of Polycrystals: The Intermediate Phi-Model: *Said Ahzi*[1]; Siham M'Guil[1]; [1]University of Strasbourg

11:10 AM Invited
Insights into Microstructure Evolution Using Crystal Plasticity Modelling: *Matthew Barnett*[1]; [1]Deakin University

11:35 AM Invited
Effects of Crystallographic Orientation vs. Grain Interaction on Slip Systems: *Grethe Winther*[1]; [1]Risø DTU

12:00 PM
VPSC Modelling in the Development of a Commercial Product: *Dincer Bozkaya*[1]; Peter Jepson[1]; [1]H.C. Starck Inc.

12:20 PM
Modelling of Texture and Microstructure Evolution during Dynamic Recrystallization: *Denis Solas*[1]; Julien Thebault[2]; Julien de Jaeger[2]; Colette Rey[2]; Thierry Baudin[1]; [1]Univ Paris Sud; [2]Ecole Centrale Paris

12:40 PM
A Physically-Based Fatigue Model for Prediction of Crack Initiation from Persistent Slip Bands in Polycrystals: *Huseyin Sehitoglu*[1]; Michael Sangid[1]; [1]University of Illinois

Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites: General and Nano-Composites

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Arkansas State University; Golam Newaz, Wayne State University

Monday AM
February 28, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Zariff Chaudhury, Arkansas State University

8:30 AM
Al/Al-Cu-Fe Metal Matrix Composites: *Guillaume Laplanche*[1]; Joël Bonneville[1]; Anne Joulain[1]; Véronique Brunet-Gauthier[1]; Sylvain Dubois[1]; [1]University of Poitiers

8:50 AM
Copper Matrix Composites Reinforced with a High Fraction of Alumina Particles: *Carmen Krueger*[1]; Andreas Mortensen[1]; [1]EPFL STI IMX LMM

9:10 AM
Low Density Magnesium Matrix Syntactic Foams: *John DeFouw*[1]; Pradeep Rohatgi[1]; [1]University of Wisconsin Milwaukee

9:30 AM
Metal Matrix Composites: History, Status, and Future: *Ajith Cyriac*[1]; Jay Hanan[1]; [1]Oklahoma State University

9:50 AM
Processing, Characterization and Thermal Properties of Diamond-Containing Metal Matrix Composites: *Vikas Sinha*[1]; Sabyasachi Ganguli[1]; Robert Wheeler[1]; Jonathan Spowart[1]; [1]Air Force Research Laboratory

10:10 AM Break

10:30 AM
Use of Cenosphere for Making Functionally Graded Aluminum Cenosphere Syntactic Foam through Liquid Metallurgy Route: *Dehi Mondal*[1]; Satyabrata Das[1]; [1]Advanced Materials and Processes Research Institute

10:50 AM
Micro-Tomography Based Characterization and Geometrical Parameter Evaluation of Advanced Woven Ceramic-Matrix Composites: *Hrishikesh Bale*[1]; David Marshall[2]; Brian Cox[2]; Robert Ritchie[1]; [1]University of California Berkeley; [2]Teledyne Scientific LLC

11:10 AM
Synthesis and Characterization of Hot Extruded Al-15wt%Mg2Si In-Situ Composite: Ashkan Zolriasatein[1]; *Masoud Emamy*[2]; Amin Bahrami[3]; Hamid Reza Jafari Nodooshan[4]; Ali Shokuhfar[1]; [1]K. N. Toosi University of Technology; [2]Tehran University ; [3]Imam Khomeini International University; [4]Islamic Azad University

11:30 AM
Thermal Conductivity and Interfacial Nanostructure in Diamond Based Composites: *F. Khalid*[1]; [1]GIK Institute of Engineering Sciences and Technology

Size Effects in Mechanical Behavior: Size Dependent Mechanical Behavior of Nanotwinned and Nanocrystalline Metals

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Monday AM
February 28, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Erica Lilleodden, GKSS Research Center; Dominique Schryvers, University of Antwerp

8:30 AM
Study of Twins in Nanoscale Pd Films with High Strain Hardening Capacity: *Dominique Schryvers*[1]; Hosni Idrissi[1]; Binjie Wang[1]; Marie-Stéphane Colla[2]; Jean-Pierre Raskin[2]; Thomas Pardoen[2]; [1]University of Antwerp; [2]Université Catholique de Louvain

8:50 AM
Effects of Differently Oriented Twin Boundaries on Mechanical Properties in Nanotwinned Ag Films: Daniel Bufford[1]; *Xinghang Zhang*[1]; Haiyan Wang[1]; [1]Texas A&M University

9:10 AM Invited
Inverse Grain-Size Effect on Twinning in Nanocrystalline FCC Metals: *Yuntian Zhu*[1]; Xiaolei Wu[2]; [1]North Carolina State University; [2]Chinese Academy of Sciences

9:40 AM
A Twist of the Eshelby Twist: Unraveling the Mystery of Twinning: *Ting Zhu*[1]; Ju Li[2]; Sankar Narayanan[1]; [1]Georgia Institute of Technology; [2]University of Pennsylvania

10:00 AM Break

10:30 AM
Detwinning Mechanisms for Growth Twins in Epitaxial Nanotwinned Cu: *Nan Li*[1]; Jian Wang[1]; Xinghang Zhang[2]; Jianyu Huang[3]; Amit Misra[1]; [1]Los Alamos National Laboratory; [2]Texas A&M University; [3]Sandia National Laboratory

10:50 AM Invited
Deformation Effects in Cu with Highly Aligned Nanotwins: *Julia Weertman*[1]; Carla Shute[1]; [1]Northwestern University

11:20 AM
Fatigue Properties of Nano Structured Copper: *Aparna Singh*[1]; Lei Lu[2]; Ming Dao[1]; [1]MIT; [2]Chinese Academy of Sciences

11:40 AM
Tensile Plastic Deformation of Gradient Nano-Grained Copper: W. L. Li[1]; N. R. Tao[1]; *K. Lu*[1]; [1]Chinese Academy of Sciences

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Growth, Characterization, and Devices I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Monday AM
February 28, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Nitin Chopra, The University of Alabama; Ritesh Agarwal, University of Pennsylvania

8:30 AM Introductory Comments

8:35 AM Invited
Transforming Semiconductor Nanowires into Heterostructures and Superlattices by Size-Dependent Cation Exchange Reactions: *Ritesh Agarwal*[1]; [1]University of Pennsylvania

9:05 AM Invited
Does Function Follow Form? Coiled Carbon Nanotube and Nanowire Structures- Thermodynamic Model, Experiment, and Applications: *Prabhakar Bandaru*[1]; Apparao Rao[2]; [1]University of California San Diego; [2]Clemson University

9:35 AM Invited
Atom-by-Atom Characterization of Low-Dimensional Materials: *Stephen Pennycook*[1]; Matthew Chisholm[1]; Gerd Duscher[2]; Timothy Pennycook[3]; James McBride[3]; Sandra Rosenthal[3]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]Vanderbilt University

10:05 AM Invited
Micro and Nanostructured Porous Heterostructures by Electrodeposition: *Martin Bakker*[1]; Nikolas Cordes[1]; Franchessa Sayler Maddox[1]; Jan-Henrik Smatt[2]; Mika Linden[2]; [1]The University of Alabama; [2]Ako Akademi University

10:35 AM Break

10:45 AM Invited
Synthesis and Characterization of Silicon Oxide Nanowires Using Nickel Nanoparticles: *Seonhee Jang*[1]; Youngil Lee[1]; Suhwan Cho[1]; Jungwook Seo[1]; Donghoon Kim[1]; [1]Samsung Electro-Mechanics

11:15 AM
Novel Architectures of Hierarchical Heterostructures: Non-Catalytic Growth of ZnO Nanowires and Their Multifunctional Heterostructures with Gold Nanoparticles: *Wenwu Shi*[1]; Austin Starnes[1]; Nitin Chopra[1]; [1]The University of Alabama

11:30 AM
Induced Chemical Changes in Ni/NiO Core Shell-Carbon Nanotube Heterostructures in a High Temperature Post-Fabrication Treatment: *Hylton McWhinney*[1]; Wenwu Shi[2]; Nitin Chopra[2]; [1]Texas A & M University; [2]The University of Alabama

11:45 AM
Nanoparticle Cluster Size Control using Chemically Modified Self-Assembly on Copolymer Surfaces: *Sarah Adams*[1]; Regina Ragan[1]; [1]University of California Irvine

12:00 PM
Thermodynamics and Processing of Nanomaterials: *Ramana Reddy*[1]; [1]The University of Alabama

12:15 PM
Magnetron Sputtering of Thin Film MIM Capacitors with Al and Pt Electrodes: *Jack Murray*[1]; Wayne Huebner[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

The Second Symposium on the Recycling of Electronic Wastes: Technologies for the Recycling of Electronic Wastes

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: Electronic Packaging and Interconnection Materials Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Jaan Kers, Tallinn University of Technology; Thomas P. Schuman, Missouri University of Science and Technology (Missouri S&T); Markus Reuter, Ausmelt Limited

Monday AM
February 28, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Lifeng Zhang, Missouri S&T; Gregory Krumdick, Argonne National Lab.

8:30 AM Introductory Comments

8:35 AM
Mechanical Recycling of Electronic Wastes for Materials Recovery: Viktor Laurmaa[1]; *Jaan Kers*[1]; Kaspar Tall[1]; Valdek Mikli[1]; Dmitri Goljandin[1]; Kristiina Vilsaar[1]; Priidu Peetsalu[1]; Mart Saarna[1]; Riho Tarbe[1]; [1]Tallinn University of Technology

9:05 AM
Processing of Discarded Liquid Crystal Display for Recovering Indium: *Gjergj Dodbiba*[1]; Kunihiko Takahashi[1]; Toyohisa Fujita[1]; N. Sato[2]; Seiji Matsuo[1]; Katsunori Okaya[1]; [1]The University of Tokyo; [2]Tohoku University

9:35 AM
Green Pyrolysis of Used Printed Wiring Board Powders: *Lucas Damoah*[1]; Xiangjun Zuo[1]; Lifeng Zhang[1]; Thomas Schuman[1]; [1]Missouri University of Science and Technology

10:05 AM
Leaching of Lead from Solder Material Used in Electrical and Electronic Equipment: *Manis Kumar Jha*[1]; Pankaj Choubey[1]; Archana Kumari[1]; Rakesh Kumar[1]; Vinay Kumar[1]; Jae-chun Lee[2]; [1]National Metallurgical Laboratory (CSIR); [2]Korea Institute of Geosciences & Mineral Resources

10:35 AM Break

10:45 AM
Copper Recovery from Printed Circuit Board of E-Waste: *Toyohisa Fujita*[1]; Hiroyuki Ono[1]; Gjergj Dodbiba[1]; Seiji Matsuo[1]; Katsunori Okaya[1]; [1]The University of Tokyo

11:15 AM
Recovery of Silver from Spent Plasma TV Monitors: *Katsutoshi Inoue*[1]; Biplob Biswas[1]; Hidetaka Kawakita[1]; Keisuke Ohto[1]; Atsushi Hoshino[2]; [1]Saga University; [2]Nishinihon Kaden Recycle Corporation

11:45 AM
A Process for Efficient Material Recovery from Scrap Electronics: *Jeffrey S. Spangenberger*[1]; Joseph Pomykala[1]; John Hryn[1]; Bassam Jody[1]; Edward Daniels[1]; [1]Argonne National Laboratory

Thermally Activated Processes in Plastic Deformation: Nucleation and Diffusive Processes

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizer: Christopher Woodward, Air Force Research Laboratory

Monday AM
February 28, 2011

Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Jeffery Rickman, Lehigh University; Carelyn Campbell, NIST

8:30 AM Invited
Challenges in the Modeling of Nucleation and Growth Processes: *Jeffrey Rickman*[1]; [1]Lehigh University

9:00 AM Invited
Analysis and Modeling of Nucleation Controlled Reactions: *John Perepezko*[1]; Seth Imhoff[1]; [1]University of Wisconsin Madison

9:30 AM Invited
Diffusive Molecular Dynamics: *Ju Li*[1]; Sanket Sarkar[2]; William Cox[2]; Thomas Lenosky[2]; Erik Bitzek[1]; Yunzhi Wang[2]; [1]University of Pennsylvania; [2]The Ohio State University

10:00 AM Invited
Predicting Diffusion Coefficients of Multi-Component Solids from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

10:30 AM Break

10:45 AM Invited
Predicting Volume-Based Diffusion in Multicomponent Multiphase Alloys: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

11:15 AM Invited
Advanced Methods for Modeling Thermally Activated Processes: *Arthur Voter*[1]; [1]Los Alamos National Laboratory

11:45 AM Invited
Equilibrium and Time-Dependent Solute Segregation at Grain Boundaries: Systematic Monte Carlo Studies: Irina Belova[1]; *Graeme Murch*[1]; Thomas Fiedler[1]; [1]The University of Newcastle

12:15 PM
Atomistic Modeling of Interactions of Dislocation Pile-Up with Grain Boundaries: *Jian Wang*[1]; Steven Valone[1]; Richard Hoagland[1]; Timothy Germann[1]; [1]Los Alamos National Laboratory

Ultrasonic Welding for Lightweight Components: Session I

Sponsored by: The Minerals, Metals and Materials Society, American Welding Society, TMS Light Metals Division, TMS Structural Materials Division, TMS: Young Leaders Committee, ASM-MSCTS: Materials and Processing Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Frank Balle, University of Kaiserslautern

Monday AM
February 28, 2011

Room: 33A
Location: San Diego Conv. Ctr

Session Chair: Frank Balle, Institute of Materials Science and Engineering, University of Kaiserslautern (Germany)

8:30 AM Introductory Comments, Frank Balle, Organizer

8:35 AM
Mechanisms of Joint Formation in Ultrasonic Spot Welding Aluminium Automotive Sheet: *Phil Prangnell*[1]; Dimitrios Bakavos[1]; Yingchun Chen[1]; [1]The University of Manchester

8:55 AM
Ultrasonic Welding of Cables and Wires: *Stefan Heinz*[1]; Dietmar Eifler[1]; Guntram Wagner[1]; [1]University of Kaiserslautern

9:15 AM Invited
Ultrasonic Metal Welding of Hybrid Joints: *Guntram Wagner*[1]; Frank Balle[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern

9:45 AM
Optimization of Aluminium to Magnesium Ultrasonic Spot Welding: *Lexi Panteli*[1]; Yingchun Chen[1]; David Strong[1]; Xiaoyun Zhang[2]; Phil Prangnell[1]; [1]The University of Manchester; [2]Beijing Institute of Aeronautical Materials

10:05 AM Break

10:15 AM
Fatigue Failure Behavior and Life Estimation of Ultrasonic Spot Welds in Lap-Shear Specimens of Magnesium and Steel Sheets: *Teresa Franklin*[1]; Jwo Pan[1]; Michael Santella[2]; Tsung-Yu Pan[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

10:35 AM
Effect of Zinc Coatings on Joint Properties and Interface Reactions in Aluminum to Steel Ultrasonic Spot Welding: *Farid Haddadi*[1]; Phil Prangnell[1]; [1]The University of Manchester

10:55 AM
Ultrasonic Spot Welding of AZ31B to Galvanized Mild Steel: *Michael Santella*[1]; Teresa Franklin[2]; Tsung-Yu Pan[1]; Elliot Brown[3]; Jwo Pan[2]; [1]Oak Ridge National Laboratory; [2]University of Michigan; [3]EB Scientific Enterprises

11:15 AM
Ultrasonic Welding of Hybrid Aluminum/CFRP-Joints: Microstructure, Monotonic Properties and Fatigue Behavior: Stefan Huxhold[1]; *Frank Balle*[1]; Guntram Wagner[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern

11:35 AM Concluding Comments

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Nanomaterials: Energy

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Monday PM
February 28, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chairs: Seong Jin Koh, University of Texas at Arlington; Seung Kang, Qualcomm

2:00 PM Introductory Comments

2:05 PM Invited
Titanium Oxides Thin Film Anodes for All-Solid-State Lithium Ion Batteries: Ming-Che Yang[1]; Danijel Gostovic[2]; *Shirley Meng*[2]; [1]University of Florida; [2]U.C. San Diego

2:35 PM
Synthesis of Titania Nanotubes for Lithium Ion Batteries: *Hyukjae Lee*[1]; Sang-Jun Park[1]; [1]Andong National University

2:50 PM
Nanogenerators from Piezoelectric-Coated Carbon Nanotubes: *David Stollberg*[1]; [1]Georgia Tech Research Institute

3:05 PM
Structural and Electrochemical Characterization of Individual Nanowires for Li-ion Batteries: *John Sullivan*[1]; Arunkumar Subramanian[1]; Jianyu Huang[1]; Michael Shaw[1]; Nicholas Hudak[1]; Yongjie Zhan[2]; Jun Lou[2]; [1]Sandia National Labs; [2]Rice University

3:20 PM
Phase Field Simulations of Morphological Evolution during Lithium Intercalation/Extraction in Li-ion Batteries: *Saswata Bhattacharya*[1]; Linyun Liang[1]; Long-Qing Chen[1]; [1]Pennsylvania State University

3:35 PM Break

3:50 PM Invited
Dye Sensitized Solar Cells with 3-Dimensional Anodes, and Prospects for Incorporating Unusual Photophysical Processes: *Michael Tauber*[1]; [1]University of California, San Diego

4:20 PM
Formation of Silver Nanocube Array via Silica-Polymer Nanocomposites: Chi-Kai Chiu[1]; Yong-Jae Choi[1]; *Tzy-Jiun Luo*[1]; [1]North Carollina State University

4:35 PM
Self-Assembled Epitaxial Quantum Dot Multilayers: A Stochastic Continuum Modeling Approach: *Lawrence Friedman*[1]; [1]National Institute of Standards and Technology

4:50 PM
Three Dimensional Carbon Nanotube Photovoltaics: *Jack Flicker*[1]; Jud Ready[2]; [1]Georgia Insitute of Technology; [2]Georgia Tech Research Institute

5:05 PM
New Silicon Alloy Nano-Particulate Materials for Lithium Ion Battery Anodes: *Emma White*[1]; Lisa Rueschhoff[1]; Iver Anderson[2]; Steve Martin[3]; [1]Iowa State University & Ames Laboratory; [2]Ames Laboratory & Iowa State University; [3]Iowa State University

5:20 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Microwave Heating and Iron and Steel Production

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

Monday PM
February 28, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Chenguang Bai, Chongqing University; Jerome Downey, Montana Tech of the Univ of Montana

2:00 PM
A Study of Coal-Based Direct Reduction of Composite Binder Magnetite Preheated Pellets: *Deqing Zhu*[1]; Tiejun Chun[1]; Vinicius Mendes[1]; Jian Pan[1]; Jian Li[2]; [1]Central South University; [2]Research Institute of Baosteel

2:20 PM
A Model of Decarburization of Iron/Carbon Droplets: *Mark Schwarz*[1]; [1]CSIRO

2:40 PM
Non-Isothermal Kinetics of Reduction Reaction of Oxidized Pellet under Microwave Irradiation: Wu Kai[1]; *Huang Zhu-Cheng*[1]; Peng Hu[2]; [1]CSU; [2]Syno-Therm Co. Ltd

3:00 PM
Microwave Dielectric Properties of Pyrolyzed Carbon: Zhiwei Peng[1]; *Jiann-Yang Hwang*[1]; Wayne Bell[1]; Matthew Andriese[1]; Shuqian Xie[2]; [1]Michigan Technological University; [2]Northeastern University

3:20 PM
Fugitive Emissions Related to Oxidation of Liquid Silicon During Ladle Refining: *Mari Næss*[1]; Gabriella Tranell[1]; Nils Eivind Kamfjord[1]; [1]Norwegian University of Science and Technology

3:40 PM
Reduction Kinetics of Iron Oxide in CaO-SiO2-Al2O3-FexO-C Mixtures: *Yuanyuan Zhang*[1]; Patrick Masset[1]; [1]TU Bergakademie Freiberg

4:00 PM Break

4:10 PM
Optimization of the Process Variables for Making Direct Reduced Iron by Microwave Heating using Response Surface Methodology: *Linqing Dai*[1]; Jinhui Peng[1]; Hongbo Zhu[1]; [1]Kunming University of Science and Technology

4:30 PM
Study on Nucleation and Growth Mechanism of Iron Crystal Grain in Coal-Based Shaft Furnace Direct Reduction Iron Pellets by Microwave Heating: *Zhucheng Huang*[1]; Zhenyuan Liao[1]; Bing Hu[1]; Lingyun Yi[1]; Yuanbo Zhang[1]; [1]Central South University

4:50 PM
In-Situ Mass, Temperature, and Resistance Measurements during Microwave Metallization of Iron Ore and Zink Dust for On-Line Optimization: *Wayne Bell*[1]; [1]Michigan Technological University

5:10 PM
Research on the Reduction Mechanism of Vanadium Oxides in Lumpy Zone in Blast Furnace: *YongHong Wang*[1]; Bing Xie[1]; QingYun Huang[1]; JiaRong Yang[1]; [1]ChongQing University

5:30 PM
Investigation on a Microwave High-Temperature Air Heat Exchanger: Jianhua Liu[1]; Yingwei Li[1]; Lijun Liu[1]; Jinhui Peng[1]; Libo Zhang[1]; *Shenghui Guo*[1]; Huilong Luo[1]; Hongpo Wang[1]; Guo Chen[1]; [1]Kunming University of Science and Technology

Advances in Science-Based Processing of Superalloys for Cost and Sustainment: Application of Modeling and Simulation to Component Design and Life Prediction

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Donna Ballard, US Air Force; David Furrer, Pratt & Whitney; Paul Jablonski, US Department of Energy; Christopher Woodward, Air Force Research Laboratory; Jeff Simmons, AFRL; Mark Blodgett, Wright-Patterson AFB

Monday PM
February 28, 2011
Room: 33B
Location: San Diego Conv. Ctr

Session Chairs: David Furrer, Pratt & Whitney; Jeff Simmons, AFRL

2:00 PM Invited
Extreme Values in Materials Microstructure: *Anthony Rollett*[1]; Seth Wilson[1]; Jeff Simmons[2]; Katayun Barmak[1]; Michael Groeber[2]; David Rowenhorst[3]; [1]Carnegie Mellon University; [2]Air Force Research Lab.; [3]Naval Research Lab.

2:30 PM Invited
Uncertainty in Process-Structure-Property Relations: Robust Materials Design: *David McDowell*[1]; [1]Georgia Institute of Technology

3:00 PM Invited
Rolls-Royce Perspective on Advances in Science-Based Processing of Superalloy Materials and Components: *Mary Lee Gambone*[1]; [1]Rolls-Royce

3:30 PM Break

3:45 PM Invited
Modeling and Simulation in Fossil Energy Systems – Current Prospectus: *Jeffrey Hawk*[1]; Liang Jiang[2]; [1]U.S. Department of Energy; [2]GE Global Research

4:15 PM
Modeling Deformation Mechanisms and Grain Structure Evolution during Forging of Powder-Metallurgy Nickel-Base Turbine Disk Alloy: *Wen Tu*[1]; Tresa Pollock[2]; [1]University of Michigan; [2]University of California - Santa Barbara

4:35 PM
The Progression of Oxidation Damage for an Advanced Powder Metallurgy Disk Superalloy: *Chantal Sudbrack*[1]; James Smialek[1]; Tim Gabb[1]; David Hull[1]; Timothy Gorman[2]; Doug Wei[3]; Jeff Marshman[3]; [1]NASA Glenn Research Center; [2]University of Dayton; [3]Carl Zeiss SMT Inc.

4:55 PM
Diffusion Simulation and Oxidation Life Prediction of Turbine Metallic Coatings: *Fan Zhang*[1]; Shuanglin Chen[1]; Weisheng Cao[1]; Y. Austin Chang[2]; Kang Lee[3]; Donna Ballard[4]; Jeff Simmons[4]; [1]CompuTherm, LLC; [2]University of Wisconsin-Madison; [3]Rolls-Royce Corporation; [4]Air Force Research Laboratory

5:15 PM
Nitridation of HAYNES® NS-163® Alloy: Thermodynamics and Kinetics: *Michael Fahrmann*[1]; Krishna Srivastava[1]; [1]Haynes International Inc.

Alumina and Bauxite: Bauxite Resources and Utilisation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Monday PM
February 28, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM
New Development Model for Bauxite Deposits: *Peter-Hans ter Weer*[1]; [1]TWS Services and Advice

2:30 PM
Study on the Characterization of Marginal Bauxite from Pará/Brazil: *Fernanda Silva*[1]; João Sampaio[2]; Marta Medeiros[1]; Francisco Garrido[1]; [1]IQ/UFRJ - CETEM; [2]Centro de Tecnologia Mineral

2:55 PM
Resource Utilization of High-Sulfur Bauxite of Low-Median Grade in Chongqing China: *Jianguo Yin*[1]; Wentang Xia[1]; Mingrong Han[1]; [1]Chongqing University of Science and Technology

3:20 PM Break

3:30 PM
Development of Bauxite and Alumina Resources in the Kingdom of Saudi Arabia: *AbdulGhafoor Al-Dubaisi*[1]; [1]Saudi Arabian Mining Co. (Maaden)

3:55 PM
Digestion Studies on Central Indian Bauxite: *Puliyur Krishnaswamy Narasimha Raghavan*[1]; Nand Kumar Kshatriya[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

4:20 PM
Effects of Roasting Pretreatment in Intense Magnetic Field on Digestion Performance of Diasporic Bauxite: *Zhang Ting-an*[1]; Dou Zhihe[1]; Lv Guozhi[1]; Liu Yan[1]; Du Juan[1]; Wang Xiaoxiao[1]; Li Yan[1]; [1]Northeastern University

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; Zhengdong Long, Kaiser Aluminum; Tongguang Zhai, University of Kentucky

Monday PM
February 28, 2011
Room: 14A
Location: San Diego Conv. Ctr

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

2:00 PM
Modeling Performance of Protection Materials Aluminum 7020-T651 and Steel: *John Chinella*[1]; [1]U.S. Army Research Laboratory

2:20 PM
The Influence of Temperature on the Tensile Anisotropy of a Forged 7XXX Aluminum Alloy: *Agouti Siham*[1]; Bozzolo Nathalie[1]; Bouchard Pierre-Olivier[1]; Le Brun Pierre[2]; Piellard Mickael[3]; [1]Centre of materials forming; [2]Voreppe Research Center; [3]Aubert et Duval Issoire

2:40 PM
Modeling the Strain Path Change Effect in 5754-O Aluminum Alloy Sheet: *Lin Hu*[1]; Anthony Rollett[1]; Mark Iadicola[2]; Tim Foecke[2]; Steve Banovic[2]; [1]Carnegie Mellon University; [2]National Institute of Standards and Technology

3:00 PM
Micromechanical Simulations for Fatigue Damage Incubation at Debonded Particles Using Cohesive Zone Model: Tong Li[1]; *Yibin Xue*[1]; [1]Utah State University

3:20 PM
Comprehensive Thermo-Mechanical Validation of Extrusion Simulation Cycle for Al 1100 Using HyperXtrude: AbdulAfoo Parkar[1]; Clemence Bouvard[1]; Stephen Horstemeyer[1]; *Esteban Marin*[1]; Paul Wang[1]; Mark Horstemeyer[1]; [1]Center for Advanced Vehicular Systems, Mississippi State University

3:40 PM Break

3:55 PM
Deformation and Rupture Modeling of an Aluminum Metal Matrix Composite: *James DeMarco*[1]; Justin Karl[1]; Ali Gordon[1]; [1]UCF MMAE Dept.

4:15 PM
Mechanical Properties and Casting Characteristics of the Secondary Aluminum Alloy AlSi9Cu3(Fe) (A226): *Philip Pucher*[1]; Holm Böttcher[2]; Helmut Kaufmann[3]; Helmut Antrekowitsch[1]; Peter J. Uggowitzer[4]; [1]University of Leoben; [2]AMAG Casting GmbH; [3]Austria Metall AG (AMAG); [4]ETH Zurich

4:35 PM
Comparison of Different FEM Codes Approach for Extrusion Process Analysis: *Lorenzo Donati*[1]; Luca Tomesani[1]; Nooman Ben Khalifa[2]; A. Erman Tekkaya[2]; [1]University of Bologna; [2]Technische Universität Dortmund

4:55 PM
Numerical Prediction of Grain Shape Evolution during Extrusion of AA6082 Alloy: *Antonio Segatori*[1]; Lorenzo Donati[1]; Luca Tomesani[1]; [1]University of Bologna

5:15 PM
Analysis of Charge Weld Evolution for a Multi-Hole Extrusion Die: *Antonio Segatori*[1]; Lorenzo Donati[1]; Barbara Reggiani[1]; Luca Tomesani[1]; [1]University of Bologna

Aluminum Reduction Technology: Environment-Emissions/ Anode Effect I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Monday PM — Room: 17B
February 28, 2011 — Location: San Diego Conv. Ctr

Session Chair: Robert Baxter, Bechtel Corp

2:00 PM
HF Measurements Inside an Aluminium Electrolysis Cell: *Karen Osen*[1]; Thor Aarhaug[1]; Asbjørn Solheim[1]; Egil Skybakmoen[1]; Camilla Sommerseth[2]; [1]SINTEF Materials and Chemistry; [2]Norwegian Institute of Science and Technology, NTNU

2:20 PM
LasIRTM -R – The New Generation RoHS-Compliant Gas Analyzers Based on Tunable Diode Lasers: *Jean-Pierre Gagne*[1]; John Pisano[2]; Alak Chanda[3]; Gervase Mackay[3]; Keith Mackay[3]; Pierre Bouchard[1]; [1]STAS; [2]University of California at Riverside; [3]Unisearch Associates Inc.

2:40 PM
Use of Spent Potlining (SPL) in Ferro Silicomanganese Smelting: *Paulo von Krüger*[1]; [1]Universidade Federal de Ouro Preto

3:00 PM
Reduction of PFC Emissions at Pot Line 70 kA of Companhia Brasileira De Alumínio: *Henrique Santos*[1]; Danilo Melo[1]; Jocimar Calixto[1]; Jefferson Santos[1]; João Miranda[1]; [1]Companhia Brasileira de Aluminio

3:20 PM Break

3:30 PM
Towards Redefining the Alumina Specifications Sheet – The Case of HF Emissions: *Linus Perander*[1]; Marco Stam[2]; Margaret Hyland[1]; James Metson[1]; [1]Light Metals Research Centre; [2]Aluminium Delfzijl B.V.

3:50 PM
Design of Experiment to Minimize Fluoride and Particulate Emissions at Alumar: *Eliezer Batista*[1]; Paulo Miotto[1]; Edson Montoro[1]; Luciano Souza[1]; [1]Alcoa

4:10 PM
Innovative Distributed Multi-Pollutant Pot Gas Treatment System: *Geir Wedde*[1]; Odd Bjarno[1]; Anders Sorhuus[1]; [1]Alstom

4:30 PM
Fluoride Emissions Management Guide (FEMG) for Aluminium Smelters: *Nursiani Tjahyono*[1]; Yashuang Gao[1]; David Wong[1]; Wei Zhang[1]; Mark Taylor[1]; [1]Light Metals Research Centre

4:50 PM
Considerations Regarding High Draft Ventilation as an Air Emission Reduction Tool: *Stephan Broek*[1]; Neal Dando[2]; Stephen Lindsay[2]; Alain Moras[2]; [1]Hatch Ltd; [2]Alcoa

Approaches for Investigating Phase Transformations at the Atomic Scale: Transformations in Fe, Ni and Al Based Systems I

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Neal Evans, Oak Ridge National Laboratory; Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Chris Wolverton, Northwestern University; David Seidman, Northwestern University; Rajarshi Banerjee, University of North Texas

Monday PM
February 28, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chairs: Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Michael Miller, Oak Ridge National Laboratory

2:00 PM Invited
Nano-scale Analysis of Precipitation in Nitrided Steels: *Tadashi Furuhara*[1]; Goro Miyamoto[1]; [1]Institute for Materials Research, Tohoku University

2:25 PM Invited
Atomic Structure of NbN GP Like Zones in a Model Fe-Nb-(C)-N Alloy: *Frederic Danoix*[1]; Thierry Epicier[2]; David Tingaud[3]; Philippe Maugis[4]; [1]CNRS - Université de Rouen; [2]INSA de Lyon; [3]Université Paris 13; [4]Université Paul Cezanne - Marseille

2:50 PM Invited
Nanometric Scale Investigation of Phase Transformations in Advanced Steels for Automotive Applications: *Josée Drillet*[1]; Thierry Iung[1]; Nathalie Valle[1]; [1]ArcelorMittal

3:15 PM
Precipitation Strengthening of a Nano-Cluster-Strengthened Ferritic Steel: *Z. W. Zhang*[1]; Ai Serizawa[2]; C. T. Liu[1]; Xun-Li Wang[2]; M. K. Miller[2]; Bryan Chin[1]; [1]Auburn University; [2]Oak Ridge National Laboratory

3:30 PM Break

3:45 PM Invited
Atom Probe Tomography as a Tool to Advance Steels Design and Performance: *Elena Pereloma*[1]; Ilana Timokhina[2]; [1]University of Wollongong; [2]Deakin University

4:10 PM Invited
Transformation of Martensite to Austenite During Aging in Steel Studied by Atom Probe Tomography and Simulation: *Dirk Ponge*[1]; Olga Dmitrieva[1]; Gerhard Inden[1]; Julio Millán[1]; Pyuck-Pa Choi[1]; Jilt Sietsma[2]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Delft University of Technology

4:35 PM
Complementary Use of Transmission Electron Microscopy and Atom Probe Tomography for the Examination of Plastic Accommodation in Nanocrystalline Bainitic Steels: *Francisca Caballero*[1]; Hung-Wei Yen[2]; Michael Miller[3]; Jer-Ren Yang[2]; Juan Cornide[1]; Carlos Garcia-Mateo[1]; [1]CENIM-CSIC; [2]National Taiwan University; [3]Oak Ridge National Laboratory

4:50 PM Invited
Effect of Solute Atoms Distribution on the Phase Transformation in Steel: *Genichi Shigesato*[1]; Shunsuke Taniguchi[1]; Taishi Fujishiro[1]; Masaaki Sugiyama[1]; [1]Nippon Steel Corporation

5:15 PM
Influence of Forging Conditions on Mechanical Properties of Ti and V-Bearing High Strength Forging Steels and Associated Precipitation Microstructure Characterized by TEM and 3D-Atom-Probe: *Naoyuki Sano*[1]; Tatsuya Hasegawa[2]; [1]Sumitomo Metal Industries, Ltd.; [2]Sumitomo Metals (Kokura), Ltd.

Biological Materials Science: Bio-Inspiration and Bio-Inspired Materials II: Soft Biomaterials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Monday PM
February 28, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Paul Calvert, University of Massachusetts; Nima Rahbar, University of Massachusetts Dartmouth

2:00 PM Invited
Gelation of Mucin Glycoproteins: *Rama Bansil*[1]; [1]Boston University

2:30 PM
Synthesis of Vitrified Collagen Gels with Optimized Transparency and Mechanical Strength for Repair of Ocular Injuries: Jennifer Breidenich[1]; Daniel Mulreany[2]; Freddy Espinoza[2]; Yo-Rhin Rhim[1]; Xiomara Calderon-Colon[1]; Qiongyu Guo[2]; R.L. McCally[1]; *Morgan Trexler*[1]; Oliver Schein[3]; Jennifer Elisseeff[2]; [1]Johns Hopkins University Applied Physics Laboratory; [2]Johns Hopkins University; [3]Wilmer Eye Institute

2:50 PM Invited
Progress Towards Cartilage Engineering Using Peptide Hydrogels: *Joel Schneider*[1]; [1]National Cancer Institute

3:20 PM
Molecular Biomimetics Enables Biological Materials Science and Engineering: *Mehmet Sarikaya*[1]; [1]University of Washington

3:40 PM Break

3:50 PM Invited
Hydrogels Formed by Inkjet Printing through Ionic Self-Assembly for Tissue Engineering and Drug Delivery: Skander Limem[1]; Donald McCallum[2]; David Kaplan[3]; Marc in het Panhuis[2]; Gordon Wallace[2]; *Paul Calvert*[1]; [1]University of Massachusetts; [2]University of Wollongong; [3]Tufts University

4:20 PM
Fabrication of 3D Hydrogel Matrices Containing Yeast and Human Cells: *Paul Calvert*[1]; Swati Mishra[1]; Dapeng Li[1]; [1]University of Massachusetts Dartmouth

4:40 PM
Synthesis of Cellulose Hydrogels with High Strength and Transparency for Use as an Ocular Bandage: *Morgan Trexler*[1]; Jenna Graham[1]; Jeffrey Maranchi[1]; Jennifer Breidenich[1]; Russell McCally[1]; Marcia Patchan[1]; Freddy Espinoza[2]; Jeremy Chae[2]; Iossif Strehin[2]; Oliver Schein[3]; Jennifer Elisseeff[2]; [1]Johns Hopkins University Applied Physics Laboratory; [2]Johns Hopkins University; [3]Wilmer Eye Institute

5:00 PM
Fabrication of a Cellulosic Nanocomposite Scaffold with Improved Supermolecular Structure as a Potential Cardiovascular Tissue-Engineered Graft: *Parisa Pooyan*[1]; Hamid Garmestani[1]; Rina Tannenbaum[1]; [1]Georgia Institute of Technology

5:20 PM
Lessons from Nature: Biomimicry of Leaf Surfaces: *John Nychka*[1]; [1]University of Alberta

Bulk Metallic Glasses VIII: 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: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Monday PM
February 28, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: J. Eckert, IFW Dresden; Jinn Chu, National Taiwan University of Science and Technology

2:00 PM Invited
Ti-Based Bulk Metallic Glasses and Composites for Structural and Functional Applications: *J. Eckert*[1]; [1]IFW Dresden

2:20 PM
Evaluation of Physical and Mechanical Properties of Metallic Glasses in Micro/nano Scales: Jinn Chu[1]; *Yen-Chen Chen*[1]; Jason 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

2:30 PM Invited
Alloying Effects on Glass-Forming Ability and Soft Magnetic Properties of Fe-Based Bulk Metallic Glasses with a High Fe Concentration: H. X. Li[1]; J. E. Gao[1]; Z. B. Jiao[1]; *Z. P. Lu*[1]; [1]University of Science and Technology Beijing

2:50 PM Invited
Superplastic Deformation at Nanoscale in Metallic Glass: *Scott Mao*[1]; J. Luo[1]; Jianyu Huang[2]; [1]University of Pittsburgh; [2]Sandia National Lab

3:10 PM
Atomic Mobility Inside Shear Bands and the Impact on Tracer Diffusion, Nucleation and Growth: *Gerhard Wilde*[1]; Joachim Bokeloh[1]; Gerrit Reglitz[1]; Harald Rösner[1]; Sergiy Divinski[1]; [1]University of Muenster

3:20 PM Break

3:30 PM Invited
Bending-Ductility Improvements of Bulk Metallic Glass by Surface Coatings: *Jinn Chu*[1]; Bo-Shian Houng[1]; Jason S. C. Jang[2]; Yin-Yu Chang[3]; Peter K. Liaw[4]; Yoshihiko Yokoyama[5]; Akihisa Inoue[5]; [1]National Taiwan University of Science and Technology; [2]National Central University; [3]Mingdao University; [4]The University of Tennessee; [5]Tohoku University

3:50 PM
Characterization and Mechanical Response of Amorphous $Fe_{45}Ni_{45}Mo_7B_3$ Honeycombs: *Balaji Jayakumar*[1]; Jay Hanan[1]; [1]Oklahoma State University

4:00 PM Invited
Air-Oxidation of a $[(Co_{50}Cr_{15}C_{15}Mo_{14}B_6)_{97.5}Er_{2.5}]_{93}Fe_7$ Bulk Metallic Glass at 600 - 725 °C: *Wu Kai*[1]; P.C. Lin[1]; Y.H. Wu[1]; W.S. Chen[1]; Z.Z. Liang[1]; H.L. Jia[2]; P.K. Liaw[2]; [1]Institute of Materials Engineering, National Taiwan Ocean University; [2]Department of Materials Science and Engineering, The University of Tennessee

4:20 PM
Deformation Behaviour of Metallic Glasses: *B Vishwanadh*[1]; R Tewari[1]; S Sharma[1]; R Kishore[1]; G K Dey[1]; [1]Bhabha Atomic Research Centre

4:30 PM Invited
Deformation Behavior and Deformation-Induced Nanocrystallization of Bulk Metallic Glasses: *Tao Zhang*[1]; [1]Beihang University

4:50 PM
Dependence of Fracture Toughness on the Configurational State of a Metallic Glass: *Glenn Garrett*[1]; Jin-Yoo Suh[1]; Michael Floyd[2]; Angeliki Kapoglou[3]; Marios Demetriou[1]; William Johnson[1]; [1]CalTech; [2]UC Berkeley; [3]European Space Agency

5:00 PM Invited
Dynamic Mechanical Behavior of Bulk Metallic Glass and Its Composite: Morgana Trexler[1]; *Naresh Thadhani*[2]; [1]The Johns Hopkins University Applied Physics Laboratory; [2]Georgia Institute of Technology

5:20 PM
Dynamic Compressive Behavior of Fe Based Amorphous Metal Honeycomb Cellular Structures: *Advait Bhat*[1]; Jay Hanan[1]; Ganapathi Mahadevan[1]; [1]Oklahoma State University

5:30 PM Invited
Atomic-Scale Structural Heterogeneity, Percolation and Unified Yielding Behavior in Metallic Glasses: *Yong Yang*[1]; Jianchao Ye[1]; C.T. Liu[1]; Jian Lu[1]; [1]the Hong Kong Polytechnic University

5:50 PM
The Oxidation Behavior of an FeCo-Based Bulk Metallic Glass at 600 - 700°C: *Wu Kai*[1]; Pin-Chen Lin[1]; Yan-Hao Wu[1]; Z.Z. Liang[1]; P.K. Liaw[2]; [1]Taiwan Ocean University; [2]University of Tennessee

Cast Shop for Aluminum Production: Casthouse Productivity and Safety

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Geoffrey Brooks, Swinburne University of Technology; John Grandfield, Grandfield Technology Pty Ltd

Monday PM
February 28, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chairs: Leonard Aubery, SELEE Corporation; David De Young, Alcoa

2:00 PM Introductory Comments

2:10 PM
New Casthouse Smelter Layout for the Production of Small Non-Alloyed Ingots: Three Furnaces/Two Lines: Jacques Berlioux[1]; Arnaud Bourgier[1]; Jean-Louis Baudrenghien[1]; Christian Jonville[1]; *Nicolas Tardy*[1]; [1]Rio Tinto Alcan

2:35 PM
Use of Process Simulation to Design a Billet Casthouse: *Gwenola Jaouen*[1]; [1]Rio Tinto - Aluval

3:00 PM
Optimizing Scrap Reuse as a Key Element in Efficient Aluminium Cast Houses: *Tom Schmidt*[1]; Jan Migchielsen[1]; [1]Otto Junker

3:25 PM
Implementation of an Effective Energy Management Program Supported by a Case Study: *Roger Courchee*[1]; [1]K B Alloys, LLC

3:50 PM Break

4:00 PM
Molten Metal Safety Approach through a Network: *Christian Pluchon*[1]; Bruno Hannart[1]; Laurent Jouet-Pastré[1]; [1]Alcan Engineered Product

4:25 PM
Improved Monolithic Materials for Lining Aluminum Holding and Melting Furnaces: *Andy Wynn*[1]; John Coppack[1]; Tom Steele[1]; Ken Moody[1]; [1]Thermal Ceramics

4:50 PM
Cost of Poor Quality in Aluminium Cast House Processes: *Puliyur Krishnaswamy Narasimha Raghavan*[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

Characterization of Minerals, Metals and Materials: Mineral Processing and Analysis

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Monday PM
February 28, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Donato Firrao, Politecnico di Torino; Joner Alves, University of Sao Paulo

2:00 PM
A Study on a Greensand Slate from Abaeté as a Source of Potassium: Thermal Treatment on Different Temperatures and Extraction on Acidic Media: *Adriana da Silva*[1]; Francisco Garrido[1]; Marta Medeiros[1]; João Sampaio[2]; [1]UFRJ; [2]CETEM

2:15 PM
Application of High-Power Nanosecond Pulses to Flotation Separation of Sulfide Minerals: *Igor Bunin*[1]; Valentine Chanturiya[1]; Alexey Kovalev[1]; Irina Khabarova[1]; Elizaveta Koporulina[1]; [1]Research Institute of Comprehensive Exploitation of Mineral Resources RAS

2:30 PM
Sulfur Deposition Impact on Surface Morphology of Fly Ash-Based Adsorbent for Mercury Removal: Yaohua Chen[1]; Wei Gao[1]; Qingcai Liu[1]; Cunfang Lu[1]; Jian Yang[1]; [1]University of Chongqing

2:45 PM
Sulfur Contents on the Distribution Characteristics of Mercury in Coals: *Wei Gao*[1]; Qingcai Liu[1]; Cunfang Lu[1]; Jian Yang[1]; Huimin Zheng[1]; Juan Wen[1]; Chunling Yao[1]; [1]university of Chongqing

3:00 PM
Characterization of Burrows from Mining District of Pachuca - Real Del Monte, in Hidalgo State and Viability Study to Use These Residues as Alternate Industrial Material: Juan Hernández[1]; *Eleazar Salinas*[1]; Francisco Patiño[1]; Isauro Rivera[1]; Martín Reyes[1]; Miguel Pérez[1]; Eduardo Cerecedo[1]; [1]Universidad Autónoma del Estado de Hidalgo

3:15 PM
Structural Characterization of Apatite Type Rare Earth Silicates: *Lii-Cherng Leu*[1]; Sherin Thomas[2]; Mailadil Sebastian[2]; Rick Ubic[1]; Scott Misture[3]; [1]Boise State University; [2]Nationals Institute for Interdisciplinary Science and Technology; [3]Alfred University

3:30 PM Break

3:45 PM Keynote
Materials Characterization is the Key to Effective and Efficient Processing: Case Studies in Extractive Cu Leaching and Mineral Processing Post-Evaluation of Drywall: *Ann Hagni*[1]; [1]Geoscience Consultant

4:25 PM
The Influence of Ca on ($Sr_{2-x}Ca_x$)(MgTe)O_6 Double Perovskites: *Steven Letourneau*[1]; Rick Ubic[1]; Sherin Thomas[2]; G. Subodh[3]; M. Sebastian[2]; [1]Boise State University; [2]National Institute for Interdisciplinary Science and Technology; [3]Physikalishches Institut

4:40 PM
Technological Characterization of Phonolite Rock to Be Applied as Source of Nutrients to the Brazilian Agriculture: *Aline Maria Teixeira*[1]; João Sampaio[2]; Francisco Garrido[3]; Marta Medeiros[3]; [1]IQ/UFRJ - CETEM; [2]CETEM-MCT; [3]IQ-UFRJ

4:55 PM
Study on Thermal Stabilities of 2- Substituted Benzimidazoles Copper and Zinc Complex: Yan Shi[1]; Dan Li[1]; Qingqiao Liu[2]; *Zhongliang Xiao*[1]; [1]Changsha University of Science and Technology; [2]Hunan Hualing Xiantan Steel Co. Ltd.

5:10 PM
Investigation on Extracting Boric Acid from Saline Brine by Boron Specific Chelating Resin: *Xiang Xiao*[1]; Baizhen Chen[1]; Xichang Shi[1]; Yunfeng Fu[1]; Hui Xu[1]; Xiyun Yang[1]; [1]Central South University School

5:25 PM
Low Temperature Carbothermic Reduction of Panzhihua Low Grade Ilmenite after Ball Milling: Ying Lei[1]; Yu Li[1]; *Jinhui Peng*[1]; Libo Zhang[1]; Shenghui Guo[1]; Wei Li[1]; [1]Key Laboratory of Unconventional metallurgy, Ministry of Education

Chloride 2011: Practice and Theory of Chloride-Based Metallurgy: Pyrometallurgy and Acid Regeneration

Sponsored by: The Minerals, Metals and Materials Society, Canadian Institute of Metals, TMS Extraction and Processing Division, TMS: Magnesium Committee, TMS: Energy Committee
Program Organizers: Dirk Verhulst, Consultant, Extractive Metallurgy; V.I. (Lucky) Lakshmanan, Process Research Ortech, Inc.

Monday PM
February 28, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: Khamal Adham, Hatch Ltd.; Lisa Helberg, E.I. DuPont de Nemours

2:00 PM
Chloride Metallurgy: Process Technology Development: Edgar Peek[1]; [1]Xstrata Process Support

2:25 PM
Purification of Titanium Tetrachloride: A History: *Lisa Helberg*[1]; [1]E.I. DuPont de Nemours

2:50 PM
Zirconium Chlorination Behavior: A Literature Review: *Donald Voit*[1]; [1]Westinghouse

3:15 PM
HCl Leaching and Acid Regeneration Using MgCl2 Brines and Molten Salt Hydrates: *Jan deBakker*[1]; Joshua LaMarre[1]; Vladimiros Papangelakis[2]; Boyd Davis[1]; [1]Queen's University; [2]University of Toronto

3:40 PM
Precipitation of Hematite and Recovery of Hydrochloric Acid from Concentrated Iron Chloride Solutions by a Novel Hydrolytic Decomposition Process: *Levente Becze*[1]; Sebastian Hock[1]; George Demopoulos[1]; [1]McGill University

4:05 PM Break

4:20 PM
Application of Oxygen Enrichment for the Pyrohydrolysis of Metal Chlorides: *Kamal Adham*[1]; Cassandra Lee[1]; [1]Hatch Ltd.

4:45 PM
Chlorine, Copper and "De Novo" Synthesis of Dioxins: Alfons Buekens[1]; Shao Ke[1]; [1]Zhejiang University, Institute for Thermal Power Engineering (ITPE)

5:10 PM
Segregation Roasting of a Saprolitic Laterite Ore: An Experimental Investigation: Munyaradzi Kwatara[1]; Juzer Tayabally[1]; *Edgar Peek*[1]; Ron Schonewille[2]; [1]Xstrata Process Support; [2]Xstrata Nickel

5:35 PM
Mechanism of Selective Chlorination of Reduced Limonitic Nickel Laterite Using a Solid Chloride Agent: *Chuanlin Fan*[1]; Xiujing Zhai[1]; Yan Fu[1]; Yongfeng Chang[1]; Binchuan Li[1]; Ting-an Zhang[1]; [1]Northeastern University

Computational Thermodynamics and Kinetics: Brent Fultz Honorary Session I: Joint Session with Neutron and X-Ray Studies of Advanced Materials IV Symposium

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Monday PM
February 28, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Xun-Li Wang, Oak Ridge National Laboratory; Michael Manley, Lawrence Livermore National Laboratory

2:00 PM Introductory Comments

2:05 PM Invited
Megawatts and Petaflops: *Ian S. Anderson*[1]; [1]Oak Ridge National Laboratory

2:35 PM Keynote
High Temperature Thermodynamics and Atom Vibrations: *Brent Fultz*[1]; [1]California Institute of Technology

3:05 PM Invited
Collective Behavior of Intrinsic Localized Modes Observed in the Vibrational Spectrum Of NaI: *Michael Manley*[1]; [1]Lawrence Livermore National Laboratory

3:35 PM Break

4:00 PM Invited
Ab Initio above Zero: Alloy Thermodynamics from First Principles: *Axel van de Walle*[1]; [1]Caltech

4:30 PM Invited
Studies on Vibrational Entropy in Alloys Using Inelastic Neutron Scattering at ORNL: *Jack Robertson*[1]; [1]Oak Ridge National Laboratory

5:00 PM Invited
Time-of-Flight Inelastic Neutron Scattering Studies of Phonons and Magnetism in Polycrystalline Samples: *Robert McQueeney*[1]; [1]Iowa State University

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Intermetallics II and Ti Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Monday PM
February 28, 2011
Room: 32A
Location: San Diego Conv. Ctr

Session Chairs: Kevin Hemker, Johns Hopkins University; Michael Smith, Federal Bureau of Investigation

2:00 PM Invited
Transformation-Induced Plasticity during Pseudo-Elastic Deformation in Ni-Ti Microcrystals: *Michael Mills*[1]; Peter Anderson[1]; Matthew Bowers[1]; Sivom Manchiraju[1]; Peter Sarosi[2]; Michael Uchic[3]; [1]The Ohio State University; [2]General Motors R & D Tech Center; [3]Air Force Research Labs RXLM

2:30 PM Invited
Some Unusual Aspects of the Deformation of FeAl and Fe2MnAl: *I. Baker*[1]; [1]Dartmouth College

3:00 PM Invited
Recent Progress in High Temperature TiAl Alloys: *Guoliang Chen*[1]; Junpin Lin[2]; [1]Univ. of Science and Technology Beijing; [2]univ. of Science and Technology Beijing

3:30 PM
Atomistic Simulations of Cross-Slip Nucleation in L12 Ni3Al: *Satish Rao*[1]; Dennis Dimiduk[2]; Jaafar El-Awady[3]; Triplicane Parthasarathy[1]; Michael Uchic[2]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research laboratory; [3]Johns Hopkins University

3:45 PM
Effect of Lamellar Microstructure on Impact Toughness and Fracture Behavior in Wrought Gamma TiAl Alloy: *Hirotoyo Nakashima*[1]; Toshikazu Kikugawa[1]; Shun Oinuma[2]; Masao Takeyama[1]; [1]Tokyo Institute of Technology; [2]Former graduate student (Currently Toshiba Corporation Power Systems Company)

4:00 PM Break

4:10 PM
The Role of Microtexture on Fatigue Lifetime Variability and Crack Initiation Mechanisms in Ti-6Al-4V: *Christopher Szczepanski*[1]; James Larsen[2]; S. Lee Semiatin[2]; [1]UTC/AFRL; [2]AFRL/RX

4:25 PM
Understanding of the Fracture Behavior of Titanium Alloy Ti-6Al-4V: *Santhosh Koduri*[1]; Vikas Dixit[1]; Peter Collins[2]; Babu Viswanathan[1]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

4:40 PM
Extended Zonal Dislocations Mediating {11-22}<11-2-3> Twinning in Titanium: *Bin Li*[1]; [1]Center for Advanced Vehicular Systems

4:55 PM
Characterization of {11-21} Twinning in \945-Ti: *Leyun Wang*[1]; Rozaliya Barabash[2]; Yiyi Yang[1]; Thomas Bieler[1]; Martin Crimp[1]; Philip Eisenlohr[3]; Wenjun Liu[4]; Gene Ice[2]; [1]Michigan State University; [2]Oak Ridge National Laboratory; [3]Max-Planck-Institut für Eisenforschung GmbH; [4]Argonne National Laboratory

Dynamic Behavior of Materials V: Dynamic Behavior of Reactive Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Monday PM
February 28, 2011

Room: 5A
Location: San Diego Conv. Ctr

Session Chair: Naresh Thadhani, Georgia Institute of Technology

2:00 PM Invited
Behavior of Laminate Reactive Materials under Dynamic Loading Conditions: *Timothy Weihs*[1]; Adam Stover[1]; David Lunking[1]; Jason Jouet[2]; Naresh Thadhani[3]; S Wu[3]; Kenneth Vecchio[4]; F Jiang[4]; Richard Lee[2]; [1]Johns Hopkins University; [2]Naval Surface Warfare Center; [3]Georgia Institute of Technology; [4]UC San Diego

2:30 PM
Dynamic Pressure Sensing during Rapid Combustion of Metal Powders in Bomb Calorimetry: *Adam Stover*[1]; Nicholas Krywopusk[1]; David Lunking[1]; Timothy Weihs[1]; [1]The Johns Hopkins University

2:45 PM
Fabrication and Properties of Hot Explosive Consolidation of Ni-Al Composites: *Laszlo Kecskes*[1]; Akaki Peikrishvili[2]; Elguja Chagelishvili[2]; Zhiliang Pan[3]; Weihua Lin[3]; Qiuming Wei[3]; [1]US Army Research Laboratory; [2]Tsulukidze Institute of Mining and Technology; [3]University of North Carolina Charlotte

3:00 PM
Investigating Reaction Mechanisms in Ni+Al Configurations Using Laser-Accelerated Thin Foil Impact: *Sean Kelly*[1]; Naresh Thadhani[1]; [1]Georgia Institute of Technology

3:15 PM
Mesoscale Modeling of the Deconsolidative Burning in Polymer-Bonded Explosives: *H.Keo Springer*[1]; [1]Lawrence Livermore National Lab

3:30 PM Break

3:50 PM Invited
Wave Propagation and Instabilities in "Soft" Heterogeneous Materials: *Vitali Nesterenko*[1]; [1]University of California, San Diego

4:20 PM
Quasi-Static and Dynamic Response of Explosively Consolidated Reactive Mixtures: *Chung-Ting Wei*[1]; Vitali Efrem[2]; Fengchun Jiang[1]; David Benson[1]; Kenneth Vecchio[1]; Naresh Thadhani[3]; Marc Meyers[1]; [1]University of California, San Diego; [2]Lawrence Livermore National Lab; [3]Georgia Institute of Technology

4:35 PM
The Role of Plastic Deformation in Initiating Intermetallic Formation Reactions: *Brady Aydelotte*[1]; Naresh Thadhani[1]; [1]Georgia Tech

4:50 PM
Numerical Modeling of Dynamic Deformation of Al/W Granular Composites: *Karl Olney*[1]; Sophia Wang[1]; David Benson[1]; Vitali Nesterenko[1]; [1]UCSD

5:05 PM
Investigation of Al-Metal Reactions Induced by High-Rate Mechanical Loading: *Eric Herbold*[1]; Jennifer Jordan[2]; Naresh Thadhani[1]; [1]Georgia Tech; [2]AFRL

5:20 PM
Processing and Dynamic Testing of Al/W Granular Composites: *Po-Hsun Chiu*[1]; Vitali Nesterenko[1]; [1]UCSD

5:35 PM
Meso-Scale Simulations of Epoxy-Based Reactive Materials at High Strain-Rates: *Bradley White*[1]; H. Keo Springer[2]; Jonathan Spowart[3]; Jennifer Jordan[4]; Naresh Thadhani[1]; [1]Georgia Institute of Technology; [2]Lawrence Livermore National Laboratory; [3]AFRL/RXLMD; [4]AFRL/RWME

Electrode Technology for Aluminium Production: Anode Baking

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Monday PM
February 28, 2011

Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Said Al Maawali, Sohar Aluminium

2:00 PM Introductory Comments

2:05 PM
Determination of Coke Calcination Level and Anode Baking Level – Application and Reproducibility of L_c Based Methods: *Stein Rørvik*[1]; Lorentz Petter Lossius[2]; Arne Petter Ratvik[3]; [1]SINTEF Materials & Chemistry; [2]Hydro Primary Metal Technology; [3]Norwegian University of Science and Technology (NTNU)

2:30 PM
Operation of an Open Type Anode Baking Furnace with a Temporary Crossover: *Esteban Cobo*[1]; Luis Beltramino[1]; Juan Artola[1]; Jorge Rey Boero[1]; Pierre-Jean Roy[2]; Jean Bigot[2]; [1]Aluar Aluminio Argentino; [2]Rio Tinto Alcan

2:55 PM
Recent Developments in Anode Baking Furnace Design: Dagoberto Severo[1]; Vanderlei Gusberti[1]; Peter Sulger[2]; Felix Keller[2]; *Markus Meier*[2]; [1]CAETE Engenharia Ltda.; [2]R&D Carbon Ltd.

3:20 PM
Sohar Aluminium's Anode Baking Furnace Operation: *Said Al Hosni*[1]; Jim Chandler[1]; Olivier Forato[1]; François Morales[2]; Christian Jonville[2]; Jean Bigot[2]; [1]Sohar Aluminium; [2]Rio Tinto Alcan

3:45 PM Break

3:55 PM
Meeting the Challenge of Increasing Anode Baking Furnace Productivity: *François Ordronneau*[1]; Magali Gendre[1]; Luc Pomerleau[1]; Nigel Backhouse[1]; Adam Berkovich[1]; Xin Huang[1]; [1]Rio Tinto Alcan

4:20 PM
Wireless Communication for Secured Firing and Control Systems of Anode Baking Furnaces: *Nicolas Fiot*[1]; Christian Coulaud[1]; [1]Solios Carbone

4:45 PM
Full Control of Pitch Burn during Baking: It's Impact on Anode Quality, Operational Safety, Maintenance and Operational Costs: *Detlef Maiwald*[1]; Domenico Di Lisa[1]; Peter Mnikoleiski[1]; [1]Innovatherm

5:10 PM
High Performance Sealing for Anode Baking Furnaces: Pierre Mahieu[1]; Sébastien Neple[1]; Nicolas Fiot[1]; Ismael Ofico[2]; Manuel Eufrasio[2]; [1]Solios Carbone; [2]Mozal

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue Property-Microstructure Relationships and Crack Growth

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Monday PM
February 28, 2011
Room: 31C
Location: San Diego Conv. Ctr

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

2:00 PM
Effects of Materials Strength on Very-High-Cycle Fatigue Behavior for Low Alloy Steels: *Youshi Hong*[1]; Aiguo Zhao[1]; [1]Institute of Mechanics, Chinese Academy of Sciences

2:20 PM
Effect of Porosity on the Mechanical and High Cycle Fatigue Behavior of Casting AM60B Magnesium Alloy: *Kee-Ahn Lee*[1]; Kyu-Sik Kim[2]; Jung-Cheol Park[3]; Chang-Dong Im[4]; [1]Andong National University; [2]Hanyang University; [3]RIST; [4]KIMM

2:40 PM
The Effect of Precipitate State on the Cyclic Deformation Behaviour of Al Alloys: Experiments and Modelling: Weizhong Han[1]; Alexei Vinogradov[2]; *Christopher Hutchinson*[1]; [1]Monash University; [2]Osaka City University

3:00 PM Invited
Effect of Microstructure on Fatigue Behavior of Two Pipeline Steels: *Gongyao Wang*[1]; Muralidharan Govindarajan[2]; Douglas Stalheim[3]; Peter Liaw[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory; [3]DGS Metallurgical Solutions, Inc

3:20 PM
Fatigue and Fracture Performance of 500MPa Grade High Strength Bridge Steel: Huaxin Hou[1]; *Chengjia Shang*[2]; Yuling Zhang[3]; [1]Ansteel Company; [2]University of Science and Technology Beijing; [3]Institute of Railway Science and Technology

3:40 PM Break

3:50 PM
Study the High-Cycle-Fatigue Behavior of a Nano-Precipitate Strengthened Alloy by In-Situ Neutron-Diffraction Experiments: *E-Wen Huang*[1]; Michael Hofmann[2]; Saurabh Kabra[3]; Sven Vogel[4]; Peter Liaw[5]; [1]National Central University; [2]Forschungsneutronenquelle Heinz Maier-Leibnitz (FRM II); [3]Australian Nuclear Science and Technology Organisation; [4]Los Alamos National Laboratory; [5]University of Tennessee

4:10 PM Invited
Fatigue Crack Tip Mechanics Following a Tensile Overload: *Soo Yeol Lee*[1]; Peter K. Liaw[2]; Hahn Choo[2]; Ronald B. Rogge[3]; Ke An[4]; Camden R. Hubbard[4]; [1]The University of British Columbia; [2]The University of Tennessee; [3]National Research Council Canada; [4]Oak Ridge National Laboratory

4:30 PM
A Modified LEFM Approach for the Prediction of the Notch Effect in Fatigue: *Masahiro Endo*[1]; Keiji Yanase[1]; Satoshi Ikeda[2]; Arthur McEvily[3]; [1]Fukuoka University; [2]Kawasaki Heavy industries, Ltd.; [3]University of Connecticut

4:50 PM
Resistivity Based Evaluation of the Fatigue Behaviour of Cast Iron: Holger Germann[1]; Peter Starke[1]; *Dietmar Eifler*[1]; [1]University of Kaiserslautern

5:10 PM
Microstructure-Sensitive Probabilistic Fatigue Modeling of Notched Components: *William Musinski*[1]; David McDowell[1]; [1]Georgia Institute of Technology

5:30 PM
Metallurgical Aspects of Stress Corrosion Cracking of X100 High-Strength Pipeline Steel: *Frank Cheng*[1]; [1]University of Calgary

Federal Funding Workshop: Panel Discussion

Sponsored by: The Minerals, Metals and Materials Society, TMS: Public and Governmental Affairs Committee
Program Organizers: Robert Shull, National Institute of Standards and Technology; Jud Ready, Georgia Tech

Monday, 4:00-6:00 PM
February 28, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chairs: Robert Shull, NIST; Jud Ready, Georgia Tech

4:00 PM Introductory Comments by Robert Shull

Panel Discussion with Panelists:

Zakya Kafafi, National Science Foundation (NSF), Director, Division of Materials Research

Michael Kassner, Office of Naval Research (ONR), Director of Research

Harriet Kung, Department of Energy (DOE), Director, Basic Energy Sciences

Jon Mogford, Defense Advanced Research Projects Agency(DARPA), Deputy Director, Defense Sciences Office

Thomas Russell, U.S. Air Force Office of Scientific Research (AFOSR), Director, Aerospace Chemical and Materials Division

David Stepp, U.S. Army Research Office (ARO), Chief, Materials Science Division

Summary Comments by Jud Ready

Networking Reception

Friction Stir Welding and Processing VI: High Temperature Materials II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Monday PM
February 28, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: Yuri Hovanski, Pacific Northwest National Laboratory

2:00 PM Invited
Reliable Sealing of Copper Canisters through Cascaded Control of Power Input and Tool Temperature: *Lars Cederqvist*[1]; Olof Garpinger[2]; Tore Hagglund[3]; Anders Robertsson[3]; [1]SKB/Lund University; [2]XDIN; [3]Lund University

2:25 PM Invited
Friction Stir Welding (FSW) of a Hardenable Alloy Steel in 'Dry' and 'Wet' Environments: Norman Overfield[1]; Murray Mahoney[2]; Russell Steel[3]; Jon Babb[3]; Sarath Menon[1]; *Terry McNelley*[1]; [1]Naval Postgraduate School; [2]Consultant, Brigham Young University; [3]MegaStir Technologies

2:50 PM Invited
Friction Stir Welding of Industrial Steels: Jonathan Perrett[1]; *Jonathan Martin*[1]; Jeremy Peterson[2]; Russell Steel[2]; Scott Packer[3]; [1]TWI; [2]MegaStir Technologies; [3]Advanced Metal Products

3:15 PM Invited
Localized Mechanical Behavior Of Ti-5111 Friction Stir Welds: *Jennifer Wolk*[1]; Marc Zupan[2]; Christopher Cheng[2]; [1]Naval Surface Warfare Center; [2]University of Maryland Baltimore County

3:40 PM
Mechanical Properties of Thick Section Titanium 6Al-4V Friction Stir and Electron Beam Welds: *Paul Edwards*[1]; Gary Coleman[1]; Marc Petersen[1]; [1]The Boeing Company

4:00 PM
Transformation and Deformation Texture Study in Friction Stir Processed API X80 Steel: *Majid Abbasi*[1]; Tracy Nelson[1]; Carl Sorensen[1]; [1]Brigham Young University

4:20 PM Break

4:30 PM Invited
The Mechanisms of Microstructure Control and Homogenization in Multi-Pass Friction Stir Processing (FSP) of NiAl Bronze: *Terry McNelley*[1]; Sarath Menon[1]; Carolyn England[1]; [1]Naval Postgraduate School

4:55 PM
Wear Testing of Friction Stir Spot Welding Tools and Evaluation of Weld Performance as a Function of Tool Condition: Chris Ridges[1]; *Michael Miles*[1]; Yuri Hovanski[2]; Russell Steel[3]; [1]BYU; [2]Pacific Northwest National Lab; [3]Megastir Technologies

5:15 PM
Tungsten Based Tool Material Development for the Friction Stir Welding of Hard Metals: *Brian Thompson*[1]; [1]EWI

5:35 PM
Improving Heat-Affected Zone Liquation Cracking Resistance of Nickel-Base Alloys by Friction Stir Processing: *James Rule*[1]; Jeffrey Rodelas[1]; John Lippold[1]; [1]Welding and Joining Metallurgy Group, The Ohio State University

5:55 PM
Using Electron Backscatter Diffraction to Characterize the Texture and Microstructure of Friction Stir Welded AISI 304L Stainless Steel: *Benjamin Nelson*[1]; Carl Sorensen[1]; [1]Brigham Young University

Frontiers in Solidification Science: Nucleation and Related Phenomena

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Solidification Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Daniel Lewis, Rensselaer Polytechnic Institute

Monday PM
February 28, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
Heterogeneous Nucleation of Anisotropic Solids: Aurèle Mariaux[1]; *Michel Rappaz*[1]; [1]EPFL

2:30 PM Invited
Phase-Field Simulations of Peritectic Growth in Ti-Al-B Including TiB_2 Inoculation: *Markus Apel*[1]; Janin Eiken[1]; Ulrike Hecht[1]; [1]Access e. V.

3:00 PM
Dispersion of Nanoparticles in Magnesium Using Contactless Electromagnetic Acoustic Transmission (EMAT) under High Magnetic Fields: *Zachary Bryan*[1]; Peiru Chen[1]; Hunter Henderson[1]; Orlando Rios[2]; Gail Mackiewicz-Ludtka[2]; Gerard Ludtka[2]; Michele Manuel[1]; [1]University of Florida; [2]Oak Ridge National Laboratory

3:20 PM
In-Situ Investigation of the Growth Dynamics of Floating and Locked Eutectic Grains during Thin-Sample Directional Solidification Using a Rotating Stage: *Melis Serefoglu*[1]; Sabine Bottin-Rousseau[1]; Silvère Akamatsu[1]; Gabriel Faivre[1]; [1]UPMC / CNRS

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Modeling of Atomic Mobility

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Monday PM
February 28, 2011
Room: 31A
Location: San Diego Conv. Ctr

Session Chairs: David Andersson, Los Alamos National Laboratory; Annika Borgenstam, Royal Institute of Technology

2:00 PM Invited
Assessment of Mobilities: *Lars Hoglund*[1]; [1]KTH

2:30 PM Invited
Evaluation of the Uncertainty of Extrapolating Thermodynamic and Mobility Data in Temperature and Composition: *Annika Borgenstam*[1]; [1]KTH

3:00 PM Invited
Development of a Reference Self-Diffusion Mobility Database: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

3:30 PM Break

3:50 PM Invited
Atomistic and Meso-Scale Simulations of Diffusion in $UO_{2\pm x}$: *David Andersson*[1]; Pankaj Nerikar[1]; Blas Uberuaga[1]; Michael Buksas[1]; Neil Carlson[1]; Cetin Unal[1]; Chris Stanek[1]; [1]Los Alamos National Laboratory

4:20 PM
Ab Initio Determination of Point Defect Kinetics in Fe-Based Alloys: Tilmann Hickel[1]; Roman Nazarov[1]; *Niko Sandschneider*[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

4:50 PM
Oxygen Diffusion in α-Titanium Alloys: *Henry Wu*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

5:20 PM
Phase Stability of Mg2X Intermetallic Phases in the Mg-X-X' (X,X': Si, Ge, Sn) Systems: *Jean Claude Tedenac*[1]; Isabelle Martin[1]; Elodie Ruiz[1]; Abel Haidoux[1]; [1]ICG

Hydrogen Storage in Materials: Theory and Experiment: Session II

Sponsored by: The Minerals, Metals and Materials Society, ASM Materials Science Critical Technology Sector, TMS: Energy Conversion and Storage Committee
Program Organizer: Louis Hector Jr, GM R&D Center

Monday PM
February 28, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chair: Dallas Trinkle, University of Illinois, Urbana-Champaign

2:00 PM
Controlling the Kinetics and Decomposition Pathway of LiBH4 and Mg(BH4)2 via Confinement in Highly Ordered Nanoporous Carbon: *Xiangfeng Liu*[1]; David Peaslee[1]; Christopher Jost[1]; Eric Majzoub[1]; [1]University of Missouri-St. Louis

2:20 PM
Direct Line-of-Site Gas Desorption Study of $LiBH_4$ in Nanoporous Carbons: The Influence of Surface Chemistry and the Size Effect: *David Peaslee*[1]; Xiangfeng Liu[1]; E. Majzoub[1]; T. Baumann[2]; [1]University of Missouri - St. Louis; [2]Lawrence Livermore National Laboratory

2:40 PM
Energetics and Microstructures in Mg/Nb Multilayers: *Anchalee Junkaew*[1]; Byoungsoo Ham[1]; Xinghang Zhang[1]; Raymundo Arroyave[1]; [1]Texas A&M University

3:00 PM
Exploration of Mg and Ca Based Laves Phases for Hydrogen Storage: *Beau Billet*[1]; Yuwen Cui[1]; J.-C. Zhao[1]; Leonid Bendersky[2]; William Boettinger[2]; [1]Ohio State University; [2]National Institute of Standards and Technology

3:20 PM
Hydrogen Absorption/Desorption Behavior of the MgH_2-Ni/Al_2O_3 Composite Prepared by High Energy Ball Milling: *Natsuki Yamasaki*[1]; Manshi Ohyanagi[1]; [1]Ryukoku University

3:40 PM Break

4:00 PM
Improved Thermodynamics and Kinetics of Mg-based Hydrogen-Storage Materials Produced via Controlled Devitrification of a Metallic Glass: *Eric Lass*[1]; [1]NIST

4:20 PM
Li-Mg Solid Solution Alloy for Reversible Hydrogen Storage: *Bo Liu*[1]; Zhigang Fang[1]; Jun Lu[1]; Peng Fan[1]; [1]University of Utah

4:40 PM
Nano-Chemo-Mechanics of Hydrogen Embrittlement of Metals under Extreme Conditions: Shan Huang[1]; David McDowell[1]; *Ting Zhu*[1]; [1]Georgia Institute of Technology

5:00 PM
Production and Characterization of Supported Transition Metal Nanoparticles on Multi-Walled Carbon Nanotubes Functionalized by Gamma Irradiation and Chemical Process: *Jessika Rojas*[1]; Carlos Castano[1]; [1]Missouri University of Science and Technology

5:20 PM Invited
Thermodynamics of Nano-Cluster Complex Hydrides Using First-Principles Density Functional Theory: *Eric Majzoub*[1]; Vidvuds Ozolins[2]; Fei Zhou[2]; [1]University of Missouri - St. Louis; [2]UCLA

ICME: Overcoming Barriers and Streamlining the Transition of Advanced Technologies to Engineering Practice -- The 12th MPMD Global Innovations Symposium: Modeling and Simulation Tools

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division
Program Organizers: Paul Mason, Thermo-Calc Software Inc; Mei Li, Ford Motor Company; James Warren, National Institute of Standards and Technology; Jeff Simmons, AFRL

Monday PM
February 28, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Jeff Simmons, AFRL; David McDowell, Georgia Institute of Technology

2:00 PM Invited
Open Source Calphad Software – Friend or Foe?: *Ursula Kattner*[1]; [1]National Institute of Standards and Technology

2:25 PM Invited
FiPy: PDE Performance in Python: *Jonathan Guyer*[1]; Daniel Wheeler[1]; James Warren[1]; [1]NIST

2:50 PM
Assessing Data Completeness and Predictive Potential in Magnesium Alloy Databases: *Kim Ferris*[1]; Dumont Jones[2]; [1]Pacific Northwest National Laboratory; [2]Proximate Technologies, LLC.

3:10 PM Invited
Accelerated Insertion of Materials with Incomplete or Uncertain Information: *Krishna Rajan*[1]; [1]Iowa State University

3:35 PM Break

3:50 PM Invited
Code Validation and Qualification – The YMP Case: *Patrice Turchi*[1]; [1]Lawrence Livermore National Laboratory

4:15 PM Invited
A Phase Field Study on Static Strain Aging Kinetics of Dual Phase Linepipe Steel: *Ning Ma*[1]; Neeraj Thirumalai[1]; Nathan Nissley[2]; Rick Noecker[3]; William Lamberti[1]; Raghavan Ayer[1]; [1]Corporate Strategic Research, ExxonMobil Research & Engineering Company; [2]ExxonMobil Upstream Research Company; [3]ExxonMobil Development Company

4:40 PM
Determination of Microstructure-Property Correlations Using Phase Field Method: *Saswata Bhattacharya*[1]; Tae Wook Heo[1]; Kunok Chang[1]; Ricardo Lebensohn[2]; Long-Qing Chen[1]; [1]Pennsylvania State University; [2]Los Alamos National Laboratory

5:00 PM
The Hierarchy of Fatigue Damage Accumulation: *Sushant Jha*[1]; Christopher Szczepanski[1]; Craig Przybyla[2]; James Larsen[2]; [1]Universal Technology Corporation/Air Force Research Laboratory; [2]Air Force Research Laboratory

5:20 PM
In-Situ Microscale Fatigue Study to Evaluate the Role of Microstructural Neighborhoods: *Christopher Szczepanski*[1]; Sushant Jha[1]; Paul Shade[1]; Robert Wheeler[2]; James Larsen[3]; [1]UTC/AFRL; [2]UES/AFRL; [3]Air Force Research Laboratory/RX

Magnesium Technology 2011: Casting and Solidification

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Monday PM
February 28, 2011

Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Baicheng Liu, Tsinghua University; Elhachmi Essadiqi, CANMET

2:00 PM
Simulation of Porosity and Hot Tears in a Squeeze Cast Magnesium Control Arm: *Christoph Beckermann*[1]; Kent Carlson[1]; John Jekl[2]; R. Berkmortel[2]; [1]University of Iowa; [2]Meridian

2:20 PM
Dendritic Microstructure in Directional Solidification of Magnesium Alloys: *Morteza Amoorezaei*[1]; Sebastian Gurevich[1]; Nikolas Provatas[1]; [1]McMaster University

2:40 PM
Effect of Fraction Solid and Injection Speed on Microstructures and Casting Defects of Magnesium Alloy in New Type Semi-solid Injection Process: *Yuichiro Murakami*[1]; Naoki Omura[1]; Mingjun Li[1]; Takuya Tamura[1]; Shuji Tada[1]; Kenji Miwa[1]; [1]Advanced Industrial Science and Technology

3:00 PM
Macrostructure Evolution in Directionally Solidified Mg-RE Alloys: Mario Salgado-Ordorica[1]; Willi Punessen[1]; Sangbong Yi[1]; Jan Bohlen[1]; Karl-Ulrich Kainer[1]; *Norbert Hort*[1]; [1]GKSS-Forschungszentrum

3:20 PM
Microstructure and Mechanical Behavior of Cast Mg AZ31-B Alloy Produced by Magnetic Suspension Melting Process: *Nathan Rimkus*[1]; Mark Weaver[1]; Nagy El-Kaddah[1]; [1]Univ of Alabama

3:40 PM
Investigations on Hot Tearing of Mg-Zn-(Al) Alloys: Le Zhou[1]; Yuanding Huang[1]; Pingli Mao[2]; Karl Ulrich Kainer[1]; Zheng Liu[2]; *Norbert Hort*[1]; [1]MagIC-Magnesium Innovation Centre, GKSS Research Centre; [2]Shenyang University of Technology

4:00 PM Break

4:20 PM
Proportional Strength-Ductility Relationship of Non-SF6 Diecast AZ91D Eco-Mg Alloys: *Shae K. Kim*[1]; [1]Korea Institute of Industrial Technology

4:40 PM
Estimation of Heat Transfer Coefficient in Squeeze Casting of Magnesium Alloy AM60 by Experimental Polynomial Extrapolation Method: *Zhizhong Sun*[1]; Xiaoping Niu[2]; Henry Hu[1]; [1]University of Windsor; [2]Promatek Research Centre, Cosma International

5:00 PM
Wide Strip Casting Technology of Magnesium Alloys: *Woo-Jin Park*[1]; Jae-Joong Kim[1]; In-Joon Kim[1]; Dong-Kyun Choo[1]; [1]RIST

5:20 PM
Microstructural Analysis of Segregated Area in Twin Roll Cast Mg Alloy Sheet: *Jae Joong Kim*[1]; Woo-Jin Park[1]; Dong Kyun Choo[1]; [1]RIST

5:40 PM
Development of the Electromagnetic Continuous Casting Technology for Mg Alloys: *Joonpyo Park*[1]; Myounggyun Kim[1]; Jong-Ho Kim[1]; Gyu Chang Lee[1]; U-Sok Yoon[1]; Woojin Kim[1]; [1]Research Institute of Industrial Science and Technology

Magnesium Technology 2011: Primary Production; Characterization and Mechanical Performance

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Monday PM
February 28, 2011

Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Neale Neelameggham, US Magnesium LLC; Adam Powell, Metal Oxygen Separation Technologies Inc.

2:00 PM
The Development of the Multipolar Magnesium Cell: A Case History of International Cooperation in a Competitive World: *Olivo Sivilotti*[1]; [1]Sigma Tau Technologies

2:20 PM
Effect of KCl on Liquidus of LiF-MgF2 Molten Salts: *Sh Yang*[1]; Fengli Yang[1]; Xianwei Hu[2]; Zhaowen Wang[2]; Zhingning Shi[2]; Bingliang Gao[2]; [1]Jiangxi University of Science and Technology; [2]School of Materials and Metallurgy117#, Northeastern University

2:40 PM
Efficiency and Stability of Solid Oxide Membrane Electrolyzers for Magnesium Production: *Eric Gratz*[1]; Soobhankar Pati[1]; Jarrod Milshtein[1]; Adam Powell[2]; Uday Pal[1]; [1]Boston University; [2]Metal Oxygen Separation Technologies, Inc.

3:00 PM
Magnesium Production by Vacuum Aluminothemic Reduction of a Mixture of Calcined Dolomite and Calcined Magnesite: *Wenxin Hu*[1]; Naixiang Feng[1]; Yaowu Wang[1]; Zhihui Wang[1]; [1]Northeastern University

3:20 PM
Multiphase Diffusion Study for Mg-Al Binary Alloy System: *Young-Min Kim*[1]; Sazol Das[1]; Manas Paliwal[1]; In-Ho Jung[1]; [1]McGill University

3:40 PM
Experiments and Modeling of Fatigue of an Extruded Mg AZ61 Alloy: *J Jordon*[1]; J. Gibson[1]; M. Horstemeyer[1]; [1]Mississippi State University

4:00 PM Break

4:20 PM
Low-Cycle Fatigue Behavior of Die-Cast Mg Alloy AZ91: *Luke Rettberg*[1]; Warwick Anderson[1]; J. Wayne Jones[1]; [1]University of Michigan

4:40 PM
Small Fatigue Crack Growth Observations in an Extruded Magnesium Alloy: *J. Bernard*[1]; J. Jordon[1]; M. Horstemeyer[1]; [1]Center for Advanced Vehicular Systems- Mississippi State University

5:00 PM
Applicability of Mg-Zn-(Y, Gd) Alloys for Engine Pistons: *Kazutaka Okamoto*[1]; Masato Sasaki[2]; Norikazu Takahashi[2]; Qudong Wang[3]; Yan Gao[3]; Dongdi Yin[3]; Changjiang Chen[3]; [1]Hitachi, R&D; [2]Hitachi Automotive Systems; [3]Shanghai Jiao Tong Univ

5:20 PM
Compressive Creep Behaviour of Extruded Mg Alloys at 150°C: *Michelle Fletcher*[1]; Lukas Bichler[1]; Dimitry Sediako[2]; Robert Klassen[3]; [1]University of British Columbia; [2]NRC-Canadian Neutron Beam Centre; [3]University of Western Ontario

5:40 PM
The Effect of Thermomechanical Processing on the Creep Behavior and Fracture Toughness of Thixomolded® AM60 Alloy: *Zhe Chen*[1]; Amit Shyam[2]; Jane Howe[2]; Jack Huang[3]; Ray Decker[3]; Steve LeBeau[3]; Carl Boehlert[1]; [1]Michigan State University; [2]Oak Ridge National Laboratory; [3]Thixomat Inc.

Magnetic Materials for Energy Applications: Magnetocaloric Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Monday PM
February 28, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: Oliver Gutfleisch, IFW Dresden

2:00 PM Keynote
Towards Better Magnetocaloric Materials: *Vitalij Pecharsky*[1]; Karl Gschneidner[1]; [1]Iowa State University

2:40 PM Invited
Interplay between Structure and Magnetism in $Gd_5(Si_xGe_{1-x})_4$: *Daniel Haskel*[1]; [1]Argonne National Laboratory

3:05 PM Invited
Novel Design of Magnetic Refrigerant Materials towards High Refrigeration Performance: *Julia Lyubina*[1]; [1]Imperial College London

3:30 PM
Adiabatic Temperature Change, Entropy Change and Magneto-Volume Effect in La-Fe-Si Alloys: A Study of Thermal and Magnetic Hystereses: *Konstantin Skokov*[1]; James Moore[1]; Jian Liu[1]; Maria Krautz[1]; Oliver Gutfleisch[1]; [1]Leibniz Institute for Solid State and Materials Research

3:45 PM
Magnetocaloric Study of Mechanically Alloyed LaFeSi: Mathieu Phejar[1]; *Lotfi Bessais*[1]; Valérie Paul-Boncour[1]; [1]CNRS

4:00 PM Break

4:15 PM
Field Effect on Martensitic Transition and Magnetocaloric Effect in $Ni_{50}Mn_{35.5}In_{14.5}$ and $Ni_{45.5}Mn_{43}In_{11.5}$ Ribbons: Wagner Rosa[1]; Tatiana Sánchez[1]; Javier García[1]; Victor Vega[1]; Victor Prida[1]; Lluisa Escoda[2]; Joan Suñol[2]; *Blanca Hernando*[1]; [1]Universidad de Oviedo; [2]Universidad de Girona

4:30 PM
In-Situ High-Energy X-Ray Studies of Magnetic-Field-Induced Functional Behaviors in Ferromagnetic Shape-Memory Alloys: *Zhihua Nie*[1]; Yandong Wang[1]; Yang Ren[2]; [1]Beijing Institute of Technology; [2]Argonne National Laboratory

4:45 PM
Room Temperature Magneto-caloric Effect In Fe Substituted Ni-Mn-Sn Alloy: *Rahul Das*[1]; Perumal Alagarsamy[1]; Ananthakrishnan Srinivasan[1]; [1]Indian Institute of Technology Guwahati

5:00 PM
The Magnetocaloric Effect in Ni-Mn-Ga Heusler Alloys: *Mikhail Drobosyuk*[1]; Vasiliy Buchelnikov[1]; Sergey Taskaev[1]; [1]Chelyabinsk State University

5:15 PM
Calorimetric and Magnetic Measurements of Magnetic Entropy Change in Pr0.5Sr0.49Ca0.01MnO3: *Ramanathan Mahendiran*[1]; [1]National University of Singapore

5:30 PM
Influence of Heat Treatment on the Structure and Magnetic Properties of Gd_5Sn_4 Alloy for Magnetic Refrigeration: *Xichun Zhong*[1]; H Zhang[2]; M Zou[2]; Zhongwu Liu[1]; Dechang Zeng[1]; K.A. Gschneidner Jr.[2]; V.K. Pecharsky[2]; [1]South China University of Technology; [2]The Ames Laboratory, Iowa State University

5:45 PM
Bonded Magnetocaloric Powders for the Refrigeration Application: *Spomenka Kobe*[1]; Benjamin Podmiljšak[1]; Marko Soderžnik[1]; Boris Saje[1]; Paul McGuiness[1]; [1]Jožef Stefan Institute

Massively Parallel Simulations of Materials Response: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Diana Farkas, Virginia Tech; Susan Sinnott, University of Florida

Monday PM
February 28, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
Status of the ReaxFF Reactive Force Field: Development and Applications: *Adri van Duin*[1]; [1]Penn State

2:25 PM Invited
LIGGGHTS – Open Source Discrete Element Simulations of Granular Materials Based on LAMMPS: *Christoph Kloss*[1]; [1]JKU Linz

2:50 PM Invited
Parallel Parameterization of Models Using Noisy Simulation Data: *Steven Stuart*[1]; Dheeraj Chahal[1]; Sebastien Goasguen[1]; [1]Clemson University

3:15 PM Invited
Effect of the Stress Field of an Edge Dislocation on Carbon Diffusion in α-Iron: Coupling Molecular Statics and Atomistic Kinetic Monte Carlo: *Michel Perez*[1]; [1]Université de Lyon - INSA de Lyon

3:40 PM Break

3:55 PM
Molecular Dynamics Simulation of Cavitation in Metallic Glass: *Michael Falk*[1]; Shuo Lu[2]; Pavan Valavala[1]; Michael Spector[1]; [1]Johns Hopkins University; [2]Beihang University

4:15 PM
Large Scale Simulation of 3D Nanocrystalline Mg by Molecular Dynamics: *Dong-Hyun Kim*[1]; M. V. Manuel[1]; F. Ebrahimi[1]; S. R. Phillpot[1]; [1]Department of Materials Science and Engineering, University of Florida

4:35 PM
Large-Scale Molecular Dynamics Simulations of Tribology in Metallic Contacts: *Michael Chandross*[1]; [1]Sandia National Laboratories

4:55 PM
Molecular Dynamics Simulations of Nanoindentation of Si/SiO2 Systems using the Charge Optimized Many-Body (COMB) Potential: *Tzu-Ray Shan*[1]; Simon Phillpot[1]; Susan Sinnott[1]; [1]University of Florida

5:15 PM Invited
Shear Transformation Zone Dynamics Modeling of Metallic Glasses: *Christopher Schuh*[1]; Eric Homer[1]; [1]MIT

5:40 PM Invited
Modeling Shear Band Formation and Propagation in Bulk Metallic Glasses and Nanoglasses: Daniel Sopu[1]; Yvonne Ritter[1]; *Karsten Albe*[1]; [1]TU Darmstadt

Materials for the Nuclear Renaissance II: Irradiation Effects

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Raul Rebak, GE Global Research; Brian Cockeram, Bechtel-Bettis; Peter Chou, Electric Power Research Institute; Micah Hackett, TerraPower, LLC

Monday PM
February 28, 2011
Room: 4
Location: San Diego Conv. Ctr

Session Chair: Micah Hackett, KAPL

2:00 PM Introductory Comments

2:05 PM
Evaluation of Scale Bridging Methodology for Performance Prediction: *Dongsheng Li*[1]; Yulan Li[1]; Fei Gao[1]; Ram Devanathan; Xin Sun[1]; Moe Kahleel[1]; [1]Pacific Northwest National Laboratory

2:25 PM
Localized Deformation in Proton and Heavy Ion Irradiated Austenitic Stainless Steels: *Zhijie Jiao*[1]; Gary Was[1]; Terumitsu Miura[2]; Koji Fukuya[2]; [1]University of Michigan; [2]Institute of Nuclear Safety System

2:45 PM
Toward a Better Understanding of Heat-to-Heat Variations in Irradiation-Assisted Stress Corrosion Cracking: *Peter Chou*[1]; Raj Pathania[1]; Bob Carter[1]; [1]Electric Power Research Institute

3:05 PM
Multiscale Simulation of the Effect of Irradiation-Induced Microstructure Evolution on Reactor Fuel Performance: *Michael Tonks*[1]; Paul Millett[1]; Derek Gaston[1]; Bulent Biner[1]; Anter El-Azab[2]; [1]Idaho National Laboratory; [2]Florida State University

3:25 PM Break

3:35 PM
Mechanical Properties of Fresh and Neutron Irradiated U-Mo Fuels for the RERTR Application: *Ramprashad Prabhakaran*[1]; D Burkes[1]; A Robinson[1]; J-F Jue[1]; A DeMint[2]; J Gooch[2]; D Keiser[1]; D Wachs[1]; I Charit[3]; [1]Idaho National Laboratory; [2]Y-12 National Security Complex; [3]University of Idaho

3:55 PM
Micro-Displacement Measurement for Small Samples in the Advanced Test Reactor (ATR) National Scientific User Facility (NSUF): *Anthony Santo Domingo*[1]; Mitchell Meyer[2]; Denis Beller[1]; [1]Univ. of Nevada, Las Vegas; [2]ATR National Scientific User Facility

4:15 PM
MC Calculation of Optimal Gd and B Containing Composition for Effective Protection from Gamma and Neutron Irradiation: *Nikoloz Chikhradze*[1]; Leri Kurdadze[2]; Guram Abashidze[1]; [1]Mining Institute/ Georgian Technical University; [2]G. Tsulukidze Mining Institute

4:35 PM
Microstructure and Mechanical Properties of Irradiated Friction Stir Welded ODS Alloys: *Ramprashad Prabhakaran*[1]; J Wang[2]; I Charit[3]; J Cole[1]; KL Murty[4]; R Mishra[2]; [1]Idaho National Laboratory; [2]Missouri University of Science and Technology; [3]University of Idaho; [4]North Carolina State University

Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells: Materials for Gasification and Turbines 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, TMS: High Temperature Alloys Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Teruhisa Horita, AIST; Zi-Kui Liu, The Pennsylvania State University

Monday PM
February 28, 2011
Room: 33C
Location: San Diego Conv. Ctr

Session Chair: Xingbo Liu, West Virginia University

2:00 PM Keynote
Meeting the Materials Challenges to Enable Clean Coal Technologies: *Cynthia Powell*[1]; [1]Office of Research and Development, National Energy Technology Laboratory, US Department of Energy

2:30 PM Keynote
Mechanistic Understanding of Materials Degradation Processes in Solid Oxide Fuel Cell (SOFC) Power Generation Systems: From Bulk to Interfacial Reactions: *Prabhakar Singh*[1]; [1]University of Connecticut

3:00 PM Invited
The Impact of Mixed Carbon Feedstock on High Cr2O3 Refractory Liners Used in Commercial Gasifiers: *James Bennett*[1]; Kyei-Sing Kwong[1]; Seetharaman Sridhar[2]; Jinichiro Nakano[3]; [1]NETL, US DOE; [2]Carnegie Mellon University; [3]URS Corp.

3:25 PM Break

3:40 PM
Stability of Mullite and V2O3 in Synthetic Slags Based on Molten Coal/ Petcoke Ash Mixtures: *Jinichiro Nakano*[1]; Seetharaman Sridhar[2]; Kyei-Sing Kwong[1]; James Bennett[1]; Thomas Lam[1]; [1]NETL; [2]Carnegie Mellon University

4:00 PM
Effect of Temperature Gradient on Slag Infiltration into Porous Refractory Material: *Tetsuya Kaneko*[1]; Jinichiro Nakano[2]; Seetharaman Sridhar[1]; Kyei-Sing Kwong[2]; Rick Krabbe[2]; Hugh Thomas[2]; James Bennett[2]; [1]Carnegie Mellon University; [2]US Department of Energy National Energy Technology Laboratory

4:20 PM Invited
Creep Strength Property of Advanced Ferritic Creep Resistant Steels for Fossil Energy Applications: *Kazuhiro Kimura*[1]; Kota Sawada[1]; [1]National Institute for Materials Science

4:45 PM
A Comparison of Creep-Rupture Tested Cast Alloys HR282, IN740 and 263 for Possible Application in Advanced Ultra-supercritical Steam Turbine and Boiler Components: *Neal Evans*[1]; Philip Maziasz[2]; Yukinori Yamamoto[2]; Paul Jablonski[3]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory; [3]National Energy Technology Laboratory

5:05 PM
Mesoscopic Finite Element Analysis of Interfacial Failure in High Temperature Alloys: Changsoo Kim[1]; *Keeyoung Jung*[2]; Frederick Pettit[2]; Gerald Meier[2]; [1]University of Wisconsin-Milwaukee; [2]University of Pittsburgh

Materials Processing Fundamentals: Process Modeling

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

Monday PM
February 28, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chair: Prince Anyalebechi, Grand Valley State University

2:00 PM
Computational Modeling of Field-Assisted Sintering: *Cristina Garcia Cardona*[1]; Eugene Olevsky[1]; Veena Tikare[2]; [1]San Diego State University; [2]Sandia National Laboratories

2:15 PM
Simulation of Macrosegregation Due to Melt Convection and Grain Sedimentation in Steel Ingots Using a Mixture Model: Wensheng Li[1]; *Houfa Shen*[1]; Baicheng Liu[1]; [1]Tsinghua University

2:30 PM
Effect of Casting Speed on Temperature Difference between Copper Plate and Solidifying Shell in Meniscus of Slab Continuous Casting Mold: *Xiangning Meng*[1]; [1]Northeastern University

2:45 PM
Numerical Simulation of Decarburization Reaction on the Surface of Liquid Iron: *Hyunjin Cho*[1]; Sangjoon Kim[1]; Haegeon Lee[1]; [1]POSTECH

3:00 PM
3D Simulation of the Melting during an Electro-Slag Remelting Process: *Abdellah Kharicha*[1]; [1]University of Leoben

3:15 PM Break

3:30 PM
An Analysis of Electromagnetic Field and Joule Heating of Electroslag Remelting Processes with Two Series-Connected Electrodes: Fang Wang[1]; *Baokuan Li*[1]; [1]Northeastern University

3:45 PM
Modeling of Copper Converter Foamover and Operational Improvements: *Pengfu Tan*[1]; [1]Xstrata Copper

4:00 PM
Modeling and Control of Copper Loss in Smelting Slag: Part I and Part II: *Pengfu Tan*[1]; [1]Xstrata Copper

Microstructural Processes in Irradiated Materials: Microstructure Evolution: Experimental

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Monday PM
February 28, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Dane Morgan, University of Wisconsin; Thak Byun, Oak Ridge National Laboratory

2:00 PM Invited
In-Situ TEM Study on Elastic Interaction between a Prismatic Dislocation Loop and a Gliding Dislocation: *Yoshi Matsukawa*[1]; Grace Liu[1]; Ian Robertson[1]; [1]University of Illinois

2:40 PM
In-Situ Investigation of Microstructure Evolution in NF616 and HCM12A Alloys under Heavy Ion Irradiation: *Cem Topbasi*[1]; Arthur Motta[1]; Mark Kirk[2]; [1]Pennsylvania State University; [2]Argonne National Laboratory

3:00 PM
Thermal Annealing Recovery Behavior of HT-9 Steel Irradiated to High Doses in FFTF: *Thak Sang Byun*[1]; William Lewis[1]; Stuart Maloy[2]; [1]Oak Ridge National Laboratory; [2]Los Alamos National Laboratory

3:20 PM
Microstructural Study of Pure Iron and Fe-Cr Model Alloys Ion Irradiated within the Jannus Platform (In- and Ex-Situ Mode): *Daniel Brimbal*[1]; Estelle Meslin[1]; Brigitte Décamps[2]; Jean Henry[1]; Alain Barbu[1]; [1]C.E.A. Saclay; [2]CNRS

3:40 PM
Multiple-Beam Irradiation Effects in Ferritic Steels: *Naoyuki Hashimoto*[1]; Norihito Yamaguchi[1]; Hiroshi Oka; Hiroshi Kinoshita[1]; Somei Ohnuki[1]; [1]Hokkaido University

4:00 PM Break

4:20 PM
The Effects of Mn on Microstructure and Hardness in A533B and Model Alloys: *Hideo Watanabe*[1]; Naoaki Yoshida[1]; [1]RIAM, Kyushu University

4:40 PM
Microstructural Changes by Thermal Aging and Neutron Irradiation in Stainless Steel Weld Overlay Cladding of Nuclear Reactor Pressure Vessels: *Tomoaki Takeuchi*[1]; Jun Kameda[2]; Yasuyoshi Nagai[3]; Takeshi Toyama[3]; Yutaka Nishiyama[1]; Kunio Onizawa[1]; [1]Japan Atomic Energy Agency; [2]National Institute for Materials Science; [3]The Oarai Center, Institute for Materials Research, Tohoku University

5:00 PM
Dependence of Radiation Induced Segregation on Grain Boundary Structure in a 9 wt.% Cr Model Ferritic/Martensitic Steel: *Kevin Field*[1]; James Bentley[2]; Chad Parish[2]; Jeremy Busby[2]; Todd Allen[1]; [1]University of Wisconsin - Madison; [2]Oak Ridge National Laboratory

5:20 PM
Kinetic Lattice Monte Carlo Simulations of Radiation Induced Segregation of Chromium in Ferritic-Martensitic Steels: *Brian Frisbie*[1]; Brian Wirth[1]; [1]University of California at Berkeley

5:40 PM
Application of Modified Inverse Kirkendall Model of Radiation-Induced Segregation to Ferritic-Martensitic Alloys: *Janelle Wharry*[1]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan

6:00 PM
Ab Initio-Based Rate Theory Modeling of Radiation Induced Segregation in Ni-Cr Alloys: *Leland Barnard*[1]; Samrat Choudhury[2]; Dane Morgan[1]; [1]University of Wisconsin-Madison; [2]Los Alamos National Lab

Neutron and X-Ray Studies of Advanced Materials IV Symposium: Brent Fultz Honorary Session I: Joint Session with Computational Thermodynamics and Kinetics Symposium

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Monday PM
February 28, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Xun-Li Wang, Oak Ridge National Laboratory; Michael Manley, Lawrence Livermore National Laboratory

See page 52 for program.

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Whisker Growth

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Monday PM
February 28, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Eric Cotts, Binghamton University; Peter Borgesen, Binghamton University

2:00 PM Keynote
The Metallurgy of Sn Whisker and Hillock Growth: *William Boettinger*[1]; [1]National Institute of Standards and Technology

2:40 PM Invited
Kinetic Mechanisms Controlling IMC Growth, Stress Evolution and Whisker Formation: *Eric Chason*[1]; Nitin Jadhav[1]; Eric Buchovecky[1]; Fei Pei[1]; Allan Bower[1]; Sharvan Kumar[1]; [1]Brown University

3:05 PM Invited
Role of Stress and Oxidation on Metallic Whisker Growth: *Elizabeth Hoffman*[1]; Yong Sun[2]; Poh-Sang Lam[1]; Xiaodong Li[2]; [1]Savannah River National Laboratory; [2]University of South Carolina

3:30 PM
Evidence of Plastic Deformation Adjacent to Sn Whiskers: *John Osenbach*[1]; Robert Hilty[2]; [1]LSI Corporation; [2]Tyco

3:50 PM Break

4:00 PM
Whisker Formation Induced by Component and Assembly Ionic Contamination: *Polina Snugovsky*[1]; Stephan Meschter[2]; Zohreh Bagheri[1]; Eva Kosiba[1]; Marianne Romanksy[1]; [1]Celestica; [2]BAE Systems

4:20 PM
Microstructure Formation and Whisker Growth in SAC105 Solder Joints with Rare Earth Elements: *Polina Snugovsky*[1]; Zohreh Bagheri[1]; Stephan Meschter[2]; Leonid Snugovsky[3]; John Rutter[3]; Doug Perovic[3]; [1]Celestica; [2]BAE Systems; [3]University of Toronto

4:40 PM
Tin Whisker Growth on the Surface of Sn-3.8Ag-0.7Cu-RE Solder Alloys: *Hu Hao*[1]; Fu Guo[1]; Yonglun Song[1]; Guangchen Xu[1]; Yaowu Shi[1]; [1]Beijing University of Technology

5:00 PM
Effect of Sn Layer on Whisker Growth Kinetics: Modifying the Surface, Microstructure, Composition and Heat Treatment: *Fei Pei*[1]; Gordon Barr[2]; Eric Chason[1]; Nitin Jadhav[1]; [1]Brown University; [2]EMC Corporation

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Characterization of Shape Memory Alloys: Structure-Property Relationships

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Monday PM
February 28, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Shuichi Miyazaki, University of Tsukuba; Huseyin Sehitoglu, University of Illinois

2:00 PM Invited
Structure and Thermomechanical Behavior of NiTiPt Shape Memory Alloy Wires: *Ken Gall*[1]; [1]Georgia Tech

2:20 PM
Training and the Two-Way Shape Memory Effect in TiNiPd and TiNiPdX High Temperature Shape Memory Alloys: *Kadri Atli*[1]; Brian Franco[1]; Ibrahim Karaman[1]; Ronald Noebe[2]; [1]Texas A&M University; [2]NASA Glenn Research Center

2:35 PM
Thermomechanical Testing of NiTiPdPt High Temperature Shape Memory Alloy Springs: *Douglas Nicholson*[1]; Santo Padula[2]; Ronald Noebe[2]; Raj Vaidyanathan[1]; [1]UCF; [2]NASA GRC

2:50 PM
Structure-Property Relationships in a Ni-Rich Ni-25Pd-48Ti (at.%) High Temperature Shape Memory Alloy: *Taisuki Sasaki*[1]; B. C. Hornbuckle[1]; Glen Bigelow[2]; Ronald Noebe[2]; Mark Weaver[1]; Gregory Thompson[1]; [1]University of Alabama; [2]NASA Glenn Research Center

3:05 PM
Structure-Property Relationships for Ni-Ti-Pt High Temperature Shape Memory Alloys: *Grant Hudish*[1]; Glen Bigelow[2]; Ronald Noebe[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]NASA-GRC

3:20 PM Break

3:30 PM Invited
A New Precipitate Phase in High-Temperature TiNiPt and Its Effect on Shape Memory Properties: F. Yang[1]; L. Kovarik[1]; Y. Wang[1]; P. M. Anderson[1]; A. Garg[2]; R.D. Noebe[3]; *Michael Mills*[1]; [1]The Ohio State University; [2]University of Toledo - and - NASA Glenn Research Center; [3]NASA Glenn Research Center

3:50 PM
Grain Size Distribution Effects on Phase Transformation Behavior of NiTi Thin Films: *Xu Huang*[1]; David Wu[2]; Ainissa Ramirez[1]; [1]Yale University; [2]Institute of High Performance Computing

4:05 PM
Shape Memory Characteristics of Time Gradient Annealing Treated Ti-50.9 at.% Ni Alloy: *Jae Il Kim*[1]; Su Ho Park[1]; Jun Hee Lee[1]; Yun-Jung Lee[2]; Tae-Hyun Nam[3]; [1]Dong-A University; [2]Gyungbook National University; [3]Gyungsang National University

4:20 PM
Crystal Structures, Phase Transformations and Microstructures of Rapidly Solidified Heusler Type CoNiGa(Al) Ferromagnetic Shape Memory Alloys for Micro-Actuator Applications: *Shampa Aich*[1]; M. Vijaykumar[2]; I. Al-Omari[3]; M. Chakraborty[4]; D. Sellmayar[3]; [1]Indian Institute of Technology; [2]JSW Steel Ltd.; [3]University of Nebraska-Lincoln; [4]Indian Institute of Technology - Bhubaneswar

4:35 PM
Studies on Effect of Aging on Shape Memory Characteristics of Cu-Al-Fe Alloys: *Sampath Vedamanickam*[1]; Raju T.N.[1]; [1]Indian Institute of Technology Madras

4:50 PM
Stoichiometry and Aging Effects on the Microstructure and Properties of NiTiHf Shape Memory Alloys: *Daniel Coughlin*[1]; Ronald Noebe[2]; Glen Bigelow[2]; Anita Garg[2]; Michael Mills[1]; [1]Ohio State University; [2]NASA Glenn Research Center

5:05 PM
Magnetic Shape Memory Effect in NiMnCo-Based Meta-Magnetic Shape Memory Alloy Micropillars: *Nevin Ozdemir*[1]; Ibrahim Karaman[1]; Nathan Mara[2]; Douglas Pete[3]; [1]Texas A&M University; [2]Los Alamos National Laboratory; [3]Sandia National Laboratories

5:20 PM
In-Situ Phase Transformation Behavior of Ni-Rich NiTi Shape Memory Alloys: *Suresh Santharam*[1]; Dong-Ik Kim[2]; Subir Kumar Bhaumik[3]; Satyam Suwas[1]; [1]Indian Institute of Science; [2]Korea Institute of Science and Technology; [3]National Aerospace Laboratory (CSIR)

5:35 PM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Neutron Diffraction and Prediction of Internal Stresses

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Monday PM
February 28, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Mark Daymond, Queen's University; Bjoern Clausen, Los Alamos National Laboratory; Donald Brown, Los Alamos National Laboratory

2:00 PM Invited
Information Volumes in Diffraction Techniques for Strain Analysis: *I Noyan*[1]; [1]Columbia University

2:25 PM Invited
EPSC Modeling and Neutron Diffraction Measurements: *Bjørn Clausen*[1]; Donald Brown[1]; Levente Balogh[1]; Carlos Tomé[1]; [1]Los Alamos National Laboratory

2:50 PM Invited
Texture and Type-2 Strains in Rolled Zircaloy-2 and Their Relevance to In-Reactor Growth: *Thomas Holden*[1]; [1]Northern Stress Technologies

3:15 PM
Internal Stresses and Microstructure by Neutron Diffraction Profile Analysis: Comparison with Other Techniques: *Vadim Davydov*[1]; Petr Lukáš[2]; Helena Van Swygenhoven[1]; Martin Petrenec[3]; Ondrej Man[4]; Pavel Strunz[2]; Radomír Kužel[5]; [1]Paul Scherrer Institut; [2]Nuclear Physics Institute; [3]Institute of Physics of Materials; [4]Brno University of Technology; [5]Charles University

3:35 PM Break

3:50 PM Invited
On the Evolution of Crystal Stresses during the Elastic-Plastic Transition in FCC Polycrystals: *Paul Dawson*[1]; Su Leen Wong[1]; [1]Cornell University

4:15 PM Invited
High Pressure Plastic Properties of Hcp Metals: Experiments and Elasto-Plastic Models: *Sebastien Merkel*[1]; [1]Universite Lille 1

4:40 PM Invited
A Decade Plus of Making Carlos Tomé Sweat: *Donald Brown*[1]; Bjorn Clausen[1]; Thomas Sisneros[1]; [1]Los Alamos National Lab

5:05 PM
Finite Element Diffraction Model for Spatially Resolved Strain Measurements in the Bulk of (Poly-) Crystals: *Peter Reischig*[1]; Wolfgang Ludwig[2]; Andrew King[3]; Tilo Baumbach[4]; [1]TU Delft; [2]GEMPPM-MATEIS, INSA de Lyon; [3]GKSS-Forschungszentrum Geesthacht GmbH; [4]Institute for Synchrotron Radiation, Karlsruhe Institute of Technology

5:25 PM
The Bauschinger Effect in Austenitic (317L) Stainless Steel: Validating a Slip-System Based Non-Linear Kinematic Hardening Model with In-Situ Neutron Diffraction: *James Wollmershauser*[1]; Bjørn Clausen[2]; Carlos Tomé[2]; Sean Agnew[1]; [1]University of Virginia; [2]Los Alamos National Laboratory

5:45 PM
Study of Lattice Strain Based on the Finite Strain Elastic-Viscoplastic Self-Consistent Model for Polycrystalline Materials: *Huamiao Wang*[1]; Peidong Wu[1]; Carlos Tome[2]; [1]McMaster University; [2]Los Alamos National Laboratory

6:05 PM
High Pressure Deformation of Zirconium: James Wilkerson[1]; *Sven Vogel*[1]; Donald Brown[1]; [1]Los Alamos National Laboratory

Processing and Properties of Powder-Based Materials: Sintering Science and Technology

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Monday PM
February 28, 2011
Room: 33A
Location: San Diego Conv. Ctr

Session Chair: Randall German, San Diego State University

2:00 PM Introductory Comments

2:05 PM
Process Simulation of Cold Pressing and Sintering of Armstrong CP-Ti Powders: Sarma Gorti[1]; *Adrian Sabau*[1]; William Peter[1]; Stephen Nunn[1]; Yukinori Yamamoto[1]; Wei Chen[1]; [1]Oak Ridge National Laboratory

2:25 PM
Hot Isostatic Pressing of Beta Titanium Alloy Powders: *Xinjiang Hao*[1]; Nicholas Wain[1]; Xinhua Wu[1]; [1]University of Birmingham

2:45 PM
Effect of Particle Size Particle Surface Modification Pressing Pressure and Sintering Temperature on Microstructure and Mechanical Properties P/M Al-B4C Composites: *Fatih Toptan*[1]; Isil Kerti[1]; Sibel Daglilar[1]; Ahmet Sagin[1]; Taner Hacioglu[1]; [1]Yildiz Technical University

3:05 PM
Microstructure and Mechanical Properties of TiNbSn-HA Biocomposite Fabricated by Mechanical Alloying and Sintering: Xiaopeng Wang[1]; *Yuyong Chen*[1]; Kee-Do Woo[2]; [1]Harbin Institute of Technology; [2]Chonbuk National University

3:25 PM
Physical Principles and Technological Tools for the Control of Densification, Shape and Diffusion Bonding during HIP of Metal Powders And Ceramics: Charles Barre[1]; *Viktor Samarov*[1]; Dmitry Seliverstov[1]; Evgeny Khomyakov[1]; Roman Haykin[1]; [1]Synertech PM Inc.

3:45 PM Break

3:55 PM
Effect of Hcl Concentration on Zrb2 Separation from a Self-Propagating High-Temperature Synthesis (SHS) Product: *Burcu Akkas*[1]; Murat Alkan[1]; Bora Derin[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

4:15 PM
Microwave Sintering of Different Aluminum Alloy Powders and Their Characterization: *Padmavathi Chandran*[1]; A Upadhyaya[1]; Dinesh Agrawal[2]; [1]Indian Institute of Technology, Kanpur, India; [2]The Pennslyvannia State University

4:35 PM
Die-Press and Sinter Processing of Armstrong Process® CP-Ti and Ti-6Al-4V Powders for Near-Net-Shape Manufacturing: *Wei Chen*[1]; Yukinori Yamamoto[1]; Stephen Nunn[1]; Jim Kiggans[1]; Michael Clark[1]; Sarma Gorti[1]; Adrian Sabau[1]; William Peter[1]; Craig Blue[1]; Brian Fuller[2]; Kamal Akhtar[2]; [1]Oak Ridge National Laboratory; [2]Cristal US, Inc. / International Titanium Powder

Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites: Multimodal, Processing and Microstructure

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Arkansas State University; Golam Newaz, Wayne State University

Monday PM
February 28, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Zariff Chaudhury, Arkansas State University

2:00 PM
Effect of Al+B4C Agglomerate Size on Mechanical Properties of Trimodal Aluminum Metal Matrix Composites: *Bo Yao*[1]; Travis Patterson[1]; Yongho Sohn[1]; Matthew Shaeffer[2]; Cory Smith[3]; Mark van den Bergh[3]; Kyu Cho[4]; [1]University of Central Florida; [2]The Johns Hopkins University; [3]DWA Aluminum Composites; [4]U. S. Army Research Laboratory

2:20 PM
Alternate Processing of Trimodal Aluminum Composites: *Joseph Paras*[1]; Deepak Kapoor[1]; Tony Zahrah[2]; Rod Rowland[2]; [1]U. S. Army ARDEC; [2]Matsys Inc.

2:40 PM
Effect of Layered Interface on Mechanical Behaviors in TiO2 Nano-Particle Reinforced Aluminum Matrix Composites: *Jaehyuck Shin*[1]; Hyunjoo Choi[1]; Donghyun Bae[1]; [1]Yonsei University

3:00 PM
Fabrication of Extruded Aluminum Composites Reinforced by Vapor Grown Carbon Nanofibers and Characterization, Modeling of Their Properties: *Fumio Ogawa*[1]; Toshiyuki Nishimura[2]; Chitoshi Masuda[1]; [1]Waseda University; [2]National Institute for Materials Science

3:20 PM
Multi-Scale Modeling on the Mechanical Behavior of Aluminum-Based Metal-Matrix Nano Composites (MMNCs): *Changsoo Kim*[1]; Pradeep Rohatgi[1]; Amirreza Sanaty-Zadeh[1]; [1]University of Wisconsin Milwaukee

3:40 PM Break

4:00 PM
Strain Induced Grain Growth of Cryomilled Nanocrystalline Al in Tri-Modal Al Composites during Forging: *Bo Yao*[1]; Cory Smith[2]; Mark van den Bergh[2]; Bhaskar Majumdar[3]; Yongho Sohn[1]; [1]University of Central Florida; [2]DWA Aluminum Composites; [3]New Mexico Institute of Mining and Technology

4:20 PM
Origin of High Strength in a Micro-Alloyed Ferritic Steel: *Hesamaldin Askari*[1]; Yong Shen[2]; C. Wang[2]; Xin Sun[3]; Hossein Zbib[1]; [1]Washington State University; [2]Northeastern University; [3]Pacific Northwest National Laboratory

4:40 PM
Synthesis of MWCNT Reinforced Al Based Nanocomposite Via Spark Plasma Sintering: *Tapas Laha*[1]; Lakshmikanth Reddy[1]; Anup Keshri[2]; Devrupa Lahiri[2]; Anway Maiti[1]; [1]Indian Institute of Technology; [2]Florida International University

5:00 PM
Effects of SPS Parameters on the Mechanical Properties and Microstructures of Titanium Reinforced with Multi-Wall Carbon Nanotubes Produced by Hot Extrusion: *Thotsaphon Threrujirapapong*[1]; Katsuyoshi Kondoh[1]; Junko Umeda[1]; Bunshi Fugetsu[2]; [1]Osaka University; [2]Hokkaido University

5:20 PM
On the Methods for Grain Size Analysis and Grain Growth Kinetic Studies for a Thermally Stable Al 5083 Nanocomposite: *Leyla Hashemi-Sadraei*[1]; S. E. Mousavi[1]; Rustin Vogt[1]; Ying Li[1]; Zhihui Zhang[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis

Size Effects in Mechanical Behavior: Size Effects in Multilayer Structures

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Monday PM
February 28, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Amit Misra, LANL; Jian Wang, Los Alamos National Laboratory

2:00 PM
A Quantized Crystal Plasticity Finite Element Model for Nanoindentation: Size Effect from Discrete Plasticity: *Lin Li*[1]; Myoung-Gyu Lee[2]; Peter Anderson[1]; [1]The Ohio State University; [2]Pohang University of Science and Technology

2:20 PM
Size Effects in Fatigue of Cu/Ta Multilayers: *Guangping Zhang*[1]; Xiaofei Zhu[1]; Jiawei Yan[1]; Jin Xu[1]; [1]Chinese Academy of Sciences

2:40 PM
Microstructure and Strengthening Mechanisms of Highly Textured Cu/Ni Multilayers: *Yue Liu*[1]; Dan Bufford[1]; Haiyan Wang[1]; Cheng Sun[1]; Xinghang Zhang[1]; [1]Texas A&M University

3:00 PM
Hardening in He Ion Implanted V/Ag Multilayers: *Qiangmin Wei*[1]; Nathan Mara[1]; Michael Nastasi[1]; Amit Misra[1]; [1]LANL

3:20 PM Invited
Deformation Mechanisms of Nanoscale Multilayers: *Jian Wang*[1]; Amit Misra[1]; [1]LANL

3:50 PM Break

4:20 PM
Fundamental Investigation of Deformation Using Spherical Indentations and 3D X-Ray Microscopy: *Bennett Larson*[1]; Jon Tischler[1]; Yanfei Gao[2]; [1]Oak Ridge National Laboratory; [2]Oak Ridge National Laboratory, University of Tennessee Knoxville

4:40 PM
Structure and Hardness of Aged Ti-W Multilayer Films: *Ross Economy*[1]; Marian Kennedy[1]; [1]Clemson University

5:00 PM
Flow Stress Partitioning in Two-Phase Metallic Composites at Decreasing Phase Length Scales: *Rainer Hebert*[1]; Girija Marathe[1]; [1]University of Connecticut

5:20 PM
Film Thickness Effects on Interfacial Failure in Polymer Metal Thin Film Structures: *Neville Moody*[1]; Markus Ong[2]; E. David Reedy Jr.[1]; Edmundo Corona[1]; David Adams[1]; John Yeager[3]; David Bahr[3]; [1]Sandia National Laboratories; [2]Whitworth University; [3]Washington State University

5:40 PM
Size Effect in Cleavage Cracking in Polycrystalline Thin Films: *Yu Qiao*[1]; Weiyi Lu[1]; [1]University of California San Diego

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Growth, Characterization, and Devices II - and - Coatings, Surfaces, and Interfaces I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Monday PM
February 28, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Nitin Chopra, The University of Alabama; Jiyoung Kim, University of Texas at Dallas; Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University

2:00 PM Invited
On the Role of Interface Engineering in Future Technology Applications: *Aarthi Venkateshan*[1]; Rajendra Singh[2]; [1]Canon Anelva Corporation; [2]Clemson University

2:30 PM Invited
Role of Rapid Photothermal Processing in Providing Homogenous Nanostructure of Silica Clad Silicon Fibers: *Rajendra Singh*[1]; Nishant Gupta[1]; T. Wade Hawkins[1]; Paul Foy[1]; Colin McMillen[1]; Stephanie Morris[1]; Robert Rice[2]; Kelvin Poole[1]; John M. Ballato[1]; [1]Clemson University; [2]Northrop Grumman Space Technology

3:00 PM
High Surface Metal/Metal Nano-Microstructured Porous Monoliths: *Martin Bakker*[1]; Franchessa Maddox Sayler[1]; Amy Grano[1]; Keana Graves[1]; [1]The University of Alabama

3:15 PM Break

3:25 PM Introductory Comments for Coatings, Surfaces, and Interfaces I

3:30 PM Invited
Microstructural Evolution in NiAlCrHf and NiAlCrZr Coated Superalloys: *Mark Weaver*[1]; Joel Alfano[1]; [1]The University of Alabama

4:00 PM Invited
Nature of the B2 Phase in Sputter-Deposited 304 Stainless Steel + 10 wt.% Al Coatings: U.M.R. Seelam[1]; *C. Suryanarayana*[1]; T. Ohkubo[2]; Kazuhiro Hono[2]; N. S. Cheruvu[3]; [1]University of Central Florida; [2]National Institute for Materials Science; [3]Southwest Research Institute

4:30 PM Invited
The Solution Precursor Plasma Spray Process for Depositing Multi-Functional, Nanoscale Coatings: *Maurice Gell*[1]; Eric Jordan[1]; [1]University of Connecticut

5:00 PM
Tribological Behavior of Spark Plasma Sintered Iron-Based Bulk Amorphous Alloys: *Ashish Singh*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

The Second Symposium on the Recycling of Electronic Wastes: Management and Technology

Overview of Electronic Wastes

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: Electronic Packaging and Interconnection Materials Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Lifeng Zhang, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Jaan Kers, Tallinn University of Technology; Thomas P. Schuman, Missouri University of Science and Technology (Missouri S&T); Markus Reuter, Ausmelt Limited

Monday PM
February 28, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Jaan Kers, Tallinn University of Technology; Thomas Schuman, Missouri S&T; Markus Reuter, Ausmelt Limited

2:00 PM
Willingness to Recycle Electronic Waste: Results from a National Survey of U.S. Households: *Jean-Daniel Saphores*[1]; Oladele Ogunseitan[1]; Andrew Shapiro[2]; [1]University of California Irvine; [2]Jet Propulsion Laboratory, California Institute of Technology

2:30 PM
Development of Technology for Recycling Valuable Metals from Electronic Wastes in Korea: *Jae-chun Lee*[1]; Byung-Su Kim[1]; Min-seuk Kim[1]; Jinki Jeong[1]; Banshi Pandey[2]; [1]Korea Institute of Geoscience and Mineral Resources (KIGAM); [2]National Metallurgical Laboratory, CSIR

3:00 PM
State of the Art in the Recycling of Waste Printed Wiring Boards: *Lifeng Zhang*[1]; [1]Missouri University of Science and Technology

3:30 PM
Overview of Electronics Waste Management in India: *Sandip Chatterjee*[1]; Krishna Kumar[1]; [1]Department of Information Technology

4:00 PM Break

4:10 PM
Prospective Scenario of E-Waste Recycling in India: Manis Kumar Jha[1]; *Abhishek Kumar*[1]; Vinay Kumar[1]; Jae-chun Lee[2]; [1]National Metallurgical Laboratory; [2]Korea Institute of Geoscience and Mineral Resources (KIGAM)

4:40 PM
From a Technical Marvel to a Hazardous Box: An Estimate of the Volumes of Potentially Toxic Materials in Obsolete TVs Stored by US Households Based on National Survey: *Natalia Milovantseva*[1]; Jean-Daniel Saphores[1]; [1]University of California, Irvine

5:10 PM
Methodology for Recovery Precious Metals: Gold, Silver and Platinum Group from Electronic Waste: *Oscar Restrepo*[1]; Honorio Oliveros[1]; [1]National University of Colombia

5:40 PM
WEEE: Obsolete Mobile Phones Characterization Aiming at Recycling: Viviane Moraes[1]; Denise Espinosa[1]; *Jorge Tenório*[1]; [1]Escola Politecnica da Universidade de São Paulo

Thermally Activated Processes in Plastic Deformation: Grain Boundary Evolution and Dislocation Core Effects

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizer: Christopher Woodward, Air Force Research Laboratory

Monday PM
February 28, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: David Rodney, INP Grenoble; Gregory Rohrer, Carnegie Mellon University

2:00 PM Invited
Grain Boundary Diffusion: From Nearly Perfect Bicrystals to Severely Deformed Polycrystalline Materials: *Sergiy Divinski*[1]; [1]University of Münster

2:30 PM Invited
Experimental Measurements of the Shear-Coupled Stress Driven Grain Boundary Migration in Al Bicrystals: *Dmitri Molodov*[1]; Tatiana Gorkaya[1]; Günter Gottstein[1]; [1]RWTH Aachen University

3:00 PM Invited
Evolution of the Grain Boundary Character Distribution during Grain Growth: *Gregory Rohrer*[1]; Herbert Miller[1]; [1]Carnegie Mellon University

3:30 PM Break

3:45 PM Invited
Grain Growth in 4D: A Comparison between Simulation and Experiment: E. Lauridsen[1]; I. McKenna[2]; S. Poulsen[1]; W. Ludwig[3]; *Peter Voorhees*[2]; [1]Riso Laboratory for Sustainable Energy; [2]Northwestern University; [3]European Synchrotron Radiation Facility

4:15 PM
A Comparison between Creep in Molybdenum and Iron toward Understanding Dynamic Abnormal Grain Growth: *Phi Thanh*[1]; Daniel Worthington[2]; Cory Guebels[1]; J. P. Delplanque[1]; Joanna Groza[1]; [1]University of California Davis; [2]University of Texas

4:35 PM Invited
Quantum Dynamical Effects in Thermally-Activated Dislocation Glide: Origin of the Discrepancy between Experimental and Simulated Peierls Stresses: *David Rodney*[1]; Laurent Proville[2]; [1]INP Grenoble; [2]CEA Saclay

5:05 PM
Core Properties of Screw Dislocations in Fe and W Based Materials: *Lisa Ventelon*[1]; François Willaime[1]; Emmanuel Clouet[1]; [1]CEA

5:25 PM
Thermal Activation in BCC Metals: Linking Local Atomistic Information to the Mesoscale: *Kinshuk Srivastava*[1]; Daniel Weygand[1]; Peter Gumbsch[1]; [1]Karlsruhe Institute of Technology

5:45 PM
Thermally Activated Motion of ½<111> Screw Dislocation in BCC Iron: *Zhiming Chen*[1]; Matous Mrovec[2]; Peter Gumbsch[2]; [1]Karlsruher Institut für Technology (KIT); [2]Fraunhofer-Institute Für Werkstoffmechanik IWM

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Fabrication of Nanomaterials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Tuesday AM
March 1, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chairs: David Stollberg, Georgia Tech Research Institute; Greg Thompson, University of Alabama

8:30 AM Introductory Comments

8:35 AM Invited
Atomic Layer Deposition for the Functionalization of Nanoporous Materials: *Jeffrey Elam*[1]; [1]Argonne National Laboratory

9:05 AM Invited
One Dimensional Nanomaterials Synthesis Using Atomic Layer Deposition: *Hyungjun Kim*[1]; [1]Yonsei University

9:35 AM
Recent Progress on Synthesis and Characterization of Boron-based One-Dimensional Nanostructures: *Terry Xu*[1]; XiaoXia Wu[1]; Zhe Guan[1]; Youfei Jiang[1]; [1]UNC Charlotte

9:50 AM
Superhydrophobicity of Boron Nitride Nanotubes Structures: Chee Huei Lee[1]; *Jaroslaw Drelich*[1]; Yoke Khin Yap[1]; [1]Michigan Technological University

10:05 AM Break

10:20 AM Invited
Solution-Synthesized ZnO Nanomaterials for Hybrid Solar Cells: *Julia Hsu*[1]; [1]University of Texas at Dallas

10:50 AM
Unipolar Assembly of ZnO Rods: Polarity Driven Collective Luminescence: *Ujjal Gautam*[1]; Masataka Imura[1]; Xiaosheng Fang[1]; Yoshio Bando[1]; Dmitri Golberg[1]; [1]National Institute for Materials Science

11:05 AM
Hierarchical Graphene Nanomaterials and Applications: *Cengiz Ozkan*[1]; [1]University of California

11:20 AM Invited
Atomic Layer Deposition of Al2O3 and ZnO at Atmospheric Pressure in a Flow Tube Reactor: *Gregory Parsons*[1]; Jesse S. Jur[1]; [1]North Carolina State University

11:50 AM
Boron Carbide-Nanowires/Carbon-Microfiber Hybrid Structures and Composites from Cotton T-shirts: Xinyong Tao[1]; Lixin Dong[2]; Xinnan Wang[1]; Wenkui Zhang[3]; Bradley Nelson[2]; *Xiaodong Li*[1]; [1]University of South Carolina; [2]ETH Zurich; [3]Zhejiang University of Technology

12:05 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Refractories, Slag and Recycling

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

Tuesday AM
March 1, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Patrick Masset, TU Bergakademie Freiberg; Gabriella Tranell, Norwegian University of Science and Technology

8:30 AM
Study on Preparation of High-Quality Synthetic Rutile from Titanium Slag by Activation Roasting Followed by Acid Leaching: Yufeng Guo[1]; Shuishi Liu[1]; *Tao Jiang*[1]; Guanzhou Qiu[1]; [1]Central South University

8:50 AM
Calculation of Phase Equilibria Relations in CaO-SiO2-FeOx-MgO System: *Cuihuan Huang*[1]; [1]Northeastern University

9:10 AM
Dissolution Behavior of Rhodium into Molten Slag: *Chompunoot Wiraseranee*[1]; Toru Okabe[1]; Kazuki Morita[1]; [1]The University of Tokyo

9:30 AM
"One Step" Technology to Separate Copper, Zinc, Lead from Iron in Metallurgical Slag and Pyrite Cinder: Part 2- Pilot Test: *De-qing Zhu*[1]; Dong Chen[1]; Jian Pan[1]; Yu Cui[1]; Tie-jun Chun[1]; [1]Central South University

9:50 AM
Effect of Oxygen to Alumina Ratio on the Viscosity of Aluminosilicate and Aluminate Systems: *Jifang Xu*[1]; Jieyu Zhang[1]; Chang Jie[1]; Fei Ruan[1]; Kuochih Chou[1]; [1]Shanghai Key Laboratory of Modern Metallurgy and Material Processing, Shanghai University

10:10 AM Break

10:20 AM
Blast Furnace Burdens Preparation from Blast Furnace Burdens Preparation from Metallurgical Dusts and Sludges with Composite Binder: Kecheng Zhang[1]; *Yuanbo Zhang*[1]; Tao Jiang[1]; Guanghui Li[1]; Zhucheng Huang[1]; [1]Central South University

10:40 AM
Determination of FeO Containing Liquid Slag Surface Tensions Using the Sessile Drop Method: *Clemens Schmetterer*[1]; Patrick Masset[1]; [1]TU Bergakademie Freiberg

11:00 AM
Preparation of Partially Stabilized Zirconia and Interface Structure Analysis: *Dong Bo Li*[1]; Sheng Hui Guo[1]; Li Jun Liu[1]; Jin Hui Peng[1]; Li Bo Zhang[1]; Cheng Dong He[1]; [1]Kunming University of Science & Technology

11:20 AM
Characteristic of Mineralization of Specularite Iron Ores during Composite Agglomeration Processing: Helei Zhang[1]; Heng Yu[1]; *Guanghui Li*[1]; Yuanbo Zhang[1]; Qian Li[1]; Tao Jiang[1]; [1]Central South University

11:40 AM
Enrichment Behavior of Phosphorous in CaO-SiO2-FetO-P2O5 Based Slag: *Yingying Shen*[1]; [1]Northeastern University

Advances in Science-Based Processing of Superalloys for Cost and Sustainment: Residual Stress and NDE Technologies for Components

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Donna Ballard, US Air Force; David Furrer, Pratt & Whitney; Paul Jablonski, US Department of Energy; Christopher Woodward, Air Force Research Laboratory; Jeff Simmons, AFRL; Mark Blodgett, Wright-Patterson AFB

Tuesday AM
March 1, 2011
Room: 33B
Location: San Diego Conv. Ctr

Session Chairs: Mark Blodgett, Wright-Patterson AFB; Reji John, Air Force Research Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Predicting and Managing Bulk Residual Stresses within Superalloys: *Ronald Wallis*[1]; [1]Wyman Gordon Forgings

9:05 AM Invited
Microstructural Effects on Electrical Resistivity in Comparison to Residual Stresses and the Implications for Eddy Current Methods in Measuring Residual Stress in IN718: *Triplicane Parthasarathy*[1]; Pavel Mogilevsky[1]; Sonya Boone[1]; Satish Rao[1]; Peter Nagy[2]; Mark Blodgett[3]; [1]UES, Inc.; [2]Univ. of Cincinnati; [3]Air Force Research Laboratory

9:35 AM Invited
Modeling and Simulation of Residual Stresses Resulting from Superalloy Processing: *Wei-Tsu Wu*[1]; Ravi Shankar[1]; Alex Bandar[1]; Byung-Kwan Chun[1]; [1]Scientific Forming Technologies Corp

10:05 AM Break

10:20 AM Invited
Probabilistic Fatigue Life-Prediction of Turbine Engine Materials: *Reji John*[1]; Sushant Jha[2]; Michael Caton[1]; James Larsen[1]; Patrick Golden[1]; [1]Air Force Research Laboratory; [2]Universal Technology Corporation

10:50 AM Invited
Advancements in NDE Technologies to Support Superalloy Component Lifing: R. Thompson[1]; *Norio Nakagawa*; Lisa Brasche[1]; [1]Iowa State University

11:20 AM
Nondestructive Evaluation of Microstructure in Super Alloy Disk Material: *James Blackshire*[1]; Enrique Medina[1]; Jeong Na[2]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute

11:40 AM
Application of Model-Based Inversion to Materials Characterization: *Harold Sabbagh*[1]; R. Murphy[1]; Elias Sabbagh[1]; John Aldrin[2]; [1]Victor Technologies, LLC; [2]Computational Tools

12:00 PM
Conductivity Profile Determination via Model-Based Inversion of Swept Frequency Eddy Current Data and Its Use for Near-Surface Material Characterization: Norio Nakagawa[1]; *Chester Lo*[1]; Anatoli Frishman[1]; [1]Iowa State University

Alumina and Bauxite: Bayer Process I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Tuesday AM
March 1, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM
Application of Operation Integrity Management to the Alumina Industry: *Carlos Suarez*[1]; Daniel Welshons[1]; John McNerney[2]; Jim Webb[2]; [1]Hatch Associates Consultants Inc; [2]Warren-Fortought Inc

8:55 AM
Influence of Solid Concentration, Particle Size Distribution, pH and Temperature on Yield Stress of Bauxite Pulp: *Carla Barbato*[1]; Márcio Nele[2]; Silvia França[3]; [1]EQ/UFRJ/CETEM; [2]EQ/UFRJ; [3]CETEM

9:20 AM
A New Method of Organics Removal in Bayer Process: *Bai Yingwei*[1]; Gao Zhenwen[1]; Shen Mingliang[1]; Yi Xiaobing[1]; [1]CHALIECO

9:45 AM
Alunorte Expansion 3 – The New Lines Added to Reach 6.3 Million Tons per Year: *Daryush Khoshneviss*[1]; Luiz Corrêa[2]; Joaquim Ribeiro Alves Filho[1]; Hans Marius Berntsen[3]; Ricardo Carvalho[2]; Daryush Albuquerque Khoshneviss[1]; [1]Alumina do Norte do Brasil S.A.; [2]Vale S.A.; [3]Hydro Aluminium AS

10:10 AM Break

10:20 AM
One Green Field Megaton Grade Large Alumina Refinery with Successful Engineering and Operation Experience: *Luo Xianqing*[1]; Yang Xiaoping[1]; Yi Xiaobing[1]; [1]CHALIECO

10:45 AM
Advanced Process Control in the Evaporation Unit: *C. Satish Kumar*[1]; Uttam Giri[1]; Rosalin Pradhan[1]; Tonmoy Banerjee[1]; Ramu Saha[1]; Pratichi Pattnaik[1]; [1]Vedanta Aluminium limited

11:10 AM
Reduction in Metallic Impurities by Improvement in Process Control: Ruth Headlam-Shaw[1]; [1]Alcoa Minerals of Jamaica

Aluminum Alloys: Fabrication, Characterization and Applications: Solidification

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

Tuesday AM
March 1, 2011
Room: 14A
Location: San Diego Conv. Ctr

Session Chair: Hiromi Nagaumi, Suzhou Reseearch Institute for Nonferrous Metals

8:30 AM
Simulation of the Deformation of a Flexible Combo Bag in a DC Aluminium Casting: *Abdellah Kharicha*[1]; [1]University of Leoben

8:50 AM
Solidification Analysis of Al-Si Alloys Modified with Addition of Cu Using In-Situ Neutron Diffraction: *Dimitry Sediako*[1]; Wojciech Kasprzak[2]; Ian Swainson[3]; Ovidiu Garlea[4]; [1]National Research Council Canada ; [2]CANMET-MTL, Natural Resources Canada; [3]National Research Council Canada; [4]Oak Ridge National Lab

9:10 AM
Development of Novel Grain Refiner for Al-Si Alloys: *Magdalena Nowak*[1]; Hari Babu Nadendla[1]; [1]BCAST

9:30 AM
Application of Neutron Diffraction in Analysis of Residual Stress Profile in the Cylinder Web Region of As-Cast V6 Aluminum Engine Block with Cast-In Iron Liners: *Dimitry Sediako*[1]; Ravi Ravindran[2]; Camden Hubbard[3]; Francesco D'Elia[2]; Anthony Lombardi[2]; Alan Machin[2]; Robert Mackay[4]; [1]National Research Council Canada ; [2]Ryerson University; [3]Oak Ridge National Laboratory; [4]Nemak of Canada

9:50 AM
Surface Modification of Aluminum Alloys by Electrolytic Plasma Processing: *Mark Liu*[1]; Xijin Li; Ben Li Luan[1]; [1]National Resaerch Council Canada

10:10 AM Break

10:25 AM
Solidification Characteristics of Aluminium Alloys under Electron Beam Fabrication Conditions: *Ma Qian*[1]; Dacian Tomus[2]; [1]The University of Queensland; [2]Monash University

10:45 AM
Formation of Intermetallic Compound Layer between A356 Al Alloy and Cast Iron in Isothermal Condition.: *Kwang Suk Son*[1]; Sungmin Kang[1]; Jinsu Kim[1]; Donggyu Kim[1]; [1]Dong-A university

11:05 AM
Effects of Al–8B Grain Refiner on the Structure, Hardness and Tensile Properties of a New Developed Super High-Strength Aluminum Alloy: Mohammad Alipour[1]; Masuod Emamy[1]; *Jafar Rassizadehghani*[1]; Mostafa Karamouz[1]; Mortaza Azarbarmas[1]; [1]University of Tehran

Aluminum Reduction Technology: Environment-Emissions/ Anode Effect II

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Tuesday AM
March 1, 2011
Room: 17B
Location: San Diego Conv. Ctr

Session Chair: Marco Stam, Aluminium Delfzijl

8:30 AM
On Continuous PFC Unrelated to Anode Effects: *Xiping Chen*[1]; Wangxing Li[1]; Jerry Marks[2]; [1]Zhengzhou Research Institute of Chalco; [2]J Marks & Associates

8:50 AM
Reduction of Anode Effect Duration in 400kA Prebake Cells: *Wei Zhang*[1]; David Wong[1]; Michel Gilbert[1]; Yashuang Gao[1]; Mark Dorreen[1]; Mark Taylor[1]; Alton Tabereaux[2]; Melinda Soffer[2]; Xiaopu Sun[2]; Changping Hu[3]; Xuemin Liang[4]; Haitang Qin[4]; Jihong Mao[5]; Xuehui Lin[5]; [1]Light Metals Research Centre; [2]Institute for Governance and Sustainable Development; [3]China Nonferrous Metals Industry Association; [4]Henan Zhongfu Industrial Co. Ltd.; [5]Northeastern University

9:10 AM
Sustainable Anode Effect Based Perfluorocarbon Emission Reduction: *Neal Dando*[1]; Lise Sylvain[1]; Janice Fleckenstein[1]; Ciro Kato[1]; Vince Van Son[1]; Laura Coleman[1]; [1]Alcoa

9:30 AM
The Initiation, Propagation and Termination of Anode Effects in Hall-Heroult Cells: *Gary Tarcy*[1]; Alton Tabereaux[2]; [1]Alcoa; [2]Consultant

9:50 AM
Towards Eliminating Anode Effects: *Ali Al Zarouni*[1]; Barry Welch[2]; Maryam Al-Jallaf[1]; Arvind Kumar[1]; [1]DUBAL; [2]Welbank Consulting Ltd

10:10 AM Break

10:20 AM
Monitoring Air Fluoride (F-) Concentration around ALUAR Smelter in Puerto Madryn (Chubut Province, Argentina): *Jorge Zavatti*[1]; Claudio Lopez Moreno[1]; Juliana Lifschitz[1]; Gabriela Quiroga[1]; [1]ALUAR Aluminio Argentino SAIC

10:40 AM
Correlation between Moisture and HF Formation in the Aluminium Process: *Camilla Sommerseth*[1]; Karen Osen[2]; Thor Aarhaug[2]; Egil Skybakmoen[2]; Asbjoern Solheim[2]; Christian Rosenkilde[1]; Arne Ratvik[1]; [1]Norwegian University of Science and Technology, NTNU; [2]SINTEF

11:00 AM
Particulate Emissions from Electrolysis Cells: *Heiko Gaertner*[1]; Arne Ratvik[1]; Thor Aarhaug[2]; [1]NTNU; [2]SINTEF

11:20 AM
Investigation of Solutions to Reduce Fluoride Emissions from Anode Butts and Crust Cover Material: *Guillaume Girault*[1]; Maxime Faure[1]; Jean-Marc Bertolo[1]; Stéphanie Massambi[1]; Georges Bertran[1]; [1]Rio Tinto Alcan

11:40 AM
PFC Survey in Some Smelters of China: Wangxing Li[1]; *Xiping Chen*[1]; [1]Zhengzhou Research Institute of Chalco

Approaches for Investigating Phase Transformations at the Atomic Scale: Transformations in Fe, Ni and Al Based Systems II

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Neal Evans, Oak Ridge National Laboratory; Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Chris Wolverton, Northwestern University; David Seidman, Northwestern University; Rajarshi Banerjee, University of North Texas

Tuesday AM
March 1, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chairs: Rajarshi Banerjee, University of North Texas; Hamish Fraser, Ohio State University

8:30 AM Invited
Nuclear Reactor Materials at the Atomic Scale: *Emmanuelle Marquis*[1]; Ceri Williams[2]; Nadine Baluc[3]; Samuel Humphry-Baker[2]; [1]University of Michigan; [2]University of Oxford; [3]Paul Scherrer Institute

8:55 AM Invited
A Multiple Technique Approach for Understanding Phase Separation in Nanostructured Ferritic Steels: *Michael Miller*[1]; C.L. Fu[1]; C.M. Parish[1]; X.-L. Wang[1]; [1]Oak Ridge National Laboratory

9:20 AM Invited
Atomic Scale Investigation of Y-Ti-O Nanoclusters in Nanostructured Ferritic Alloys: *Brian Wirth*[1]; Hyon-Jee Lee[2]; Lauren Marus[2]; G. Robert Odette[3]; [1]University of Tennessee; [2]University of California, Berkeley; [3]University of California, Santa Barbara

9:45 AM
Characterization of Nanofeatures and Oxides in Nanostructured Ferritic Alloys – Cross Comparison SANS, SAXS, TEM, APT and Other Techniques: *G. Robert Odette*[1]; Nicholas Cunningham[1]; Takuya Yamamoto[1]; Yuan Wu[1]; Auriane Etienne[1]; Erich Stergar[1]; [1]UC Santa Barbara

10:00 AM
Effect of Elastic Strain on Phase Separation in Fe-20% Cr-6% Al-0.5% Ti ODS Alloy: *Carlos Capdevila-Montes*[1]; Mike Miller[2]; Isaac Toda[1]; Jesus Chao[1]; [1]CENIM-CSIC; [2]ORNL

10:15 AM Break

10:30 AM Invited
Nano-Structural Characterizations Using Advanced Methods - A Case Study of Nanosized Cu Precipitates in C Containing Fe-1.2 Wt% Cu Alloys: *Rajashekhara Shabadi*[1]; Roland Taillard[1]; [1]University of Science and Technology of Lille, France

10:55 AM
Anharmonic Phonon Behavior in α-Fe at Temperatures near the Structural Phase Transition: *Lisa Mauger*[1]; Matthew Lucas[2]; Jorge Munoz[1]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Laboratory

11:10 AM
Atomic Scale Investigation of Gamma Prime Precipitation in Nickel Base Alloys Coupling Aberration-Corrected STEM with Atom Probe Tomography: Antariksh Singh[1]; Gopal Viswanathan[2]; Soumya Nag[1]; Junyeon Hwang[1]; Jaimie Tiley[2]; Hamish Fraser[3]; *Rajarshi Banerjee*[1]; [1]University of North Texas; [2]Air Force Research Laboratory; [3]The Ohio State University

11:25 AM Invited
Exploring Initial Stages of Precipitate Formation in Aluminum Alloys through Kinetic Lattice Monte Carlo Simulations: *Marcel Sluiter*[1]; [1]TU Delft

11:50 AM
Primary Crystallization Behavior Change Induced by Minor Element Substitution: *Feng Yi*[1]; Seth Imhoff[1]; John Perepezko[1]; Paul Voyles[1]; [1]UW-Madison

Biological Materials Science: Surface Engineering and Biological Interactions

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Tuesday AM
March 1, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Candan Tamerler, University of Washington; Po-Yu Chen, University of California, San Diego

8:30 AM Introductory Comments

8:35 AM Keynote
Role of Substrate Material Properties in Modulating Cell Fate and Function: *Shu Chien*[1]; [1]University of California, San Diego

9:15 AM Invited
Strategies to Promote Mammalian Cell Functions Pertinent to Tissue Formation at the Tissue-Implant Interface: A Materials Perspective: *Rena Bizios*[1]; [1]UTSA

9:45 AM
Protein Adsorption on Bioceramic Nanoparticles and Monoliths: *Kenneth Stanton*[1]; Éilis McGrath[1]; John Gibbons[2]; Iseult Lynch[1]; Kenneth Dawson[1]; [1]University College Dublin; [2]Royal College of Surgeons in Ireland

10:05 AM
Utilization of Diatoms to Collect Metallic Ions: Itaru Jimbo[1]; *Takahiro Sekiguchi*[1]; HIroaki Onizawa[1]; [1]Tokai University

10:25 AM Break

10:35 AM Invited
Aligned TiO2 Nanotubes for Strong Osseo-Integration in Orthopaedic Implants: *Sungho Jin*[1]; [1]UC San Diego

11:05 AM
Surface Free Energy Modification of Titania for Bioactive Surfaces: Kyle Krzywosinski[1]; *Molly Gentleman*[1]; [1]Texas A&M University

11:25 AM
Cellular Response of Grain Boundary Grooved Nanograined/Ultrafine-grained Structures: *Pavan Challa*[1]; Devesh Misra[1]; [1]University of Louisiana at Lafayette

11:45 AM
Enhanced Bone Cell Response on Zirconium Oxide Nanotube Surface: *Christine Frandsen*[1]; Karla Brammer[1]; Kunbae Noh[1]; Sungho Jin[1]; [1]University of California, San Diego

12:05 PM
Quantification of Osteoblast Adhesion Strength on Hydroxyapatite-Carbon Nanotube Coated Bioimplant Surface: *Debrupa Lahiri*[1]; Ana Paula Benaduce[1]; Lidia Kos[1]; Arvind Agarwal[1]; [1]Florida International University

Bulk Metallic Glasses VIII: 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: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Tuesday AM
March 1, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Takeshi Egami, University of Tennessee; John Lewandowski, Case Western Reserve Univ

8:30 AM Keynote
Mechanical Properties of Metallic Glasses: An Atomistic View: *Takeshi Egami*[1]; [1]University of Tennessee

9:00 AM
Structural Changes in BMG after Mechanical Fatigue and Pre-Loading: *Wei Guo*[1]; Wojciech Dmowski[1]; Andrew Chuang[1]; Gongyao Wang[1]; Yoshihiko Yokoyama[2]; Yang Ren[3]; Peter Liaw[1]; Akihisa Inoue[2]; Takeshi Egami[1]; [1]University of Tennessee; [2]Tohoku University; [3]Advanced Photon Source

9:10 AM Invited
X-Ray Strain Measurements in Metallic Glasses: *Todd Hufnagel*[1]; [1]Johns Hopkins University

9:30 AM Invited
Insights on Thermomechanical Deformation in Bulk Metallic Glasses from In-Situ X-Ray and Neutron Scattering Experiments: Alexandru Stoica[1]; Dong Ma[1]; John Daniels[2]; Ken Littrell[1]; *Xun-Li Wang*[1]; [1]Oak Ridge National Laboratory; [2]European Synchrotron Radiation Facility

9:50 AM Invited
Atomic Structure and Dynamics of BMG during Mechanical Deformation: *Wojciech Dmowski*[1]; Andrew Chuang[1]; Wei Guo[1]; Konstantin Lokshin[1]; Yoshihiko Yokoyama[2]; Tatsuya Iwashita[1]; Yang Ren[3]; Matt Stone[4]; Peter Liaw[1]; Akihisa Inoue[2]; Takeshi Egami[5]; [1]University of Tennessee; [2]Tohoku University; [3]Advanced Photon Source; [4]SNS; [5]ORNL

10:10 AM Break

10:20 AM Invited
Fracture Toughness of Bulk Metallic Glasses: *John Lewandowski*[1]; [1]Case Western Reserve Univ

10:40 AM
Using Artificial Microstructures to Understand Microstructure Property Relationship in Metallic Glasses: *Baran Sarac*[1]; Golden Kumar[1]; Jan Schroers[1]; [1]Yale University

10:50 AM Invited
Incipient Plasticity in Bulk Metallic Glasses at Elevated Temperatures and under Cyclic Loading: *Oliver Franke*[1]; Cristopher Schuh[1]; [1]MIT

11:10 AM Invited
Inhomogeneous Deformation and Kinetics of Shear Banding in Metallic Glasses: *Robert Maass*[1]; David Klaumünzer[1]; Jörg Löffler[1]; [1]Swiss Federal Institute of Technology (ETHZ)

11:30 AM Invited
Elastic, Plastic and Fracture Response of Bulk Metallic Glass Matrix Composites: *Upadrasta Ramamurty*[1]; R. L Narayan[1]; P.S Singh[1]; K Boopathy[1]; Indrani Sen[1]; D. C Hofmann[2]; [1]Indian Institute of Science; [2]California Institute of Technology

11:50 AM
Mechanical Inhomogeneity in As-Cast Bulk Metallic Glass: *John Plummer*[1]; Russell Goodall[1]; Ignacio Figueroa[2]; Iain Todd[1]; [1]University of Sheffield; [2]Universidad Nacional Autonoma de Mexico

12:00 PM Invited
Effect of Structure of β Phase on the Mechanical Properties of Ti-Based Bulk Metallic Glass Composites: Chang Wook Bang[1]; Ka Ram Lim[1]; Jin Man Park[1]; Won Tae Kim[1]; *Do Hyang Kim*[1]; [1]Yonsei University

12:20 PM Invited
In-Situ TEM/STEM Investigations on Crack Propagation with Plasticity in Zr-Based Metallic Glass: Jingwei Deng[1]; *Manling Sui*[2]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; [2]Beijing University of Technology

12:40 PM
In-Situ Studies of Micromechanical Behavior of Porous W/Zr-Based Amorphous Alloy Composite: *Yunfei Xue*[1]; [1]Beijing Institute of Technology

Cast Shop for Aluminum Production: Direct Chill Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Geoffrey Brooks, Swinburne University of Technology; John Grandfield, Grandfield Technology Pty Ltd

Tuesday AM
March 1, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chairs: Dmitry Eskin, Delft University of Technology; Arild Hakonsen, Hydro Aluminium

8:30 AM Introductory Comments

8:35 AM
Cold Cracking during Direct-Chill Casting: *Dmitry Eskin*[1]; Mehdi Lalpoor[1]; Laurens Katgerman[2]; [1]Materials innovation institute; [2]Delft University of Technology

9:00 AM
Surface Defect Structures On Direct Chill Cast 6xxx Aluminum Billets: Mikael Erdegren[1]; *Torbjörn Carlberg*[1]; [1]Mid Sweden University

9:25 AM
Effect of Cooling Water Quality on the Dendrite Arm Spacing of DC Cast Billets: *Satya Mohapatra*[1]; Suvendra Nanda[1]; Anindya Palchowdhury[1]; [1]National Aluminium Company

9:50 AM
Mould Wall Heat Flow Mechanism in a DC Casting Mould: *Arvind Prasad*[1]; Ian Bainbridge[1]; [1]University of Queensland

10:15 AM Break

10:25 AM
Productivity Improvements at Direct Chill Casting Unit at Aluminium Bahrain (ALBA): Abdulla Ahmed[1]; *Sukanta Chateeriji*[1]; A Rasool Maki[1]; [1]Aluminium Bahrain (Alba)

10:50 AM
The Coupling of Macrosegregation With Grain Nucleation, Growth and Motion in DC Cast Aluminum Alloy Ingots: *Miha Založnik*[1]; Arvind Kumar[1]; Hervé Combeau[1]; Marie Bedel[2]; Philippe Jarry[2]; Emmanuel Waz[2]; [1]Institut Jean Lamour; [2]Alcan CRV

11:15 AM
Investment Casting of Surfaces with Microholes and Their Possible Applications: *Todor Ivanov*[1]; Andreas Buehrig-Polaczek[1]; Uwe Vroomen[1]; Claudia Hartmann[2]; Arnold Gillner[2]; Kirsten Bobzin[1]; Jens Holtkamp[2]; Nazlim Bagcivan[1]; Sebastian Theiss[1]; [1]RWTH Aachen University; [2]Fraunhofer-Institute for Laser Technology

11:40 AM
Using SEM and EDX for a Simple Differentiation of α- and β-AlFeSi-Phases in Wrought Aluminum Billets: *Marcel Rosefort*[1]; Christiane Matthies[1]; Hinrich Buck[1]; Hubert Koch[1]; [1]Trimet Aluminium AG

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

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Tuesday AM
March 1, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Mingdong Cai, Exova; John Bridge, Maine Maritime Academy

8:30 AM
Effect of Initial Structure on Grain Refinement of Medium Carbon Steel Processed by ECAP: *Jozef Zrnik*[1]; Sergey Dobatkin[2]; George Raab[3]; Martin Fujda[4]; Libor Kraus[5]; [1]Comtes FHT, Inc.; [2]Russian Academy of Science; [3]Ufa State University; [4]Technical University of Kosice; [5]COMTES FHT Inc.

8:45 AM
Effect of Test Temperature and Prior Straining on the Deformation Mode of Austenitic Stainless Steel during Tensile Testing: Supratik Roychowdhury[1]; Suman Neogy[1]; Mayank Gupta[2]; Vivekanand Kain[1]; Dinesh Srivastava[1]; G.K. Dey[1]; R.C. Prasad[3]; *Raghvendra Tewari*[4]; [1]Bhabha Atomic Research Centre; [2]PEC; [3]IIT, Bombay; [4]Bhabha Atomic Resrach Centre

9:00 AM
Susceptibility of Low and High Manganese X70 Pipeline Steel to Hydrogen Embrittlement: Daniel Hejazi[1]; Ayesha Haq[1]; Nima Yazdipour[1]; Druce Dunne[1]; Andrzej Calka[1]; Frank Barbaro[2]; *Elena Pereloma*[1]; [1]University of Wollongong; [2]BlueScope Steel

9:15 AM
Evaluation of Aging Embrittlement of Austenitic Stainless Steels JN1, JJ1 and JK2 by Cryogenic Small-Punch Testing: Maribel Saucedo-Muñoz[1]; *Victor Lopez-Hirata*[1]; Shin-ichi Komazaki[2]; Toshiyuki Hashida[3]; [1]Instituto Politecnico Nacional (ESIQIE); [2]Muroran Institute of Technology; [3]Tohoku University

9:30 AM
Investigations on the Cyclic Crack Growth Behaviour of Spring Steel Wire Reinforced EN AW-6082: *Matthias Merzkirch*[1]; Kay Weidenmann[1]; Volker Schulze[1]; [1]Karlsruhe Institute of Technology

9:45 AM Invited
Effect of Cr Content on Corrosion Resistance of Fe-Based Alloys under SCW Condition: *Jian Li*[1]; Wenyue Zheng[1]; William Cook[2]; [1]CANMET-MTL; [2]University of New Brunswick

10:15 AM Break

10:30 AM
Variations of Elastic Modulus of Automotive Steels after Yielding: Paolo Matteis[1]; Giorgio Scavino[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

10:45 AM
The Development of a High Strength Microalloy Steel TiC Deposited by Reactive Magnetron Sputtering: *Narayanna Ferreira*[1]; Edalmy Almeida[1]; Marcio Mendes[1]; Clodomiro Alves Júnior[1]; [1]UFRN

11:00 AM
Microstructure and Properties of New Wear Resistant Steel with High Strength and High Toughness: *Li Hongbin*[1]; [1]Baosteel

11:15 AM
Evaluation of Growth Rates of Austenitic Transformation Products in Fe-C-Cr Alloys Using Laser Scanning Confocal Microscopy: *Peter Kolmskog*[1]; Peter Hedström[1]; Annika Borgenstam[1]; [1]Royal Institute of Technology, KTH

11:30 AM
Internal Friction and Three Dimensional Atom Probe Analysis of Bake Hardening Phenomenon in Ultra-Low Carbon Bake Hardening Steel: *Hua Wang*[1]; Wen Shi[1]; Lin Li[1]; [1]Shanghai University

11:45 AM
A New Understanding on the Initiation of Pitting Corrosion of Austenitic Stainless Steels in Salt Water: *Xiu-Liang Ma*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Chloride 2011: Practice and Theory of Chloride-Based Metallurgy: Molten Salts, Magnesium and Aluminum

Sponsored by: The Minerals, Metals and Materials Society, Canadian Institute of Metals, TMS Extraction and Processing Division, TMS: Magnesium Committee, TMS: Energy Committee
Program Organizers: Dirk Verhulst, Consultant, Extractive Metallurgy; V.I. (Lucky) Lakshmanan, Process Research Ortech, Inc.

Tuesday AM
March 1, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: Neale Neelameggham, US Magnesium LLC; Vladimiros Papangelakis, University of Toronto

8:30 AM
Evaluation of 2.25Cr-1Mo Alloy for Containment of LiCl/KCl Eutectic during the Treatment of Used Nuclear Fuel: *Brian Westphal*[1]; S. Li[1]; G. Fredrickson[1]; D. Vaden[1]; T. Johnson[1]; J. Wass[1]; [1]Idaho National Laboratory

8:50 AM
Numerical and Experimental Study of Fluid Flow during Electrolytic Process for Magnesium Production: *Hyun Na Bae*[1]; Myung Duk Seo[1]; Seon Hyo Kim[1]; Go-Gi Lee[2]; Jae Young Jung[2]; [1]POSTECH; [2]RIST

9:10 AM
Magnesium Removal from Secondary Aluminum Melts in Reverberatory and Rotary Furnaces: *Eulogio Velasco*[1]; Marcos Cardoso[2]; Jose Nino[2]; [1]Texas State University; [2]NEMAK

9:30 AM
Rapid Removal of Chlorine in Molten Salt Electrolysis of Magnesium Chloride: *Gökhan Demirci*[1]; Ishak Karakaya[2]; [1]Aselsan Inc.; [2]Middle East Technical University

9:50 AM
Preparation of Al-Ca Alloys by Molten Salt Electrolysis Method: *Sh Yang*[1]; Fengli Yang[1]; Mingzhou Li[1]; Xianwei Hu[2]; Zhaowen Wang[2]; Zhongning Shi[2]; Bingliang Gao[2]; [1]Jiangxi University of Science and Technology; [2]School of Materials and Metallurgy117#, Northeastern University

10:10 AM Break

10:25 AM
The Dissolution Behavior of TiCxO1-x Solid Solutions in Chloride Melt: Xiaohui Ning[1]; Chao Du[1]; Qiuyu Wang[1]; Shuqiang Jiao[1]; *Hongmin Zhu*[1]; [1]University of Science and Technology Beijing

10:45 AM
Study on Mechanism of Alumina Carbothermic Reduction-Chlorination Process in Vacuum: *Fulong Zhu*[1]; Bin Yang[1]; Qingchun Yu[1]; Baoqiang Xu[1]; Yongnian Dai[1]; [1]National Engineering Laboratory for Vacuum Metallurgy

11:05 AM
Investigation on the Corrosion Resistance of Several Steel Materials to LiCl-KCl Melt: *Bing Li*[1]; [1]East China University of Science and Technology

11:25 AM
Electrochemical Removal of Impurity Mg from LiCl-KCl Containing MgCl2 Melt: *Bing Li*[1]; Miao Shen[1]; Jingwei Lou[1]; [1]East China University of Science and Technology

11:45 AM
Direct Synthesis of Niobium Aluminides Powders by Sodiothermic Reduction in Molten Salts: Na Wang[1]; Chao Du[1]; Shuqiang Jiao[1]; Kai Huang[1]; *Hongmin Zhu*[1]; [1]University of Science and Technology Beijing

Computational Thermodynamics and Kinetics: Brent Fultz Honorary Session II

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Tuesday AM
March 1, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Matthew Lucas, Air Force Research Laboratory; Lee Roberson, Oak Ridge National Laboratory

8:30 AM Invited
Iron Alloys through the Lens of Nuclear Resonant Spectroscopy: *Wolfgang Sturhahn*[1]; [1]Jet Propulsion Laboratory

9:00 AM Invited
Mixing Properties in Oxide Solid Solutions Relevant to Nuclear Fuels: Ben Hanken[1]; *Mark Asta*[2]; Chris Stanek[3]; Fei Zhou[4]; Vidvuds Ozolins[4]; Niels Gronbech-Jensen[1]; [1]University of California, Davis; [2]University of California, Berkeley; [3]Los Alamos National Laboratory; [4]University of California, Los Angeles

9:30 AM Invited
Time-Resolved Measurements of Transient Behaviors by Asynchronous In-Situ Neutron Diffraction at the Spallation Neutron Source: *Ke An*[1]; Alexandru Stoica[1]; Harley Skorpenske[1]; Abhijit Pramanick[1]; Rick Riedel[1]; Steve Miller[1]; Hahn Choo[2]; Jabob Jones[3]; James Kohl[1]; Xun-Li Wang[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]University of Florida

10:00 AM Break

10:20 AM
Phonon Density of States and High Temperature Thermodynamics of MgB2: *Jorge Munoz*[1]; Nikolay Markovskiy[1]; Matthew Lucas[2]; Olivier Delaire[3]; Chen Li[1]; Matthew Stone[3]; Douglas Abernathy[3]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Lab; [3]Oak Ridge National Lab

10:40 AM Invited
Phonon Studies with Inelastic Neutron Scattering and First-Principles Simulations: *Olivier Delaire*[1]; [1]Oak Ridge National Laboratory

11:10 AM Invited
Phonon Thermodynamics of Binary Fe Alloys: *Matthew Lucas*[1]; [1]Air Force Research Laboratory

11:40 AM
The Temperature Dependence of Phonons in Scandium Fluoride, a Material with Large Negative Thermal Expansion: *Chen Li*[1]; Xiaoli Tang[1]; Jorge Munoz[1]; Brandon Keith[1]; Doug Abernathy[2]; Sally Tracy[1]; Benjamin Greve[3]; Angus Wilkinson[3]; Brent Fultz[1]; [1]California Institute of Technology; [2]Oak Ridge National Laboratory; [3]Georgia Institute of Technology

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Intermetallics III, Superalloys, and Gum Metal

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Tuesday AM
March 1, 2011
Room: 32A
Location: San Diego Conv. Ctr

Session Chairs: Ian Baker, Dartmouth College; Takayuki Takasugi, Osaka Prefecture University

8:30 AM Invited
Stability and Structure of Transition Metal C14/C15 Laves Phases: *Masao Takeyama*[1]; Shigehiro Ishikawa[2]; [1]Tokyo Institute of Technology; [2]Former graduate student (Currently Sumitomo Metal Co.)

9:00 AM Invited
Resemblance and Difference in Mechanical Properties between $L1_2$ and $E2_1$ Type Ordered Crystal Structures: *Yoshisato Kimura*[1]; [1]Tokyo Institute of Technology

9:30 AM Invited
Microstructure Evolution and Solubility Change of Constituent Phases in Mo-Si-B Based Alloys at 1800 Degree C: *Kyosuke Yoshimi*[1]; Seong-Ho Ha[1]; Kouichi Maruyama[1]; [1]Tohoku University

10:00 AM Break

10:15 AM Invited
Overview of Creep Deformation of Nickel Base Superalloys and Intermetallics: *Dilip Shah*[1]; [1]Pratt & Whitney

10:45 AM
Localized Shear Deformation in Gum Metal at Ideal Strength: *Shigeru Kuramoto*[1]; Tadahiko Furuta[1]; Naoyuki Nagasako[1]; John Morris[2]; [1]Toyota Central R&D Labs., Inc.; [2]University of California, Berkeley

11:00 AM
Microstructual Characterization and Deformation Behavior of Ideal Strength Metallic Materials: *Tadahiko Furuta*[1]; Shigeru Kuramoto[1]; Kaveh Edalati[2]; Zenji Horita[2]; [1]Toyota Central R & D Labs., Inc.; [2]Kyushu University

11:15 AM
Non-Planar Deformation as a Dominant Deformation Mechanism Following Low Cycle Fatigue of a Ni-Based Superalloy: *Patrick Phillips*[1]; Libor Kovarik[2]; Raymond Unocic[3]; Dan Wei[4]; David Mourer[4]; Michael Mills[1]; [1]Ohio State University; [2]PNNL; [3]ORNL; [4]GE Aviation

11:30 AM
Investigation of Fatigue Crack Growth Mechanisms in a Ni-Based Superalloy: *Clarissa Yablinsky*[1]; Katharine Flores[1]; Michael Mills[1]; James Williams[1]; [1]The Ohio State University

11:45 AM
Fatigue Life Modeling of Single Crystal Nickel-Base Superalloys: *Clinique L. Brundidge*[1]; Tresa M. Pollock[2]; [1]University of Michigan; [2]University of California, Santa Barbara

12:00 PM
The Effect of Temperature on the Microstructure and Mechanical Behavior of Two-Phase $Fe_{30}Ni_{20}Mn_{20}Al_{30}$ Alloy: *Xiaolan Wu*[1]; Ian Baker[1]; [1]Thayer School of Engineering, Dartmouth College

Deformation, Damage, and Fracture of Light Metals and Alloys: Session I

Sponsored by: The Minerals, Metals and Materials Society, MS&T Organization, TMS Light Metals Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Xun-Li Wang, Oak Ridge National Laboratory; Yanyao Jiang, University of Nevada, Reno

Tuesday AM
March 1, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chair: Qizhen Li, University of Nevada, Reno

8:30 AM Invited
Modeling Dislocation Slip Transmission across Alpha-Beta Interface in Ti-Alloy: Chen Shen[1]; Ju Li[2]; *Yunzhi Wang*[3]; [1]GE; [2]University of Pennsylvania; [3]Ohio State University

9:00 AM Invited
Deformation and Fracture of Nanostructured fcc Materials under Monotonic and Cyclic Loading: *Diana Farkas*[1]; [1]Virginia Tech

9:30 AM
Using Ab Initio Calculations in Designing BCC MgLi-X Alloys for Ultra-Lightweight Applications: *Martin Friak*[1]; William Counts[1]; Dierk Raabe[1]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research

9:45 AM
The Effect of Crystallographic Orientation on Void Growth: A Molecular Dynamics Study: Mehul Bhatia[1]; *Kiran Solanki*[1]; Amitava Moitra[1]; Mark Tschopp[1]; [1]Mississippi State University

10:00 AM Break

10:15 AM Invited
Creep Deformation of Al-Sc-X Alloys: Matthew Krug[1]; David Seidman[1]; *David Dunand*[1]; [1]Northwestern University

10:45 AM Invited
Impression Creep – A Localized Technique for Characterizing Creep Deformation of Materials: *Fuqian Yang*[1]; [1]University of Kentucky

11:15 AM
Creep Fatigue Behavior of 319 Aluminum Casting Alloys under Hot Compressive Dwell Conditions: *Xiang Chen*[1]; Diana Lados[1]; Richard Pettit[2]; [1]Worcester Polytechnic Institute; [2]FractureLab

11:30 AM
Room Temperature Creep and Substructure Formation in Pure Aluminum at Ultra-Low Strain Rates: *Junjie Shen*[1]; Iketa Ken-ichi[1]; Hata Satoshi[1]; Nakashima Hideharu[1]; [1]Kyushu University

11:45 AM
Quantifying the Relationship Between Deformation-Induced Surface Roughness, Grain Orientation, and Strain Localization in Polycrystalline Aluminum: *Mark Stoudt*[1]; Joseph Hubbard[1]; Adam Creuziger[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology

Dynamic Behavior of Materials V: Spalling and Dynamic Fracture

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Tuesday AM
March 1, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chair: George Gray, Los Alamos National Lab

8:30 AM Invited
Dynamic Necking of Structures Submitted to High Strain Rate Loadings: *Alain Molinari*[1]; Sébastien Mercier[1]; [1]Université Paul Verlaine-Metz

9:00 AM
3-D Modelling of Local and Global Spall Damage in Shocked FCC Multicrystals: *Kapil Krishnan*[1]; Leda Wayne[1]; Andrew Brown[1]; Pedro Peralta[1]; Shengnian Luo[2]; Darrin Byler[2]; Aaron Koskelo[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

9:20 AM
Examination of the Damage and Failure Response of Tantalum and Copper under Varied Shock Loading Conditions: Ellen Cerreta[1]; Darcie Dennis-Koller[1]; Neil Bourne[1]; George Gray[1]; *Curt Bronkhorst*[1]; Davis Tonks[1]; Irene Beyerlein[1]; Benjamin Hansen[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

9:40 AM
Geometric and Microstructural 3-D Characteristics of Incipient Spall Damage in Shock Loaded Cu Multicrystals and Polycrystals: *Andrew Brown*[1]; Leda Wayne[1]; Kapil Krishnan[1]; Pedro Peralta[1]; Shengnian Luo[2]; Scott Greenfield[2]; Darrin Byler[2]; Kenneth McClellan[2]; Aaron Koskelo[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

10:00 AM
Instrumented Ring Expansion for the Measurement of High Strain Rate Constitutive and Fracture Behavior: *Jason Johnson*[1]; Geoff Taber[1]; Gregg Fenton[2]; Glenn Daehn[1]; [1]Ohio State University; [2]Applied Research Associates

10:20 AM Break

10:30 AM Invited
The Dependence of Dynamic Spall Strength on Flow Stress and Temperature: *Roger Minich*[1]; [1]LLNL

11:00 AM
Laser-Shock Induced Spalling and Fragmentation in Vanadium: *Marc Meyers*[1]; H. Jarmakani[1]; B. Maddox[2]; C. T. Wei[1]; D. Kalantar[2]; [1]University of California, San Diego; [2]Lawrence Livermore National Laboratory

11:20 AM
Micro-CT for the Quantification of 3D Voids within Damaged Structures: *Brian Patterson*[1]; Christopher Hamilton[1]; Ellen Cerreta[1]; Darcie Dennis-Koller[1]; Curt Bronkhorst[1]; Benjamin Hansen[1]; [1]Los Alamos National Laboratory

11:40 AM
Shock-Induced Spallation Phenomena in Copper-Niobium Nanolayered Composites: *Niraj Gupta*[1]; Alexander Stukowski[2]; Michael Baskes[3]; Srinivasan Srivilliputhur[1]; [1]University of North Texas; [2]Darmstadt University of Technology; [3]Los Alamos National Laboratory

12:00 PM
Materials Characterization of Railgun Erosion Phenomena: *Brenda Machado*[1]; Lawrence Murr[1]; Edwin Martinez[1]; Sara Gaytan[1]; Sikhanda Satapathy[2]; [1]University of Texas at El Paso; [2]The University of Texas at Austin

Electrode Technology for Aluminium Production: Anode Raw Materials and Green Carbon

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Tuesday AM
March 1, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Frank Cannova, BP Coke

8:30 AM Introductory Comments

8:35 AM
Property Profile of Lab- Scale Anodes Produced with 180°C Mettler Coal Tar Pitch: Winfried Boenigk[1]; Claudia Boltersdorf[1]; Falk Lindner[1]; *Jens Stiegert*[1]; [1]RÜTGERS Germany GmbH

9:00 AM
Quality and Process Performance of Rotary Kilns and Shaft Calciners: *Les Edwards*[1]; [1]Rain CII Carbon

9:25 AM
Sub-Surface Carbon Dioxide Reaction in Anodes: *Donald Ziegler*[1]; [1]Alcoa Primary Metals

9:50 AM
Paste Quality Improvements at Alcoa Poços de Caldas Plant: *Beatriz Vry*[1]; Ciro Kato[1]; Jeronimo Araujo[1]; Fabiano José Ribeiro[1]; André Luís Abreu[1]; [1]Alcoa

10:15 AM Break

10:25 AM
The Vertical Ball Mill for the Grinding of Calcined Petroleum Coke to Improve the Quality of the Anodes in the Aluminium Industry: *Stefan Gosau*[1]; Andreas Wolf[1]; [1]Claudius Peters Projects GmbH

10:50 AM
Prebaked Anode from Coal Extract (2) - Effects of the Properties of Hypercoal-Coke on the Preformance of Prebaked Anodes: *Maki Hamaguchi*[1]; Noriyuki Okuyama[1]; Nobuyuki Komatsu[1]; Jiro Koide[2]; Keisuke Kano[2]; [1]Kobe Steel, Ltd.; [2]Sumitomo Corporation

11:15 AM
The New Generation of Vertical Shaft Calciner Technology: *Jingli Zhao*[1]; [1]Jinan Aohai Carbon Products Co.,Ltd.

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue of Nanocrystalline Materials and Fatigue Property Enhancement

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Tuesday AM
March 1, 2011
Room: 31C
Location: San Diego Conv. Ctr

Session Chairs: Peter Liaw, University of Tennessee; E-Wen Huang, National Central University

8:30 AM
Monitoring and Characterization of the Fatigue Response of Nano-Crystalline Mg Composites Reinforced with Ti2AlC: *Antonios Kontsos*[1]; Kavan Hazeli[1]; Babak Anasori[1]; Theodoros Loutas[2]; Michel Barsoum[1]; [1]Drexel University; [2]University of Patras

8:50 AM
Effects of Ultrasonic Nanocrystal Surface Modification on Fatigue Behavior of SUS316 Austenitic Stainless Steel Tube for Stents: *Auezhan Amanov*[1]; Young Sik Pyun[1]; Jun Hyong Kim[1]; Hak Du Kim[1]; Sang Ho Kim[2]; Chae Jong Park[2]; [1]Sun Moon University; [2]M.I. Tech Co., Ltd.

9:10 AM
Increasing the Fatigue Life of SAE52100 Steel by Ultrasonic Nanocrystal Surface Modification: *Jong Soon Im*[1]; Young Sik Pyun[2]; Auezhan Amanov[2]; Sung Jae Lee[1]; Jun Hyong Kim[2]; Chang Min Suh[3]; [1]Iljin Global; [2]Sun Moon University; [3]Kyungpook National University

9:30 AM
Research on HCF Tests and Damage Model of TC11 Alloy Welded Joints: *Xiaogang Liu*[1]; Guo Hai-ding[1]; [1]Nuaa

9:50 AM
Residual Stresses in Alloy CF8C Plus Coated with Iron Aluminide: *Deepak Kumar*[1]; Sebastien Dryepondt[1]; Philip Maziasz[1]; Bruce Pint[1]; Beth Armstrong[1]; Edgar Curzio[1]; [1]Oak Ridge National Laboratory

10:10 AM Break

10:20 AM
Fatigue Behavior of Al 6082-T4 and Al 7075-T73 after Ball Burnishing: *Yasser Ahmed*[1]; Mansour Mhaede[2]; Lothar Wagner[2]; [1]German University in Cairo; [2]Institute of Materials Science and Engineering (IWW), TU of Clausthal

10:40 AM
High Temperature Fatigue Behavior of Laser Shock Peened IN718Plus Superalloy: *Vibhor Chaswal*[1]; S Mannava[1]; Dong Qian[1]; Vijay Vasudevan[1]; Kristina Langer[2]; [1]University of Cincinnati; [2]Wright Patterson Air Force Base

11:00 AM
Mechanical Properties and Four-Point-Bending Fatigue Behaviors of Non-Heat Treated and Carburized Low-Carbon Steels for Load-Chain Materials: *Wei Wu*[1]; Gongyao Wang[1]; David Huber[2]; Peter Hogan[2]; Rodney Reynolds[2]; Chris Hale[2]; Lee Whitted[2]; Joe Eudy[2]; John Stewart[2]; Jules Raphael[3]; Doug Fielden[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]Columbus McKinnon Corporation; [3]J R Technical Services

11:20 AM
Sustained Peak Low Cycle Fatigue: The Role of Coatings: *Britta Laux*[1]; Tresa Pollock[1]; [1]University of California, Santa Barbara

11:40 AM
S-N Fatigue and Fatigue Crack Propagation Behaviors of High Mn Steels: *HyunJung Lee*[1]; Jakie Kwon[2]; Youngju Kim[2]; Sangshik Kim[1]; [1]Gyeong Sang National Univ.; [2]Korea Institute of Geoscience and Mineral Resources

12:00 PM
High Cycle Fatigue Behavior of Shot-Peened Steels: *Alan Plumtree*[1]; Mehdi Mirzazadeh[1]; [1]University of Waterloo

Friction Stir Welding and Processing VI: Aluminum and Magnesium Alloys I

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Tuesday AM
March 1, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: Yutaka Sato, Tohoku University

8:30 AM
Microstructure and Mechanical Properties of Friction Stir Welded (FSW) AA5454-Joints: Xavier Lang[1]; Dietmar Eifler[1]; *Guntram Wagner*[1]; [1]University of Kaiserslautern

8:50 AM
The Effect of Friction Stir Welding on the Dispersoid Particles of Aluminium Alloy 2195: *Roy Crooks*[1]; Jorge dos Santos[2]; Kati Savolainen[3]; Hannu Hänninen[3]; [1]Black Laboratories, L.L.C.; [2]GKSS-Research Centre GmbH; [3]Aalto University

9:10 AM
Microstructural Characteristics of Sc-Modified Al-Zn-Mg-Cu Alloy Extrusions Joined by Friction Stir Welding: *Carter Hamilton*[1]; Stanislaw Dymek[2]; Oleg Senkov[3]; [1]Miami University; [2]AGH University of Science and Technology; [3]UES, Inc

9:30 AM
AGG Suppression in Friction-Stir-Welded, Spun-Formed Al-Li 2195 Materials: *Stephen Hales*[1]; Wesley Tayon[1]; [1]NASA

9:50 AM
Analysis of Temperature and Residual Stress Evolution during Friction Stir Welding of Aluminum 7075-T6: Yunfeng Cao[1]; Tyler Davis[1]; *Yung Shin*[1]; [1]Purdue University

10:10 AM
Measurement of Residual Stress in Friction Stir Weld Joints: *Adrian DeWald*[1]; Michael Hill[2]; Murray Mahoney[3]; [1]Hill Engineering, LLC; [2]University of California, Davis; [3]Consultant

10:30 AM
Development of Tatsumaki Friction Stir Welding: *Seung Hwan C. Park*[1]; Satoshi Hirano[1]; Shinichi Kaga[2]; Mitsuru Onose[2]; Noriaki Tominaga[2]; Yasutsugu Yoshimura[2]; [1]Hitachi Ltd.; [2]Mitsubishi-Hitachi Metals Machinery, Inc.

10:50 AM Break

11:00 AM
The Role of Plastic Deformation in Suppressing Abnormal Grain Growth in Friction Stir Welded Al-Li 2195: *Eric Hoffman*[1]; Robert Hafley[1]; Marcia Domack[1]; Ravi Shenoy[2]; Wesley Tayon[1]; Jessica Robinson[1]; [1]NASA Langley Research Center; [2]Lockheed Martin Space Systems

11:20 AM
The Effect of Dispersoid Modification on Abnormal Grain Growth in Friction Stir Welded Al-Li 2195: *Roy Crooks*[1]; Ravi Shenoy[2]; Wesley Tayon[3]; Marcia Domack[3]; [1]National Institute of Aerospace; [2]Lockheed Martin Space Systems; [3]NASA Langley Research Center

11:40 AM
Friction Stir Welding of 25 mm Thick Al 6061-T651 Plates: *Guru Dinda*[1]; Douglas Grant[1]; Matthew Scheid[1]; Ashish Dasgupta[1]; Sudip Bhattacharya[2]; Jyoti Mazumder[2]; [1]Focus: HOPE; [2]University of Michigan

12:00 PM
Effects of Forge Axis Force and Backing Plate Boundary Condition on FSW of AA6056: *Piyush Upadhyay*[1]; Anthony Reynolds[1]; [1]University of South Carolina

12:20 PM
Friction Stir Welded "A" Frame For Duel Function Test Fixture: *Alan Handyside*[1]; Farzad Baratzadeh[1]; Jeff Buller[1]; Hamid Lankarani[2]; Blair Carlson[3]; Dwight Burford[1]; [1]National Institute for Aviation Research; [2]Wichita State University; [3]General Motors Corporation

12:40 PM
Investigation of Lazy S Feature in Self Reacting Tool Welds in 2024-T4 Aluminum: *Karl Warsinski*[1]; Michael West[2]; Jim Freeman[3]; Todd Curtis[2]; [1]Michigan Technological University; [2]South Dakota School of Mines and Technology; [3]MTS Systems Corporation

Frontiers in Solidification Science: Experimental Studies

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Solidification Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Daniel Lewis, Rensselaer Polytechnic Institute

Tuesday AM
March 1, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Invited
Simulation of Dendritic Growth Observed in Synchroton X-ray Video Experiments: *Christoph Beckermann*[1]; Pierre Delaleau[1]; Ragnvald Mathiesen[2]; Lars Arnberg[2]; [1]University of Iowa; [2]NTNU

9:00 AM Invited
Solidification of Metallic Alloys under Magnetic Fields: *Yves Fautrelle*[1]; Xi Li[1]; Olga Budenkova[1]; Bachir Saadi[1]; Zhongming Ren[1]; [1]Grenoble Institute of Technology

9:30 AM Invited
Two-Phased Spiral Dendrites: *Silvere Akamatsu*[1]; Mikael Perrut[2]; Sabine Bottin-Rousseau[1]; Gabriel Faivre[1]; [1]CNRS - UPMC; [2]ONERA

10:00 AM Break

10:15 AM Invited
Universality and the Pinch-off of Rods by Capillarity: L. Aagesen[1]; A. Johnson[1]; J. Fife[1]; *Peter Voorhees*[1]; M. Miksis[1]; S. Poulsen[2]; E. Lauridsen[2]; F. Marone[3]; M. Stampanoni[3]; [1]Northwestern University; [2]Riso Laboratory for Sustainable Energy; [3]Swiss Light Source

10:45 AM Invited
Directional Growth Structures in Univariant Eutectics: *Ralph Napolitano*[1]; [1]Iowa State University

11:15 AM
Nucleation Catalysis Potency of Ceramic Nanoparticles in Aluminum Matrix Nanocomposites: *Michael De Cicco*[1]; John Perepezko[1]; Lih-Sheng Turng[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Diffusion Coefficients and Thermodynamics

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Tuesday AM
March 1, 2011
Room: 31A
Location: San Diego Conv. Ctr

Session Chairs: Yongho Sohn, University of Central Florida; Gary Shiflet, University of Virginia

8:30 AM Invited
Influence of Thermodynamic Forces on Diffusion in Melts: *Axel Griesche*[1]; Juergen Horbach[2]; Andreas Meyer[2]; [1]Federal Institute for Materials Research and Testing (BAM); [2]German Aerospace Center (DLR)

9:00 AM Invited
Atomic Bond Defects; Thermodynamics and Diffusion in Metallic Glasses: *Gary Shiflet*[1]; Aiwu Zhu[1]; S. Joseph Poon[1]; [1]University of Virginia

9:30 AM Invited
Application of Thermodynamic and Kinetic Modeling to Diffusion Simulations in Nickel-Base Superalloy Systems: Anders Engström[1]; *Henrik Larsson*[1]; Johan Bratberg[1]; Lars Höglund[1]; Paul Mason[2]; [1]Thermo-Calc Software AB; [2]Thermo-Calc Software Inc

10:00 AM Break

10:20 AM Invited
Selected Observations from Interdiffusion Study in U-Mo-Al System: *Yongho Sohn*[1]; Emmanuel Perez[1]; Bo Yao[1]; Ashley Ewh[1]; Dennis Keiser, Jr.[2]; [1]University of Central Florida; [2]Idaho National Laboratory

10:50 AM Invited
Analysis of the Influence of Vacancy-Solute Interaction on Diffusion of Atomic Monomers and Clusters: Piotr Warczok[1]; Jaroslav Zenisek[2]; Ernst Kozeschnik[1]; [1]Vienna University of Technology; [2]Materials Center Leoben Forschung GmbH

11:20 AM
Characterization of Phase Formation and Diffusion Behavior of the Cu-Zn Binary System: *Christopher Eastman*[1]; John Kuper[1]; Ji-Cheng (J.-C.) Zhao[1]; [1]The Ohio State University

11:50 AM
Interdiffusion Investigation of Mo and Zr in Fe, Fe-Cr and Fe-Ni-Cr Alloys at 650, 750, and 850°C: *Ashley Ewh*[1]; Judith Dickson[1]; Bulent Sencer[2]; John Kennedy[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

ICME: Overcoming Barriers and Streamlining the Transition of Advanced Technologies to Engineering Practice -- The 12th MPMD Global Innovations Symposium: Emerging and Fundamental Techniques and the Advancement of ICME in Industry

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division
Program Organizers: Paul Mason, Thermo-Calc Software Inc; Mei Li, Ford Motor Company; James Warren, National Institute of Standards and Technology; Jeff Simmons, AFRL

Tuesday AM
March 1, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chair: Mei Li, Ford Motor Company

8:30 AM
Modeling and Simulation of Mechanical Properties of Magnesium Alloy Wheel Casting for Automobile: Liang Huo[1]; *Zhiqiang Han*[1]; Xunming Zhu[2]; Junpeng Duan[2]; Aimin Wang[2]; Baicheng Liu[3]; [1]Key Laboratory for Advanced Materials Processing Technology (Ministry of Education), Department of Mechanical Engineering, Tsinghua University; [2]WANFENG Magnesium Co. Ltd., WANFENG Auto Holding Group; [3]State Key Laboratory of Automotive Safety and Energy, Department of Automotive Engineering, Tsinghua University

8:50 AM Invited
Engineering Grain Boundary Populations and Connectivity in Polycrystalline Structures: *Gregory Rohrer*[1]; Herbert Miller[1]; [1]Carnegie Mellon University

9:15 AM
The Development of Tools for the Prediction of the Tensile and Fracture Toughness Properties in a/ß Titanium alloys: *Santhosh Koduri*[1]; Peter Collins[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

9:35 AM
Quantifying Interface Energetics and Kinetics using Atomic-scale Simulations: *Moneesh Upmanyu*[1]; [1]Northeastern University

9:55 AM Invited
Integrated Computational Materials Design and Qualification: Making CyberSteel Fly: *Greg Olson*[1]; [1]Northwestern University

10:20 AM Break

10:35 AM Invited
3-D Modeling of Machining Distortions of Aerospace Components: *Shesh Srivatsa*[1]; [1]GE Aviation

11:00 AM Invited
A Case for ICME - Ti Alloy Design Tool Development at Boeing: *Donald Shih*[1]; [1]The Boeing Company

11:25 AM Invited
Application of Computational Modeling during Processing of Stainless Steels: *Ashish Patel*[1]; [1]Carpenter Technology Corporation

11:50 AM Invited
Fast Acting Models for Materials-Centric Engineering Design: *Triplicane Parthasarathy*[1]; Y.S. Choi[1]; R. Goetz[2]; D. Furrer[2]; R. John[3]; R. Dutton[3]; [1]UES, Inc.; [2]Rolls Royce Engines; [3]Air Force Research Laboratory

Magnesium Technology 2011: Alloy Design/ Development; Grain Refinement and Severe Plastic Deformation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Tuesday AM
March 1, 2011
Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Matthew Barnett, Deakin University; Suveen Mathaudhu, US Army Research Office

8:30 AM
Effect of Zn/Gd Ratio on Phase Constitutions in Mg-Zn-Gd Alloys: Song Zhang[1]; *Guangyin Yuan*[1]; Chen Lu[1]; Wenjiang Ding[1]; [1]Shanghai Jiao Tong University

8:50 AM
Optimization of Magnesium-Aluminum-Tin Alloys for As-Cast Microstructure and Mechanical Properties: Xiaoyu Kang[1]; *Alan Luo*[2]; Penghuai Fu[1]; Zhenzhen Li[1]; Tianyu Zhu[1]; Liming Peng[1]; Wenjiang Ding[1]; [1]National Engineering Research Center of Light Alloys Net Forming and State Key Laboratory of Metal Matrix Composite, Shanghai Jiaotong University; [2]General Motors Research & Development Center

9:10 AM
Thermodynamic Analysis of As-Cast and Heat Treated Microstructures of Mg-Ce-Nd Alloys: Mark Easton[1]; Suming Zhu[1]; Mark Gibson[2]; Jian-Feng Nie[1]; Joachim Groebner[3]; Artem Kozlov[3]; *Rainer Schmid-Fetzer*[3]; [1]CAST CRC, Monash University; [2]CAST CRC, CSIRO, Clayton; [3]Clausthal University of Technology

9:30 AM
Compressive Strength and Hot Deformation Behavior of TX32 Magnesium Alloy with 0.4% Al and 0.4% Si Additions: *Pitcheswara Kamineni*[1]; YVRK Prasad[2]; Suresh Kalidass[1]; Chalasani Dharmendra[1]; Norbert Hort[3]; Karl Kainer[3]; [1]City University of Hong Kong; [2]processingmaps.com; [3]GKSS Research Centre

9:50 AM
An Analysis of the Grain Refinement of Magnesium By Zirconium: Partha Saha[1]; *Srinath Viswanathan*[1]; [1]University of Alabama

10:10 AM
Study on the Grain Refinement Behavior of Mg-Zr Master Alloy and Zr Containing Compounds in Mg-10Gd-3Y Magnesium Alloy: *Guohua Wu*[1]; Ming Sun[1]; Jichun Dai[1]; Wenjiang Ding[1]; [1]Shanghai Jiao Tong University

10:30 AM Break

10:50 AM
The Effect of Rare Earth Elements on the Texture and Formability of Asymmetrically Rolled Magnesium Sheet: *David Randman*[1]; Bruce Davis[1]; Martyn Alderman[2]; Govindarajan Muralidharan[3]; Tom Muth[3]; William Peter[3]; Tom Watkins[3]; Odis Cavin[3]; Edward Kenik[3]; [1]Magnesium Elektron North America; [2]Magnesium Elektron; [3]Oak Ridge National Laboratory

11:10 AM
Improvement of Strength and Ductility of Mg-Zn-Ca-Mn Alloy by Equal Channel Angular Pressing: *Mingyi Zheng*[1]; [1]Harbin Institute of Technology

11:30 AM
Deformation Behavior of a Friction Stir Processed Mg Alloy: *Qi Yang*[1]; Sergey Mironov[2]; Yutaka Sato[3]; Kazutaka Okamoto[4]; [1]Hitachi America, Ltd.; [2]Department of Materials Processing, Graduate School of Engineering, Tohoku University ; [3]Department of Materials Processing, Graduate School of Engineering, Tohoku University; [4]Hitachi Research Laboratory, Hitachi Ltd.

11:50 AM
Effect of Heat Index on Microstructure and Mechanical Behavior of Friction Stir Processed AZ31: *Wei Yuan*[1]; Rajiv Mishra[1]; [1]Missouri University of Science and Technology

12:10 PM
Strengthening Mg-Al-Zn Alloy by Repetitive Oblique Shear Strain: *Toshiji Mukai*[1]; Hidetoshi Somekawa[1]; Alok Singh[1]; Tadanobu Inoue[1]; [1]National Institute for Materials Science

Magnetic Materials for Energy Applications: Nd-Fe-B Sintered Magnets

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday AM
March 1, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: George Hadjipanayis, University of Delaware

8:30 AM Invited
Materials for Motors of Hybrid Automobiles: *Shigeru Konda*[1]; [1]Toyota Motor Corp., Inc.

8:55 AM Invited
Application of Nd-Fe-B Magnets to the Megawatt Scale Generator for the Wind Turbine: *Takehisa Minowa*[1]; [1]Shin-Etsu Chemical Co. Ltd.

9:20 AM Invited
Enhancement of Coercivity of Nd-Fe-B Sintered Magnets by Grain Boundary Modifications: *Kazuhiro Hono*[1]; Tadakatsu Ohkubo[1]; [1]National Institute for Materials Science

9:45 AM Invited
Novel Approaches to Microstructural Characterisation in NdFeB Materials: *Thomas Woodcock*[1]; Nora Dempsey[2]; Dominique Givord[2]; Stefan Zaefferer[3]; Oliver Gutfleisch[1]; [1]IFW Dresden; [2]Institute Neél, CNRS-UJF; [3]Max Planck Institute for Iron Research

10:10 AM Invited
Modeling of Magnetization Reversal in Nd-Fe-B Based Sintered Magnets: *Thomas Schrefl*[1]; Simon Bance[1]; Harald Oezelt[1]; Gino Hrkac[2]; [1]St. Poelten University of Applied Sciences; [2]University of Sheffield

10:35 AM
Theoretical Investigation on Formation Mechanism of fcc-NdOx in Nd/Nd-Fe-B Interface: *Ying Chen*[1]; Satoshi Hirosawa[2]; Shuichi Iwata[3]; [1]Tohoku University; [2]NEOMAX Co., Hitachi Metals, Ltd.; [3]The University of Tokyo

10:50 AM
NdFeB Thick Films for Micro-System Applications: *Nora Dempsey*[1]; Mikhail Kustov[1]; Daniel O'Brien[1]; Yuepeng Zhang[1]; Luiz Zanini[1]; Georgeta Ciuta[1]; Frederic Dumas-Bouchiat[1]; Dominique Givord[1]; [1]Institut Néel CNRS/UJF

11:05 AM Break

Magnetic Materials for Energy Applications: Magnetostrictive Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday AM — Room: 11A
March 1, 2011 — Location: San Diego Conv. Ctr

Session Chair: Michael McHenry, Carnegie Mellon University

11:20 AM
Magnetostrictive Behavior of Fe-W Alloy Single Crystals: *Gavin Garside*[1]; Chai Ren[1]; Biswadeep Saha[1]; Meenakshisundaram Ramanathan[1]; Sivaraman Guruswamy[1]; [1]University of Utah

11:35 AM
Investigation of DO_3 and B2 Type Ordering in Quenched Magnetostrictive Fe-27.5 at.%Ga Alloy Single Crystals: *Chai Ren*[1]; Gavin Garside[1]; Biswadeep Saha[1]; Meenakshisundaram Ramanathan[1]; Sivaraman Guruswamy[1]; [1]University of Utah

11:50 AM
Influence of Plastic Deformation on the Magnetostrictive Behavior of [001]-oriented Fe-Ga Alloy Single Crystals: *Biswadeep Saha*[1]; Gavin Garside[1]; Meenakshisundaram Ramanathan[1]; Chai Ren[1]; Sivaraman Guruswamy[1]; [1]University of Utah

12:05 PM
Enhanced Magnetoimpedance Effect in Co89Zr7B4 Ribbon/Fe80Ni20 Bilayer Structures: N. Laurita[1]; A. Chaturvedi[1]; A. Leary[2]; P. Jayathilaka[1]; C. Bauer[1]; Casey W. Miller[1]; M.H. Phan[1]; M.E. McHenry[2]; *H. Srikanth*[1]; [1]University of South Florida; [2]Carnegie Mellon University

Massively Parallel Simulations of Materials Response: Session III

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Diana Farkas, Virginia Tech; Susan Sinnott, University of Florida

Tuesday AM — Room: 1A
March 1, 2011 — Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Invited
Ultra-Large Scale Simulations of Deformation and Failure of Biological Protein Materials: *Markus Buehler*[1]; [1]Massachusetts Institute of Technology

8:55 AM Invited
Multilevel Atomistic Modeling of Grain Boundaries and Nanocrystals: Garritt Tucker[1]; Shreevant Tiwari[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

9:20 AM Invited
Quantitative Studies of Nanoindentation: Coupled Experiments and Modeling: *Lyle Levine*[1]; Richard Wagner[1]; Li Ma[1]; Francesca Tavazza[1]; Chandler Becker[1]; Douglas Smith[1]; Dylan Morris[1]; David Bahr[2]; Stefhanni Jennerjohn[2]; [1]National Institute of Standards and Technology; [2]Washington State University

9:45 AM Invited
Nanostructurally Small Cracks (NSC): Atomistic Modeling of Fatigue: *Mark Horstemeyer*[1]; G. Potirniche[2]; S. Kim[1]; T. Tang[1]; Diana Farkas[3]; [1]Mississippi State University; [2]Univ. Idaho; [3]Virginia Tech

10:10 AM Break

10:25 AM
Atomistic Predictions of Age Hardening in Al-Cu Alloys: *Chandra Veer Singh*[1]; Derek Warner[1]; [1]Cornell University

10:45 AM
Massively Parallel Molecular Statics Simulations of the Percolation of Dislocations through a Random Array of Forest Dislocation Obstacles in FCC Nickel: *Satish Rao*[1]; Dennis Dimiduk[2]; Jaafar El-Awady[3]; Triplicane Parthasarathy[1]; Michael Uchic[2]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]Johns Hopkins University

11:05 AM
Atomic Scale Deformation Mechanisms of Amorphous Polyethylene under Tensile Loading: *Mark Tschopp*[1]; Jean-Luc Bouvard[1]; Don Ward[2]; Mark Horstemeyer[1]; [1]Mississippi State University; [2]Sandia National Laboratory

11:25 AM
Energy of Slip Nucleation and Transmission at Grain Boundaries: *Michael Sangid*[1]; Huseyin Sehitoglu[1]; [1]University of Illinois, Urbana-Champaign

11:45 AM
Molecular Dynamics Investigations of Polyurethane-Chrome Oxide Interfaces: *Susanne Opalka*[1]; Kenneth Smith[1]; [1]United Technologies Research Center

12:05 PM
Tendency of Cooperative Grain Boundary Sliding in Nanocrystalline Materials: *Shreevant Tiwari*[1]; David McDowell[1]; [1]Georgia Institute of Technology

Materials for the Nuclear Renaissance II: Next Generation Reactors

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Raul Rebak, GE Global Research; Brian Cockeram, Bechtel-Bettis; Peter Chou, Electric Power Research Institute; Micah Hackett, TerraPower, LLC

Tuesday AM — Room: 4
March 1, 2011 — Location: San Diego Conv. Ctr

Session Chair: Brian Cockeram, Bechtel Bettis

8:30 AM Introductory Comments

8:35 AM
On the Prospects for Developing Advanced Alloys that Are Immune to Irradiation: Challenges and Opportunities: *G. Robert Odette*[1]; Takuya Yamamoto[1]; [1]University of California, Santa Barbara

8:55 AM
A Multi-Layer Approach to a Stable Alpha Alumina Barrier Layer on Alloy 617: *Elizabeth Clark*[1]; James Yang[1]; Gokce Gulsoy[2]; Deepak Kumar[2]; Gary Was[2]; Carlos Levi[1]; [1]University of California, Santa Barbara; [2]University of Michigan

9:15 AM
Order-Disorder Transformation in a Ni-Cr-Mo Alloy: Amit Verma[1]; *Jung Singh*[1]; Mahadevan Sundararaman[1]; Nelia Wanderka[2]; [1]Bhabha Atomic Research Centre; [2]Helmholtz-Zentrum Berlin für Materialien und Energie GmbH

9:35 AM
Creep Characteristics of a Grade 91 Steel: *Triratna Shrestha*[1]; Mehdi Basirat[1]; Zachary Wuthrich[1]; Indrajit Charit[1]; Gabriel Potirniche[1]; Karl Rink[1]; [1]University of Idaho

9:55 AM
Microstructural Characterization of Nuclear Grade Graphites: *Joshua Kane*[1]; Karthik Chinnathambi[1]; Rick Ubic[1]; Darryl Butt[1]; [1]Boise State University

10:15 AM Break

10:25 AM
Evaluation of Nanofeature Evolution in the Sequence of Atomization to Consolidation Steps in Processing a Fe14Cr3W0.4Ti0.2Y Alloy: *Nicholas Cunningham*[1]; Erich Stergar[1]; Auriane Etienne[1]; G. Robert Odette[1]; Yuan Wu[1]; Brian Wirth[2]; Stuart Maloy[3]; [1]UC Santa Barbara; [2]UC Berkeley; [3]Los Alamos National Laboratory

10:45 AM
Spatially-Dependent Cluster Dynamics Modeling of Vacancy and Interstitial Cluster Evolution in Ferritic/Martensitic Fe-Cr Alloys: *Thibault Faney*[1]; Aaron Kohnert[1]; Brian Wirth[1]; Djamel Kaoumi[2]; Arthur Motta[3]; [1]UC Berkeley; [2]USC; [3]Penn State University

11:05 AM
Experimental and Modeling Studies on the Effects of a Wide Range of Flux on the Microstructures and Mechanical Properties of RPV Steels – Predicting Low Flux High Fluence Embrittlement: *Takuya Yamamoto*[1]; G. Robert Odette[1]; Nicholas Cunningham[1]; Douglas Klingensmith[1]; Randy Nanstad[2]; [1]Univ. California Santa Barbara; [2]Oak Ridge National Laboratory

11:25 AM
Material Constraints on Accelerator Driven Sub-Critical Molten Salt Thorium Reactors: *John Wallace*[1]; Ganapati Myneni[2]; [1]Casting Analysis Corp; [2]Thomas Jefferson Nat. Accelerator Facility

11:45 AM
Stress Corrosion Cracking Behavior of Ferritic and Austenitic Stainless Steels in High Temperature Water: *Raul Rebak*[1]; Peter Andresen[1]; [1]GE Global Research

12:05 PM
Mechanical Properties of Advanced NF616 Steel: *Mikhail Sokolov*[1]; Lizhen Tan[1]; [1]ORNL

Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells: Materials for Gasification and Turbines 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, TMS: High Temperature Alloys Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Teruhisa Horita, AIST; Zi-Kui Liu, The Pennsylvania State University

Tuesday AM
March 1, 2011
Room: 33C
Location: San Diego Conv. Ctr

Session Chair: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory

8:30 AM Invited
Gas Turbines of the Future: Hydrogen and Oxy-Combustion Environments: *Jeffrey Hawk*[1]; Gordon Holcomb[1]; [1]U.S. Department of Energy

8:55 AM
Tempered Martensitic Ferritic Steel Alloy Development for Ultrasupercritical Steam Applications: *Christopher Cowen*[1]; Jeffrey Hawk[1]; Paul Jablonski[1]; [1]United States Department of Energy

9:15 AM Invited
Accelerating High-Performance Materials Design: An Integrated Computational and Experimental Approach: *Michael Gao*[1]; De Nyago Tafen[1]; Kaisheng Wu[1]; Rongxiang Hu[1]; Vijay Jain[1]; Omer Dogan[1]; Jeff Hawk[1]; Chris Cowen[1]; Paul Jablonski[1]; Michael Widom[2]; [1]NETL; [2]Carnegie Mellon University

9:40 AM Invited
Effect of Oxy-Firing on Fireside Corrosion Rates: Michael Bestor[1]; *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

10:00 AM Break

10:15 AM Invited
Oxidation Kinetics Modeling Applying Phase Field Approach: *Youhai Wen*[1]; Long-Qing Chen[2]; Jeff Hawk[1]; [1]National Energy Technology Laboratory; [2]Penn State University

10:40 AM
Cyclic Oxidation Behavior of HVOF MCrAlY Coatings Deposited on La- and Y-Doped Superalloys: Michael Bestor[1]; Allen Haynes[1]; *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

11:00 AM
An Investigation on Hot Corrosion Resistance of Plasma Sprayed YSZ-Ceria TBC in Na2SO4+V2O5 at 1050 °C: Mohsen Saremi[1]; *M.H. Habibi*[1]; [1]University of Tehran

11:20 AM
An Investigation of the Electrochemical Properties of 3 Types PVD Coated on STS304: *Min-Seok Moon*[1]; Woo KeeDo[2]; Chan-Won Kwak[3]; Sang-Hyuk Kim[2]; Joon-Hyuk Song[1]; Je-Ha Oh[1]; [1]Chonbuk National University, Jeonju Institute of Machinery Carbon Composites; [2]Chonbuk National University; [3]Se-Won Hard Facing Co., Ltd.

11:40 AM
Gaseous Hydrogen Embrittlement of Pipeline Steels: *Nicholas Nanninga*[1]; Yaakov Levy[2]; Andrew Slifka[1]; [1]NIST; [2]NRCN

Materials Processing Fundamentals: Powders and Composites

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

Tuesday AM
March 1, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chair: Prince Anyalebechi, Grand Valley State University

8:30 AM
Exploratory Research in Reactive Spark Plasma Extrusion: *P Mehra*[1]; K. Morsi[1]; [1]San Diego State University

8:45 AM
Preliminary Investigations of the Effect of Particle Size and Tip Size in the Current Activated Tip-Based Sintering (CATS) of Nickel Powder Compacts: *A. El-Desouky*[1]; K. Morsi[1]; K.S. Moon[1]; S.K. Kassegne[1]; [1]San Diego State University

9:00 AM
Determination of the Spark Plasma Sintering Fundamental Densification Mechanisms by Novel Cyclic Loading Approach: *Wei Li*[1]; William Bradbury[1]; Joanna McKittrick[1]; Randall German[2]; Eugene Olevsky[2]; [1]University of California San Diego; [2]San Diego State University

9:15 AM
Exploratory Investigations in Reactive Current Activated Tip-based Sintering (CATS): *A Numula*[1]; K. Morsi[1]; K.S. Moon[1]; S.K. Kassegne[1]; [1]San Diego State University

9:30 AM
Microstructural Evolution of Cu, Ni and Al Powder Particles Processed by Cold Spray: *Yu Zou*[1]; Eric Irissou[2]; Jean-Gabriel Legoux[2]; Stephen Yue[1]; [1]McGill University; [2]Industrial Materials Institute (IMI), National Research Council Canada (NRC)

9:45 AM
Elucidating Microstructure Formations in Ta(x)C(1-x) at Various Carbon Contents: Robert Morris[1]; *Gregory Thompson*[1]; [1]University of Alabama

10:00 AM Break

10:15 AM
Fabrication, Characterization and Comparison of Spinel ZnFe2O4 Obtained by Sonochemestry Way and Ceramic Way: *Oscar Restrepo*[1]; Edgar Chavarriaga[1]; Juan Montoya[1]; Leidy Jaramillo[1]; Miguel Hernández[1]; [1]National University of Colombia

10:30 AM
Properties and Performance of Composites Based on Superrefractories Cements: *Ilyoukha Nickolai*[1]; Timofeeva Valentina[1]; Schabanov Alexander[1]; [1]Academic Ceramic Center

10:45 AM
Predicting the Mechanical Properties of Aluminium-SiC Functionally Graded Materials Processed by Centrifugal Rotation Method: *Veerarajkumar Aparna*[1]; Savita Kaliya Perumal Veerapandian[1]; [1]College of Engineering, Guindy, Anna University

11:00 AM
Improvement on the Tribological Characteristics of Particulate Copper Silicon Carbide Composites: *David Esezobor*[1]; Atinuke Oladoye[1]; [1]University of Lagos

11:15 AM
Study on Preparation of High-Purity Magnesium Carbonate Whisker from Low-Grade Magnesite: *Caiyun Lu*[1]; Min Chen[1]; Jingkun Yu[1]; [1]Northeastern University

11:30 AM
Preparation of Metal Cobalt Powder by Coprecipitation and Heat Decomposition Method: *Xue Ping*[1]; Guo Xueyi[2]; Tian Qinghua[2]; Liang Sha[2]; [1]Jianghan University; [2]Central South University

Microstructural Processes in Irradiated Materials: Microstructure Evolution: Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Tuesday AM
March 1, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Yuri Osetsky, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory

8:30 AM Invited
Simulations of Voids and Gas Bubbles in Irradiated Materials: *Marius Stan*[1]; Shenyang Hu[2]; [1]Argonne National Laboratory; [2]Pacific Northwest National Laboratory

9:10 AM
Modeling the Helium Transport, Fate in Tempered Martensitic Steels and Nanostructured Ferritic Alloys – Consequences to Void Swelling: *Takuya Yamamoto*[1]; G. Robert Odette[1]; [1]Univ. California Santa Barbara

9:30 AM
Modeling He Behavior in Tungsten: Relevance of the Implantation Model: Marc Hou[1]; *Charlotte Becquart*[2]; Andree De-backer[2]; Christophe Domain[3]; Christophe Ortiz[4]; [1]Physique des Solides Irradiés et des Nanostructures CP234; [2]UMET, UMR 8207, EM2VM; [3]EdF, R&D, EM2VM; [4]Laboratorio Nacional de Fusión por Confinamiento Magnético, CIEMAT

9:50 AM
Stability and Evolution of He Clusters and Complex Defect Clusters Investigated by Ab Initio Calculations and OKMC Simulations in Tungsten: *Charlotte Becquart*[1]; Andree De Backer[1]; Christophe Domain[2]; [1]UMET, UMR 8207, EM2VM; [2]EdF, R&D, EM2VM

10:10 AM
Mesoscale Simulation of Irradiation-Induced Gas Bubbles: Evolution and Impact on Macroscale Properties: *Paul Millett*[1]; Anter El-Azab[2]; Michael Tonks[1]; [1]Idaho National Laboratory; [2]Florida State University

10:30 AM Break

10:50 AM
Simple Concentration-Dependent Pair Interaction Model for FeCr Alloys with Vacancy Supersaturation: *Enrique Martinez Saez*[1]; Maximilien Levesque[2]; Frederic Soisson[2]; Maylise Nastar[2]; Chu Chun Fu[2]; [1]LANL; [2]CEA-Saclay

11:10 AM
Atomistic Study of Interstitial Migration in the Proximity of a Helium Bubble in the Fe-Cr System: *Jeffery Hetherly*[1]; Alfredo Caro[1]; [1]Los Alamos National Laboratory

11:30 AM
Microstructure Evolution of Two Model Ferritic/Martensitic Steels Irradiated with Ions In-Situ in a TEM: *Djamel Kaoumi*[1]; Jimmy Adamson[1]; Athur Motta[2]; Mark Kirk[3]; [1]The University of South Carolina; [2]The Pennsylvania State University; [3]Argonne National Laboratory

11:50 AM
Atomic-Scale Features of Strengthening Due to Impenetrable Obstacles in Iron: *Yury Osetskiy*[1]; Roger Stoller[1]; [1]ORNL

12:10 PM
Mobility of Low Energy Boundaries in FCC Copper during Irradiation: *James Belak*[1]; Bryan Reed[1]; Ming Tang[1]; Joel Bernier[1]; Vasily Bulatov[1]; Thomas LaGrange[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

Neutron and X-Ray Studies of Advanced Materials IV: Complex Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Tuesday AM
March 1, 2011
Room: 10
Location: San Diego Conv. Ctr

Session Chairs: T.-C. Chiang, University of Illinois at Urbana-Champaign; Yang Ren, APS

8:30 AM Keynote
From Structure to Nano-Structure: Materials Research with X-Rays and Neutrons: *Gernot Kostorz*[1]; [1]ETH Zurich

8:55 AM Invited
Diffuse Scattering as an Aid to the Understanding of Polymorphism in Pharmaceuticals: *Richard Welberry*[1]; Darren Goossens[1]; Eric Chan[1]; Aidan Heerdegen[1]; [1]Australian National University

9:15 AM Invited
Modeling Diffraction from Thin Film Structures: *I Noyan*[1]; Andrew Ying[1]; Braxton Osting[1]; Conal Murray[1]; [1]Columbia University

9:35 AM Invited
Multiple Diffraction in Quasicrystals: *Walter Steurer*[1]; Changzeng Fan[1]; [1]ETH Zurich

9:55 AM Invited
Development of Ultrasmall-Angle X-Ray Scattering / X-Ray Photon Correlation Spectroscopy (USAXS/XPCS) for In Situ Studies of Equilibrium and Non-Equilibrium Dynamics over Extended Length and Time Scales: *Jan Ilavsky*[1]; Andrew Allen[2]; Fan Zhang[2]; Lyle Levine[2]; Alec Sandy[1]; Gabrielle Long[1]; [1]APS, Argonne National Laboratory; [2]National Institute of Standards and technology

10:15 AM Invited
X-ray Studies of the Lattice Dynamics of Cr across Its Antiferromagnetic Transition: *Tai Chiang*[1]; Ruqing Xu[1]; Mary Upton[2]; Hawoong Hong[2]; [1]University of Illinois; [2]Argonne National Laboratory

10:35 AM Invited
Diffuse X-Ray Scattering of Bulk Au-50 at.% Pd and a Ni-23 at.% Pt(100) Surface: *Bernd Schoenfeld*[1]; [1]ETH Zurich

10:55 AM Break

11:05 AM Keynote
Diffraction from Nanocrystalline Materials: Reciprocal Space versus Direct Space Methods: *Paolo Scardi*[1]; Matteo Leoni[1]; Luca Gelisio[1]; Alberto Leonardi[1]; [1]University of Trento

11:30 AM Invited
Doing Neutron Scattering Science with the Multi-Axis Crystal Spectrometer at the NCNR: *Jose Rodriguez-Rivera*[1]; [1]University of Maryland/NIST Center for Neutron Resarch

11:50 AM
Diffraction Measurements to Identify Structural Changes In Li[Li1/3-2x/3NixMn2/3-X/3]O2 (x=1/5) Cathode Materials for Lithium Ion Batteries: *Christopher Fell*[1]; Shirley Meng[2]; Jacob Jones[1]; [1]University of Florida; [2]Unveristy of California San Diego

12:00 PM Invited
Site Occupation of Atoms in Crystal Lattice Determined by High-Pressure X-Ray Diffraction Technique: *Zhihua Nie*[1]; Yandong Wang[1]; Zhenwei Huang[2]; Dongmei Liu[2]; Qiaoshi Zeng[3]; Wenge Yang[3]; Yang Ren[4]; [1]Beijing Institute of Technology; [2]Northeastern University; [3]Carnegie Institution of Washington; [4]Argonne National Laboratory

12:20 PM Invited
In situ Neutron Diffraction Studies of Phase Transformations in Shape Memory Alloys: *Raj Vaidyanathan*[1]; [1]UCF

12:40 PM Invited
Temperature Dependence of Diffuse Scattering in PZN: *Darren Goossens*[1]; Ross Whitfield[1]; T. Welberry[1]; [1]Australian National University

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Alloy and Microstructure 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: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Tuesday AM
March 1, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Darrel Frear, Freescale Semiconductor; Thomas Bieler, Michigan State University

8:30 AM Invited
Structure and Transformation in Sn-Rich Sn-In Solders: *John Morris*[1]; Kyu-Oh Lee[2]; Fay Hua[2]; [1]University of California Berkeley; [2]Intel Corporation

8:55 AM Invited
Optimization of Pb-Free Solder Joint Reliability from Metallurgical Perspective: *Kejun Zeng*[1]; [1]Texas Instruments Inc.

9:20 AM Invited
On the Driving Force for Massive Spalling in Solder Systems: W. M. Chen[1]; *C. Robert Kao*[1]; [1]National Taiwan University

9:45 AM Invited
A Study of the Factors Affecting the ß to a Transition in Solder Alloys: *Christopher Hunt*[1]; Davide Di Maio[1]; [1]National Physical Laboratory

10:10 AM
Effect of Solidification Temperature on the Microstructure of SnAgCu Solder Joints: *Babak Arfaei*[1]; Eric Cotts[1]; [1]Binghamton University

10:30 AM Break

10:40 AM
Effect of the Ternary Quasiperitectic Reaction on the Formation of Microstructure during Freezing of Ternary Pb-Free Solder Alloys: *Doug Perovic*[1]; Leonid Snugovsky[1]; Polina Snugovsky[2]; John Rutter[1]; [1]University of Toronto; [2]Celestica Inc.

11:00 AM
Development of SAC3595 Solders Alloyed with Al, Mn, or Zn for High Reliability: *Adam Boesenberg*[1]; Iver Anderson[2]; Joel Harringa[2]; [1]Iowa State University; [2]Ames Laboratory

11:20 AM
Effect of Gold Content on the Microstructural Evolution of SAC305 Solder Joints under Isothermal Aging: *Mike Powers*[1]; Jianbiao Pan[2]; Julie Silk[1]; Patrick Hyland[2]; [1]Agilent Technologies; [2]California Polytechnic State University

11:40 AM
Rare Earths Addition Effect on Microstructure and Intermetallic Layer Growth Kinetics on Lead-Free Solder Sn-Ag-Bi: *Miguel Neri*[1]; Alberto Martinez-Villafañe[1]; Caleb Carreño[1]; [1]CIMAV, S.C.

12:00 PM
Magnetically-Driven Three-Dimensional Manipulation and Inductive Heating of Magnetic-Dispersion Containing Lead-Free Solders: *Ainissa Ramirez*[1]; Xu Huang[1]; Joshua Calabro[1]; Brian Lewis[1]; [1]Yale University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Characterization of Shape Memory Alloys: Microstructural Transformation

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Tuesday AM
March 1, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Ibrahim Karaman, Texas A&M University; Sai Raj, NASA Glenn Research Center

8:30 AM Introductory Comments

8:35 AM Plenary
Hysteresis, Reversibility, and Shape Memory: *Richard James*[1]; Vijay Srivastava[1]; Yintao Song[1]; [1]University of Minnesota

9:05 AM Invited
Effects of Surface Modifications on Twinning Stress and the Stability of Twin Microstructures of Magnetic Shape-Memory Alloys: *Peter Müllner*[1]; Markus Chmielus[2]; Cassie Witherspoon[1]; Rainer Schneider[3]; Kari Ullakko[1]; [1]Boise State University; [2]Boise State University and Helmholtz Centre Berlin for Materials and Energy; [3]Beuth Hochschule für Technik and VDI/VDE Innovation and Technik GmbH

9:25 AM Invited
In-Situ Neutron Scattering Studies of Shape Memory Alloy Actuator Materials: *Donald Brown*[1]; Bjorn Clausen[1]; Thomas Sisneros[1]; [1]Los Alamos National Lab

9:45 AM Invited
Nanocrystalline Shape Memory Alloys: *Thomas Waitz*[1]; Wolfgang Pranger[2]; Clemens Mangler[1]; Martin Peterlechner[1]; Gerd Steiner[1]; Thomas Antretter[3]; Franz Dieter Fischer[3]; Peter Müllner[4]; [1]University of Vienna; [2]Materials Center Leoben Forschung GmbH; [3]Montanuniversität Leoben; [4]Boise State University

10:05 AM Break

10:15 AM Invited
New Microscopic Tools Applied for the Study of SMA: *Dominique Schryvers*[1]; [1]University of Antwerp

10:35 AM Invited
Modulated Martensite: Why it Forms and Why it Deforms Easily: *Sebastian Fähler*[1]; [1]IFW Dresden

10:55 AM Invited
Transformation Characteristics of Ni-Mn-Ga High Temperature Shape Memory Alloys: Ruben Santamarta[1]; *Jaume Pons*[1]; Catalina Picornell[1]; Eduard Cesari[1]; Joan Font[2]; Joaquim Muntasell[2]; Ibrahim Karaman[3]; Dimitris Lagoudas[3]; [1]University of the Balearic Islands; [2]Polytechnical University of Catalonia; [3]Texas A&M University

11:15 AM
Microstructural Instability in NiTi Based Shape Memory Alloy Actuators: *Nicholas Jones*[1]; David Dye[1]; [1]Imperial College London

11:30 AM
The R Phase Transformation in Rapidly Solidified Ti-47.3Ni(at%) Alloy Ribbons: *Tae-hyun Nam*[1]; Hyo-jung Mun[1]; Yinong Liu[2]; Hong Yang[2]; Yeon-wook Kim[3]; [1]Gyeongsang National University; [2]University of Western Australia; [3]Keimyung University

11:45 AM
Characterization of Nanoscale Precipitates in a Ni-Rich Ni-29.7Ti-20Hf (at.%) High Temperature Shape Memory Alloy: Taisuke Sasaki[1]; B. C. Hornbuckle[1]; Glen Bigelow[2]; Ronald Noebe[2]; Mark Weaver[1]; *Gregory Thompson*[1]; [1]University of Alabama; [2]NASA Glenn Research Center

12:00 PM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Hexagonal Materials and Twinning

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Tuesday AM
March 1, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Sean Agnew, University of Virginia; Jian Wang, Los Alamos National Laboratory; Irene Beyerlein, Los Alamos National Laboratory

8:30 AM Invited
Role of Stress Fluctuations in the Nucleation of Deformation Twinning in Hcp Metals: *Irene Beyerlein*[1]; Anand Kanjarla[1]; Carlos Tome[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

8:55 AM Invited
Orthotropic Strain Rate Potential for Hexagonal Metals: *Oana Cazacu*[1]; Ioan Ionescu[2]; [1]University of Florida; [2]LPMTM, University Paris 13

9:20 AM
Modeling Deformation Twinning with a Binary-Tree Based Polycrystal Model: *Sivasambu Mahesh*[1]; [1]IIT Kanpur

9:40 AM Break

9:55 AM Invited
Effect of Texture on Anisotropic Creep of Zr-2.5Nb Tubes: *Rick Holt*[1]; W. Li[1]; S. Tracy[1]; Ricardo Lebensohn[2]; [1]Queen's University; [2]Los Alamos National Laboratory

10:20 AM Invited
Atomistic Modeling of Deformation Twinning Mechanisms in Hcp Metals: *Jian Wang*[1]; Irene Beyerlein[1]; Carlos Tome[1]; [1]LANL

10:45 AM
Grain Size and Neighbor Grain Effects on Deformation Twinning: *Rodney McCabe*[1]; Irene Beyerlein[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory

11:05 AM
Texture Evolution during Themomechanical Processing of Zircaloy-4: *Christabel Evans*[1]; David Dye[1]; Trevor Lindley[1]; David Rugg[2]; Nicholas Jones[1]; [1]Imperial College London; [2]Rolls-Royce plc.

11:25 AM
Crystal Plasticity Based Finite Element Simulations of Deformation in AM30 Magnesium Alloy Under Complex Strain Paths: Adel Izadbakhsh[1]; *Kaan Inal*[1]; Raja Mishra[2]; [1]University of Waterloo; [2]General Motors R&D Center

11:45 AM
Experimental and Simulation Studies on the Evolution of Rolling Texture in a Two Phase Titanium Alloy: *Nilesh Gurao*[1]; Satyam Suwas[1]; [1]Indian Instituteof Science, Bangalore

12:05 PM
Hardening Mechanisms upon Profuse Twinning in Pure Magnesium: *Andrew Oppedal*[1]; Haitham El Kadiri[1]; Carlos Tomé[2]; James Baird[1]; Sven Vogel[2]; George Kaschner[2]; Mark Horstemeyer[1]; [1]Mississippi State University; [2]Los Alamos National Laboratory

12:25 PM
Micromechanical Model of Metals and Alloys of Low Symmetry Deforming by Slip and Twinning: *Katarzyna Kowalczyk-Gajewska*[1]; [1]Institute of Fundamental Technological Research, Warsaw

Processing and Properties of Powder-Based Materials: Current-Activated and Conventional Sintering

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Tuesday AM
March 1, 2011
Room: 33A
Location: San Diego Conv. Ctr

Session Chair: Javier Garay, University of California-Riverside

8:30 AM Introductory Comments

8:35 AM Keynote
Coarsening Models Applicable to Sintering: *Randall German*[1]; [1]San Diego State University

9:05 AM
Challenges in the Scalability of Field Assisted Sintering: *Chris Haines*[1]; Darold Martin[1]; Deepak Kapoor[1]; William Bradbury[2]; Eugene Olevsky[2]; [1]US Army ARDEC; [2]San Diego State University

9:25 AM
Cryomilled Commercially Pure Ti Consolidated via Spark Plasma Sintering: *Osman Ertorer*[1]; Troy Topping[1]; Ying Li[1]; Wes Moss[2]; Enrique Lavernia[1]; [1]University of California - Davis; [2]TRD

9:45 AM
Microstructural Characterization of Mechanically Alloyed Lanthana-Bearing Oxide Dispersion Strengthened Steels: *Somayeh Pasebani*[1]; Indrajit Charit[1]; Kerry Allahar[2]; Brian Jaques[2]; Darryl Butt[2]; James Cole[3]; [1]University of Idaho; [2]Boise State University; [3]Idaho National Laboratory

10:05 AM
Spark Plasma Sintering of Ultra-Fine Grained and Nanocrystalline WC Based Hard Metals: *Milan Dopita*[1]; David Chmelik[1]; Anton Salomon[1]; C. Sriram[2]; Hans Seifert[1]; [1]Technical University of Freiberg; [2]National Institute of Technology Tiruchirappalli

10:25 AM Break

10:35 AM
Preliminary Investigations in Current-Activated Tip-Based Sintering (CATS): Modeling and Experiments: *A. El-Desouky*[1]; S.K. Kassegne[1]; K.S. Moon[1]; K. Morsi[1]; [1]San Diego State University

10:55 AM
The Role of Sintering Methods (HP & SPS) on Substructure and Its Correspondence on Creep Properties in Alumina Based Ceramic Materials: *Ebrahim Karamian*[1]; Alain Bataille[2]; Ahmad Monshi[3]; Ehsan Mohamadi Zahrani[4]; [1]Isfahan University of Technology; [2]UMET, Unité Matériaux et Transformations, UMR CNRS 8207, University of Lille Science and Technology; [3]Department of Materials Engineering, Isfahan University of Technology; [4]Department of Materials Engineering, University of British Columbia

11:15 AM
Spark Plasma Sintering of Ferritic Oxide Dispersion Strengthened Alloys: *Kerry Allahar*[1]; Jatuporn Burns[1]; Brian Jaques[1]; Indrajit Charit[2]; Darryl Butt[1]; James Cole[3]; [1]Boise State University; [2]University of Idaho; [3]Idaho National Laboratory

11:35 AM
Characteristics of Tin/Fe Cermet Fabricated by Mechanical Milling and Pulse Current Sintering: *Hiroyuki Nakayama*[1]; Keizo Kobayashi[1]; Kotaro Kikuchi[2]; [1]National Institute of Advanced Industrial Science and Technology; [2]SS Alloy Co., Ltd.,

Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites: Processing, Microstructure and Mechanical Properties I

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Arkansas State University; Golam Newaz, Wayne State University

Tuesday AM
March 1, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Martin Pech-Canul, Cinvestav Saltillo

8:30 AM
Effects of Zr on the Microstructure and Tensile Properties of Al-15%Mg2Si Metal Matrix Composite: Ahmad Razaghian[1]; Amin Bahrami[1]; *Masoud Emamy*[2]; Nargues Nemati[3]; Hamid Reza Jafari Nodooshan[4]; [1]Imam Khomeini International University; [2]Center of Excellence for High Performance Materials, School of Metallurgy and Materials, University of Tehran; [3]Sahand University of Technology; [4]Islamic Azad University

8:50 AM
Investigation of Wear Properties of Hot Extruded Al-15wt%Mg2Si In-Situ Metal Matrix Composite: Hamid Reza Jafari Nodooshan[1]; *Masoud Emamy*[2]; Amin Bahrami[3]; Ashkan Zolriasatein[4]; [1]Islamic Azad University; [2]University of Tehran; [3]Imam Khomeini International University; [4]K. N. Toosi University of Technology

9:10 AM
Microstructural Development of Al–15wt.%Mg2Si in Situ Composite with Be Addition: Mortaza Azarbarmas[1]; Masoud Emamy[1]; *Jafar Rassizadehghani*[1]; Mohammad Alipour[1]; Mostafa Karamouz[1]; [1]University of Tehran

9:30 AM
Microstructural Properties and Wear Behaviour of AlSi9Mg Matrix B4Cp Reinforced Composites: *Fatih Toptan*[1]; Isil Kerti[1]; Ahmet Sagin[1]; Mustafa Cigdem[1]; Sibel Daglilar[1]; Fatih Yuksel[1]; [1]Yildiz Technical University

9:50 AM
Modification of Al–Mg2Si In Situ Composite by Boron: Mortaza Azarbarmas[1]; Masoud Emamy[1]; *Jafar Rassizadehghani*[1]; Mostafa Karamouz[1]; Mohammad Alipour[1]; [1]University of Tehran

10:10 AM Break

10:30 AM
The Influence of Li on the Microstructure and Mechanical Properties of Hot Extruded Al–Mg2Si Metal Matrix Composite: Amin Bahrami[1]; *Masoud Emamy*[2]; Ahmad Razaghian[1]; Hamid Reza Jafari Nodooshan[3]; Ashkan Zolriasatein[4]; [1]Imam Khomeini International University; [2]University of Tehran; [3]Islamic Azad University; [4]K. N. Toosi University of Technology

10:50 AM
Characterization of Composite Materials Interface Aimed to Suppress Vibration in Cast Parts: *M. David Hanna*[1]; Shung Sung[1]; [1]General Motors

11:10 AM
In-Situ Synthesis of AlN/Mg Matrix Composites: *Xiao Ma*[1]; Salin Kuplin[1]; David Johnson[1]; Kevin Trumble[1]; [1]Purdue University

11:30 AM
Performance Evaluation of Particulate Reinforced Al-SiC Bolted Joints: *Gergis William*[1]; Samir Shoukry[1]; Jacky Prucz[1]; [1]West Virginia University

11:50 AM
Synthesis and Mechanical Behavior of Ultrafine-Grained Al-B4C Composites: *Zhihui Zhang*[1]; Ying Li[1]; Troy Topping[1]; Rustin Vogt[1]; Yizhang Zhou[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California Davis

Shape Casting IV: Light Metals Division Symposium in Honor of Prof. John T. Berry: Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Paul Crepeau, General Motors Corporation; John Campbell, University of Birmingham

Tuesday AM
March 1, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Mark Jolly, Univ of Birmingham; Daan Maijer, Univ of British Columbia

8:30 AM Introductory Comments

8:40 AM
The History of Casting Process Simulation: *Christof Heisser*[1]; [1]MAGMA Foundry Technologies, Inc.

9:05 AM
State of the Art Review of Modelling Entrainment Defects in the Shape Casting Process: Carl Reilly[1]; Nick Green[2]; *Mark Jolly*[2]; [1]University of British Columbia; [2]University of Birmingham

9:30 AM
Physical and Computational Models of Free Surface Related Defects in Low-Pressure Die-Cast Aluminum Alloy Wheels: *Jianglan Duan*[1]; Daan Maijer[1]; Steve Cockcroft[1]; Carl Reilly[1]; Ken Nguyen[2]; Dominic Au[2]; [1]University of British Columbia; [2]Canadian Autoparts Toyota, Inc.

9:55 AM
Solidification Model Coupling Lattice Boltzmann Method with Cellular Automaton Technique: Hebi Yin[1]; Liang Wang[2]; *Sergio Felicelli*[1]; [1]Mississippi State University; [2]Mississippi State University

10:20 AM Break

10:40 AM
Physical Characterization of the Permeability of Equiaxed Eutectic Structures in Hypoeutectic Aluminum Alloys: *Ehsan Khajeh*[1]; Daan Maijer[1]; [1]University of British Columbia

11:05 AM
Foam Filters Used in Gravity Casting: *Fu-Yuan Hsu*[1]; Huey-Jiuan Lin[1]; [1]National United University

11:30 AM
Simulation of Macrosegregation during Directional Solidification Using MeshAdaptation: *Udaya Sajja*[1]; Sergio Felicelli[1]; [1]Mississippi State University

11:55 AM
A Mathematical Model for Simulating the Microporosity of Squeeze Casting of Aluminum Alloy: *Zhiqiang Han*[1]; Jinxi Li[1]; Wen Yang[1]; Baicheng Liu[1]; [1]Tsinghua University

Size Effects in Mechanical Behavior: In Situ Characterization to Understand Mechanically Driven Size Effects

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Tuesday AM
March 1, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Andrew Minor, UC Berkeley; Jun Lou, Rice University

8:30 AM Invited
Quantitative *In-situ* TEM to Investigate Defect – Strength Relations: *Daniel Kiener*[1]; [1]Austrian Academy of Science & University of Leoben

9:00 AM
Insights into Mg Plasticity From In Situ Nanomechanical Testing in the TEM: *Qian Yu*[1]; Raj Mishra[2]; Andrew Minor[3]; [1]University of California Berkeley; [2]General Motors Corporation; [3]University of California Berkeley & Lawrence Berkeley National Laboratory

9:20 AM Invited
In Situ TEM Studies of Plastic Deformation in Small-Volume Samples near Room Temperature: *Evan Ma*[1]; [1]Johns Hopkins University

9:50 AM
Dislocation Nucleation in Confined Crystalline Volumes: In-Situ TEM Observations and Micro-Mechanical Tests on Submicron Al Fibers: *Frederic Mompiou*[1]; Marc Legros[1]; Daniel Caillard[1]; Daniel Gianola[2]; Andreas Sedlmayr[3]; Oliver Kraft[3]; [1]CEMES-CNRS; [2]University of Pennsylvania; [3]Karlsruher Institut für Technologie

10:10 AM Break

10:40 AM
Mechanical Annealing in Submicro-sized Molybdenum Crystals: Ling Huang[1]; *Zhiwei Shan*[1]; Ju Li[2]; Jun Sun[1]; Evan Ma[3]; [1]Xi'an Jiaotong University; [2]University of Pennsylvania; [3]Johns Hopkins University

11:00 AM
A Length Scale Dependent Phase Transformation in Si: *Aaron Beaber*[1]; Steven Girshick[1]; William Gerberich[1]; [1]University of Minnesota

11:20 AM Invited
Probing Size Dependent Mechanical Properties of Metallic Nanowires in Tension: Yang Lu[1]; Cheng Peng[1]; Yogi Ganesan[1]; Hao Lu[1]; Jianyu Huang[2]; *Jun Lou*[1]; [1]Rice University; [2]Sandia National Laboratories

11:50 AM
Micro-Cantilever Testing of Ti Alloys: Jicheng Gong[1]; *Angus Wilkinson*[1]; [1]University of Oxford

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Coatings, Surfaces, and Interfaces II - and - Magnetic Heterostructures I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Tuesday AM
March 1, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama

8:30 AM Invited
Thermal Annealing of ZnO Films Using High-Density Plasma Arc Lamps: *Adrian Sabau*[1]; Ralph Dinwiddie[1]; Jun Xu[1]; Joseph Angelini[1]; David Harper[1]; [1]Oak Ridge National Laboratory

9:00 AM
Glass Transition at a Polymer Surface Monitored by Localized Surface Plasmon Resonance: *Kaan Kalkan*[1]; Ratan Putla[1]; [1]Oklahoma State University

9:20 AM
Oxidation and Interfacial Structure of Ti_3Al: *Muralidharan Ramachandran*[1]; Ramana Reddy[1]; [1]The University of Alabama

9:35 AM Break

9:45 AM
Fabrication and Characterization of MWCNT Reinforced Aluminum Using Spark Plasma Sintering
: *Vineet Yadav*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

10:00 AM
Microstructure and Wear Behavior of Pulse Electrodeposited Nickel-Carbon Nanotube (Ni-CNT) Composite Coatings: *Tushar Borkar*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

10:15 AM
Synthesis and Characterization of Graphene after Ion Implantation: *Tomeka Colon*[1]; Cydale Smith[1]; Mohamed Seif[1]; Satilmis Budak[1]; Claudiu Muntele[1]; Lawrence Holland[1]; Robert Zimmerman[1]; Daryush Ila[1]; [1]Alabama A&M University

10:30 AM
A Facile Route to Synthesis and Characterisation of Hydrophobic Titania Nanofibres: *T. Sundararajan*[1]; S. Abirami[1]; P. Manohar[1]; [1]Anna University

10:45 AM
Application of the Strong Contrast Technique to Thermoelastic Characterization of Nanocomposites: *Majid Baniassadi*[1]; Akbar Ghazavizadeh[1]; David Ruch[1]; Yves Rémond[1]; Said Ahzi[1]; Hamid Garmestani[1]; [1]CRP Henri Tudor

11:00 AM Break

11:10 AM Introductory Comments for Magnetic Heterostructures

11:15 AM Invited
Multifunctional Plasmonic-Ferromagnetic Surface Nanocomposites Synthesized by Bilayer Liquid Self-Organization: Hare Krishna[1]; Ritesh Sachan[2]; Nozomi Shirato[2]; Jeremy Strader[2]; Hernando Garcia[3]; Anup Gangopadhyay[1]; *Ramki Kalyanaraman*[2]; [1]Washington University in St. Louis; [2]University of Tennessee; [3]Southern Illinois University

11:45 AM Invited
Nanocomposite Magnetic Materials: Improved Performance by Nanostructuring: *Matthew Willard*[1]; Maria Daniil[1]; Keith Knipling[1]; Ramasis Goswami[1]; Ashish Baraskar[2]; Soack Yoon[2]; Vincent Harris[2]; [1]Naval Research Laboratory; [2]Northeastern University

Thermally Activated Processes in Plastic Deformation: Dislocation Ensemble Evolution

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizer: Christopher Woodward, Air Force Research Laboratory

Tuesday AM
March 1, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Christopher Woodward, Air Force Research Laboratory; Ladislas Kubin, CNRS-ONERA

8:30 AM Invited
On the Cross Slip of Dislocations in the Face-Centered Cubic Metals: *Joël Bonneville*[1]; [1]University of Poitiers

9:00 AM
Measurement of Cross-Slip Activation Parameters in Pure Ni via Bonneville-Escaig Experiments: *Jaafar El-Awady*[1]; Michael Uchic[2]; Sang-Lan Kim[3]; Paul Shade[4]; Satish Rao[3]; Dennis Dimiduk[2]; Christopher Woodward[2]; [1]Johns Hopkins University; [2]Air Force Research Laboratory; [3]UES, Inc.; [4]Universal Technology Corporation

9:20 AM Invited
Atomistic Simulations of Cross-Slip Nucleation at Screw Dislocation Intersections in Face-Centered Cubic Nickel and Copper and L12 Ni3Al: *Satish Rao*[1]; Dennis Dimiduk[2]; Jaafar El-Awady[3]; Triplicane Parthasarathy[1]; Michael Uchic[2]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]Johns Hopkins University

9:50 AM
Dislocation Kinetics in Fe and Fe Alloys Investigated by In Situ TEM Straining Experiments: *Daniel Caillard*[1]; [1]CNRS

10:10 AM Break

10:30 AM Invited
Discrete Dislocation Dynamics: Principle and Recent Applications: *Marc Fivel*[1]; [1]SIMaP-GPM2

11:00 AM
Forest Hardening in Materials with High Lattice Friction: *Benoit Devincre*[1]; Ghiath Monnet[2]; Jonathan Amodeo[3]; [1]CNRS; [2]EDF; [3]Lille 1 University

11:20 AM
Simulating the Evolution of the Dislocation Network under Irradiation: *Dan Mordehai*[1]; Georges Martin[2]; [1]Technion; [2]CEA-Siège

11:40 AM
Mobility of Dislocation Populations as a Thermally Activated Process: *Craig Hartley*[1]; [1]El Arroyo Enterprises LLC

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Ultra-Fine Grained Materials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Tuesday PM
March 1, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chair: Suveen Mathaudhu, US Army Research Lab

2:00 PM Introductory Comments

2:05 PM
Deformation Twinning in Nanocrystalline HCP Mg Alloys: *Yuntian Zhu*[1]; X.L. Wu[2]; K.M. Youssef[1]; C.C. Koch[1]; S.N. Mathaudhu[3]; L.J. Kecskes[3]; [1]North Carolina State Univ; [2]Institute of Mechanics; [3]U.S. Army Research Laboratory

2:35 PM
Deformation Twins in Nanocrystalline Magnesium-Based Alloy: *Marta Pozuelo*[1]; Wei Kao[1]; Jenn-Ming Yang[1]; [1]UCLA

2:50 PM
Nanotechnology and the Army Research Laboratory: *Suveen Mathaudhu*[1]; [1]U.S. Army Research Laboratory

3:05 PM
Solid Solutions in Ultra-Fine-Grained Al-Mg Alloys: *Richard Karnesky*[1]; Nancy Yang[1]; Chris San Marchi[1]; Troy Topping[2]; Zhihui Zhang[2]; Ying Li[2]; Enrique Lavernia[2]; [1]Sandia National Laboratories; [2]University of California, Davis

3:20 PM
Fabrication and Deformation of Bulk Lamellar Nanocomposites under Extreme Rolling Strains: *Nathan Mara*[1]; Thomas Wynn[1]; Jonathan Ledonne[2]; Dhriti Bhattacharyya[1]; Duncan Hammon[1]; Anthony Rollett[2]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory; [2]Carnegie Mellon University

3:35 PM
Thermal Stability of Nanocrystalline Cu 10at% Nb: *Kris Darling*[1]; Suveen Mathaudhu[1]; Laszlo Kecskes[1]; [1]ARL

3:50 PM Break

4:05 PM Invited
Embedded Binary Eutectic Alloy Nanostructures: *Daryl Chrzan*[1]; Swanee Shin[1]; Julian Guzman[1]; C.-W. Yuan[2]; Christopher Liao[1]; Cosima Boswell-Koller[1]; Peter Stone[1]; Oscar Dubon[1]; Andrew Minor[1]; Masashi Watanabe[3]; Jeffrey Beeman[4]; Kin Man Yu[4]; Joel Ager[4]; Eugene Haller[1]; [1]University of California, Berkeley; [2]Ludwig-Maximilians Universitat; [3]Lehigh University; [4]Lawrence Berkeley National Laboratory

4:35 PM
Molecular Dynamics of Fatigue Crack Growth in Nanocrystalline Aluminium: *Y. Purohit*[1]; Ram Mohan[1]; [1]NCA&T State University

4:50 PM
Atomic-Scale Simulations of Straining of Nanocrystalline Palladium along Different Loading Paths: *Dmitry Bachurin*[1]; Peter Gumbsch[1]; [1]Institut für Zuverlässigkeit von Bauteilen und Systemen (IZBS), Karlsruher Institut für Technology (KIT)

5:05 PM
Nanostructured Ti-alloys with Superior Fatigue Properties: *Vladimir Zhernakov*[1]; Irina Semenova[1]; Salavat Kusimov[1]; [1]Ufa State Aviation Technical University

5:20 PM
Principles of Control over Fatigue Properties in Ultrafine Grain Ti Materials: *Irina Semenova*[1]; A. Yu. Vinogradov[2]; V.V. Polyakova[1]; R.Z. Valiev[1]; [1]Ufa State Aviation Technical University; [2]Osaka City University

5:35 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Ferrous and Nonferrous Metals

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

Tuesday PM
March 1, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Mark Cooksey, CSIRO; Tao Jiang, Central South Univ

2:30 PM
Enhancing the Pelletization of Brazilian Hematite by Adding Boron Bearing Additives: Wei Yu[1]; *Deqing Zhu*[1]; Tiejun Chun[1]; Jian Pan[1]; [1]Central South University

2:50 PM
Study on Improving the Quality of Pellet Made from Vale Hematite Pellet Feed: *Vinicius Mendes*[1]; Deqing Zhu[1]; Marcus Emrich[2]; Jian Pan[1]; Tiejun Chun[1]; [1]Central South University; [2]CVRD

3:10 PM
Decomposition and Oxidation of Bismuthinite in Nitrogen–Oxygen Atmospheres: *Rafael Padilla*[1]; Ricardo Villa[1]; Maria Ruiz[1]; [1]University of Concepcion

3:30 PM
Kinetic Study on Vanadium Oxidation in Low Vanadium Bearing Hot Metal during BOF Process: *Qingyun Huang*[1]; Bing Xie[1]; Xiaopeng Zhen[1]; [1]Chongqing University

3:50 PM
Production of Srontium Metal from Strontium Oxide Using Vacuum Aluminothermic Reduction: *Yeliz Demiray*[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

4:10 PM Break

4:20 PM
Pyrometallurgical Controls of Silver-residue Smelting in a Short Rotary Furnace: *Atsuhiro Nabei*[1]; Ken-ichi Yamaguchi[1]; [1]Mitsubishi Materials Corp. Central Research Institute

4:40 PM
A Study of Pelletization of Manganese Ore Fines: *Deqing Zhu*[1]; Vinicius Mendes[1]; Tiejun Chun[1]; Jian Pan[1]; [1]Central South University

5:00 PM
Microwave Induced Arcing of Metallic Sulfide Bearing Ore Particles: *Matthew Andriese*[1]; [1]Michigan Technological University

5:20 PM
Reduction of Carbon-burdened Chromite Pellets in the Presence of Additives: *Guanghui Li*[1]; Jianchen Li[1]; Mingjun Rao[1]; Guohua Bai[1]; Tao Jiang[1]; [1]Central South University

5:40 PM
Purification of Boron Trichloride by Decomposition of Phosgene in Co_2 Laser System: *Duygu Agaogullari*[1]; Ismail Duman[1]; [1]Istanbul Technical University

Alumina and Bauxite: Red Mud

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Tuesday PM
March 1, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Application of Nanofiltration Technology to Improve Sea Water Neutralisation of Bayer Process Residue: *Kelvin Taylor*[1]; Mark Mullett[1]; Lee Fergusson[2]; Helen Adamson[1]; Juerg Wehrli[1]; [1]Hatch & Associates; [2]Virotec Global Solutions

2:25 PM
Caustic and Alumina Recovery from Bayer Residue: *Songqing Gu*[1]; [1]Chalco

2:50 PM
Investigation on Alumina Discharge into Red Mud Pond at Nalco's Alumina Refinery, Damanjodi, Orissa, India: *Birendra Kumar Mohapatra*[1]; Barada Kanta Mishra[1]; Chitta Ranjan Mishra[2]; [1]Institute of Minerals & Materials Technology(IMMT); [2]National Aluminium Company Limited(NALCO)

3:15 PM Break

3:25 PM
Production of Ordinary Portland Cement(OPC) from NALCO Red Mud: *Chitta Mishra*[1]; Devendra Yadav[2]; M Alli[2]; P Sharma[2]; [1]National Aluminium Company Limited; [2]National Council for Cement & Building Materials(NCB)

3:50 PM
Recovery of Metal Values from Red Mud: *Puliyur Krishnaswamy Narasimha Raghavan*[1]; Nand Kumar Kshatriya[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

4:15 PM
Red Mud Flocculants Used in The Bayer Process: *Scott Moffatt*[1]; Frank Ballentine[1]; Morris Lewellyn[1]; [1]Cytec Industries

4:40 PM
Reductive Smelting of Greek Bauxite Residues for Iron Production: *Anthimos Xenidis*[1]; C. Zografidis[1]; I. Kotsis[1]; D. Boufounos[2]; [1]National Technical University of Athens; [2]Aluminium of Greece, SA

Aluminum Alloys: Fabrication, Characterization and Applications: Thermal Mechanical Processing

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

Tuesday PM — Room: 14A
March 1, 2011 — Location: San Diego Conv. Ctr

Session Chair: Xiyu Wen, University of Kentucky

2:00 PM
Study of the Artificial Aging Kinetics of Different AA6013-T4 Heat Treatment Conditions: *Josef Berneder*[1]; Ramona Prillhofer[1]; Josef Enser[1]; Peter Schulz[1]; Carsten Melzer[1]; [1]AMAG rolling

2:20 PM
Textures and Particle Structures of a Continuous Cast AA3004 Aluminum Alloy after Cold Rolling and Annealing: *Xiyu Wen*[1]; Yansheng Liu[2]; Jingwu Zhang[3]; Shridas Ningileri[1]; Tongguang Zhai[1]; Zhong Li[4]; [1]University of KY; [2]Secat Inc.; [3]State Key Lab of Matastable Materials Science and Technology; [4]Aleris International Inc.

2:40 PM
Mechanical Properties of Bulk Nanostructured 7075 Al Alloy Prepared by Severe Plastic Deformation: *Yonghao Zhao*[1]; Tory Topping[1]; Xiaozhou Liao[2]; Yuntian Zhu[3]; Enrique Lavernia[1]; [1]University of California, Davis; [2]The University of Sydney; [3]North Carolina State University, Raleigh

3:00 PM
Investigation of High Strain Rate Flow of Aluminum Alloys: *Yansheng Liu*[1]; Xiyu Wen[2]; Shridas Ningileri[2]; [1]SECAT Inc; [2]University of Kentucky

3:20 PM
Estimating Response to Hot Rolling of Al-Mn-Mg Alloys from Hot Torsion Testing: *Hugh McQueen*[1]; [1]Concordia University

3:40 PM Break

3:55 PM
A Study on Solute Redistribution during Solution Treatment and Aging Bahavior in a Bi-Layer AA6xxx-AA3xxx Alloy System: *Shahrzad Esmaeili*[1]; Ehsan Foroozmehr[1]; Lihua Liao[1]; Samuel Huberman[1]; David Lloyd[2]; Mark Gallerneault[2]; [1]University of Waterloo; [2]Novelis Global Technology Centre

4:15 PM
Interactive Processes during Non-Isothermal Annealing of an AA6xxx Alloy: *Panthea Sepehrband*[1]; Xiang Wang[2]; Haiou Jin[3]; Shahrzad Esmaeili[1]; [1]University of Waterloo; [2]McMaster University; [3]Novelis Global Technology Centre

4:35 PM
Microstructural Characterization and Heat Treatments of Different Al-Zn-Mg/Zr Alloys: *Paola Leo*[1]; Emanuela Cerri[1]; Hugh McQueen[2]; [1]Università del Salento; [2]Concordia University

4:55 PM
Effect of Die Entry Angle on Extrusion Responses of Aluminum 6063 Alloy: *Samson Adeosun*[1]; Sanmbo Balogun[1]; Olatunde Sekunowo[1]; Wasiu Ayoola[1]; Oluwashina Gbenebor[1]; [1]University of Lagos, Akoka

5:15 PM
Hot Deformation Behaviour of 7075 Al Alloy: Hossein Mohammadi[1]; *Mostafa Ketabchi*[1]; [1]Amirkabir University

5:35 PM
Development of Microstructures and Mechanical Properties Aluminum Alloy after Equal Channel Angular Pressing: Miroslav Greger[1]; *Ladislav Kander*[2]; [1]VSB-Technical University Ostrava; [2]Material & Metallurgical Research Ltd,

Aluminum Reduction Technology: Cells Thermal Balance

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Tuesday PM — Room: 17B
March 1, 2011 — Location: San Diego Conv. Ctr

Session Chair: Bernard Allais, Rio Tinto Alcan

2:00 PM
Increasing the Power Modulation Window of Aluminium Smelter Pots with Shell Heat Exchanger Technology: Pascal Lavoie[1]; Sankar Namboothiri[1]; *Mark Dorreen*[1]; John Chen[1]; Donald Zeigler[2]; Mark Taylor[1]; [1]Light Metals Research Centre, The University of Auckland; [2]Alcoa Primary Metals, Aluminerie Deschambault

2:20 PM
New Approachs to Power Modulation at TRIMET Hamburg: *Till Reek*[1]; [1]Trimet Aluminium AG

2:40 PM
Some Aspects of Heat Transfer between Bath and Sideledge in Aluminium Reduction Cells: *Asbjorn Solheim*[1]; [1]SINTEF

3:00 PM
Heat Recovery from Aluminium Reduction Cells: Yves Ladam[1]; *Asbjorn Solheim*[1]; Martin Segatz[2]; Odd-Arne Lorentsen[2]; [1]SINTEF; [2]Hydro PMT

3:20 PM Break

3:30 PM
Effects of Composition and Granulometry on Thermal Conductivity of Anode Cover Materials: *Hasini Wijayaratne*[1]; Margaret Hyland[1]; Mark Taylor[1]; Ionela Grama[2]; Tania Groutso[1]; [1]Light Metals Research Centre; [2]University of Auckland

3:50 PM
Multiblock Monitoring of Aluminum Reduction Cells Performance: *Jayson Tessier*[1]; Carl Duchesne[2]; Gary Tarcy[3]; [1]STAS; [2]Aluminium Research Centre-REGAL; [3]Alcoa

4:10 PM
Towards a Design Tool for Self-Heated Cells Producing Liquid Metal by Electrolysis: *Sophie Poizeau*[1]; Donald Sadoway[1]; [1]Massachusetts Institute of Technology

4:30 PM
Restart of 300kA Potlines after 5 Hours Power Failure: *Xinliang Zhao*[1]; Bingliang Gao[2]; Hua Han[1]; Jie Liu[1]; Jiuyi Xiao[1]; Jianxun Qian[1]; [1]Keao Aluminium Company; [2]Northeastern University, China

Approaches for Investigating Phase Transformations at the Atomic Scale: Other Systems and Transformations

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Phase Transformations Committee
Program Organizers: Neal Evans, Oak Ridge National Laboratory; Francisca Caballero, Spanish National Research Center for Metallurgy (CENIM-CSIC); Chris Wolverton, Northwestern University; David Seidman, Northwestern University; Rajarshi Banerjee, University of North Texas

Tuesday PM
March 1, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chairs: Mark Asta, University of California - Berkeley; Jeffery Hoyt, McMaster University

2:00 PM Invited
A Molecular Dynamics Study of the Cavitation Pressure in Liquid Al: *Jeffrey Hoyt*[1]; Alice Potter[1]; [1]McMaster University

2:25 PM
Defect Structure at Rocksalt/Tetradymite-Telluride Interfaces: *Douglas Medlin*[1]; J. Sugar[1]; N. Heinz[2]; T Ikeda[2]; G. Snyder[2]; [1]Sandia National Labs; [2]California Institute of Technology

2:40 PM
Phase Transformation Identification in Beta Titanium Alloys Using ETMT, Gleeble and SSDTA: *Yufeng Zheng*[1]; Robert Williams[1]; Boian Alexandrov[1]; John Lippold[1]; Hamish Fraser[1]; [1]The Ohio State University

2:55 PM
Investigating Omega Precipitation in Titanium Alloys at the Atomic Scale: Arun Devaraj[1]; *Soumya Nag*[1]; Robert Williams[2]; Srinivasan Rajagopalan[3]; Srinivasan Srivilliputhur[1]; Hamish Fraser[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]The Ohio State University; [3]Exxon Mobil Corporation

3:10 PM Break

3:25 PM Invited
Computational and Experimental Investigations of Core-Shell Precipitates in Al-Sc-Li Alloys: *Mark Asta*[1]; Colin Ophus[2]; Abhay Raj Singh Gautam[2]; Marta Rossell[2]; Emmanuelle Marquis[3]; Velimir Radmilovic[2]; Uli Dahmen[2]; [1]University of California, Berkeley; [2]Lawrence Berkeley National Laboratory; [3]University of Michigan

3:50 PM
Remarkable Microstructural Stability of Cu-Based Ternary Alloys during High Temperature Annealing: *Xuan Zhang*[1]; Nhon Vo[1]; Pascal Bellon[1]; Robert Averback[1]; [1]UIUC

4:05 PM
Ab-Initio Calculation of the Phase Stability of Mechanically Unstable High-Temperature Phases: Nikolas Antolin[1]; Oscar Restrepo[1]; *Wolfgang Windl*[1]; [1]Ohio State University

4:20 PM
Effect of Dilute H on Phase Transformations near Hcp Zr Crack Tip: Margarita Ruda[1]; Graciela Bertolino[2]; *Diana Farkas*[3]; Peter Evans[3]; [1]CAB-CNEA; [2]CONICET; [3]Virginia Tech

4:35 PM
Precipitation of Prismatic Plates in Mg-0.3Ca-(0.3-1)in (at%) Alloys: *Chamini Mendis*[1]; Keiichiro Oh-ishi[1]; Tadakatsu Ohkubo[1]; Kazuhiro Hono[1]; [1]National Institute for Materials Science

4:50 PM
Strengthening Precipitate Phases in the WE43 Alloy at Peak Hardness: *Shengjun Zhang*[1]; Gregory Olson[1]; [1]Northwestern University

Biological Materials Science: Biomedical Materials, Implants and Devices

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Tuesday PM
March 1, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Marian Kennedy, Clemson University; John Nychka, University of Alberta

2:00 PM Invited
Biomaterial Advances and Failure in Total Joint Replacement: *Roy Bloebaum*[1]; [1]University of Utah/ VA Medical Center

2:30 PM
Can Mechanical Properties of Bioactive Glass-Ceramics be Improved Without Sacrificing Their Bioactivity?: *John Nychka*[1]; Satadru Kashyap[1]; Hamidreza Pirayesh[1]; [1]University of Alberta

2:50 PM
Mechanical and In-Vitro Behaviour of Alumina and Zirconia Based Bioceramics: Ajoy Pandey[1]; Usha Jena[1]; Debika Mandal[1]; *Koushik Biswas*[1]; [1]Indian Institute of Technology Kharagpur

3:10 PM
Effects of Nanocrystalline Calcium Deficient Hydroxyapatite on the Resorption of Conventional Glass Ionomer Cements (GIC): *Sumit Goenka*[1]; Rajkamal Balu[2]; T. S. Sampath Kumar[2]; [1]Visveswaraya National Institute of Technology (VNIT), Nagpur, India; [2]Indian Institute of Technology Madras (IITM), Chennai, India

3:30 PM
Spark Plasma Sintering of Complex Shape HAP-CNT Composites: *Yen-Shan Lin*[1]; Marc.A Meyers[1]; Eugene.A Olevsky[2]; [1]UCSD; [2]SDSU

3:50 PM Break

4:00 PM
Nanopillared Metal Stent for Superior Endothelialization and Controlled Drug Release: *Karla Brammer*[1]; Mariana Loya[1]; Sungho Jin[1]; [1]UC San Diego

4:20 PM
Corrosion Products of Iron Wire Arterial Implants from In Vivo and In Vitro Studies: Daniel Pierson[1]; *Jacob Edick*[2]; Justine Farina[1]; Jonathan Zuidema[1]; Donisha Das[1]; Nikki Long[1]; Jon Stinson[2]; Heather Getty[2]; Jaroslaw Drelich[1]; Jeremy Goldman[1]; [1]Michigan Technological University; [2]Boston Scientific

4:40 PM
Surface Patterning Effects on Wear and Friction in Metal-Polymer and Metal-Metal Contact: Caleb Eljach[1]; Marian Kennedy[1]; John DesJardins[1]; *Nathan Mitchell*[1]; [1]Clemson University

5:00 PM
Bi-functional Chimeric Peptide Coatings for Improved Osteointegration of Titanium Implants: Hilal Yazici[1]; *Mustafa Gungormus*[2]; Mehmet Sarikaya[2]; Candan Tamerler[2]; [1]Istanbul Technical University; [2]University of Washington

5:20 PM
Mechanical Behavior of a Biological Beta-Ti Alloy: *Sudhakar Vadiraja*[1]; [1]Montana Tech

5:40 PM
Effects of Extrusion and Heat Treatment on the Mechanical Properties and Bio-Corrosion Behaviors of Mg-Nd-Zn-Zr Alloy for Biomedical Applications: Xiaobo Zhang[1]; Guangyin Yuan[1]; Lin Mao[1]; *Guohua Wu*[1]; Wenjiang Ding[1]; [1]Shanghai Jiaotong University

Bulk Metallic Glasses VIII: 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: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Tuesday PM
March 1, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Katharine Flores, The Ohio State University; Michael Atzmon, University of Michigan

2:00 PM Invited
High Heating Rate Crystallization Behavior of a Zr-Based Metallic Glass: Insights into Glass Structure: *Katharine Flores*[1]; Hongqing Sun[1]; [1]The Ohio State University

2:20 PM
Investigation of Elevated Temperature Effect on the Mechanical Behaviors of a Thin Film Metallic Glass Cu52Zr48: *Jianjun Pang*[1]; Yuchan Liu[2]; Ming-Jen Tan[1]; [1]Nanyang Technological University; [2]Singapore Institute of Manufacturing Technology

2:30 PM Invited
Nanoscale Mechanics and Medium Range Order in Bulk Metallic Glasses: *Don Stone*[1]; Zenon Melgarejo[1]; Jinwoo Hwang[1]; Jon Puthoff[1]; Joseph Jakes[2]; Hongbo Cao[1]; Chuan Zhang[1]; Eren Kalay[3]; Matthew Kramer[3]; Paul Voyles[1]; [1]University of Wisconsin; [2]USDA Forest Products Laboratory; [3]Iowa State University/Ames Laboratory

2:50 PM
Mechanical Polarization of Cu50Hf41.5Al8.5 Bulk Metallic Glass: *Rainer Hebert*[1]; Arif Mubarok[1]; [1]University of Connecticut

3:00 PM Invited
Multiscale Mechanical Studies for Investigating the Role of the Metallurgical Structure on the Mechanical Properties of Metallic Glasses: *Jian Lu*[1]; Y. Yang[2]; C.T. Liu[2]; Q. Wang[2]; J.C. Ye[2]; P. Liaw[3]; [1]City University of Hong Kong; [2]The Hong Kong Polytechnic University; [3]University of Tennessee

3:20 PM
Measurement of Viscosity of a Metallic Glass in the Inaccessible Temperature Region Using Rapid Joule Heating: *Georg Kaltenboeck*[1]; Joseph Schramm[1]; Marios Demetriou[1]; William Johnson[1]; [1]California Institute of Technology

3:30 PM Break

3:40 PM Invited
Properties of Shear Transformation Zones: *Michael Atzmon*[1]; Jong Du Joo[1]; Dongchan Jang[2]; Amadi Nwankpa[1]; [1]University of Michigan; [2]Caltech

4:00 PM
Microscale Characterization of Amorphous-Crystalline Metallic Composites: J. Sosa[1]; K. Flores[1]; *Nicholas Hutchinson*[1]; [1]The Ohio State University

4:10 PM Invited
Understanding Roles of Secondary Amorphous Phases in Glassy Matrix: *Eun Soo Park*[1]; [1]Seoul National University

4:30 PM Invited
Nanocrystallization of a Bulk Metallic Glass in the Zr-Al-CuNiCo System – Structure and Mechanical Properties: Arnaud Caron[1]; Rainer Wunderlich[2]; *Hans Fecht*[2]; [1]Tohoku Universtiy; [2]Ulm University

4:50 PM
On Interfacial Bonding in Mg-Cu-Gd Metallic Glass via High Pressure Torsion (HPT): *Baolong Zheng*[1]; Yizhang Zhou[1]; Chi Y.A. Tsao[2]; Ruslan Valiev[3]; Enrique Lavernia[1]; [1]University of California, Davis; [2]National Cheng Kung University; [3]Ufa State Aviation Technical University

5:00 PM Invited
Ni-Free Zr-Ti-Cu-Al Bulk Metallic Glasses: Tensile Property and Fracture Toughness: *Jian Xu*[1]; Qiang He[1]; Evan Ma[2]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]Johns Hopkins University

5:20 PM
Mg-Cu/Ni-Nd Bulk Metallic Glasses: Glass Transition Temperature and Elastic Properties Versus Toughness: *Ling Shi*[1]; Jian Xu[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

5:30 PM Invited
Topological and Chemical Order in Liquids and Glasses – Influence on Phase Transitions: *Ken Kelton*[1]; [1]Washington University

5:50 PM Invited
Inhomogeneous Flow and Fracture of Glassy Materials: *Akira Furukawa*[1]; Hajime Tanaka[1]; [1]University of Tokyo

Cast Shop for Aluminum Production: Dross Formation, Control and Handling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Geoffrey Brooks, Swinburne University of Technology; John Grandfield, Grandfield Technology Pty Ltd

Tuesday PM
March 1, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chair: Pierre Le Brun, Alcan CRV

2:00 PM Introductory Comments

2:05 PM
Oxidation of AlMg in Simulated Dry and Humid Atmospheres: *Anne Kvithyld*[1]; Darcy Stevens[1]; Shawn Wilson[1]; Thorvald Engh[2]; [1]SINTEF; [2]NTNU

2:30 PM
Study of Early Stage Interaction of Oxygen with Al; Methods, Challenges and Difficulties: *Behrooz Fateh*[1]; Geoff Brooks[1]; M. Akbar Rhamdhani[1]; John Taylor[2]; Jeff. Davis[3]; Martin Lowe[3]; [1]Swinburne University of Technology; [2]CAST CRC; [3]The Centre for Atom Optics and Ultrafast Spectroscopy (CAOUS), Swinburne University of Technology

2:55 PM
Quality Assessment of Recycled Aluminum: *Derya Dispinar*[1]; Anne Kvithyld[1]; Arne Nordmark[1]; [1]SINTEF Materials and Chemistry

3:20 PM
Preserving Metal Units Utilizing the Latest Generation of Aluminum Dross Press: *James Herbert*[1]; Alan Peel[2]; [1]Altek LLC; [2]Altek Europe Ltd.

Characterization of Minerals, Metals and Materials: Characterization of Non-Ferrous Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Tuesday PM
March 1, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Shadia Ikhmayies, Al Isra University; Augusta Isaac, Laboratório Nacional de Luz Síncrotron

2:30 PM
Evolution of Crystallographic Texture of Cold Roll Bonding and Annealing Ti-Al-Nb Multilayer Sheets: *Peng Qu*[1]; Liming Zhou[1]; Viola Acoff[1]; [1]the University of Alabama

2:45 PM
Capillarity-Driven Migration of a Thin Ge Wedge on a Bicrystalline Au Substrate: *Tamara Radetic*[1]; Andrew Minor[1]; Ulrich Dahmen[1]; [1]NCEM, Lawrence Berkeley National Lab

3:00 PM
Characterization of Laser Shock Peened IN718 SPF: *Amrinder Gill*[1]; Vijay Vasudevan[1]; S.R. Mannava[1]; [1]University of Cincinnati

3:15 PM
Classification of Precipitation Shapes in Nickel Base Gamma-Gamma Prime Alloys: *Jason Van Sluytman*[1]; Tresa Pollock[2]; [1]University of Michigan; [2]University of California - Santa Barbara

3:30 PM
Dynamic-Tensile-Extrusion of Zirconium: The Role of Texture: *Carl Trujillo*[1]; George Gray III[1]; Ellen Cerreta[1]; Daniel Martinez[1]; [1]Los Alamos National Laboratory

3:45 PM
Effect of Ti Addition on Microstructure and Tensile Property of Aged Cu-Ni-Si Alloy: *Eungyeong Lee*[1]; Sangshik Kim[1]; Kwangjun Euh[2]; Seungzeon Han[2]; [1]Gyeongsang National University; [2]Korea Institute of Materials Science

4:00 PM Break

4:15 PM Invited
Comparison of Ni-Cr and Co-Based Alloys for Fuel Injectors: Giorgio Scavino[1]; Paolo Matteis[1]; Giovanni Mortarino[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

4:45 PM
Microstructural Characterization of 70Cu-30Ni Alloy Formed by Direct Metal Deposition (DMD®) Process: Sudip Bhattacharya[1]; *Jyotirmoy Mazumder*[1]; Guru Prasad Dinda[2]; Ashish Dasgupta[2]; Bhaskar Dutta[3]; [1]University of Michigan, Ann Arbor; [2]Focus:HOPE; [3]POM

5:00 PM
Characterization of the Manganese Oxide Scales Formed on a Grooved Cast Pb-Ag Anode from a Zinc Electrowinning Operation: *Tzong Chen*[1]; John Dutrizac[1]; [1]CANMET-MMSL

5:15 PM
Microstructure Evolution in Ultrafine-Grained CuZr Polycrystals Processed by High Pressure Torsion: Miloš Janecek[1]; *Ondrej Srba*[1]; Petr Harcuba[1]; Milan Dopita[1]; Jakub Cížek[1]; Radomír Kužel[1]; Hyoung Seop Kim[1]; [1]Charles University

5:30 PM
The Effect of Rolling Mill Geometrical Parameters in Bulk Texture Analysis of Processed TiAl Based Multi-Layered Sheet Material: *Liming Zhou*[1]; Peng Qu[1]; Viola Acoff[1]; [1]The University of Alabama

5:45 PM
Thermophysical Properties of Platinum-Copper System: *Shahid Mehmood*[1]; Ulrich E. Klotz[2]; Gernot Pottlacher[1]; [1]Institute of Experimental Physics TU Graz; [2]Fem Research Institute Precious Metals and Metals Chemistry

6:00 PM
Processing and Characterization of Ultra-Fine Grain Structure in Al Alloy by Equal Channel Angular Pressing: *Prasad Shanmugasandaram*[1]; Narayani Narasimhan[2]; Balasivanadha Prabhu[3]; [1]State University of New York, Stony Brook; [2]Stanford University; [3]Anna University

6:15 PM
Advances in Elemental Analysis, Characterization of Minerals and Ores, and Identification of Metal Alloys Using Handheld X-ray Fluorescence Technology: *Jeff Walker*[1]; Chris Smith[1]; [1]Thermo Fisher Scientific

Computational Plasticity: Atomistic Modeling in Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Remi Dingreville, Polytechnic Institute of NYU; Koen Janssens, Paul Scherrer Institute

Tuesday PM
March 1, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
Deformation Mechanism in Nanocrystalline Metals: Experiments and Atomistic Simulations: *Helena Van Swygenhoven*[1]; Mario Velasco[1]; Christian Brandl[2]; Andreas Elsener[3]; Steven Van Petegem[1]; Michael Weisser[1]; [1]Paul Scherrer Institut; [2]Los Alamos National Laboratory; [3]University of Zurich

2:30 PM
Grain Boundary Migration as a Deformation Mechanism in Nanocrystalline Materials: *Diana Farkas*[1]; [1]Virginia Tech

2:50 PM
Extracting Dislocations and other Defects from Atomistic Simulations: *Alexander Stukowski*[1]; Karsten Albe[1]; [1]Darmstadt University of Technology, Germany

3:10 PM
Grain Boundary Kinetics in Molecular Dynamics: The Effect of the Driving Force on Mobility and Migration Mechanisms: *Christopher Race*[1]; Johann von Pezold[1]; Joerg Neugebauer[1]; [1]Max-Plank-Institute for Iron Research

3:30 PM Break

3:45 PM Invited
Slip Coupling in Crystal Plasticity: *Vasily Bulatov*[1]; [1]Lawrence Livermore National Laboratory

4:15 PM
Partial Dislocation Nucleation and Twinning in Aluminum: Nitin Daphalapurkar[1]; *K.T. Ramesh*[1]; [1]The Johns Hopkins University

4:35 PM
Atomistic Simulations of Cu/Cu-Oxide Planar Interface Properties: *Abdelmalek Hallil*[1]; Remi Dingreville[2]; Stéphane Berbenni[1]; Mohammed Cherkaoui[1]; [1]Georgia Tech - CNRS; [2]NYU-Poly

4:55 PM
Plastic Deformation of Au Nanoparticles and Thin-Films: A Comparative Experimental and Simulation Study: *Dan Mordehai*[1]; Eugen Rabkin[1]; David Srolovitz[2]; [1]Technion; [2]Institute of High Performance Computing

5:15 PM
Molecular Dynamics Analysis of Edge Dislocation Walls: *Sebastian Echeverri Restrepo*[1]; Barend Thijsse[1]; [1]TUDelft

Computational Thermodynamics and Kinetics: Energy Materials: Storage, Generation, Catalysis

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Tuesday PM
March 1, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Vidvuds Ozolins, UCLA; Stefano Curtarolo, Duke University

2:00 PM Invited
First-Principles Approaches to Li-Air Batteries: *Donald Siegel*[1]; Max Radin[1]; [1]University of Michigan

2:30 PM
The Li-Graphite System and Surface Reactions from First-Principles: *Kristin Persson*[1]; [1]LBNL

2:45 PM
A First Principles Study of Nanostructured Thermoelectric Materials: *Philippe Jund*[1]; Romain Viennois[1]; Jean Claude Tédenac[1]; Mathieu Fèvre[2]; [1]Université Montpellier 2 - ICGM; [2]LEM - ONERA

3:00 PM
Defects in Perovskites for Solid Oxide Fuel Cell Cathodes: Surface and Strain Effects: *Yueh-Lin Lee*[1]; Milind Gadre[1]; Dane Morgan[1]; [1]University of Wisconsin-Madison

3:15 PM Invited
Data, Methods and Search Strategies for Metal Catalysts: *Stefano Curtarolo*[1]; Gus Hart[2]; Ohad Levy[3]; Wahyu Setyawan[1]; [1]Duke University; [2]BYU; [3]NRCN

3:45 PM Break

3:55 PM Invited
Self-Assembly of Stable Ti, Y, and O-Enriched Nanoclusters in Fe: H. Zhao[1]; M. Krcmar[2]; *C. L. Fu*[1]; M. K. Miller[1]; [1]Oak Ridge National Laboratory; [2]Grand Valley State University

4:25 PM
First-Principles Study of the Structure of RuO_2*xH_2O: *Fei Zhou*[1]; Yongduo Liu[1]; Mark Asta[2]; Vidvuds Ozolins[1]; [1]UCLA; [2]UC Berkeley

4:40 PM
Reaction Pathways of Methane Decomposition on Cu Surface from Ab Initio Calculations: *Grzegorz Gajewski*[1]; Chun-Wei Pao[1]; [1]Research Center for Applied Sciences, Academia Sinica

5:00 PM Invited
Water Splitting on Reduced CeO2(111): Heine Hansen[1]; *Chris Wolverton*[1]; [1]Northwestern University

5:30 PM
Thermodynamic Analysis of Phase Transformations in $La_cSr_{1-c}MnO_3$ Perovskite Solid Solutions: Royi Glass[1]; *David Fuks*[1]; Eugene Kotomin[2]; Joachim Maier[2]; [1]Ben Gurion University of the Negev; [2]Max Planck Institut für Festkörperforschung

5:45 PM
Calculation of the Thermoelectric Power of Titanium, Zirconium, and Hafnium: *Zhongliang Xiao*[1]; Hanli Yang[1]; Zhichao Ma[1]; Horst Brodowsky[2]; Qiyuan Chen[3]; [1]Changsha University of Science and Technology; [2]Christian-Albrechts-Universität zu Kiel; [3]Central South University

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Deformation, Fracture, and Hydrogen Effects

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Tuesday PM
March 1, 2011
Room: 32A
Location: San Diego Conv. Ctr

Session Chairs: Dennis Dimiduk, Air Force Research Laboratory; Dilip Shah, Pratt & Whitney

2:00 PM Invited
Non-Associated Flow of Crystalline Solids: *John Bassani*[1]; [1]University of Pennsylvania

2:30 PM Invited
The Ice-Structure Interaction Problem: Creep, Fracture and the Ductile-Brittle Transition of Ice: *Erland Schulson*[1]; [1]Dartmouth College

3:00 PM Invited
Micro-Scale Investigations of Interfacial Delamination in Thermal Protection Systems: *Kevin Hemker*[1]; [1]Johns Hopkins University

3:30 PM Break

3:45 PM
A TEM Study of the Micromechanisms Associated with Hydrogen Embrittlement in Steels: *Srinivasan Rajagopalan*[1]; Neeraj Thirumalai[1]; Ning Ma[1]; Dakshina Valiveti[1]; Sanket Desai[1]; [1]ExxonMobil Research and Engineering

4:00 PM
Strain-Induced Metal-Hydrogen Interactions Across the First Transition Series – An Ab Initio Study of Hydrogen Embrittlement: *Johann von Pezold*[1]; Ugur Aydin[1]; Tilmann Hickel[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

4:15 PM
Influence of Hydrogen Loading on the Tensile Behavior of Fe-Ga Alloys: *Meenakshisundaram Ramanathan*[1]; Biswadeep Saha[1]; Chai Ren[1]; Gavin Garside[1]; Sivaraman Guruswamy[1]; [1]University of Utah

4:30 PM
Prismatic Cross-Slip in Mg from First Principles: *Joseph Yasi*[1]; Louis Hector[2]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign; [2]General Motors R&D Center

4:45 PM
Substructure Evolution during Creep in Zirconium Alloys: *Benjamin Morrow*[1]; Robert Kozar[2]; Kenneth Anderson[2]; Michael Mills[1]; [1]The Ohio State University; [2]Bechtel Bettis, Inc.

Deformation, Damage, and Fracture of Light Metals and Alloys: Session II

Sponsored by: The Minerals, Metals and Materials Society, MS&T Organization, TMS Light Metals Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Xun-Li Wang, Oak Ridge National Laboratory; Yanyao Jiang, University of Nevada, Reno

Tuesday PM
March 1, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chair: Qizhen Li, University of Nevada, Reno

2:00 PM Invited
Visualizing the 3D Microstructure Evolution during Deformation: *Henning Poulsen*[1]; Masakazu Kobyashi[2]; Jette Oddershede[1]; Christian Wejdemann[1]; Ulrich Lienert[3]; Soeren Schmidt[1]; Ulrik Olsen[1]; Bettina Camin[4]; Grethe Winther[1]; Dorte Juul Jensen[1]; Hiroyuki Toda[2]; Walter Reimers[4]; [1]Risoe DTU; [2]Toyohashi University of Technology; [3]Argonne National Lab.; [4]TU Berlin

2:30 PM
Development of <111> Fiber Texture and {111}<112> Shear Bands in Pure Al Metal by Wire Drawing: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

2:45 PM
Effects of Spatial Locations of Nucleation Sites on Incipient Damage in High Purity Aluminum: *Matthew Tucker*[1]; John Bingert[1]; Timothy Ulrich[1]; Cheng Liu[1]; Ching-Fong Chen[1]; George Gray[1]; [1]Los Alamos National Lab

3:00 PM
Fracture Behavior of Short Carbon Fiber Reinforced Aluminium Matrix Composite: Pengfei Yan[1]; Guangchun Yao[1]; Jianchao Shi[1]; Xiaolan Sun[1]; *Hongjie Luo*[1]; [1]School of Materials & Metallurgy, Northeastern University

3:15 PM Break

3:30 PM
Microscale Discontinuous Displacement Measurement Techniques: *Helena Jin*[1]; Sandip Haldar[2]; Hugh Bruck[2]; Wei-Yang Lu[1]; [1]Sandia National Labs; [2]University of Maryland

3:45 PM
Microstructural Influence on the Mechanical Behaviour of Ti-5Al-5Mo-5V-3Cr: *Nicholas Jones*[1]; David Dye[1]; Trevor Lindley[1]; [1]Imperial College London

4:00 PM
Effects of Rolling Induced Anisotropy on Fatigue Crack Initiation and Short Crack Propagation in Al 2024-T351 under Uniaxial and Biaxial States of Stress: *Admir Makas*[1]; Ikshwaku Atodaria[1]; Ross MacKinnon[1]; Pedro Peralta[1]; [1]ASU

4:15 PM
Damage Evolution in Ultrasonic Welded Aluminum/Fiber-Reinforced Polymer Joints with Different Welding Geometries: *Natalia Konchakova*[1]; Ralf Mueller[1]; Franz Josef Barth[1]; Frank Balle[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern

4:30 PM
Role of Austenite Plasticity in the Deformation of Superelastic Nitinol: *David Xu*[1]; Robert Ritchie[1]; [1]UC Berkeley

4:45 PM
Deformation in Two-Phase Titanium Alloys Studied by Surface Strain Mapping Techniques: *Rebecca Sandala*[1]; João Fonseca[1]; Michael Preuss[1]; [1]University of Manchester

5:00 PM
Vanadium Effects on a BCC Iron Sigma 3 Grain Boundary Strength: *Sungho Kim*[1]; Seong-Gon Kim[1]; Mark Horstemeyer[1]; [1]Center for Advanced Vehicular Systems

Dynamic Behavior of Materials V: Shock Compression

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Tuesday PM
March 1, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chair: Jerry La Salvia, US Army Research Lab

2:00 PM Invited
Material Deformation Dynamics at Ultrahigh Pressures and Strain Rates: *Bruce Remington*[1]; [1]Lawrence Livermore National Laboratory

2:30 PM
Length- and Timescales for Dynamic Deformation in Materials: *Neil Bourne*[1]; [1]AWE Aldermaston

2:45 PM
Extracting Plastic Flow Properties from Shock Velocimetry: *Bryan Reed*[1]; James Stolken[1]; Roger Minich[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

3:00 PM
High Strain Rate and Pressure Induced Twinning in Tantalum: *Jeffrey Florando*[1]; James McNaney[1]; Luke Hsiung[1]; Nathan Barton[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

3:15 PM
Isomorphic Phase Transformation of Cerium under Shock Loading Using Molecular Dynamics: *Virginie Dupont*[1]; Timothy Germann[1]; Shao-Ping Chen[1]; [1]Los Alamos National Laboratory

3:30 PM
Laser Compression of Monocrystalline Tantalum: *Chia-Hui Lu*[1]; Bruce Remington[2]; Brian Maddox[2]; Bimal Kad[1]; Fabienne Gregori[3]; Hye-Sook Park[2]; Marc Meyers[1]; [1]University of California, San Diego; [2]Lawrence Livermore National Laboratory; [3]Université Paris Nord

3:45 PM Break

3:55 PM Invited
Shock Response and Recovery of Cu-Nb Nanolayer Composites: *Timothy Germann*[1]; [1]Los Alamos National Laboratory

4:25 PM
Mode Transitions in Shocked Single-Crystal Tantalum: *Luke Hsiung*[1]; Brian Maddox[1]; Bruce Remington[1]; [1]Lawrence Livermore National Laboratory

4:40 PM
Analytical Models for Predicting Pressure-Volume Compressibility of Low-Density Compacts of Iron Nano-Particles: Chengda Dai[1]; Daniel Eakins[2]; *Naresh Thadhani*[3]; [1]Southwest Institute of Fluid Physics; [2]Imperial College ; [3]Georgia Institute of Technology

4:55 PM
Simultaneous Contour Forming and Shock Hardening in Planar Impact Forming: *Huimin Wang*[1]; Yuan Zhang[1]; Geoff Taber[1]; Glenn Daehn[1]; [1]Ohio State University

5:10 PM
Spatial Distribution of Damage after Shock Loading: *Veronica Livescu*[1]; John Bingert[1]; Davis Tonks[1]; [1]Los Alamos National Laboratory

5:25 PM
The Effect of Cold Work on the Shock Response of Tantalum: *Jeremy Millett*[1]; Glenn Whiteman[1]; Neil Bourne[1]; Nigel Park[1]; [1]AWE

5:40 PM
The Role of the Structure of Grain Boundary Interfaces during Shock Loading: *Alejandro Perez-Bergquist*[1]; Juan Escobedo[1]; Carl Trujillo[1]; Ellen Cerreta[1]; George Gray[1]; Saryu Fensin[1]; Timothy Germann[1]; [1]Los Alamos National Laboratory

5:55 PM
Role of Twinning in Shock Related Deformation: *Veronica Livescu*[1]; John Bingert[1]; Thomas Mason[1]; George Gray III[1]; [1]Los Alamos National Laboratory

Electrode Technology for Aluminium Production: Petroleum Coke VBD

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Tuesday PM
March 1, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Angelique Adams, Alcoa

2:00 PM Introductory Comments

2:10 PM Invited
Historical and Future Challenges with the Vibrated Bulk Density Test Methods for Determining Porosity of Calcined Petroleum Coke: *Jignesh Panchal*[1]; Mark Wyborney[1]; Jeffrey Rolle[1]; [1]A.J.Edmond Company

2:35 PM Invited
Prediction of Calcined Coke Bulk Density: *Marie-Josée Dion*[1]; Hans Darmstadt[1]; Nigel Backhouse[1]; Frank Cannova[2]; Mike Canada[2]; [1]Rio Tinto Alcan; [2]BP

3:00 PM Invited
Calcined Coke Particle Size and Crushing Steps Affect Its VBD Result: Frank Cannova[1]; *Mike Canada*[1]; Bernie Vitchus[1]; [1]BP Coke

3:25 PM Invited
Bulk Density - Overview of ASTM and ISO Methods with Examples of between Laboratory Comparisons: *Lorentz Petter Lossius*[1]; Bill Spencer[2]; Harald A. Øye[3]; [1]Hydro Aluminium AS; [2]Oxbow Calcining; [3]Norwegian University of Science and Technology

3:50 PM Break

4:00 PM Invited
Improving the Repeatability of Coke Bulk Density Testing: *Les Edwards*[1]; Marvin Lubin[1]; James Marino[1]; [1]Rain CII Carbon

4:25 PM Invited
ASTM D7454 Vibrated Bulk Density Method – Principles and Limitations: *Francois Laplante*[1]; Luc Duchesneau[1]; [1]RioTinto Alcan

4:50 PM Invited
Vibrated Bulk Density (VBD) of Calcined Petroleum Coke and Implications of Changes in the ASTM Method D4292: *Bill Spencer*[1]; Laura Johnsen[1]; David Kirkpatrick[1]; Desiree Clark[1]; Miguel Baudino[1]; [1]Oxbow Calcining LLC

5:15 PM Panel Discussion

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue and Corrosion Interaction and Materials Corrosion

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Tuesday PM
March 1, 2011
Room: 31C
Location: San Diego Conv. Ctr

Session Chairs: Chengjia Shang, University of Science and Technology Beijing; Soo Yeol Lee, The University of British Columbia

2:00 PM Invited
Effect of Sensitized Microstructure on Corrosion Fatigue Crack Growth in Al 5083: *Peter Pao*[1]; Ramasis Goswami[2]; Robert Bayles[1]; Ronald Holtz[1]; [1]Naval Research Laboratory; [2]SAIC

2:20 PM
The Effect of Hot Corrosion Pits on Fatigue Crack Initiation and Fatigue Life of a Disk Superalloy: *Yoshiki Yamada*[1]; Ignacy Telesman[2]; Timothy Gabb[2]; Louis Ghosn[2]; [1]Ohio Aerospace Institute; [2]NASA GRC

2:40 PM
Effect of Proximity and Dimension of Two Artificial Pitting Holes on the Fatigue Endurance of Aluminum Alloy 6061-T6 under Rotating Bending Fatigue Tests: *Gonzalo Dominguez Almaraz*[1]; Victor Hugo Mercado[1]; J. Jesus Villalon[1]; [1]University of Michocan

3:00 PM
Microstructural and Environmental Effects on Fatigue Crack Growth in 7075 Aluminum Alloy: *Amir Bonakdar*[1]; Fengjiang Wang[1]; Jason Williams[1]; Nikhilesh Chawla[1]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering

3:20 PM Invited
A Study of Corrosion of Pure Aluminum and AA2037 Al Alloy in a NaOH Solution by Positron Annihilation: Yichu Wu[1]; *Tongguang Zhai*[2]; [1]University of Wuhan; [2]University of Kentucky

3:40 PM Break

3:50 PM Invited
Constituent Particle Clustering and Pitting Corrosion: *D Gary Harlow*[1]; [1]Lehigh University

4:10 PM Invited
Life Prediction of a New Developed Ferrite Stainless Steel for Automobile Muffler: *Chengjia Shang*[1]; [1]University of Science and Technology Beijing

4:30 PM
A Versatile Component Testing Method for the Life Time Determination of Automotive Exhaust Mufflers: *Muhammad Yasir*[1]; Gregor Mori[1]; Helmut Wieser[2]; Martin Schattenkirchner[2]; Manuel Hogl[2]; [1]Christian Doppler Laboratory of Localized Corrosion, University of Leoben, Austria; [2]Faurecia Emissions Control Technologies, Germany

4:50 PM Invited
Effect of Hydrogen on the Localized Corrosion of Steels: *Lijie Qiao*[1]; [1]University of Science and Technology Beijing

5:10 PM
Studying Properties of Zn-Coated Carbon Steel: *Ruqaya Khammas*[1]; [1]Technical College

Friction Stir Welding and Processing VI: Aluminum and Magnesium Alloys II

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Tuesday PM
March 1, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: Murray Mahoney, Retired from Rockwell Scientific

2:00 PM Invited
Novel Techniques for Corner Joints Using Friction Stir Welding: *Jonathan Martin*[1]; Chris Stanhope[1]; Sam Gascoyne[2]; [1]TWI; [2]Centre for Doctoral Training in Advanced Metallic Systems

2:25 PM
Investigation of the Material Shear Layer in Bobbin Tool Friction Stir Welding: *Jakob Hilgert*[1]; Jorge dos Santos[1]; Norbert Huber[1]; [1]GKSS Forschungszentrum GmbH

2:45 PM
Effect of Tool Geometry and Process Condition on Static Strength of Magnesium Friction Stir Lap Linear Weld: *Qi Yang*[1]; Xiang Li[1]; Ke Chen[1]; Yijing Shi[1]; [1]Hitachi America, Ltd.

3:05 PM
Effect of Tool Feature on the Joint Strength of Dissimilar Friction Stir Lap Welds: *Saumyadeep Jana*[1]; Yuri Hovanski[1]; Glenn Grant[1]; Karl Mattlin[1]; [1]PNNL

3:25 PM
Friction Stir Fabrication of Spar T-Joints Made from 7075 Aluminum: *Jeremy Brown*[1]; Dwight Burford[1]; [1]Wichita State University

3:45 PM
A Study Of a Versatile Method To Attach a Portable FSW System To an Aluminum Structure Using Adhesives: *Jordan Walser*[1]; Tracy Nelson[1]; Carl Sorensen[1]; Murray Mahoney[1]; [1]Brigham Young University

4:05 PM
Microstructural and Mechanical Properties of Friction Stir Welding Joints of 6082-T6 with 6063-T6: *Farzad Baratzadeh*[1]; Alan Handyside[1]; Enkhsaikhan Boldsaikhan[1]; Hamid Lankarani[2]; Blair Carlson[3]; Dwight Burford[1]; [1]National Institute for Aviation Research; [2]Wichita State University; [3]General Motors Corporation

4:10 PM Break

4:20 PM Invited
Microstructure and Corrosion Behavior of Friction Stir Welded Mg/Al- and Mg/Mg-Joints: *Guntram Wagner*[1]; Otmar Klag[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern

4:45 PM
Corrosion and Mechanical Behavior of Friction Stir Processed Mg-CeO2 Surface Composite: *Kumar Kandasamy*[1]; Gourav Argade[1]; Sushanta Panigrahi[1]; Rajiv Mishra[1]; [1]Missouri University of Science and Technology

5:05 PM
Mechanical Properties of Al and Mg Alloy Welds Made by Friction Stir Lap Welding: *Shamzin Yazdanian*[1]; Zhan Chen[1]; Guy Littlefair[1]; [1]AUT university

5:25 PM
Microstructure and Tensile Fracture Characteristic of 7005 Aluminum Alloys with Friction Stir Processes: *Ming-Hsiang Ku*[1]; Fei-Yi Hung[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

5:45 PM
Evaluation of Microstructure and Mechanical Properties of Aluminum / Copper Friction Stir Butt Welds: *Rouzbeh Sarrafi*[1]; Amir Hossein Kokabi[1]; Majid Abbasi Gharacheh[1]; Babak Shalchi[1]; [1]Department of Materials Science and Engineering, Sharif University of Technology

Frontiers in Solidification Science: Phase Field and Phase Field Crystal Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Solidification Committee
Program Organizers: Jeffrey Hoyt, McMaster University; Daniel Lewis, Rensselaer Polytechnic Institute

Tuesday PM
March 1, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
Phase Field Crystal Modelling of Solidification: *Ken Elder*[1]; [1]Oakland University

2:30 PM Invited
Phase-Field Crystal Modeling of Homogeneous and Heterogeneous Crystal Nucleation: *Laszlo Granasy*[1]; Gyorgy Tegze[1]; Gyula Toth[1]; Gergely Toth[2]; Tamas Pusztai[1]; [1]Research Institute for Solid State Physics and Optics; [2]Eotvos University

3:00 PM Invited
Spacing Characterization in Al-Cu Alloys Directionally Solidified under Transient Growth Conditions: Morteza Amoorezaei[1]; Sebastian Gurevich[1]; *Nikolas Provatas*[1]; [1]McMaster University

3:30 PM Break

3:45 PM Invited
Thermodynamic and Mechanical Properties of Hot Grain Polycrystalline Evolution during Late-Stage Solidification: *Alain Karma*[1]; Ari Adland[1]; [1]Northeastern University

4:15 PM Invited
Unified Derivation of Phase-Field Models for Alloy Solidification: *Mathis Plapp*[1]; [1]CNRS/Ecole Polytechnique

4:45 PM Invited
Phase-Field Model for Strong Non Equilibrium Solidification: *Ingo Steinbach*[1]; [1]Ruhr-University

5:15 PM
Phase-Field Simulations of Stress-Induced Twin Formation during Solidification: *Shenyang Hu*[1]; Chuck Henager Jr.[1]; [1]Pacific Northwest National Laboratory

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Diffusion Theory and Diffusion in Grain Boundary

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Tuesday PM
March 1, 2011
Room: 31A
Location: San Diego Conv. Ctr

Session Chairs: Jian Luo, Clemson University; Sybrand van der Zwaag, Technical University Delft

2:00 PM Invited
Development of a Theory of Solute Diffusion Enhancement for Analyzing Interdiffusion Experiments: *Irina Belova*[1]; Alan Allnatt[2]; Yongho Sohn[3]; Nagraj Kulkarni[4]; Sarah Brennan[3]; Graeme Murch[1]; [1]The University of Newcastle; [2]University of Western Ontario; [3]University of Central Florida; [4]Oak Ridge National Laboratory

2:30 PM Invited
The 17 Diffusion Path Theorems by Kirkaldy and Brown Revisited: *John Morral*[1]; [1]Ohio State University

3:00 PM Invited
Determination of the Intrinsic Interface Mobility in Binary Ferrous Alloys Using Reversible Partial Transformation Experiments: *Sybrand van der Zwaag*[1]; Hao Chen[1]; [1]Technical University Delft

3:30 PM Break

3:50 PM
Diffusion Coefficients in Liquid and Grain Boundary Predicted by Ab Initio Molecular Dynamics: *Zi-Kui Liu*[1]; Huazhi Fang[1]; Bill Wang[1]; [1]The Pennsylvania State University

4:20 PM
Grain Boundary "Phase" Diagrams and Their Applications in Predicting Activated Sintering and Microstructure Development: *Jian Luo*[1]; [1]Clemson University

4:50 PM
Finding Critical Nucleus Configuration and Activation Energy for Heterogeneous Nucleation at Grain Boundaries: *Ning Zhou*[1]; Yipeng Gao[1]; Yunzhi Wang[1]; [1]The Ohio State University

5:20 PM
Influence of Porosity on Grain Boundary Diffusion of Fe in Ultrafine-Grained 14YWT Steel Produced by Mechanical Alloying: *Reeti Singh*[1]; Sergiy Divinski[1]; Joachim Schneibel[2]; Gerhard Wilde[1]; [1]Institute of Material Physics, Westfälische Wihelms-University Münster, Germany; [2]Institute for Materials and Joining Technology, University of Magdeburg

Magnesium Technology 2011: High-Temperature Alloys; High-Strength Alloys; Precipitation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Tuesday PM
March 1, 2011
Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Alan Luo, General Motors; Alok Singh, National Institute for Materials Science

2:00 PM
Creep and Elemental Partitioning Behavior of Mg-Al-Ca-Sn Alloys with the Addition of Sr: *Jessica TerBush*[1]; Olivia Chen[1]; J.Wayne Jones[1]; Tresa Pollock[2]; [1]University of Michigan; [2]University of California

2:20 PM
Effect of Mn Addition on Creep Property in Mg-Al-Ca Systems: *Tomoyuki Homma*[1]; S. Nakawaki[1]; K. Oh-ishi[2]; Kazuhiro Hono[2]; Shigeharu Kamado[1]; [1]Nagaoka University of Technology; [2]National Institute for Materials Science

2:40 PM
The Effect of Precipitate State on the Creep Performance of Mg-Sn Alloys: Mark Gibson[1]; Xi-ya Fang[2]; Colleen Bettles[3]; *Christopher Hutchinson*[4]; [1]CSIRO Manufacturing and Infrastructure Technology; [2]Monash Centre for Electron Microscopy; [3]ARC Centre of Excellence for Design in Light Metals; [4]Monash University

3:00 PM
Microstructure and Mechanical Properties of Mg-Zn-Y-M (M: Mixed RE) Alloys with LPSO Phase: *Jonghyun Kim*[1]; Yoshihito Kawamura[2]; [1]Kumamoto Technology & Industrial Foundation; [2]Kumamoto University

3:20 PM
Analysis of Texture Evolution during High-Temperature Creep in Magnesium Alloys with Application of Neutron Diffraction: *Dimitry Sediako*[1]; Scott Shook[2]; Sven Vogel[3]; Anton Sediako[4]; [1]National Research Council Canada; [2]Applied Magnesium International; [3]Los Alamos Neutron Science Center; [4]McGill University

3:40 PM
Improved Processing of Mg-Zn-Y Alloys Containing Quasicrystal Phase for Isotropic High Strength and Ductility: *Alok Singh*[1]; Yoshiaki Osawa[1]; Hidetoshi Somekawa[1]; Toshiji Mukai[1]; [1]National Institute for Materials Science

4:00 PM Break

4:20 PM
Precipitation Hardenable Mg-Ca-Al Alloys: *J. Jayaraj*[1]; C.L. Mendis[1]; T. Ohkubo[1]; K. Oh-ishi[1]; K. Hono[1]; [1]National Institute for Materials Science

4:40 PM
Microstructure, Phase Evolution and Precipitation Strengthening of Mg-3.1Nd-0.45Zr-0.25Zn Alloy: Galit Atiya[1]; Menachem Bamberger[1]; *Alexander Katsman*[1]; [1]Technion - Israel Institute of Technology

5:00 PM
Precipitation Process in Mg-Nd-Zn-Zr-Gd/Y Alloy: *Jiehua Li*[1]; Gang Sha[2]; Peter Schumacher[1]; Simon Ringer[2]; [1]Chair of Casting Research, Department of Metallurgy, the University of Leoben; [2]Australian Centre for Microscopy and Microanalysis, The University of Sydney

5:20 PM
Mechanical Properties and Microstructures of Twin-Roll Cast Mg-2.4Zn-0.1Ag-0.1Ca-0.16Zr Alloy: *Chamini Mendis*[1]; Jun Ho Bae[2]; Nack Kim[2]; Kazuhiro Hono[1]; [1]National Institute for Materials Science; [2]Pohang University of Science and Technology

5:40 PM
The Solidification Microstructure and Precipitation Investigation of Magnesium-Rich Alloys Containing Zn and Ce: *Chuan Zhang*[1]; Alan A. Luo[2]; Y. Austin Chang[1]; [1]UW-Madison; [2]General Motors Research & Development Center

Magnetic Materials for Energy Applications: Soft Magnetic Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday PM
March 1, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory

2:00 PM Keynote
Soft Magnetic Materials Fabricated by Rapid Quenching Technique for Energy Applications: *Motoki Ohta*[1]; Yoshihito Yoshizawa[1]; [1]Hitachi Metals Ltd.

2:40 PM Invited
Recent Advances in Non-oriented Electrical Steel for EV/HEV Traction Motor: *Ichiro Tanaka*[1]; Hiroyoshi Yashiki[1]; [1]Sumitomo Metal Industries, Ltd.

3:05 PM Invited
The Requirements of Soft Magnetic Materials for Industrial Applications: *Francis Johnson*[1]; Satish Prabhakaran[1]; Ayman El-Refaie[1]; [1]GE Global Research

3:30 PM Invited
Soft Magnetic Materials for Improved Energy Performance: *Matthew Willard*[1]; Maria Daniil[1]; Keith Knipling[1]; Ramasis Goswami[1]; [1]Naval Research Laboratory

3:55 PM Break

4:25 PM Invited
FeCo and FeNi-based Nanocomposite Magnets for Energy Applications.: *Michael McHenry*[1]; [1]Carnegie Mellon University

4:50 PM Invited
Field-Annealed FeCo-Based Amorphous and Nanocrystalline Alloys with Improved Magnetic Softness: *Ivan Skorvanek*[1]; Jozef Marcin[1]; Peter Svec[2]; [1]Institute of Experimental Physics; [2]Institute of Physics

5:15 PM
Effect of Different Annealing Methods on Structure and Texture of Primary Recrystallization of Grain-oriented Silicon Steel: *Lijuan Li*[1]; Li-hua Liu[1]; Xue-liang Wu[1]; Wen Shi[1]; Qi-jie Zhai[1]; [1]Shanghai University

5:30 PM
Solute Effects on Magnetic Properties and Thermal Stability in Fe-Mo-B-P-Si Metallic Glasses: *Gary Shiflet*[1]; S. Bhattacharya[1]; S. Joseph Poon[1]; [1]University of Virginia

5:45 PM
Fabrication of High Performance Fe-Si-Al Soft Magnetic Composites: *Junhua You*[1]; [1]Shenyang University of Technology

Materials for the Nuclear Renaissance II: Zirconium and Fuel

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Raul Rebak, GE Global Research; Brian Cockeram, Bechtel-Bettis; Peter Chou, Electric Power Research Institute; Micah Hackett, TerraPower, LLC

Tuesday PM
March 1, 2011
Room: 4
Location: San Diego Conv. Ctr

Session Chair: Peter Chou, EPRI

2:00 PM Introductory Comments

2:05 PM
Determination of Zircaloy Liquidus and Solidus with an Instrumented Transvarestraint Test: *Micah Hackett*[1]; George Young[1]; [1]KAPL

2:25 PM
Development of Microstructure and Irradiation Hardening of Zircaloy during Low Dose Neutron Irradiation at Nominally 300C: *Brian Cockeram*[1]; Lance Snead[2]; Richard Smith[1]; [1]Bechtel-Bettis; [2]ORNL

2:45 PM
Fabrication and Irradiation of LWR Hydride Mini-Fuel Rods: *Kurt Terrani*[1]; Mehdi Balooch[1]; Donald Olander[1]; [1]University of California, Berkeley

3:05 PM
Vanadium and Zirconium Interaction with HT-9 Stainless Steel: *Randall Fielding*[1]; James Cole[1]; [1]Idaho National Laboratory

3:25 PM Break

3:35 PM
Fuel-Cladding Development for Sodium Fast Reactor Metallic Transmutation Fuels: *James Cole*[1]; Randall Fielding[1]; Jian Gan[1]; Haiyan Wang[2]; Todd Allen[3]; Kumar Sridharan[3]; [1]Idaho National Laboratory; [2]Texas A&M University; [3]University of Wisconsin

3:55 PM
Rapid Synthesis of Nuclear Nitride Fuels at Low Temperatures: *Brian Jaques*[1]; Daniel Osterberg[1]; Cole Smith[1]; Mike Hurley[1]; Darryl Butt[1]; [1]Boise State University

4:15 PM
Statistics of Grain Boundary Crystallography in Surrogates for Oxide Nuclear Fuels and its Effects on Mass Transport: Comparison between 2-D and 3-D Measurements and Models: *Karin Rudman*[1]; Kapil Krishnan[1]; Pedro Peralta[1]; Chris Stanek[2]; Kenneth J. McClellan[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

4:35 PM
The Development of Crystalline Ceramic Wasteforms for an Advanced Nuclear Fuel Cycle: *Kyle Brinkman*[1]; Amanda Billings[1]; Kevin Fox[1]; James Marra[1]; Ming Tang[2]; Kurt Sickafus[2]; [1]Savannah River National Laboratory (SRNL); [2]Los Alamos National Laboratory (LANL)

4:55 PM
Alloy Optimization for Metallic Inert Matrix Nuclear Fuels: *Vincenzo Lordi*[1]; James Belak[1]; Patrice Turchi[1]; [1]Lawrence Livermore National Lab

5:15 PM
Initial Microstructure Formation and Evolution in U-Pu-Zr Alloys: *Dawn Janney*[1]; Rory Kennedy[1]; [1]Idaho National Laboratory

5:35 PM
Modeling of Molten Salt Mixtures: Thermodynamic Assessment of CeBr3 and MBr-CeBr3 Systems (M=Li, Na, K, Rb): Yue Wu[1]; Weiping Gong[2]; Leszek Rycerz[3]; Ewa Ingier-Stocka[3]; Ida Chojnacka[3]; Jan Kapala[3]; Slobodan Gadzuric[4]; *Marcelle Gaune-Escard*[5]; [1]Central South University; [2]a)State Key Laboratory of Powder Metallurgy, Central South University and b) Huizhou University; [3]Wroclaw University of Technology; [4]University of Novi Sad; [5]Polytech

Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells: SOFC I - Interconnects

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, TMS: High Temperature Alloys Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Teruhisa Horita, AIST; Zi-Kui Liu, The Pennsylvania State University

Tuesday PM
March 1, 2011
Room: 33C
Location: San Diego Conv. Ctr

Session Chairs: Paul Jablonski, US Department of Energy; Jeffrey Fergus, Auburn University

2:00 PM Invited
On the State of the Art of Metal Interconnects for SOFC Application: *Paul Jablonski*[1]; [1]US Department of Energy

2:25 PM Invited
Development of a New Alloy for SOFC Interconnects: *Nobutaka Yasuda*[1]; Toshihiro Uehara[2]; Shigenori Tanaka[1]; Kazuhiro Yamamura[1]; [1]Hitachi metals, Ltd.; [2]Hitachi Metals, Ltd.

2:50 PM
Chromium Poisoning and Degradation of Cathodes for Solid Oxide Fuel Cells: *Teruhisa Horita*[1]; DoHyong Cho[1]; Taro Shimonosono[1]; Haruo Kishimoto[1]; Katsuhiko Yamaji[1]; Manuel Brito[1]; Harumi Yokokawa[2]; [1]AIST; [2]Tokyo City University

3:10 PM Break

3:25 PM Invited
Degradation of Manganese Cobalt Spinel SOFC Interconnect Coatings: *Jeffrey Fergus*[1]; Yingjia Liu[1]; Yu Zhao[1]; [1]Auburn University

3:50 PM Invited
Development of Protective Coating on Alloy Interconnect for SOFCs: *Yoshitaka Baba*[1]; Harukuni Kameda[1]; Yoshio Matsuzaki[1]; Satoshi Yamashita[1]; Nobutaka Yasuda[2]; Toshihiro Uehara[2]; Katsuhiko Yamaji[3]; Teruhisa Horita[3]; Harumi Yokokawa[3]; [1]Tokyo Gas Co., Ltd.; [2]Hitachi Metals, Ltd.; [3]National Institute of Advanced Industrial Science and Technology (AIST)

4:15 PM
Electrophoretic Deposition of (Mn,Co)3O4 Spinel for SOFC Interconnects Application: *Hui Zhang*[1]; Zhaolin Zhan[2]; Xingbo Liu[1]; [1]West Virginia University; [2]Kunming University of Science and Technology

4:35 PM
Electrodeposited Mn-Co Alloy Coating For SOFC Interconnects: *Heather McCrabb*[1]; Tim Hall[1]; Junwei Wu[2]; Hui Zhang[2]; Xingbo Liu[2]; EJ Taylor[1]; [1]Faraday Technology; [2]West Virginia University

4:55 PM
Electrodeposited Metal Ni Coating on Ferritic Stainless Steel for Intermediate Temperature SOFC Interconnect Application: *Shujiang Geng*[1]; Fuhui Wang[2]; [1]Northeastern University; [2]Institute of Metal Research, Chinese Academy of Sciences

Materials Processing Fundamentals: Smelting, Refining, and Liquid Processing

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

Tuesday PM
March 1, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chair: Prince Anyalebechi, Grand Valley State University

2:30 PM
Removal of Textile Dye using Electrocoagulation: *Jewel Gomes*[1]; Sadia Jame[1]; Daniel Chen[1]; Venkata Palla[1]; Paul Bernazzani[1]; David Cocke[1]; [1]Lamar University

2:45 PM
A Study On Ferromolybdenum Production By Metallothermic Reduction Process: *Güvenç Güven*[1]; Murat Alkan[1]; Bora Derin[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

3:00 PM
Development of a Surface Micro Texturing Process Based on the Ablation at Cathode Spots of Atmospheric Arc: *Rouzbeh Sarrafi*[1]; Mehdi Asgharifar[1]; Radovan Kovacevic[1]; [1]Research Center for Advanced Manufacturing, Southern Methodist University

3:15 PM
DRI Carburization in the Reduction and Transition Zones of a Shaft Furnace MIDREX Type: Ferry Benique[1]; *Jose D'Abreu*[1]; Hélio Kohler[2]; Mauricio Otaviano[3]; [1]Pontifical Catholic University; [2]Independent Consultant; [3]Samarco Mineração SA

3:30 PM
Low Grade Ore Leaching to Produce Cheap Dry Cell: *Alphonse Djorgbenoo*[1]; [1]Mining

3:45 PM
Preparation and Properties of CuInS2 Thin Films by Electrodeposition and Sulfurization: *Min Li*[1]; Huimin Lu[1]; Lisha Yang[1]; [1]Beihang University

4:00 PM Break

4:15 PM
Effect of Technological Conditions on Enrichment of Phosphor during Melting Adjustment Process of Converter Slag: Min Chen[1]; Hong-xu Cui[1]; *Zhen Tian*[1]; [1]Northeastern University

4:30 PM
Experimental Study on the Production of Nitrogen-bearing Stainless Steel by Injecting Nitrogen Gas: *Liyuan Sun*[1]; Jingshe Li[1]; Lifeng Zhang[2]; [1]University of Science and Technology Beijing; [2]Missouri University of Science and Technology

4:45 PM
A New Method of Synthesis of Rod-like Magnetite: Xiyun Yang[1]; *Xichang Shi*[1]; Hui Xu[1]; Xiaofeng Zhang[1]; Xiang Xiao[1]; Liwen Ma[1]; [1]Central South University

5:00 PM
Preparation of Fibrous CoO Particles by Thermal Decomposition of a New Precursor: Jing Zhan[1]; Difei Zhou[1]; Chuanfu Zhang[1]; *Jianfeng Yue*[1]; [1]Central South University

5:15 PM
Direct Observation of Al Drop and Gas Bubbles in the Anode–Cathode Space during Aluminum Electrolysis: *Jilai Xue*[1]; Yifang Zheng[1]; Zhu Jun[1]; Lin Li[1]; [1]Unversity of Science and Technology Beijing

5:30 PM
Extracting Al2O3 from Coal Gangue by Carbonthermal Reduction - Alkaline Leaching Process: *Jun Zhu*[1]; Jilai Xue[1]; Tao Li[1]; [1]Unversity of Science and Technology Beijing

5:45 PM
ESP Dust Recovery Process Test Works, Plant Trial, Commissioning, Operations and Metallurgical Performance: *Pengfu Tan*[1]; [1]Xstrata Copper

Microstructural Processes in Irradiated Materials: Phase Stability

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Tuesday PM
March 1, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Emmanuelle Marquis, University of Michigan; Philippe Pareige, Universite et INSA de Rouen

2:00 PM Invited
Characterization of Solute Atom Distribution in Grain Interior of Neutron-Irradiated 304L and 304 Stainless Steels: *Naoki Soneda*[1]; Kenji Nishida[1]; Akiyoshi Nomoto[1]; Kenji Dohi[1]; Peter Chou[2]; [1]Central Research Institute of Electric Power Industry; [2]Electric Power Research Institute

2:40 PM
Grain Boundary Chemistry in Irradiated Fe-Cr Alloys: Rong Hu[1]; *Emmanuelle Marquis*[2]; [1]University of Oxford; [2]University of Michigan

3:00 PM
Precipitation and Grain Boundary Segregation under Neutron Irradiation in Fe-12at%Cr Based Alloy: *Philippe Pareige*[1]; Viacheslav Kuksenko[1]; Brigitte Décamps[2]; Pierre Desgardin[3]; Cristelle Pareige[1]; [1]GPM - UMR 6634 CNRS, University and INSA of Roeun; [2]CSNSM, UMR CNRS 8609, Université Paris-Sud; [3]CEMHTI/CNRS site Cyclotron

3:20 PM
Characterization of Radiation-induced Precipitation in Ferritic-Martensitic Alloys by Different Particle Types: *Zhijie Jiao*[1]; Gary Was[1]; [1]University of Michigan

3:40 PM Break

4:00 PM
Effects of Helium on Cavity and Microstructural Evolution in Tempered Martensitic Steels and Nanostructured Ferritic Alloys – In Situ Helium Implantation Studies: *G. Robert Odette*[1]; Danny Edwards[2]; Yuan Wu[1]; Takuya Yamamoto[1]; Richard J. Kurtz[2]; [1]University of California, Santa Batrbara; [2]Pacific Northwest National Laboratory

4:05 PM
Ni-Si Clusters in Neutron-irradiated 304 Stainless Steel Studied by Three-dimensional Atom Probe: *Takeshi Toyama*[1]; Yoshitaka Matsukawa[1]; Yasuko Nozawa[1]; Masahiko Hatakeyama[1]; Yasuyoshi Nagai[1]; Wouter Van Renterghem[2]; Steven Van Dyck[2]; Abderrahim Al Mazouzi[3]; [1]Tohoku University; [2]SCK•CEN; [3]EDF R&D

4:25 PM
Microstructure Evolution in Irradiated Austenitic Stainless Steels: *Gary Was*[1]; Zhijie Jiao[1]; [1]University of Michigan

4:45 PM
Phase Stability of Solution Strengthened 316 Stainless Steel Under Fast Neutron Irradiation Using a Diffusion Couple Approach: *Luke Brewer*[1]; Khalid Hattar[2]; Joseph Puskar[2]; Steven Goods[2]; Mark Reece[2]; [1]Naval Postgraduate School; [2]Sandia National Laboratories

5:05 PM
Solute Rich Clusters Formation under Neutron Irradiation of Fe Dilute Alloys Representative of Model and RPV Steels by Atomic Kinetic Monte Carlo: *Christophe Domain*[1]; Raoul Ngayam Happy[1]; Charlotte Becquart[2]; [1]EDF R&D; [2]UMET, UMR8207

5:25 PM
The Role of Carbon in Copper Precipitation Process in Neutron Irradiated Fe-Cu Binary Alloys: *Milan Konstantinovic*[1]; [1]SCK.CEN

Neutron and X-Ray Studies of Advanced Materials IV: Dislocations, Strains and Stresses I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Tuesday PM
March 1, 2011
Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Klaus-Dieter Liss, The Bragg Institute; E-Wen Huang, National Central University of Taiwan

2:00 PM Keynote
Pursuing 3DXRD at the Sub-Micron Scale: *Henning Poulsen*[1]; Erik Lauridsen[1]; Wolfgang Ludwig[2]; Alexei Snigirev[2]; Ulrik Olsen[1]; Soeren Schmidt[1]; Haihua Liu[1]; Xiaoxu Huang[1]; Gavin Vaughan[2]; [1]Risoe DTU; [2]ESRF

2:25 PM Invited
3D Orientation Imaging Microscopy Based on Monochromatic Beam Synchrotron X-Ray Diffraction and Imaging Techniques: *Wolfgang Ludwig*[1]; Andrew King[2]; Peter Reischig[3]; Michael Herbig[1]; Henry Proudhon[4]; [1]Université de Lyon; [2]ESRF; [3]Karlsruhe Institute of Technology; [4]Mines Paristech

2:45 PM Invited
Measuring Complete Strain Tensors from Individual Dislocation Cells in Deformed Cu: *Lyle Levine*[1]; Peter Geantil[2]; Bennett Larson[3]; Jonathan Tischler[3]; Francesca Tavazza[1]; Michael Kassner[4]; Wenjun Liu[5]; [1]National Institute of Standards and Technology; [2]University of Southern California; [3]Oak Ridge National Laboratory; [4]Director of Research, Office of Naval Research; [5]Argonne National Laboratory

3:05 PM Invited
Synchrotron X-Ray Laue Microdiffraction for the Study of Materials Micromechanics: *Nobumichi Tamura*[1]; Martin Kunz[1]; Kai Chen[1]; [1]Lawrence Berkeley National Lab.

3:25 PM
A Study of Casting Residual Stress: *Thomas Watkins*[1]; Eric Johnson[2]; Camden Hubbard[1]; Joshua Schmidlin[1]; [1]ORNL; [2]Deere and Company

3:40 PM
Laue Microdiffraction Measure of Crystal Distortion and Dislocation Density Profile in a Plastically Deformed Multi-Crystal: *Gael Daveau*[1]; Benoit Devincre[2]; Thierry Hoc[3]; Odile Robach[4]; [1]LEM (CNRS-ONERA) / MSSMAT (ECP); [2]LEM (CNRS-ONERA); [3]LTDS (EC-Lyon); [4]CEA-Grenoble DSM/INAC/SP2M/NRS

3:50 PM
Pair Distribution Function of a High Entropy Alloy: A Neutron Scattering Study: *Wei Guo*[1]; Peter Liaw[1]; Takeshi Egami[1]; [1]university of tennessee, knoxville

4:00 PM Break

4:10 PM Invited
Cyclic-loading Effects on Lattice-Strain Asymmetry Behavior in Loading and Transverse Directions: *E-Wen Huang*[1]; Kyle Woods[2]; Bjorn Clausen[3]; Rozaliya Barabash[4]; Peter Liaw[2]; [1]National Central University; [2]Univ. of Tennessee; [3]Los Alamos Neutron Science Center; [4]Oak Ridge National Laboratory

4:30 PM
Twin Boundaries and Dislocation Densities in <111>, <100> and <211> Textured Ni Thin Films Determined by X-Ray Line Profile Analysis: *Gábor Csiszár*[1]; Karen Pantleon[2]; Hossein Alimadadi[2]; Tamás Ungár[1]; [1]Eötvös University Budapest; [2]Technical University of Denmark

4:45 PM Invited
Grain Resolved Strain Evaluation Using Hard X-Rays: Marcin Moscicki[1]; *Andras Borbely*[2]; Jonathan Wright[3]; Anke Pyzalla[4]; [1]Max-Planck Institut für Eisenforschung; [2]Ecole des Mines de Saint-Etienne; [3]ESRF; [4]Helmholtz Zentrum für Materialien und Energie Berlin

5:05 PM Invited
High Resolution Reciprocal Space Mapping of Individual Grains within Deformed Polycrystals: *Ulrich Lienert*[1]; Matthew Brandes[2]; Joel Bernier[3]; Peter Kenesei[1]; Michael Mills[2]; Matthew Miller[4]; [1]Argonne National Laboratory; [2]Ohio State University; [3]Lawrence Livermore National Laboratory; [4]Cornell University

5:25 PM
Evolution of Internal Strain with Temperature in Depleted Uranium in the Presence of Hydrides: *Michael Hemphill*[1]; Elena Garlea[2]; Jonathan Morrell[2]; Don Brown[3]; Thomas Sisneros[3]; Sven Vogel[3]; G Powell[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Y-12 National Security Complex; [3]Los Alamos National Laboratory

5:35 PM
Measuring Single Crystal Diffuse Neutron Scattering on the Wombat High Intensity Powder Diffractometer: *Ross Whitfield*[1]; Darren Goossens[1]; Andrew Studer[2]; Jennifer Forrester[3]; [1]Australian National University; [2]Australian Nuclear Science and Technology Organisation; [3]The University of Newcastle

5:45 PM
Validation of Predicted Residual Stresses within DC Cast Magnesium Alloy WE43 Slab: *Mark Turski*[1]; Anna Paradowska[2]; Shu Yan[2]; Dag Mortensen[3]; Hallvard Fjaer[3]; John Grandfield[4]; Tim Wilks[1]; Bruce Davis[5]; Richard DeLorme[5]; [1]Magnesium Elektron; [2]Rutherford Appleton Laboratory; [3]Institute for Energy Technology; [4]Grandfield Technology Pty Ltd, ; [5]Magnesium Elektron North America

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Thermo-Mechanical Behavior 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: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Tuesday PM
March 1, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Tae-Kyu Lee, Cisco Systems; Hongtao Ma, Cisco Systems, Inc.

2:00 PM Invited
Comparison of Extensive Thermal Cycling Effects on Microstructure Development in Micro-Alloyed Sn-Ag-Cu Solder Joints: *Iver Anderson*[1]; Adam Boesenberg[2]; Joel Harringa[1]; David Riegner[2]; Andrew Steinmetz[2]; David Hillman[3]; Tim Pearson[4]; [1]Ames Laboratory; [2]Iowa State University; [3]Rockwell-Collins ; [4]Rockwell-Collins

2:25 PM Invited
The Role of Elastic and Plastic Anisotropy on Microstructure Evolution and Strain History during Thermomechanical Cycling of Lead-Free Solder Joints: *Thomas Bieler*[1]; Bite Zhou[1]; Payam Darbandi[1]; Farhang Pourboghrat[1]; Guilin Wu[2]; Stefan Zaaefferer[2]; Tae-kyu Lee[3]; Kuo-Chuan Liu[3]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung; [3]Cisco Systems, Inc.

2:50 PM Invited
Studies of Impact Fracture Modes on Pb-Free Solder Joint Reliability: T. Kobayashi[1]; Andre Lee[1]; *K. Subramanian*[1]; [1]Michigan State University

3:15 PM Invited
Damage and Fracture in SnAgCu Solder Alloys: Dennis Chan[1]; *Ganesh Subbarayan*[1]; [1]Purdue University

3:40 PM Break

3:50 PM Invited
Dynamic Recrystallization in Pb-Free Solder Joints during Fatigue Tests: *Liang Yin*[1]; Luke Wentlent[2]; Linlin Yang[2]; Babak Arfaei[2]; Awni Oasaimeh[2]; Peter Borgesen[2]; [1]Universal Instruments Corp; [2]Binghamton University

4:15 PM
Creep of Bi-Containing Pb-Free Solders: *David Witkin*[1]; [1]The Aerospace Corporation

4:35 PM
Fracture Mechanics of Solder Joint under Mechanical Fatigue: Selection and Transition of Failure Location with Microstructure: *Woong Ho Bang*[1]; Emil Zin[1]; Huili Xu[1]; Choong-Un Kim[1]; Hong-Tao Ma[2]; Tae-Kyu Lee[2]; Kuo-Chuan Liu[2]; [1]University of Texas Arlington; [2]Cisco Systems, Inc.

4:55 PM
Impact of Isothermal Aging on Sn-Ag-Cu Solder Interconnect Board Level Mechanical Shock Performance: *Tae-Kyu Lee*[1]; Weidong Xie[1]; Kuo-Chuan Liu[1]; [1]Cisco Systems, Inc.

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X: Solder-Related Reliability Issues

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

Program Organizers: Chih-Ming Chen, National Chung Hsing University; Hans Flandorfer, University of Vienna; Sinn-Wen Chen, National Tsing Hua University; Jae-ho Lee, Hongik University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Clemens Schmetterer, TU Bergakademie Freiberg; Ikuo Ohnuma, Tohoku University; Chao-Hong Wang, National Chung Cheng University

Tuesday PM
March 1, 2011

Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Chih-Ming Chen, National Chung Hsing University; Ikuo Ohnuma, Tohoku University

2:00 PM Introductory Comments

2:05 PM Invited
Whisker Growth Behavior in a High Vacuum with Thermal Cycling: *Keun-Soo Kim*[1]; Jung-Lae Jo[1]; Ki-Ju Lee[1]; Alongheng Baated[1]; Katsuaki Suganuma[1]; Norio Nemoto[2]; Tsuyoshi Nakagawa[3]; Toshiyuki Yamada[3]; [1]Osaka University; [2]Japan Aerospace Exploration Agency; [3]Nippon Avionics Co., Ltd.

2:30 PM
Investigation of Tin Whisker Growth on Patterned Surface: *Chien Hao Su*[1]; Li-Wei Zoul[1]; Hao Chen[1]; Albert T. Wu[1]; [1]National Central University

2:45 PM
Oxidation Behaviors and Cosmetic Discolor of Pb-Free Solders: *Chi-Hang Tsai*[1]; Yun-Min Cheng[2]; Jenn-Ming Song[2]; Shih-Yun Chen[1]; [1]National Taiwan University of Science and Technology; [2]National Dong Hwa University

3:00 PM
The Change of Melting Temperature after Soldering at Sn-10wt.%Sb and Bi-2wt.%Sn Alloys: *Minoru Ueshima*[1]; [1]Senju Metal Industry

3:15 PM
Electroless-Plated Ni Layer as a Barrier Layer for a Cu Bump/Sn/Cu Bump Bonding Structure for the Applications of 3D Integration: *Byunghoon Lee*[1]; Jongseo Park[1]; Hoo-Jeong Lee[1]; [1]Sungkyunkwan University

3:30 PM Break

3:50 PM
Effects of Surface Finish Conditions and Loading Speeds on Shear Strengths of Sn-3.0Ag-0.5Cu BGA Solder Bump: *Jae-Myeong Kim*[1]; Myeong-Hyeok Jeong[1]; Sehoon Yoo[2]; Chang-Woo Lee[2]; Young-Bae Park[1]; [1]Andong National University; [2]Korea Institute of Industrial Technology

4:05 PM
Electromigration of SnZn and SnBi Solders: *Chih-Ming Chen*[1]; [1]National Chung Hsing University

4:20 PM
Study of EM-Induced Ni(P) Consumption of ENIG and ENEPIG Bond-Pads: C. T. Lu[1]; *Cheng Yi Liu*[1]; [1]National Central University

4:35 PM
Interfacial Reactions between High-Pb Solders and Ag Metallization: *Chi-pu Lin*[1]; Chih-ming Chen[1]; Yee-wen Yen[2]; [1]National Chung Hsing University; [2]National Taiwan University of Science and Technology

4:50 PM
Influence of Pd Concentration on the Interfacial Reaction and Mechanical Reliability of the Ni/Sn-xPd System: *Sheng-Wei Lin*[1]; Yen-Chen Lin[1]; Ling-Huang Hsu[1]; Cheng-En Ho[1]; [1]Yuan Ze University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Fundamental and Engineering Modeling of Shape Memory Alloys

Sponsored by: The Minerals, Metals and Materials Society

Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Tuesday PM
March 1, 2011

Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Dimitris Lagoudas, Texas A&M University; Richard James, University of Minnesota

2:00 PM Invited
Structural Anisotropy, Orientational Flexibility and Superelasticity of a Premartensitic State: *Armen Khachaturyan*[1]; Wei-Feng Rao[1]; [1]Rutgers University

2:20 PM Invited
Basic Properties of Shape Memory Materials from First-Principles Calculations: *Peter Entel*[1]; Mario Siewert[1]; Antje Dannenberg[1]; Markus Gruner[1]; [1]University of Duisburg-Essen

2:40 PM Invited
Modeling Martensitic Phase Transformations Using the Self-Consistent Lattice Dynamics Approach: *Ryan Elliott*[1]; Venkata Guthikonda[1]; [1]University of Minnesota

3:00 PM
A Generalized Ginzburg-Landau Model for Martensitic Transformations in Shape Memory Alloys: *Rajeev Ahluwalia*[1]; Srikanth Vedantam[2]; Turab Lookman[3]; Avadh Saxena[3]; [1]Institute of High Performance Computing; [2]Indian Institute of Technology; [3]Los Alamos National Lab

3:15 PM
Chemical Trends for Phase Transitions in Magnetic Shape Memory Alloys Derived from First Principles: *Tilmann Hickel*[1]; Ali Al-Zubi[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

3:30 PM Break

3:40 PM Invited
Mechanics of Shape-Memory Alloys: *Kaushik Bhattacharya*[1]; [1]California Institute of Technology

4:00 PM Invited
Multivariant Modeling and Experiments of Shape Memory Alloys: *L. Catherine Brinson*[1]; Aaron Stebner[1]; [1]Northwestern University

4:20 PM
Multivariant and Rate-Dependent Calculation of Martensitic Phase Transformation: *Seung Yong Yang*[1]; Tae-Hyun Nam[2]; [1]Korea University of Technology and Education; [2]Gyeongsang National University

4:35 PM
Simulating Load Biased Thermal Cycling of Polycrystalline NiTi: Sivom Manchiraju[1]; Darrell Gaydosh[2]; Ronald Noebe[2]; Shipeng Qiu[3]; Raj Vaidyanathan[3]; *Peter Anderson*[1]; [1]The Ohio State University; [2]N. A. S. A. Glenn Research Center; [3]University of Central Florida

4:50 PM
Modeling the Shape Memory Effect: Comparison and Validation of Two Constitutive Models: *Marco Fabrizio Urbano*[1]; [1]SAES Getters

5:05 PM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Orientation Imaging Techniques and Related Models

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Tuesday PM
March 1, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Brent Adams, Brigham Young University; Robert Wagoner, Ohio State University; David Field, Washington State University

2:00 PM Invited
A High Resolution EBSD Study of Deformation near Twins in Ti: *Benjamin Britton*[1]; Angus Wilkinson[1]; [1]University of Oxford

2:25 PM Invited
High-Resolution EBSD Characterization and Analysis of Defect Structure of In-Situ Deformations of Steel: *Brent Adams*[1]; Samikshya Subedi[1]; Sadegh Ahmadi[1]; David Fullwood[1]; Robert Wagoner[2]; [1]Brigham Young University; [2]The Ohio State University

2:50 PM
Meso-Scale Treatment of Dislocation-Grain Boundary Interactions 2: Single Crystal Constitutive Model without Tacit Grain Boundary Effects: *Hojun Lim*[1]; Robert Wagoner[1]; Myoung-Gyu Lee[2]; Brent Adams[3]; John Hirth[4]; [1]The Ohio State University; [2]Pohang University of Science and Technology; [3]Brigham Young University; [4]-

3:10 PM Invited
Meso-Scale Treatment of Dislocation-Grain Boundary Interactions 3: Prediction of Dislocation Densities, Lattice Curvatures, and the Hall-Petch Effect: *Robert Wagoner*[1]; Hojun Lim[1]; Ji Hoon Kim[2]; Myoung-Gyu Lee[3]; Brent Adams[4]; [1]The Ohio State University; [2]Korea Institute of Materials Science; [3]Pohang University of Science and Technology; [4]Brigham Young University

3:35 PM Break

3:50 PM Invited
Measuring Misorientations and Grain Sizes in Severely Deformed Metals through Orientation Mapping on a Transmission Electron Microscope: *Edgar Rauch*[1]; Muriel Veron[1]; [1]SIMAP Laboratory

4:15 PM Invited
Quantification of Dislocation Structure Heterogeneity in Deformed Polycrystals: *David Field*[1]; [1]Washington State University

4:40 PM
Determining Correlations between Crystallography and Mechanical Response in a 3D Polycrystalline Material: *Alexis Lewis*[1]; Siddiq Qidwai[2]; Andrew Geltmacher[1]; [1]Naval Research Laboratory; [2]SAIC

5:00 PM
Three-Dimensional Interface Curvature as a Function Crystallographic Grain Boundary Character: *David Rowenhorst*[1]; Alexis Lewis[1]; [1]Naval Research Lab

5:20 PM
On the Role of Grain Size Distribution on the Heterogeneity of Plastic Deformation: *Francis Wagner*[1]; Nathalie Allain-Bonasso[1]; Stephane Berbenni[1]; David Field[2]; [1]Universite de Metz; [2]Washington State University

5:40 PM
Microstructure Effects on Local Plasticity: Closing the Loop between Experiment and Simulation: *Michael Groeber*[1]; Paul Shade[2]; Michael Uchic[1]; [1]AFRL; [2]UTC/AFRL

6:00 PM
3D EBSD Characterization of Deformed Polycrystalline Micro-Scale Tensile Samples: *Paul Shade*[1]; Michael Groeber[2]; Michael Uchic[2]; Robert Wheeler[3]; Dennis Dimiduk[2]; [1]UTC / AFRL; [2]Air Force Research Laboratory; [3]UES / AFRL

Processing and Properties of Powder-Based Materials: Powder Fabrication and Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Tuesday PM
March 1, 2011
Room: 33A
Location: San Diego Conv. Ctr

Session Chair: Iver Anderson, Iowa State University

2:00 PM Introductory Comments

2:05 PM
Characterization of Copper Open Cellular Structures Fabricated by Electron Beam Melting: *Diana Ramirez*[1]; L Murr[1]; S Li[2]; E Martinez[1]; D Hernandez[1]; J Martinez[1]; F Medina[3]; P Frigola[4]; R Wicker[3]; [1]University of Texas at El Paso; [2]Institute of Metal Research, Chinese Academy of Sciences; [3]W.M. Keck Center for 3D Innovation; [4]Radiabeam Technologies

2:25 PM
Comparative Study of Production of Boron Carbide Powder by: Resistance Furnace and Arc Furnace: *Habibollah Amini Rastabi*[1]; Ayoub Karimi Dehcheshmeh[1]; [1]Islamic Azad University

2:45 PM
Prediction and Control of Nucleation Kinetics of Mono-Sized Spherical Copper Droplets: *Mehmet Islier*[1]; Teiichi Ando[1]; [1]Northeastern University

3:05 PM
Characterization and Properties of Titanium Alloy Powder Produced by Close-Coupled Gas Atomization and of Resulting Consolidated Samples: *Andrew Heidloff*[1]; Joel Rieken[1]; Iver Anderson[2]; David Byrd[2]; [1]Iowa State University; [2]Ames Laboratory

3:25 PM
Microstructural Investigation of D2 Tool Steel during Rapid Solidification Using Impulse Atomization: *Pooya Delshad Khatibi*[1]; Arash Ilbagi[1]; Hani Henein[1]; [1]University of Alberta

3:45 PM Break

3:55 PM
Mechanism of Thermal Decomposition of Zinc Hydroxide Carbonate and Preparation of Complexional Ultra-Fine Zinc Oxide: *Z. F. Tong*[1]; L. X. Lian[1]; Y. L. Li[1]; [1]Jiangxi University of Science and Technology

4:15 PM
Synthesis of Silver Plating Nano-Copper Bimetallic Powders: *Wei Liu*[1]; Qionghua Zhou[1]; [1]Henan University of Science and Technology

4:35 PM
Effect of Pore Size on High Temperature Oxidation Behavior of Ni-Fe-Cr-Al Porous Metal: *Kee-Ahn Lee*[1]; Sung-Hwan Choi[1]; Song-Yi Kim[1]; Jung-Yeul Yun[2]; Hye-Moon Lee[2]; Byung-Kee Kim[3]; [1]Andong National University; [2]Korea Instituteof Machinery and Materials; [3]University of Ulsan

4:55 PM
WC Alloys Technology: *Alex li*[1]; [1]Glorytek industry(Beijing)Co.,Ltd

Properties, Processing, and Performance of Steels and Ni-Based Alloys for Advanced Steam Conditions: Alloy Design, Selection, Qualification, and Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee
Program Organizers: Peter Tortorelli, Oak Ridge National Laboratory; Bruce Pint, Oak Ridge National Laboratory; Paul Jablonski, National Energy Technology Laboratory; Xingbo Liu, West Virginia University

Tuesday PM
March 1, 2011
Room: 33B
Location: San Diego Conv. Ctr

Session Chair: Bruce Pint, Oak Ridge National Laboratory

2:00 PM Invited
U. S. Program on Advancing the Materials Technology for Advanced Ultrasupercritical Steam Boilers and Turbines: *John Shingledecker*[1]; R. Viswanathan[1]; R. Purgert[2]; P. Rawls[3]; [1]Electric Power Research Institute; [2]Energy Industries of Ohio; [3]National Energy Technology Laboratory

2:30 PM Invited
Ultra-Super-Critical (USC) Power Plant Development and High Temperature Materials Research and Application in China: *Fusheng Lin*[1]; Xishan Xie[2]; [1]Shanghai Power Equipment Research Institute; [2]University of Science and Technology Beijing

3:00 PM Invited
Alloy Design for Improved High-Temperature Performance: *Philip Maziasz*[1]; [1]Oak Ridge National Laboratory

3:30 PM Invited
The Metallurgy and Engineering of USC and A-USC Steam Turbines: *Jeffrey Hawk*[1]; [1]U.S. Department of Energy

4:00 PM Break

4:10 PM
Ni-Base Alloys for Use as Components in Advanced-USC Steam Turbines: *Jeffrey Hawk*[1]; Paul Jablonski[1]; Christopher Cowen[1]; [1]U.S. Department of Energy

4:30 PM
Castability of Traditionally Wrought Ni-Based Superalloys for USC Steam Turbines: *Paul Jablonski*[1]; Christopher Cowen[1]; Jeffrey Hawk[1]; Neal Evans[2]; Philip Maziasz[2]; [1]US Department of Energy; [2]ORNL

4:50 PM
Castability of HAYNES 282 Alloy: *Henry White*[1]; Zenon Pirowski[2]; Robert Purgert[3]; [1]Haynes International; [2]Foundry Research Institute; [3]Energy Industries of Ohio

5:10 PM
Simplified Production of Ni-Based Oxide Dispersion Strengthened (ODS) Alloys via Gas Atomized Precursor Powder Approach: *John Meyer*[1]; Iver Anderson[2]; Joel Rieken[1]; David Byrd[2]; [1]Iowa State University; [2]Ames Laboratory - US DOE

Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites: Processing, Microstructure and Mechanical Properties II

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Arkansas State University; Golam Newaz, Wayne State University

Tuesday PM
March 1, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Martin Pech-Canul, CINVESTAV SALTILLO

2:00 PM
Deformation and Cavitation in Non-Contact Creep Studies for a Nb-Based Superalloy: *Robert Hyers*[1]; Xiao Ye[1]; Jan Rogers[2]; Laurent Cretegny[3]; [1]University of Massachusetts; [2]NASA/MSFC; [3]GE Global Research

2:20 PM
Effect of MgAl2O4 on the Superficial Hardness of Hybrid-Multimodal Al/SiC Composites Processed by Reactive Infiltration: *Miguel Montoya-Davila*[1]; Martin Pech-Canul[2]; Maximo Pech-Canul[2]; Rodrigo Escalera-Lozano[3]; [1]Universidad Autónoma de Zacatecas; [2]Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional; [3]Universidad del Istmo

2:40 PM
Corrosion and Wear Behaviour of Aluminum Alloy 6061-Fly Ash Composites: *Ajit Bhandakkar*[1]; B. Balaji[1]; R. C. Prasad[1]; Shankar Sastry[1]; [1]Indian Institute of Technology

3:00 PM
Interface Evolution in Tungsten Wire Reinforced Stainless Steel Composites: *Pawan Kumar*[1]; Milo Kral[1]; [1]University of Canterbury

3:20 PM Break

3:40 PM
Effects of Annealing on the Growth Behavior of Intermetallic Compounds on the Interface of Copper/Aluminum Clad Metal Sheets: *Li Xiaobing*[1]; Zu Guoyin[1]; Deng Qiang[2]; [1]Northeastern University; [2]Pangang Group Company LTD

4:00 PM
Contribution of Different Strengthening Mechanisms in Particulate-Metal Matrix Nanocomposites: Z. Razavi Hesabi[1]; J. Gracio[2]; S. Ahzi[3]; *Hamid Garmestani*[3]; [1]Georgia Institute of Technology - and - University of Aveiro; [2]University of Aveiro; [3]Georgia Institute of Technology

4:20 PM
Manufacturing of an Aluminum Composite Structure Using a New Method and Its Comparison with Two Different Conventional Methods: *Atefeh Nabavi*[1]; J. Vahdati Khaki[1]; [1]Ferdowsi University of Mashhad

4:40 PM
Joining of Advanced Aluminum-Graphite Composite: *Wayne Hung*[1]; Manasa Velamati[1]; Mauricio Garza[2]; Edgar Aguilar[2]; Mike Powers[3]; [1]Texas A&M University; [2]COMIMSA; [3]Agilent Technologies

Refractory Metals 2011: Refractory Metal-Based Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Jim Ciulik, University of Texas, Austin

Tuesday PM
March 1, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: Omer Dogan, National Energy Technology Laboratory; Evan Ohriner, Oak Ridge National Laboratory

2:00 PM Invited
Potential Next Generation Airfoil Alloys for Advanced Land-Base Gas Turbines: *Jeffrey Hawk*[1]; [1]U. S. Department of Energy

2:20 PM
Strengthening in High Entropy Alloys: *Garth Wilks*[1]; Oleg Senkov[1]; Daniel Miracle[1]; [1]Air Force Research Laboratory

2:40 PM Invited
Processing Methods for Iridium and Iridium Alloys: *Evan Ohriner*[1]; [1]Oak Ridge National Laboratory

3:00 PM
Surface Processing of an Iridium Alloy for Control of Emissivity: *Evan Ohriner*[1]; G. B. Ulrich[1]; R. G. Miller[1]; W. Zhang[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM
Improving Chromium Ductility: *Hailey Murdock*[1]; Jamie Kruzic[2]; Omer Dogan[1]; [1]National Energy Technology Laboratory; [2]Oregon State University

4:00 PM
High-Temperature Oxidation Behaviour of Co-Re-Cr-Based Alloys: *Bronislava Gorr*[1]; Steffen Burk[1]; Hans-Jürgen Christ[1]; [1]University Siegen

4:20 PM
Computational Study of Microstructure-Property Relationships in High Temperature Materials for Fossil Energy Applications: An Integrated Phase Field and Numerical Viscoplasticity Approach: *Kaisheng Wu*[1]; Omer Dogan[1]; [1]National Energy Technology Laboratory

4:40 PM
Characterization of Osmium-Ruthenium Thin Films for Cathode Coatings: *Phillip Swartzentruber*[1]; T. John Balk[1]; Scott Roberts[2]; [1]University of Kentucky; [2]Semicon Associates

Shape Casting IV: Light Metals Division Symposium in Honor of Prof. John T. Berry: Solidification

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Paul Crepeau, General Motors Corporation; John Campbell, University of Birmingham

Tuesday PM
March 1, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: William Griffiths, Univ of Birmingham; Peter Schumacher, Univ of Leoben

2:00 PM Introductory Comments

2:10 PM
Review of Defect Behavior in Ni-Based Superalloys: *John Campbell*[1]; [1]University of Birmingham

2:35 PM
Premium Quality Super Duplex Stainless Steel Castings without Secondary Refining: *Bob Puhakka*[1]; [1]Alloy Casting Industries

3:00 PM
Direct X-Ray Observation of High Temperature Deformation in Aluminum Alloy Composites: *Richard Hamilton*[1]; Andre Phillion[2]; Alex Leung[1]; Thomas Connolley[3]; Peter Lee[1]; [1]Imperial College London; [2]University of British Columbia; [3]Diamond Light Source

3:25 PM
In-Mold Thermal Analysis of Ductile Cast Iron: *Morten Onsoien*[1]; [1]SINTEF

3:50 PM Break

4:10 PM
Modeling of Hot Tearing and Its Validations in Metal Castings: *Jianzheng Guo*[1]; J. Z. Zhu[1]; Sam Scott[2]; [1]ESI US R&D, Inc.; [2]ESI NA

4:35 PM
Effect of Alloying Elements (Magnesium and Copper) On Hot Cracking Susceptibility of AlSi7MgCu-Alloys: Salar Bozorgi[1]; *Katharina Haberl*[1]; Christian Kneissl[2]; Thomas Pabel[2]; Peter Schumacher[1]; [1]University of Leoben; [2]Austrian Foundry Research Institute

5:00 PM
Hydrogen and Cooling Rate Effects on Microporosity Formation in the Production of Defect-Controlled Fatigue Specimens: *Rosario Squatrito*[1]; Ivan Todaro[1]; Lorella Ceschini[1]; Luca Tomesani[1]; [1]University of Bologna

5:25 PM
Effects of Gravity on the Columnar to Equiaxed Transition in Directional Solidification: *Wajira Mirihanage*[1]; David Browne[1]; [1]University College Dublin

Size Effects in Mechanical Behavior: Capturing the Size Effect through Modeling and Simulation

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Tuesday PM
March 1, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Thomas Buchheit, Sandia National Laboratories; Srinivasan Srivilliputhur, University of North Texas

2:00 PM
Gradient Theory and Size Effects: *Elias Aifantis*[1]; [1]Aristotle University of Thessaloniki

2:20 PM
Deformation of Polycrystalline Magnesium Thin Film Size Effects: *Mark Horstemeyer*[1]; Amitava Moitra[1]; Kiran Solanki[1]; [1]Mississippi State University

2:40 PM
Controlling the Strength of Nanocrystalline Metals and Alloys: On the Importance of the Grain Boundary Relaxation State: Jonathan Schäfer[1]; Alexander Stukowski[1]; *Karsten Albe*[1]; [1]TU Darmstadt

3:00 PM
A Continuum Theory of Dislocation Dynamics - Microstructure Evolution, Size Effects and Comparison With DDD: *Stefan Sandfeld*[1]; Thomas Hochrainer[2]; Michael Zaiser[3]; Peter Gumbsch[1]; [1]Karlsruhe Institute of Technology; [2]Florida State University; [3]The University of Edinburgh

3:20 PM
Effect of Precipitate Morphology on Chemical Mixing during Severe Plastic Deformation: *Nhon Vo*[1]; Robert Averback[1]; Pascal Bellon[1]; Yinon Ashkenazy[1]; [1]University of Illinois Urbana Champaign

3:40 PM Break

4:00 PM Invited
Deformation of Nanoscale Single Crystal Gold by Atomistic Simulation: Shivraj Karewar[1]; Niraj Gupta[1]; Alex Stukowski[2]; Michael Baskes[3]; *Srinivasan Srivilliputhur*[1]; [1]University of North Texas; [2]Technical University of Darmstadt; [3]Los Alamos National Laboratory

4:30 PM
Two-Dimensional Discrete Dislocation Plasticity Incorporating Anisotropic Elasticity: Siamak Shishvan[1]; *Erik Van der Giessen*[2]; [1]University of Tabriz; [2]University of Groningen

4:50 PM
Frank Read Sources in the Continuum Theory of Dislocations: Thomas Hochrainer[1]; *Stefan Sandfeld*[2]; Jochen Senger[2]; Peter Gumbsch[2]; [1]The Florida State University; [2]Karlsruher Institut fuer Technologie

5:10 PM
A Discrete Dislocation Analysis of Size Effects on Void Growth in Single Crystals: *Shyam Keralavarma*[1]; Javier Segurado[2]; Javier LLorca[2]; Ahmed Benzerga[1]; [1]Texas A&M University; [2]Polytechnic University of Madrid

5:30 PM Invited
Dislocation Core Spreading in Gum Metals: *Daryl Chrzan*[1]; Matthew Sherburne[1]; Yuranan Hanlumyuang[1]; Tianshu Li[2]; John Morris[1]; [1]University of California Berkeley; [2]University of California Davis

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Magnetic Heterostructures II - and - Energy and Catalysis Technologies I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Tuesday PM
March 1, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama

2:00 PM Invited
Green Magnetic Energy: Mn(Bi,Al) Nanomagnets: *Yang-Ki Hong*[1]; [1]University of Alabama

2:30 PM
HR-STEM Imaging and EELS Characterizing of Nano-Scale Defects in Sputter Deposited Thin Films of Double-Perovskite Sr2FeMoO6 (SFMO): *Robert Williams*[1]; Jeremy Lucy[1]; Rebecca Riccardo[1]; Patrick Woodward[1]; Fengyuan Yang[1]; Hamish Fraser[1]; Adam Hauser[1]; Manisha Dixit[1]; [1]The Ohio State University

2:45 PM Break

2:55 PM Introductory Comments for Energy and Catalysis Technologies

3:00 PM Invited
High Efficiency Photolytic Nanostructures for Hydrogen Production: *Kaan Kalkan*[1]; [1]Oklahoma State University

3:30 PM Invited
Visible Light Photoreduction of CO2 Using Heterostructures of Nanocrystalline TiO2 and Semiconductor Quantum Dots: *Christopher Matranga*[1]; Congjun Wang[1]; Robert Thompson[1]; John Baltrus[1]; [1]US DOE - NETL

4:00 PM Invited
Controlling Defect Density in Polymer-Fullerene Bulk Heterojunction Solar Cells by Optimizing Growth Conditions: Kanwar Nalwa[1]; Rakesh Mahadevapuram[1]; Yuqing Chen[1]; Santosh Pandey[1]; *Sumit Chaudhary*[1]; [1]Iowa State University

4:30 PM
Photovoltaics Using Doped and Undoped Amorphous Silicon Heterojunctions with Conjugated Polymers: Rakesh Mahadevapuram[1]; Kanwar Nalwa[1]; Vikram Dalal[1]; *Sumit Chaudhary*[1]; [1]Iowa State University

4:45 PM Invited
Characterization and Modeling of 3D Photovoltaics: *Jonathan Guyer*[1]; Daniel Josell[1]; [1]NIST

5:15 PM Invited
Engineering Carbon Nanomaterials for Energy Application: *Wonbong Choi*[1]; [1]Florida International University

Thermally Activated Processes in Plastic Deformation: Deformation Mechanisms and Polycrystal Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizer: Christopher Woodward, Air Force Research Laboratory

Tuesday PM
March 1, 2011

Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Dennis Dimiduk, Air Force Research Laboratory; Yoon-Suk Choi, UES Inc

2:00 PM Invited
High Energy X-Ray Diffraction Methods for Dynamic Characterization of Non-Linear Material Behaviors: *Matthew Miller*[1]; [1]Cornell University

2:30 PM Invited
Physics Based Single Crystal Deformation Material Modeling for Aerospace Applications: *Alexander Staroselsky*[1]; Brice Cassenti[2]; [1]Pratt & Whitney; [2]University of Connecticut

3:00 PM Invited
Modeling the Orientation Dependence and Nonlinearity in the Creep of Single Crystal Superalloys Using a Semi-Mechanistic Approach: *Y. Sun*[1]; [1]Rolls Royce

3:30 PM
Local Strain Accommodation in Polycrystalline Ni-Base Superalloys: *Jennifer Walley*[1]; Robert Wheeler[2]; Michael Uchic[3]; Michael Mills[1]; [1]The Ohio State University; [2]UES; [3]Air Force Research Laboratory

3:50 PM
Comparison of Deformation Mechanisms for Constant Strain Rate and Creep Testing of a Ni-Based Superalloy: *Hallee Deutchman*[1]; Patrick Phillips[1]; Michael Mills[1]; [1]The Ohio State University

4:10 PM Break

4:25 PM Invited
Challenges in the Micromechanical Modelling of Hot Deformation: *David Dye*[1]; Nicholas Jones[1]; [1]Imperial College

4:55 PM
Thermal Aging of IN718Plus Superalloy and Relaxation of Laser Shock Peened Residual Stresses: *Vibhor Chaswal*[1]; S. Mannava[1]; Dong Qian[1]; Vijay Vasudevan[1]; Kristina Langer[2]; [1]University of Cincinnati; [2]Air Force Research Laboratory

5:15 PM
Localized Deformation during Macroscopically Uniform Plastic Flow of a Dynamically Strain Aging Alloy: *R. Storer*[1]; M. Lebyodkin[2]; P. Kurath[1]; A. Beaudoin[1]; C. Fressengeas[2]; [1]University of Illinois at Urbana Champaign; [2]Universite Paul Verlain-Metz/CNRS

5:35 PM
Comparative Hot-Work Constitutive Analyses of Carbon/HSLA and Stainless Steels with Linkage to Microstructural Evolution: *Hugh McQueen*[1]; Yong Li[1]; I. Rieiro[2]; M. Carsí[3]; O. Ruano[3]; [1]Concordia University; [2]Universidad de Castilla-La Mancha; [3]Centro Nacional de Investigaciones Metalúrgicas

5:55 PM
A Crystalline Law for Thermally Activated Plastic Deformation: *Ghiath Monnet*[1]; [1]EDF

NOTES

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Ultra-Fine Grained Materials II

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

Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Wednesday AM
March 2, 2011

Room: 8
Location: San Diego Conv. Ctr

Session Chair: Suveen Mathaudhu, U.S. Army Research Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
SPD-Processed Nanostructured Metals for Innovative Applications: *Ruslan Valiev*[1]; Georgy Raab[1]; Maxim Murashkin[1]; Nail Zaripov[1]; [1]Ufa State Aviation Technical University

9:05 AM Invited
Understanding the Role of Interfaces in the Deformation of Lamellar Nanocomposites Fabricated via Severe Plastic Deformation Techniques: *Irene Beyerlein*[1]; Jian Wang[1]; Ruifeng Zhang[1]; Nhon Vo[2]; Pascal Bellon[2]; Robert Averback[2]; Anthony Rollett[3]; Nathan Mara[1]; [1]Los Alamos National Laboratory; [2]University of Illinois; [3]Carnegie Mellon University

9:35 AM
On the Hall-Petch Contribution in a Bulk Nanostructured Al-4Cu Alloy: Shanmugasundaram Thangaraju[1]; *Martin Heilmaier*[1]; Subramanya Sarma[2]; B.S. Murty[2]; [1]Technical University Darmstadt; [2]Indian Institute of Technology Madras

9:50 AM
Direct Production of Sheet from Alloys of Limited Workability Using Machining-Based Processes: *Wilfredo Moscoso*[1]; Mert Efe[1]; Dale Compton[1]; Kevin Trumble[1]; Srinivasan Chandrasekar[1]; [1]Purdue University

10:05 AM Break

10:20 AM Invited
Ductility and Strategies for Improving Ductility of Bulk Nanostructured Materials: Yonghao Zhao[1]; *Enrique Lavernia*[1]; [1]University of California, Davis

10:50 AM
Grain Boundary Segregation of Carbon and Formation of Nanocrystalline Iron-Carbon Alloys by Ball Milling: *Reiner Kirchheim*[1]; Yuzeng Chen[1]; Andreas Herz[1]; [1]University of Goettingen

11:05 AM
Investigation of Mechanical Properties of Silica/Epoxy Nano-Composites by Molecular Dynamics and Finite Element Modeling: *Bohayra Mortazavi*[1]; Julien Bardon[1]; Said Ahzi[2]; David Ruch[1]; [1]Centre de Recherche Public Henri Tudor,; [2]University of Strasbourg

11:20 AM
Mechanical Properties and Microstructure Evolutions of Ultrafine-Grained Al during Recovery via Annealing: *Yonghao Zhao*[1]; Tory Topping[1]; John Bingert[2]; Y. Li[1]; Peiling Sun[3]; Xiaozhou Liao[4]; Yuntian Zhu[5]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Los Alamos National Laboratory; [3]Feng Chia University; [4]The University of Sydney; [5]North Carolina State University Raleigh

11:35 AM
Microstructural Evolution of 316L Stainless Steel during ECAP Process: *Suk Hoon Kang*[1]; Hyung-Ha Jin[1]; Jinsung Jang[1]; Do Hyun Kim[2]; Kyu Hwan Oh[2]; Xinghang Zhang[3]; David Foley[3]; Karl Hartwig[3]; [1]Korea Atomic Energy Research Institute; [2]Seoul National University; [3]Texas A&M University

11:50 AM
Microstructure Characterization of Grain Boundaries in Al 5083/B4C Ultrafine Grained Composites: *Ying Li*[1]; Zhihui Zhang[1]; Rustin Vogt[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis

12:05 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Treatment of Metals and Pellets

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Energy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Jerome Downey, Montana Tech; Jaroslaw Drelich, Michigan Technological University; Tao Jiang, Central South University; Mark Cooksey, CSIRO

Wednesday AM
March 2, 2011

Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Jeffrey Schoonover, GE Global Research; Stephen Kampe, Michigan Technological University

8:30 AM
The Production of LaB_6 by "Hot-Powder" CVD and Subsequent Milling: *Duygu Agaogullari*[1]; Özge Balci[1]; Ismail Duman[1]; [1]Istanbul Technical University

8:50 AM
Fundamentals of Spark-Plasma Sintering: Net-Shaping and Size Effects: *Eugene Olevsky*[1]; Evan Khaleghi[1]; Cristina Garcia[1]; William Bradbury[1]; Randall German[1]; Cnris Haines[2]; Darold Martin[2]; Deepak Kapoor[2]; [1]San Diego State University; [2]US Army ARDEC

9:10 AM
Microwave Brazing of Gas Turbine Components: *Jeffrey Schoonover*[1]; Laurent Cretegny[1]; [1]GE Global Research

9:30 AM
Spark Plasma Sintering of Tantalum Carbide: *Evan Khaleghi*[1]; [1]San Diego State University

9:50 AM
Heats of Reaction in the Formation of TiB_2 Reinforced Titanium Aluminide Composites: *Andrew Baker*[1]; Stephen Kampe[1]; Tony Zahrah[2]; [1]Michigan Tech; [2]Matsys Inc.

10:10 AM
A Path Planning Study of Multi-pass Heat Treatment using High Power Direct Diode Laser: *Soundarapandian Santhanakrishnan*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

10:30 AM
Hot Workability of 1.2690 Ledeburitic Tool Steel and Development Of Microstructure: *Milan Tercelj*[1]; Goran Kugler[1]; [1]University of Ljubljana, NTF-OMM

10:50 AM
Effect of TiO2 on the Conduction Heat Transfer of Mold Flux: Xuemei Qing[1]; *Bing Xie*[1]; Jiang Diao[1]; [1]Chongqing University

11:10 AM
Flow Stress and Microstructural Evolution during Single and Double Hit Isothermal Forging of Waspaloy: *Ahmad Chamanfar*[1]; Mohammad Jahazi[1]; Javad Gholipour[2]; Priti Wanjara[2]; Stephen Yue[3]; [1]AMTC-IAR-NRC and McGill University; [2]AMTC-IAR-NRC; [3]McGill University

11:30 AM
Effects of Binders on Oxidized Pellets Preparation from Vanadium/ Titanium-Bearing Magnetite: Guihong Han[1]; Yuanbo Zhang[1]; Yanfang Huang[1]; Zengqing Sun[1]; Guanghui Li[1]; *Tao Jiang*[1]; [1]School of Minerals Processing & Bioengineering, Central South University

11:50 AM
Constituents and Porosity of Lead Concentrate Pellets Produced in the Trepce Plant: *Ahmet Haxhiaj*[1]; Jaroslaw Drelich[2]; [1]University of Pristina; [2]Michigan Technological University

12:10 PM
Experimental Research on Increasing Hematite Concentrate Proportion in Oxide Pellet: *Xiaohui Fan*[1]; Lishun Yuan[1]; Yi Wang[1]; Luben Xie[1]; [1]Central South University

12:30 PM
Oxidized Pellet Preparation from Refractory Specularite Concentrates Using Modified Humic Acid (MHA) Binders: Guohua Bai[1]; Daoyuan Zhang[1]; *Yuanbo Zhang*[1]; Guihong Han[1]; Zijian Su[1]; Guanghui Li[1]; [1]School of Minerals Processing & Bioengineering, Central South University

Advances in Mechanics of One-Dimensional Micro/ Nano Materials: Nanomechanics: Pillars and Wires

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Seung Min Han, Korea Advanced Institute of Science and Technology; Katerina Aifantis, Aristotle University

Wednesday AM
March 2, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Reza Shahbazian Yassar, Michigan Technological University; Katerina Aifantis, Aristotle University

8:30 AM Invited
Deformation and Failure of Phosphide- and Boride-Based Nanofilaments: Melisa Steighner[1]; Humberto Gutierrez[1]; *Christopher Muhlstein*[1]; [1]The Pennsylvania State University

8:55 AM Invited
The Brittleness Transition in 1-D Pillars: *William W. Gerberich*[1]; A. Beaber[1]; [1]University of Minnesota

9:20 AM Invited
Deformations in Nano-Sized Pillars of Metallic Glasses: *Jeff De Hosson*[1]; Alexey Kuzmin[1]; ChangQiang Chen[1]; YuTao Pei[1]; [1]Univ of Groningen

9:45 AM
Elastic and Plastic Deformation of Nano- and Micro- Pillars: *Katerina Aifantis*[1]; [1]Aristotle University

10:00 AM Invited
Dislocation Sources in Micro-Pillars: *Wei Cai*[1]; [1]Stanford University

10:25 AM
Numerical Study of Fracture of Si-NWs Subjected to Lithiation/ Delithiation: *Ill Ryu*[1]; William Nix[1]; [1]Stanford University

10:40 AM Break

11:05 AM Invited
Deformation Mechanisms In Single Crystalline fcc Nanowhiskers: *Daniel Gianola*[1]; Andreas Sedlmayr[2]; Lisa Chen[1]; Gunther Richter[3]; Reiner Mönig[2]; Oliver Kraft[2]; [1]University of Pennsylvania; [2]Karlsruhe Institute of Technology; [3]Max Planck Institute for Metals Research

11:30 AM
Mechanics of Nanotubes/Nanowires: In Situ Microscopy: *Reza Shahbazian-Yassar*[1]; Kasra Momeni[1]; Hessam Ghassemi[1]; Anjana Asthana[1]; Yoke Yap[1]; [1]Michigan Technological University

11:45 AM Invited
Structure-Elastic Property Relations in One-Dimensional Nanostructures: *Gheorghe Stan*[1]; Robert Cook[1]; [1]NIST

12:10 PM
A Study of the Mechanical Properties of Nanowires Using Nanoindentation: *Gang Feng*[1]; Davood Askari[2]; [1]Villanova University; [2]University of Texas at Brownsville and Texas Southmost College

12:25 PM
Mechanical Behavior of the Ag Nanowires for Transparent Electrode Application: *Chansun Park*[1]; Hui Wu[2]; Yi Cui[2]; Seung Min Han[1]; [1]KAIST; [2]Stanford University

Alumina and Bauxite: Precipitation, Calcination and Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Wednesday AM
March 2, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM
Effect of Technological Parameters on PSD of Aluminum Tri-Hydroxide from Seed Precipitation in Seeded Sodium Aluminate Solution: Yusheng Wu[1]; Li Mingchun[1]; Qu Yanping[1]; [1]Shenyang University of Technoloy

9:00 AM
Methods to Reduce Operating Costs in Circulating Fluidized Bed Calcination: *Cornelis Klett*[1]; Michael Missalla[1]; Bernd Reeb[1]; Hans Schmidt[1]; [1]Outotec GmbH

9:25 AM
Pressure Calcination Revisited: *Fred Williams*[1]; C Misra[2]; [1]CMIS Corp; [2]AluminaTech

9:50 AM
Dynamic Simulation of Gas Suspension Calciner (GSC) for Alumina: *Benny Raahauge*[1]; Susanne Wind[1]; Mengzhe Wu[1]; Torsten Jensen[1]; [1]FLSmidth

10:15 AM Break

10:25 AM
Physical Simulation and Numerical Simulation of Mixing Performance in the Seed Precipitation Tank with a Improved Intermig Impeller: *Zhang Ting-an*[1]; Liu Yan[1]; Wang Shuchan[1]; Zhao Hongliang[1]; Zhang Chao[1]; Zhao Qiuyue[1]; Dou Zhihe[1]; Lv Guozhi[1]; [1]Northeastern University

10:50 AM
Two Perspectives on the Evolution and Future of Alumina: *Linus Perander*[1]; James Metson[1]; Cornelis Klett[2]; [1]Light Metals Research Centre; [2]Outotec GmbH

11:15 AM
Significant Improvement of Energy Efficiency at Alunorte's Calcination Facility: *Michael Missalla*[1]; Hans Schmidt[1]; Joaquim Ribeiro[2]; Reiner Wischnewski[3]; [1]Outotec GmbH; [2]Alunorte-Alumina do Norte do Brasil S.A.; [3]Hydro Aluminium AS

11:40 AM
Attrition of Alumina in Smelter Handling and Scrubbing Systems: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

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; Zhengdong Long, Kaiser Aluminum; Tongguang Zhai, University of Kentucky

Wednesday AM
March 2, 2011
Room: 14A
Location: San Diego Conv. Ctr

Session Chair: Tongguang Zhai, University of Kentucky

8:30 AM
Transmission Electron Microscopic Investigations of Grain Boundary Beta Phase Precipitation in Al-5083: *Ramasis Goswami*[1]; Peter Pao[2]; Ronald Holtz[2]; [1]SAIC/Naval Research Laboratory; [2]Naval Research Laboratory

8:50 AM
Effect of Ultrasonic Impact Treatment on a 5456 Aluminum Alloy Characterized through Micro-Specimen Testing and X-Ray Tomography: *Caroline Scheck*[1]; Kim Tran[2]; Christopher Cheng[1]; Marc Zupan[1]; [1]University of Maryland, Baltimore County; [2]Naval Surface Warfare Center, Carderock Division

9:10 AM
Effect of Extrusion Microstructure on the Corrosion Behavior of AA6005A Aluminum Alloy: *Dan Seguin*[1]; Calvin White[1]; Richard Dickson[2]; [1]Michigan Technological University; [2]Hydro Aluminum

9:30 AM
Failure Loads and Deformation in 6061-T6 Aluminum Alloy Spot Welds: *Radu Florea*[1]; Kiran Solanki[1]; Douglas Bammann[1]; Brian Jordon[1]; Matt Castanier[1]; [1]Mississippi State University

9:50 AM
Magnesium Diffusivity Measurement in AA5083 Alloys: *Soumya Kar*[1]; Michael Free[1]; [1]University of Utah

10:10 AM Break

10:25 AM
Surface Energy, Electronic Structure, and Complexity of Al-Based Intermetallics: *Jean-Marie Dubois*[1]; Esther Belin-Ferré[2]; [1]Institut Jean Lamour, CNRS; [2]LCPMR, CNRS

10:45 AM
Measurement of Resistivity/Conductivity of Aluminium Oxide-Film by Electrochemical Impedance Spectroscopy (EIS): *Khaled Habib*[1]; [1]KISR

11:05 AM
Effect of Conical and Cylindrical Tool with Grooves Pin Profiles on Tensile Strength in Friction Stir Welding Process: *C. N. Suresha*[1]; B. M. Rajaprakash[1]; Sarala Upadhya[1]; [1]Bangalore University

Aluminum Reduction Technology: Cells Technology, Development and Sustainability

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Wednesday AM
March 2, 2011
Room: 17B
Location: San Diego Conv. Ctr

Session Chair: Gilles Dufour, Aluminerie de Deschambault

8:30 AM
High Amperage Operation of AP18 pots at Karmøy: *Marvin Bugge*[1]; Haakon Haakonsen[1]; Ove Kobbeltvedt[1]; Knut Paulsen[1]; [1]Hydro Aluminium

8:50 AM
Aluminium Smelter Manufacturing Simulation – Can These Bring Real Cost Savings?: *Maarten Meijer*[1]; [1]Hencon

9:10 AM
Simultaneous Preheating and Fast Re-Start of 50 Aluminium Reduction Cells in an Idled Pot Line- A New Soft Re-Start Technique for a Pot Line: Albert Mulder[1]; Anita Folkers[1]; *Marco Stam*[1]; Mark Taylor[2]; [1]Aluminium Delfzijl; [2]The Light Metals Research Centre

9:30 AM
SWOT Perspectives of Mid-age Prebaked Aluminium Smelter: *Pradip Choudhury*[1]; Arun Sharma[1]; [1]National Aluminium Company Ltd.

9:50 AM Break

10:00 AM
Integrated Approach for Safe and Efficient Plant Layout Development: *Rafael Pires*[1]; Robert Baxter[1]; Laszlo Tikasz[1]; Robert McCulloch[1]; [1]Bechtel

10:20 AM
Improving Current Efficiency of Aged Reduction Lines at Aluminium Bahrain (Alba): *Abdulla Ahmed*[1]; Ragahavendra K.S.R[1]; Hasanain Hassan[1]; [1]Aluminium Bahrain (Alba)

10:40 AM
Current Efficiency for Aluminium Deposition from Molten Cryolite-Alumina Electrolytes in a Laboratory Cell: *Geir Martin Haarberg*[1]; Joseph Armoo[1]; Henrik Gudbrandsen[2]; Egil Skybakmoen[2]; Asbjørn Solheim[2]; Trond Eirik Jentoftsen[3]; [1]Norwegian University of Science and Technology; [2]SINTEF; [3]Hydro Aluminium

11:00 AM
New Progress on Application of NEUI400kA Family High Energy Efficiency Aluminum Reduction Pot ("HEEP") Technology: Dingxiong Lv[1]; Xiquan Qi[1]; Junman Qin[1]; Zijin Ai[1]; *Yungang Ban*[1]; [1]Northeastern University Engineering & Research Institute Co. Ltd

11:20 AM
Development of NEUI500kA Family High Energy Efficiency Aluminum Reduction Pot ("HEEP") Technology: Dingxiong Lv[1]; *Yungang Ban*[1]; Xiquan Qi[1]; Jingxiong Liu[1]; [1]Northeastern University Engineering & Research Institute Co. Ltd

11:40 AM
An Innovative Approach to Improving the Operational Performance of Aluminum Smelters: *Nelson Dubé*[1]; Thiago Heitling[1]; [1]SNC-Lavalin

Battery Recycling: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory

Wednesday AM
March 2, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chairs: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory

8:30 AM Introductory Comments

8:35 AM
Taking a Life Cycle Approach to Battery Management: *Mira Inbar*[1]; [1]Dow Kokam

8:55 AM
Role of Recycling in the Life Cycle of Batteries: *John Sullivan*[1]; Linda Gaines[1]; Andrew Burnham[1]; [1]Argonne National Laboratory

9:15 AM
Treatment or Recycling End-Of-Life (H)EV Battery Packs: *Mark Caffarey*[1]; [1]Umicore USA

9:35 AM
Evaluation of Environmental Tradeoffs in Portable Battery Recycling: *Elsa Olivetti*[1]; Gabrielle Gaustad[2]; Randolph Kirchain[1]; [1]Massachusetts Institute of Technology; [2]Rochester Institute of Technology

9:55 AM
Managing Hybrid Electric Batteries at End of Life: *Todd Coy*[1]; [1]Kinsbursky Brothers / Toxco

10:15 AM Break

10:25 AM
The 10 Obstacles to a Successful Battery Recycling Program: The North American Experience: Lisa Pollack[1]; *Carl Smith*[1]; [1]Call2Recycle

10:45 AM
Product Stewardship Pressures on the Lead and Motive Power Battery Industries: *David Weinberg*[1]; [1]Wiley Rein LLP

11:05 AM
A Preliminary Investigation for Spent LIBs Recycling: Mengjun Chen[1]; Fu-shen Zhang[2]; Jianxin Zhu[2]; [1]Southwest University of Science and Technology; [2]Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences

11:25 AM
Recovery of Metal Values from Waste Cathode Active Material Using Organic Acid as Leachant and Its Application to Synthesis of LiCoO2: *Hyun-Jong Kim*[1]; Seong Ho Son[1]; Chi Ho Shin[1]; Howard Lee[2]; [1]Korea Institute of Industrial Technology; [2]OSC Co., Ltd.

11:45 AM Concluding Comments

Biological Materials Science: Mechanical Behavior of Biological Materials I

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Wednesday AM
March 2, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Po-Yu Chen, University of California, San Diego; David Kisailus, University of California, Riverside

8:30 AM Keynote
Turning Weakness into Strength: Explaining the Great Strength and Extensibility of Spider Silk: *Markus Buehler*[1]; [1]Massachusetts Institute of Technology

9:10 AM Invited
Biomechanics of Cancer Cells: *Chwee Teck Lim*[1]; [1]National University of Singapore

9:40 AM
On the Structure and Mechanical Behavior of Scales from Cyprinus Carpio: Adriana Garrano[1]; *Dwayne Arola*[2]; [1]University of Catania; [2]University of Maryland Baltimore County

10:00 AM
Mechanical Properties and Laminate Structure of Arapaimas Gigas Scale: Yen-Shan Lin[1]; *Marc.A Meyers*[1]; Eugene.A Olevsky[1]; [1]UCSD

10:20 AM Break

10:30 AM Invited
Biological Materials: A Materials Science Approach: *Marc Meyers*[1]; Po-Yu Chen[1]; Maria Lopez[1]; Yasuaki Seki[1]; Albert Lin[1]; Joanna McKittrick[1]; [1]University of California, San Diego

11:00 AM
Dynamic Mechanical Behavior of Shark Tessellated Skeleton: *Xiaoxi Liu*[1]; Hamed Youssefpour[1]; Mason Dean[2]; Adam Summers[3]; James Earthman[1]; [1]University of California, Irvine; [2]Max Planck Institute of Colloids and Interfaces; [3]University of Washington

11:20 AM
Structure and Mechanical Behavior of Saxidomus Purpuratus Shells: *Wen Yang*[1]; Marc Meyers[1]; Guang-Ping Zhang[2]; Xiao-Wu Li[3]; [1]University of California, San Diego; [2]Institute of Metal Research, Chinese Academy of Sciences; [3]College of Sciences, Northeastern University

11:40 AM
Unveiling the Deformation and Toughening Mechanisms of Nacre – Lessons from Nature: *Xiaodong Li*[1]; [1]University of South Carolina

12:00 PM
On the Growth and Mechanical Behavior of Abalone Nacre: Role of Organic Constituent: *Maria Lopez*[1]; Po-Yu Chen[1]; Laura Connelly[1]; Ratnesh Lal[1]; Joanna McKittrick[1]; Marc Meyers[1]; [1]UCSD

Bridging Microstructure, Properties and Processing of Polymer Based Advanced Materials: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee, ASM-MSCTS: Texture and Anisotrophy Committee
Program Organizers: Dongsheng Li, Pacific Northwest National Laboratory; Said Ahzi, University of Strasburg; Moe Kahleel, Pacific Northwest National Laboratory

Wednesday AM
March 2, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chair: Said Ahzi, University Louis Pasteur, Strasbourg

8:30 AM Introductory Comments

8:35 AM Keynote
Constitutive Modeling of Deformation Behaviour of Semicrystalline Polymers under Small Strains: Stanislav Patlazhan[1]; Yves Remond[2]; [1]Russian Academy of Sciences; [2]University of Strasbourg

9:05 AM
Molecular Dynamics Simulation of Diffusion of Atmospheric Penetrates in Polydimethylsiloxane based Nanocomposites: Alexander Sudibjo[1]; Varun Ullal[1]; *Douglas Spearot*[1]; [1]University of Arkansas

9:25 AM
Nanostructuration of Polymers for Energy, Drug Delivery and Bio-Implant Systems: *Frédéric Addiego*[1]; Marc Michel[1]; Valérie Toniazzo[1]; David Ruch[1]; [1]CRP Henri Tudor

9:45 AM
A Bilinear Semi-Empirical Constitutive Model for an Orthotropic Material: *Edmond Saliklis*[1]; Jorien Baza[1]; [1]California Polytechnic State University

10:05 AM Break

10:20 AM
Fabrication and Characterization of Super Strong Cellulose Nanowhisker Paper: *Dongsheng Li*[1]; Hamid Garmestani[2]; [1]Pacific Northwest National Laboratory; [2]Georgia Institute of Technology

10:40 AM
Fully Recoverable High Strain Shape Memory Polymers: *Walter Voit*[1]; Taylor Ware[1]; Ken Gall[2]; [1]UT Dallas; [2]Georgia Tech

11:00 AM
Hydroxyapatite Reinforced Polymer Biocomposites with Tailored Mechanical Properties through Microstructure Design: *Ryan Roeder*[1]; Timothy Conrad[1]; Jeffrey Vitter[1]; Justin Deuerling[1]; [1]University of Notre Dame

11:20 AM
Computer-Aided Design, Processing and Characterization of Polymer-Matrix Magnetic Composites: *Tianle Cheng*[1]; Jie Zhou[1]; Yu Wang[1]; [1]Michigan Technological University

11:40 AM
Effects of Filler Microstructures on Effective Properties of Magnetic Composites: Phase Field Modeling and Simulation: *Jie Zhou*[1]; Tian-Le Cheng[1]; Yu Wang[1]; [1]Michigan Technological University

Bulk Metallic Glasses VIII: Fatigue and Corrosion

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Wednesday AM
March 2, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Y. Yokoyama, Institute for Materials Research; Jamie Kruzic, Oregon State University

8:30 AM Invited
Fracture and Fatigue in Monolithic and Composite Metallic Glasses: *Robert Ritchie*[1]; Maximillien Launey[2]; Douglas Hofmann[3]; William Johnson[3]; [1]University of California Berkeley; [2]Lawrence Berkeley National Laboratory; [3]California Institute of Technology

8:50 AM
Zr-Based Glass-Forming Film for Fatigue-Property Improvements of 316L Stainless Steel: Annealing Effects: Jinn P. Chu[1]; *Cheng-Min Lee*[1]; R. T. Huang[2]; Jia-Hong Zhu[1]; Peter. K. Liaw[3]; [1]Nation Taiwan University of Science and Technology; [2]National Taiwan Ocean University; [3]The University of Tennessee

9:00 AM Invited
Fatigue of Zr-Based Bulk Metallic Glass under Cyclic Shear Stress: *Yoshikazu Nakai*[1]; Kenich Nakagawa[1]; Kohei Mikami[1]; [1]Kobe University

9:20 AM Invited
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

9:40 AM
The Effect of Structural Ordering on Active, Passive and Localized Corrosion in an Amorphous Cu75Hf20Dy05 Alloy: *Derek Horton*[1]; John Scully[1]; [1]University of Virginia

9:50 AM Invited
Why Can't The Excellent Corrosion Resistance of Amorphous and Amorphous-Nanocrystalline Melt Spun Alloys be Achieved in Thermally Sprayed Coatings?: *J.R. Scully*[1]; N. Tailleart[1]; T. Aburada[1]; D. Horton[1]; R. Huang[1]; A. Lucente[1]; [1]University of Virginia

10:10 AM Break

10:20 AM
Investigation of the Corrosion Behavior of a Zr-Based Bulk Metallic Glass: *Courtney Harmon*[1]; Mary Cavanaugh[1]; Katharine Flores[1]; Rudolph Buchheit[1]; [1]The Ohio State University

10:30 AM Invited
Characterization of Shear Bands Induced by Three-Point Bending Fatigue Test in Zr-Cu-Al Bulk Metallic Glass: *Pei-Ling Sun*[1]; Gongyao Wang[2]; Peter Liaw[2]; [1]Feng Chia University; [2]University of Tennessee

10:50 AM
Four-Point-Bending Fatigue Study on a Tough Fe-Based Bulk-Metallic Glass: *Gongyao Wang*[1]; Marios Demetriou[2]; Peter Liaw[1]; William Johnson[2]; [1]University of Tennessee; [2]Keck Laboratory

11:00 AM Invited
Compression-Compression Fatigue Behaviour of Zr-Based Bulk Metallic Glass (BMG): The Effects on the Near-Surface Residual-Stresses: *Bartlomiej Winiarski*[1]; Gongyao Wang[2]; Yoshihiko Yokoyama[3]; Peter Liaw[2]; Philip Withers[1]; [1]University of Manchester; [2]The University of Tennessee; [3]Tohoku University

11:20 AM
Effects of Frequency on Fatigue Behavior of Zr-Base Bulk Metallic Glasses: *Qingming Feng*[1]; Gongyao Wang[1]; Lu Huang[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Beijing University of Aeronautics & Astronautics

11:30 AM Invited
Investigating the Effects of Fatigue on Annealed and As-Quenched Zr-Based Bulk Metallic Glasses: *Peng Tong*[1]; Despina Louca[1]; Peter Liaw[2]; Gongyao Wang[2]; Yoshihiko Yokoyama[3]; [1]University of Virginia; [2]University of Tennessee; [3]Tohoku University

11:50 AM
Interpreting Temperature Change in Shear Bands of a Bulk-Metallic Glass Using Spatial-Temporal Analysis: *Jiajia Luo*[1]; Gongyao Wang[1]; Hairong Qi[1]; Yoshihiko Yokoyama[2]; Peter Liaw[1]; Akihisa Inoue[2]; [1]University of Tennessee; [2]Institute for Materials Research

12:00 PM Invited
Fatigue and Fracture Behavior of a Ca-Based Bulk-Metallic Glass: *Julian Raphael*[1]; Gongyao Wang[2]; Peter Liaw[2]; Oleg Senkov[3]; Dan Miracle[3]; [1]J R Technical Services, LLC; [2]University of Tennessee; [3]Air Force Research Laboratory

12:20 PM
Studying Fatigue-Crack-Propagation Behavior of Zr-Based Bulk-Metallic Glasses: *Gongyao Wang*[1]; P. Liaw[1]; Y. Yokoyama[2]; Q. Feng[1]; T Toll[1]; A. Inoue[2]; [1]University of Tennessee; [2]Institute for Materials Research

Cast Shop for Aluminum Production: Melt Quality Control

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Geoffrey Brooks, Swinburne University of Technology; John Grandfield, Grandfield Technology Pty Ltd

Wednesday AM
March 2, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chairs: Claude Dupuis, Rio Tinto Alcan; Steinar Benum, Aloca Norway

8:30 AM Introductory Comments

8:35 AM
In-Line Salt-ACD™:
A Chlorine–Free Technology for Metal Treatment: *Patrice Robichaud*[1]; Claude Dupuis[1]; Alain Mathis[2]; Pascal Coté[3]; Bruno Maltais[3]; [1]Rio Tinto Alcan, Arvida Research & Development Centre; [2]Rio Tinto Alcan, Aluval; [3]STAS

9:00 AM
The Effect of TiB2 Granules on Metal Quality: Maryam Al Jallaf[1]; Margaret Hyland[2]; Barry Welch[3]; Ali Al Zarouni[1]; Fahimi Abdullah[1]; [1]DUBAL; [2]University of Auckland; [3]Welbank Consulting

9:25 AM
Thermodynamic Analysis of Ti, Zr, V and Cr Impurities in Aluminium Melt: *Abdul Khaliq*[1]; Muhammad Rhamdhani[1]; Geoffrey Brooks[1]; [1]Swinburne University of Technology

9:50 AM
Current Technologies for the Removal of Iron from Aluminum Alloys: *Lifeng Zhang*[1]; Jianwei Gao[2]; [1]Missouri University of Science and Technology; [2]Shanghai Jiao Tong University

10:15 AM Break

10:25 AM
Electromagnetically Enhanced Filtration of Aluminum Melts: Mark Kennedy[1]; *Shahid Akhtar*[1]; Ragnhild Aune[1]; Jon Bakken[1]; [1]Norwegian University of Science and Technology

10:50 AM
A Review of the Development of New Filter Technologies Based on the Principle of Multi Stage Filtration with Grain Refiner Added in the Intermediate Stage: *John Courtenay*[1]; Stephen Instone[2]; Frank Reusch[3]; [1]MQP Limited; [2]Hydro Aluminium Deutschland GmbH; [3]Drache Umwelttechnik GmbH

11:15 AM
Wettability of Aluminium with Sic and Graphite in Aluminium Filtration: *Sarina Bao*[1]; Anne Kvithyld[2]; Thorvald Engh[1]; Merete Tangstad[1]; [1]NTNU; [2]SINTEF

11:40 AM
Study of Microporosity Formation under Different Pouring Conditions in A356 Aluminum Alloy Castings: *Lu Yao*[1]; Steve Cockcroft[1]; Daan Maijer[1]; Jindong Zhu[1]; Carl Reilly[1]; [1]University of British Columbia

Characterization of Minerals, Metals and Materials: Structural Characterization

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Wednesday AM
March 2, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Jeongguk Kim, Korea Railroad Research Institute

8:30 AM
Micro-Computerized Tomography of Ti-5111 Friction Stir Welded Microsamples: *Christopher Cheng*[1]; Jennifer Wolk[2]; Marc Zupan[1]; [1]University of Maryland Baltimore County; [2]Naval Surface Warfare Center, Carderock Division

8:45 AM
Application of Novel Techniques to the Three-Dimensional Characterization of Microstructural Features in a+ß Titanium Alloys: *John Sosa*[1]; Santhosh Koduri[1]; Vikas Dixit[1]; Peter Collins[2]; Stephen Niezgoda[3]; Surya Kalidindi[3]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas; [3]Drexel University

9:00 AM
Application of Conical Beam X-Ray Tomography to Multi-Phase Materials: *Jason Wolf*[1]; Anthony Rollett[1]; Marc De Graef[1]; [1]Carnegie Mellon University

9:15 AM
High Temperature X-ray Diffraction Characterization of Thermal Energy Storage Materials – The Binary Phase Diagram Study: *Wen-Ming Chien*[1]; Vamsi Kamisetty[1]; Ivan Gantan[1]; Prathyusha Mekala[1]; Anjali Talekar[1]; Dhanesh Chandra[1]; [1]University of Nevada, Reno

9:30 AM
Non-Invasive X-Ray Imaging of Paint Layers in Old Master Paintings: *Peter Reischig*[1]; Lukas Helfen[2]; Tilo Baumbach[2]; Arie Wallert[3]; Joris Dik[1]; [1]Delft University of Technology; [2]Institute for Synchrotron Radiation, Karlsruhe Institute of Technology; [3]Rijksmuseum Amsterdam

9:45 AM
Characterization of Residual Stress Distributions and Microstructural Changes in Laser Shock Peened Ti-6Al-4V Alloy: *Yixiang Zhao*[1]; Ulrich Lienert[2]; Jon Almer[2]; Yang Ren[2]; David Lahrman[3]; Dong Qian[1]; S. Mannava[1]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]Advanced Photo Source, Argonne National Laboratory; [3]LSP Technologies, Inc.,

10:00 AM Break

10:15 AM Invited
In Situ Tomographic Characterization of Single Cavity-Growth during High-Temperature Creep of Metallic Materials: *Augusta Isaac*[1]; Federico Sket[2]; Krzysztof Dzieciol[3]; Andras Borbely[3]; [1]Laboratório Nacional de Luz Síncrotron; [2]Madrid Institute for Advanced Studies of Materials; [3]École Nationale Supérieure des Mines de Saint-Étienne

10:45 AM
EBSD Analysis Strategies for Quantitative Characterization of 'Multi-Phase' Steel Microstructures: *Eric Payton*[1]; Shenja Dziaszyk[1]; Gunther Eggeler[1]; [1]Ruhr-Universitaet Bochum

11:00 AM
EBSD Ferrite Fraction in Austenitic Welds: *Carl Necker*[1]; John Milewski[1]; John Elmer[2]; [1]Los Alamos National Laboratory; [2]Lawrence Livermore National Laboratory

11:15 AM
Characterization of Twin Boundaries in Twinning-Induced Plasticity Steels Using Electron Backscatter Diffraction Electron Microscopy: *Erin Diedrich*[1]; David Field[1]; [1]Washington State University

11:30 AM
EBSD Detail Extraction for Greater Spatial and Angular Resolution in Material Characterization: *Jay Basinger*[1]; David Fullwood[1]; Brent Adams[1]; [1]Brigham Young University

11:45 AM
Segmentation of Three-Dimensional EBSD Data through Fast Multiscale Clustering: *Cullen McMahon*[1]; Cassandra George[1]; Md. Zakaria Quadir[2]; Michael Ferry[2]; Lori Bassman[1]; [1]Harvey Mudd College; [2]University of New South Wales

12:00 PM
Characterization and Processing Ultramafic Nickel Ore after Acid Attack to Disintegrate Fibres: *Salah Uddin*[1]; Mitra Mirnezami[1]; Ram Rao[1]; James Finch[1]; [1]McGill University

12:15 PM
Microwave Sintering of CaO Stabilized Nature Baddeleyite: Li Jing[1]; Peng Jinhui[1]; *Guo Shenghui*[1]; Li Wei[1]; Zhang Libo[1]; [1]Faculty of Metallurgy and Energy Engineering, Kunming University of Science and Technology

Coatings for Structural, Biological, and Electronic Applications II: Process-Property-Performance Correlations - I; Metallic Coatings

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

Wednesday AM
March 2, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chairs: Nuggehalli Ravindra, New Jersey Institute of Technology; Nancy Michael, University of Texas at Arlington

8:30 AM Symposium Overview

8:35 AM Invited
Improved Mechanical Properties of Coatings and Bulk Components as a Function of Grain Size: *Robert Gansert*[1]; Chris Melnyk[2]; David Grant[2]; David Lugan[2]; Brian Weinstein[2]; [1]Advanced Materials & Technology Services, Inc.; [2]California Nanotechnologies, Inc.

9:00 AM Invited
Residual Stresses in Coatings Measured at Micro Scale: Jeff De Hosson[1]; *Vasek Ocelik*[1]; Ivan Furar[1]; [1]Univ of Groningen

9:25 AM Invited
Factors Influencing the Formation of Oxide Layer on AZ91 Mg Alloy Coated by Electrochemical Plasma Coating: *Dong H. Shin*[1]; In Jun Hwang[1]; Kang Min Lee[1]; Young Gun Ko[2]; [1]Hanyang University; [2]Yeungnam University

9:50 AM Invited
Phase Stability and Surface Rumpling during Cyclic Oxidation of Pd/Pt-Modified Ni-Al Bond Coats at 1150°C: *Raghavendra Adharapurapu*[1]; Jun Zhu[1]; Don Lipkin[2]; Voramon Dheeradhada[2]; Tresa Pollock[3]; [1]University of Michigan; [2]General Electric Global Research Center; [3]University of California Santa Barbara

10:15 AM Break

10:25 AM Invited
The Benefits of the Thermal Properties and Durability of Alodine EC2 Coated Aluminum in the Heat Transfer Industry: *Jianhui Shang*[1]; Ryan Brune[1]; Wesley Sprague[1]; Larry Wilkerson[1]; Steve Hatkevich[1]; [1]American Trim LLC

10:50 AM
Characterization of Electroless Ni-B Coating for Tribological Application: *Soupitak Pal*[1]; Nisha Verma[1]; Vikram Jayaram[1]; Sanjay Biswas[1]; Yancy Riddle[2]; [1]Indian Institute of Science; [2]UCT Coatings. Inc

11:05 AM
Improving High Temperature Performance of Aluminum Foams by Nickel Coating: Zhuokun Cao[1]; Huan Liu[1]; *Yihan Liu*[1]; Guangchun Yao[1]; [1]Northeastern University, China

11:20 AM
Studies on Ni-Ti Thin Films Grown by Bias Assisted Magnetron Sputtering: *B Geetha Priyadarshini*[1]; Shampa Aich[1]; Madhusudan Chakraborty[2]; [1]Indian Institute of technology (IIT),Kharagpr; [2]Indian Institute of technology (IIT), Bhubaneswar

Commonality of Phenomena in Composite Materials II: Development of New Composite Materials

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Carl Boehlert, Michigan State University

Wednesday AM
March 2, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Nik Chawla, Arizona State University

8:30 AM Invited
Tuning the Properties of Nanocrystalline Semiconductors: Producing Bulk Sized Nanocomposites Using Electric Currents: J. Alaniz[1]; J. Morales[1]; C. Dames[1]; *J. Garay*[1]; [1]UC Riverside

9:10 AM
Initial Characterization of an Aluminum Based Syntactic Foam: Oliver Strbik[1]; Satyendra Kumar[1]; Chris Smith[1]; *Todd Osborn*[1]; Joe Cochran[2]; Thomas Sanders[2]; Naresh Thadhani[2]; Laura Cerully[2]; Tammy McCoy[2]; Liang Quan[2]; Vincent Hammond[3]; Kyu Cho[3]; [1]Deep Springs Technology; [2]Georgia Tech; [3]Army Research Lab

9:30 AM
Machinable Aluminum Matrix Composite: *William Harrigan*[1]; [1]Gamma Technology

9:50 AM
Stability and Lithium Adsorption Property of LiMn2O4-LiSbO3 Composite in Aqueous Medium: *Li-Wen Ma*[1]; Xi-Chang Shi[1]; Bai-Zhen Chen[1]; Kun Zhang[1]; [1]School of Metallurgical Science and Engineering

10:10 AM Break

10:30 AM Invited
Nanotube Based Composites: A Matrix of Understanding: *Enrique Barrera*[1]; [1]Rice University

11:10 AM
Impact Damage Sensing of Multiscale Glass/Epoxy Composite Structures: Luciana Arronche[1]; *Valeria La Saponara*[1]; [1]University of California, Davis

11:30 AM
Temperature-Sensitive Shape Memory Polymer Based Acoustic Metamaterials: *Brayden Ware*[1]; Walter Voit[1]; [1]University of Texas at Dallas

11:50 AM
Reinforced Steel/Polymer/Steel Sandwich Composites with Improved Properties: *Heinz Palkowski*[1]; Olga Sokolova[1]; Adele Carradó[2]; [1]TU Clausthal; [2]Institut de Physique et Chimie des Matériaux de Strasbourg

12:10 PM
Fatigue Damage Identification in Glass/Epoxy Composite Structures through Embedded Piezoelectrics and Wavelet Transforms: *Valeria La Saponara*[1]; Wahyu Lestari[2]; Charles Winkelmann[1]; Luciana Arronche[1]; [1]University of California, Davis; [2]Embry-Riddle Aeronautical University

Computational Plasticity: Continuum Computational Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Remi Dingreville, Polytechnic Institute of NYU; Koen Janssens, Paul Scherrer Institute

Wednesday AM
March 2, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Invited
Microstructural Evolution and Its Effect on Plastic Flow and Strain Localization: *John Bassani*[1]; [1]University of Pennsylavnia

9:00 AM Invited
Advances in the Constitutive Equation Parameter Identification Procedure:
Why Experiments Should Discuss With Numerical Simulations: *Jerôme Crépin*[1]; Eva Héripré[2]; Arjen Roos[3]; Dominique Geoffroy[3]; [1]MinesParistech; [2]Ecole Polytechnique; [3]ONERA

9:30 AM
On the Origin of Plastic Instability of Al-Mg Alloy 5052 during Stress Rate Change Test: *Chen-Ming Kuo*[1]; Chi-Ho Tso[1]; [1]I-Shou University

9:50 AM Invited
Probabilistic Simulation of Incubation and Nucleation of Fatigue Cracks in AA 7075-T651: *Anthony Ingraffea*[1]; Jacob Hochhalter[2]; Michael Veilleux[1]; Jeffrey Bozek[1]; [1]Cornell University; [2]NASA

10:20 AM
A Stochastic-Based Modified Gurson Model for Modeling Void Growth in Metallic Alloys: Huiyang Fei[1]; Kyle Yazzie[1]; Nikhilesh Chawla[1]; *Hanqing Jiang*[1]; [1]Arizona State University

10:35 AM Break

10:55 AM Invited
Approaching Statistically Significant Correlations through Reduced Modeling of Initial Yielding Behavior: Siddiq Qidwai[1]; Alexis Lewis[2]; *Andrew Geltmacher*[2]; [1]SAIC; [2]Naval Research Laboratory

11:25 AM Invited
Deformation and Microrotation in the Vicinity of Grain Boundaries: Continuum Analysis of Atomistic Simulations: Garritt Tucker[1]; *Jonathan Zimmerman*[2]; David McDowell[1]; [1]Georgia Institute of Technology; [2]Sandia National Laboratories

11:55 AM
An Attempt to Express Isotropic Yield Functions of Metals Based on the Invariants of Stress Tensor: *Mohammad Habibi Parsa*[1]; Kamal Azimi[1]; Payam Matin[2]; [1]University of Tehran; [2]Sciences University of Maryland

12:15 PM
Three Dimensional Visualization and Microstructure-Based Modeling of Plasticity
and Void Growth in Pb-Free Solder Alloys: *Vaidehi Jakkali*[1]; Ling Jiang[1]; Jason Williams[1]; Nikhilesh Chawla[1]; M Pacheco[2]; V Novitski[2]; S Lau[3]; Luke Hunter[3]; [1]Arizona State University; [2]Intel; [3]Xradia

Computational Thermodynamics and Kinetics: Microstructual Evolution

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Wednesday AM
March 2, 2011

Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Min Soo Park, Texas A&M University; Nele Moelans, Katholieke Universiteit Leuven

8:30 AM Invited
Role of Elastostatic Interaction in Domain Processes of Magnetic Shape Memory Alloys: *Yongmei Jin*[1]; [1]Michigan Technological University

9:00 AM Invited
Phase-field Modeling of Deformation Twinning: Taewook Heo[1]; Yi Wang[1]; Saswata Bhattacharya[1]; Xin Sun[2]; Shenyang Hu[2]; *Long Qing Chen*[1]; [1]Pennsylvania State University; [2]Pacific Northwest National Lab

9:30 AM
Microstructure Evolution and Analysis of Single Crystal Nickel-Based Superalloy During Compression Creep: Shu Zhang[1]; *Sugui Tian*[1]; [1] Shenyang University of Technology

9:45 AM
Combining Phase-Field and CALPHAD for Systems Containing Intermediate Phases with Low Solubility: *Nele Moelans*[1]; Bo Sundman[2]; [1]K.U. Leuven, Belgium; [2]INSTN, CEA, France

10:00 AM Break

10:10 AM Invited
Modeling of Crystal Defects and Interactions at Diffusive Time Scales: *Jon Dantzig*[1]; [1]University of Illinois

10:40 AM
Free Energy Functionals for Efficient Phase Field Crystal Modeling of Structural Phase Transformations: *Michael Greenwood*[1]; Nikolas Provatas[2]; Joerg Rottler[1]; [1]University of British Columbia; [2]McMaster University

10:55 AM
Control of Domain Configurations and Sizes in Crystallographically Engineered Ferroelectric Single Crystals: Phase Field Modeling: *Jie Zhou*[1]; Tian-Le Cheng[1]; Ke-Wei Xiao[2]; Wei-Feng Rao[2]; Yu Wang[1]; [1]Michigan Tech.Univ.; [2]Virginia Tech

11:10 AM
Phase Field Modeling of Nanoparticles for Medical Applications: *Jonathan Guyer*[1]; David Saylor[2]; James Warren[1]; [1]NIST; [2]FDA

11:25 AM
Phase-Field Crystal Modeling of Compositional Domain Formation in Ultrathin Films: *Srevatsan Muralidharan*[1]; Raika Khodadad[2]; Mikko Haataja[1]; [1]Princeton University; [2]California State University Northridge

11:40 AM
Quantitative Phase-Field Predictions of β" Precipitate Size Distribution as a Function of Heat Treatment Conditions and Alloying Composition in AA6111: *Junsheng Wang*[1]; Shiyao Huang[1]; Ruijie Zhang[1]; William Donlon[1]; Mei Li[1]; Long-Qing Chen[2]; John Allison[3]; [1]Ford Research and Advanced Engineering Lab, Ford Motor Company; [2]Department of Materials Science and Engineering, Penn State University; [3]Department of Materials Science and Engineering, The University of Michigan

11:55 AM
Phase-Field Simulations of Bainitic Phase Transformation in 100Cr6: *Wenwen Song*[1]; Ulrich Prahl[1]; Wolfgang Bleck[1]; Krishnendu Mukherjee[1]; [1]RWTH Aachen University

12:10 PM
Transmission Electron Microscopy and Modeling of Carbide Precipitation in Tempered Martensitic Steels: *Peter Hedström*[1]; Joakim Odqvist[1]; Fredrik Lindberg[2]; [1]KTH - Royal Institute of Technology; [2]Swerea KIMAB AB

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Deformation, Fracture, and Advanced Characterization Techniques

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Wednesday AM
March 2, 2011

Room: 32A
Location: San Diego Conv. Ctr

Session Chairs: Tresa Pollock, University of California Santa Barbara; Erland Schulson, Dartmouth College

8:30 AM Invited
Forensic Applications of Materials Science-An Overview: *Michael Smith*[1]; [1]Federal Bureau of Investigation

9:00 AM Invited
Investigations of Zirconium Alloy Deformation and Fracture: Jake Ballard[1]; John Sutliff[1]; Tom Angeliu[1]; *Robert Mulford*[1]; Joseph Pyle[1]; [1]Knolls Atomic Power Lab

9:30 AM Invited
Crack Growth on Basal Planes in Zn Single and Bicrystals: Experiments and Computations: *Sharvan Kumar*[1]; Dhiraj Catoor[2]; [1]Brown University; [2]Dassault Systèmes Simulia Corp

10:00 AM Invited
JIM INTERNATIONAL SCHOLAR AWARD WINNER: Crack Tip Dislocations and the Sequential Multiplication Process of Dislocation Sources along the Crack Front Revealed by HVEM-Tomography: *Masaki Tanaka*[1]; S. Sadamatsu[1]; G.S. Liu[2]; H. Nakamura[1]; K. Higashida[1]; I.M. Robertson[2]; [1]Kyushu University; [2]University of Illinois

10:30 AM Invited
Improving Surfboards through the Adaptation of Metallic Honeycomb Sandwich Structure Technology: *Edison Conner*[1]; [1]N/A

11:00 AM Invited
Fundamental Research to Discover Amazing Metals through the "Nano-Metallurgy": *Kenji Abiko*[1]; [1]Tohoku University

11:30 AM
Subsonic Edge Dislocation near Interface Solved with Discrete Image Edge Dislocation Components: *Johannes Weertman*[1]; [1]Northwestern University

11:45 AM
Fundamentals of Fatigue Crack Initiation and Propagation: *Chandra Pande*[1]; [1]Naval Research Laboratory

12:00 PM
Intelligent Microscopy for the Study of Fracture and Fatigue: *David Fullwood*[1]; Brent Adams[1]; Travis Rampton[1]; Ali Khosravani[1]; [1]Brigham Young University

Deformation, Damage, and Fracture of Light Metals and Alloys: Session III

Sponsored by: The Minerals, Metals and Materials Society, MS&T Organization, TMS Light Metals Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Qizhen Li, University of Nevada, Reno; Xun-Li Wang, Oak Ridge National Laboratory; Yanyao Jiang, University of Nevada, Reno

Wednesday AM
March 2, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chair: Qizhen Li, University of Nevada, Reno

8:30 AM Invited
Confining Shear Bands and Fracture to Improve Plasticity in an Amorphous Mg Alloy Reinforced with Mo Particles: *Taigang Nieh*[1]; Jason Jang[2]; Jacob Huang[3]; [1]University of Tennessee; [2]National Central University; [3]National Sun Yat-Sen University

9:00 AM
Formability of Wrought Magnesium Sheet for Various Temperatures and Strain Conditions: Michael Miles[1]; David Fullwood[1]; Brent Adams[1]; *Jonathan Scott*[1]; Ali Khosravani[1]; [1]Brigham Young University

9:15 AM
Utilizing HR-OIM and In-Situ Tensile Tests for Studying Crack Initiation in AZ31 Magnesium Alloys: *Ali Khosravani*[1]; Brent L. Adams[1]; David T. Fullwood[1]; Mike Miles[1]; Stuart Rogers[1]; Jonathan Scott[1]; [1]Brigham Young University

9:30 AM
Stress Intensity Factor Solutions for Friction Stir Spot Welds of Magnesium AZ31 Alloy: *Tian Tang*[1]; Mark F. Horstemeyer[1]; Brian Jordan[1]; Paul Wang[1]; [1]Mississippi State University

9:45 AM
Deformation Induced Phase Transformation during Machining of Ti-5Al-5Mo-5V-3Cr: *David Yan*[1]; Guy Littlefair[1]; Tim Pasang[1]; [1]AUT University

10:00 AM Break

10:15 AM Invited
Fatigue Modeling in Nickel-Base Superalloys: Bradley Fromm[1]; Chen Shen[1]; Timothy Hanlon[1]; Yan Gao[1]; *Liang Jiang*[1]; [1]GE Global Research

10:45 AM Invited
Fatigue Deformation of Nanocrystalline NiFe Alloy: *Sheng Cheng*[1]; Yonghao Zhao[2]; Xun-Li Wang[3]; Sooyeol Lee[1]; Li Li[1]; Jon Almer[4]; Peter Liaw[1]; Enrique Lavernia[2]; [1]University of Tennessee, Knoxville; [2]University of California, Davis; [3]Oak Ridge National Laboratory; [4]Argonne National Laboratory

11:15 AM
Mechanical Properties and Deformation Mechanisms of Ultrafine Grained Al and Ti: *Yonghao Zhao*[1]; Troy Topping[1]; Y. Li[1]; Peiling Sun[2]; Ruslan Valiev[3]; [1]University of California, Davis, CA 95616, USA; [2]Feng Chia University, Taichung 40724, Taiwan; [3]Ufa State Aviation Technical University, Ufa 450000, Russia

11:30 AM
Investigation of the Fatigue Crack Growth Behavior of Wrought and Cast Light Metals: *Anastasios Gavras*[1]; Brendan Chenelle[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

11:45 AM
An Experimental Study on Cyclic Deformation and Fatigue of Extruded ZK60 Magnesium Alloy: *Qin Yu*[1]; Jixi Zhang[1]; Yanyao Jiang[1]; Qizhen Li[2]; [1]Department of Mechanical Engineering, University of Nevada, Reno; [2]Department of Chemical and Metallurgical Engineering, University of Nevada, Reno

12:00 PM
Effect of Strain Ratio on Cyclic Deformation and Fatigue of Extruded Magnesium Alloy AZ61A: *Jixi Zhang*[1]; Qin Yu[1]; Yanyao Jiang[1]; Qizhen Li[1]; [1]Department of Mechanical Engineering, University of Nevada, Reno

Dynamic Behavior of Materials V: Dynamic Deformation

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Wednesday AM
March 2, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chair: William Proud, U. Cambridge

8:30 AM Invited
A New Paradigm for Lowering the Ductile-to-Brittle Transformation Temperature in Steels: *Morris Fine*[1]; Semyon Vaynman[1]; Dieter Isheim[1]; Yip-Wah Chung[1]; Shrikant Bhat[2]; [1]Northwestern University; [2]ArcelorMittal

9:00 AM
Deformation Twinning in Tantalum: *Changqiang Chen*[1]; Kaliat Ramesh[1]; Kevin Hemker[1]; Mukul Kumar[2]; Jeffrey Florando[2]; [1]Johns Hopkins University; [2]Lawrence Livermore National Laboratory

9:15 AM
Dynamic Deformation Response of High-Strength Ni-Containing Steels: *Ratnesh Gupta*[1]; Sharvan Kumar[1]; [1]Brown University

9:30 AM
Dynamic Properties of Ultrafine-Grained Magnesium Alloys: *Bin Li*[1]; [1]Center for Advanced Vehicular Systems

9:45 AM Break

10:00 AM Invited
Lighter, Stronger, Faster: Materials for an Insecure Future: *K Ramesh*[1]; [1]Johns Hopkins University

10:30 AM Invited
Small Scale Experiments to Support Strength and Damage Modeling: *Ellen Cerreta*[1]; Darcie Koller[1]; George Gray[1]; Curt Bronkhorst[1]; Carl Trujillo[1]; Juan Escobedo[1]; Alex Bergquist[1]; Benjamin Hansen[1]; Davis Tonks[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

11:00 AM
Influence of Cryogenic Processing on Dynamic Tensile Response of High-Purity Copper: *Joel House*[1]; Michael Nixon[1]; Philip Flater[1]; James O'Brien[2]; William Hosford[3]; Robert De Angelis[4]; [1]Air Force Research Laboratory; [2]O'Brien & Associates; [3]University of Michigan; [4]University of Florida, REEF

11:15 AM
High Plasticity and Substantial Deformation in Nanocrystalline NiFe Alloys under Dynamic Loading: *Yonghao Zhao*[1]; Sheng Cheng[2]; Yazhou Guo[3]; Ying Li[1]; Qiuming Wei[3]; Xun-Li Wang[4]; Yang Ren[5]; Peter Liaw[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]university of tennessee; [3]University of North Carolina, Charlotte; [4]Oak Ridge National Laboratory; [5]Argonne National Laboratory

11:30 AM
Micromechanical Modelling of the Dynamic Behavior of Amorphous and Crystalline Polymers: *Said Ahzi*[1]; Nadia Bahlouli[1]; [1]University of Strasbourg

11:45 AM
High-Strain Rate Behavior of Nanostructured Niobium Processed by Severe Plastic Deformation to Very Large Strains: *Suveen Mathaudhu*[1]; Zhiliang Pan[2]; Weihua Ying[2]; Laszlo Kecskes[1]; Quiming Wei[2]; [1]U.S. Army Research Laboratory; [2]University of North Carolina - Charlotte

12:00 PM
Strain-Rate and Temperature Dependent Tensile Behavior of Pb-Sn and Sn-Ag-Cu Solder Alloys: *Brad Boyce*[1]; Mike Neilsen[1]; Luke Brewer[2]; [1]Sandia National Labs; [2]Naval Postgraduate School

12:15 PM
Deformation and Failure Behavior of Al/Si Nanocomposites at Atomic Scales: *Avinash Dongare*[1]; B. LaMattina[2]; A.M. Rajendran[3]; M.A. Zikry[4]; D.W. Brenner[5]; [1]North Carolina State University, Department of Materials Science and Engineering, Department of Mechanical and Aerospace Engineering; [2]University of Mississippi, Department of Mechanical Engineering; [3]U. S. Army Research Office; [4]North Carolina State University, Department of Mechanical and Aerospace Engineering; [5]North Carolina State University, Department of Materials Science and Engineering

Electrode Technology for Aluminium Production: Anode Quality and Rodding Processes

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Wednesday AM
March 2, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Nigel Backhouse, Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM
Multivariate Monitoring of the Baked Anode Manufacturing Process: *Julien Lauzon-Gauthier*[1]; Carl Duchesne[1]; Jayson Tessier[2]; Katie Cantin[3]; Isabelle Petit[3]; [1]Aluminium Research Centre – REGAL; [2]STAS; [3]Alcoa

9:00 AM
Characterization of a Full Scale Pre-Baked Carbon Anode Using X-Ray Computerized Tomograph: *Donald Picard*[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Pierre-Olivier St-Arnaud[1]; Mario Fafard[1]; [1]NSERC/ Alcoa Industrial Research Chair MACE3 and Aluminium Research Centre-REGAL, Laval University; [2]Alcoa Canada Primary Metals

9:25 AM
FEM Analysis of the Anode Connection in Aluminium Reduction Cells: *Susann Beier*[1]; John J. J. Chen[1]; Mario Fafard[2]; [1]University of Auckland; [2]University of Laval

9:50 AM
Development of Industrial Benchmark FEA Model to Study Energy Efficient Electrical Connections for Primary Aluminium Smelters: *David Molenaar*[1]; Kan Ding[2]; Ajay Kapoor[2]; [1]CSIRO; [2]Swinburne University of Technology

10:15 AM Break

10:25 AM
Real Time Temperature Distribution during Sealing Process and Room Temperature Air Gap Measurements of a Hall-Héroult Cell Anode: *Olivier Trempe*[1]; Daniel Larouche[1]; Donald Ziegler[2]; Michel Guillot[1]; Mario Fafard[1]; [1]Université Laval; [2]Alcoa

10:50 AM
Effects of High Temperatures and Pressures on Cathode and Anode Interfaces in a Hall-Heroult Electrolytic Cell: *Lyne St-Georges*[1]; Laszlo I. Kiss[1]; Jens Bouchard[1]; Mathieu Rouleau[1]; Daniel Marceau[1]; [1]UQAC

11:15 AM
New Apparatus for Characterizing Electrical Contact Resistance and Thermal Contact Conductance: Nedeltcho Kandev[1]; *Hugues Fortin*[1]; Sylvain Chénard[1]; Guillaume Gauvin[2]; Marie-Hélène Martin[2]; Mario Fafard[2]; [1]Hydro-Quebec; [2]Laval University

11:40 AM
Carbon Anode Modeling for Electric Energy Savings in the Aluminium Reduction Cell: *Dag Herman Andersen*[1]; Z. L. Zhang[2]; [1]Hydro Primary Metal Technology; [2]Norwegian University of Science and Technology (NTNU)

Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Materials Corrosion and Prevention

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division
Program Organizers: Tongguang Zhai, University of Kentucky; Zhengdong Long, Kaiser Aluminum; Peter Liaw, University of Tennessee

Wednesday AM
March 2, 2011
Room: 31C
Location: San Diego Conv. Ctr

Session Chairs: Yoshiki Yamada, Ohio Aerospace Institute; Zhefeng Zhang, Institute of Metal Research, Chinese Academy of Sciences

8:30 AM
The Zinagizado Processes as New Electrochemical Alternative to Prevent the Corrosion: *S. R. Casolco*[1]; A. Zanatta A.[1]; H. Castañeda[2]; S. Valdez[3]; [1]ITESM-Campus-Puebla; [2]Battelle, Applied Energy Systems; [3]Instituto de Ciencias Físicas-UNAM

8:50 AM
Corrosion Control by Natural Alkaloids in Silicone Coatings on Mild Steel in Simulated Seawater: *Sandy Tran*[1]; James Earthman[1]; [1]University of California, Irvine

9:10 AM
Electrochemical Evaluation of Martensitic-Austenitic Stainless Steel in Sulfuric Acid Solutions: *Mosaad Sadawy*[1]; [1]University of Technology

9:30 AM
The Preparation of Imidazoline Corrosion Inhibitor: *Daowu Yang*[1]; Yunyun Zhang[1]; Zhuo Ren[1]; [1]ChangSha University of Science & Technology

9:50 AM
Effect of Temperature on The Loss of Ductility of S-135 Grade Drill Pipe Steel and Characterization of Corrosion Products in CO_2 Containing Environment: *Arshad Bajvani Gavanluei*[1]; Brajendra Mishra[1]; David Olson[1]; [1]Colardo School of Mines

10:10 AM Break

10:20 AM
Corrosion Behavior and Galvanic Corrosion Studies of Ti-6Al-4V Alloy GTA Weldment in HCl Solution: M. Atapour[1]; *E. Zahrani*[1]; M. Shamanian[1]; M. H. Fathi[1]; [1]Isfahan University of Technology

10:40 AM
Comparative Study of Hot Corrosion Behavior of Plasma Sprayed Yttria and Ceria Stabilized Zirconia Thermal Barrier Coatings in Na2SO4+V2O5 at 1050 °C: Mohammad Sadegh Mahdipoor[1]; Mohammad Reza Rahimipour[1]; *Mohammad hamed Habibi*[2]; [1]Materials and Energy Research Center; [2]University of Tehran

11:00 AM
The Effect of Temperature on the Corrosion Behavior of 625 Superalloy in PbSO4-Pb3O5-PbCl-ZnO Molten Salt System with 10 wt. % CdO: *E. Zahrani*[1]; A. M. Alfantazi[1]; [1]The University of British Columbia

Friction Stir Welding and Processing VI: Friction Stir Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Wednesday AM
March 2, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: Ravi Verma, General Motors

8:30 AM Invited
Friction Stir Processing to Enable High Peak Combustion Pressures in Mid-sized and Heavy Duty Diesel Engines: *Glenn Grant*[1]; Saumyadeep Jana[1]; Mark Veliz[2]; Brad Beardsley[2]; [1]Pacific Northwest National Laboratory; [2]Caterpillar Technical Center

8:55 AM Invited
Mechanical Properties of Friction Stir Processed, Friction Stir Welded, and Gas Metal Arc Welded AA5083 Aluminum Plate: *Christopher Smith*[1]; Murray Mahoney[2]; Rajiv Mishra[3]; [1]Friction Stir Link; [2]Consultant; [3]Missouri University of Science and Technology

9:20 AM Invited
Friction Stir Powder Processing (FSPP) in Al/Cu and Fe/C Systems: *Hidetoshi Fujii*[1]; Koji Inada[1]; YuFeng Sun[1]; Yoshiaki Morisada[2]; [1]Osaka University; [2]Osaka Municipal Technical Research Institute

9:45 AM
Mechanical Interlock of Thin Metallic Wire Using Friction Stir Forming: *Koshi Yamamura*[1]; Kazuya Torikai[2]; Tadashi Nishihara[2]; [1]Yamamua Mfg. Co., Ltd.; [2]Kokushikan University

10:05 AM
Friction Stir Fabrication - An Additive Friction Stir Technology: *Jeffrey Schultz*[1]; Peter Ferek[1]; [1]Schultz-Creehan, LLC

10:25 AM
Friction Consolidation of Aluminum Chips: *Wei Tang*[1]; Anthony Reynolds[1]; [1]University of South Carolina

10:45 AM
Friction Stir Processing as a Base Metal Preparation Technique for Modification of Fusion Weld Microstructures: *Jeff Rodelas*[1]; John Lippold[1]; James Rule[1]; Jason Livingston[1]; [1]The Ohio State University

11:05 AM Break

11:15 AM
Thermal Stability of Friction Stir Processed Ultrafine Grained Al-Mg-Sc Alloy: *Nilesh Kumar*[1]; Rajiv Mishra[1]; [1]Missouri University of Science & Technology

11:35 AM
Effect of Friction Stir Processing on Constituent Particles in a Commercial 2024Al: *Somayeh Pasebani*[1]; Indrajit Charit[1]; Rajiv Mishra[2]; [1]University of Idaho; [2]Missouri University of Science and Technology

11:55 AM
Obtaining Sub-Micron Grain Size in AM60 Magnesium Alloy Using Friction Stir Processing: *Daniel Gesto*[1]; David Verdera[1]; Paz Miniño[2]; Pilar Rey[1]; Gloria Pena[2]; [1]AIMEN Technology Centre; [2]Universidad de Vigo

12:15 PM
Effect of Friction Stir Processing on Corrosion Behavior of AA5083 Aluminum Alloy: *Gaurav Argade*[1]; Rajiv Mishra[1]; Chris Smith[2]; Murray Mahoney[3]; [1]Missouri University of Science and Technology; [2]Friction Stir Link; [3]Consultant

12:35 PM
Evaluation of Rotational Speed and Post Annealing Effect on the Microstructural Homogeneity of Friction Stir Processed 5083 Aluminum Alloy: *Chun-Yi Lin*[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

Furnace Efficiency – Energy and Throughput: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Thomas Niehoff, Linde Gas; Cynthia Belt, Consultant; Russell Hewertson, Air Products and Chemicals Inc; Robert Voyer, Hatch

Wednesday AM
March 2, 2011
Room: 4
Location: San Diego Conv. Ctr

Session Chairs: Russell Hewertson, Air Products and Chemicals, Inc.; Thomas Niehoff, Linde Gas

8:30 AM
Furnaces Designed for Fuel Efficiency: *David White*[1]; [1]The Schaefer Group, Inc.

8:50 AM
Latest Trends in Post Consumer and Light Gauge Scrap Processing to Include Problematic Processing Material such as UBC, Edge Trimmings and Loose Swarf: *Franz Niedermair*[1]; Guenther Wimroither[1]; [1]Hertwich Engineering

9:10 AM
Investigation of Heat Transfer Conditions in a Reverberatory Melting Furnace by Numerical Modeling: *Andreas Buchholz*[1]; John Rødseth[2]; [1]Hydro Aluminium Rolled Products GmbH; [2]Hydro Aluminium AS

9:30 AM
Oxyfuel Optimization Using CFD Modeling: *Thomas Niehoff*[1]; Sreenivas Viyyuri[1]; [1]Linde Gas

9:50 AM
Operational Efficiency Improvements Resulting from Monitoring and Trim of Industrial Combustion Systems: *Jim Oakes*[1]; [1]Super Systems Inc

10:10 AM Break

10:30 AM
50% Reduction of Energy and CO2 Emission in Metallurgical Furnaces by Burners: Michael Potesser[1]; B. Holleis[2]; M. Demuth[2]; D. Spoljaric[2]; J. Zauner[3]; [1]Superior Industries International; [2]MESSER AUSTRIA GmbH; [3]University of Leoben

10:50 AM
New Technology for Electromagnetic Stirring of Aluminum Reverberatory Furnaces: James Herbert[1]; *Alan Peel*[2]; [1]Altek LLC; [2]Altek Europe Ltd.

11:10 AM
Evaluation of Effects of Stirring in a Melting Furnace for Aluminum: *Kunio Matsuzaki*[1]; Steve Iijima[2]; [1]National Institute of Advanced Industrial Science and Technology, Japan; [2]Zmag America, Ltd.

11:30 AM
Business Analysis of Total Refractory Costs: *Cynthia Belt*[1]; [1]Consultant

11:50 AM
Improved Furnace Efficiency through the Use of Refractory Materials: *James Hemrick*[1]; Angela Rodrigues-Schroer[2]; Dominick Colavito[2]; Jeffrey Smith[3]; [1]Oak Ridge National Laboratory; [2]MINTEQ International, Inc.; [3]Missouri University of Science and Technology

12:10 PM
Study on the Energy-Saving Technology of Chinese Shaft Calciners: Guanghui Lang[1]; Chongai Bao[1]; Shoulei Gao[1]; *Ronald Logan*[1]; Yan Li[1]; Jingou Wu[1]; [1]Sunstone

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Diffusion and Phase-Field Simulations

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Wednesday AM
March 2, 2011
Room: 31A
Location: San Diego Conv. Ctr

Session Chairs: Katsuyo Thornton, University of Michigan; Ingo Steinbach, Ruhr-University

8:30 AM Invited
Thermodynamics and Ionic/Electronic Transport in Oxides: Ye Cao[1]; Saswata Bhattacharya[1]; Jie Shen[2]; Clive Randall[1]; *Long Qing Chen*[1]; [1]Pennsylvania State University; [2]Purdue University

9:00 AM Invited
Stress Induced Diffusion of Voids and Interstitials in Solids: *Ingo Steinbach*[1]; [1]Ruhr-University

9:30 AM Invited
Modeling Displacive-Diffusional Coupling in Phase Transformation and Plastic Deformation: *Yunzhi Wang*[1]; Ju Li[2]; [1]Ohio State University; [2]University of Pennsylvania

10:00 AM Break

10:20 AM Invited
Diffuse Interface Modeling and Simulations: Conventional and Rigorous Treatments of Diffusion Accompanied by the Kirkendall Effect: Hui-Chia Yu[1]; *Katsuyo Thornton*[2]; [1]University of Michigan - Department of Material Science & Engineering; [2]University of Michigan - Department of Material Science & Eng.

10:50 AM Invited
Evaluation of Ordering Mobility from Antiphase Domain Growth Rate in Fe_3Al Using Phase-Field Simulation: *Yuichiro Koizumi*[1]; Samuel Allen[2]; Masayuki Ouchi[3]; Yoritoshi Minamino[3]; [1]Tohoku University; [2]Massachusetts Institute of Technology; [3]Osaka University

11:20 AM
Phase Field Modeling of Beta to Alpha Transformations in Ti-6Al-4V: *Rongpei Shi*[1]; Ning Zhou[1]; Ning Ma[2]; Yunzhi Wang[1]; [1]The Ohio State University; [2]ExxonMobil Research & Engineering Company

11:50 AM
Thermotransport in γ(bcc) U-Zr Alloys: A Phase-field Model Study: Rashmi Mohanty[1]; *Joshua Bush*[1]; Maria Okuniewski[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

Magnesium Technology 2011: Deformation Mechanisms I

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Wednesday AM
March 2, 2011
Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Carlos Caceres, University of Queensland; Eric Nyberg, Pacific Northwest National Laboratory

8:30 AM
Crystal Plasticity Analysis on Compressive Loading of Magnesium with Suppression of Twinning: *Tsuyoshi Mayama*[1]; Tetsuya Ohashi[2]; Kenji Higashida[3]; Yoshihito Kawamura[1]; [1]Kumamoto university; [2]Kitami Institute of Technology; [3]Kyushu University

8:50 AM
Crystal Plasticity Modeling of Pure Magnesium Considering Volume Fraction of Deformation Twinning: *Yuichi Tadano*[1]; [1]Saga University

9:10 AM
Nucleation Mechanism for Shuffling Dominated Twinning in Magnesium: *Sungho Kim*[1]; Haitham Kadiri[1]; Mark Horstemeyer[1]; [1]Center for Advanced Vehicular Systems

9:30 AM
On the Impact of Second Phase Particles on Twinning in Magnesium Alloys: *Matthew Barnett*[1]; [1]Deakin University

9:50 AM
Influence of Crystallographic Orientation on Twin Nucleation in Single Crystal Magnesium: Christopher Barrett[1]; *Mark Tschopp*[1]; Haitham El Kadiri[1]; Bin Li[1]; [1]Mississippi State University

10:10 AM
Twinning Multiplicity in an AM30 Magnesium Alloy under Uniaxial Compression: *Q. Ma*[1]; H. El Kadiri[1]; A.L. Oppedal[1]; J.C. Baird[1]; M.F. Horstemeyer[1]; [1]Mississippi State University

10:30 AM Break

10:50 AM
Inhomogeneous Deformation of AZ31 Magnesium Sheet in Uniaxial Tension: *Jidong Kang*[1]; David Wilkinson[1]; Raja Mishra[2]; [1]McMaster University; [2]General Motors R&D

11:10 AM
Limitation of Current Hardening Models in Predicting Anisotropy by Twinning in hcp Metals: Application to a Rod-Textured AM30 Magnesium Alloy: *Andrew Oppedal*[1]; Haitham El Kadiri[1]; Carlos Tomé[2]; James Baird[1]; Sven Vogel[2]; Mark Horstemeyer[1]; [1]Mississippi State University; [2]Los Alamos National Laboratory

11:30 AM
Deformation Behavior of Mg from Micromechanics to Engineering Applications: Erica Lilleodden[1]; Jörn Mosler[2]; Malek Homayonifar[2]; Mintesnot Nebebe[2]; Gyu Kim[2]; *Norbert Huber*[2]; [1]GKSS-Research Centre; [2]Helmholtz-Zentrum Geesthacht

11:50 AM
Effect of Substituted Aluminum in Magnesium Tension Twin: *Kiran Solanki*[1]; Amitava Moitra[1]; Mehul Bhatia[1]; [1]Mississippi State University

12:10 PM
Influence of Solute Cerium on the Deformation Behavior of an Mg-0.5wt.%Ce Alloy: *Lan Jiang*[1]; John Jonas[1]; Raj Mishra[2]; [1]McGill University; [2]General Motors

Magnetic Materials for Energy Applications: Amorphous and Nanostructured Magnetocaloric Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday AM
March 2, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: Victorino Franco, Sevilla University

8:30 AM Invited
Effect of Magnetic Cluster Size on the Magnetocaloric Effect in a Magnetic Spin Glass: Eric Lass[1]; Virgil Provenzano[1]; *Robert Shull*[1]; [1]National Institute of Standards and Technology

8:55 AM Invited
Nanostructured Materials for Magnetic Refrigeration: *Christian Binek*[1]; Tathagata Mukherjee[1]; Ralph Skomski[1]; David Sellmyer[1]; Steven Michalski[1]; Renat Sabirianov[2]; [1]University of Nebraska-Lincoln; [2]University of Nebraska-Omaha

9:20 AM Invited
Magnetocaloric Effect in Oxide Nanostructures: *Hariharan Srikanth*[1]; Manh-Huong Phan[1]; [1]University of South Florida

9:45 AM Invited
Ordered Arrays of Magnetic CoNi-Base Nanowires and Nanodots: Magnetization and Transport: *Manuel Vazquez*[1]; Laura Vivas[1]; Victor Prida[2]; Victor Vega[2]; [1]Spanish Council for Research; [2]University of Oviedo

10:10 AM
Magnetocaloric Effect in Gd-Based Thin Film Heterostructures: *Casey Miller*[1]; Christopher Bauer[1]; Daryl Williams[1]; Brian Kirby[2]; [1]University of South Florida; [2]NIST Center for Neutron Research

10:25 AM Break

10:55 AM
Optimization of the Refrigerant Capacity in Multiphase Magnetocaloric Materials: *Rafael Caballero-Flores*[1]; Victorino Franco[1]; Alejandro Conde[1]; K. Knipling[2]; M. Willard[2]; [1]Sevilla University; [2]U.S. Naval Research Laboratory

11:10 AM
The Magnetocaloric Effect of Fe-B-Cr-Gd Amorphous Alloys: J Law[1]; *Raju Ramanujan*[1]; V Franco[2]; [1]Nanyang Technological University; [2]Universidad de Sevilla

11:25 AM
Tuneable Magnetocaloric Properties of Gd-Based Metallic Glasses: *Charlotte Mayer*[1]; Stéphane Gorsse[2]; Bernard Chevalier[1]; [1]ICMCB/CNRS Bordeaux 1 University; [2]ICMCB/CNRS IPB

11:40 AM
Magnetocaloric Studies in Binary Gd-X (X = B, Ga, & Mn) Alloys: *Tanjore Jayaraman*[1]; Laura Langemeier[1]; Mark Koten[1]; Jeffrey Shield[1]; [1]University of Nebraska

11:55 AM
Magnetocaloric Effect and Enhanced Refrigeration Efficiency in ($La_{0.7}Sr_{0.3}MnO_3/SrRuO_3$) Superlattices: *Qiang Zhang*[1]; S. Thota[1]; F. Guillou[1]; P. Padhan[1]; V. Hardy[1]; A. Wahl[1]; W. Prellier[1]; [1]CRISMAT

Material Science Advances Using Test Reactor Facilities: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizer: Todd Allen, University of Wisconsin-Madison

Wednesday AM
March 2, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chair: Todd Allen, University of Wisconsin

8:30 AM Introductory Comments

8:40 AM
In-Reactor Oxidation of Zircaloy and Surface-Modified Zircaloy in Water Vapor at Low Partial Pressures: *David Senor*[1]; Stan Pitman[1]; Mitch Cunningham[1]; Clark Carlson[1]; Walter Luscher[1]; Kevin Clayton[2]; Glen Longhurst[3]; [1]Pacific Northwest National Laboratory; [2]Idaho National Laboratory; [3]Southern Utah University

9:00 AM
Effect of Neutron Radiation on Mechanical Properties of Nanograin Structured Copper: *Walid Mohamed*[1]; Korukonda Murty[1]; Jacob Eapen[1]; [1]North Carolina State University

9:20 AM
Program for Irradiation of Reactor Structural Materials at the ATR-National Scientific User Facility: *Heather MacLean Chichester*[1]; Kumar Sridharan[2]; Ramprashad Prabhakaran[1]; Yong Yang[2]; Peng Xu[2]; Todd Allen[2]; [1]Idaho National Laboratory; [2]University of Wisconsin-Madison

9:40 AM
MAX Ceramics for Nuclear Applications: A New Material for a New Generation of Power: *Darin Tallman*[1]; Elizabeth Hoffman[2]; Dennis Vinson[2]; Robert Sindelar[2]; Gordon Kohse[3]; Michel Barsoum[1]; [1]Department of Materials Science and Engineering, Drexel University; [2]Savannah River National Laboratory; [3]Department of Nuclear Engineering, Massachusetts Institute of Technology

10:00 AM Break

10:30 AM
Status of UCSB ATR-1 and ATR-2 Experiments: *Takuya Yamamoto*[1]; G. Robert Odette[1]; Douglas Klingensmith[1]; David Gragg[1]; Ben Sams[1]; Mitchell Meyer[2]; Gregg Wachs[2]; Julie Foster[2]; James Cole[2]; Dan Ogden[2]; Michael Sprenger[2]; Thomas Maddock[2]; Paul Murray[2]; Joseph Nielsen[2]; Randy Nanstad[3]; William Server[4]; [1]Univ. California Santa Barbara; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory; [4]ATI Consulting

10:50 AM
In-Situ Measurement of Tritium Permeation Through Stainless Steel: *David Senor*[1]; Walter Luscher[1]; Mitch Cunningham[1]; Clark Carlson[1]; Kevin Clayton[2]; Glen Longhurst[3]; [1]Pacific Northwest National Laboratory; [2]Idaho National Laboratory; [3]Southern Utah University

11:10 AM
Target Development Initiatives at SINQ Applying Neutron Techniques: *Werner Wagner*[1]; Peter Vontobel[1]; Yong Dai[1]; Michael Wohlmuther[1]; [1]Paul Scherrer Institut

11:30 AM Invited
Criticality Validation and Reactor Physics Experiment for the Advanced Test Reactor (ATR) National Scientific User Facility (NSUF): *Kimberly Clark*[1]; Denis Beller[1]; John Bess[2]; [1]Univ. of Nevada, Las Vegas; [2]Idaho National Laborotory

11:50 AM Concluding Comments

Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells: 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, TMS: High Temperature Alloys Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Teruhisa Horita, AIST; Zi-Kui Liu, The Pennsylvania State University

Wednesday AM
March 2, 2011
Room: 33C
Location: San Diego Conv. Ctr

Session Chairs: Teruhisa Horita, AIST; Kathy Lu, Virginia Tech

8:30 AM
The Growth of the Oxide Scale on Alloy Interconnects under Electrical Current Supply: *Kenichi Kawamura*[1]; Mitsutoshi Ueda[1]; Toshio Maruyama[1]; [1]Tokyo Institute of Technology

8:55 AM
Oxidation Behavior of (CoMn)3O4 Coatings on Preoxidized 441HP Stainless Steel: *Kathryn Hoyt*[1]; Paul Gannon[1]; Preston White[1]; Rukiye Tortop[1]; [1]Montana State University

9:15 AM
Influence of CeO_2 Coating on Fe-Cr Base Alloys for SOFC Interconnect Applications: *Keeyoung Jung*[1]; Nazik Yanar[1]; Frederick Pettit[1]; Gerald Meier[1]; [1]University of Pittsburgh

9:35 AM
Advanced Conductive Spinel Coating on SOFC Interconnect Frames with One-Step Heat Treatment: *Jung Pyung Choi*[1]; Jeffry Stevenson[1]; Matt Chou[1]; Josh Templeton[1]; Gordon Xia[1]; [1]Pacific Northwest National Laboratory

9:55 AM
Fabrication of Metal-Supported Micro-SOFC: *Gyeong Man Choi*[1]; Younki Lee[1]; Sunwoong Kim[1]; [1]POSTECH

10:15 AM Break

10:25 AM Invited
Search and Study of a Solid Oxide Fuel Cell Seal Material: *Kathy Lu*[1]; [1]Virginia Tech

10:50 AM
In-Situ Neutron Diffraction Study of Porous NiO-YSZ Composite under Uniaxial Loading: *Ling Yang*[1]; Ke An[1]; Alexandru Stoica[1]; Harley Skorpenske[1]; Xunli Wang[1]; [1]Oak Ridge National Laboratory

11:10 AM
Design on Elevated-Temperature and Methanol-Blocking Proton Exchange Membrane for Fuel Cell Application: *Yan Xiang*[1]; [1]Beihang University

11:30 AM
Magnetic Analysis of Nickel Nano-Particles in Solid Oxide Fuel Cell Materials: *James O'Brien*[1]; [2]; [1]Quantum Design; [2]UCSD

11:50 AM
Investigation of 5 MOL% YSZ Electrolyte for SOFC: *Nilufer Evcimen*[1]; Ahmet Ekerim[1]; [1]Yildiz Technical University

Neutron and X-Ray Studies of Advanced Materials IV: Resolving Time

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Wednesday AM
March 2, 2011
Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Erica Lilleoden, GKSS Research Center; Zahir Islam, APS

8:30 AM Keynote
Time-Resolved X-Ray Scattering Techniques for Sub-picosecond to Millisecond Investigation of The Dynamics of Atomic Displacement Cascades*: *Bennett Larson*[1]; Jon Tischler[1]; Roger Stoller[1]; Matthew Perkins[2]; [1]Oak Ridge National Laboratory; [2]Oak Ridge High School

8:55 AM
Three-Dimensional Reciprocal Space Mapping of Martensitic Transformations in Bulk Single Crystals by In-Situ High-Energy Synchrotron X-Ray Diffraction: *Yu Wang*[1]; Xin Zhao[1]; Tian-Le Cheng[1]; Yang Ren[2]; [1]Michigan Tech; [2]Argonne National Laboratory

9:10 AM Invited
In-Situ X-Ray Diffraction Observations of Silver-Nanoink Sintering and High Temperature Eutectic Reaction with Copper: *John Elmer*[1]; Eliot Specht[2]; [1]LLNL; [2]ORNL

9:30 AM Invited
In-Situ Neutron and Synchrotron X-Ray Diffraction for the Investigation of Thermo Mechanical Processes in Materials Science: *Klaus-Dieter Liss*[1]; [1]ANSTO

9:50 AM Invited
Using In-Situ Neutron Diffraction and Mesoscale Modeling to Understand Texture Evolution during Recrystallization of Metallic Polycrystals Simulate Texture Evolution during Recrystallization of Metallic Polycrystals: *Bala Radhakrishnan*[1]; Grigoreta Stoica[1]; Govindarajan Muralidharan[1]; Sarma Gorti[1]; Xun-Li Wang[1]; [1]Oak Ridge National Laboratory

10:10 AM Invited
In-Situ High-Energy X-Ray Study of Advanced Materials for Energy Storage: *Yang Ren*[1]; Zonghai Chen[1]; Yugang Sun[1]; Tu Truong[1]; Jian Xie[2]; [1]Argonne National Laboratory; [2]IUPUI

10:30 AM
A Study of the Deformation Modes in B2 Intermetallics CoTi and CoZr Using In-Situ Neutron Diffraction and Electron Backscattered Diffraction: *Rupalee Mulay*[1]; Sean Agnew[1]; [1]University of Virginia

10:40 AM Break

10:50 AM Invited
In Situ Studies of Engineering Processes with Synchrotron Radiation and Neutrons: *Andreas Schreyer*[1]; Torben Fischer[1]; Jorge Dos Santos[1]; Andreas Stark[1]; Robert Gerstenberger[2]; Peter Staron[1]; Martin Müller[1]; Florian Pyczak[1]; Walter Reimers[2]; Norbert Huber[1]; [1]GKSS Research Center; [2]TU Berlin

11:10 AM Invited
Energy Research on the HIPPO Beam-Line at LANSCE: *Sven Vogel*[1]; Yusheng Zhao[1]; [1]Los Alamos National Laboratory

11:30 AM Invited
In-Situ Intergranular Strains in Extrusion Textured 304L Stainless Steel: 18 Students[1]; Harley Skorpenske[1]; Ke An[1]; Sheng Cheng[2]; Ercan Cakmak[2]; *Thomas Holden*[1]; Hahn Choo[2]; Peter Liaw[2]; Xun-Li Wang[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

11:50 AM
In-Situ Study of Plastic Deformation in 316LN Stainless Steel by Fast Neutron Diffraction: *Alexandru Stoica*[1]; Sheng Cheng[1]; Ke An[1]; Harley Skorpenske[1]; Xun-Li Wang[1]; [1]ORNL

12:05 PM
In-situ Phase Transformation Studies of High Strength Beta Titanium Alloys: *Xinjiang Hao*[1]; Nicholas Wain[1]; Chao Yang[1]; Xinhua Wu[1]; [1]University of Birmingham

12:20 PM Invited
Texture Evolution and Phase Transformation in Titanium Investigated by In-Situ Neutron Diffraction: *Dong Ma*[1]; A.D. Stoica[1]; K. An[1]; L. Yang[1]; H. Bei[1]; R.A. Mills[1]; H. Skorpenske[1]; X.-L. Wang[1]; [1]ORNL

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Thermo-Mechanical Behavior 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: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Wednesday AM
March 2, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chair: Sung Kang, IBM Corporation

8:30 AM Invited
Local Mechanical Properties of Microstructural Constituents in Pb-Free Solders by Micropillar Compression: Ling Jiang[1]; *Nikhilesh Chawla*[1]; [1]Arizona State University

8:55 AM Invited
Coupled Effect of Electric and Mechanical Load on the Fracture Behavior of Lead-Free Solder Joint: *Choong-Un Kim*[1]; Woong Ho Bang[1]; Hong-Tao Ma[2]; Tae-Kyu Lee[2]; Kuo-Chuan Liu[2]; [1]University of Texas Arlington; [2]Cisco Systems, Inc.

9:20 AM Invited
Effects of Aging on Pb-Free Solder Properties in Long Term Service: *Peter Borgesen*[1]; Babak Arfaei[1]; Tariq Tashtoush[1]; Younis Jaradat[1]; Awni Qasaimeh[1]; [1]Binghamton University

9:45 AM Invited
Electromigration-Enhanced Stress Relaxation of Sn and Sn-Ag-Cu Alloy: H. Liu[1]; Q. Zhu[1]; Z. Wang[1]; *J. Shang*[2]; [1]Institute of Metal Research; [2]University of Illinois

10:10 AM Break

10:20 AM
Time-Dependent Mechanical Properties of Thermomechanically Fatigued Pb-Free Solder Joints: *Andre Lee*[1]; K. Subramanian[1]; [1]Michigan State University

10:40 AM
Life Prediction of Sn-3.0Ag-0.5Cu/ENIG and OSP Pb-Free Solder Joints of Chip Scale Package for Automotive Electronics: *Won Sik Hong*[1]; Chulmin Oh[1]; [1]Korea Electronics Technology Institute

11:00 AM
Lead-Free Solder Joint Reliability under Wide Range of Thermal Cycling Conditions: *Hongtao Ma*[1]; Mudasir Ahmad[1]; Kuo-Chuan Liu[1]; [1]Cisco Systems, Inc.

11:20 AM
Microstructural and Damage Evolution in Thermally Cycled Sn-3.5Ag Solder Joints: *Govindarajan Muralidharan*[1]; Kanth Kurumaddali[1]; Andrew Kercher[1]; Larry Walker[1]; Scott Leslie[2]; [1]Oak Ridge National Laboratory; [2]Powerex Inc

11:40 AM
Effects of Reflow Parameters and Aging on Fracture Toughness of a Lead-Free Solder Joint under Dynamic Loading Conditions: *Zhe Huang*[1]; Praveen Kumar[1]; Indranath Dutta[1]; Rajen Sidhu[2]; Mukur Renavikar[2]; Ravi Mahajan[2]; [1]Washington State University; [2]Intel Corp.

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X: Interfacial Reactions of the Pb-Free Solder Joints

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Hans Flandorfer, University of Vienna; Sinn-Wen Chen, National Tsing Hua University; Jae-ho Lee, Hongik University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Clemens Schmetterer, TU Bergakademie Freiberg; Ikuo Ohnuma, Tohoku University; Chao-Hong Wang, National Chung Cheng University

Wednesday AM
March 2, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Sinn-Wen Chen, National Tsing Hua University; Yee-Wen Yen, National Taiwan Univ. of Sci. & Tec.

8:30 AM Invited
Effect of Ag on Growth Behavior of Cu6Sn5 Formed between Molten Sn-xAg-0.5Cu Solders and Cu UBMs: Moon Gi Cho[1]; Sun-Kyoung Seo[1]; *Hyuck Mo Lee*[2]; [1]Samsung Electronics; [2]KAIST

8:55 AM Invited
Influence of Alloying Elements on Solid-State Reactive Diffusion at Interconnection between Sn and Pd: *Masanori Kajihara*[1]; [1]Tokyo Institute of Technology

9:20 AM
Solid-Solid Reaction between Sn3Ag0.5Cu Alloy and Au/Pd/Ni(P) Metallization Pad with Various Pd Thicknesses: *Wei-Hsiang Wu*[1]; Yen-Chen Lin[1]; Cheng-Shiuan Lin[1]; Cheng-En Ho[1]; [1]Yuan Ze University

9:35 AM
Phase Equilibria of the Sn-Fe-Ni Ternary System and Interfacial Reactions at the Sn/Fe-xNi Alloys Couples: *Yee-wen Yen*[1]; Hsien-Ming Hsiao[1]; Shih-Wei Lin[1]; Chen-Kuan Lin[1]; Chiapying Lee[1]; [1]National Taiwan University of Science and Technology

9:50 AM
Modeling of Alternating Reaction Phases in Sn/Ni-V Couples: Chun-Chong Fu[1]; *Chih-chi Chen*[1]; [1]Chung Yuan Christian University

10:05 AM Break

10:25 AM Invited
Phase Evolution and Growth at the Interface of Sn/Cu-xZn under Liquid and Solid Reaction: Chi-Yang Yu[1]; *Jenq-Gong Duh*[1]; [1]National Tsing Hua University

10:50 AM
Metallurgical Reaction in Sn-Cu-Ni Solder Alloys: *Han-wen Lin*[1]; Chih Chen[1]; [1]National Chiao Tung University

11:05 AM
Microstructure Effect of Electroplated Cu Foils on Interfacial Reaction with Pb-Free Sn-Based Solders: T. S. Huang[1]; *Cheng Yi Liu*[1]; [1]National Central University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Alloy Design and Development

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Wednesday AM
March 2, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Sebastian Fähler, IFW Dresden; Petr Sittner, Institute of Physics of the Academy of Sciences

8:30 AM Introductory Comments

8:35 AM Plenary
New Experimental Results on the Role of Alloy Composition and Microstructure on Thermodynamic and Mechanical Properties of NiTi Shape Memory Alloys: Gunther Eggeler[1]; [1]Ruhr-Universitat Bochum

9:05 AM Invited
Characteristic Features of Ni- and Fe-Based Magnetic Shape Memory Alloys: *Ryosuke Kainuma*[1]; [1]Tohoku University

9:25 AM Invited
Design of Ferromagnetic Shape Memory Alloy (FSMA) Composites: *Minoru Taya*[1]; [1]University of Washington

9:45 AM
Thermoelastic and Non-Thermoelastic Martensitic Transformations in Fe-Mn-Al and Fe-Mn-Ga bcc Alloys: *Toshihiro Omori*[1]; Ikuo Ohnuma[1]; Kiyohito Ishida[1]; Ryosuke Kainuma[1]; [1]Tohoku University

10:00 AM Break

10:10 AM
Phase Transformation and Shape Memory Effect of Ti(Pt, Ir): *Yoko Yamabe-Mitarai*[1]; Toru Hara[1]; Seiji Miura[2]; Hideki Hosoda[3]; [1]National Institute for Materials Science; [2]Hokkaido University; [3]Tokyo Institute of Technology

10:25 AM
New Ferrous Polycrystalline Shape Memory Alloy Showing Huge Superelasticity: *Yuuki Tanaka*[1]; Toshihiro Omori[1]; Ryosuke Kainuma[1]; Yuji Sutou[1]; Kiyohito Ishida[1]; [1]Tohoku University

10:40 AM
The Effect of Aluminum Additions on the Shape Memory Behavior in NiTiZr Alloys: Derek Hsen Dai Hsu[1]; Taisuke Sasaki[2]; Gregory Thompson[2]; *Michele Manuel*[1]; [1]University of Florida; [2]The University of Alabama

10:55 AM
Characterization of New Phases in the Ti-Pt System Relevant to High Temperature Shape Memory Alloys: *Karem Tello*[1]; Scott Cochran[1]; Jacob Neuchterlein[1]; Keith Roman[1]; Dana Drake[1]; Heather Rosin[1]; Anita Garg[2]; Ronald Noebe[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]NASA Glenn Research Center

11:10 AM
Influence of Precipitation on the Phase Transformation Temperatures of High Temperature Shape Memory NiMnCoIn Films: *Steven Rios*[1]; Ibrahim Karaman[1]; Xinghang Zhang[1]; [1]Texas A&M University

11:25 AM
Phase Transformation and Microstructure Evolution in Rapidly Solidified Co-Ni-Ga Ferromagnetic Shape Memory Alloys: *Haamun Kalaantari*[1]; Reza Abbaschian[1]; [1]University of California, Riverside (UCR)

11:40 AM
Plasticity Enhanced Martensite Transformation in Ni-Ti Shape Memory Alloys: *Harshad Paranjape*[1]; Sivom Manchiraju[1]; Peter Anderson[1]; [1]The Ohio State University

11:55 AM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Dislocation Dynamics, Geomaterials, Nanoscale

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Wednesday AM
March 2, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Laurent Capolungo, Georgia Tech; Amit Misra, Los Alamos National Laboratory; Olivier Castelnau, ENSAM

8:30 AM Invited
Scaling Laws for Dislocation Microstructures in Cyclic Deformation: *Ladislas Kubin*[1]; Sauzay Maxime[2]; [1]CNRS; [2]CEA

8:55 AM Invited
Dislocation Dynamics Enhanced Single Crystal Constitutive Law: *Laurent Capolungo*[1]; Carlos Tome[2]; irene Beyerlein[2]; [1]Georgia Institute of Technology; [2]Los Alamos National Laboratory

9:20 AM
Experimental and Simulation Study of Grain Boundary Influence on Dislocation Mean Free Path: *Gael Daveau*[1]; Benoit Devincre[2]; Thierry Hoc[3]; Odile Robach[4]; [1]LEM (CNRS-ONERA) / MSSMAT (ECP); [2]LEM (CNRS-ONERA); [3]LTDS (EC-Lyon); [4]CEA-Grenoble DSM/INAC/SP2M/NRS

9:40 AM Invited
Slip Systems Interactions in Ice Single Crystals: *Benoit Devincre*[1]; [1]CNRS

10:05 AM Break

10:20 AM Invited
Polycrystal Plasticity: Linking the Microscopic and Macroscopic Scale: *Hans-Rudolf Wenk*[1]; [1]University of California

10:45 AM Invited
The Transient Creep of Polycrystalline Ice Inferred from Theoretical, Numerical, and Experimental Micromechanical Approaches: *Olivier Castelnau*[1]; Claudiu Badulescu[2]; Renald Brenner[3]; Paul Duval[4]; Fanny Grennerat[4]; Noel lahellec[2]; Maurine Montagnat[4]; Hervé Moulinec[2]; Pierre Suquet[2]; Quoc Huy Vu[3]; [1]PIMM-CNRS; [2]LMA-CNRS; [3]LPMTM-CNRS; [4]LGGE-CNRS

11:10 AM
Rheologic Anisotropy Associated with Flow-Induced Texturing of Earth's Mantle: Donna Blackman[1]; *Olivier Castelnau*[2]; [1]UCSD; [2]CNRS

11:30 AM Invited
Studying the Mechanical Response of Regions within Grains and near Grain Boundaries Using Spherical Nanoindentation: Siddhartha Pathak[1]; *Surya Kalidindi*[2]; [1]Mechanics of Materials and Nanostructures Laboratory, EMPA; [2]Drexel University

11:55 AM
Ab-Initio Based Study of the Elastic Properties of Dual-Phase Ti-Nb Polycrystalline Composites: *Martin Friak*[1]; Benedikt Sander[1]; Duancheng Ma[1]; William Counts[1]; Dierk Raabe[1]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research

12:15 PM
Plasticity of Metallic Nanolayered Composites: Shrinking Tomé to Nanoscales: *Amit Misra*[1]; [1]Los Alamos National Laboratory

12:35 PM
Assessment of the Hertzian Estimate of Dislocation Nucleation Stresses from Nanoindentation Experiments: *Li Ma*[1]; Dylan Morris[2]; Stefhanni Jennerjohn[3]; David Bahr[3]; Lyle Levine[1]; [1]NIST; [2]Michelin North America; [3]Washington State University

Processing and Properties of Powder-Based Materials: Powder and Laser Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Wednesday AM
March 2, 2011
Room: 33A
Location: San Diego Conv. Ctr

Session Chair: David Bourell, University of Texas-Austin

8:30 AM Introductory Comments

8:35 AM
Effect of Heat Diffusion in Interparticle Micro-Welding for 3-D Particle Assembly: *Kenta Takagi*[1]; Kimihiro Ozaki[1]; Keizo Kobayashi[1]; [1]National Institute of Advanced Industrial Science and Tecnology

8:55 AM
Thermal Characterization of Powder-Based Selective Laser Sintering of Nylon-12: *Tim Diller*[1]; Rameshwar Sreenivasan[1]; David Bourell[1]; Joseph Beaman[1]; [1]University of Texas

9:15 AM
Characterization of Al-Ni Composites Produced by Ultrasonic Powder Consolidation: *Dinc Erdeniz*[1]; Teiichi Ando[1]; [1]Northeastern University

9:35 AM
Comparison of the Effect of Particle Size on the Compressive Strength of Sintered Wollastonite - And Chemically Bonded Phosphate - Ceramics: *H. A. Colorado*[1]; J. Juanri[1]; Clem Hiel[2]; H. T. Hahn[1]; J-M Yang[1]; [1]University of California, Los Angeles; [2]Composite Support and Solutions Inc

9:55 AM
Laser Cladding of Functional Coatings for Biomedical Applications: *Shaodong Wang*[1]; Lijue Xue[1]; [1]National Research Council Canada

10:15 AM Break

10:25 AM
Millimeter-Wave Beam Sintering of Ceramic Laser Host Materials: *Arne Fliflet*[1]; Steven Gold[1]; Spencer Miller[2]; M. Imam[1]; C. Feng[1]; [1]Naval Research Laboratory; [2]Directed Energy Professional Society Scholar

10:45 AM
Characterization of Particle-Interface Structure and Its Effect on Tensile Fracture in Bulk Copper Produced by Cold Gas Dynamic Spray Processing: *Paul Eason*[1]; Phillip Brooke[1]; Timothy Eden[2]; Gerald Bourne[3]; Michael Kaufman[4]; [1]University of North Florida; [2]Pennsylvania State University; [3]University of Florida; [4]Colorado School Of Mines

11:05 AM
A Feasibility Study of Multi-Pass Cladding Using High-Power Direct Diode Laser: *Soundarapandian Santhanakrishnan*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

Properties, Processing, and Performance of Steels and Ni-Based Alloys for Advanced Steam Conditions: Mechanical Behavior and Physical Metallurgy

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee
Program Organizers: Peter Tortorelli, Oak Ridge National Laboratory; Bruce Pint, Oak Ridge National Laboratory; Paul Jablonski, National Energy Technology Laboratory; Xingbo Liu, West Virginia University

Wednesday AM
March 2, 2011
Room: 33B
Location: San Diego Conv. Ctr

Session Chair: Paul Jablonski, National Energy Technology Laboratory

8:30 AM
Creep Properties of Fe-20Cr-30Ni-2Nb Austenitic Heat Resistant Steels Strengthened by Intermetallics Designed for A-USC Power Plant: *Masao Takeyama*[1]; Imanuel Tarigan[2]; Naoya Kanno[2]; [1]Tokyo Institute of Technology, Consortium of the Japan Research and Development Center for Materials (JRCM); [2]Tokyo Institute of Technology

8:50 AM
Development and Evaluation of High Mn Containing Alumina-Forming Austenitic Stainless Steel Alloys for Advanced Steam Conditions: *Yukinori Yamamoto*[1]; Michael Santella[1]; Michael Brady[1]; Neal Evans[2]; Philip Maziasz[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

9:10 AM
New Ferritic Steels with Combined Optimal Creep Resistance and Ductility Designed by Coupling Thermodynamic Calculations with Focused Experiments: *Zhenke Teng*[1]; Fan Zhang[2]; Michael Miller[3]; Chain Liu[4]; Austin Chang[2]; Shenyan Huang[1]; Robert Tien[5]; Ye Chou[5]; Peter Liaw[1]; [1]University of Tennessee, Knoxville; [2]CompuTherm LLC; [3] Oak Ridge National Laboratory; [4]Hong Kong Polytechnic University; [5]Multi-Phase Services Inc.

9:30 AM
Alloy 740 Weld Strength Optimization: *John deBarbadillo*[1]; Brian Baker[1]; [1]Special Metals Corporation

9:50 AM
Creep Rupture Testing of Inconel™ 740 Weldments: *Michael Santella*[1]; John Shingledecker[2]; Oleg Barabash[1]; [1]Oak Ridge National Laboratory; [2]EPRI

10:10 AM Break

10:30 AM
Effect of Steam Exposure on the Creep Properties of Ni-Based Alloys: *Sebastien Dryepondt*[1]; Bruce Pint[1]; Edgar Lara-Curzio[1]; [1]ORNL

10:50 AM
High Temperature Fatigue Life of Coated and Uncoated Valve Materials: *Jeffrey Evans*[1]; Seth Farrington[1]; Sebastien Dryepondt[2]; Bruce Pint[2]; [1]University of Alabama in Huntsville; [2]Oak Ridge National Laboratory

11:10 AM
A Study on Constitutive Model for Alloy IC10: *Hongjian Zhang*[1]; Weidong Wen[1]; Haitao Cui[1]; [1]Nanjing University of Aeronautics and Astronautics

11:30 AM
A Study on Constitutive Model for the Recrystallization Behaviors of Alloy IC10: *Hongjian Zhang*[1]; Weidong Wen[1]; Haitao Cui[1]; Ying Xu[1]; [1]Nanjing University of Aeronautics and Astronautics

Refractory Metals 2011: Tungsten-Based Alloys

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Jim Ciulik, University of Texas, Austin

Wednesday AM
March 2, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: Gary Rozak, H.C. Starck, Inc.; John Shields, Pentamet Associated, LLC

8:30 AM
New Refractory High-Entropy Alloys: *Oleg Senkov*[1]; Garth Wilks[1]; Daniel Miracle[1]; C. (Andrew) Chuang[2]; Peter Liaw[2]; [1]Air Force Research Laboratory; [2]University of Tennessee

8:50 AM
Mechanical Properties of Refractory High-Entropy Alloys: *Oleg Senkov*[1]; Garth Wilks[1]; Daniel Miracle[1]; [1]Air Force Research Laboratory

9:10 AM
Creep, Oxidation and Intermetallic Phase Formation: Assessing the High Temperature Performance of a Tungsten-Stainless Steel Hybrid: *Ben Reyngoud*[1]; Milo Kral[1]; [1]University of Canterbury

9:30 AM
WC(100) Surface and Co/WC(100) Interface: Spin-Polarized Ab Initio Study: *Victor Zavodinsky*[1]; [1]Russian Academy of Sciences

9:50 AM Break

10:10 AM
A Bimodal Distribution of W Grain Size in a Mechanically Alloyed Bulk Tungsten Heavy Alloy: *Andrew Zeagler*[1]; Alex Aning[2]; [1]Virginia Polytechnic Institute and State University; [2] Virginia Polytechnic Institute and State University

10:30 AM
Spark Plasma Sintering of Tungsten-Rhenium Alloys for Very High Temperature Nuclear Reactor Applications: *Cory Sparks*[1]; John Youngsman[1]; Jonathan Webb[2]; Steve Howe[2]; Indrajit Charit[3]; Megan Frary[1]; Darryl Butt[1]; [1]Boise State University; [2]Idaho National Laboratory; [3]University of Idaho

10:50 AM
Physical and Mechanical Properties of Tungsten-Rhenium Alloys Produced Via Spark Plasma Sintering: *Jonathan Webb*[1]; Indrajit Charit[2]; Cory Sparks[3]; Darryl Butt[3]; Megan Frary[3]; Mark Carroll[4]; [1]Center for Space Nuclear Research; [2]University of Idaho; [3]Boise State University; [4]Idaho National Laboratory

11:10 AM
Characterization and Sintering of Open-Cell Ceramic Foams Infiltrated with Tungsten Powder: *Eric Faierson*[1]; Kathryn Logan[1]; [1]Virginia Polytechnic Institute and State University

11:30 AM
Comparative Study of Grain Boundary Impurity Effects in Tantalum and Tungsten Based on First-Principles Calculations: Zhiliang Pan[1]; Laszlo Kecskes[2]; *Qiuming Wei*[1]; [1]University of North Carolina Charlotte; [2]U. S. Army Research Laboratory

11:50 AM
Atomistic Modelling of Complex Phases in Refractory Alloys: *Thomas Hammerschmidt*[1]; Bernhard Seiser[2]; Ralf Drautz[1]; David Pettifor[2]; [1]ICAMS Ruhr-Universität Bochum; [2]University of Oxford

Shape Casting IV: Light Metals Division Symposium in Honor of Prof. John T. Berry: Properties

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Paul Crepeau, General Motors Corporation; John Campbell, University of Birmingham

Wednesday AM — Room: 15B
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Glenn Byczynski, Nemak Europe; Sergio Felicelli, Mississippi State Univ

8:30 AM Introductory Comments

8:40 AM
On Faceted Fatigue Fracture in Castings: *Murat Tiryakioglu*[1]; John Campbell[2]; [1]University of North Florida; [2]University of Birmingham

9:00 AM
Effect of Holding Time before Solidification on Double-Oxide Film Defects and Mechanical Properties of Aluminium Alloys: Mahmoud El-Sayed[1]; Hanadi Salem[2]; Abdel-Razik Kandeil[1]; *William Griffiths*[3]; [1]Arab Academy for Science, Technology & Maritime Transport; [2]American University Cairo; [3]University of Birmingham

9:20 AM
Weibull Analysis of Thin A356 Plates Cast with an Electromagnetic Pump Green Sand Process: *Ratessiea Lett*[1]; Sergio Felicelli[1]; John Berry[1]; Rafael Cuesta[2]; Jose Maroto[2]; Ruth San Jose[2]; [1]Mississippi State University; [2]CIDAUT

9:40 AM
Guidelines for 2-Parameter Weibull Analysis for Castings: *Murat Tiryakioglu*[1]; [1]University of North Florida

10:00 AM
Melt Cleanliness, Hydrogen Content and Tensile Properties of A356: *Derya Dispinar*[1]; Arne Nordmark[1]; Freddy Syvertsen[1]; [1]SINTEF

10:20 AM Break

10:40 AM
The Origin of Griffith Cracks: *John Campbell*[1]; [1]University of Birmingham

11:00 AM
The Use of the Weibull Statistical Method to Assess the Reliability of Cast Aluminum Engine Blocks made from Different Casting Processes: *Glenn Byczynski*[1]; Robert Mackay[1]; [1]Nemak Canada

11:20 AM
Ultra-High Strength Sand Castings from Aluminum Alloy 7042: O. Senkov[1]; *Alan Druschitz*[2]; S. Senkova[1]; K. Kendig[1]; J. Griffin[2]; [1]Air Force Research Laboratory; [2]University of Alabama Birmingham

11:40 AM
Relationship between Structures and Properties of Al-Cu Alloys: *Alicia Ares*[1]; Liliana Gassa[1]; Carlos Schvezov[1]; [1]CONICET

12:00 PM
Microstructure Characterization of Magnesium Control Arm Castings: *Liang Wang*[1]; Ratessiea Lett[2]; Sergio Felicelli[2]; John Berry[2]; [1]Mississippi State University ; [2]Mississippi State University

Size Effects in Mechanical Behavior: Indentation Size Effects

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Wednesday AM — Room: 2
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Erica Lilleodden, GKSS Research Center; Khalid Hattar, Sandia National Laboratories

8:30 AM
Stress-Strain Responses from Spherical Nano-Indentation and Micro-Pillar Compression Experiments: A Comparative Study: *Siddhartha Pathak*[1]; Rejin Koodakal[2]; Surya Kalidindi[3]; Johann Michler[2]; [1]California Institute of Technology; [2]EMPA - Swiss Federal Laboratories for Materials Testing and Research; [3]Drexel University

8:50 AM
Nanoscale Behavior of Ta Single Crystals – Temperature and Orientation Dependence: Zhi-Chao Duan[1]; Juergen Biener[2]; Monika Biener[2]; *Andrea Hodge*[1]; [1]University of Southern California; [2]Lawrence Livermore National Laboratory

9:10 AM
The Effect of Point Defects on the Nucleation Plasticity in Small Volumes: *David Bahr*[1]; Veronica Perez[1]; Iman Salehinia[1]; Marc Weber[1]; [1]Washington State University

9:30 AM
Length Scale Effect on the Mechanical Properties of Irradiated Metals: *Khalid Hattar*[1]; Thomas Buchheit[1]; Brad Boyce[1]; Luke Brewer[2]; [1]Sandia National Laboratories; [2]Naval Postgraduate School

9:50 AM
Plastic Flattening of a Sinusoidal Surface: Fengwei Sun[1]; Erik Van der Giessen[2]; *Lucia Nicola*[1]; [1]Delft University of Technology; [2]University of Groningen

10:10 AM Break

10:40 AM Invited
Statistical Effects in Nanoindentation and Nanopillar Compression: *James Morris*[1]; Hongbin Bei[1]; Easo George[1]; [1]Oak Ridge National Laboratory

11:10 AM
Size Effects in Yield Instabilities: *William Gerberich*[1]; [1]University of Minnesota

11:30 AM
Time-Dependent Plasticity in the Small-Scale: Influence of Initial Strain: Byung-Gil Yoo[1]; In-Chul Choi[1]; Kyu-Sik Kim[1]; Jun-Hak Oh[1]; Yong-Jae Kim[1]; *Jae-il Jang*[1]; [1]Hanyang University

Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications: Energy and Catalysis Technologies II - and - Biological Applications

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Nanomaterials Committee, TMS: Surface Engineering Committee
Program Organizers: Nitin Chopra, The University of Alabama; Ramana Reddy, The University of Alabama; Jiyoung Kim, Univ of Texas; Arvind Agarwal, Florida International Univ; Sandip Harimkar, Oklahoma State University

Wednesday AM
March 2, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Ramana Reddy, The University of Alabama; Arvind Agarwal, Florida International University; Nitin Chopra, The University of Alabama

8:30 AM
Silicon-Coated Carbon Nanotube Anodes for Lithium-Ion Batteries: *Michelle Gaines*[1]; Samuel Karpowicz[1]; Deborah Williams[2]; [1]Georgia Institute of Technology; [2]DM Therrell School for Technology, Engineering, Math, and Science

8:45 AM
Fundamental Studies on Morphological Evolution of Multi-Functional Carbon Nanotubes-Nickel/Nickel Oxide Core/Shell Nanoparticle Heterostructures: Wenwu Shi[1]; Anshuman Bansal[2]; *Nitin Chopra*[1]; [1]The University of Alabama; [2]Alabama School of Fine Arts

9:00 AM Break

9:10 AM Introductory Comments for Biological Applications

9:15 AM Invited
Cytokine Nanotechnology: *Venkat Sharma*[1]; [1]University of West Alabama

9:45 AM Invited
Surface Modification of Microneedles for Antimicrobial Activity: *Roger Narayan*[1]; Shaun Gittard[1]; Boris Chichkov[2]; Aleksandr Ovsianikov[2]; Shane Stafslien[3]; Bret Chisholm[3]; [1]University of North Carolina & North Carolina State University; [2]Laser Zentrum Hannover; [3]North Dakota State University

10:15 AM Invited
Functionalized Quantum Dots for Molecular Profiling of Cancer Biomarkers: *Peter Searson*[1]; [1]Johns Hopkins University

10:45 AM Invited
Autonomous Nano/Microscale Motion through Catalysis: *Ayusman Sen*[1]; [1]Pennsylvania State University

11:15 AM
Precipitation and Crystallization of Hydroxyapatite on Boron Nitride Nanotubes Immersed in Simulated Body Fluid: *Debrupa Lahiri*[1]; Virendra Singh[2]; Anup Keshri[1]; Sudipta Seal[2]; Arvind Agarwal[1]; [1]Florida International University; [2]University of Central Florida

11:35 AM
Synthesis of Magnetic and Fluorescent Bifunctional Nanoparticles: Yaolin Xu[1]; Soubantika Palchoudhury[1]; *Yuping Bao*[1]; [1]The University of Alabama

11:50 AM
Synthesis of Multiple Platinum Attached Iron Oxide Nanoparticles: *Soubantika Palchoudhury*[1]; Yaolin Xu[1]; Yuping Bao[1]; [1]The University of Alabama

12:05 PM
Colloid-Chemical Nanoprocesses and Nanotechnologies on the Basis of Oxyhydrate Systems of Rare-Earth Elements: *Tatiana Prolubnikova*[1]; Yuri Sucharev[1]; Tatiana Ukolkina[1]; Konstantin Nosov[1]; [1]Chelyabinsk State University

12:20 PM Concluding Comments

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Characterizations of Nanomaterials and Session in Honor of Prof. T. Kang

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Wednesday PM
March 2, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Seung Kang, Qualcomm

2:00 PM Introductory Comments

2:05 PM Invited
Tailored Fabrication and Characterization of Nanostructures: *Moon Kim*[1]; [1]University of Texas at Dallas

2:35 PM
Scanning Tunneling Microscopic Characterization of Electron Transport in Pi-Conjugated Organic Self-Assembled Monolayer: *Govind Mallick*[1]; Shashi Karna[1]; [1]Army Research Laboratory

2:50 PM
Tunneling Spectroscopy with Near Zero Line-Width Broadening: Ramkumar Subramanian[1]; *Pradeep Bhadrachalam*[1]; Taejoo Park[2]; Jiyoung Kim[2]; Seong Jin Koh[1]; [1]University of Texas at Arlington; [2]University of Texas at Dallas

3:05 PM
Sub-Nanometer Resolution 3D Mapping of Isotopically Modulated Si Multilayers by Atom-Probe Tomography: *Oussama Moutanabbir*[1]; Dieter Isheim[2]; Yoko Kawamura[3]; Kohei Itoh[3]; David Seidman[2]; [1]Max Planck institute of Microstructure Physics; [2]Department of Materials Science and Engineering, Northwestern University; [3]School of Fundamental Science and Technology, Keio University

3:20 PM
Electronic Structure of Bimetallic Nanowires and Implications for Catalytic Activity: *Regina Ragan*[1]; [1]University of California, Irvine

3:35 PM Break

3:50 PM Introductory Comments

3:55 PM Invited
Nano-Scale Multilayer Mask for EUV Lithography Applications and Its Extendability: *Jinho Ahn*[1]; Tak Kang[2]; [1]Hanyang University; [2]Seoul National University

4:25 PM Invited
Aminosilane Monolayer-Assisted Patterning of Conductive Poly(3,4-Ethylenedioxythiophene) PEDOT Source/Drain Electrodes for Bottom Contact Pentacene Thin Film Transistors, and the Effects of the Surface Morphology of PEDOT on the Electrical Performance: Kyunghoon Jeong[1]; Hyunjung Shin[1]; *Jaegab Lee*[2]; [1]Kookmin University; [2]Center for Materials and Processes of Self-Assembly

4:55 PM
Electrochemical Characterization of CdSe and CdTe Electrodeposits: *Jae-Ho Lee*[1]; Ju-Young Lee[1]; [1]Hongik University

5:10 PM
Electrochemical Migration of Cu on Printed Circuit Board; Mechanism and Sn Surface Finish Effect: *Young-Chang Joo*[1]; Min-Suk Jung[1]; Shin-Bok Lee[1]; Ho-Young Lee[1]; Tak Kang[1]; [1]Seoul National University

5:25 PM
Biosensor Applications of Functionalized Singular TiO2 Nanotubes: *Mingun Lee*[1]; Jie Huang[1]; Moon Kim[1]; Hyunjung Shin[2]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]Kookmin University

5:40 PM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Raw Materials Processing

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

Wednesday PM
March 2, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Ismail Duman, Istanbul Technical University; Wei Li, Kunming University of Science and Technology

2:00 PM
An Innovative Process on Beneficiation of Superfine Low Grade Hematite Ore: *Deqing Zhu*[1]; Yongzhong Xiao[1]; Tiejun Chun[1]; Jian Pan[1]; [1]Central South University

2:20 PM
Calcination Behavior of Sivrihisar Laterite Ores of Turkey: *Ender Keskinkilic*[1]; Saeid Pournaderi[2]; Ahmet Geveci[2]; Yavuz A. Topkaya[2]; [1]Atilim University; [2]Middle East Technical University

2:40 PM
Function of High Pressure Roll Grinding in Producing Magnetite Oxidized Pellets: *Yu-feng Guo*[1]; Hai-zheng Hao[1]; Tao Jiang[1]; Jan-jun Fan[1]; [1]Central South University

3:00 PM
Magnetic and Floatability Behaviors of Nonstoichiometric Pyrrhotites: Vladimir Luganov[1]; Shinibai Baiysbekov[1]; *Tatyana Chepushtanova*[1]; Viktor Ermolayev[1]; [1]The K.I. Satpayev Kazakh National Technical University

3:20 PM
Improving the Pelletization of Fluxed Hematite Pellets by Hydrated Lime: *Deqing Zhu*[1]; Wei Yu[1]; Tiejun Chun[1]; Jian Pan[1]; [1]Central South University

3:40 PM
Microwave Assisted Breakage of Metallic Sulfide Bearing Ore: *Matthew Andriese*[1]; [1]Michigan Technological University

4:00 PM Break

4:10 PM
Research on the Ball Milling and Followed by Microwave Reduction of Panzhihua Low Grade Ilmenite Concentrate: Ying Lei[1]; Yu Li[2]; *Jinhui Peng*[2]; Libo Zhang[2]; Shenghui Guo[2]; Wei Li[2]; [1]Key Laboratory of Unconventional metallurgy, Ministry of Education ; [2]Key Laboratory of Unconventional metallurgy, Ministry of Education

4:30 PM
Research on the Recovery of Vanadium from Low-Grade Vanadium Slag by the Calcium Roasting Process: *Xiaojun Li*[1]; [1]Chongqing University

4:50 PM
Study of Strengthen Pelletization of Nickel Laterite: *Jian Pan*[1]; Xian Zhou[1]; De Zhu[1]; Guo Zheng[1]; [1]Central South University

5:10 PM
Waste to Wealth: Production of Fe-Ni from Lateritic Ore/ Chromite over Burden of Sukinda Deposite in Orissa, India: *Bhagyadhar Bhoi*[1]; Chitta Mishra[2]; Hara Mishra[3]; [1]Institute of Minerals and Materials Technology; [2]Natinal Aluminium Company Ltd.; [3]Industrial Promotion and Investment Corporation of Orissa Ltd.(IPICOL)

5:30 PM
Mineralization Behavior of Fluxes during Iron Ore Sintering: Min Gan[1]; *Xiaohui Fan*[1]; Tao Jiang[1]; [1]Central South University

Advances in Mechanics of One-Dimensional Micro/ Nano Materials: Nanomechanics: Size Scale and Theory

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Seung Min Han, Korea Advanced Institute of Science and Technology; Katerina Aifantis, Aristotle University

Wednesday PM
March 2, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Xiaodong Li, University of South Carolina; Julia Greer, California Institute of Technology

2:00 PM Invited
Measurement of Size-Scale Effects in Pure Ni: Effect of Initial Dislocation Density: Jaafar El-Awady[1]; Paul Shade[2]; Sang-Lan Kim[3]; *Michael Uchic*[4]; Satish Rao[3]; Dennis Dimiduk[4]; Chris Woodward[4]; [1]Johns Hopkins University; [2]Universal Technology Corporation; [3]UES, Inc.; [4]Air Force Research Laboratory

2:25 PM Invited
Atomistic Simulations of the Strength of Gold Nanowires: *Christopher Weinberger*[1]; [1]Sandia National Labs

2:50 PM Invited
Gradient Theory for One-Dimensional Configurations and Objects: *Elias Aifantis*[1]; [1]Aristotle University of Thessaloniki

3:15 PM
Size Effects on Strength and Plasticity of Vanadium Nanopillars: *Seung Min Han*[1]; Tara Bozorg-Grayeli[2]; James Groves[2]; Yi Cui[2]; William Nix[2]; [1]Korea Advanced Institute of Science and Technology; [2]Stanford University

3:30 PM Invited
Size Dependent Deformation Mechanism Transition in a Titanium Alloy: *Zhiwei Shan*[1]; [1]Xi'an Jiaotong University

3:55 PM Break

4:10 PM Invited
Size Matters: Size-Dependent Mechanical Properties of Metallic Systems: *Julia Greer*[1]; Dongchan Jang[1]; Andrew Jennings[1]; Ju-Young Kim[1]; [1]California Institute of Technology

4:35 PM Invited
Environmental Effects on the Mechanical Behavior and Function Performance of Nanostructures: *Xiaodong Li*[1]; [1]University of South Carolina

5:00 PM Invited
Transition from Deterministic to Stochastic Deformation: *Alfonso Ngan*[1]; [1]University of Hong Kong

5:25 PM Invited
Structural Transformations in Bulk Nanocrystalline Materials, Nanorods, and Nanoparticles Triggered by Disclinations: *Alexey Romanov*[1]; Anna Kolesnikova[2]; Leonid Dorogin[3]; Ilmar Kink[3]; Elias Aifantis[4]; [1]Ioffe Physical-Technical Institute RAS; [2]Institiute of Problems of Mechnical Engineering; [3]Univeristy of Tartu; [4]Aristotle University of Thessaloniki

5:50 PM
Vibration Analysis of Nano-Structures Using Wavelets and Gradient Theory: *Avraam Konstantinidis*[1]; [1]Aristotle University of Thessaloniki

Alumina and Bauxite: Energy and Environment

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: James Metson, University of Auckland; Carlos Suarez, Hatch Associates Consultants Inc

Wednesday PM
March 2, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Perspective on Bayer Process Energy: *Don Donaldson*[1]; [1]Alumina Consultant

2:20 PM
Optimization of Heat Recovery from the Precipitation Circuit: *Rashmi Singh*[1]; Sushant Hial[1]; Michael Simpson[1]; [1]Vedanta Aluminium Ltd.

2:40 PM
Alunorte Global Energy Efficiency: Arthur Monteiro[1]; Reiner Wischnewski[2]; *Cleto Azevedo*[1]; Emerson Moraes[1]; [1]Alumina do Norte do Brasil S.A.; [2]Hydro Aluminium AS

3:00 PM
Opportunities for Improved Environmental Control in the Alumina Industry: *Richard Mimna*[1]; John Kildea[2]; Everett Phillips[1]; Wayne Carlson[1]; Bruce Keiser[1]; [1]Nalco Company; [2]Nalco Australia

3:20 PM
Alumina Refinery Water Management: When Zero Discharge Just Isn't Feasible….: *Lucy Martin*[1]; Steven Howard[1]; [1]Bechtel

3:40 PM Break

3:50 PM
High Purity Alumina Powders Extracted from Aluminum Dross by the Calcining—Leaching Process: *Liu Qingsheng*[1]; [1]Jiangxi University of Science and Technology

4:10 PM
Effect of Calcium/Aluminium Ratio on MgO Containing Calcium Aluminate Slags: *Wang Bo*[1]; Sun Huilan[1]; Guo Dong[1]; Bi Shiwen[2]; [1]Hebei University of Science and Technology; [2]Northeastern University

4:30 PM
Study on Extracting Aluminum Hydroxide from Reduction Slag of Magnesium Smelting by Vacuum Aluminothermic Reduction: *Wang Yaowu*[1]; Feng Naixiang[1]; You Jing[1]; Hu Wenxin[1]; Peng Jianping[1]; Di Yuezhong[1]; Wang Zhihui[1]; [1]Northeastern University

4:50 PM
Application of Thermo-Gravimetric Analysis for Estimation of Tri-Hydrate Alumina in Central Indian Bauxites --- An Alternative for Classical Techniques: *Yarlagadda Ramana*[1]; Rajesh Patnaik[1]; [1]Vedanta Aluminium Limited

5:10 PM
Determination of Oxalate Ion in Bayer Liquor Using Electrochemical Method: Seval Turhan[1]; Betül Usta[1]; Yücel Sahin[2]; Oktay Uysal[3]; [1]ENTEKNO Industrial Technological and Nano Materials Ltd.& Anadolu University, Faculty of Science, Department of Chemistry; [2]Anadolu University, Faculty of Science, Department of Chemistry; [3]ENTEKNO Industrial Technological and Nano Materials 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; Zhengdong Long, Kaiser Aluminum; Tongguang Zhai, University of Kentucky

Wednesday PM
March 2, 2011
Room: 14A
Location: San Diego Conv. Ctr

Session Chair: Subodh Das, Phinix LLc

2:00 PM
Microstructure Evolution Of Cryomilled Nanostructured Light Weight Al 5083 During SPS: *Yuhong Xiong*[1]; Dongming Liu[1]; Ying Li[1]; Baolong Zheng[1]; Troy Topping[1]; Yizhang Zhou[1]; Deepak Kapoor[2]; Chris Haines[2]; Joseph Paras[2]; Darold Martin[2]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California; [2]US Army

2:20 PM
Design and Optimization of Innovative High Performance Aluminum Sandwich Structures: Antonio Valente[1]; *Edward Chen*[2]; [1]PLY Engenharia, Lda; [2]Transition45 Technologies, Inc.

2:40 PM
Effects of Spark Plasma Sintering (SPS) on Cryomilled Nanostructured Al 5083 Alloy: *Dongming Liu*[1]; Yuhong Xiong[1]; Troy Topping[1]; Yizhang Zhou[1]; Chris Haines[2]; Joseph Paras[2]; Deepak Kapoor[2]; Darold Martin[2]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]UC Davis; [2]US Army, RDECOM-ARDEC, Picatinny Arsenal, NJ 07806, USA

3:00 PM
Microstructural and Electrochemical Characterization of Anodic Oxide Films Formed on Spray-Deposited Al-Si Alloys: *Hector Herrera*[1]; Manuel Palomar[1]; Mario Romero[1]; Jose Juárez[2]; [1]Metropolitan Autonomous University (UAM); [2]Centro Nacional de Metrología (CENAM)

3:20 PM
Preparation of Al - Li Alloys for Lithium-Air Secondary Battery by Solid Diffusion Method: Tao Cheng[1]; Zijian Lv[1]; *Xiujing Zhai*[1]; Mingjie Zhang[1]; Ganfeng Tu[1]; [1]Northeastern University

3:40 PM Break

3:55 PM
Effects of Process Parameters on Rolled Precursor of Aluminum Foam Sandwich Panel: *Binna Song*[1]; Guangchun Yao[1]; Guoyin Zu[1]; Lei Wang[1]; Zhihao Guan[1]; [1]Northeastern University

4:15 PM
Preparation and Characterization of Short Carbon Fiber Reinforced Aluminium Matrix Composites: Pengfei Yan[1]; Guangchun Yao[1]; Jianchao Shi[1]; Xiaolan Sun[1]; *Hongjie Luo*[1]; [1]School of Materials & Metallurgy, Northeastern University

4:35 PM
Preparation of Aluminum Foam Using a Novel Gas-Generating Agent: Deng-Wei Huo[1]; *Xiang-yang Zhou*[1]; Tai-kang Zhang[1]; Jin Qin[1]; Jie Li[1]; Huan Zhao[1]; [1]School of Metallurgical Science and Engineering, Central South University

4:55 PM
High Temperature Dry Sliding Wear Behaviour of Aluminium-Silicon/Graphite Composite Processed by Stir Casting: G. Rajaram[1]; *S. Kumaran*[1]; [1]National Institute of Technology Tiruchirappalli

Aluminum Reduction Technology: Improvement in Cell Equipment and Design

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Wednesday PM — Room: 17B
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: Stephan Broek, Hatch Ltd

2:00 PM
Retrofit of a Combined Breaker Feeder with a Chisel Bath Contact Detection System to Reduce Anode Effect Frequency in a Potroom: *Jonathan Verreault*[1]; René Gariépy[1]; Bernard Desgroseilliers[1]; Claude Simard[1]; Xavier Delcorde[2]; Christophe Turpain[2]; [1]Rio tinto Alcan; [2]ECL

2:20 PM
Anode Dusting from a Potroom Perspective at Nordural And Correlation with Anode Properties: *Halldor Gudmundsson*[1]; [1]Century - Nordural

2:40 PM
The Application of Continuous Improvement to Aluminium Potline Design and Equipment: *William Paul*[1]; [1]Rio Tinto Alcan

3:00 PM
Alcoa STARprobe: *Xiangwen Wang*[1]; Bob Hosler[1]; Gary Tarcy[1]; [1]Alcoa, Inc.

3:20 PM Break

3:30 PM
Active Pot Control Using Alcoa STARprobe: Xiangwen Wang[1]; *Gary Tarcy*[1]; Eliezer Batista[1]; [1]Alcoa, Inc.

3:50 PM
Applications of New Structure Reduction Cell Technology in Chalco's Smelters: *Fengqin Liu*[1]; Songqing Gu[1]; Jiangmin Wang[1]; [1]Chalco

4:10 PM
Transport Numbers in the Molten System NaF-KF-AlF3-Al2O3: Pavel Fellner[1]; *Jan Hiveš*[1]; Jomar Thonstad[2]; [1]Slovak University of Technology in Bratislava; [2]NTNU

4:30 PM
Study on Solution of Al2O3 in Low Temperature Aluminum Electrolyte: *Hongmin Kan*[1]; Ning Zhang[1]; Xiaoyang Wang[1]; [1]Shenyang University

Biological Materials Science: Mechanical Behavior of Biological Materials II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Wednesday PM — Room: 15A
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Dwayne Arola, University of Maryland Baltimore County; Ryan Roeder, University of Notre Dame

2:00 PM Invited
Energy Absorption in Natural Materials: *Joanna McKittrick*[1]; Po-Yu Chen[1]; Ekaterina Novitskaya[1]; Maria Lopez[1]; Irene Chen[1]; Marc Meyers[1]; [1]University of California, San Diego

2:30 PM Invited
High Performance Impact-Tolerant and Abrasion-Resistant Materials: Lessons from Nature: *David Kisailus*[1]; Qianqian Wang[1]; Michiko Nemoto[1]; Dongsheng Li[1]; Brian Weden[1]; [1]University of California at Riverside

3:00 PM
Anatomic Variability in the Elastic Anisotropy of Human Cortical Bone Tissue is Governed by the Orientation Distribution of Apatite Crystals: Justin Deuerling[1]; David Rudy[1]; *Ryan Roeder*[1]; [1]University of Notre Dame

3:20 PM
Ab Initio Study of Thermodynamic, Structural, and Elastic Properties of Mg-Substituted Crystalline Calcite: *Martin Friak*[1]; Pavlina Elstnerova[1]; Liverios Lymperakis[1]; Michal Petrov[1]; Tilmann Hickel[1]; Helge Fabritius[1]; Andreas Zigler[2]; Svetoslav Nikolov[3]; Sabine Hild[4]; Dierk Raabe[1]; Joerg Neugebauer[1]; [1]Max Planck Institute for Iron Research; [2]University of Ulm; [3]Bulgarian Academy of Sciences; [4]Johannes Kepler University Linz

3:40 PM Break

3:50 PM
Crack Propagation in Biocomposites: A Phase Field Study: *Murali Palla*[1]; Tanmay Bhandakkar[2]; Wei Cheah[3]; Mark Jhon[1]; Huajian Gao[2]; Rajeev Ahluwalia[1]; [1]Institute of High Perform. Computing; [2]Brown University; [3]Institute of Materials Research and Engineering

4:10 PM
Fracture Behaviour of Whole Teeth and Dentine at Different Hierarchical Levels: *Claudia Fleck*[1]; Tania Traykova[1]; Paul Zaslansky[2]; Anke Maerten[2]; [1]Technische Universitaet Berlin; [2]Max-Planck-Institute of Colloids and Interfaces

4:30 PM
Depth, Tubule Density and the Fatigue Crack Growth Resistance of Dentin: *Juliana Ivancik*[1]; Dwayne Arola[1]; [1]University of Maryland Baltimore County

4:50 PM
Nanoscopic Dynamic Mechanical Properties of a Mineralized Tissue: Human Dentin: Dwayne Arola[1]; *Heonjune Ryou*[1]; [1]University of Maryland Baltimore County

5:10 PM
The Effects of High Doses of Irradiation on the Fracture Behavior of Human Cortical Bone: *Holly Barth*[1]; Maximilien Launey[2]; Robert Ritchie[1]; [1]UC Berkeley; [2]Lawrence Berkeley National Laboratory

5:30 PM
Quantitative and Qualitative Changes in the Structure and Properties of Demineralized and Deproteinated Compact Bone: *Ekaterina Novitskaya*[1]; Joshua Vasquez[1]; Robert Urbaniak[1]; Steve Lee[1]; Po-Yu Chen[1]; Ana Castro[2]; Gustavo Hirata[2]; Joanna McKittrick[1]; [1]UCSD; [2]Centro de Investigación Científica y de Educación Superior de Ensenada

Bridging Microstructure, Properties and Processing of Polymer Based Advanced Materials: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee, ASM-MSCTS: Texture and Anisotrophy Committee
Program Organizers: Dongsheng Li, Pacific Northwest National Laboratory; Said Ahzi, University of Strasburg; Moe Kahleel, Pacific Northwest National Laboratory

Wednesday PM
March 2, 2011
Room: 32B
Location: San Diego Conv. Ctr

Session Chairs: Dongsheng Li, Pacific Northwest National Laboratory; Frédéric Addiego, CRP Henri Tudor

2:00 PM Keynote
Amorphous and Semi-Crystalline Blends of Poly(Vinylidene Fluoride) and Poly(Methyl Methacrylate): Characterization and Modeling of the Mechanical Behavior: *Jean Halary*[1]; [1]ESPCI ParisTech

2:30 PM
Mechanical Behavior of Melt Mixing Polypropylene Organoclay Nanocomposites: *Said Ahzi*[1]; Nadia Bahloui[1]; Kui Wang[1]; Rodrigue Matadi[1]; Rene Muller[1]; [1]University of Strasbourg

2:50 PM
Microstructural Characterization of Plastic-Bonded Explosives: *John Yeager*[1]; Daniel Hooks[1]; David Bahr[2]; [1]Los Alamos National Laboratory; [2]Washington State University

3:10 PM
An Electron Microscopy Study of Nanoscale Surface and Sub-Surface Deformation Response of Polymer Nanocomposites: *Qiang Yuan*[1]; Devesh Misra[1]; [1]University of Louisiana at Lafayette

3:30 PM Break

3:50 PM
Investigation on Modified Humic Substances Based Binders for Iron Ore Agglomeration: *Tao Jiang*[1]; Guihong Han[1]; Yuanbo Zhang[1]; Yanfang Huang[1]; Guanghui Li[1]; [1]School of Minerals Processing & Bioengineering, Central South University

4:10 PM
Triple Shape Memory Polymers Based on Self-Complimentary Hydrogen Bonding: *Taylor Ware*[1]; Keith Hearon[2]; Duncan Maitland[2]; Walter Voit[1]; [1]The University of Texas at Dallas; [2]Texas A&M University

4:30 PM
Thermomechanical Properties of Epoxy Nanocomposites Using Surface Functionalized Silica Nanoparticles: *Muhammad Sajjad*[1]; Bernhard Feichtenschlager[1]; Silvia Pabisch[2]; Thomas Koch[1]; Sabine Seidler[1]; Herwig Peterlik[2]; Guido Kickelbick[3]; [1]TU Wien; [2]University of Vienna,; [3]Saarland University

4:50 PM
Electrospun Polymer Nanofiber Composite as Thermal Neutron Scintillators: *Stephen Young*[1]; Indraneel Sen[1]; Dayakar Penumadu[1]; [1]University of Tennessee, Knoxville

5:10 PM
Environmental Reliability Anlysis of Mobile Phone Based on Active Disassembly Using Smart Materials: Liu Zhifeng[1]; *Zhao Liuxian*[1]; Li Xinyu[1]; [1]Hefei University of Technology

5:30 PM
Epitaxial and Confinement Effects in Hybrid Organic-Inorganic Nanostructured Composites: *Qiang Yuan*[1]; Devesh Misra[1]; [1]University of Louisiana at Lafayette

5:50 PM Keynote
Bio-Based Nanocomposites Formed by Nanoparticle-Catalyzed Polymerization of Furfuryl Alcohol: *Rina Tannenbaum*[1]; [1]Georgia Institute of Technology, School of Materials Science and Engineering

Bulk Metallic Glasses VIII: Simulation and Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Wednesday PM
March 2, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Dan Miracle, AF Research Laboratory; Ju Li, University of Pennsylvania

2:00 PM Invited
Partial Coordination Numbers in Solute-Rich Glasses: *Dan Miracle*[1]; Oleg Senkov[2]; Garth Wilks[3]; [1]AF Research Laboratory; [2]UES, Inc.; [3]General Dynamics

2:20 PM
Atomic-Scale Modeling of Chemical Effects on the Glass-Forming Ability of Metallic Glass Alloys: *Logan Ward*[1]; Katharine Flores[1]; Wolfgang Windl[1]; [1]The Ohio State University

2:30 PM Invited
Cold Versus Hot Shear Banding in Metallic Glass: A Stick-Slip Model Compared with Experiments: *Evan Ma*[1]; [1]Johns Hopkins University

2:50 PM
Condensed Bond Enthalpies in Metal-Nonmetal and Metal-Semimetal Compounds: *Amanda Dahlman*[1]; Daniel Miracle[1]; Garth Wilks[1]; [1]Air Force Research Laboratory

3:00 PM Invited
Effects of the Potential Landscape on Metallic Liquids and Alloys: *James Morris*[1]; [1]Oak Ridge National Laboratory

3:20 PM
Continuum Modeling of Bulk Metallic Glasses and Composites: *Fadi Abdeljawad*[1]; Max Fontus[2]; Lisa Manning[1]; Mikko Haataja[1]; [1]Princeton University; [2]Prairie View A&M University

3:30 PM Break

3:40 PM Invited
Stress and Fracture Analyses of Bulk Metallic Glasses under Compressive Loading: *Leon Keer*[1]; Xiaoqing Jin[1]; Gongyao Wang[2]; Oleg Senkov[3]; Daniel Miracle[3]; Peter Liaw[2]; Jules Raphael[4]; [1]Northwestern University; [2]The University of Tennessee, Knoxville; [3]Air Force Research Laboratory; [4]Columbus McKinnon Corporation

4:00 PM Invited
Deformation and Failure of Glasses at Nanoscale: *Ju Li*[1]; [1]University of Pennsylvania

4:20 PM
Correlation between Elastic Modulus and Intrinsic Plasticity of Metallic Glass: The Roles of Atomic Configuration and Alloy Composition: *Yongqiang Cheng*[1]; Ajing Cao[1]; Evan Ma[1]; [1]Johns Hopkins University

4:30 PM Invited
Equation of State of Metallic Glasses: Mo Li[1]; [1]Georgia Institute of Technology

4:50 PM Invited
Molecular Dynamics Simulations of Metallic Glasses under Cyclic Loading: *Yunfeng Shi*[1]; Despina Louca[2]; Gongyao Wang[3]; Peter Liaw[3]; [1]Rensselaer Polytechnic Institute; [2]University of Virginia; [3]The University of Tennessee

5:10 PM
Phase-Field Modeling of Phase Transformations in Glass Forming Alloys: *Tao Wang*[1]; Ralph Napolitano[2]; [1]Ames Lab; [2]Ames Lab & Iowa State University

5:20 PM Invited
Molecular Dynamics Studies of Cu-Zr-Al Metallic Glasses in Connection with In-Situ Synchrotron Experiment: *Yunche Wang*[1]; Chun-Yi Wu[1]; Feng Jiang[2]; Jinn Chu[3]; Peter Liaw[2]; [1]National Cheng Kung University; [2]The University of Tennessee; [3]National Taiwan University of Science and Technology

5:40 PM
Correlations between Local Stresses and Moduli in Model Metallic Glasses: Karimi Kamran[1]; *Craig Maloney*[1]; [1]Carnegie Mellon University / Civil & Environmental Engineering

5:50 PM Invited
Local Atomic Structure of Ca-Mg-Zn Bulk Metallic Glasses: *Oleg Senkov*[1]; Emma Barney[2]; Yongqiang Cheng[3]; Daniel Miracle[1]; Evan Ma[3]; Alex Hannon[2]; [1]Air Force Research Laboratory; [2]ISIS, Rutherford Appleton Laboratory; [3]John Hopkins University

6:10 PM
Predicting the Properties of High Entropy Alloys from Electronic Structure: *Andrew Cunliffe*[1]; Colin Freeman[1]; Iain Todd[1]; [1]University of Sheffield

6:20 PM Invited
Predicating the Bulk Elastic Modulus and Density of Metallic Glasses by First Principles Calculation: *X. Hui*[1]; Z. P. Lu[1]; G. L. Chen[1]; Z. K. Liu[2]; [1]University of Science and Technology Beijing; [2]The Pennsylvania State University

Cast Shop for Aluminum Production: Grain Refinement, Alloying, Solidification and Casting

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Geoffrey Brooks, Swinburne University of Technology; John Grandfield, Grandfield Technology Pty Ltd

Wednesday PM
March 2, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chairs: Peter Schumacher, University of Leoben; Arild Hakonsen, Hydo Alusminium Hycast a.s.

2:00 PM Introductory Comments

2:05 PM
Hycast Gas Cushion (GC) Billet Casting System: Idar Steen[1]; Arild Hakonsen; [1]Hydro Aluminium

2:30 PM
Studies of Fluid Flow and Meniscus Behavior during Horizontal Single Belt Casting (HSBC) of Thin Metallic Strips: *Donghui Li*[1]; Jaspreet Gill[1]; Mihaiela Isac[1]; Roderick Guthrie[1]; [1]McGill Metals Processing Centre

2:55 PM
Development of Alba High Speed Alloy: Abdulla Ahmed[1]; *Jalal Hassan*[1]; [1]Aluminium Bahrain (Alba)

3:20 PM
Dissolution Studies of Si Metal in Liquid Al under Different Forced Convection Conditions: *Mehran Seyed Ahmadi*[1]; Stavros Argyropoulos[1]; Markus Bussmann[1]; Don Doutre[2]; [1]University of Toronto; [2]Novelis Global Technology Center

3:45 PM Break

3:55 PM
Modification and Grain Refinement of Eutectics to Improve Performance of Al-Si Castings: *Milan Felberbaum*[1]; Arne Dahle; [1]The University of Queensland

4:20 PM
Production of Al-Ti-C Grain Refiners with the Addition of Elemental Carbon and K2TiF6: *Fatih Toptan*[1]; Isil Kerti[1]; Sibel Daglilar[1]; Ahmet Sagin[1]; Omer Faruk Karadeniz[1]; Aysin Ambarkutuk[1]; [1]Yildiz Technical University

4:45 PM
Effect of Mechanical Vibrations on Microstructure Refinement of Al-7Mass% Si Alloys: *Takuya Tamura*[1]; Toshiro Matsuki[2]; Kenji Miwa[1]; [1]National Institute of Advanced Industrial Science and Technology (AIST); [2]Yamagata Research Institute of Technology

5:10 PM
Predicting the Response of Aluminum Casting Alloys to Heat Treatment: *Chang-Kai Wu*[1]; Makhlouf Makhlouf[1]; [1]Worcester Polytechnic Institute

Characterization of Minerals, Metals and Materials: Nanomaterials, Nanotechniques and Thin Films

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Wednesday PM
March 2, 2011

Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Shadia Ikhmayies, Al Isra University; Jozef Zrnik, Comtes FHT, Inc.

2:00 PM
Microstructural Characterization of Nanomaterials Produced from Co-Products of the Ethanol Production (DDGS): Joner Alves[1]; *Chuanwei Zhuo*[2]; Yiannis Levendis[2]; Jorge Tenório[1]; [1]University of Sao Paulo; [2]Northeastern University

2:15 PM
Photoluminescence of the Interface of SnO2:F/CdS:In/CdTe Thin Film Solar Cells Prepared Partially by the Spray Pyrolysis Technique: *Shadia Ikhmayies*[1]; Riyad Ahmad-Bitar[2]; [1]Al Isra University; [2]Al-Hussain Ben Talal University, Ma'an Jordan

2:30 PM
Particle Size Analysis of Metallic Nanoparticles Using Ultra-High Resolution Mass Sensors: *Kerri-Ann Hue*[1]; Ken Babcock[2]; Patrick O'Hagan[1]; Larry Unger[1]; [1]Particle Sizing Systems; [2]Affinity Biosensors

2:45 PM
Observation of Heterogeneous Deformation in Commercial Purity Ti Using Nano-Indentation: *Yiyi Yang*[1]; Claudio Zambaldi[2]; Leyun Wang[1]; Philip Eisenlohr[2]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung

3:00 PM
Production of CdS1-xTex Thin Films and Bandgap Investigation of the Produced Solid Solution: *Shadia Ikhmayies*[1]; Riyad Ahmad-Bitar[2]; [1]Al Isra University; [2]Al-Hussain Ben Talal University, Ma'an Jordan

3:15 PM
Studying the Microstructural Evolution of Nanocrystalline Metals in Response to External Straining by Automated Acquisition and Indexing of Diffraction Patterns in the TEM: *Kai Zweiacker*[1]; Andreas Kulovits[1]; Jorg Wiezorek[1]; [1]University of Pittsburgh

3:30 PM Break

3:45 PM Invited
An Investigation of the Photoluminescence and Transmittance of CdS1-xTex Thin Films: *Shadia Ikhmayies*[1]; Riyad Ahmad-Bitar[2]; [1]Al Isra University; [2]Al-Hussain Ben Talal University, Ma'an Jordan

4:15 PM
Convergent Beam Electron Diffraction of Nanomaterials: Karen Henry[1]; Richard Vanfleet[2]; *Gregory Thompson*[1]; [1]University of Alabama; [2]Brigham Young University

4:30 PM
Measuring the Elastic Modulus of Polymers by Nanoindentation with an Atomic Force Microscope: Daniel Hoffman[1]; Ibrahim Miskioglu[1]; Katerina Aifantis[2]; *Jaroslaw Drelich*[1]; [1]Michigan Technological University; [2]Aristotle University of Thessaloniki

4:45 PM
Microstructural Analysis of Nanomaterials Synthesized from Unserviceable Tires: Joner Alves[1]; *Chuanwei Zhuo*[2]; Yiannis Levendis[2]; Jorge Tenório[1]; [1]University of Sao Paulo; [2]Northeastern University

5:00 PM
Synthesis of Sr-Doped LaP_3O_9 Films in Phosphoric Acid Solutions and Their Proton Conduction Properties: *Takayuki Onishi*[1]; Naoyuki Hatada[1]; Kazuaki Toyoura[1]; Yoshitaro Nose[1]; Tetsuya Uda[1]; [1]Kyoto University

5:15 PM
Effects of Heat Treatment Schedule on the Crystallization Behavior and Thermal Expansion of a LiS_2 Based Glass-Ceramic: *Onder Guney*[1]; Erdem Demirkesen[1]; [1]Istanbul Technical University

5:30 PM
Characterization of Nanocrystalline Silver Fabricated by Warm-Vacuum-Compaction Method: *Wei Liu*[1]; Qionghua Zhou[1]; [1]Henan University of Science and Technology

Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Development of Nuclear Energy Systems and Fuels

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Matthew Kerr, US Nuclear Regulatory Commission; Meimei Li, Argonne National Lab; Jonathan Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Lab

Wednesday PM
March 2, 2011

Room: 4
Location: San Diego Conv. Ctr

Session Chairs: Meimei Li, Argonne National Lab; Matthew Kerr, US Nuclear Regulatory Commission

2:00 PM Keynote
Using Synchrotron Radiation to Study Nuclear Energy Systems: *Lynda Soderholm*[1]; [1]Argonne National Laboratory

2:30 PM Invited
Zirconium Alloy Oxide Structure Studied Using Microbeam Synchrotron Radiation Diffraction and Fluorescence: *Arthur Motta*[1]; Aylin Kucuk[2]; Marcelo Gomes da Silva[3]; Robert Comstock[4]; Barry Lai[5]; Zhonghou Cai[5]; [1]Penn State University; [2]EPRI; [3]Universidade Federal do Ceara; [4]Westinghouse Electric Co.; [5]Argonne National Laboratory

3:00 PM
Texture and Intergranular Stresses of Hydrides Precipitated in Zr-2.5%Nb and Zircaloy-4: *Javier Santisteban*[1]; M A Vicente-Alvarez[1]; Pablo Vizcaino[2]; A. D. Banchik[2]; Jon Almer[3]; [1]CONICET; [2]Comision Nacional de Energia Atómica; [3]Argonne National Laboratory

3:20 PM
A High Energy Synchrotron X-Ray Study of Biaxial Thermal Creep of AISI 316L Steel: *Hsiao-Ming Tung*[1]; Kun Mo[1]; Xiang Chen[1]; Jonathan Almer[2]; Meimei Li[2]; James F. Stubbins[1]; [1]University of Illinois; [2]Argonne National Laboratory

3:40 PM
Synchrotron X-Ray Characterization of the Oxide Structure Formed an Ferritic-Martensitic Alloys Exposed to 500°C Steam and Supercritical Water: *Jeremy Bischoff*[1]; Arthur Motta[1]; Guoping Cao[2]; Robert Comstock[3]; Zhonghou Cai[4]; [1]Penn State University; [2]University of Wisconsin-Madison; [3]Westinghouse Electric Co.; [4]Argonne National Laboratory

4:00 PM Break

4:10 PM Keynote
Microbeam, Timing and Wavelength-Dispersive Studies of Nuclear Materials with Synchrotrons: *Gene Ice*[1]; [1]Oak Ridge National Laboratory

4:40 PM
Synchrotron Radiation Study of Hydride Reorientation in Zircaloy under In Situ Stress and Temperature Cycles: *Kimberly Colas*[1]; Arthur Motta[1]; Mark Daymond[2]; Jonathan Almer[3]; Zhonghou Cai[3]; [1]Pennsylvania State University; [2]Queen's University; [3]APS Argonne National Laboratory

5:00 PM
SAXS and ASAXS Studies of Nanoscale Features in Reactor Pressure Vessel Steels and Nanostructured Ferritic Alloys: *Takuya Yamamoto*[1]; Nicholas Cunningham[1]; G. Robert Odette[1]; Carlo Segre[2]; Shanshan Liu[2]; Sonke Seifert[3]; [1]Univ. California Santa Barbara; [2]Illinois Institute of Technology; [3]Argonne National Laboratory

5:20 PM
Design of Materials Testing Capsule in PULSTAR Reactor for High Temperature Irradiations: *Santosh Sahoo*[1]; Kalyan Chitrada[1]; Jacob Eapen[1]; Timothy Burchell[2]; K. Murty[1]; [1]North Carolina State University; [2]Oak Ridge National Laboratory

5:40 PM
Microtomographic Investigation of Damage in E911 Steel after Long Term Creep: Federico Sket[1]; *Andras Borbely*[2]; Karl Maile[3]; Rudy Scheck[3]; [1]IMDEA Materials; [2]Ecole des Mines de Saint-Etienne; [3]Materialprüfungsanstalt Universität Stuttgart

Coatings for Structural, Biological, and Electronic Applications II: Process-Property-Performance Correlations - II; Metallic, Semiconducting and Insulating Coatings

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

Wednesday PM
March 2, 2011
Room: 6E
Location: San Diego Conv. Ctr

Session Chairs: Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ

2:00 PM
The Development of a Non-Destructive Multiple Partial Unloading Micro-Indentation Technique for Thermal Barrier Coating Spallation Prediction: *Jared Tannenbaum*[1]; Kwangsoon Lee[1]; Bruce Kang[1]; Mary Anne Alvin[2]; [1]West Virginia University; [2]National Energy Technology Laboratory

2:15 PM Invited
Study of the Nanocomposites for Superalloy Thermal Barrier Coatings: *Shiqiang Qian*[1]; [1]School of Materials Engineering, Shanghai University of Engineering Science

2:40 PM
Effect of Solubilizer on Low-Temperature Stability of Organic Solderability Preservative: *Zhongliang Xiao*[1]; Yan Shi[1]; Yu Ding[1]; Daoxin Wu[1]; Guojun Xu[2]; [1]Changsha University of Science and Technology; [2]Shenzhen Yicheng Electronic Technology Co., Ltd

2:55 PM
Failure Mechanisms of Strained Copper Films on Polyimide: *Megan Cordill*[1]; Gerhard Dehm[2]; [1]University of Leoben; [2]Erich Schimd Insitute of Materials Science

3:10 PM
High-Performance Organic-Inorganic Thin Film Structural Adhesive Interphases: *Jeffrey Yang*[1]; Reinhold Dauskardt[1]; [1]Stanford University

3:25 PM
Effect of the Duty Cycle on the Microstructural, Mechanical and Tribological Properties of TiN Layers Deposited by PACVD: Mohammad Sadegh Mahdipoor[1]; Mani Montazeri[2]; Mansour Soltanie[2]; Farzad Mahboubi[1]; *Mohammad Hamed Habibi*[3]; Shahrokh Ahangarani[4]; [1]Amirkabir University of Technology; [2]Iran University of Science and Technology; [3]University of Tehran; [4]Iranian Research Organization for Science and Technology

3:40 PM Break

3:50 PM
The Influence of Pre-Treatment Plasma Nitriding on Tribological Properties of TiN Coatings Produced by PACVD: Mohammad Sadegh Mahdipoor[1]; Farzad Mahboubi[1]; Mahdi Raoufi[2]; Hasan Elmkhah[3]; *Mohammad Hamed Habibi*[4]; [1]Amir Kabir university; [2]Iran University of Science and Technology; [3]Tarbiat Modarres University; [4]University of Tehran

4:05 PM
The Effects of Annealing on the Charge-Discharge Characteristics of Al-Si Thin Film with Pre-Deposited Al Layer: *Chao-Han Wu*[1]; Fei-Yi Hung[2]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]Department of Materials Science and Engineering, National Cheng Kung University; [2]Institute of Nanotechnology and Microsystems Engineering, Center for Micro/Nano Science and Technology, National Cheng Kung University

4:20 PM Invited
Morphology Evolution during the Growth of Polycrystalline Thin Films: *Ramanathan Krishnamurthy*[1]; Mikko Haataja[2]; [1]Purdue University; [2]Princeton University

4:45 PM
Characterization of Nanospherical ZnO: Al Films and ZnO: Al/p-Si Structure: *Nilgun Baydogan*[1]; O. Karacasu[2]; H. Cimenoglu[2]; [1]Istanbul Technical University, Energy Institute; [2]Istanbul Technical University, Metallurgical & Materials Engineering Department

Commonality of Phenomena in Composite Materials II: Understanding Composite Performance

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Carl Boehlert, Michigan State University

Wednesday PM
March 2, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chair: Enrique Barrera, Rice University

2:00 PM Invited
Microstructural Optimization of Hybrid Materials for Multifunctional Performance: *Jonathan Spowart*[1]; [1]Air Force Research Laboratory

2:40 PM
Stiffness Based Failure Predictions in Composite Structures: *Chandra Veer Singh*[1]; [1]Cornell University

3:00 PM
Ablation Properties of Glass Ceramic Matrix/C and Glass Ceramic/Sic Matrix Composites during Oxyacetylene Torch Test: *Julien Beaudet*[1]; Jonathan Cormier[1]; André Dragon[1]; [1]PPRIME

3:20 PM
Higher-Order Micromechanics and Effective Elastic Moduli of Particle Reinforced Composites: *Keiji Yanase*[1]; Jiann-Wen Ju[2]; [1]Fukuoka University; [2]University of California, Los Angeles

3:40 PM Break

4:00 PM Invited
Enhancing Performance, Durability and Properties of Engineering Resins through the Use of Nanotechnology: *Michael Meador*[1]; [1]NASA Glenn Research Center

4:40 PM
Modelling Shear Fracture of Hybrid CFRP/Ti Laminates with Cohesive Elements; Effects of Geometry and Material Properties: *Parya Naghipour*[1]; Marion Bartsch[1]; Joachim Hausmann[1]; Karola Schulze[1]; [1]German Aerospace Research Center (DLR)

5:00 PM Invited
Deformation Mechanisms in Carbon Nanotube/Epoxy Composites: Scott Brownlow[1]; Alexander Moravsky[2]; *Bhaskar Majumdar*[1]; [1]New Mexico Tech; [2]MER Corporation

Computational Plasticity: Crystal Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Remi Dingreville, Polytechnic Institute of NYU; Koen Janssens, Paul Scherrer Institute

Wednesday PM
March 2, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
A Methodology for Simulating Microtexture Evolution in Deformed Aluminum and Titanium Polycrystals: *Paul Dawson*[1]; Romain Quey[1]; [1]Cornell University

2:30 PM Invited
A Modular Crystal Plasticity Framework Applicable from Component to Single Grain Scale: *Philip Eisenlohr*[1]; Denny Tjahjanto[1]; Christoph Kords[1]; Franz Roters[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung

3:00 PM Invited
An Efficient Strategy to Take Texture-Induced Anisotropy Point-By-Point into Account during FE Simulations of Metal Forming Processes: *Paul Van Houtte*[1]; Jerzy Gawad[1]; Philip Eyckens[1]; Bert Van Bael[1]; Samaey Giovanni[1]; Dirk Roose[1]; [1]Katholieke Universiteit Leuven

3:30 PM Invited
Crystal Plasticity Computations Using Real Grain Arrangements to Simulate Deformation and Fracture: *Henry Proudhon*[1]; Samuel Forest[1]; Wolfgang Ludwig[2]; [1]MINES ParisTech; [2]INSA Lyon

4:00 PM
A Rate-Dependent Polycrystal Model for Evaluation of the Creep Deformation in the Heat Affected Zone of the Modified 9Cr-1Mo Steels: *Mehdi Basirat*[1]; Gabriel Potirniche[1]; Triratna Shrestha[1]; Indrajit Charit[1]; Karl Rink[1]; [1]University of Idaho

4:15 PM Break

4:30 PM Invited
Use of Spectral Databases for Crystal Plasticity Finite Element Simulations of Bulk Deformation Processing of Cubic Metals: *Hamad Al-Harbi*[1]; Josh Shaffer[1]; Surya Kalidindi[1]; [1]Drexel University

5:00 PM
Modeling Mesoscopic Plastic Flow Heterogeneities of 3D Polycrystalline Microstructures Using Crystal-Plasticity FEM and FFT-Based Viscoplastic Model: *Yoon Suk Choi*[1]; Benjamin Anglin[2]; Michael Groeber[3]; Paul Shade[4]; Michael Uchic[3]; Christopher Woodward[3]; Dennis Dimiduk[3]; Anthony Rollett[2]; Ricardo Lebensohn[5]; Triplicane Parthasarathy[1]; [1]UES, Inc.; [2]Carnegie Mellon University; [3]Air Force Research Laboratory; [4]UTC; [5]Los Alamos National Laboratory

5:20 PM Invited
Efficient Methodologies for Determining Temperature-Dependent Parameters of Crystal Viscoplasticity: Daniel Smith[1]; *Richard Neu*[1]; [1]Georgia Institute of Technology

5:50 PM
A Dislocation Density Based Crystal Plasticity Model for a-Titanium: *Alankar Alankar*[1]; Philip Eisenlohr[1]; [1]Max-Planck Institute for Iron Research

6:10 PM
Numerical Eulerian Modeling in Dynamic Crystal Plasticity: *Ioan Ionescu*[1]; Oana Cazacu[2]; [1]University Paris 13; [2]University of Florida

Computational Thermodynamics and Kinetics: Thermodynamics, Phase Stability and Phase Transformations

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Wednesday PM
March 2, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Patrice Turchi, Lawrence Livermore National Laboratory; Michael Gao, National Energy Technology Lab/URS Corp

2:00 PM Invited
Thermomechanical Processing Design of Nanoprecipitate Strengthened Alloys Employing Genetic Algorithms: *Pedro Rivera-Diaz-del-Castillo*[1]; [1]University of Cambrdige

2:30 PM
Thermodynamic Assessment and Experimental Investigation of the Ternary Ti–Al–Cr System: *Mario Kriegel*[1]; Damian Cupid[1]; Olga Fabrichnaya[1]; Dmytro Pavlyuchkov[1]; Kostyantyn Korniyenko[2]; Vera Khorujaya[2]; Fereshteh Ebrahimi[3]; Hans Seifert[1]; [1]Freiberg University of Mining and Technology; [2]I.N. Frantsevich Institute for Problems of Materials Science; [3]University of Florida

2:45 PM
First-Principles Prediction of Partitioning of Alloying Elements between Cementite and Ferrite: Chaitanya Krishna Ande[1]; *Marcel Sluiter*[2]; [1]Materials Innovation Institute, Delft University of Technology; [2]Delft University of Technology

3:00 PM
Ab Initio Aided CALPHAD Thermodynamic Modeling of Ionic Systems: Application to $La_{1-y}MnO_{3\pm\delta}$: *Shih-kang Lin*[1]; Dane Morgan[1]; [1]Univeristy of Wisconsin-Madison

3:15 PM
Phase Formation in Actinide Alloys: Why Ab Initio?: *Patrice Turchi*[1]; Alexander Landa[1]; Larry Kaufman[2]; Per Söderlind[1]; [1]Lawrence Livermore National Laboratory; [2]CALPHAD, Inc.

3:30 PM Break

3:40 PM Invited
Topological Modelling of Martensitic Transformations: Robert Pond[1]; [1]University of Exeter

4:10 PM Invited
Ginzburg-Landau Modeling of Martensitic and Multifunctional Materials: *Avadh Saxena*[1]; [1]Los Alamos National Lab

4:40 PM
Simulation of Liquid/Solid Phase Transformations - How Thin Is a Sharp Interface?: *Markus Rettenmayr*[1]; [1]Friedrich-Schiller-University Jena

4:55 PM
A Molecular Dynamics Study of the Austenite-Ferrite Interface Mobility in Pure Fe: *Huajing Song*[1]; Jeff Hoyt[1]; [1]Mcmaster University

5:10 PM
Phase Stability of Fe-Nb-M (M=Cr, Mn, Si, Ti): A First Principles Approach: *Michael Gao*[1]; Paul Jablonski[1]; [1]NETL

5:25 PM
Thermodynamic Modeling of the Cu-Hf System: Yu Zhong[1]; Arkapol Saengdeejing[1]; *Laszlo Kecskes*[2]; Zi-Kui Liu[1]; [1]Pennsylvania State University; [2]US Army Research Laboratory

David Pope Honorary Symposium on Fundamentals of Deformation and Fracture of Advanced Metallic Materials: Grain Boundaries, Phase Transformations, and Steels

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: E. P. George, Oak Ridge National Laboratory; Haruyuki Inui, Kyoto University; C. T. Liu, The Hong Kong Polytechnic University

Wednesday PM — Room: 32A
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Michael Mills, The Ohio State University; Robert Mulford, Knolls Atomic Power Laboratory

2:00 PM Invited
Physical Metallurgy Insights into the Effects of Grain-Boundary Segregants on Ductility and Fracture: *E. P. George*[1]; C. T. Liu[2]; D. P. Pope[3]; [1]Oak Ridge National Laboratory; [2]Hong Kong Polytechnic University; [3]University of Pennsylvania

2:30 PM
Study of Grain Boundary Strength in AA2198 Using Notched Micro-Beam Bending: Daniel Kupka[1]; *Erica Lilleodden*[1]; [1]GKSS Research Center

2:45 PM
In Situ TEM Observations of Reverse Dislocation Motion upon Unloading of Ultrafine-Grained (UFG) Aluminium Strained in the Microyield Region: *Daniel Caillard*[1]; Frederic Mompiou[1]; Marc Legros[1]; Hael Mughrabi[2]; [1]CNRS; [2]University Erlangen-Nürnberg

3:00 PM
Grain Boundary Based Plasticity: In-Situ TEM Experiments and Modelling: *Frederic Mompiou*[1]; Marc Legros[1]; Daniel Caillard[1]; [1]CEMES-CNRS

3:15 PM
Truncated Dislocation Sources in Nanometric Aluminum Crystals: A Molecular Dynamics Study: *Bulent Biner*[1]; L. P. Kubin[2]; [1]Idaho National Laboratory; [2]LEM CNRS/ONERA

3:30 PM
Geometrical Construction and Structure of Quasi-Periodic Grain Boundaries in Cubic Materials: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

3:45 PM Break

4:00 PM
Mechanism of Creep Deformation in Alumina-Forming Stainless Steel Fe-25Ni-14Cr-3.5Al-2.5Nb-0.1wt%C: *Deepak Kumar*[1]; Yukinori Yamamoto[1]; Michael Santella[1]; Michael Brady[1]; Edgar Curzio[1]; [1]Oak Ridge National Laboratory

4:15 PM
Evaluation and Modeling for Fatigue Damage Initiation of Thermal-Mechanically Processed High-Strength Steel: Angelika Brueckner-Foit[1]; Benjamin Bode[1]; *Yibin Xue*[2]; [1]Kassel University; [2]Utah State University

4:30 PM
Influences of Material and Process Parameters on Delayed Fracture in TRIP-Aided Austenitic Stainless Steels: *Xiaofei Guo*[1]; Wolfgang Bleck[1]; [1]RWTH Aachen University

4:45 PM
In-Situ EBSD Study of Micromechanical Behavior of TRIP Steel: *Nan Li*[1]; Yandong Wang[1]; Xin Sun[2]; Guilin Wu[1]; Kang Yuan[1]; [1]Beijing Institute of Technology; [2]Pacific Northwest National Laboratory

5:00 PM
Patterning of Alloy Precipitation through External Pressure: *Jack Franklin*[1]; Jennifer Lues[1]; [1]University of Pennsylvania

Dynamic Behavior of Materials V: Dynamic Effects in Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Marc Meyers, UCSD; Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Wednesday PM — Room: 5A
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: Ellen Cerreta, Los Alamos National Laboratory

2:00 PM Invited
The Use of Diagnostics in Determining the High-Rate Response of Granular and Porous Materials: *W.G. Proud*[1]; D.J. Chapman[1]; W. Neal[1]; D. Eakins[1]; [1]Cavendish Laboratory

2:30 PM
Determination of Bulk Modulus and Shear Modulus of Human Thoracic Organ Tissue and Biosimulants at High Strain Rates: *Morgan Trexler*[1]; Andrew Lennon[1]; Adam Maisano[1]; Alexis Wickwire[1]; Timothy Harrigan[1]; Quang Luong[1]; Andrew Merkle[1]; [1]Johns Hopkins University Applied Physics Laboratory

2:45 PM
Electrically Driven Expanding Plasma as a Means to Drive High Velocity and High Strain Rate Experiments: *Anupam Vivek*[1]; Jason Johnson[1]; Gregg Fenton[2]; Geoff Taber[1]; Glenn Daehn[1]; [1]Ohio State University; [2]Applied Research Associates

3:00 PM
Shear-Rate Dependence in Dislocation Pile-up Simulations at Asymmetric Tilt Boundaries in Aluminum: *Steven Valone*[1]; Jian Wang[1]; Richard Hoagland[1]; Timothy Germann[1]; [1]Los Alamos National Laboratory

3:15 PM
Thermal Stability of Commercially Pure Ultra-fine Grained Al at High Strain Rates: *Emily Huskins*[1]; K Ramesh[1]; [1]Johns Hopkins University

3:30 PM
The Implications of Loading History on Grain Size Effects in Polycrystalline Copper Spallation Damage from Hydrocode Simulations: *Davis Tonks*[1]; Ellen Cerreta[1]; Darcie Dennis-Koller[1]; John Bingert[1]; Veronica Livescu[1]; Curt Bronkhorst[1]; [1]Los Alamos National Lab

3:45 PM
Dynamic Characterization of Cast and Wrought Uranium-Niobium Metals: *Carl Cady*[1]; George Gray[1]; Ellen Cerreta[1]; Robert Aikin[1]; Dan Thoma[1]; Robert Field[1]; [1]Los Alamos National Laboratory

4:00 PM Break

4:10 PM Invited
Characteristic Responses of Thick Ceramic Bodies to High-Velocity Impact: *Jerry LaSalvia*[1]; James McCauley[1]; Jeffrey Swab[1]; Parimal Patel[1]; [1]U.S. Army Research Laboratory

4:40 PM Invited
Effects of Strain Rate and Stacking-Fault Energy on Microstructures and Mechanical Properties of Deformed Cu and Cu-Al Alloys: Y. Zhang[1]; N.R. Tao[1]; *K. Lu*[1]; [1]SYNL, Institute of Metal Res.

5:10 PM
The Critical Role of Shock Melting in Ultrafast Laser Machining: *Ben Torralva*[1]; S. Ma[1]; A. Kumar[1]; S. M. Yalisove[1]; T. M. Pollock[2]; K. Thornton[1]; [1]University of Michigan; [2]University California, Santa Barbara

5:25 PM
Blast Wave Mitigation Using a Nanoporous Functionalized Liquid Materials: *Yu Qiao*[1]; Douglas Giese[2]; [1]UCSD; [2]AgileNano

5:40 PM
Effects of Grain Size and Boundary Structure on the Dynamic Response of Polycrystalline Copper: *Juan Escobedo*[1]; Ellen Cerreta[1]; Darcie Dennis-Koller[1]; Curt Bronkhorst[1]; Benjamin Hansen[1]; Ricardo Lebensohn[1]; Davis Tonks[1]; Brian Patterson[1]; [1]Los Alamos National Laboratory

Electrode Technology for Aluminium Production: Cathode Design and Operation

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Wednesday PM
March 2, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Richard Jeltsch, Consultant

2:00 PM Introductory Comments

2:05 PM
Preheating Collector Bars and Cathode Blocks Prior to Rodding with Cast Iron by Passing an Ac Current through the Collector Bars: *Erik Jensen*[1]; Hans Petter Bjørnstad[2]; Jan Hansen[2]; [1]EAJ Consulting; [2]ALMEQ

2:30 PM
Development and Application of an Energy Saving Technology for Aluminum Reduction Cells: *Peng Jianping*[1]; Feng Naixiang[1]; Feng Shaofeng[2]; Liu Jun[3]; Qi Xiquan[4]; [1]Northeastern University; [2]Zhejiang Huadong Aluminum Corporation Ltd.; [3]East Hope Baotou Xitu Aluminum Ltd.; [4]Northeastern University Engineering & Research Institute Co. Ltd

2:55 PM
Study of Electromagnetic Field in 300kA Aluminium Reduction Cells with Innovation Cathode Structure: *Baokuan Li*[1]; Xiaobo Zhang[1]; Suirui Zhang[1]; Fang Wang[1]; Naixiang Feng[1]; [1]Northeastern University

3:20 PM Break

3:30 PM
Evaluation of the Thermophysical Properties of Silicon Carbide, Graphitic and Graphitized Carbon Sidewall Lining Materials Used in Aluminium Reduction Cell in Function of Temperature: *Ayesha Khatun*[1]; Martin Desilets[1]; [1]University of Sherbrooke

3:55 PM
Advanced Numerical Simulation of the Thermo-Electro-Mechanical Behaviour of Hall-Héroult Cells under Electrical Preheating: Daniel Marceau[1]; Simon Pilote[1]; *Martin Désilets*[2]; Lyès Hacini[3]; Jean-François Bilodeau[3]; Yves Caratini[3]; [1]Université du Québec à Chicoutimi; [2]Sherbrooke University; [3]Rio Tinto Alcan

4:20 PM
Creep Behaviors of Industrial Graphitic and Graphitized Cathodes during Modified Rapoport Tests: *Wei Wang*[1]; Jilai Xue[1]; Jianqing Feng[2]; Qingsheng Liu[2]; Lei Zhan[2]; Hua He[2]; [1]Unversity of Science and Technology Beijing; [2]Ningxia Qingtongxia Energy Aluminium Group, China Power Investment Corporation

Friction Stir Welding and Processing VI: Process Modeling and Verification

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Wednesday PM
March 2, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chairs: Guntram Wagner, University of Kaiserslautern; Carl Sorensen, Brigham Young University

2:00 PM
Effect of Plasticized Material Flow on the Tool Feedback Forces during Friction Stir Welding: *Enkhsaikhan Boldsaikhan*[1]; Dwight Burford[1]; Pedro Gimenez Britos[1]; [1]Wichita State University

2:20 PM
Weld Flaw Analysis of High Speed Friction Stir Processed Magnesium AZ31: *Leon Hütsch*[1]; Jorge dos Santos[1]; Norbert Huber[1]; [1]GKSS Forschungszentrum GmbH

2:40 PM
Developing an Alternative Heat Indexing Equation for FSW: *Joseph Querin*[1]; Judy Schneider[1]; [1]Mississippi State University

3:00 PM Invited
Finite Element Modeling of Friction Stir Welding: *Paul Dawson*[1]; Donald Boyce[1]; [1]Cornell University

3:25 PM
Investigation of Methods to Control Friction Stir Weld Power with Spindle Speed Changes: *Kenneth Ross*[1]; Carl Sorensen[1]; [1]Brigham Young University

3:45 PM
Materials Design for Joinable, High Performance Aluminum Alloys: *Ryan Glamm*[1]; Greg Olson[1]; [1]Northwestern University

4:05 PM
Transient Heat and Material Flow Modeling of Friction Stir Processing of Magnesium Alloy: *Zhenzhen Yu*[1]; Hahn Choo[1]; Wei Zhang[2]; Zhili Feng[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

4:25 PM Break

4:35 PM
Approaches to In-Situ Data Monitoring of FSW Quality: *Haley Doude*[1]; Judy Schneider[1]; [1]Mississippi State University

4:55 PM
A Comparison of Experimental Data and Model Predictions with Constitutive Laws Commonly Used to Model Friction Stir Welding: *Katherine Kuykendall*[1]; Carl Sorensen[1]; Tracy Nelson[1]; [1]Brigham Young University

5:15 PM
Long Range Oscillations in Friction Stir Welding Tool Travel Speed: *Mike Brendel*[1]; Judith Schneider[1]; [1]Mississippi State University

5:35 PM
Tool Load and Torque Study for Portable Friction Stir Welding in Aluminum: *Scott Rose*[1]; Murray Mahoney[2]; Tracy Nelson[1]; Carl Sorensen[1]; [1]Brigham Young University; [2]Consultant

5:55 PM
Towards Process Control of Friction Stir Welding for Different Aluminum Alloys: Axel Fehrenbacher[1]; *Edward Cole*[1]; Michael Zinn[1]; Nicola Ferrier[1]; Neil Duffie[1]; Frank Pfefferkorn[1]; [1]Univ. Wisconsin-Madison

General Abstracts: Structural Materials Division: Applications

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: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Judith Schneider, Mississippi State University

Wednesday PM
March 2, 2011
Room: 31C
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Steel Design for Blast and Fragment Protection: *Zechariah Feinberg*[1]; [1]Northwestern University

2:15 PM
Effects of Differential Oxygen Access on the Corrosion Behavior of Zinc Relevant to Mechanically Stabilized Earth Walls: *Victor Padilla*[1]; Akram Alfantazi[1]; [1]UBC

2:30 PM
Analysis of Eutectically Soldered Silicon Chips on a Copper Flanges with Innovative "Ductile Layer" Technology: Pu Zhou[1]; *Michael Zimmerman*[1]; Anil Saigal[1]; [1]Tufts University

2:45 PM
Influence of Sulfide on Internal-Fracture-Type Rolling Contact Fatigue Life of Bearing Steels: *Kazuya Hashimoto*[1]; Kazuhiko Hiraoka[1]; Katsuyuki Kida[2]; [1]Sanyo Special Steel; [2]Kyushu University

3:00 PM
Stress-Rupture Behavior of Single Crystal Superalloy M09A: *Qi Zheng*[1]; Jinxia Yang[1]; Hongyu Zhang[1]; Xiaofeng Sun[1]; Hengrong Guan[1]; Zhuangqi Hu[1]; [1]IMR

3:15 PM
Tensile Deformation Characteristics of a Ferrite/Austenite Two Phase Steel Containing the High Mn and Al Contents: *Kyung-Tae Park*[1]; Si Woo Hwang[2]; Jung Hoon Ji[1]; Sera Kim[1]; Youngil Son[3]; [1]Hanbat National University; [2]Steel Research Institute; [3]Agency for Defense Development

3:30 PM
Shear Capacity of Reinforced Concrete Beams Using Recycled Coarse Aggregates: *Efe Ewaen Ikponmwosa*[1]; Musbau Salau[1]; [1]University of Lagos

3:45 PM Break

4:00 PM
Hot Deformation Behavior of Ti-6Al-4V Alloy with a' Martensite Starting Microstructure: *Hiroaki Matsumoto*[1]; Bin Liu[1]; Sang-Hak Lee[2]; Yunping Li[1]; Kazuhisa Sato[1]; Yoshiki Ono[2]; Akihiko Chiba[1]; [1]Institute for Materials Research, Tohoku University; [2]NHK Spring Co., Ltd

4:15 PM
Hot Ductility of Near-Alpha and Alpha + Beta Titanium Alloys: *Jeff Rodelas*[1]; John Lippold[1]; [1]The Ohio State University

4:30 PM
Influence of Heterogeneous Deformation on Microstructural Cracking in Alpha-Titanium Alloys: *Motoaki Morita*[1]; Satoshi Moroka[1]; Osamu Umezawa[1]; [1]Yokohama National University

4:45 PM
Deformation Behavior of Biomedical Co-Cr-Mo Alloy: *Hiroaki Matsumoto*[1]; Shingo Kurosu[1]; Byong-soo Lee[1]; Yunping Li[1]; Yuichiro Koizumi[1]; Akihiko Chiba[1]; [1]Institute for Materials Research, Tohoku university

5:00 PM
Cyclic Oxidation Of Co-Al-W-Based Alloys At 900°C And 1000°C: *Raghavendra Adharapurapu*[1]; Sara Perez-Bergquist[1]; Jennifer Dibbern[1]; Akane Suzuki[2]; Tresa Pollock[3]; [1]University of Michigan; [2]General Electric Global Research Center; [3]University of California Santa Barbara

5:15 PM
Effects of Solution Temperatures on Creep Properties and Fracture Mechanism of FGH95 Nickel-Base Superalloy: Jun Xie[1]; *Sugui Tian*[1]; [1]Shenyang University of Technology

5:30 PM
Novel Opencell™ Metal Sandwich Panels: Antonio Valente[1]; Mika Sirén[2]; Jukka Säynäjäkangas[3]; *Edward Chen*[4]; [1]PLY Engenharia, Lda; [2]VTT Technical Research Centre of Finland; [3]Outokumpu Stainless Tornio Works; [4]Transition45 Technologies, Inc.

5:45 PM
Effect of Hydrogen on Tensile Properties of a Ductile Cast Iron: *Hisao Matsunaga*[1]; Kenshin Matsuno[1]; Katsuya Hayashida[2]; [1]Fukuoka University; [2]Toppan Printing Co., Ltd.

6:00 PM
Analysis of Sandwich Composite Chassis Using Multiscale Modeling Technique: *Arslan Siddiqui*[1]; [1]Pakistan Navy Engineering College - NUST

Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science: Materials Design and Diffusional Simulations

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Larry Kaufman, CALPHAD, Inc.; Annika Borgenstam, Royal Institute of Technology; Carelyn Campbell, NIST

Wednesday PM — Room: 31A
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Richard Sisson, Worcester Polytechnic Institute; Roger Reed, University of Birmingham

2:00 PM Invited
Thermodynamics-Based Materials Design: *Greg Olson*[1]; [1]Northwestern University

2:30 PM Invited
New Nickel-Based Superalloys By CALPHAD-Driven Design Methods: *Roger Reed*[1]; Nils Warnken[1]; [1]University of Birmingham

3:00 PM Invited
High-Throughput Measurements for Accelerated Establishment of Materials Databases: *Ji-Cheng Zhao*[1]; Xuan Zheng[2]; David Cahill[2]; [1]The Ohio State University; [2]University of Illinois

3:30 PM Break

3:50 PM Invited
Atomic Defects in Alloys and Compounds: The Effect of a Macroscopic State: *Pavel Korzhavyi*[1]; Andrei Ruban[1]; Oleg Gorbatov[2]; Yuri Gornostyrev[2]; Borje Johansson[1]; [1]Royal Institute of Technology (KTH); [2]Institute of Quantum Materials Science

4:20 PM
Modeling the Microstructural Development during the Nitriding of Low Alloy Steels: Mei Yang[1]; Danielle Belsito[1]; *Richard Sisson*[1]; [1]Worcester Polytechnic Institute, Center for Heat Treating Excellence

4:50 PM
Phase Field and DICTRA Simulations of Type 3 Boundaries: *Xiaoqin Ke*[1]; John Morral[1]; Yunzhi Wang[1]; [1]Ohio State University

5:20 PM
Thermodynamics Test of the Mixed Enthalpy TiCxOy System: Bo Jiang[1]; Chengjun Gao[1]; Zhanmin Cao[1]; Kai Huang[1]; *Hongmin Zhu*[1]; [1]USTB

Magnesium Technology 2011: Deformation Mechanisms II; Formability and Forming

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Wednesday PM — Room: 6F
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Paul Krajewski, General Motors; Wim Sillekens, TNO Science and Industry

2:00 PM
Texture Weakening Effect of Y in Mg-Zn-Y System: *Seyed Amir Farzadfar*[1]; Mehdi Sanjari[1]; In-Ho Jung[1]; Elhachmi Es-Sadiqi[2]; Steve Yue[1]; [1]McGill University; [2]CANMET- Materials Technology Laboratory

2:20 PM
In-Situ Scanning Electron Microscopy Comparison of Microstructure and Deformation Behavior between WE43-F and WE43-T5 Magnesium Alloys: *Tomoko Sano*[1]; Jian Yu[1]; Bruce Davis[2]; Richard DeLorme[2]; Kyu Cho[1]; [1]US Army Research Laboratory; [2]Magnesium Elektron North America

2:40 PM
A Molecular Dynamics Study of Fracture Behavior in Magnesium Single Crystal: *Tian Tang*[1]; Sungho Kim[1]; Mark F. Horstemeyer[1]; Paul Wang[1]; [1]Mississippi State University

3:00 PM
Microstructural Relationship in the Damage Evolution Process of an AZ61 Magnesium Alloy: *Marcos Lugo*[1]; J Jordon[2]; M Horstemeyer[1]; M Tschopp[1]; [1]Mississippi State University; [2]The University of Alabama

3:20 PM
Formability Enhancement in Hot Extruded Magnesium Alloys: *Raja Mishra*[1]; Anil Gupta[2]; Rajiv Sikand[3]; Anil Sachdev[1]; Li Jin[4]; [1]General Motors; [2]Advanced Materials and Processes Research Institute; [3]National Physical Laboratory; [4]Shanghai Jiao Tong University

3:40 PM
Deformation and Evolution of Microstructure and Texture during High Speed Heavy Rolling of AZ31 Magnesium Alloy Sheet: *Tetsuo Sakai*[1]; Akinori Hashimoto[1]; Go Hamada[1]; Hiroshi Utsunomiya[1]; [1]Osaka University

4:00 PM Break

4:20 PM
Formability of Magnesium Sheet ZE10 and AZ31 with Respect to Initial Texture: *Lennart Stutz*[1]; Jan Bohlen[1]; Dietmar Letzig[1]; Karl Ulrich Kainer[1]; [1]GKSS Forschungszentrum Geesthacht GmbH

4:40 PM
Hot Workability of Alloy WE43 Examined using Hot Torsion Testing: *Frederick Polesak*[1]; Bruce Davis[2]; Rick DeLorme[2]; Sean Agnew[1]; [1]University of Virginia; [2]Magnesium Elektron North America Inc.

5:00 PM
Enhancement of Superplastic Forming Limit of Magnesium Sheets by Counter-Pressurizing: *Wonkyu Bang*[1]; Hyun-Seok Lee[1]; Hyung-Lae Kim[2]; Young-Won Chang[2]; [1]RIST; [2]POSTECH

5:20 PM
Microstructural Evolution during Roller Hemming of AZ31 Magnesium Sheet: *Amanda Levinson*[1]; Raja Mishra[2]; John Carsley[2]; Roger Doherty[1]; Surya Kalidindi[1]; [1]Drexel University; [2]General Motors

5:40 PM
The Warm Forming Performance of Mg Sheet Materials: *Paul Krajewski*[1]; Peter Friedman[2]; Jugraj Singh[3]; [1]General Motors; [2]Ford Motor Company; [3]Chrysler Group, LLC

Magnetic Materials for Energy Applications: Nanocrystalline and Nanocomposite Nd-Fe-B Magnets

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday PM — Room: 11A
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: Kazuhiro Hono, National Institute for Materials Science

2:00 PM Keynote
High Performance Magnets for Energy Efficient Devices: *George Hadjipanayis*[1]; [1]University of Delaware

2:40 PM Invited
Coercivity Enhancement in Sintered Nd-Fe-B Magnets Annealed under High Magnetic Fields: *Hiroaki Kato*[1]; Takahiro Akiya[2]; Kunihiro Koike[1]; [1]Yamagata University; [2]Tohoku University

3:05 PM Invited
Toward Development of Anisotropic Nanocomposite Permanent Magnets: *Satoshi Hirosawa*[1]; [1]Hitachi Metals, Limited

3:30 PM Invited
Development of High Coercivity Nd-Fe-B Permanent Magnets: *Matahiro Komuro*[1]; Yuichi Satsu[1]; Hiroyuki Suzuki[1]; Akira Nambu[1]; Kazuhiro Ueda[1]; Akira Sugawara[1]; Hideyuki Matsuoka[1]; [1]Hitachi, Ltd.

3:55 PM Invited
High Coercivity Nd-Fe-B Thin Films: *Toshiyuki Shima*[1]; [1]Tohoku Gakuin University

4:20 PM Invited
Current Status of Permanent Magnet Research and Market in China: *Aru Yan*[1]; [1]Ningbo Institute of Material Technology and Engineering

4:35 PM
Grain Refinement in $Nd_2Fe_{14}B$ Powders by High Hydrogen Pressure Reactive Milling and Desorption: *Konrad Güth*[1]; Julia Lyubina[2]; Ludwig Schultz[1]; Oliver Gutfleisch[1]; [1]IFW Dresden; [2]Imperial College London

4:50 PM
Coercivity Mechanism in Hydrogenation-Disproportionation-Desorption-Recombination Processed Nd-Fe-B Base Powders: *T. Ohkubo*[1]; H. Sepehri-Amin[1]; T. Nishiuchi[2]; S. Hirosawa[2]; K. Hono[1]; [1]National Institute for Materials Science; [2]Hitachi Metals Ltd

5:05 PM
Texture Investigation in Melt-Spun High Temperature Mixed Rare Earth-Iron-Boron Alloys: *Nathaniel Oster*[1]; Iver Anderson[2]; Matthew Kramer[2]; R.W. McCallum[2]; Wei Tang[2]; Yaqiao Wu[2]; Kevin Dennis[2]; [1]Iowa State University; [2]Ames Laboratory

5:20 PM
Structure and Magnetic Properties of Mechanically Milled Melt Spun Rare Earth-based Permanent Magnets: *Farhad Golkar*[1]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln

5:35 PM
Effects of Cu Addition on Microstructures and Magnetic Properties of Nd-Fe(Co,Cu)-B Nanocomposite Magnets: *Junhua You*[1]; [1]Shenyang University of Technology

5:50 PM
NdFeB Thick Films as Model Systems for Coercivity Analysis: *Ciuta Georgeta*[1]; Fruchart Olivier[1]; Zhang Yuepeng[1]; Woodcock Thomas[2]; Gutfleisch Oliver[2]; Dempsey Nora[1]; Givord Dominique[3]; [1]CNRS/Institut Neel; [2]IFW; [3]CNRS/institut Neel

Materials in Clean Power Systems VI: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells: Membranes and Materials for Renewable Energies

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, TMS: High Temperature Alloys Committee
Program Organizers: Xingbo Liu, West Virginia University; Zhenguo "Gary" Yang, Pacific Northwest National Laboratory; Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Teruhisa Horita, AIST; Zi-Kui Liu, The Pennsylvania State University

Wednesday PM — Room: 33C
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: Yan Xiang, Beihang University

2:00 PM
Novel Metallic Membranes for Hydrogen Separation: *Omer Dogan*[1]; [1]DOE National Energy Technology Laboratory

2:20 PM
Pd-Based Membrane Reactor for Simultaneous CO2 Sequestration and Hydrogen Production from Syngas Produced from IGCC: *Yi Ma*[1]; [1]Worcester Polytechnic Institute

2:40 PM
Structure/Property Relations in Proton Conducting Ceramics of the Form SrCe0.95Yb0.05O3 With Applications in Membrane Separations: The Role of Microstructure and Second Phase Additions to Enhance Electronic Conductivity: *Kyle Brinkman*[1]; Frank Chen[2]; Kevin Huang[2]; Sung Gu Kang[3]; David Sholl[3]; [1]Savannah River National Laboratory (SRNL); [2]University of South Carolina (USC); [3]Georgia Institute of Technology

3:00 PM
Ternary CuPdM Alloys for Hydrogen Separation Membranes: *Rongxiang Hu*[1]; Michael Gao[1]; Ömer Dogan[2]; Bret Howard[2]; Bryan Morreale[2]; [1]URS at National Energy Technology Laboratory; [2]National Energy Technology Laboratory

3:20 PM
Electrodeposition of ZnO Nanocrystallines on ITO Mesoporous Films and Application to Photoelectrochemical Cells: *Haining Chen*[1]; Liqun Zhu[1]; Weiping Li[1]; Huicong Liu[1]; [1]Beihang University, Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering

3:40 PM Break

3:50 PM
Catalysts Decorated ZnO/Si Branched Nano-heterostructure Electrodes for Solar Water Splitting: *Ke Sun*[1]; Kristian Madsen[1]; Khaleda Banu[1]; Deli Wang[1]; [1]University of California, San Diego

4:10 PM
Competitive Adsorption of CO_2 from Binary Gas Mixtures in a Structurally Dynamic Porous Coordination Polymer: *Kristi Kauffman*[1]; Jeffrey Culp[2]; Angela Goodman[1]; Thomas Brown[1]; Mark Bernardo[1]; Russell Pancoast[1]; Christopher Matranga[1]; [1]National Energy Technology Laboratory; [2]URS

4:30 PM
Direct Deposition of Nanostructured Platinum Cluster on Gas Diffusion Layer for Highly Durable Polymer Electrode Membrane Fuel Cell (PEMFC: *Hyun-Jong Kim*[1]; Ji-Eun Ahn[1]; Ho Nyun Lee[1]; Myung Keun Han[1]; Hong Kee Lee[1]; [1]Korea Institute of Industrial Technology

4:50 PM
Optimization of the Concentrated V(IV)/V(V) Electrolytes in a Vanadium Redox Battery: *Feng Shi*[1]; Huimin Lu[1]; Yuan Yuan[1]; [1]Beihang University

5:10 PM
Thermo-mechanical Reliability of Proton Exchange Membranes in Fuel Cells: *Ruiliang Jia*[1]; Binghong Han[1]; Takuya Hasegawa[2]; Jiping Ye[3]; Reinhold Dauskardt[1]; [1]Stanford University; [2]Nissan Motor Co., Ltd.; [3]NISSAN ARC LTD.

Microstructural Processes in Irradiated Materials: Nanostructured Alloys, Mechanical Properties

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

Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Wednesday PM
March 2, 2011

Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Robert Odette, University of California Santa Barbara; Peter Hosemann, University of California Berkeley

2:00 PM Invited
Radiation Response of Nanostructured Ferritic Steels to High Dose Ion Irradiation: *Michael Miller*[1]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory

2:40 PM
On the Stability of Nanofeatures in Nanostructured Ferritic Alloys – the Effects of Long Term High Temperature Thermal Aging and Friction Stir Welding: *Nicholas Cunningham*[1]; Auriane Etienne[1]; Yuan Wu[1]; Doug Klingensmith[1]; G. Robert Odette[1]; Erin Haney[1]; Erich Stergar[1]; [1]UC Santa Barbara

3:00 PM
Atomistic Studies on Y-Ti-O Nanoclusters in Ferritic Alloys: *Lauren Marus*[1]; Hyon-Jee Voigt[1]; Brian Wirth[2]; [1]University of California-Berkeley; [2]University of Tennessee-Knoxville

3:20 PM
HRTEM Study of Oxide Nanoparticles in Fe-Cr MA/ODS Steels: *Luke Hsiung*[1]; Micheal Fluss[1]; [1]Lawrence Livermore National Laboratory

3:40 PM Break

4:00 PM
Radiation Response the Nanostructured Ferritic Alloy 14YWT to High Dose Irradiation: *Alicia Certain*[1]; Jim Bentley[1]; Shuttha Shutthanandan[2]; David Hoelzer[3]; Todd Allen[1]; [1]University of Wisconsin-Madison; [2]Pacific Northwest National Laboratory; [3]Oak Ridge National Laboratory

4:20 PM
Microstructural Evolution by Helium Irradiation and Its Desorption in ODS Alloy: Jinsung Jang[1]; *Yitao Yang*[2]; Hyung-Ha Jin[1]; Suk-Hoon Kang[1]; Chonghong Zhang[2]; [1]Korea Atomic Energy Research Institute; [2]Institute of Modern Physics, CAS

4:40 PM Invited
Nano-Mechanical Testing and Post Testing Investigation on Ion Beam Irradiated Single Crystal Cu: *Peter Hosemann*[1]; Daniel Kiener[2]; Stuart Maloy[3]; Osman Anderoglu[3]; Eric Olivas[3]; Yongqiang Wang[3]; [1]UC Berkeley; [2]University of Leoben; [3]LANL

5:20 PM
Point Defect Mediated Radiation Induced Creep in Nano-Crystalline Metal: *Yinon Ashkenazy*[1]; Tai Kai-Ping[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana Champaign

5:40 PM
Stress, Temperature, and Dose Rate Dependence of Proton Irradiation Creep of Ferritic-Martensitic Steel T91: *Cheng Xu*[1]; Gary Was[1]; [1]University of Michigan

Neutron and X-Ray Studies of Advanced Materials IV: Dislocations, Strains and Stresses II

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

Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Wednesday PM
March 2, 2011

Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Karen Pantleon, Denmark Technical University; Phil Ryan, APS

2:00 PM Keynote
In-Situ Laue Diffraction of Deforming Mo Pillars: *Helena Van Swygenhoven*[1]; Julien Zimmermann[1]; Steven Van Petegem[1]; Cecile Marichal[1]; Daniel Grolimund[1]; Hongbin Bei[2]; Hongbin Bei[2]; Michael Weisser[1]; [1]Paul Scherrer Institut; [2]Oak Ridge National Laboratory

2:25 PM Invited
Depth-Resolved Phase Identification and Internal Stress Analysis after High Temperature Corrosion in Power Plants: *Karen Pantleon*[1]; [1]Technical University of Denmark

2:45 PM Invited
Developing Links Between the Microstructure and Lattice Strain Uncertainties: Jay Schuren[1]; *Matthew Miller*[1]; Alexander Kazimirov[1]; [1]Cornell University

3:05 PM Invited
Full Local Elastic Strain Tensor from Laue Microdiffraction: A White-Beam Method to Measure the Lattice Expansion: *Odile Robach*[1]; Jean-Sébastien Micha[2]; Olivier Ulrich[1]; Patrice Gergaud[3]; [1]CEA-Grenoble / INAC; [2]CNRS / SPrAM UMR 5819; [3]CEA-Grenoble / LETI

3:25 PM Invited
X-Ray Diffraction Evaluation of the Hardening State of Various Cubic and Hexagonal Materials after Large Strains: *Brigitte Bacroix*[1]; Thierry Chauveau[1]; Guy Dirras[1]; Olivier Castelnau[2]; Renald Brenner[1]; Akrum Abdul-Latif[3]; Christophe Le Bourlot[1]; Aurélie Wauthier[1]; [1]CNRS - LPMTM; [2]CNRS - PIMM; [3]SUPMECA - LISMMA

3:45 PM Invited
Extending Line Profile Analysis to Neutron Diffraction: *Tamás Ungár*[1]; [1]Eötvös University Budapest

4:05 PM
Comprehensive Characterization of the Effects of Composition, Temperature, Flux and Fluence on the Evolution of Cu-Mn-Ni Precipitates in Reactor Pressure Vessel Steels: *G. Robert Odette*[1]; Nicholas Cunningham[1]; Brian Wirth[2]; Matthew Alinger[3]; Takuya Yamamoto[1]; Doug Klingensmith[1]; [1]UC Santa Barbara; [2]UC Berkeley; [3]GE Global Research

4:15 PM Invited
Study of Precipitate and Recrystallization in Ti-Added Low Carbon Steels by SANS: *Baek Seok Seong*[1]; [1]KAERI

4:35 PM Break

4:45 PM Invited
Nanostructure of Surrogate Nuclear-Reactor Pressure Vessel Steels: *Davor Balzar*[1]; [1]University of Denver

5:05 PM
Microstructure of $MgGeO_3$ Post-Perovskite at 84 GPa Determined by 3D X-Ray Diffraction: *Gabor Ribarik*[1]; Carole Nisr[2]; Tamás Ungár[1]; Gavin Vaughan[3]; Patrick Cordier[2]; Sebastien Merkel[2]; [1]Eotvos Lorand University, Institute of Physics, Budapest, Hungary; [2]Université Lille 1; [3]European Synchrotron Research Facility

5:20 PM
Influence of Recrystallization Texture on Tensile Behavior of Friction Stir Processed Magnesium Alloy: *Zhenzhen Yu*[1]; Hahn Choo[1]; Zhili Feng[2]; Ke An[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

5:30 PM
Investigation of Microstrain near the Fracture Surface in the Tensile-Overloaded Corrosion Resistant Hastelloy C-2000 Alloy: Gabor Csiszar[1]; Soo Yeol Lee[2]; *Tamas Ungar*[1]; Peter K. Liaw[2]; Lee M. Pike[3]; [1]Eötvös University Budapest; [2]The University of Tennessee; [3]Haynes International, Inc.

5:45 PM
Neutron Diffraction Studies of Intercritically Austempered Ductile Irons: *Alan Druschitz*[1]; Ricardo Aristizabal[1]; Edward Druschitz[1]; Camden Hubbard[2]; Thomas Watkins[2]; Larry Walker[2]; Mel Ostrander[3]; [1]University of Alabama at Birmingham; [2]Oak Ridge National Laboratory; [3]Rex Heat Treat

5:55 PM
Analysis of the Initial Oxidation of Gamma-TiAl by Non-Destructive Ion Beam Analysis: *Hans-Eberhard Zschau*[1]; Michael Schütze[1]; [1]Dechema e. V.

6:10 PM
Crack Trafficking across Borders: Imaging Fatigue Crack Propagation In Situ at Grain Boundaries with Synchrotron Radiation: *Naji Husseini*[1]; Martina Zimmermann[2]; Clinique Brundidge[1]; Jason Geathers[1]; Christopher Torbet[3]; Wah-Keat Lee[4]; Tresa Pollock[3]; J Jones[1]; Roy Clarke[1]; [1]University of Michigan; [2]Universität Siegen; [3]University of California, Santa Barbara; [4]Argonne National Laboratory

6:20 PM
Particle Size Analysis of Multimodal Gamma-Prime (γ') Distributions in an Advanced Polycrystalline Nickel-Base Superalloy by a Peak Broadening Approach: *David Collins*[1]; Howard Stone[1]; [1]University of Cambridge

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Interfaces and 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: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Wednesday PM
March 2, 2011

Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Laura Turbini, Research In Motion; Polina Snugovsky, Celestica

2:00 PM Invited
Interfacial Reactions in the Sn-(Pb)/Ni-7wt%V Couples: *Sinn-wen Chen*[1]; Yu-ren Lin[1]; Hsin-jay Wu[1]; Hong-ming Lin[2]; [1]National Tsing Hua University; [2]Tatung University

2:25 PM Invited
Fundamental Studies on Electromigration in Eutectic Sn-Based Solder Joints: *Fu Guo*[1]; Guangchen Xu[1]; Ruihong Zhang[1]; Hongwen He[1]; [1]Beijing University of Technology

2:50 PM Invited
Effect of the Cu Thickness in Ti/Ni(V)/Cu under Bump Metallization on Interfacial Reaction and Mechanical Test of Sn3.0Ag0.5Cu Solder Joint: I-Tai Wang[1]; Kai-Jheng Wang[1]; Chi-Yang Yu[1]; *Jenq-Gong Duh*[1]; [1]National Tsing Hua University

3:15 PM
Electroless Fe-Ni under Bump Metallurgy for Solder Interconnects: H. Zhou[1]; J. Guo[1]; *J. Shang*[2]; [1]Institute of Metal Research; [2]University of Illinois

3:35 PM Break

3:45 PM
Effect of Solder Bump Heights on Cu Dissolution Rate in Pb-Free Flip Chip Solder Joints by Electromigration: *Fan-Yi Ouyang*[1]; Pilin Liu[1]; Matt Pharr[2]; Kejie Zhao[2]; Zhigang Suo[2]; [1]Intel Corporation; [2]Harvard University

4:05 PM
Effects of Cu-Bearing Flux on Sn-3.5Ag Soldering with Electroless Ni-P/Au Surface Finish: Microstructure and Joint Reliability: *Hitoshi Sakurai*[1]; Keun-Soo Kim[1]; Youichi Kukimoto[2]; Katsuaki Suganuma[1]; [1]Osaka University; [2]Harima Chemicals, Inc.

4:25 PM
Effect of Cu Electroplating Process on the "Kirkendall Voiding" in SnAgCu-Cu Solder Joints: *Liang Yin*[1]; Nikolay Dimitrov[2]; Peter Borgesen[2]; [1]Universal Instruments Corp; [2]Binghamton University

4:45 PM
Correlations of Microstructure and Electromigation Behavior in Eutectic Sn-Pb Solder Joints: Andre Lee[1]; Y. Lee[1]; *K. Subramanian*[1]; [1]Michigan State University

5:05 PM
The Effect of Pd Thickness in the Interfacial Reaction between Sn-3.0Ag-0.5Cu Solder and Electroless Nickel/Electroless Palladium/Immersion Gold Surface Finish and Their Mechanical Properties: *Youngmin Kim*[1]; Jin-Young Park[1]; Young-Ho Kim[1]; [1]Hanyang University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X: Conductors, Dielectrics, Interconnects, Phase Change Memory, and Polymer Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Hans Flandorfer, University of Vienna; Sinn-Wen Chen, National Tsing Hua University; Jae-ho Lee, Hongik University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Clemens Schmetterer, TU Bergakademie Freiberg; Ikuo Ohnuma, Tohoku University; Chao-Hong Wang, National Chung Cheng University

Wednesday PM
March 2, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Alexandre Kodentsov, Eindhoven University of Technology; Jae-Ho Lee, Hongik University

2:00 PM Invited
Phase Transformation of PVP-Protected Noble Metallic Nanoparticle Deposits upon Heating in Air: *Jenn-Ming Song*[1]; Guan-Di Chiou[2]; Wei-Ting Chen[1]; Shih-Yun Chen[2]; Tzu-Hsuan Kao[3]; In-Gann Chen[3]; Hsin-Yi Lee[4]; [1]National Dong Hwa University; [2]National Taiwan University of Science and Technology; [3]National Cheng Kung University; [4]National Synchrotron Radiation Research Center

2:25 PM
Synthesis of Ag Nanoparticles for the Fabrication of Highly Conductive Ink: Inyu Jung[1]; Yun Hwan Jo[1]; *Hyuck Mo Lee*[1]; [1]KAIST

2:40 PM
Influence of Post Annealing Ambient on the Microstructure and Contact Resistance of Screen-Printed Silver Contacts of Silicon Solar Cells: *Sungbin Cho*[1]; Jung-Woo Chun[1]; Bo-Mook Chung[1]; Joo-Youl Huh[1]; Byung-Chul Lee[2]; Kuninori Okamoto[2]; [1]Korea University; [2]Cheil Industries Inc.

2:55 PM
Low Resistivity RuTaC Barrier for Cu Interconnection: *Jau-Shiung Fang*[1]; J. Lin[1]; B. Chen[1]; G. Chen[1]; T. Chin[1]; [1]National Formosa University

3:10 PM Break

3:30 PM
Metal-Induced Crystallization and the Diffusion Behavior of Al/Ge Thin Film: *Chao Nan Yeh*[1]; Kewin Yang[1]; Albert T. Wu[1]; [1]National Central University

3:45 PM
Measurement of Warpage for Chips on Si Interposer: *Hsueh-Hsien Hsu*[1]; Tao-Chih Chang[2]; Chih Chen[3]; Hsin-Yi Lee[4]; Albert T. Wu[1]; [1]National Central University; [2]Industrial Technology Research Institute; [3]National Chiao Tung University; [4]National Synchrotron Radiation Research Center

4:00 PM
Dynamic Transmission Electron Microscope Investigation of Coupled Laser Absorption, Phase Transformation, and Nanoscale Morphology in $e_2Sb_2Te_5$: *Bryan Reed*[1]; Melissa Santala[1]; Stefan Meister[2]; Thomas LaGrange[1]; Geoffrey Campbell[1]; Nigel Browning[1]; [1]Lawrence Livermore National Laboratory; [2]Stanford University

4:15 PM
Thermal Treatment of a Ni/Pt Bi-Layer Deposited on a Polyimide Film for Dye-Sensitized Solar Cells: *Sheng-Jye Cherng*[1]; Chih-Ming Chen[1]; [1]National Chung Hsing University

4:30 PM
Synthesis of Carbon Nanomaterials from Paper Phenolic Board: *Yu Ting Huang*[1]; YiWei Lin[1]; Chih Ming Chen[1]; [1]National Chung Hsing University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Effect of Processing on the Properties of Shape Memory Alloys

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Wednesday PM
March 2, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: Gunther Eggeler, Ruhr-Universität Bochum; Thomas Waitz, University of Vienna

2:00 PM Invited
On the Processes Involved in Shape Setting of SMA: *Petr Sittner*[1]; J. Pilch[1]; L. Heller[1]; [1]Institute of Physics of the ASCR

2:20 PM
An In Situ Neutron Diffraction Study of Shape Setting NiTi: *Othmane Benafan*[1]; Santo Padula[2]; Ronald Noebe[2]; Raj Vaidyanathan[1]; [1]UCF; [2]NASA GRC

2:35 PM Invited
The Effect of Inclusion Content on the Mechanical and Physical Properties of Binary NiTi Shape Memory Alloys: *Giorgio Vergani*[1]; Frank Sczerzenie[1]; Graeme Paul[1]; [1]SAES Smart Materials

2:55 PM
Characterization of Low Inclusions NiTi Shape Memory Wires for Industrial Applications: *Alberto Coda*[1]; Luca Fumagalli[1]; Giorgio Vergani[2]; Frank Sczerzenie[2]; [1]SAES Getters S.p.A.; [2]SAES Smart Materials Inc.

3:10 PM
Study of the Influence of Inclusions on the Behavior of NiTi Shape-Memory Alloys in Thermal Cycling by Means of FEM: *Marco Fabrizio Urbano*[1]; [1]SAES Getters

3:25 PM Break

3:35 PM Invited
Shape Memory Alloy Cables: *John Shaw*[1]; [1]The University of Michigan

3:55 PM Invited
Shape-Memory Nitinol with Micro-Channel Networks: Anselm J. Neurohr[1]; *David Dunand*[1]; [1]Northwestern University

4:15 PM
Joining Strategies for Shape Memory Alloy Actuators: *Konstantin Lygin*[1]; Sven Langbein[1]; Tim Sadek[1]; [1]Ruhr University Bochum

4:30 PM
Fabrication of Neck Ache Prevent Tool Applying Ti-Ni Superelastic Alloy: *Kazuhiro Kitamura*[1]; Hiraku Tsuboi[2]; Katsuyoshi Chino[3]; Yu Takeuchi[4]; Kimio Satou[5]; [1]Aichi University of Education; [2]Nagano Techno Foundation; [3]C. K.Techno Co, Ltd.; [4]Misuya Industry Co, Ltd.; [5]Suzaka city

4:45 PM
Severe Plastic Deformation of a Beta-Titanium Shape Memory Alloy: *Ji Ma*[1]; Ibrahim Karaman[1]; [1]Texas A&M University

5:00 PM
Self-Assembled Ti Nanowires on Single Crystal NiTi Shape Memory Alloys: *Xu Huang*[1]; Yuriy Chumlyakov[2]; Ainissa Ramirez[1]; [1]Yale University; [2]Siberian Physical and Technical Institute

5:15 PM End of Session

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Steels, Damage

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Wednesday PM
March 2, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Jose Gracio, Universidade de Aveiro; Thomas Bieler, Michigan State University; Chad Sinclair, University of British Columbia

2:00 PM Invited
Plastic Anisotropy in Multiphase Steels: Young Ung Jeong[1]; *Frederic Barlat*[1]; [1]Pohang University of Science and Technology

2:25 PM Invited
Effect of Asymmetric Rolling on the Mechanical Behavior of Low Carbon Steel under Shear Tests: A Simple Modelling Approach: *Jose Gracio*[1]; [1]University of Aveiro

2:50 PM
Comparison of Experimental and Computational Texture Evolution in Steel under Multi-Axial Loads: *Adam Creuziger*[1]; Thomas Gnäupel-Herold[1]; Lin Hu[2]; Anthony Rollett[3]; [1]National Institute of Standards and Technology; [2]Carnegie Mellon University ; [3]Carnegie Mellon University

3:10 PM
Micromechanical Modelling of Strength and Deformation of Advanced High Strength Steels on the Grain Level: Christian Krempaszky[1]; *Ewald Werner*[2]; Andreas Pichler[3]; Thomas Hebesberger[3]; [1]CD Laboratory of Material Mechanics of High Performance Alloys, TU-Munich; [2]Technische Universität München; [3]voestalpine Stahl Linz GmbH

3:30 PM Break

3:50 PM Invited
Roping of Ferritic Stainless Steels: Models and Experiments: *Chad Sinclair*[1]; Guillaume Lefebvre[1]; Ricardo Lebensohn[2]; Jean-Denis Mithieux[3]; [1]University of British Columbia; [2]Los Alamos National Laboratory; [3]ArcelorMittal

4:15 PM Invited
Integrated Experimental and Crystal Plasticity Investigations of Heterogeneous Deformation and Damage Nucleation in Titanium: *Thomas Bieler*[1]; Philip Eisenlohr[2]; Martin Crimp[1]; Leyun Wang[1]; A. Alankar[2]; Yiyi Yang[1]; Rozaliya Barabash[3]; Gene Ice[3]; Wenjun Liu[4]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung; [3]Oak Ridge National Laboratory; [4]Argonne National Laboratory

4:40 PM Invited
Role of Crystallographic Texture in the Delamination and Fracture of Al-Li Alloys: *Armand Beaudoin*[1]; Rebecca Storer[1]; Wesley Tayon[2]; Sean Hamel[1]; Peter Kurath[1]; [1]University of Illinois at Urbana-Champaign; [2]NASA Langley

5:05 PM
Ductile Failure of Metals: The Initiation and Growth of Nanovoids: *Marc Meyers*[1]; Eduardo Bringa[2]; Yizhe Tang[1]; [1]UCSD; [2]U. Nacional de Cuyo

5:30 PM
Roles of Stress and Strain in IG Cracking of Irradiated Stainless Steel in Supercritical Water: *Elaine West*[1]; Gary Was[1]; [1]University of Michigan

5:50 PM
The Effect of Asymmetric Rolling on the Mechanical Properties of Interstitial Free Steel: *Saeed Tamimi*[1]; Gabriela Vincze[1]; Augusto Lopes[2]; Jose Gracio[1]; Edgar Rauch[3]; Frédéric Barlat[4]; [1]TEMA; [2]Departamento de Engenharia Ceramica e do Vidro; [3]Génie Physique et Mécanique des MatériauxENSPG-INPG (ESA CNRS 5010); [4]Graduate Institute of Ferrous Technology

6:10 PM
Simulations for Fatigue Damage Incubation Mechanisms of Textured Al Alloy Using Crystal Plasticity Model: *Yibin Xue*[1]; Chong Teng[1]; Tong Li[1]; [1]Utah State University

Processing and Properties of Powder-Based Materials: Mechanical Alloying/Milling, Reactions and Consolidation

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: K. Morsi, San Diego State University; Ahmed El-Desouky, San Diego State University

Wednesday PM
March 2, 2011
Room: 33A
Location: San Diego Conv. Ctr

Session Chair: K. Morsi, San Diego State University

2:00 PM Introductory Comments

2:05 PM
Effect of Milling Process on Mechanical Properties of Fully Consolidated Titanium and Titanium Alloy Powders Made by Armstrong Process® Technology: *Yukinori Yamamoto*[1]; Wei Chen[1]; Stephen Nunn[1]; Jim Kiggans[1]; Michael Clark[1]; Sarma Gorti[1]; Adrian Sabau[1]; Ronald Swain[1]; Craig Blue[1]; Brian Fuller[2]; Kamal Akhtar[2]; [1]Oak Ridge National Laboratory; [2]Cristal US, Inc./ International Titanium Powder

2:25 PM
Fabrication of Ultrafine-Grained Al-Mg Alloy via ECAP Consolidation of Nanostructured Powder: *Zhihui Zhang*[1]; Xiaolin Wu[2]; Ying Li[1]; Troy Topping[1]; Wei Xu[2]; Yizhang Zhou[1]; Kenong Xia[2]; Enrique Lavernia[1]; [1]UC Davis; [2]University of Melbourne

2:45 PM
Investigation of Mechanical Alloying Process Parameters on Fe-Mn-Si Based System: *A. Umut Soyler*[1]; Burak Özkal[1]; Leandru G. Bujoreanu[2]; [1]Istanbul Technical University; [2]The "Gh. Asachi" Technical University

3:05 PM
The Effects of Boron Sources on the Mechanochemical Synthesis of AlB_2 from Chloride-Based Powders: *Duygu Agaogullari*[1]; Hasan Gökçe[1]; Ismail Duman[1]; M. Lütfi Öveçoglu[1]; [1]Istanbul Technical University

3:25 PM Break

3:35 PM
Deformation-Induced Ductility in Cryomilled Nanostructured Nickel: *Yonghao Zhao*[1]; Qian Zhan[2]; Troy Topping[1]; Y. Li[1]; Enrique Lavernia[1]; [1]University of California, Davis; [2]University of Science and Technology Beijing

3:55 PM
The Effects of Ti Addition on the Microstructural and Physical Properties of Cu-SiC Composite Powders: *Ceren Dutdibi*[1]; Hasan Gokce[1]; A. Umut Soyler[1]; M. Lutfi Ovecoglu[1]; Burak Ozkal[1]; [1]ITU

4:15 PM
The Effect of Ball-to-Powder Weight Ratio on the Synthesis of Aluminum Diboride: *Hasan Gökçe*[1]; Duygu Agaogullari[1]; Ismail Duman[1]; M. Lütfi Öveçoglu[1]; [1]Istanbul Technical University

4:35 PM
Investigation of Solid State Reaction Mechanism for Sodium Metaborate (NaBO2) Production: *Aysel Kanturk Figen*[1]; Hatice Ergüven[1]; Sabriye Piskin[1]; [1]Yildiz Technical University

Properties, Processing, and Performance of Steels and Ni-Based Alloys for Advanced Steam Conditions: High Temperature Oxidation and Design for Resistance

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS: High Temperature Alloys Committee
Program Organizers: Peter Tortorelli, Oak Ridge National Laboratory; Bruce Pint, Oak Ridge National Laboratory; Paul Jablonski, National Energy Technology Laboratory; Xingbo Liu, West Virginia University

Wednesday PM
March 2, 2011
Room: 33B
Location: San Diego Conv. Ctr

Session Chairs: Peter Tortorelli, Oak Ridge National Laboratory; Xingbo Liu, West Virginia University

2:00 PM
High Temperature Corrosion Resistance of Fe-Ni-Cr Alloys in CO2-H2O Atmospheres: Thomas Gheno[1]; Jianqiang Zhang[1]; *David Young*[1]; [1]University of New South Wales

2:20 PM
Oxidation and Corrosion Resistance of Structural Alloys in Supercritical Water for Generation IV Reactor Systems: Peng Xu[1]; Liang Zhao[1]; Lizhen Tan[1]; *Todd Allen*[1]; [1]University of Wisconsin

2:40 PM
Steam Oxidation of Fe-20Cr-30Ni-2Nb Austenitic Steel at 973 K: *Toshio Maruyama*[1]; Masakazu Yamashita[1]; Mitsutoshi Ueda[1]; Kenichi Kawamura[1]; Masao Takeyama[1]; [1]Tokyo Institute of Technology

3:00 PM
Austenitic Steel Oxidation in Steam: Alloy Composition and Surface Modification Solutions: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

3:20 PM
Moisture Effects on the Oxidation Behavior of Ni-Based Alloys: *Wei Zhao*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

3:40 PM Break

4:00 PM
Oxidation Behavior of Alumina-Forming Austenitic Steel in Steam: *Kinga Unocic*[1]; Michael Brady[1]; Yukinori Yamamoto[1]; Bruce Pint[1]; [1]ORNL

4:20 PM
Hydrogen Ingress in Stainless Steels during High-Temperature Oxidation in Water Vapor: *James Keiser*[1]; [1]Oak Ridge National Laboratory

4:40 PM
Steam Oxidation of New PVD Nano-Structured and Microstructured Coatings on P92 Steels: *Francisco Pérez Trujillo*[1]; Maria Hierro[1]; Maria Mato[1]; Juan Sanchez[1]; Marta Brizuela[1]; [1]Universidad Complutense de Madrid

5:00 PM
Characterization of Amorphous/Nanocrystalline Steel Coatings Developed by Different Thermal Spray Processes: *Vikram Varadaraajan*[1]; Ramesh Kumar Guduru[1]; Pravansu Mohanty[1]; [1]Univ of Michigan

Recycling General Session: 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 PM — Room: 12
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chair: Joseph Pomykala, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM Keynote
2011 Vittorio de Nora Award Winner: Recycling of Contaminated Aluminium Scrap: *Anne Kvithyld*[1]; [1]SINTEF

2:25 PM
Recycling and Material Price: An Exploration of the Effects of Secondary Substitutability on Price Stability: *Nathan Fleming*[1]; Randolph Kirchain[1]; Elisa Alonso[1]; Richard Roth[1]; Frank Field[1]; [1]Massachusetts Institute of Technology

2:45 PM
Increased Recycled Aluminum Content during Remelting by Incorporating Compositional Uncertainty: *Tracey Brommer*[1]; Elsa Olivetti[1]; Britt Elin Gihleengen[2]; Geir Øyen[2]; Hans Ole Riddervold[2]; Randolph Kirchain[1]; [1]Massachusetts Institute of Technology; [2]Norsk Hydro

3:05 PM
On In-Process Separation of Zinc from EAF Dust: *Naiyang Ma*[1]; [1]ArcelorMittal

3:25 PM
The Removal of Nickel from Leachate of Galvanic Sludge with Titanium Dioxide: *Muge Sari Yilmaz*[1]; Sibel Kasap[1]; Ozgul Dere Ozdemir[1]; Sabriye Piskin[1]; [1]Yildiz Technical University

3:45 PM Break

3:55 PM
Recycling of High Quality Steel Scraps Directly in Electroslag Remelting Process (ESR): *Burak Birol*[1]; Muhlis Saridede[1]; [1]Yildiz Technical University

4:15 PM
Recycling of Wastes Generated during the Steelmaking Process: *Victor Telles*[1]; Joner Alves[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]University of Sao Paulo - USP

4:35 PM
Differential Removal of Copper and Iron from Acidic Polymetallic Aqueous Solutions: *Jinhui Li*[1]; Youjun Xiao[1]; Daoling Xiong[1]; Ruixiang Wang[1]; Hao Chen[1]; [1]Jiangxi University of Science and Technology

4:55 PM
High Purity Alumina Powders Extracted from Aluminum Dross by the Calcining—Leaching Process: *Liu Qingsheng*[1]; [1]Jiangxi University of Science and Technology

5:15 PM
Research on Effect of Recombination Action of Rare Earth Metals La,Ce and Y on Soil Enzymatic Activities: *Nie Jinxia*[1]; Chen Yunnen[1]; [1]Jiangxi University of Science and Technology

Refractory Metals 2011: Refractory Metal-Based Composites I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Jim Ciulik, University of Texas, Austin

Wednesday PM — Room: 19
March 2, 2011 — Location: San Diego Conv. Ctr

Session Chairs: James Ciulik, University of Texas at Austin; Michael Gao, URS at National Energy Technology Laboratory

2:00 PM Invited
Optimization of Mo-Ni-Al-X Alloys for High Temperature Oxidation: *Matthew Kramer*[1]; Pratik Ray[1]; Travis Brammer[1]; Kevin Severs[1]; Mufit Akinc[1]; [1]Iowa State University

2:20 PM Invited
Effect of Zr Micro-Alloying Additions on Microstructure and Mechanical Properties of Mo-Si(-B) Alloys: Martin Heilmaier[1]; *Manja Krüger*[2]; Nelia Wanderka[3]; [1]Technische Universität Darmstadt; [2]University of Magdeburg; [3]Helmholtz Zentrum Berlin für Materialien und Energie GmbH

2:40 PM
Fracture Behavior of Mo-Si-B Alloys at Elevated Temperatures in Air and Inert Atmospheres: *Joseph Lemberg*[1]; Michael Middlemas[2]; Joseph Cochran[2]; Robert Ritchie[1]; [1]University of California Berkeley; [2]Georgia Institute of Technology

3:00 PM
Effect of Alloying on Phase Stability and Deformation Behavior of Mo-Si-B System: *Oleg Kontsevoi*[1]; Arthur Freeman[1]; [1]Northwestern University

3:20 PM Break

3:40 PM
Molybdenum - Silicate Multiphase Composites: Mechanical Considerations: *Peter Marshall*[1]; Joe Cochran[1]; Will Daloz[1]; [1]Georgia Institute of Technology

4:00 PM
Molybdenum-Silicate Multiphase Composites: Oxidation Concerns: *William Daloz*[1]; Joe Cochran[1]; Peter Marshall[1]; [1]Georgia Institute of Technology

4:20 PM
Microstructures and Oxidation Behavior of W Substituted Mo-Si-B Alloys: *Pratik Ray*[1]; Mufit Akinc[1]; Matthew Kramer[1]; [1]Iowa State University

4:40 PM
Oxidation Performance of Mo-Si-B Alloys: Implications through Alloying and Pre-Treatment: *Steffen Burk*[1]; Bronislava Gorr[1]; Hans-Jürgen Christ[1]; [1]Universität Siegen

5:00 PM
The Systematic Control of Polyhedral Mo Powder Formation with Different Particle Sizes: *Xian Qin Wang*[1]; Fei Zhuang[1]; Yuan Jun Sun[1]; Jun Huai Liu[1]; Jing Li[1]; Hu Zhao[1]; [1]Jin Dui Cheng (JDC) Molybdenum Group Co. Ltd.

Sensors, Sampling, and Simulation for Process Control: Liquid Metal Sensing and Online Measurement

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Brian Thomas, University of Illinois at Urbana-Champaign; Andrew Campbell, WorleyParsons; Srinath Viswanathan, University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; James Yurko, 22Ti LLC; Thomas Battle, Midrex Technologies

Wednesday PM
March 2, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chairs: Brian Thomas, University of Illinois at Urbana-Champaign; Lifeng Zhang, Missouri University

2:00 PM Introductory Comments

2:10 PM Keynote
In-Situ Sensors for Liquid Metal Quality: *Roderick Guthrie*[1]; Mihaiela Isac[1]; [1]McGill Metals Processing Centre

2:40 PM Keynote
Sensors for On-Line Monitoring of Molten Metal Quality: *Jeffrey Fergus*[1]; [1]Auburn University

3:10 PM
Development of an Aqueous Particle Sensor (APSIII) System as a Research Tool for Studying the Behavior of Inclusions in Water Models of Tundish Operations: Mihaiela Isac[1]; *Abhishek Chakraborty*[1]; Luis Calzado[1]; Roderick Guthrie[1]; [1]McGill Metals Processing Centre

3:35 PM Break

3:55 PM
Lorentz Force Velocimetry – A Contactless Technique for Flow Measurement in High-Temperature Melts: *Andre Thess*[1]; Yurii Kolesnikov[2]; Christian Karcher[1]; Rico Klein[2]; [1]Ilmenau University of Technology ; [2]Ilmenau University of Technology

4:20 PM
The Development of a Sensor to Determine the Direction of Velocity in Liquid Aluminum: *Mitren Sukhram*[1]; Stavros Argyropoulos[1]; [1]University of Toronto

4:45 PM
New Sensors for the Velocity Measurement in Liquid Metal Processes: *Klaus Timmel*[1]; Sven Eckert[1]; Thomas Wondrak[1]; Frank Stefani[1]; Gunter Gerbeth[1]; [1]Forschungszentrum Dresden-Rossendorf

5:10 PM
Measurement of Molten Steel Surface Velocity with SVC and Nail Dipping during Continuous Casting Process: Joydeep Sengupta[1]; *Rui Liu*[2]; Don Crosbie[1]; S. Chung[1]; M. Trinh[1]; Brian Thomas[2]; [1]ArcelorMittal Dofasco; [2]University of Illinois at Urbana Champaign

5:35 PM
Measurement of Transient Meniscus Flow in Steel Continuous Casters and Effect of Electromagnetic Braking: *Seong-Mook Cho*[1]; Hyoung-Jun Lee[1]; Seon-Hyo Kim[1]; Rajneesh Chaudhary[2]; Brian Thomas[2]; Duck-Hee Lee[3]; Yong-Jin Kim[3]; Woong-Ryul Choi[4]; Sung-Kwang Kim[4]; Hui-Soo Kim[4]; [1]Pohang University of Science and Technology; [2]University of Illinois at Urbana Champaign; [3]POSCO Gwangyang Steel Works; [4]POSCO Gwangyang Works

Shape Casting IV: Light Metals Division Symposium in Honor of Prof. John T. Berry: Methods and Systems

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Processing Committee, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Paul Crepeau, General Motors Corporation; John Campbell, University of Birmingham

Wednesday PM
March 2, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Alan Druschitz, Univ of Alabama; Derya Dispinar, SINTEF

2:00 PM Introductory Comments

2:10 PM
The Effect of Reducing the Molecular Weight of the Foam Pattern in the Lost Foam Casting Process: Kiavash Siavashi[1]; Clare Topping[2]; *William Griffiths*[3]; [1]University of Birmingham; [2]Isotron; [3]University of Birmingham

2:30 PM
Classical Nondestructive Testing Techniques Do Not Correlate with Strength as Does Process Compensated Resonant Testing: *Robert Nath*[1]; Marvin Johnson[2]; Clifford Grupke[2]; Chuck Leonard[3]; [1]Magnaflux Quasar; [2]Retired/Consultant; [3]Diversified Machine, Inc.

2:50 PM
Advanced Methoding Concepts for the Gravity Casting of Steel Alloys: *Bob Puhakka*[1]; [1]Alloy Casting Industries

3:10 PM
Advanced Mold Design Technology of the LCS Waterjet (WJ) Entry Edge Casting Components Assisted by Flow, Solidification and Stress Modeling: *Laurentiu Nastac*[1]; John Romanelli[1]; [1]Concurrent Technologies Corporation

3:30 PM
Evaluation of the Distortion of a Hydro Turbine Blade during Heat Treatment Process: *Jinwu Kang*[1]; [1]Tsinghua University

3:50 PM Break

4:10 PM
The Capability Enhancement of Aluminium Casting Process by Application of the Novel CRIMSON Method: *Xiaojun Dai*[1]; Mark Jolly[1]; [1]University of Birmingham

4:30 PM
Optimization of the Process Parameters and Tooling Improvement for the Rheocasting of High Quality Aluminum Components Using the SEED Process: Chang-Qing Zheng[1]; *Ehab Samuel*[1]; Alain Simard[1]; Florentin Laplume[1]; [1]National Research Council Canada

4:50 PM
Shaped Castings and Machining: *John Wyatt*[1]; John Berry[1]; [1]Mississippi State University

5:10 PM
The Estimable Value of "Clever" Experiments: *John Berry*[1]; [1]Mississippi State University

5:35 PM Concluding Comments
Dr. Berry will have the opportunity to reflect on the symposium, metal casting and life.

Size Effects in Mechanical Behavior: Observing Size Effects Using the Microcompression Method

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Wednesday PM
March 2, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Andrew Minor, UC Berkeley; Cynthia Byer, Johns Hopkins University

2:00 PM Invited
Achieving Ultra-High Strength and Strain-Hardening Rate by Trapping Dislocations in Small Material Volumes: Kwok-Sing Ng[1]; *Alfonso Ngan*[1]; [1]University of Hong Kong

2:30 PM Invited
Size Effects on Strength and Hardening in Cu Micropillars: P. J. Guruprasad[1]; Daniel Kiener[2]; Gerhard Dehm[2]; Shyam Keralavarma[3]; *Amine Benzerga*[3]; [1]Ecole des Mines de Paris; [2]Austrian Academy of Sciences; [3]Texas A&M University

3:00 PM
Effect of Initial Dislocation Density on Microcompression Experiments of HCP Single-Crystal Magnesium: *Cynthia Byer*[1]; K. T. Ramesh[1]; [1]Johns Hopkins University

3:20 PM
Size Effects in Slip and Twinning in Mg Single Crystals: *Erica Lilleodden*[1]; Gyu Seok Kim[1]; [1]GKSS Research Center

3:40 PM Break

4:10 PM
Size Effects on Plasticity and Martensitic Transformation in Shape Memory Alloy Microcrystals: *Matthew Bowers*[1]; Michael Mills[1]; John Carpenter[1]; Peter Anderson[1]; Sivom Manchiraju[1]; [1]The Ohio State University

4:30 PM
Anomalous Features of the Nanoscale Deformation of "Gum Metal": *John Morris*[1]; Elizabeth Withey[1]; Rohini Sankaran[1]; Andrew Minor[1]; Daryl Chrzan[1]; Shigeru Kuramoto[2]; [1]University of California Berkeley; [2]Toyota Central R&D Laboratory

4:50 PM
A Microcompression Study Of Gum Metal: *Julia Hapke*[1]; Shigeru Kuramoto[2]; Erica Lilleodden[1]; [1]GKSS-Research Center; [2]Toyota Central R&D Laboratory

5:10 PM
High Resolution Imaging of Gum Metal Defect Structure: *Rohini Sankaran*[1]; Velimir Radmilovic[2]; Daryl Chrzan[1]; Andrew Minor[1]; John Morris[1]; [1]University of California Berkeley; [2]Lawrence Berkeley National Laboratory

Waste Heat Recovery: 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, Consultant; Mark Jolly, University of Birmingham; Xingbo Liu, West Virginia University; Rachel DeLucas, H.C. Starck

Wednesday PM
March 2, 2011
Room: 31B
Location: San Diego Conv. Ctr

Session Chairs: Rachel De Lucas, HC Starck Inc; Xingbo Liu, West Virginia Univ

2:00 PM
Waste Heat Utilization to Increase Energy Efficiency in the Metals Industry: Elizabet Cruz[1]; Maytinee Vatanakul[1]; Rory Hynes[1]; Jim Sarvinis[1]; [1]Hatch

2:20 PM
Waste Heat Reduction and Recovery Options for Metals Industry: Arvind Thekdi[1]; *Cynthia Belt*[2]; [1]E3M Inc.; [2]Consultant

2:40 PM
Development of a Direct Evaporator for the Organic Rankine Cycle: *Donna Guillen*[1]; Helge Klockow[2]; Matthew Lehar[2]; Sebastian Freund[2]; Jennifer Jackson[2]; [1]Idaho National Laboratory; [2]General Electric Company

3:00 PM
The Application of Industrial Waste Heat to ORC Waste Heat Generators: *Bob Miller*[1]; [1]Calnetix, Inc.

3:20 PM
Topological Considerations for Thermoelectric Capture of Waste Heat: *Jan Beck*[1]; David Nemir[1]; Manuel Alvarado[1]; [1]TXL Group, Inc.

3:40 PM
Waste Heat Recovery in the Aluminum Melting Furnaces: *John W. Nortan*[1]; [1]Nortan Engineering, LLC

4:00 PM
Energy Efficiency Improvement by Implementation of the Novel CRIMSON Aluminium Casting Process: *Mark Jolly*[1]; Xiaojun Dai[1]; [1]University of Birmingham

4:20 PM
Waste Heat Recovery Trial from Aluminum Reduction Cell Exhaust Gases: *Hadi Fanisalek*[1]; Mohsen Bashiri[1]; Reza Kamali[1]; [1]Hormozal

4:40 PM
The Study of Coal Gasification by Molten Blast Furnace Slag: *Peng Li*[1]; Qingbo Yu[1]; [1]Northeastern University

5:00 PM
System for Recovering Waste Heat from High Temperature Molten Blast Furnace Slag: *Junxiang Liu*[1]; Qingbo Yu[1]; Qin Qin[1]; [1]Northeastern University

5:20 PM
Stability and Thermoelectric Properties of Transition Metal Silicides from First Principles Calculations: *Philippe Jund*[1]; Xiaoma Tao[1]; Romain Viennois[1]; Catherine Colinet[1]; Jean Claude Tédenac[1]; [1]Université Montpellier 2 - ICGM

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Fabrication of Nanomaterials II

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Thursday AM
March 3, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chairs: Jud Ready, Georgia Institute of Tech; Vijay Singh, University of Kentucky

8:30 AM Introductory Comments

8:35 AM
Synthesis of Discrete Aluminum Nanoparticles: *Christopher Crouse*[1]; Eunsung Shin[2]; P. Terry Murray[2]; Jonathan Spowart[1]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute

8:50 AM
Microstructure of Ball Milled Nanostructured Cu: *Daria Setman*[1]; Michael Kerber[1]; Hamed Bahmanpour[2]; Ronald Scattergood[2]; Carl Koch[2]; Michael Zehetbauer[1]; [1]Research group Physics of Nanostructured Materials, University Vienna, Austria; [2]Department of Materials Science and Engineering, North Carolina State University, USA

9:05 AM
Growth of Bulk, Nano-Composite (RE)-Ba-Cu-O Single Grain Superconductors: *Hari babu Nadendla*[1]; YunHua Shi[2]; Sandeep Pathak[2]; Anthony Dennis[2]; David Cardwell[2]; [1]Brunel University; [2]University of Cambridge

9:20 AM
Inkjet Printed Gold Nanoparticulate Pads for Surface Finish in Electronic Package: *Seonhee Jang*[1]; Kyoung-Jin Jeong[1]; Sungkoo Kang[1]; Donghoon Kim[1]; [1]Samsung Electro-Mechanics

9:35 AM
Synthesis of Anisotropic Nanoporous Platinum Structures: *Yuan Li*[1]; Antonia Antoniou[1]; [1]Georgia Institute of Technology

9:50 AM
Tailoring the Structure of Iron-Carbon Nanocomposites by Laser Power Variation Throughout the Laser Pyrolysis Process: *Ion Morjan*[1]; Florian Dumitrache[1]; Rodica Alexandrescu[1]; Claudiu Fleaca[1]; Ruxandra Birjega[1]; Catalin-Romeo Luculescu[1]; Iuliana Soare[1]; Victor Kuncser[1]; Victor Ciupina[1]; [1]National Institute for Lasers, Plasma and Radiation Physics

10:05 AM Break

10:20 AM
Mechanomutable Nanomaterials: Multiscale Computational and Experimental Studies: *Markus Buehler*[1]; Steven Cranford[1]; Christine Ortiz[1]; [1]Massachusetts Institute of Technology

10:35 AM
Fabrication of Gold-Platinum Nanoalloy by High-Intensity Laser Irradiation of Solution: *Takahiro Nakamura*[1]; Yuliati Herbani[1]; Shinichi Sato[1]; [1]IMRAM, Tohoku University

10:50 AM
Enhancement of CFRP Composites' Lateral Strength by Means of Magnetically Aligned CNTs: *Saud Aldajah*[1]; Yousef Haik[1]; [1]United Arab Emirates University

11:05 AM
Effective Elastic Properties of Solids Containing Imperfectly Bonded Nano-Inhomogeneities Based on Atomistic-Continuum Interphase Model: *Bhasker Paliwal*[1]; Mohammed Cherkaoui[1]; [1]Unité Mixte Internationale (UMI) Georgia Tech-CNRS & Georgia Institute of Technology

11:20 AM
Carbon Nanotube and Thin Film RF Antenna: *David Stollberg*[1]; [1]Georgia Tech Research Institute

11:35 AM
Metallic Nanoparticles in a Polysaccharide Thin Film: *Patricia Farias*[1]; Josivandro Silva[1]; Igor Cavalcanti[2]; Beate Santos[1]; Adriana Fontes[1]; Rosa Dutra[2]; [1]Federal University of Pernambuco - UFPE; [2]RENORBIO

11:50 AM Concluding Comments

2nd International Symposium on High-Temperature Metallurgical Processing: Sintering and Synthesis

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

Thursday AM
March 3, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chairs: Xiaohui Fan, Central South University; Xuewei Lv, Chongqing University,China

8:30 AM
Crystallization Behavior of Calcium Ferrite during Iron Ore Sintering: *Xiaohui Fan*[1]; Lin Hu[1]; Min Gan[1]; [1]Central South University

8:50 AM
Numeric Simulation of the Cooling Process of the Iron Ore Sinter: Jiaqing Yin[1]; *Xuewei Lv*[1]; Chenguang Bai[1]; [1]Chongqing University,China

9:10 AM
Study on Sintering Properties of A Fine Iron Concentrate Containing Hematite and Limonite: *Tao Jiang*[1]; Zheng-wei Yu[1]; Yu-feng Guo[1]; Yong-bin Yang[1]; Jian-jun Fan[2]; [1]Central South University; [2]Taiyuan Iron and Steel(Group) Corp.

9:30 AM Break

9:40 AM
Kinetics Studies of the Zinc Ferrite Synthesis: *Mery Gómez*[1]; José D'Abreu[1]; Helio Kohler[1]; [1]Puc-rio

10:00 AM
Vitrification of the Thermal State during Iron Ore Sintering: Xuling Chen[1]; *Xiaohui Fan*[1]; Tao Jiang[1]; Xiaoming Mao[1]; Hongming Long[2]; [1]Central South University; [2]Anhui university of technology

10:20 AM
Improving of Compression Strength of Preheated Pellets by High Pressure Roll Grinding: Jianjun Fan[1]; Guanzhou Qiu[1]; Tao Jiang[1]; Yufeng Guo[1]; [1]Central South University

10:40 AM Concluding Comments

Advances in Mechanics of One-Dimensional Micro/Nano Materials: Nanomechanics: In-Situ Techniques

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Seung Min Han, Korea Advanced Institute of Science and Technology; Katerina Aifantis, Aristotle University

Thursday AM
March 3, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: En Ma, John Hopkins University; Paulo Ferreira, The University of Texas at Austin

8:30 AM Invited
In Situ Mechanical Testing in the TEM as a Window anto Small-Scale Plasticity Phenomena: *Andrew Minor*[1]; [1]UC Berkeley & LBL

8:55 AM Invited
Application of In-Situ Electron Microscopy in Nanoscience and Energy Research: *Jianyu Huang*[1]; Li Zhong[2]; Chongmin Wang[3]; Ju Li[4]; Liang Qi[4]; John Sullivan[1]; Wu Xu[3]; Jie Yu[5]; Liqiang Zhang[2]; Scott Mao[2]; Nicholas Hudak[1]; Xiaohua Liu[1]; Arunkumar Subramanian[1]; Hongyu Fan[1]; Akihiro Kushima[4]; [1]Sandia National Laboratories; [2]University of Pittsburgh; [3]Pacific Northwest National Laboratory; [4]University of Pennsylvania; [5]Harbin Institute of Technology

9:20 AM Invited
Deformation in Metallic Nanowires under In-Situ TEM: *Scott Mao*[1]; He Zheng[1]; J. Luo[1]; Jianyu Huang[2]; [1]University of Pittsburgh; [2]Sandia National Lab

9:45 AM Invited
In-Situ Mechanical Testing of Nanowires and Nanodots: *Johann Michler*[1]; [1]EMPA, Swiss Federal Laboratories for Materials Science and Technology

10:10 AM
In-Situ SEM Micro-Compression Behavior of 1-D Nanostructure Arrays: *Siddhartha Pathak*[1]; William Mook[1]; Mikhael Bechelany[1]; Johann Michler[1]; [1]EMPA - Swiss Federal Laboratories for Materials Testing and Research

10:25 AM Break

10:40 AM Invited
Quantitative In Situ Mechanical Characterization of Carbon Nanotube/Epoxy Interface and Individual Carbon Nanotube Using Novel Micromechanical Devices: Yogi Ganesan[1]; Cheng Peng[1]; Yang Lu[1]; Phillip Loya[1]; *Jun Lou*[1]; [1]Rice University

11:05 AM Invited
Superplastic Shaping of Silica Glass Nanowires and Nanoparticles: Electron-Beam-Assisted Flow Near Room Temperature: *Evan Ma*[1]; [1]Johns Hopkins University

11:30 AM Invited
Recent Advances in Characterization with In Situ SPM-TEM Instruments: *Oleg Lourie*[1]; [1]Nanofactory Instruments Inc.

11:55 AM
Quantitative Tensile Testing of Free-Standing Thin Films in a TEM: *Claire Chisholm*[1]; Zhiwei Shan[2]; Jason Oh[3]; S.A. Syed Asif[3]; O.L Warren[3]; Andrew Minor[1]; [1]University of California, Berkeley and National Center for Electron Microscopy; [2]Xi'an Jiaotong University and Hysitron, Inc.; [3]Hysitron, Inc.

12:10 PM Invited
Are Dislocations Possible in Nanoparticles?: C.E. Carlton[1]; *Paulo Ferreira*[1]; [1]University of Texas at Austin

Aluminum Reduction Technology: Cells Process Modeling

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Thursday AM
March 3, 2011
Room: 17B
Location: San Diego Conv. Ctr

Session Chair: Marc Dupuis, GéniSim Inc

8:30 AM
Development and Application of an ANSYS Based Thermo-Electro-Mechanical Collector Bar Slot Design Tool: *Marc Dupuis*[1]; [1]GéniSim Inc

8:50 AM
Impact of Amperage Creep on Potroom Busbars and Electrical Insulation: Thermal-Electrical Aspects: *Andre Schneider*[1]; Daniel Richard[1]; Olivier Charette[1]; [1]Hatch

9:10 AM
Modern Design of Potroom Ventilation: *Anastasiya Vershenya*[1]; Umesh Shah[1]; Stephan Broek[1]; Tom Plikas[1]; Jennifer Woloshyn[1]; Andre Felipe Schneider[1]; [1]Hatch Limited

9:30 AM
Modeling of Energy Savings by Using Cathode Design and Inserts: *René von Kaenel*[1]; Jacques Antille[1]; [1]KAN-NAK SA

9:50 AM Break

10:00 AM
A Preliminary Finite Element Electrochemical Model for Modelling Ionic Species Transport in the Cathode Block of a Hall-Héroult Cell: *Frédérick Gagnon*[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]NSERC/Alcoa Industrial Research Chair MACE3 and Aluminium Research Centre-REGAL, Laval University; [2]Alcoa Primary Metals

10:20 AM
Anodic Voltage Oscillations in Hall-Héroult Cells: *Kristian Etienne Einarsrud*[1]; Espen Sandnes[2]; [1]Norwegian University of Science and Technology; [2]Hydro Aluminium AS

10:40 AM
CFD Modelling of Alumina Mixing in Aluminium Reduction Cells: Yuqing Feng[1]; *Mark Cooksey*[2]; Phil Schwarz[1]; [1]CSIRO Mathematics, Informatics and Statistics; [2]Process Science and Engineering

11:00 AM
Bubble Transport by Electro-Magnetophoretic Foces at Anode Botttom of Aluminium Cells: *Valdis Bojarevics*[1]; Alan Roy[1]; [1]University of Greenwich

Biological Materials Science: Mechanical Behavior of Biological Materials III

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Jamie Kruzic, Oregon State University; Nima Rahbar, University of Massachusetts, Dartmouth; Po-Yu Chen, University of California, San Diego; Candan Tamerler, University of Washington

Thursday AM
March 3, 2011
Room: 15A
Location: San Diego Conv. Ctr

Session Chairs: Nima Rahbar, University of Massachusetts Dartmouth; Jamie Kruzic, Oregon State University

8:30 AM Invited
Adhesion in Biomaterials: From BioMEMS to Nanoparticles for Cancer Detection and Treatment: Winston Soboyejo[1]; [1]Princeton University

9:00 AM
Micro Tribology of Compression Molded Ultrahigh Molecular Weight Polyethylene Reinforced with Aluminum Oxide, Hydroxyapatite and Carbon Nanotubes: *Ankur Gupta*[1]; Debrupa Lahiri[2]; Sanat Ghosh[2]; Garima Tripathi[1]; Bikramjit Basu[1]; Arvind Agarwal[2]; Kantesh Balani[1]; [1]Indian Institute of Technology, Kanpur; [2]Florida International University, Miami

9:20 AM
Determination of Micro-Mechanical Properties of Bovine Cortical Bone by Uniaxial Compression Testing: *Pravin Ramesh*[1]; Katrina Altman[1]; Elise Morgan[2]; Katharine Flores[1]; [1]The Ohio State University; [2]Boston University

9:40 AM
Advanced Mechanical Characterization of Biomaterials by Nanoindentation: *Nicholas Randall*[1]; Bo Zhou[1]; [1]CSM Instruments

10:00 AM
Broadband Nanoindentation Spectroscopy for Biological Materials: *Joseph Jakes*[1]; Daniel Yelle[1]; Charles Frihart[1]; Donald Stone[2]; [1]USDA Forest Products Laboratory; [2]University of Wisconsin - Madison

10:20 AM Break

10:30 AM
Fiber Reinforced Tough Hydrogels: Animesh Agrawal[1]; Dapeng Li[1]; Nima Rahbar[1]; *Paul Calvert*[1]; [1]University of Massachusetts

10:50 AM
Microstructural and Mechanical Investigation of Macadamia Nutshells on Different Hierarchical Levels: *Claudia Fleck*[1]; Ruth Loprang[1]; Paul Schüler[1]; Paul Zaslansky[2]; Dietmar Meinel[3]; [1]Technische Universitaet Berlin; [2]Max-Planck-Institute of Colloids and Interfaces; [3]Bundesanstalt für Materialforschung und -prüfung BAM

11:10 AM
Characterization of Brazil Nut Shell Fiber: *Nelida Lucia del Mastro*[1]; Patricia Inamura[1]; Felipe Kraide[1]; Maria Aguirre[1]; Marcos Scapin[1]; Esperidiana Moura[1]; [1]IPEN-CNEN/SP

11:30 AM
Armadillo Armor:
Mechanical Testing and Micro-Structural Evaluation: *Irene Chen*[1]; James Kiang[1]; Joshua Yee[2]; Maria Lopez[1]; Po-Yu Chen[1]; Joanna McKittrick[1]; Marc Meyers[1]; [1]University of California at San Diego; [2]University of California at Irvine

11:50 AM
Feathers in Flexure: Why Buckling Up is for the Birds: *Sara Bodde*[1]; James Kiang[1]; Joanna McKittrick[1]; Marc Meyers[1]; [1]UCSD

12:10 PM
Quasi-Static and Dynamic Characterization of Agar: *Vinod Nayar*[1]; James Weiland[1]; Andrea Hodge[1]; [1]University of Southern California

Bulk Metallic Glasses VIII: Mechanical and Other Properties I

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Thursday AM
March 3, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Ralph Napolitano, Iowa State Univ; Jianzhong Jiang, International Center for New-Structured Materials (ICNSM)

8:30 AM Invited
Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr: I. Kalay[1]; Y. Kalay[2]; M. Kramer[2]; *Ralph Napolitano*[1]; [1]Iowa State University; [2]Ames Laboratory

8:50 AM
Crystallization Behavior and Magnetic Properties of FeCoSiBNb BMG with Cu Additions: *Mihai Stoica*[1]; Ran Li[2]; Stefan Roth[1]; Gavin Vaughan[3]; Jürgen Eckert[1]; [1]IFW Dresden; [2]BUAA University; [3]ESRF Grenoble

9:00 AM
Viscosity Measurement and Fragility Calculation in Fe-Based Amorphous Alloys: *Jong Hyun Na*[1]; Marios D. Demetriou[1]; Won Tae Kim[2]; Do Hyang Kim[3]; William L. Johnson[1]; [1]California Institute of Technology; [2]Cheongju University; [3]Yonsei University

9:10 AM Invited
Structural Relaxation, Glass-Transition, Viscous Formability and Crystallization of Bulk Metallic Glasses on Heating Including Microwave Treatment: *Dmitri Louzguine*[1]; Akihisa Inoue[1]; [1]WPI-AIMR, Advanced Institute for Materials Research, Tohoku University

9:30 AM
Effect of Tantalum Substitution on the Crystallization Kinetics and Hydrogen Permeability of Ni-Nb-Zr Amorphous Alloys: *Sang-Mun Kim*[1]; Narendra Pal[1]; Wen-Ming Chien[1]; Joshua Lamb[1]; Anjali Talekar[1]; Dhanesh Chandra[1]; Michael Dolan[2]; Stephen Paglieri[3]; Ted Flanagan[4]; [1]University of Nevada, Reno; [2]Commonwealth Scientific and Industrial Research Organisation; [3]TDA Research; [4]The University of Vermont

9:40 AM Invited
Plastic Deformation Behaviors of Metallic Glasses under Multiaxial Loadings: *Zhefeng Zhang*[1]; F. F. Wu[1]; J. X. Zhao[1]; R. T. Qu[1]; [1]Institute of Metal Research

10:00 AM Break

10:10 AM
Interface Properties of Crystalline-Amorphous Metallic Multilayers: *Christian Brandl*[1]; Timothy Germann[1]; Amit Misra[1]; [1]Los Alamos National Laboratory

10:20 AM Invited
Effect of Minor Additives on Nucleation and Grain Growth Behaviors in Zr-Al-Ni-Cu-Based Metallic Glass: *Junji Saida*[1]; Albertus Setyawan[1]; Mitsuhide Matsushita[2]; Akihisa Inoue[1]; [1]Tohoku University; [2]JEOL Co., Ltd.

10:40 AM
Electrochemical and Wear Properties of $Zr_{55}Cu_{30}Ni_5Al_{10}$ Bulk Metallic Glass with Respect to Use as a Medical Implant Material: *Steven Savage*[1]; Maysam Nezafati[2]; Magnus Skjellerudsveen[3]; Dan Persson[2]; Ragnhild Aune[3]; [1]FOI; [2]Swerea KIMAB AB; [3]NTNU

10:50 AM
In-Vitro Biocompatibility of Ni-Free Zr-Al-Cu-Nb-Pd Bulk Metallic Glasses: *Lu Huang*[1]; Wei He[2]; Yoshihiko Yokoyama[3]; Shujie Pang[1]; Peter Liaw[2]; Akihisa Inoue[3]; Tao Zhang[1]; [1]Beihang University; [2]University of Tennessee; [3]Tohoku University

11:00 AM Invited
Microstructure Evolution and Mechanical Properties of Zr-Cu-Ni-Al Bulk Metallic Glasses by the Bridgman Solidification: Jialin Cheng[1]; *Guang Chen*[1]; Hongwei Xu[1]; [1]Nanjing University of Science and Technology

11:20 AM
Shear Band Patterns in Metallic Glasses under Vickers Indentation: *Zhinan An*[1]; Yanfei Gao[1]; Fengxiao Liu[1]; Peter Liaw[1]; [1]University of Tennessee

11:30 AM
Effects of Laser-surface Melting Treatment on the Mechanical Behaviors of Zr-Based Bulk Metallic Glasses: *Haoling Jia*[1]; Gongyao Wang[1]; Junwei Qiao[1]; Bingqing Chen[2]; Tao Zhang[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Beihang University

11:40 AM
Viscosity Measurement of Fe-Based Metallic Glass by Single Particle Compressive Test: *Rui Yamada*[1]; Noriharu Yodoshi[1]; Akira Kawasaki[1]; [1]Tohoku University

Carbon Dioxide and Other Greenhouse Gas Reduction Metallurgy - 2011: Electrochemical Reduction Methods - CO2 Use and Other Metal Production

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; Maria Salazar-Villalpando, National Energy Technology Laboratory; James Yurko, 22Ti LLC; Malti Goel, INSA

Thursday AM
March 3, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Aldo Steinfeld, Solar Technology Lab; Mahesh Jha, Department of Energy

8:30 AM Introductory Comments

8:35 AM
Concentrated Solar Power for Producing Liquid Fuels from CO2 and H2O: *Peter Loutzenhiser*[1]; Anastasia Stamatiou[1]; Daniel Gstoehl[2]; Anton Meier[2]; Aldo Steinfeld[1]; [1]ETH Zurich; [2]Paul Scherrer Institute

8:55 AM
CO_2 Electrochemical Reduction by Specifically Adsorbed Anions: Korato Ogura[1]; Jack Ferrell[2]; *Maria Salazar-Villalpando*[3]; [1]Research and Engineering Services; [2]ORISE; [3]National Energy Technology Laboratory

9:15 AM
Photo-Electro-Catalytic Conversion of CO2 to Synthetic Fuels on Surface Modified Nanowires: *Jung-Kun Lee*[1]; Mengjin Yang[1]; Maria Salazar-Villalpando[2]; [1]University of Pittsburgh; [2]National Energy Technology Laboratory

9:35 AM
Solar Thermo-Chemical Splitting of Carbon Dioxide by Metal Oxide Redox Pairs: Martin Roeb[1]; Sebastian Stenger[1]; *Martina Neises*[1]; Christian Sattler[1]; [1]DLR

9:55 AM
Recent Progress in Molten Oxide Electrolysis for Iron Production: *Antoine Allanore*[1]; Felipe Carillo[1]; Luis Ortiz[1]; Donald Sadoway[1]; [1]MIT

10:15 AM
Perflourocarbon Generation during Electrolysis in Molten Fluorides: Xiangsheng Wang[1]; Zuoju Huang[1]; Guihua Wang[1]; *Hongmin Zhu*[1]; [1]University of Science & Technolgoy Beijing

10:35 AM Break

10:45 AM
Climate Change and Metal and Mining Sector: An Overview of Trends, Project Potential and Its Abatement: *Puliyur Krishnaswamy Narasimha Raghavan*[1]; [1]Bharat Aluminium Co. Ltd.

11:05 AM
Fundamental Thermodynamics of Aqueous Carbon Dioxide Systems: *Dave Tahija*[1]; H.H. Huang[2]; [1]Gehenna Corp; [2]Montana Tech

11:25 AM
Electrodeposition of PbTe Thermoelectric Materials in NaOH Solutions: *Zhongning Shi*[1]; Ramana Reddy[2]; [1]School of Materials and Metallurgy, Northeastern University; [2]The University of Alabama

11:45 AM
Study of Bamboo Charcoal Load Ce-Doped Nano-TiO2 Photochemical Catalysis Oxidation Degradation of Formaldehyde Device: *Daowu Yang*[1]; Zhuo Ren[1]; Hui Liu[1]; Yu Su[1]; [1]ChangSha University of Science & Technology

Challenges in Mechanical Performances of Materials in Next Generation Nuclear Power Plants: Session I

Sponsored by: The Minerals, Metals and Materials Society, American Nuclear Society, ASM International, Japan Institute of Metals, National Science Foundation, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, ASM Materials Science Critical Technology Sector, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS/ASM: Composite Materials Committee, TMS: Energy Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee
Program Organizer: Faramarz Zarandi, CANMET-Materials Technology Laboratory

Thursday AM
March 3, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chairs: Amit Misra, Los Alamos National Laboratory; Milo Kral, University of Canterbury

8:30 AM Invited
Materials Selection and Qualification for Advanced Nuclear Reactors: *R. N. Wright*[1]; [1]Idaho National Laboratory

9:10 AM
Creep Behavior of High Temperature Alloys for Generation IV Nuclear Power Plant Applications: *Xingshuo Wen*[1]; Laura Carroll[2]; Richard Wright[2]; T.-L. (Sam) Sham[3]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory

9:30 AM
The Influence of a VHTR Environment on the Creep-Fatigue Behavior of Alloy 617: *Laura Carroll*[1]; Celine Cabet[2]; Rachael Madland[3]; Richard Wright[1]; [1]Idaho National Laboratory; [2]CEA, DEN, DPC, SCCME; [3]Colorado School of Mines

9:50 AM
The Effect of Grain Size and Annealing Twin Density on the Creep Properties of Alloy 800H: *Ben Gardiner*[1]; Milo Kral[1]; [1]University of Canterbury

10:10 AM Break

10:20 AM Invited
On the Scientific and Engineering Challenges Facing the Development Irradiation Tolerant Nanostructured Ferritic Alloys: *G. Robert Odette*[1]; [1]University of California Santa Barbara

11:00 AM
Microstructure and Creep Behavior of Nanocluster-Strengthened Ferritic Steels: *M Brandes*[1]; Libor Kovarik[2]; Glenn Daehn[1]; Joachim Schneibel[3]; Martin Heilmaier[4]; Michael Mills[1]; Michael Miller[3]; [1]The Ohio State University; [2]Pacific Northwest National Lab; [3]Oak Ridge National Laboratory; [4]University of Magdeburg

11:20 AM
On the High Temperature Creep and Crack Growth Studies of Nanostructured Ferritic Alloys: *E. Stergar*[1]; M. Salston[1]; G.R. Odette[1]; K. Fields[1]; D. Gragg[1]; [1]UC Santa Barbara

11:40 AM
Characterization of Nano-scale Features in Mechanically Alloyed and HIP-ed Oxide Dispersion Strengthened Steel U14YWT: *Dhriti Bhattacharyya*[1]; Patricia Dickerson[1]; Stuart Maloy[1]; G. Robert Odette[2]; Michael Nastasi[1]; Amit Misra[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

Characterization of Minerals, Metals and Materials: Characterization of Polymers,Composites and Natural Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS/ASM: Composite Materials Committee, TMS: Materials Characterization Committee
Program Organizer: Sergio Monteiro, State University of the Northern Rio de Janeiro - UENF

Thursday AM
March 3, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chairs: Fernando Rizzo, PUC Rio de Janeiro; Jian Li, CANMET-MTL

8:30 AM
Characterization of Tensile Properties of Piassava Fiber Reinforced Polyester Composites: Denise Nascimento[1]; Isabela da Silva[1]; *Felipe Lopes*[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

8:45 AM
Characterization of Tensile Tested Continuous Bamboo Stripped Fiber Reinforced Epoxy Composites: *Lucas da Costa*[1]; Romulo Loiola[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

9:00 AM
Characterization of Thermal Behavior of Polyester Composites Reinforced with Curaua Fibers by Differential Scanning Calorimetry: Ailton Ferreira[1]; *Felipe Lopes*[1]; Sergio Monteiro[1]; Teresa Castillo[1]; Ruben Rodriguez[1]; [1]State University of the Northern Rio de Janeiro - UENF

9:15 AM
Characterization of Thermogravimetric Behavior of Polyester Composites Reinforced with Coir Fiber: *Helvio Santafé*[1]; Sergio Monteiro[1]; Ruben Rodriguez[1]; Teresa Castillo[1]; [1]State University of the Northern Rio de Janeiro - UENF

9:30 AM
Characterization of Aluminum Composite Reinforced with ZrO2 Nanoparticles Produced by Mechanical Alloying and Sintering Process: *Jose de Jesus Cruz Rivera*[1]; Jorge Garcia Rocha[1]; Luis Salvador Hernandez Hernandez[1]; Esperanza Elizabeth Martinez Flores[1]; Roberto Martinez Sanchez[1]; Hector Javier Dorantes Rosales[1]; [1]Instituto de Metalurgia

9:45 AM
Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Buriti Fibers: Tammy Portela[1]; *Lucas da Costa*[1]; Rômulo Loiola[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

10:00 AM Break

10:15 AM
Tensile Failure Characterization of 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

10:30 AM
Rheological and Dynamic Strain Rate Studies of Wax-Coated Granular Composites Used in Sports Surfaces: *John Bridge*[1]; Alper Kiziltas[2]; Douglas Gardner[2]; Michael Peterson[2]; Wayne McIlwraith[3]; [1]Maine Maritime Academy; [2]University of Maine; [3]Colorado State University

10:45 AM
Characterization of Plastic Materials Used by Automotive Industry (Impact-Stress): *Alejandro Rojo*[1]; Nora Ramirez[1]; Jorge Salgado[1]; [1]ITESM Toluca

11:00 AM
Dynamic-Mechanical Characterization of Polyester Matrix Composites Reinforced with Banana Fibers: Nathalia Rosa[1]; Lucas Martins[1]; *Felipe Lopes*[1]; Lucas da Costa[1]; Sergio Monteiro[1]; Rubén Rodriguez[1]; [1]State University of the Northern Rio de Janeiro - UENF

11:15 AM
Characterization of Thermal Properties of Curaua Fibers by Photothermal and Photoacoustic Techniques: *Felipe Lopes*[1]; Leonardo Mota[1]; Marcelo da Silva[1]; Helion Vargas[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

11:30 AM
Photoacoustic Thermal Characterization of a Natural Biofoam Extracted from the Buriti Palm Tree: *Lucas da Costa*[1]; Leonardo Mota[1]; Marcelo da Silva[1]; Tammy Portela[1]; Helion Vargas[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

11:45 AM
Pullout Test of Jute Fiber to Evaluate the Interface Shear Stress in Polyester Composites: Isabela da Silva[1]; Alice Bevitori[1]; *Felipe Lopes*[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

12:00 PM
Thermal Analysis Characterization of Ramie Fibers with Different Diameters: Ruben Rodriguez[1]; Alice Bevitori[1]; Isabela da Silva[1]; *Felipe Lopes*[1]; Sergio Monteiro[1]; [1]State University of the Northern Rio de Janeiro - UENF

12:15 PM
Characteristics of Cementious-Based Materials When Subjected to Microwave Energy: *Natt Makul*[1]; [1]Phranakhon Rajabhat University

Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Mechanical Characterization and Modeling

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

Program Organizers: Matthew Kerr, US Nuclear Regulatory Commission; Meimei Li, Argonne National Lab; Jonathan Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Lab

Thursday AM
March 3, 2011

Room: 4
Location: San Diego Conv. Ctr

Session Chairs: Matthew Kerr, US Nuclear Regulatory Commission; Don Brown, Los Alamos National Lab

8:30 AM Invited
Studies of Deformation Modes in Zirconium Alloys for Nuclear Power Applications by Diffraction: *Mark Daymond*[1]; Fei Long[1]; Don Brown[2]; Rick Holt[1]; [1]Queen's University; [2]Los Alamos National Lab

9:00 AM
In-Situ Observation of the Dissolution and Precipitation of Hydridesin Zircaloy-4: *Olivier Zanellato*[1]; Michael Preuss[2]; Fabienne Ribeiro[1]; Jean-Yves Buffiere[3]; Jean Desquines[1]; Axel Steuwer[4]; [1]IRSN Cadrache, France; [2]The University of Manchester; [3]INSA Lyon; [4]ESSS

9:20 AM
Effects of Altering Bulk Hydride Phase and Orientation on DHC Behaviour in Zr-2.5wt% Nb: *Eric Tulk*[1]; Matthew Kerr[2]; Mark Daymond[1]; [1]Queen's University; [2]US Nuclear Regulatory Commission

9:40 AM Invited
Validation of Models and Simulations of Nuclear Fuels: *Marius Stan*[1]; Bogdan Mihaila[2]; Mark Bourke[2]; [1]Argonne National Laboratory; [2]Los Alamos National Laboratory

10:10 AM
Chemical Segregation of U-10wt.% Mo Fuel Foils during Simulated Bonding Cycles: *Sven Vogel*[1]; Donald Brown[1]; Maria Okuniewski[2]; Jan-Fong Jue[2]; Blair Park[2]; [1]Los Alamos National Laboratory; [2]Idaho National Laboratory

10:30 AM
Microstructure Characterization and Processing of U-Mo Alloy Fuels for Nuclear Reactors: *Amy Clarke*[1]; Robert Field[1]; Deniece Korzekwa[1]; Robert Aikin[1]; Duncan Hammon[1]; David Alexander[1]; Kester Clarke[1]; Ann Kelly[1]; Pallas Papin[1]; Rodney McCabe[1]; Carl Necker[1]; Robert Forsyth[1]; Joel Katz[1]; David Dombrowski[1]; [1]Los Alamos National Laboratory

10:50 AM Break

11:00 AM
Dissimilar Metal Weld Residual Stress Mappings by Neutron and X-ray Diffraction and Incremental Hole Drilling Methods: *Camden Hubbard*[1]; Josh Schmidlin[1]; Matthew Klug[2]; James Pineault[3]; Shane Van De Car[3]; Zhili Feng[1]; Fei Ren[1]; Wei Zhang[1]; [1]Oak Ridge National Laboratory; [2]Dominion Engineering, Inc.; [3]PROTO Manufacturing

11:20 AM
2D Mapping of Weld Residual Stresses Using the Contour Method: *Adrian DeWald*[1]; Michael Hill[2]; [1]Hill Engineering, LLC; [2]University of California, Davis

11:40 AM
Eliminating Do in Neutron Diffraction Weld Residual Stress Measurement: *Zhili Feng*[1]; Wei Zhang[1]; Paul Crooker[2]; Howard Rathbun[3]; David Rudland[3]; Raj Iyengar[3]; Xun-Li Wang[1]; Ke An[1]; Camden Hubbard[1]; [1]Oak Ridge National Laboratory; [2]Electric Power Research Institute; [3]U.S. Nuclear Regulatory Commission

12:00 PM Invited
Neutron Diffraction Measurements in Thick Section Nuclear Reactor Piping Systems: *Thomas Holden*[1]; D.W. Brown[2]; T. Sisneros[2]; M. Kerr[3]; [1]Northern Stress Technologies; [2]Los Alamos National Laboratory; [3]US Nuclear Regulatory Commission

Coatings for Structural, Biological, and Electronic Applications II: Metallic, Semiconducting, Insulating Coatings - Applications

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

Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Choong Kim, University of Texas at Arlington; Nancy Michael, University of Texas at Arlington; Gregory Krumdick, Argonne National Laboratory; Roger Narayan, Univ of North Carolina & North Carolina State Univ

Thursday AM
March 3, 2011

Room: 6E
Location: San Diego Conv. Ctr

Session Chairs: Choong-un Kim, University of Texas at Arlington; Sudhakar Shet, National Renewable Energy Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Thin Film Coatings for Silicon Solar Cells: Requirements and Challenges: *Bhushan L. Sopori*[1]; [1]National Renewable Energy Laboratory

9:00 AM Invited
Effect of Gas Ambient on the Synthesis of Al and N Co-Doped ZnO:(Al,N) Films and Their Influence on PEC Response for Photoelectrochemical Water Splitting Application: *Sudhakar Shet*[1]; Le Chen[1]; Houwen Tang[1]; Todd Deutsch[1]; Heli Wang[1]; Nuggehalli Ravindra[2]; Yanfa Yan[1]; John Turner[1]; Mowafak Al-Jassim[1]; [1]National Renewable Energy Laboratory; [2]New Jersey Institute of Technology

9:25 AM Invited
Viscoplastic Deformation in Porous Low-k Dielectrics: *Nancy Michael*[1]; Emil Zin[1]; Woong Ho Bang[1]; Sean King[2]; Todd Ryan[3]; Choong-Un Kim[1]; [1]University of Texas at Arlington; [2]Intel; [3]Global Foundries

9:50 AM
Nanostructured Zinc Oxide Coatings Developed Via Solution Precursor Plasma Spray Technique: *Raghavender Tummala*[1]; Ramesh Guduru[1]; Pravansu Mohanty[1]; [1]The University of Michigan - Dearborn

10:05 AM Break

10:15 AM
Thin Al Doped ZnO Films for Si Heterojunction Solar Cells: *Sudhakar Shet*[1]; Bhushan L. Sopori; [1]National Renewable Energy Laboratory

10:40 AM Invited
Spin Coated Er2O3-SiO2 Films on Silicon Substrates: *Sufian Abedrabbo*[1]; Bashar Lahlouh[1]; Anthony Fiory[2]; Nuggehalli Ravindra[2]; [1]University of Jordan; [2]New Jersey Institute of Technology

11:05 AM
Magnetic Material Interactions for the Method of Magnetic Field Directed Assembly: *Rene Rivero*[1]; Michael R. Booty[1]; Anthony T. Fiory[1]; Nuggehalli M. Ravindra[1]; [1]New Jersey Institute of Technology

11:20 AM Invited
Bioactive Hydroxyapatite Coatings on Titanium Implants: Hadeer Ibrahim Mohammed[1]; *Adele Carradò*[2]; Thierry Roland[3]; Genevieve Pourroy[2]; Wafa Abdel-Fattah[4]; [1]Biophysics Department, Ain-Shams University; [2]IPCMS; [3]INSA; [4]NRC

11:45 AM Invited
Flame Spray Deposition of Composite Titanium Alloy and Bioactive Glass Coatings: *Greg Nelson*[1]; Andre McDonald[1]; John Nychka[1]; [1]University of Alberta

Commonality of Phenomena in Composite Materials II: Characterization and Processing Techniques for Composites

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Carl Boehlert, Michigan State University

Thursday AM
March 3, 2011
Room: 6A
Location: San Diego Conv. Ctr

Session Chairs: Meisha Shofner, Georgia Institute of Technology; Erica Corral, University of Arizona

8:30 AM Invited
Characterization of Composite Materials: Thermal Analysis of ROMP-Based Thermosets: *Michael Kessler*[1]; Xia Sheng[1]; Timothy Mauldin[1]; Wonje Jeong[1]; Jong Lee[2]; [1]Iowa State University; [2]Kumoh National Institute of Technology

9:10 AM
Nanoparticle Shape Effects in Polymer Composites: *Meisha Shofner*[1]; Ji Hoon Lee[1]; Jasmeet Kaur[1]; [1]Georgia Institute of Technology

9:30 AM
Effect of Piassava Fiber Incorporation In Morphological, Thermal and Viscoelastic Behavior of HDPE Composites: *Esperidiana Moura*[1]; Thiago Luiz Souza[1]; Anne Chinellato[2]; Walker Drumond[3]; Beatriz Nogueira[1]; [1]Instituto de Pesquisas Energeticas e Nucleares - IPEN-CNEN/SP; [2]Mash: Tecnologia em Compostos e Masters; [3]Departamento de Engenharia Metalúrgica e de Materiais da Universidade de São Paulo

9:50 AM
Thermo-Mechanical Behavior of HDPE/Sugarcane Bagasse Fiber/Organoclay Nanocomposites: Anibal V Castillo[1]; Alejandra Teran[1]; Anne Chinellato[2]; Maria de Fátima Nascimento[3]; *Francisco Rolando Díaz*[4]; Esperidiana Moura[3]; [1]Laboratorio Tecnologico del Uruguay; [2]Mash: Tecnologia em Compostos e Masters; [3]Instituto de Pesquisas Energeticas e Nucleares - IPEN-CNEN/SP; [4]Universidade de São Paulo

10:10 AM Break

10:30 AM Invited
Three Dimensional (3D) Microstructure Visualization and Modeling of Deformation in Composites by In situ X-ray Synchrotron Tomography: Jason Williams[1]; Vijesh Tanna[1]; Vaidehi Jakkali[1]; *Nikhilesh Chawla*[1]; Xianghui Xiao[2]; Francesco De Carlo[2]; [1]Arizona State University, School of Mechanical, Aerospace, Chemical, and Materials Engineering; [2]Advanced Photon Source, Argonne National Laboratory, Argonne, IL

11:10 AM Invited
Spark Plasma Sintering of Ultra-High Temperature Ceramic Composites: *Erica Corral*[1]; [1]The University of Arizona

Computational Plasticity: Dislocations Structures and Dynamics during Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Remi Dingreville, Polytechnic Institute of NYU; Koen Janssens, Paul Scherrer Institute

Thursday AM
March 3, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

8:30 AM Invited
Plasticity at Small Scales: *Richard LeSar*[1]; Caizhi Zhou[2]; [1]Iowa State University; [2]Ames Laboratory

9:00 AM Invited
Applications of Phenomenological Mesoscale Field Dislocation Mechanics: *Armand Beaudoin*[1]; Koenraad Janssens[2]; [1]University of Illinois at Urbana-Champaign; [2]Paul Scherrer Institute

9:30 AM
Binary and Ternary Interaction Coefficients and Strain Hardening in BCC Single Crystals: *Ronan Madec*[1]; Ladislas Kubin[2]; [1]CEA, DAM, DIF; [2]LEM (CNRS/ONERA)

9:50 AM Invited
Continuity Constraints at Interfaces and Scale Dependence of the Mechanical Behavior of Crystalline Materials: *Claude Fressengeas*[1]; Thiebaud Richeton[2]; Guofeng Wang[3]; [1]University Paul Verlaine - Metz / CNRS; [2]CNRS / Arts et Metiers ParisTech; [3]Harbin Institute of Technology

10:20 AM Break

10:35 AM Invited
Entropic Effect on Dislocation Nucleation: *Wei Cai*[1]; Seunghwa Ryu[1]; Keonwook Kang[1]; [1]Stanford University

11:05 AM Invited
On Particle Size Effects: An Internal Length Mean Field Approach Using Field Dislocation Mechanics Simulations: Vincent Taupin[1]; *Stephane Berbenni*[1]; Claude Fressengeas[1]; Olivier Bouaziz[1]; [1]LPMM, CNRS, Univ Metz, ENSAM

11:35 AM
Interaction between Edge Dislocations and Voids in bcc Iron Investigated Thanks to a Multiscale Approach: *Sylvain Queyreau*[1]; Brian Wirth[1]; Jaime Marian[2]; Anastasios Arsenlis[2]; [1]University of California at Berkeley; [2]Lawrence Livermore National Laboratory

11:55 AM
3-Dimensional Dislocation Dynamics Simulation of Low-Angle Grain Boundary Migration: *Adele Lim*[1]; Wei Cai[2]; Mikko Haataja[1]; David Srolovitz[3]; [1]Princeton University; [2]Stanford University; [3]Institute of High Performance Computing

12:10 PM
Discrete Dislocation Simulations of Plasticity of Polycrystalline Thin Films: *Caizhi Zhou*[1]; Richard LeSar[1]; [1]Iowa State University

Computational Thermodynamics and Kinetics: Thermodynamics and Microstructure Evolution in Soft Matter

Sponsored by: The Minerals, Metals and Materials Society, ASM International, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Raymundo Arroyave, Texas A & M University; James Morris, Oak Ridge National Laboratory; Mikko Haataja, Princeton University; Jeff Hoyt, McMaster University; Vidvuds Ozolins, University of California, Los Angeles; Xun-Li Wang, Oak Ridge National Laboratory

Thursday AM
March 3, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chairs: Mikko Haataja, Princeton University; James Morris, Oak Ridge National Laboratory

8:30 AM Invited
Continuum-Level Simulations of Two-Phase Lipid Membranes Coupling Composition with Deformation: Chloe Funkhouser[1]; Francisco Solis[2]; *Katsuyo Thornton*[3]; [1]University of Michigan - Department of Biomedical Engineering; [2]Arizona State University West - Division of Mathematical and Natural Sciences; [3]University of Michigan - Department of Material Science & Engineering

9:10 AM Invited
Lateral Segregation in Lipid Bilayer Membrane Modulated by Curvature: *Tobias Baumgart*[1]; [1]University of Pennsylvania

9:50 AM
Modeling the Self-Assembly of Arbitrary-Shaped Ferro-Colloidal Particles in Bulk Liquid and at Fluid Interface: *Tianle Cheng*[1]; Yu Wang[1]; Paul Millett[2]; [1]Michigan Technological University; [2]Idaho National Laboratory

10:10 AM Break

10:20 AM Invited
Lipid Rafts Reach a Critical Point: *Sarah Veatch*[1]; Benjamin Machta[2]; [1]University of Michigan; [2]Cornell University

11:00 AM Invited
Mesoscale Computational Studies of the Compositional and Morphological Heterogeneties of Biomembranes: *Mohamed Laradji*[1]; [1]University of Memphis

11:40 AM Invited
Solid Domains on Fluid Lipid Vesicles Induced by pH: *Stavroula Sofou*[1]; [1]Polytechnic Institute of New York University

Electrode Technology for Aluminium Production: Cathode Materials and Wear

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Thursday AM
March 3, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chair: Frank Hiltmann, SGL Carbon GmbH

8:30 AM Introductory Comments

8:35 AM
Measurement of Cathode Surface Wear Profiles by Laser Scanning: *Egil Skybakmoen*[1]; Stein Rørvik[1]; Asbjorn Solheim[1]; Knut Ragnar Holm[2]; Priska Tiefenbach[2]; Oyvind Ostrem[2]; [1]SINTEF Materials and chemistry; [2]NTNU

9:00 AM
Coke Selection Criteria for Abrasion Resistant Graphitized Cathodes: Raymond Perruchoud[1]; Werner Fischer[1]; *Markus Meier*[1]; Ulrich Mannweiler[2]; [1]R&D Carbon Ltd.; [2]Mannweiler Consulting

9:25 AM
Determination of the Effect of Pitch-Impregnation on Cathode Erosion Rate: *Pretesh Patel*[1]; Yoshinori Sato[2]; Pascal Lavoie[1]; [1]Light Metals Research Centre; [2]SEC Carbon, Ltd

9:50 AM
Simplifying Protection System to Prolong Cell Life: *Maryam Al Jallaf*[1]; Margaret Hyland[2]; Barry Welch[3]; Ali Al Zarouni[1]; [1]DUBAL; [2]University of Auckland; [3]Welbank Consulting Ltd.

10:15 AM Break

10:25 AM
Aluminate Spinels as Sidewall Linings for Aluminum Smelters: Xiao Yan[1]; Reiza Mukhlis[2]; M. Rhamdhani[2]; *Geoffrey Brooks*[2]; [1]CSIRO; [2]Swinburne University of Technology

10:50 AM
A New Ramming Paste with Improved Potlining Working Conditions: *Bénédicte Allard*[1]; Régis Paulus[1]; Gérard Billat[2]; [1]Carbone Savoie - Vénissieux - France; [2]Carbone Savoie - Aigueblanche - France

11:15 AM
Towards a Better Understanding of Carburation Phenomenon: Martin Lebeuf[1]; *Marc-André Coulombe*[1]; Bénédicte Allard[2]; Gervais Soucy[1]; [1]Université de Sherbrooke; [2]Carbone Savoie

11:40 AM
Characterization of Sodium and Fluorides Penetration into Carbon Cathodes by Image Analysis and SEM-EDS Techniques: *Yuanling Gao*[1]; Jilai Xue[1]; Jun Zhu[1]; Kexin Jiao[1]; [1]Unversity of Science and Technology Beijing

Friction Stir Welding and Processing VI: Friction Stir Spot Welding

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, Missouri University of Science and Technology; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Thursday AM
March 3, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chairs: Tony Reynolds, University of South Carolina; Michael West, South Dakota School of Mines and Technology

8:30 AM Invited
Fatigue Behavior of Dissimilar Friction Stir Spot Welds between Aluminum and Steel Sheets: Van-Xuan Tran[1]; *Jwo Pan*[1]; [1]University of Michigan

8:55 AM
Material Flow and Temperature Distribution in Friction Spot Welding of Al and Steel: *Yingchun Chen*[1]; Phil Prangnell[1]; [1]The University of Manchester

9:15 AM
Continued Development of Friction Stir Spot Welding for Advanced High Strength Steels
: *Yuri Hovanski*[1]; Michael Santella[2]; Glenn Grant[1]; [1]Pacific Northwest National Laboratory; [2]Oak Ridge National Laboratory

9:35 AM
Structure-Property Relationships of Fatigue in Friction Stir Spot Welding of AZ31 Mg Alloy: *J Jordon*[1]; [1]Mississippi State University

9:55 AM
Mechanical and Microstructural Investigation of Dissimilar Resistance and Friction Stir Spot Welds in AA5754-H22 and AA6082-T6 Aluminium Alloys and 22MnB5 Hot-Stamped Boron Steel: *Antonio da Silva*[1]; Egoitz Aldanondo[1]; Pedro Alvarez[1]; Alberto Echeverría[1]; Martin Eiersebner[2]; [1]Research Centre LORTEK; [2]FRONIUS International GmbH

10:15 AM
Effect of Coating on Mechanical Properties of Magnesium Alloy Friction Stir Spot Welds: *Wei Yuan*[1]; R.S. Mishra[1]; B. Carlson[2]; R. Verma[2]; R. Szymanski[2]; [1]Missouri University of Science and Technology; [2]General Motors R&D Center

10:35 AM Break

10:45 AM Invited
Process-Properties Relationship in Friction Spot Welds on Aircraft Al-Alloys: Gabriel Pieta[1]; *Jorge dos Santos*[1]; Ana Paula Camilo[2]; Sergio Amancio[1]; Marcelo Beltrao[1]; Sebastiao Kury[2]; Nelson de Alcantara; Nelson de Alcantara[2]; [1]GKSS Forschungszentrum; [2]Federal University of Sao Carlos

11:10 AM
Retractable vs. Fixed Probe Tools in Swept Friction Stir Spot Welding: *Jeremy Brown*[1]; James Gross[1]; Jeff Buller[1]; Dwight Burford[1]; [1]Wichita State University

11:30 AM
Friction Stir Spot Welding of Magnesium to Aluminum Alloys with a Cold Sprayed Interlayer: *Dustin Blosmo*[1]; Todd Curtis[1]; Timothy Johnson[1]; Nicholas Procive[1]; Christian Widener[1]; Blair Carlson[2]; Robert Symanski[2]; Michael West[1]; [1]South Dakota School of Mines and Technology; [2]General Motors

11:50 AM
Swept FSSW in Aluminum Alloys through Sealants and Surface Treatments: *Karin Witthar*[1]; Jeremy Brown[1]; Dwight Burford[1]; [1]Wichita State University

General Abstracts: Light Metals Division: Metal Matrix Composites

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee, TMS: Energy Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Thursday AM
March 3, 2011
Room: 17A
Location: San Diego Conv. Ctr

Session Chair: Alan Luo, General Motors Global Research & Development

8:30 AM
Preparation and Characterization of Cast Hypereutectic Al-20wt.%Si-4.5wt.%Cu Nanocomposites with Al_2O_3 Nanoparticles: *Hongseok Choi*[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

8:55 AM
An Investigation of Nanoparticle Wetting, Grain Refinement and Mechanical Property Enhancement in Aluminum Matrix Nanocomposites: *Michael De Cicco*[1]; Dake Wang[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

9:20 AM
Influence of Processing Parameters on Distribution of Fibers in Cast Aluminium Matrix: Pengfei Yan[1]; Guangchun Yao[1]; Jianchao Shi[1]; Xiaolan Sun[1]; *Hongjie Luo*[1]; [1]School of Materials & Metallurgy, Northeastern University

9:45 AM
In Situ Fabrication of Ceramic Containing Metal Matrix Composite onto a TC4 Ti Alloy by Laser Cladding: *Kemin Zhang*[1]; Jianxin Zou[2]; [1]Shanghai University of Engineering Science; [2]National Engineering Research Center of Light Alloy Net Forming, Shanghai Jiao Tong University

10:10 AM Break

10:40 AM
Stability of Nanoparticle Dispersion and Property Enhancement in Aluminum Matrix Nanocomposites during Repeated Casting Cycles: *Dake Wang*[1]; Michael De Cicco[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

11:05 AM
Study of Sputtering Deposition of Aluminum Boride-Based Composite: *Glorimar Ramos*[1]; O. Marcelo Suárez[1]; [1]University of Puerto Rico-Mayaguez Campus

11:30 AM
Corrosion Behavior of Metal-Matrix Composite AlMg-SiCp: M.A. Hernandez[1]; *S. Valdez*[2]; [1]E.T.S.E.I., Universidade de Vigo; [2]UNAM-ICF

11:55 AM
Preparation Process of Aluminum Foam Reinforced by Carbon Fibers: *Hongjie Luo*[1]; Yihan Liu[1]; [1]Northeastern University

Hydrometallurgy Fundamentals and Applications: Session I

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

Thursday AM — Room: 16A
March 3, 2011 — Location: San Diego Conv. Ctr

Session Chair: Michael Free, University of Utah

8:30 AM Keynote
2011 EPD DISTINGUISHED LECTURER: The Removal of Arsenic, Selenium and Metals from Aqueous Solution by Iron Precipitation and Reduction Techniques: *Larry Twidwell*[1]; [1]Montana Tech of The University of Montana

9:10 AM
Enhanced Pressure Dissolution of Enargite Using Pyrite or Ferrous Sulfate: *Maria Ruiz*[1]; Oscar Jerez[1]; Jonathan Retamal[1]; Rafael Padilla[1]; [1]University of Concepcion

9:35 AM
Model and Simulation of Ion Exchange of Antimony: *Gerardo Cifuentes*[1]; Jaime Simpson[2]; Cesar Zúñiga[1]; Leoncio Briones[1]; Alejandro Morales[3]; [1]USACH; [2]ProPipe S.A.; [3]UCN

10:00 AM Break

10:15 AM
Analysis of the Adsorption of Gold and Silver on Magnetic Species Formed in the Electrocoagulation Process: *Jose Parga*[1]; Jesus Valenzuela[2]; [1]Institute Technology of Saltillo; [2]University of Sonora

10:40 AM
Characterization and Performance of Smart Anode for Cobalt Electrowinning: *Masatsugu Morimitsu*[1]; Katsuya Kawaguchi[1]; [1]Doshisha University

11:05 AM
Treatment of Acid Mine Drainage by Electrodialysis: *Daniella Buzzi*[1]; Lucas Viegas[2]; Flávia Silvas[1]; Marco Antônio Rodrigues[3]; Ivo André Schneider[2]; Andréa Bernardes[2]; Denise Espinosa[1]; Jorge Alberto Tenório[1]; [1]Universidade de São Paulo; [2]Universidade Federal do Rio Grande do Sul; [3]Universidade Feevale

Magnesium Technology 2011: New Applications (Biomedical and Other)

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Thursday AM — Room: 6F
March 3, 2011 — Location: San Diego Conv. Ctr

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Michele Manuel, University of Florida

8:30 AM
Current Research Activities of Biomedical Mg Alloys in China: *Yufeng Zheng*[1]; [1]Peking University

8:50 AM Invited
Design Considerations for Developing Biodegradable Magnesium Implants: *Harpreet Brar*[1]; Benjamin G. Keselowsky[2]; Malisa Sarntinoranont[3]; Michele V. Manuel[1]; [1]University of Florida, Department of Materials Science and Engineering; [2]University of Florida, Department of Biomedical Engineering; [3]University of Florida, Department of Mechanical and Aerospace Engineering

9:10 AM
Coating Systems for Magnesium-Based Biomaterials - State of the Art: Mark Staiger[1]; *Jay Waterman*[1]; [1]University of Canterbury

9:30 AM
Corrosion, Surface Modification and Biocompatibility of Mg and Mg Alloys: *Sannakaisa Virtanen*[1]; Ben Fabry[1]; [1]University of Erlangen

9:50 AM
Magnesium Alloys for Bioabsorbable Stents: A Feasibility Assessment: *Charles Deng*[1]; Rajesh Radhakrishnan[1]; Steve Larsen[1]; Dennis Boismier[1]; Jon Stinson[1]; Adrienne Hotchkiss[1]; Jan Weber[1]; Torsten Scheuermann[1]; [1]Boston Scientific

10:10 AM Break

10:30 AM
Processing Aspects of Magnesium Alloy Stent Tube: Robert Werkhoven[1]; *Wim Sillekens*[1]; Koos van Lieshout[1]; [1]TNO Science and Industry

10:50 AM
Ballistic Analysis of New Military Grade Magnesium Alloys for Armor Applications: *Tyrone Jones*[1]; Katsuyoshi Kondoh[2]; [1]U.S. Army Research Laboratory; [2]Joining and Welding Research Institute

11:10 AM
Mg17Al12 Intermetallic Prepared by Bulk Mechanical Alloying: Kenji SAKURAGI[1]; *Masashi SATO*[1]; Takamitsu Honjo[1]; Toshiro KUJI[1]; [1]Tokai university

11:30 AM
Corrosion Behaviour of Mg Alloys in Various Basic Media: Application of Waste Encapsulation of Fuel Decanning from UNGG Nuclear Reactor: *David Lambertin*[1]; Adrien Blachere[1]; Fabien Frizon[1]; Florence Bart[1]; [1]CEA Marcoule

Magnetic Materials for Energy Applications: Other Magnets

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Thursday AM — Room: 11A
March 3, 2011 — Location: San Diego Conv. Ctr

Session Chair: Iver Anderson, Ames Laboratory

8:30 AM Invited
Nanoscaling like Noodles — A Novel Approach to Fabrication Nanocomposite Magnets with High Energy Density: *J.Ping Liu*[1]; Chuanbing Rong[1]; Ying Zhang[1]; M.J. Kramer[2]; [1]University of Texas-Arlington; [2]Ames Laboratory

8:55 AM Invited
Intergranular Diffusion in Exchange-Coupled Sm-Co/Fe Nanocomposites and Thin Films: *Matthew Kramer*[1]; Ying Zhang[1]; J Liu[2]; Chuanbing Rong[2]; Ichiro Takeuchi[3]; Debjani Banerjee[3]; [1]Ames Lab/ISU; [2]University of Texas at Arlington; [3]University of Maryland

9:20 AM
Hard Magnetic $PrCo_3$ Structural and Magnetic Properties: *Lotfi Bessais*[1]; Khedidja Younsi[1]; Vincent Russier[1]; Jean-Claude Crivello[1]; [1]CNRS

9:35 AM
Directional Annealing Induced Texture in Melt-Spun Sm-Co Based Alloys: *Tanjore Jayaraman*[1]; Paul Rogge[1]; Jeffrey Shield[1]; [1]University of Nebraska

9:50 AM
Magnetic Hardening of Nanocrystalline Sm-Fe-Mo Synthesized by Mechanical Alloying: Lotfi Bessais[1]; Salwa Khazzan[1]; *Najeh Mliki*[2]; Gustaaf Van Tendeloo[3]; [1]CNRS; [2]University of Tunisia; [3]EMAT, University of Antwerp

10:05 AM
Understanding and Control of Coercivity in Non-Rare Earth Alnico Permanent Magnets: *Scott Long*[1]; Iver Anderson[2]; R.W. McCallum[2]; Matthew Kramer[2]; Wei Tang[2]; Yaqiao Wu[2]; [1]Iowa State University; [2]Ames Lab

10:20 AM Break

Magnetic Materials for Energy Applications: Requirements of Magnetic Materials for Current Technological Applications

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Thursday AM
March 3, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory

10:30 AM Invited
The Transformational Potential of Magnetic Materials: ARPA-E Investment: *Rajeev Ram*[1]; [1]ARPA-E

10:55 AM Panel Discussion
Requirements of Magnetic Materials for Current Technological Applications: *Moderator: Paul R. Ohodnicki*[1]; [1]National Energy Technology Laboratory

Panelists:

Karl Gschneidner[1]; [1]Ames Laboratory: **Critical Parameters for the Utilization of First Order Magnetocaloric Regenerator Materials in Magnetic Cooling Machines**

Takehisa Minowa[1]; [1]Shin-Etsu Chemical Co. Ltd.: **Application of Nd-Fe-B Magnets to the Megawatt Scale Generator for the Wind Turbine**

Jinfang Liu[1]; [1]Electron Energy Corporation: **Industrial Requirements and Applications of Hard Magnetic Materials**

Aru Yan[1]; [1]Ningbo Institute of Material Technology and Engineering: **Current Status of Permanent Magnet Research and Market in China**

Francis Johnson[1]; [1]General Electric Global Research: **Industrial Needs and Applications for Soft Magnetic Materials**

Ryusuke Hasegawa[1]; [1]Metglas, Inc: **Soft Magnetic Materials in Energy Applications**

Sarah Bedair[1]; [1]US Army Research Laboratory: **Low Loss, High Power Density Magnetics in Inductor/Transformer Cores for Army Applications**

12:35 PM
Industrial Requirements and Applications of Hard Magnetic Materials: *Jinfang Liu*[1]; [1]Electron Energy Corporation

12:45 PM
Low Loss, High Power Density Magnetics in Inductor/Transformer Cores for Army Applications: *Sarah Bedair*[1]; Wesley Tipton[1]; Damian Urciuoli[1]; Brian Morgan[1]; [1]US Army Research Laboratory

12:55 PM
Soft Magnetic Materials in Energy Applications: *Ryusuke Hasegawa*[1]; [1]Metglas, Inc

1:05 PM
Industrial Needs and Applications for Soft Magnetic Materials: *Francis Johnson*[1]; [1]GE Global Research

1:15 PM
Critical Parameters for the Utilization of First Order Magnetocaloric Regenerator Materials in Magnetic Cooling Machines: *Karl Gschneidner*[1]; [1]Iowa State University

Microstructural Processes in Irradiated Materials: Nuclear Fuel Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Thursday AM
March 3, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Dieter Wolf, Argonne National Laboratory; Maria Okuniewski, Idaho National Laboratory

8:30 AM Invited
Multi-Scale Modeling of Irradiation Effects on Nuclear Fuel Microstructure: *Dieter Wolf*[1]; [1]Argonne National Laboratory

9:10 AM
Formation and Incorporation Energies of Fission Gases He, Xe, and Kr in bcc Uranium: *Benjamin Beeler*[1]; Benjamin Good[1]; Chaitanya Deo[1]; Sergey Rashkeev[2]; Michael Baskes[3]; Maria Okuniewski[2]; [1]Georgia Institute of Technology; [2]Idaho National Laboratory; [3]University of California-San Diego

9:30 AM
Recent Results of Microstructural Characterization of Irradiated RERTR Fuels: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Adam Robinson[1]; Pavel Medvedev[1]; [1]Idaho National Laboratory

9:50 AM
Phase Field Modeling of Void Growth in Irradiated Two-Phase U-Zr Alloys: *Ximiao Pan*[1]; Morral Morral[1]; Y. Wang[1]; [1]OSU

10:10 AM
Lanthanides Migration and Immobilization in U-Zr Based Nuclear Fuels: *Guillermo Bozzolo*[1]; Gerard Hofman[1]; Abdellatif Yacout[1]; Hugo Mosca[2]; [1]Argonne National Laboratory; [2]CNEA

10:30 AM Break

10:50 AM
Fission Induced Fuel Swelling, Creep and Sintering of U-Mo Alloy Fuel: *Gerard Hofman*[1]; Yeon Soo Kim[1]; [1]Argonne National Laboratory

11:10 AM
Simulation of Recrystallization in Uranium Dioxide Nuclear Fuels: *Jonathan Madison*[1]; Veena Tikare[1]; Elizabeth Holm[1]; [1]Sandia National Laboratories

11:30 AM
The Influence of Temperature on the Evolution of Irradiation-Induced Defect Structure in CeO_2: *Bei Ye*[1]; Wei-Ying Chen[1]; Mark Kirk[2]; James Stubbins[1]; Abdellatif Yacout[2]; Jeffery Rest[2]; [1]U of Illinois at Champaign-Urbana; [2]Argonne National Lab

11:50 AM
Influence of Radiation Damage on Strontium Diffusion in Silicon Carbide: *Erich Friedland*[1]; Nic van der Berg[1]; Johan Malherbe[1]; Elke Wendler[2]; Werner Wesch[3]; [1]University of Pretoria; [2]Institute for solid state physics; [3]Friedrich-Schiller-Universitaet

12:10 PM
Atomistic Modeling of Fission Products Transport in SiC and ZrC TRISO Fuels: *Sungtae Kim*[1]; David Shrader[1]; Sarah Khalil[1]; Andrew Heim[1]; Dane Morgan[1]; Izabela Szlufarska[1]; [1]University of Wisconsin - Madison

Neutron and X-Ray Studies of Advanced Materials IV: Dislocations, Strains and Stresses III

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

Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, Oak Ridge National Laboratory; Jaimie Tiley, Air Force Research Laboratory; Peter Liaw, The University of Tennessee; Erica Lilleodden, GKSS Research Center; Brent Fultz, California Institute of Technology; Y-D Wang, Northeastern University

Thursday AM
March 3, 2011

Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Jaimie Tiley, Air Force research Laboratory; Peter Liaw, UTK

8:30 AM Invited
Development of Recrystallization Texture during Friction Stir Processing of Magnesium Alloy: *Hahn Choo*[1]; Zhenzhen Yu[1]; Wei Zhang[2]; Zhili Feng[2]; Sven Vogel[3]; Edward Kenik[2]; [1]Univ of Tennessee; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

8:50 AM
Neutron Diffraction Measurements of Residual Stresses in a 50-mm Thick Weld Plate: *Wanchuck Woo*[1]; Vyacheslav EM[1]; Jeong-Ung Park[2]; Gyu-Baek An[3]; Baek-Seok Seong[1]; [1]KAERI (Korea Atomic Energy Research Institute); [2]Chosun University; [3]POSCO Steel

9:05 AM
Deformation Behavior of Nanostructured Metals Over Different Strain Rates and Temperatures: *Ryan Ott*[1]; Yinmin Wang[2]; Matthew Besser[1]; Jonathan Almer[3]; Matthew Kramer[1]; [1]Ames Laboratory (USDOE); [2]Lawrence Livermore National Laboratory; [3]Argonne National Laboratory

9:20 AM
Deformation Studies of a Creep Resistant Bainitic Steel Using Synchrotron and Neutron Diffraction: *Michael Weisser*[1]; Alexander Evans[1]; Steven Van Petegem[1]; Stuart Holdsworth[2]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]EMPA

9:35 AM
MikroGap Area Detector for Stress and Textures Analysis: *Bob He*[1]; [1]Bruker AXS

9:50 AM
Micromechanical Behavior Evolution of Twinning-Induced Plasticity Steels Studied by Neutron Diffraction and Self-Consistent Modeling: *Xiaopeng Liu*[1]; Ru Lin Peng[2]; Xiangyuan Wang[1]; Yandong Wang[3]; Yongfeng Shen[1]; Shuyan Zhang[4]; Xin Sun[5]; Sten Johansson[2]; [1]Northeastern University; [2]Linköping University; [3]Beijing Institute of Technology; [4]Rutherford Appleton Laboratory; [5]Pacific Northwest National Laboratory

10:05 AM
Study of Material Deformation at High Pressure Using Synchrotron X-Rays: Jiuhua Chen[1]; *Jennifer Girard*[1]; [1]Florida International University

10:15 AM
Micromechanical and Neutron Diffraction Studies of Intergranular Strain Development near a Fatigue Crack Tip: *Lili Zheng*[1]; Yanfei Gao[1]; Rozaliya Barabash[2]; Sooyeol Lee[3]; Jinhaeng Lee[1]; Ewen Huang[1]; Hahn Choo[1]; Peter K Liaw[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory; [3]The University of British Columbia

10:25 AM
In-Situ Observations of Martensitic Transformation and Precipitation in Blast Resistant Steel: *Xinghua Yu*[1]; Sudarsanam Babu[1]; John Lippold[1]; [1]The Ohio State University

10:35 AM Break

10:45 AM Invited
High P-T nanoMechanics and Molecular Physics: *Yusheng Zhao*[1]; [1]Los Alamos National Laboratory

11:05 AM
Fast X-Ray Microdiffraction and X-Ray Phase-Contrast Imaging Studies of Self-Propagating Reactions in Nanolayered Metals: *Todd Hufnagel*[1]; Stephen Kelly[1]; Timothy Weihs[1]; Sara Barron[1]; Eric Dufresne[2]; Kamel Fezzaa[2]; [1]Johns Hopkins University; [2]Argonne National Laboratory

11:20 AM
Strain Heterogeneity in Deformed Polycrystals Inferred from Neutrons, Synchrotron, and Laboratory Diffraction Experiments -- Application to a Duplex Steel: *Christophe Le Bourlot*[1]; Olivier Castelnau[2]; Brigitte Bacroix[1]; Thierry Chauveau[1]; Marie-Hélène Mathon[3]; Veijo Honkimäki[4]; Thomas Buslaps[4]; Dominique Thiaudière[5]; [1]LPMTM; [2]Arts et Métiers ParisTech; [3]CEA-LLB; [4]ESRF; [5]Synchrotron SOLEIL

11:30 AM
Mapping the Strain Distributions in Deformed Bulk Metallic Glasses Using Hard X-Ray Diffraction: *Jozef Bednarcik*[1]; Hermann Franz[1]; Lianyi Chen[2]; Xiaodong Wang[2]; Jianzhong Jiang[2]; [1]Deutsches Elektronen Synchrotron DESY; [2]ICNSM, Zhejiang University and Laboratory of New-Structured Materials

11:45 AM
X-Ray Diffraction Analysis of the Dislocation Structure of Cu-Nb Interfaces: *Gábor Csiszár*[1]; Amit Misra[2]; Tamás Ungár[1]; [1]Eötvös University Budapest; [2]Los Alamos National Laboratory

11:55 AM
Stress Field in Deformed Polycrystals at the Micron Scale: Johann Petit[1]; *Olivier Castelnau*[1]; Michel Bornert[2]; Christophe Le Bourlot[3]; Odile Robach[4]; Jean -Sébastien Micha[4]; Olivier Ulrich[4]; [1]PIMM-CNRS; [2]Unité de Recherche NAVIER; [3]LPMTM-CNRS; [4]CEA-Grenoble

12:10 PM
Study of Microstrain Evolution during Creep of a Ferritic Superalloy: *Shenyan Huang*[1]; Bjørn Clausen[2]; Donald Brown[2]; Zhenke Teng[1]; Gautam Ghosh[3]; Morris Fine[3]; Peter Liaw[1]; [1]University of Tennessee; [2]Los Alamos National Laboratory; [3]Northwestern University

12:20 PM
EXAFS Study of Local Atomic Environment in Annealed and Quenched Fe-27.5 at.% Ga Single Crystals: *Gavin Garside*[1]; Sivaraman Guruswamy[1]; [1]University of Utah

12:35 PM
SANS to Evaluate Precipitate Morphology Degradation in Creep Exposed Single Crystal Nickel Base Superalloy: *Jozef Zrnik*[1]; Pavel Strunz[2]; Alexander Epishin[3]; Thomas Link[3]; [1]Comtes FHT, Inc.; [2]Nuclear Physics Institute; [3]Technical University Berlin

12:50 PM Invited
Investigation of Welding Residual Stresses Before and After Post-Weld Heat Treatment: *Anna Paradowska*[1]; John W.H. Price[2]; Trevor R. Finlayson[3]; R. Ibrahim[2]; [1]ISIS, Rutherford Appleton Laboratory; [2]Monash University, Department of Mechanical Engineering; [3]The University of Melbourne, School of Physics

Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies: Processing and Reliability Issues

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Indranath Dutta, Washington State University; Darrel Frear, Freescale Semiconductor; Sung Kang, IBM; Eric Cotts, SUNY Binghamton; Laura Turbini, Research in Motion; Rajen Sidhu, Intel Corporation; John Osenbach, LSI Corporation; Albert Wu, National Central Univ, Taiwan; Tae-Kyu Lee, Cisco Systems

Thursday AM
March 3, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chairs: Kejun Zeng, Texas Instruments Inc; Andre Lee, Michigan State University

8:30 AM Invited
Impact of Isothermal Aging and Sn Grain Orientation on Long Term Reliability of SnAgCu Solder Interconnects in 5.0wt% NaCl Solution Environment: *Tae-Kyu Lee*[1]; Bo Liu[1]; Bite Zhou[2]; Thomas R. Bieler[2]; Kuo-Chuan Liu[1]; [1]Cisco Systems, Inc.; [2]Michigan State University

8:55 AM
In-Situ 2D X-Ray Study of Pb-Free Solder Joints and Next Generation Thermal Interface Material in Flip Chip Packages: *Yan Li*[1]; Rahul Panat[1]; Bin Li[1]; Rose Mulligan[1]; Purushotham Kaushik Muthur Srinatha[1]; Arun Raman[1]; [1]Intel Corp

9:15 AM
The Stability Window and Mechanical Properties of the Interfacial Intermetallic in Lead-Free Solder Joints: *Keith Sweatman*[1]; Kazuhiro Nogita[2]; Hideaki Tsukamoto[2]; Tetsuro Nishimura[1]; [1]Nihon Superior Co., Ltd.; [2]University of Queensland

9:35 AM
Effect of Temperature and Strain Rate on Flow and Fracture Behavior of Pb-Free Solder Joints: *Andre Lee*[1]; Deep Choudhuri[1]; K. Subramanian[1]; [1]Michigan State University

9:55 AM
Printing of Functionally Graded, Pb-Free Braze Layers for Use in High Temperature Die Attach Applications: Jared McCoppin[1]; Thomas Reitz[2]; Ryan Miller[2]; *Henry Young*[1]; [1]Wright State University; [2]Wright Patterson Air Force Base

10:15 AM Break

10:25 AM
Joule Heating Effect Caused by Continuous Al Trace Damage under Electromigration on Physical and Statistical Failure Analysis of Solder Joints: *Jung Kyu Han*[1]; Daechul Choi[1]; King-Ning Tu[1]; [1]University of California Los Angeles

10:45 AM
Erosion Behavior of Stainless Steels in Molten Lead-Free Solder: *Hiroshi Nishikawa*[1]; Songai Kang[1]; Tadashi Takemoto[1]; [1]Osaka University

11:05 AM
Influence of Solder Microstructure and Cu_6Sn_5 Interfacial Intermetallic on Mechanical Shock Resistance of Sn-rich Solders: *Kyle Yazzie*[1]; Huiyang Fei[1]; Hanqing Jiang[1]; Nikhilesh Chawla[1]; [1]Arizona State University

11:25 AM
Interdiffusion of Aluminum/Germanium Bi-Layer Thin Film: *Chao-Nan Yeh*[1]; Kewin Yung[1]; Albert T. Wu[1]; [1]National Central University

11:45 AM
Influence of Dynamic Recovery and Recrystallization on the Fatigue Fracture Mechanics of Lead-Free Solder Joint: *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 Arlington; [2]Cisco Systems, Inc.

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X: Phase Equilibria and Transformation of the Pb-Free Solders and Thermoelectric Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Hans Flandorfer, University of Vienna; Sinn-Wen Chen, National Tsing Hua University; Jae-ho Lee, Hongik University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Clemens Schmetterer, TU Bergakademie Freiberg; Ikuo Ohnuma, Tohoku University; Chao-Hong Wang, National Chung Cheng University

Thursday AM
March 3, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Hyuck Mo Lee, Korea Advanced Institute of Science and Technology; Albert T. Wu, National Central University

8:30 AM Invited
Ni-Sb-Sn Alloys as Possible High-Temperature Solders: Phase Equilibria and Thermochemistry: *Herbert Ipser*[1]; Ratikant Mishra[1]; [1]University of Vienna

8:55 AM Invited
The Effect of Sb Addition on Sn-Based Alloys for High-T Lead-Free Solders: An Investigation of the Ag-Sb-Sn System: *Simona Delsante*[1]; Dajian Li[1]; Gabriella Borzone[1]; Andy Watson[2]; [1]University of Genoa; [2]University of Leeds

9:20 AM
Phase Field Simulations of Growth and Coarsening in the Interdiffusion Zone of Lead Free Ag-Cu-Sn/Cu Joints: *Nele Moelans*[1]; [1]Katholieke Universiteit Leuven, Belgium

9:35 AM
Phase Equilibria in the Au-Ag-X (X= Sn and Zn) Systems: *Yoshikazu Takaku*[1]; Eri Sato[1]; Ikuo Ohnuma[1]; Toshihiro Omori[1]; Ryosuke Kainuma[1]; Kiyohito Ishida[1]; [1]Tohoku University

9:50 AM
Thermodynamic Modeling of the Ag-Cu-In-Sn System: *Wojciech Gierlotka*[1]; Kai-chien Zhang[1]; [1]YuanZe University

10:05 AM Break

10:20 AM Invited
High Temperature Lead-Free Solder: Phase Relations in (Cu,Ni)-Sn-Zn: *Clemens Schmetterer*[1]; Hans Flandorfer[2]; Divakar Rajamohan[2]; Herbert Ipser[2]; [1]TU Bergakademie Freiberg; [2]University of Vienna

10:45 AM
Sn-Bi-Te Phase Equilibria and Interfacial Reactions in the Sn/Bi2Te3 Couples: Chen-nan Chiu[1]; *Chia-ming Hsu*[1]; Sinn-wen Chen[1]; [1]National Tsing Hua University

11:00 AM
Microstructures and Liquidus Projection of the Ternary Ag-Sb-Te System: *Hsin-jay Wu*[1]; Sinn-wen Chen[1]; [1]National Tsing Hua University

11:15 AM
A Study on the Phase Transformation and Microstructure Evolution of Sputtered Bi-Te Thermoelectric Films with Different Compositions during Post-Annealing: *Minsub Oh*[1]; Seong-jae Jeon[1]; Seungmin Hyun[2]; Hoo-jeong Lee[1]; [1]Sungkyunkwan University; [2]Korea Institute of Machinery and Materials

11:30 AM
Fabrication Process of Half-Heusler Compound TiNiSn Based on the Solid-Liquid Reaction: *Shinya Otani*[1]; Yoshisato Kimura[1]; Yaw-Wang Chai[1]; Yoshinao Mishima[1]; [1]Tokyo Institute of Technology

11:45 AM
Formation of Intermetallic Compounds between Lead-free Solder Systems and Thermoelectric Materials: *Tai-Yin Lin*[1]; Chien-Neng Liao[2]; Albert Wu[1]; [1]National Central University; [2]National Tsing Hua University

Physical and Mechanical Metallurgy of Shape Memory Alloys for Actuator Applications: Applications of Shape Memory Alloys

Sponsored by: The Minerals, Metals and Materials Society
Program Organizers: S. Raj, NASA Glenn Research Center; Raj Vaidyanathan, University of Central Florida; Ibrahim Karaman, Texas A&M University; Ronald Noebe, NASA Glenn Research Center; Frederick Calkins, The Boeing Company; Shuichi Miyazaki, Institute of Materials Science, University of Tsukuba

Thursday AM
March 3, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chairs: F. Calkins, The Boeing Company; Santo Padula II, NASA Glenn Research Center

8:30 AM Invited
Shape Memory Actuation: Pitfalls and Opportunities: *Tom Duerig*[1]; [1]Nitinol Devices and Components

8:50 AM Invited
Selected Applications of Aeropropulsion Actuation and Shape Control Devices Using HTSMAs: *Todd Quackenbush*[1]; Robert McKillip[1]; [1]Continuum Dynamics, Inc.

9:10 AM
Optimization of Ferromagnetic Shape Memory Alloys for Strain Detection: *Terryl Wallace*[1]; John Newman[1]; William Leser[2]; Patrick Leser[2]; Michael Horne[2]; [1]NASA Langley Research Center; [2]North Carolina State University

9:25 AM
Fabrication and Characterization of Porous Meta-Magnetic Shape Memory Alloys: *James Monroe*[1]; Josue Perez[1]; Ibrahim Karaman[1]; Kohei Ito[2]; Ryosuke Kainuma[2]; [1]Texas A&M University; [2]Tohoku University

9:40 AM
New Concepts for Shape Memory Actuator Systems: *Sven Langbein*[1]; Konstantin Lygin[1]; Tim Sadek[1]; [1]Ruhr University Bochum

9:55 AM Break

10:05 AM Invited
A Hyper-Elastic Thin Film Nitinol Flow Diverter for Brain Aneurysms: *Greg Carman*[1]; Y.J. Chun[1]; K.P. Mohanchandra[1]; D. Levi[1]; C. Kealey[1]; C.S. Hur[1]; D. DiCarlo[1]; F. Vinuela[1]; [1]UCLA

10:25 AM
Development of a SMA-Based Drive Unit for Prehension Orthoses to Support Disabled People: *Yukiharu Yoshimi*[1]; Shunji Moromugi[2]; Kazuhiro Kitamura[3]; Tsunaki Ikeda[2]; Takakazu Ishimatsu[2]; [1]Yoshimi,Inc.; [2]Nagasaki University; [3]Aichi University of Education

10:40 AM
Antagonistic SMA Actuator with Bowden Cable Housing for Orthosis Systems: *Hyung-Min Son*[1]; Dong-Hyun Jeong[1]; Yun-Jung Lee[1]; [1]Kyungpook National Univ.

10:55 AM
Modeling of Improved Frequency Shape Memory Alloy Actuation Structures: *Aaron Stebner*[1]; James Mabe[2]; Joseph Kreuger[1]; Frederick Calkins[2]; L. Catherine Brinson[1]; [1]Northwestern University; [2]The Boeing Company

11:10 AM
Control Loops of Shape Memory Actuators by Detection of the Electrical Resistance: Horst Meier[1]; *Alexander Czechowicz*[1]; [1]Ruhr-University Bochum

11:25 AM
Computer-Aided Development and Simulation Tools for Shape Memory Actuator Systems: Horst Meier[1]; *Alexander Czechowicz*[1]; [1]Ruhr-University Bochum

11:40 AM
Problems and Solutions for Shape Memory Actuators in Automotive Applications: *Sven Langbein*[1]; Konstantin Lygin[1]; Tim Sadek[1]; [1]Ruhr University Bochum

11:55 AM Conclusion of Symposium

Polycrystal Modelling with Experimental Integration: A Symposium Honoring Carlos Tome: Emerging Polycrystal Models with Experimental Integration II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, ASM-MSCTS: Texture and Anisotropy Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Ricardo Lebensohn, Los Alamos National Laboratory; Sean Agnew, University of Virginia; Mark Daymond, Queens's University

Thursday AM
March 3, 2011
Room: 6C
Location: San Diego Conv. Ctr

Session Chairs: Anthony Rollett, Carnegie Mellon University; Craig Hartley, El Arroyo Enterprises; Philip Eisenlohr, Max-Planck Institut fuer Eisenforschung

8:30 AM Invited
Full-Field Modeling with Experimental Integration of 3-D Polycrystalline Materials Deforming in Different Regimes Using Fast Fourier Transforms: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

8:55 AM Invited
Solving Finite-Deformation Crystal Elasto-Viscoplasticity with a Fast Fourier Transformation-Based Spectral Method: *Philip Eisenlohr*[1]; Martin Diehl[1]; Franz Roters[1]; Ricardo Lebensohn[2]; [1]Max-Planck-Institut für Eisenforschung; [2]Los Alamos National Laboratory

9:20 AM Invited
Problem Solving with Viscoplasticity: *Anthony Rollett*[1]; ricardo lebensohn[2]; Francis Wagner[3]; David Field[4]; [1]Carnegie Mellon University; [2]los alamos national laboratory; [3]University of Metz; [4]Washington State Univ

9:45 AM
Modeling Slip and Twinning Induced Plastic Deformation: Comparison between a Crystal Plasticity Finite Element and a Self Consistent Approach: *Hamidreza Abdolvand*[1]; Charles Mareau[1]; Mark R. Daymond[1]; [1]Queen's University

10:05 AM Break

10:20 AM Invited
Modeling Non-Conservative Deformation in Crystal Plasticity: *Craig Hartley*[1]; [1]El Arroyo Enterprises LLC

10:45 AM Invited
Improving Texture Predictions by Introducing Microstructurally Based Spin Continuity on Grain Boundaries: *Raúl Bolmaro*[1]; Andrea Fourty[1]; Javier Signorelli[1]; [1]IFIR

11:10 AM
Grain-Scale Interactions and Correlations: Effects on Yield Strength and Flow Stress: *James Stolken*[1]; Bryan Reed[1]; Mukul Kumar[1]; [1]LLNL

11:30 AM
Grain Boundary Engineered Materials as Correlated Networks: *Bryan Reed*[1]; Ming Tang[1]; James Belak[1]; Joel Bernier[1]; Vasily Bulatov[1]; Thomas LaGrange[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

11:50 AM
Multiscale Modeling of the Mechanical Response of Dislocation Structures Developed Using High Straining at Low Deformation Temperatures: *Krzysztof Muszka*[1]; Janusz Majta[1]; [1]AGH Univeristy of Science and Technology

12:10 PM
Study Microstructure Evolution in FCC Polycrystalline Materials Using a New Eulerian Continuity Model: *Sadegh Ahmadi*[1]; Brent Admas[1]; David Fullwood[1]; [1]Brigham Young University

12:30 PM Invited
Strain Hardening Behavior of HPDC Mg-Al Alloys at Low Strains: *K. Vanna Yang*[1]; C. H. Caceres[1]; A. V. Nagasekhar[2]; M. A. Easton[3]; [1]ARC Centre of Excellence for Design in Light Metals, The University of Queensland; [2]Carpenter Technologies; [3]CAST Co-operative Research Centre

Recycling General Session: 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

Thursday AM
March 3, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chair: Jeffrey Spangenberger, Argonne National Laboratory

8:30 AM Introductory Comments

8:35 AM
Designing a Collaborative System for Socio-Environmental Management of Industrial Waste: *Marisa Borges*[1]; Fabio Baldini[2]; [1]Universidade Federal do Paraná; [2]Excel Solutions

8:55 AM
Analysis of Carbon Fiber Recovered from Optimized Processes of Commercial Scale Recycling Facilities: *Joseph Heil*[1]; Davis Litzenberger[1]; Jerome Cuomo[1]; [1]North Carolina State University

9:15 AM
Analysis and Control of Light Hydrocarbon Gases in the Pyrolysis/ Combustion Process of Several Solid Wastes: Joner Alves[1]; *Chuanwei Zhuo*[2]; Yiannis Levendis[2]; Jorge Tenório[1]; [1]University of Sao Paulo; [2]Northeastern University

9:35 AM
Reduction Properties of Iron Ore Composite Pellets Bearing Waste Plastics: *Burak Birol*[1]; Muhlis Saridede[1]; [1]Yildiz Technical University

9:55 AM
Recycling Charge and Subsidy for Waste Packaging Containers in Taiwan: *Esher Hsu*[1]; Chen-Ming Kuo[2]; [1]National Taipei University; [2]I-Shou University

10:15 AM Break

10:25 AM
Treatment of Waste Leaching Liquor of a SHS Produced Tungsten Boride: M. Seref Sonmez[1]; Sertac Yazici[1]; *Bora Derin*[1]; [1]Istanbul Technical University

10:45 AM
The Effect of CO2 Carbonation Reaction on the Behavior Leaching of Heavy Metals and Chlorine in the Industrial Waste Incineration Ash: *Ji-Whan Ahn*[1]; Kwangsuk Yoo[1]; Seong-Young Nam[1]; [1]Korea Institute of Geoscience and Mineral Resources

11:05 AM
Study on the Treatment of Wastewater Containing High Concentration of Ammonia Nitrogen: *Ding Lichao*[1]; Chen Yunnen[1]; [1]Jiangxi University of Science and Technology

Refractory Metals 2011: Refractory Metal-Based Composites II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Jim Ciulik, University of Texas, Austin

Thursday AM
March 3, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: S.K. Varma, University of Texas at El Paso; Panos Tsakiropoulos, University of Sheffield

8:30 AM Invited
Computational Design of Oxidation and Creep-Resistant Ductile Refractory Alloys for High Temperature Applications: *Abhijeet Misra*[1]; [1]QuesTek Innovations LLC

8:50 AM
First-Principles Calculation and Thermodynamic Modeling of Cr-Al-Ni-Ti Quaternary System: *Michael Gao*[1]; Omer Dogan[1]; [1]National Energy Technology Laboratory

9:10 AM
Effect of Various Ternary Additions on Cr-Cr_2Ta Based Alloys: *Ayan Bhowmik*[1]; Howard Stone[1]; [1]University of Cambridge

9:30 AM
Microwave Sintering of Nb/Nb5Si3 Composite Material: *Yi Liu*[1]; Huimin Lu[1]; Jingru Dai[1]; [1]Beihang University

9:50 AM Break

10:10 AM
Oxidation Behavior of Nb-25Cr-20Si-15Mo-5B and Nb-25Cr-20Mo-15Si-10B in Air from 700 to 1300°C: *Benedict Portillo*[1]; Shailendra Varma[1]; [1]University of Texas El Paso

10:30 AM
Study of the Effect of Al, Cr, Mo and Ta Additions on the Microstructure and Properties of Nb Silicide Based Alloys: *Panayiotis Tsakiropoulos*[1]; [1]The University of Sheffield

10:50 AM
Thermomechanical Processing and Microstructure Evolution in Nb-Si-Ti-Al-Cr-X Alloys for High Temperature Aeroengine Applications: *Raghvendra Tewari*[1]; Hyojin Song[2]; Amit Chatterjee[3]; Vijay Vasudevan[2]; [1]Bhabha Atomic Research Centre; [2]University of Cincinnati; [3]Rolls-Royce Corporation

11:10 AM
Consolidation of Tantalum Materials by the Cold Spray Process: *Matthew Trexler*[1]; Robert Carter[1]; Victor Champagne[1]; [1]U. S. Army Research Laboratory

11:30 AM
Ta/Al2O3 Based Coatings Produced by Thermal Spraying: *Marcio Mendes*[1]; Eraldo Souza[2]; Narayanna Ferreira[2]; Clodomiro Alves, Jr.[2]; [1]Universidade Federal do Rio Grande do Norte ; [2]Universidade Federal do Rio Grande do Norte

11:50 AM
Micropillar Compression of Nanocrystalline and Ultra-Fine-Grained BCC Metals Processed by Severe Plastic Deformation: Jonathan Ligda[1]; *Brian Schuster*[2]; Qiuming Wei[1]; [1]University of North Carolina Charlotte; [2]U. S. Army Research Laboratory

Sensors, Sampling, and Simulation for Process Control: Temperature-Related Process Monitoring Systems

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Brian Thomas, University of Illinois at Urbana-Champaign; Andrew Campbell, WorleyParsons; Srinath Viswanathan, University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; James Yurko, 22Ti LLC; Thomas Battle, Midrex Technologies

Thursday AM
March 3, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chairs: Hani Henein, University of Alberta; Srinath Viswanathan, University of Alabama

8:30 AM
Dynamic Run-Out Table Cooling Simulator and Temperature Controllers: *Nicolas Pethe*[1]; Kai Zheng[1]; Didier Huin[1]; Christian Moretto[1]; Evgueni Poliak[1]; [1]ArcelorMittal

8:55 AM
Real-Time Model-Based Spray-Cooling Control System for Steel Continuous Casting: *Bryan Petrus*[1]; Kai Zheng[2]; X. Zhou[1]; Brian Thomas[1]; Joseph Bentsman[1]; [1]University of Illinois at Urbana Champaign; [2]Mittal Steel Company

9:20 AM
Measurement of the Solidification Front inside a Metallurgical Reactor: *Clement Bertrand*[1]; Marc-Andre Marois[1]; Martin Desilets[1]; Gervais Soucy[1]; [1]University of Sherbrooke

9:45 AM
Inverse Prediction and Control of the Bank Thickness in High Temperature Metallurgical Reactors: *Marc LeBreux*[1]; Martin Désilets[1]; Marcel Lacroix[1]; [1]Université de Sherbrooke

10:10 AM Break

10:25 AM
Online Imaging Pyrometer for Laser Deposition Processing: *James Craig*[1]; Thomas Wakeman[1]; Richard Grylls[2]; James Bullen[3]; [1]Stratonics, Inc.; [2]Optomec, Inc. ; [3]Optomec, Inc.

10:50 AM
Optimization of Continuous Hot Dipped Galvanization Lines through the Addition of a Hot Coating Weight Sensor: *Christopher Burnett*[1]; Andreas Quick[1]; [1]Thermo Scientific

11:15 AM
Monitoring of Meniscus Thermal Phenomena with Thermocouples in Continuous Casting of Steel: *Brian Thomas*[1]; Mary Wells[2]; Dianfeng Lee[3]; [1]University of Illinois at Urbana Champaign; [2]Waterloo University; [3]Belvac Metal Forming Company

11:40 AM
Implementation of Temperature and Strain Micro-Sensors into a Casting Mold Surface: *Brian Thomas*[1]; Michael Okelman[2]; [1]University of Illinois at Urbana Champaign; [2]ArcelorMittal Inc.

12:05 PM
Simulated Temperature Profile Control of a Laminar Cooling System Using the Genetic Algorithms: *Baher Bineshmarvasti*[1]; J. Barry Wiskel[1]; Amos Ben-Zvi[1]; Hani Henein[1]; [1]University of Alberta

Silicon Production, Purification and Recycling for Photovoltaic Cells: Session I

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Anne Kvithyld, SINTEF; Gregory Hildeman, Consultant; Gabriella Tranell, Norwegian University of Science and Technology (NTNU); Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

Thursday AM
March 3, 2011
Room: 14A
Location: San Diego Conv. Ctr

Session Chair: Gabriella Tranell, Norwegian University of Science and Technology

8:30 AM
Polysilicon in Photovoltaics: Market Conditions & Competing PV Technologies: *David Lynch*[1]; Byron Cocilovo[2]; Mario Marquez[2]; Akram Amooali[2]; Andrew Shroads[2]; Scott De Valle[2]; Rochellee Manygoats[2]; Chad Munich[2]; [1]Solar Technology Research Corporation; [2]University of Arizona

8:50 AM
Agglomeration as a Minor Mechanism for Polycrystalline Silicon Grown in a Fluidized Bed Reactor: *Mohamad Zbib*[1]; Uttara Sahayam[1]; Wayne Osborne[2]; Grant Norton[1]; David Bahr[1]; [1]Washington State University; [2]REC Silicon

9:10 AM
Preparation of Polysilicon by the Reaction of Zinc and Silicon Tetra-Chloride: *Tao Zhang*[1]; Huimin Lu[1]; Jingbo Xu[1]; [1]Beihang University

9:30 AM
Macrosegregation of Impurities during Solidification of Metallurgical Grade Silicon in a Vertical Bridgman Furnace: *Marcelo Martorano*[1]; João Ferreira Neto[2]; Theógenes Oliveira[1]; Tomoe Tsubaki[2]; [1]University of São Paulo; [2]Instituto de Pesquisas Tecnológicas do Estado de São Paulo

9:50 AM Break

10:10 AM
Removal of Inclusions from Solar Grade Silicon Using Electromagnetic Field: *Anping Dong*[1]; Lucas Damoah[1]; Lifeng Zhang[1]; [1]Missouri University of Science and Technology

10:30 AM
Effect of Calcium Addition and Microstructure of Metallurgical Grade Silicon on Its Leaching Behavior: *Yulia Meteleva-Fischer*[1]; Yongxiang Yang[1]; Rob Boom[1]; [1]Delft University of Technology

10:50 AM
Effect of Solidification Conditions on Si Growth from Si-Cu Melts: *Yosuke Ohshima*[1]; Takeshi Yoshikawa[1]; Kazuki Morita[1]; [1]University of Tokyo

11:10 AM
Structure Silicon Deposits Obtained by Electrolytic Refining in Salt Melt: *Oleg Chemezov*[1]; Oleg Vinogradov-Jabrov[1]; Yuriy Zaikov[1]; Aleksey Apisarov[1]; Andrey Isakov[1]; [1]Russian Academy of Sciences

11:30 AM
Silicon Electrodeposition Process in Molten Fluorides: *Anne-laure Bieber*[1]; Laurent Massot[1]; Laurent Cassayre[1]; Pierre Chamelot[1]; Mathieu Gibilaro[1]; Pierre Taxil[1]; [1]Laboratoire de génie Chimique

Size Effects in Mechanical Behavior: Combined Approaches Applied to Size Scale Dependent Experimental Problems

Sponsored by: The Minerals, Metals and Materials Society, Not Applicable, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Erica Lilleodden, GKSS Research Center; Amit Misra, Los Alamos National Laboratory; Thomas Buchheit, Sandia National Laboratories; Andrew Minor, UC Berkeley & LBL

Thursday AM
March 3, 2011
Room: 2
Location: San Diego Conv. Ctr

Session Chairs: Thomas Buchheit, Sandia National Laboratories; T. John Balk, University of Kentucky

8:30 AM
The Behavior of Nanoporous Au and Cu Foams with Controllable Pore Size: *I-Chung Cheng*[1]; Andrea Hodge[1]; [1]University of Southern California

8:50 AM Invited
Nanoporous FCC Metals: Effects of Nanoscale Structure on Mechanical Behavior: *T. John Balk*[1]; [1]University of Kentucky

9:20 AM
Scaling Behavior of Nanoporous Bcc Materials: *Ralph Spolenak*[1]; Flavio Mornaghini[1]; [1]ETH Zurich

9:40 AM
Internal Friction Measurements in Nanocrystalline and Nanoporous Metals: *Nicolas Briot*[1]; [1]University of Kentucky

10:00 AM
Measurement and Analysis of Internal Friction in Sputtered Thin Films of Aluminum: *Guruprasad Sosale*[1]; Luc Frechette[2]; Srikar Vengallatore[1]; [1]McGill University; [2]Universite de Sherbrooke

10:20 AM Break

10:40 AM
Augmentation of Micro-Tension Testing Methods: New Parallelized Sample Fabrication Techniques and Development of Elevated Temperature Micro-Heater Grips: *Paul Shade*[1]; Robert Wheeler[2]; Sang-Lan Kim[2]; Michael Uchic[3]; Sabyasachi Ganguli[4]; Jianjun Hu[2]; [1]Universal Technology Corporation; [2]UES Inc.; [3]AFRL; [4]UDRI / AFRL

11:00 AM
Casting and Testing of Cast metallic Microsamples: *Jerome Krebs*[1]; Csilla Miko[1]; Nadja Marxer[1]; Andreas Mortensen[1]; [1]EPFL

11:20 AM
Understanding Mechanical Behaviors of Indium Nanostructures through Synchrotron Laue X-Ray Microdiffraction: Michael Burek[1]; *Arief Budiman*[2]; Gyuhyon Lee[1]; Ju-Young Kim[3]; Nobumichi Tamura[4]; Martin Kunz[4]; Julia Greer[3]; Ting Tsui[1]; [1]University of Waterloo; [2]Los Alamos National Laboratory; [3]California Institute of Technology; [4]Lawrence Berkeley National Laboratory

2011 Functional and Structural Nanomaterials: Fabrication, Properties, Applications and Implications: Nanomaterials-Characteristics

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Jiyoung Kim, Univ of Texas; David Stollberg, Georgia Tech Research Institute; Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Suveen Mathaudhu, U.S. Army Research Office

Thursday PM
March 3, 2011
Room: 8
Location: San Diego Conv. Ctr

Session Chairs: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, U. of Alabama

2:00 PM Introductory Comments

2:05 PM
Engineered Electronic Transport in Assembled Carbon Nanotube (CNT) Thin Films: Role of CNT-scale Properties and Network Topology: *Moneesh Upmanyu*[1]; Hailong Wang[1]; Yung Jung[1]; Myung Hahm[1]; [1]Northeastern University

2:20 PM
Calculating the Relative Density of Nanoporous Metal Structures: *Ran Liu*[1]; Antonia Antoniou[1]; [1]Georgia Institute of Technology

2:35 PM
Fundamental Interactions between Au Nanoparticles and Deoxyribonucleic Acid: Govind Mallick[1]; *Mlleshree Karna*[2]; Shashi Karna[1]; [1]Army Research Laboratory; [2]University Southern California

2:50 PM
Large 3D Oxides with Length Scale Dependent Magnetic Properties: *J. Morales*[1]; J. Garay[1]; [1]UC Riverside

3:05 PM
Thermoelectric Circuits Based on Single Bismuth Telluride and Bismuth Nanowires as Bolometric Detectors: *Tito Huber*[1]; K. Owusu.[1]; [1]Howard University

3:20 PM
Crystallization Kinetics and Giant Magneto Impedance Behavior of FeCo Based Amorphous Wires: *Rajat Roy*[1]; Partha Sarkar[1]; Satnam Singh[1]; Ashis Panda[1]; Amitava Mitra[1]; [1]National Metallurgical Laboratory

3:35 PM Break

3:50 PM
Utilization of Fe-Based Nanocomposite Materials for Industrial Applications: *Ryan Dehoff*[1]; Andrew Klarner[1]; Wei Chen[1]; Peter Blau[1]; Louis Aprigliano[2]; Dave Novotnak[3]; William Peter[1]; [1]Oak Ridge National Laboratory; [2]Strategic Analysis, Inc.; [3]Carpenter Powder Products

4:05 PM
Silicon Coated Vertically Aligned Carbon Nanotubes as High Capacity Anodes for Lithium Ion Batteries: *Kara Evanoff*[1]; Thomas Fuller[1]; W. Jud Ready[2]; Gleb Yushin[1]; [1]Georgia Institute of Technology; [2]Georgia Tech Research Institute

4:20 PM
Engineering Shapes in Nanotechnology: Helicity on Demand: *Zi Chen*[1]; Carmel Majidi[2]; David Srolovitz[3]; Mikko Haataja[1]; [1]Princeton University; [2]Harvard University; [3]Institute of High Performance Computing

4:35 PM
Nanoimprinting and Piezoresponse Force Microscopy of Ferroelectric Poly(Vinylidene Fluoride-Trifluoroethylene) Copolymer Films: *Yuanming Liu*[1]; Dirk Weiss[1]; Jiangyu Li[1]; [1]University of Washington

4:50 PM
Synthesis of Vertical Ultra-long Platinum Nanolawns via Thermally Assisted Photoreduction: *You-Lin Shen*[1]; Shih-Yun Chen[1]; Jenn-Ming Song[2]; Tzu-Kang Chin[2]; Chu-Hsuan Lin[2]; In-Gann Chen[3]; [1]National Taiwan University of Science and Technology; [2]National Dong Hwa University; [3]National Cheng Kung University

5:05 PM Concluding Comments

Advances in Mechanics of One-Dimensional Micro/Nano Materials: Nanomechanics: Multilayers, Composites, Wires, and Sensors

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Reza Shahbazian-Yassar, Michigan Technological University; Seung Min Han, Korea Advanced Institute of Science and Technology; Katerina Aifantis, Aristotle University

Thursday PM
March 3, 2011
Room: 1B
Location: San Diego Conv. Ctr

Session Chairs: Ali Shokuhfar, K.N.T University; Seung Min Han, Korea Advanced Institute of Science and Technology

2:00 PM
Plasticity in the Nanoscale Cu/Nb Single Crystal Multilayers as Revealed by Ex Situ Synchrotron X-Ray Microdiffraction: *Arief Budiman*[1]; Seung-Min Han[2]; Patricia Dickerson[1]; Martin Kunz[3]; Nobumichi Tamura[3]; John Hirth[1]; Amit Misra[1]; [1]Los Alamos National Laboratory (LANL); [2]Stanford University; [3]Advanced Light Source (ALS), Berkeley Lab

2:20 PM
Enhanced Tensile Strength and Ductility in Nano-Multilayer: *Ju-Young Kim*[1]; Julia Greer[1]; [1]Caltech

2:40 PM
In-Situ Observation of Ultra-Strong but Ductile Deformation Behavior of Single Crystalline Metallic Nanowires: Jong Hyun Seo[1]; Youngdong Yoo[2]; Sang Won Yoon[1]; Tae-Yeon Seong[3]; *In-Suk Choi*[4]; Kon Bae Lee[5]; Bongsoo Kim[2]; Jae-Pyoung Ahn[4]; [1]Korea Institute of Science and Technology - and - Korea University; [2]KAIST; [3]Korea University; [4]Korea Institute of Science and Technology; [5]Kookmin University

3:00 PM
Artificial Neural Network for Solving Large Deflection of Micro/Nano-Beams: *Payam Heidary*[1]; Ali Shokuhfar[1]; [1]K.N.Toosi University of Technology

3:20 PM
Geometric Nonlinear Effects on the Micro/Nano-cantilever Biosensors: Ali Shokuhfar[1]; *Payam Heidary*[1]; [1]K.N.Toosi Univ. of Technology

3:40 PM Break

4:00 PM
Synthesis and Mechanical Properties of AL/ γ-Al12Mg17 Nanocomposite Prepared by Ball Milling and Hot Pressing: *Ali Shokuhfar*[1]; Ashkan Zolriasatein[1]; Narguess Nemati[2]; Abbas Sabahi[2]; [1]Advanced Materials and Nanotechnology Research Laboratories, Department of Mechanical Engineering, K.N.Toosi University of Technology; [2]Sahand University of Technology

4:20 PM
Effect of Intermetallic Reinforcement Particle Size on Wear Behaviour of Al/γ-Al12Mg17 Nanocomposite Prepared by Ball Milling and Hot Pressing: Ashkan Zolriasatein[1]; *Ali Shokuhfar*[1]; Narguess Nemati[2]; [1]Advanced Materials and Nanotechnology Research Laboratories, Department of Mechanical Engineering, K.N.Toosi University of Technology; [2]Sahand University of Technology

Aluminum Reduction Technology: Energy Savings by Cell Design Improvements

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee
Program Organizers: Mohd Mahmood, Aluminium Bahrain; Abdulla Ahmed, Aluminium Bahrain (Alba); Charles Mark Read, Bechtel Corporation; Stephen Lindsay, Alcoa, Inc.

Thursday PM
March 3, 2011
Room: 17B
Location: San Diego Conv. Ctr

Session Chair: Bjorn Moxnes, Hydro Aluminium AS

2:00 PM
Experimental Investigation of Single Bubble Characteristics in a Cold Model of a Hall-Héroult Electrolytic Cell: Subrat Das[1]; Yos Morsi[1]; *Geoffrey Brooks*[1]; William Yang[2]; John Chen[3]; [1]Swinburne University od Technology; [2]CSIRO Light Metals National Research Flagship; [3]University of Auckland

2:20 PM
Large Gas Bubbles under the Anodes of Aluminum Electrolysis Cells: Alexandre Caboussat[1]; *Laszlo Kiss*[2]; Jacques Rappaz[3]; Klára Vékony[4]; Alexandre Perron[5]; Steeve Renaudier[6]; Olivier Martin[7]; [1]Ycoor Systems SA; [2]Universite du Quebec a Chicoutimi; [3]École Polytechnique Fédérale de Lausanne; [4]Universitat Polytècnica de Barcelona; [5]Rio Tinto Alcan - CRDA ; [6]Rio Tinto Alcan - LRF; [7]7Rio Tinto Alcan - LRF

2:40 PM
Initiatives To Reduction Of Aluminum Potline Energy Consumption Alcoa Poços De Caldas/Brazil: *André Abreu*[1]; Mauro Salles[1]; Ciro Kato[1]; [1]Alcoa

3:00 PM
Electrical Conductivity of the KF-NaF- AlF3 Molten System at Low Cryolite Ratio with CaF2 Additions: Alexander Redkin[1]; *Alexander Dedyukhin*[1]; Alexei Apisarov[1]; Pavel Tin'ghaev[1]; Yurii Zaikov[1]; [1]Institute of High Temperature Electrochemistry

3:20 PM Break

3:30 PM
Study of ACD Model and Energy Consumption in Aluminum Reduction Cells: *Tian Yingfu*[1]; Wang Hang[1]; [1]Chongqing Tiantai Aluminum Industry CO., Ltd

3:50 PM
Cell Voltage Noise Reduction Based on Wavelet in Aluminum Reduction Cell: *Binchuan Li*[1]; Jianshe Chen[1]; [1]Northeastern University

Bulk Metallic Glasses VIII: Mechanical and Other Properties II

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Gongyao Wang, University of Tennessee; Peter Liaw, Univ of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee

Thursday PM
March 3, 2011
Room: 6D
Location: San Diego Conv. Ctr

Session Chairs: Dongchan Jang, California Institute of Technology; Yuri Petrusenko, National Science Center - Kharkov Institute of Physics & Technology

2:00 PM Invited
Transition from Strong-Yet-Brittle to Stronger-and-Ductile by Size Reduction in Metallic Glasses: *Dongchan Jang*[1]; Julia Greer[1]; [1]California Institute of Technology

2:20 PM Invited
Local Structures of Supercooled Ni-Nb, Cu-Zr, and Cu-Hf Melts at Eutectic and Bulk Metallic Glass-Forming Compositions: *Victor Wessels*[1]; Kevin Laws[2]; Kisor Sahu[1]; Nicholas Mauro[3]; Anup Gangopadhyay[3]; Kenneth Kelton[3]; Jörg Löffler[1]; [1]ETH Zurich Laboratory of Metal Physics and Technology; [2]University of New South Wales; [3]Washington University in St. Louis

2:40 PM
Sliding Wear Behavior of Cu50Hf41.5Al8.5 Bulk Metallic Glass: *Rainer Hebert*[1]; Dharma Maddala[1]; [1]University of Connecticut

2:50 PM Invited
Residual Stresses Induced by Laser Shock Peening on Zr-Based Bulk Metallic Glass and Its Effect on Plasticity: *Yunfeng Cao*[1]; Xie Xie[2]; Bartlomiej Winiarski[3]; Gongyao Wang[2]; Yung Shin[1]; Philip Withers[3]; Peter Liaw[2]; [1]Purdue University; [2]University of Tennessee; [3]University of Manchester

3:10 PM
Relaxation and Nanocrystallization of Bulk Amorphous Niti Processed by Severe Plastic Deformation: *Martin Peterlechner*[1]; Joachim Bokeloh[2]; Gerhard Wilde[2]; Thomas Waitz[1]; [1]University of Vienna, Faculty of Physics; [2]Univerisity of Münster

3:20 PM Break

3:30 PM Invited
Manifestation of the Bulk Metallic Glass Structure Features in the Compression-Compression Fatigue Experiments: *Yuri Petrusenko*[1]; Alexander Bakai[1]; Ivan Neklyudov[1]; Sergij Bakai[1]; Peter K. Liaw[2]; Gongyao Y. Wang[2]; Lu Huang[3]; Tao Zhang[3]; [1]National Science Center - Kharkov Institute of Physics & Technology; [2]The University of Tennessee; [3]Beihand University

3:50 PM
Structural Characterization of Iron Based Bulk Metallic Glass by Dilatometric Measurements: Fatemeh Saeidi[1]; *Mahmoud Nili-Ahmadabadi*[1]; Amir Seifoddini[1]; [1]University of Tehran

4:00 PM
Effect of Li on the Microstructure and Mechanical Properties of an Mg-Based BMG: *Ignacio Figueroa*[1]; John Plummer[2]; Iain Todd[2]; [1]National Autonomous University of Mexico; [2]University of Sheffield

4:10 PM Invited
Selective Nanocrystallization of Metallic Glasses Induced by Nanoindentation: Jordi Sort[1]; Jordina Fornell[1]; Aïda Varea[1]; Emma Rossinyol[1]; Luiz Bonavina[2]; Carlos Souza[2]; Walter Botta[2]; Claudemiro Bolfarini[2]; Claudio Kiminami[2]; Santiago Suriñach[1]; Josep Nogués[3]; *Maria D Baró*[1]; [1]Universitat Autònoma de Barcelona; [2]Universidade Federal de Sao Carlos; [3]ICREA/ICN-CSIC

4:30 PM
Phase Formation and Mechanical Properties of Cu-Zr-Co alloys: *Fatemeh A. Javid*[1]; Norbert Mattern[1]; Simon Pauly[1]; Jürgen Eckert[1]; [1]Leibniz Institute for Solid State and Materials Research Dresden

4:40 PM
Temperature Effects on Flow of Several Metallic Glasses: *Lisa Deibler*[1]; John Lewandowski[1]; [1]Case Western Reserve University

4:50 PM
Study of Activation Parameters of Deformation by Broadband Nanoindentation Creep in Structural Relaxed Zr-Cu-Al Bulk Metallic Glasses: *Zenon Melgarejo*[1]; Joseph Jakes[2]; Jonathan Puthoff[1]; Hongbo Cao[1]; Chuan Zhang[1]; Donald Stone[1]; Paul Voyles[1]; [1]University of Wisconsin-Madison; [2]Performance Enhanced Biopolymers, United States Forest service, Forest Products laboratory

5:00 PM
Enhanced Plasticity of a Zr-Cu-Ni-Al Bulk Metallic Glass by Micro Nb Additions: Shuang-shuang Chen[1]; John Plummer[1]; Iain Todd[1]; [1]The university of Sheffield

5:10 PM
A Study on Crystalline Phases Present in the As-Solidified and Crystallized Microstructures in $Zr_{53}Cu_{21}Al_{10}Ni_8Ti_8$ Alloy: *Raghvendra Tewari*[1]; Suman Neogy[1]; Gautam Dey[1]; Srikumar Banerjee[2]; S. Ranganathan[3]; [1]Bhabha Atomic Resrach Centre; [2]Department of Atomic Energy; [3] Indian Institute of Science

Carbon Dioxide and Other Greenhouse Gas Reduction Metallurgy - 2011: CO2 and GHG Reduction in Metal Industries

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; Maria Salazar-Villalpando, National Energy Technology Laboratory; James Yurko, 22Ti LLC; Malti Goel, INSA

Thursday PM
March 3, 2011
Room: 15B
Location: San Diego Conv. Ctr

Session Chairs: Maria salazaar - Villapando, National Energy Technology Laboratory; Malti Goel, Jawaharlal Nehru University

2:00 PM Introductory Comments

2:05 PM
Vacuum Distillation of Aluminum and Silicon via Carbothermal Reduction of Their Oxides with Concentrated Solar Energy: *Peter Loutzenhiser*[1]; Enrico Guglielmini[1]; Alwin Frei; Aldo Steinfeld[1]; [1]ETH Zurich

2:25 PM
The Alkali Roasting of Complex Oxide Minerals for High Purity Chemicals – Beyond Le Chatelier into 21st Century: *Animesh Jha*[1]; [1]University of Leeds

2:45 PM
The Alkali Roasting and Leaching of Ilmenite Minerals For the Extraction of High Purity Synthetic Rutile and Rare-Earth Oxides: Animesh Jha[1]; *Graham Cooke*[1]; [1]University of Leeds

3:05 PM
Hydrogen-Rich and Carbon-Neutral Gas as Reducing Agent for Heavy Metal Containing Residues: *Thomas Griessacher*[1]; Jürgen Antrekowitsch[1]; [1]University of Leoben

3:25 PM
Bauxite Residue Use to Remove SO2 from Gas Effluents: *Luis Venancio*[1]; Paulo Santos[1]; José Antonio Souza[1]; Emanuel Macedo[1]; Wanderson Rodrigues[1]; [1]Federal University of Pará

3:45 PM
Greenhouse Gas Emission Reduction from Aluminum Industry in India: Challenges and Prospects: Malti Goel[1]; [1]INSA

4:05 PM Break

4:15 PM
Dissolution Kinetics of Steelmaking Slag and Its Promotion for the Growth of Algae: Chunfang Zi[1]; Kai Huang[1]; Lianyun Liu[1]; Xiaohui Li[1]; *Hongmin Zhu*[1]; [1]University of Science and Technology of Beijing

4:35 PM
Life Cycle Assessment of China's Alumina Manufacturing by Bayer Process: *Li Hongxu*[1]; Duan Ge[1]; Bai Hao[1]; Cang Daqiang[1]; [1]University of science and technology, Bejing

4:55 PM
Analysis of Carbon Emission Reduction of China's Integrated Steelworks: *Hao Bai*[1]; [1]University of Science and Technology Beijing

Challenges in Mechanical Performances of Materials in Next Generation Nuclear Power Plants: Session II

Sponsored by: The Minerals, Metals and Materials Society, American Nuclear Society, ASM International, Japan Institute of Metals, National Science Foundation, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, ASM Materials Science Critical Technology Sector, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS/ASM: Composite Materials Committee, TMS: Energy Committee, TMS: High Temperature Alloys Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS/ASM: Nuclear Materials Committee
Program Organizer: Faramarz Zarandi, CANMET-Materials Technology Laboratory

Thursday PM
March 3, 2011
Room: 5A
Location: San Diego Conv. Ctr

Session Chairs: G. Robert Odette, University of California, Santa Barbara; Laura Carroll, Idaho National Laboratory

2:00 PM
Simplified Powder Processing of ODS Ferritic Stainless Steels: *Joel Rieken*[1]; Iver Anderson[2]; Matthew Kramer[2]; [1]Iowa State University; [2]Ames Laboratory

2:20 PM
Degradation of High Temperature Mechanical Performance in Ferritic-Martensitic Steels: *Meimei Li*[1]; Saurin Majumdar[1]; Ken Natesan[1]; [1]ANL

2:40 PM
Optimized Thermomechanical Treatment for High Strength 9Cr Ferritic-Martensitic Steels: *Lizhen Tan*[1]; Edward Kenik[1]; Jeremy Busby[1]; [1]Oak Ridge National Laboratory

3:00 PM
Nitride-Strengthened Reduced Activation Martensitic Steels: *Yiyin Shan*[1]; Ping Hu[1]; Wei Yan[1]; Wei Wang[1]; Wei Sha[2]; Ke Yang[1]; [1]Institute of Metal Research; [2]Queen's University of Belfast

3:20 PM
Inclusion Initiated Cleavage Fracture in a Nitride-Strengthened Reduced Activation Martensitic Steel: *Wei Yan*[1]; Wei Wang[1]; Ping Hu[1]; Lifeng Deng[1]; Yiyin Shan[1]; Ke yang[1]; [1]Institute of Metal Research

3:40 PM Break

4:00 PM
Determination of Ion Bombardment, in Reactor Irradiation and Post Irradiation Fatigue Properties: *Z. W. Zhang*[1]; Suiqiong Li[1]; Wen Shen[1]; C. T. Liu[1]; Xun-Li Wang[1]; Xun-Li Wang[2]; Bryan Chin[1]; [1]Auburn University; [2]Oak Ridge National Laboratory

4:20 PM
Oxidation and Diffusion Investigation of the Carbides Used as Cladding Materials in TRISO-Coated Fuel Particles: *John Youngsman*[1]; Brian Gorman[2]; Ivar Reimanis[2]; Darryl Butt[1]; [1]Boise State University; [2]Colorado School of Mines

4:40 PM
Forming 6061 Al HIP-Clad DU10Mo Monolithic Fuel Plates: *Kester Clarke*[1]; David Alexander[1]; Cheng Liu[1]; Hunter Swenson[1]; [1]Los Alamos National Laboratory

Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Irradiated Materials and Technique Development

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Matthew Kerr, US Nuclear Regulatory Commission; Meimei Li, Argonne National Lab; Jonathan Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Lab

Thursday PM
March 3, 2011
Room: 4
Location: San Diego Conv. Ctr

Session Chairs: Jonathon Almer, Argonne National Lab; Don Brown, Los Alamos National Lab

2:00 PM Invited
Characterization of Radioactive Materials Using the MARS Beamline at the Synchrotron SOLEIL: *Bruno Sitaud*[1]; Pier Lorenzo Solari[1]; Sandrine Schlutig[1]; [1]Synchrotron SOLEIL

2:30 PM
Neutron Imaging for Non-Destructive Testing of Nuclear Materials: *Peter Vontobel*[1]; Eberhard Lehmann[1]; Yong Dai[1]; Mirco Grosse[2]; [1]Paul Scherrer Institut; [2]Forschungszentrum Karlsruhe

2:50 PM Invited
From In-Core to BOP to Waste, Neutrons Characterize Nuclear Materials and Components: *Ron Rogge*[1]; [1]National Research Council

3:20 PM
SANS and TEM Investigation of Phase Precipitation in HT-9 at High Neutron Irradiation Dose Levels: *Joris Van den Bosch*[1]; Osman Anderoglu[1]; Tobias Romero[1]; Patricia Dickerson[1]; Robert Dickerson[1]; Peter Hosemann[1]; Rex Hjelm[1]; Stuart Maloy[1]; [1]LANL

3:40 PM
Synchrotron Radiation Study of Unirradiated and Irradiated Ferritic-Martensitic Steels: *Meimei Li*[1]; Jonathan Almer[1]; Yang Ren[1]; Jeff Terry[2]; Stuart Maloy[3]; Ken Natesan[1]; [1]ANL; [2]Illinois Institute of Technology; [3]Los Alamos National Lab

4:00 PM Break

4:10 PM
X-ray Absorption Spectroscopy Study of Irradiated ZrC and ZrN: *Daniel Olive*[1]; Yong Yang[2]; Jeff Terry[1]; [1]Illinois Institute of Technology; [2]University of Wisconsin-Madison

4:30 PM
Cold Neutron Prompt-Gamma Activation Analysis of Hydrogen Pickup during Zirconium Alloy Corrosion: *Adrien Couet*[1]; Arthur Motta[1]; Robert Comstock[2]; Rick Paul[3]; [1]Penn State University; [2]Westinghouse Electric Company; [3]National Institute of Standards and Technology

4:50 PM
Comparison of Proton, Benchtop X-Ray and Synchrotron X-Ray Radiography of Surrogate Urania and Thoria/Ceria Composite Fuel Samples: *Mark Bourke*[1]; Donald Brown[1]; Darrin Byler[1]; Christopher Chen[1]; Jeremy Kropf[2]; James Hunter[1]; Fesseha Mariam[1]; Christopher Morris[1]; Andrew Saunders[1]; [1]Los Alamos National Laboratory; [2]Argonne national laboratory

5:10 PM
Crystallographic Texture Contrast in Neutron Radiography of Zirconium Based Components: *Javier Santisteban*[1]; Sven Vogel[2]; Anton Tremsin[3]; Winfried Kockelmann[4]; Eberhard Lehmann[5]; [1]Comision Nacional de Energia Atómica; [2]Los Alamos National Laboratory; [3]University of California at Berkeley; [4]Rutherford Appleton Laboratory; [5]Paul Scherrer Institut

5:30 PM
Spatially Resolved Strain Fields in Nuclear Fuel Plates Determined by Synchrotron X-Ray Diffraction: *Maria Okuniewski*[1]; Don Brown[2]; Levente Balogh[2]; Jeff Terry[3]; Daniel Olive[3]; Yulia Trenikhina[3]; John Okasinski[4]; Pavel Medvedev[1]; Hakan Ozaltun[1]; Soenke Seifert[4]; Soma Chattopadhyay[3]; Tomohiro Shibata[3]; Hasitha Ganegoda[3]; Jan-Fong Jue[1]; Barry Rabin[1]; Glenn Moore[1]; Blair Park[1]; [1]Idaho National Laboratory; [2]Los Alamos National Laboratory; [3]Illinois Institute of Technology; [4]Argonne National Laboratory

5:50 PM
Diffraction Studies of Irradiated Cladding and Duct Reactor Materials: *Tarik Saleh*[1]; Stuart Maloy[1]; Tobias Romero[1]; Joris Van Den Bosch[1]; Sara Perez-Bergquist[1]; Donald Brown[1]; [1]Los Alamos National Laboratory

Computational Plasticity: Multiscale Modeling in Plasticity

Sponsored by: The Minerals, Metals and Materials Society, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: High Temperature Alloys Committee
Program Organizers: Remi Dingreville, Polytechnic Institute of NYU; Koen Janssens, Paul Scherrer Institute

Thursday PM
March 3, 2011
Room: 1A
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM Invited
Effective Elastic Properties of Solids Containing Imperfectly Bonded Nano-Inhomogeneities Based on Atomistic-Continuum Interphase Model: *Mohammed Cherkaoui*[1]; Bashkar Paliwal[1]; [1]Georgia Institute of Technology

2:30 PM
Kinetics of Deformation Mechanisms in Nanocrystalline Copper: *Mathieu McPhie*[1]; Stéphane Berbenni[2]; Mohammed Cherkaoui[1]; [1]Georgia Tech Lorraine, GT-CNRS UMI 2958; [2]Laboratory of Physics and Mechanics of Materials (LPMM), CNRS, ENSAM

2:50 PM
Experimental and Microstructurally Based Computational Investigation of the High Strain-Rate Behavior of High Strength Aluminum Alloys: *William Lee*[1]; Khalil El-Khodary[1]; H. Salem[2]; Mohammed Zikry[1]; [1]North Carolina State University; [2]American University of Cairo

3:05 PM Break

3:20 PM Invited
Lengthscale, Orientation and Morphology Effects in Fatigue Crack Nucleation in Polycrystals: *Fionn Dunne*[1]; [1]University of Oxford

3:50 PM Invited
Quantifying the Microstructure-Induced Uncertainty in Strain Concentrations at Engineered Defects: *Corbett Battaile*[1]; Luke Brewer[2]; John Emery[1]; Brad Boyce[1]; [1]Sandia National Laboratories; [2]Naval Postgraduate School

4:20 PM
Modeling the Evolution of the Microstructure in Magnesium by Means of Incremental Energy Minimization: *Joern Mosler*[1]; Malek Homayonifar[1]; [1]GKSS-Forschungszentrum Geesthacht

4:40 PM
Studying Dislocation Nucleation from Different Shaped Notches Using a Multiscale Model: *Steffen Brinckmann*[1]; Dhiraj Mahajan[1]; Alexander Hartmaier[1]; [1]ICAMS

5:00 PM
A Microstructure Sensitive Crystal Plasticity Model for a-Iron: *Alankar Alankar*[1]; David Field[2]; [1]Max-Planck Institute for Iron Research; [2]Washington State University

5:20 PM
Statistical Modeling of Elastic Strain, Lattice Rotation and Dislocation Density Tensor in FCC Crystals: Mamdouh Mohamed[1]; Jie Deng[1]; Anter El-Azab[1]; *Ben Larson*[2]; [1]Florida State University; [2]Oak Ridge National Laboratory

Electrode Technology for Aluminium Production: Inert Anodes and Wettable Cathodes

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Alan Tomsett, Rio Tinto Alcan; Ketil Rye, Alcoa Mosjøen; Barry Sadler, Net Carbon Consulting Pty Ltd

Thursday PM
March 3, 2011
Room: 16B
Location: San Diego Conv. Ctr

Session Chairs: Veronique Laurent, Rio Tinto Alcan; Jilai Xue, Department of Nonferrous Metallurgy

2:00 PM Introductory Comments

2:05 PM
Pressureless Sintering of TiB2–Based Composites Using Ti and Fe Additives for Development of Wettable Cathodes: *Hamed Heidari*[1]; Houshang Alamdari[1]; Dominique Dubé[1]; Robert Schulz[2]; [1]Université Laval; [2]Hydro-Quebec

2:30 PM
Furan Resin and Pitch Blends as Binders for TiB2-C Cathodes: *Hongliang Zhang*[1]; Jinlong Hou[1]; Xiaojun Lü[1]; Yanqing Lai[1]; Jie Li[1]; [1]School of Metallurgical Science and Engineering, Central South University

2:55 PM
Influence of Cobalt Additions on Electrochemical Behaviour of Ni-Fe-Based Anodes for Aluminium Electrowinning: *Vivien Singleton*[1]; Barry Welch[2]; Maria Skyllas-Kazacos[1]; [1]University of New South Wales; [2]Welbank Consulting Ltd.

3:20 PM Break

3:30 PM
Effects of the Additive ZrO2 on Properties of Nickel Ferrite Cermet Inert Anode: *Xiao Zhang*[1]; Guangchun Yao[1]; Yihan Liu[1]; Jia Ma[1]; Zhigang Zhang[1]; [1]Northeastern University

3:55 PM
Effect of Sintering Atmosphere on Phase Composition and Mechanical Property of 5Cu/(10NiO-NiFe2O4) Cermet Anodes for Aluminum Electrolysis: Zhong Zou[1]; Juan Wei[1]; Liang Tian[1]; Kai Liu[1]; *Liang Zhang*[1]; Qing Lai[1]; Jie Li[1]; [1]Central South University

Electrometallurgy Fundamentals and Applications: Session I

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

Thursday PM
March 3, 2011
Room: 18
Location: San Diego Conv. Ctr

Session Chair: Michael Free, University of Utah

2:00 PM
Electrochemical Reduction of Tantalum Oxide in a CaCl2 – CaO Molten Salt Electrolyte: Roger Barnett[1]; *Derek Fray*[1]; [1]University of Cambridge

2:25 PM
Molten Oxide Electrolysis Application to Steelmaking: A New Approach of Slag Science?: Ghazal Azimi[1]; *Antoine Allanore*[1]; Donald Sadoway[1]; [1]MIT

2:50 PM
Direct Electroreduction of Oxides in Molten Fluorides
: *Laurent Cassayre*[1]; Mathieu Gibilaro[1]; Jacques Pivato[1]; Laurent Massot[1]; Pierre Chamelot[1]; Olivier Dugne[2]; [1]Université de Toulouse; [2]CEA Marcoule

3:15 PM
Thermodynamic Studies on the Preparation of Titanium Alloys by Molten Salt Electrolysis: *Du Jihong*[1]; Shenghong Yang[1]; Qingyu Li[1]; Chengben Yang[1]; Mingxia Sun[1]; Zhengping Xi[1]; [1]Northwest Institute for Nonferrous Metal Research

3:40 PM Break

3:55 PM
Preparation of TiFe Alloy by Electrolysis in Molten Salt: Hu Meilong[1]; Bai Chenguang[1]; Shi Ruimeng[1]; *Lv Xuewei*[1]; Liu Xuyang[1]; [1]chongqing university

4:20 PM
Recapturing Metals from Electrocoagulation Floc: *Jewel Gomes*[1]; Md Islam[1]; Paul Bernazzani[1]; George Irwin[1]; Dan Rutman[1]; David Cocke[1]; Mohammad Islam[1]; [1]Lamar University

4:45 PM
Mechanism of Antimony Deposition in Alkaline Solution Containing Xylitol: *Wei Liu*[1]; Tianzu Yang[2]; Qionghua Zhou[1]; [1]Henan University of Science and Technology; [2]School of Metallurgical Science and Engineering, Central South University

5:10 PM
Preparation of Ti-Al Intermetallic by Electrolytic Reduction from TiO2 and Al2 O3: Chengbeng Yang[1]; *Du Jihong*[1]; Zhengping Xi[1]; [1]Northwest Institute for Nonferrous Metal Research

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: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Long Qing Chen, Pennsylvania State University; Sung Kang, IBM Corporation; Mark Palmer, Kettering University

Thursday PM
March 3, 2011
Room: 9
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Processing Parameter Optimization to Synthesize High Quality Single Phase CZTS Film: *Prashant Sarswat*[1]; Michael Free[1]; Ashutosh Tiwari[1]; [1]University of Utah

2:20 PM
Tatalum Nitride For Efficient Visible-Light-Driven Photocatalyst: *Zheng Wang*[1]; Jiangting Wang[1]; Lianyun Liu[1]; Kai Huang[1]; Jungang Hou[1]; Hongmin Zhu[1]; [1]University of Science and technology Beijing

2:40 PM
Failure Mechanism of Electrode in Crystalline Photovoltaics: *Oh Chulmin*[1]; Park Nochang[1]; Han Changwoon[1]; Hong Won Sik[1]; [1]KETI/ Reliability Physics Research Center

3:00 PM
Property–Structure Relations II Oxide Thin Films Used in Light Sensing Applications: *J. Wilde*[1]; Y. Kodera[2]; C. Dames[2]; J. Garay[2]; [1]Raytheon Vision Systems; [2]UC Riverside

3:20 PM
The Investigation of Chemical Vapor Deposited Antimony Doped SnO2 Thin Films by Synchrotron Grazing Incidence X-Ray: *Yang Yi Lin*[1]; Albert T. Wu[1]; [1]National Central University

3:40 PM Break

4:00 PM
Synthesis of Nano-sized Tantalum Nitrides with Various Morphology: Lianyun Liu[1]; Chunhong Ma[1]; Zheng Wang[1]; Kai Huang[1]; Shuqiang Jiao[1]; *Hongmin Zhu*[1]; [1]University of Science and Technology Beijing

4:20 PM
Properties of Perfect GaP Crystals: *Sergei Pyshkin*[1]; John Ballato[2]; Andrea Mura[3]; [1]Academy of Sciences of Moldova; [2]Clemson University; [3]University of Cagliari

4:40 PM
Development of New Transparent Conductive Material of Mg(OH1-xCx)2 (x = 0.1-0.35) by Magnetron Sputtering: *Takamitsu Honjo*[1]; Toshiro Kuji[1]; [1]Tokai university

5:00 PM
Synthesis of Ultrafine Single Crystals and Nanostructured Coatings of Indium Oxide from Solution Precursor: *Nagaswetha Pentyala*[1]; Ramesh Kumar Guduru[1]; Pravansu Mohanty[1]; [1]University of Michigan Dearborn

5:20 PM
Reliability of Wedge Wire Bonds Subjected to Ultrasonic Welding and Thermal Cycling: *Anil Saigal*[1]; Michael Zimmerman[1]; James Battaglia[1]; [1]Tufts University

General Abstracts: Light Metals Division: General Light Metals

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Aluminum Processing Committee, TMS: Energy Committee, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Alan Luo, General Motors Corporation; Eric Nyberg, Pacific Northwest National Laboratory

Thursday PM
March 3, 2011
Room: 14B
Location: San Diego Conv. Ctr

Session Chair: Alan Luo, General Motors Global Research & Development

2:00 PM
The Effect of Residual Chloride on the Sintering and Sintered Properties of Titanium and Its Alloys: *Ma Qian*[1]; [1]The University of Queensland

2:20 PM
High Strain Rate Behavior of 2139-T8 Al Alloy: *Buyang Cao*[1]; K. Ramesh[1]; [1]The Johns Hopkins University

2:40 PM
Determination of Heat Treatment Effect on 6XXX Series Aluminum Foams by Design of Experiment: *Deniz Polat*[1]; B. Ozkal[1]; O. Keles[1]; [1]Istanbul Technical University

3:00 PM
Effect of Reacted Layer on Galvanic Corrosion Phenomenon at Interface between Ti Dispersion and Mg-Al Alloy: *Katsuyoshi Kondoh*[1]; Nozomi Nakanishi[1]; Rei Takei[1]; Junko Umeda[1]; [1]Osaka University

3:20 PM
Compressive Capacity and Fracture Mechanism of Aluminum Foam: *Hai Hao*[1]; Guoqiang Lu[1]; Mouhamadou Diop[1]; Hanwei Dong[1]; Xingguo Zhang[1]; [1]Dalian University of Technology

3:40 PM Break

4:00 PM
LiAl Alloy Prepared by Bulk Mechanical Alloying: *Takamitsu Honjo*[1]; Toshiro Kuji[1]; [1]Tokai university

4:20 PM
Multistage Fatigue Model for High-Strength Textured Al Alloys: *Yibin Xue*[1]; Chong Teng[1]; Brian Jordon[2]; Mark Horstermeyer[3]; David McDowell[4]; Elias Anagnostou[5]; [1]Utah State University; [2]University of Alabama; [3]Mississippi State University; [4]Georgia Tech; [5]Northrop Grumman

4:40 PM
Super Plasticity of Magnesium Alloys after Rolling and ECAP: Miroslav Greger[1]; *Radim Kocich*[1]; [1]VSB-Technical University Ostrava

5:00 PM
Tomographic Reconstruction of Microstructures in Al-Ni-Y-Based Alloys: *Mauricio Gordillo*[1]; Lichun Zhang[1]; Thomas Watson[2]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt and Whitney Aircraft

5:20 PM
Improved Properties of Light Alloys Using Near-Nano and Nano-Based Materials in Bulk Consolidation Processing: *Robert Gansert*[1]; Chris Melnyk[2]; David Grant[2]; David Lugan[2]; Brian Weinstein[2]; [1]Advanced Materials & Technology Services, Inc.; [2]California Nanotechnologies, Inc.

General Abstracts: Materials Processing and Manufacturing Division: Casting, Surface Modification, and Powder 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: Integrated Computational Materials Engineering 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: Corbett Battaile, Sandia National Laboratories; Joy Forsmark, Ford Motor Company; Amit Misra, Los Alamos National Laboratory

Thursday PM — Room: 2
March 3, 2011 — Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Application of Thermodynamics in Nucleation of Secondary Graphite on Heat Treated Ductile Cast Iron: *Fabian Imanasa Azof*[1]; Eung Ryul Baek[1]; [1]Yeungnam University

2:15 PM
Evaluation of Microstructures and Mechanical Properties on the Effects of Build Orientation and Building Parameters on Manufactured Ti6Al4V Specimens by EBM: *Karina Puebla*[1]; Sara Gaytan[1]; Lawrence Murr[1]; Ryan Wicker[1]; [1]The University of Texas at El Paso

2:30 PM
Calciumsilicate-Graphite-Compound, a New Material for the Flow Control of Liquid Aluminium Alloys: *Wolf Huettner*[1]; Tobias Hoelscher[1]; Mark Quackenbush[2]; Rusty Smith[3]; [1]Calsitherm International; [2]Prime Material Sales; [3]Industrial Products International

2:45 PM
Influence of a Direct Current on the Solidification Behavior of Pure Aluminum: *Yunhu Zhang*[1]; Changjiang Song[1]; Liang Zhu[1]; Hongxing Zheng[1]; Qijie Zhai[1]; [1]shanghai university

3:00 PM
Influence of Heating Effect on the Solidified Structure of Pure Aluminum by Electric Current Pulse: *Zhenxing Yin*[1]; Bo Li[1]; Yongyong Gong[1]; Qijie Zhai[1]; [1]Shanghai University

3:15 PM
Influence of Silicon to (Fe,Si)Al Island Formation in Fe2Al5 Aluminide Layer during Heat Treatment of Al-Si Coated Steel Sheets: *Nandyo Alpalmy*[1]; Baek Eung-Ryul[1]; Kim Tai-Ho[2]; [1]Yeungnam University; [2]POSCO

3:30 PM
Manufacturing Methods and Properties of Powder-Based Parts with Inherently Saved Information: Bernd-Arno Behrens[1]; *Najmeh Vahed*[1]; Fabian Lange[1]; Edin Gastan[1]; [1]Institute of Metal Forming and Metal-Forming Machines of the Leibniz University of Hannover

3:45 PM
Microstructure and Mechanical Properties of Al Based Composite Coatings Produced by the Cold Gas Dynamic Spraying Process: *Onur Meydanoglu*[1]; Murat Baydogan[1]; Eyup Kayali[1]; Huseyin Cimenoglu[1]; [1]Istanbul Technical University

4:00 PM
Optimization of Fiber Laser Produced Hastelloy C-276 Single Track Clad: *Perry Leggett*[1]; Prabu Balu[1]; Radovan Kovacevic[1]; Syed Hamid[2]; [1]SMU; [2]Halliburton

4:15 PM
Preparation of Nanocrystalline Aluminium by Warm-Vacuum-Compaction Method: *Wei Liu*[1]; Qionghua Zhou[1]; [1]Henan University of Science and Technology

4:30 PM
The Effect of Sintering Conditions on the Properties of WC-Co Hard Metal Fabricated by Powder Injection Molding Process: *Sung-Hyun Choi*[1]; Kyoung-Rok Do[1]; Dong-Wook Park[1]; Young Sam Kwon[2]; Kwon Koo Cho[1]; In-Sup Ahn[1]; [1]GNU; [2]CetaTech. Inc

4:45 PM
Annealing Characteristics of Cold Sprayed Pure Cu and Ni Coatings Using EBSD Technique: *Ahmad Rezaeian*[1]; A. Changizi[1]; Y. Zou[1]; E. Irissou[2]; J.-G. Legoux[2]; S. Yue[1]; [1]McGill University; [2]National Research Council Canada(NRC) – Industrial Materials Institute(IMI)

5:00 PM
Microstructure Evolution of Amorphous/Nanocrystalline Steel Coatings by Hybrid Spray Process: *Vikram Varadaraajan*[1]; Ramesh Kumar Guduru[1]; Pravansu Mohanty[1]; [1]University of Michigan

5:15 PM
Surface Characteristics and High Temperature Oxidation Resistance Performance of Stainless Steel Foam Modified by Pack Aluminizing and Moderate Oxidation: Deng-Wei Huo[1]; *Xiang-Yang Zhou*[1]; Hui Wang[1]; Jie Li[1]; Hong-Yu Song[1]; Peng Zhu[1]; [1]School of Metallurgical Science and Engineering, Central South University

5:30 PM
Development of Copper Coating on Austenitic Stainless Steel through Microwave Hybrid Heating: Dheeraj Gupta[1]; *Apurbba Sharma*[1]; [1]Indian Institute of Technology Roorkee

5:45 PM
Anodization of Aluminum Alloys with Novel Anodizing Additive: *Alp Manavbasi*[1]; [1]METALAST International, Inc.

General Abstracts: Materials Processing and Manufacturing Division: Forging, 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: Integrated Computational Materials Engineering 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: Corbett Battaile, Sandia National Laboratories; Joy Forsmark, Ford Motor Company; Amit Misra, Los Alamos National Laboratory

Thursday PM
March 3, 2011
Room: 5B
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Profile of Electrochemically Machined Microcomponents: *Wayne Hung*[1]; Laxmi Viswanathan[1]; Mike Powers[2]; [1]Texas A&M University; [2]Agilent Technologies

2:15 PM
A New Method for the Determination of Formability Limit in Tube Drawing Process: *Hien Bui*[1]; Reza Bihamta[1]; Michel Guillot[1]; Guillaume D'Amours[2]; Ahmed Rahem[2]; Mario Fafard[1]; [1]Laval University; [2]National Research Council Canada, Aluminium Technology Centre

2:30 PM
A Novel Method for Joining of Stainless Steel (SS-316)through Microwave Energy: *M Srinath*[1]; Apurbba Sharma[1]; Pradeep Kumar[1]; [1]IIT Roorkee

2:45 PM
A Reliable Method for Determining the Solidification Force of Steel for Continuous Casting Conditions: *Matthew Rowan*[1]; [1]University of Illinois at Urbana-Champaign

3:00 PM
An Investigation into the Laser Micro-Welding of Aluminum and Copper in Lap Joint Configuration: *Prabu Balu*[1]; B Carlson[2]; Rouzbeh Sarrafi[1]; Radovan Kovacevic[1]; [1]SMU; [2]GM

3:15 PM
Carbothermal Production of ZrB_2-ZrO_2 Composite Powders from ZrO_2-B_2O_3/B System by High-energy Ball Milling and Annealing Assisted Process: *Duygu Agaogullari*[1]; Özge Balci[1]; Ismail Duman[1]; [1]Istanbul Technical University

3:30 PM
Deformation of High Purity Copper Specimens in Compression between Flat and Grooved Dies: *Bashir Raddad*[1]; [1]University of Alfateh, Mechanical Department

3:45 PM
Improved Shear Zone Quality by an Oscillating Shear Blade: *Michael Lücke*[1]; [1]IPH

4:00 PM
Local Strain Hardening of Massive Forming Components by Means of Martensite Generation: Bernd-Arno Behrens[1]; *Julian Knigge*[1]; [1]Institute of Metal Forming and Metal-Forming Machines

4:15 PM
Machinable Trialcium Phosphate / CaTiO3 Composites: *Celaletdin Ergun*[1]; [1]Istanbul Technical University

4:30 PM
Some Studies on Performance of a Natural Polymer Media for Abrasive Flow Machining: *S. Rajesha*[1]; Apurbba Kumar Sharma[1]; Pradeep Kumar[1]; [1]Indian Institute of Technology Roorkee

4:45 PM
Surface Characterization of Laser Machined and Electropolished Metal Micro-Parts: *Lysle Serna*[1]; Bradley Jared[1]; Brad Boyce[1]; Gerald Knorvosky[1]; [1]Sandia National Labs

5:00 PM
Effect of Particle Size on the Microstructure and Hardness of TiC and ZrC Reinforced Al-4 wt. %Cu Metal Matrix Composites Fabricated by a Novel Casting Method: *Hulya Kaftelen*[1]; Lütfi Öveçoglu[1]; Hani Henein[2]; Necip Ünlü[1]; [1]Istanbul Technical University; [2]Alberta University

5:15 PM
Effects of Coil Configurations on Electromagnetic Tube Compression: *Jianhui Shang*[1]; Allen Jones[1]; Larry Wilkerson[1]; Steve Hatkevich[1]; [1]American Trim LLC

General Abstracts: Materials Processing and Manufacturing Division: Modeling, Simulation, Ceramics, and Chemical 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: Integrated Computational Materials Engineering 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: Corbett Battaile, Sandia National Laboratories; Joy Forsmark, Ford Motor Company; Amit Misra, Los Alamos National Laboratory

Thursday PM
March 3, 2011
Room: 7B
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
A Finite Element-Phase Field Study of Solid State Phase Transformation: Coarsening of Coherent Precipitates and Instability of Multilayer Thin Films: *Mohsen Asle Zaeem*[1]; Haitham El Kadiri[1]; Sinisa Mesaroivc[2]; Paul Wang[1]; Mark Horstemeyer[1]; [1]Mississippi State University; [2]Washington State University

2:15 PM
Developing a New Method for Prediction of the Inhomogeneity of Stored Energy Based on the Recrystallization Phenomenon: *Peyman Saidi*[1]; [1]Ferdowsi University

2:30 PM
FEM Analysis of a Channel-Compression Process to Produce a Severe-Plastically Deformed Sheet: *Jong Jin Park*[1]; [1]Hongik University

2:45 PM
Investigation on Electrohydraulic Servovalve through a Finite Element Method: *Somashekhar S. Hiremath*[1]; M. Singaperumal[1]; [1]Indian Institute of Technology Madras

3:00 PM
Mathematical Modeling for Analysis of the Burden Distribution and Gas Flow: *Jong-in Park*[1]; Hun-je Jung[1]; Min-Kyu Jo[1]; Jeong-Whan Han[1]; [1]Inha university

3:15 PM
Development of a New Modeling Technique for Die Geometry for Extrusion of LCP Films: Arash Ahmadzadegan[1]; *Michael Zimmerman*[1]; Anil Saigal[1]; [1]Tufts University

3:30 PM
Microwave Drying of Silica Sand: Modeling, Kinetics, and Energy Consumption: Yu Li[1]; Ying Lei[1]; Hao Niu[1]; Libo Zhang[1]; *Jinhui Peng*[1]; Huilong Luo[1]; Wenwen Qu[1]; [1]Key Laboratory of Unconventional metallurgy, Ministry of Education

3:45 PM
Structural and Thermal Stability of Microwave Synthesized Nano-Hydroxyapatite: M Bilal Khan[1]; Rafaqat Hussain[2]; *Muhammad Aftab Akram*[1]; Nida Iqbal[2]; [1]National University of Sciences and Technology (NUST), SCME; [2]COMSATS

4:00 PM
A Study on the Hydrophobicity and Investigation of Physical and Chemical Properties of Produced Zinc Borate: *Mehmet Burcin Piskin*[1]; Nil Baran Acarali[1]; Nurcan Tugrul[1]; Emek Moroydor Derun[1]; Ozlem Akgun[1]; [1]Yildiz Technical University

4:15 PM
Investigation of Reaction Conditions Effecting Hydrophobicity on Zinc Borate Yield: *Sabriye Piskin*[1]; Nil Baran Acarali[1]; Emek Moroydor Derun[1]; Nurcan Tugrul[1]; [1]Yildiz Technical University, Chemical Engineering Department

4:30 PM
The Role of Energy Sinks in Discontinuous Reactions and the Approach to Equilibrium in U-Nb Alloys: *Robert Hackenberg*[1]; Kester Clarke[1]; Robert Forsyth[1]; Ann Kelly[1]; Tim Tucker[1]; Pallas Papin[1]; Robert Field[1]; Heather Volz[1]; Geralyn Hemphill[1]; [1]Los Alamos National Lab

4:45 PM
Effect of Iron Additions on the Shape Memory Characteristics of Cu-Al Alloys: *T.N. Raju*[1]; Sampath Vedamanickam[1]; [1]Indian Institute of Technology Madras

5:00 PM
Improved Wear Resistance by DLC Coatings: *Andreas Krause*[1]; [1]IPH - Institut für Integrierte Produktion

5:15 PM
Asphalt Fatigue Damage Characterization Based on Laser Scanning Detection and Energy Dissipation: *Hossein Ajideh*[1]; James Earthman[1]; [1]University of California, Irvine

General Abstracts: Structural Materials Division: Microstructure

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: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Judith Schneider, Mississippi State University

Thursday PM
March 3, 2011
Room: 11B
Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Grain Size Dependence of Fracture Toughness of Fine Grained Alumina Sintered by Spark Plasma Sintering: *Wenlong Yao*[1]; Jing Liu[1]; Troy Holland[1]; Lin Huang[1]; Yuhong Xiong[1]; Julie Schoenung[1]; Amiya Mukherjee[1]; [1]University of California, Davis

2:15 PM
Formation and Thermal Stability of Nanosized Oxide Precipitates in NiAl Alloys: *Yongdeog Kim*[1]; Hyon-Jee L. Voigt[1]; Zuhair A. Munir[2]; Brian D. Wirth[3]; [1]University of California, Berkeley; [2]University of California, Davis; [3]University of California, Berkeley/University of Tennessee

2:30 PM
The Effect of Hafnium Addition on the Microstructure and Phase Equilibria in Cr-Si Based Alloys: *Amir Nanpazi*[1]; Panos Tsakiropoulos[1]; [1]IMMPETUS, Department of Engineering Materials, The University of Sheffield, Sir Robert Hadfield Building, Mappin Street, Sheffield S1 3JD, England, UK

2:45 PM
Microstructural Properties of Gamma Titanium Aluminide Manufactured by Electron Beam Melting: *Sanna Fager Franzén*[1]; Joakim Karlsson[1]; Ryan Dehoff[2]; Ulf Ackelid[1]; Orlando Rios[2]; Chad Parish[2]; William Peter[2]; [1]Arcam AB; [2]Oak Ridge National Laboratory

3:00 PM
Microstructure of a' Martensites in Ti-V-Al Alloys Studied by High-Resolution Transmission Electron Microscopy: *Kazuhisa Sato*[1]; Hiroaki Matsumoto[1]; Akihiko Chiba[1]; Toyohiko Konno[1]; [1]Tohoku University

3:15 PM
Precipitation and Growth of Omega Phase and Alpha Phase during Aging of Alpha-Beta Solution Treated Ti-6.8Mo-4.5Fe-1.5Al: *Jana Smilauerova*[1]; Milos Janecek[1]; Radomir Kuzel[1]; Petr Harcuba[1]; Josef Strasky[1]; Henry Rack[2]; [1]Charles University; [2]Clemson University

3:30 PM
Abnormal Phase Stability in a Ru-Containing Ni-Base Single Crystal Superalloy: Jingyang Chen[1]; Yanhui Chen[1]; Yunrong Zheng[2]; Zuqing Sun[1]; *Qiang Feng*[1]; [1]University of Science and Technology Beijing; [2]Beijing Institute of Aeronautical Materials

3:45 PM Break

4:00 PM
Comparison of Point-Defect Evolution in Irradiated UO2 and Ceo2 from Molecular Dynamics Simulation: *Dilpuneet Aidhy*[1]; Dieter Wolf[1]; [1]Argonne National Laboratory

4:15 PM
A New Method for Constructing Coincident Site Lattices for Cubic Crystals: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

4:30 PM
Martensite Strain Induced Phase Transformation and Corrosion Resistance of AISI 201 and AISI 304 Stainless Steel: *Viviane de Morais*[1]; [1]MAHLE

4:45 PM
Mechanical Twinnning Investigation in a 17.5%Mn TWIP Steel. A Physically-Based Phenomenological Model: *Ayoub Soulami*[1]; Xin Sun[1]; Moe Khaleel[1]; [1]Pacific Northwest National Laboratories

5:00 PM
Mechanical Properties and Strain Mechanisms Analysis in Ti-5553 Titanium Alloy: *Timothée Duval*[1]; Patrick Villechaise[1]; Sandra Andrieu[2]; [1]Institut P' - ENSMA; [2]Messier Dowty

5:15 PM
Creep Studies of Misoriented Grains in René N4 and GTD 444 Superalloy Bicrystals: *Kaitlin Gallup*[1]; Tresa Pollock[1]; [1]UCSB

5:30 PM
Static Recrystallization Behavior of Co-Ni-Cr-Mo Superalloy after Cold Rolling and Subsequent Heat Treatment: *Takuma Otomo*[1]; Shingo Kurosu[1]; Yunping Li[1]; Hiroaki Matsumoto[1]; Shigeo Sato[1]; Yuichiro Koizumi[1]; Kazuaki Wagatsuma[1]; Akihiko Chiba[1]; [1]Institute for Materials Reseach, Tohoku University, Japan

5:45 PM
Oxidation Behavior of Copper Thin Films with Nanoscale Twins: *Pi-Hua Lee*[1]; Chan Tsung-Cheng[1]; Liao Chien-Neng[1]; [1]Department of Materials Science and Engineering, National Tsing-Hua University

General Abstracts: Structural Materials Division: Processing

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: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Judith Schneider, Mississippi State University

Thursday PM — Room: 6A
March 3, 2011 — Location: San Diego Conv. Ctr

Session Chair: To Be Announced

2:00 PM
Using Resistance Heating to Create Full-Scale API RP2Z CTOD Samples: Morgan Gallagher[1]; *Sudarsanam Suresh Babu*[2]; Jerry Gould[1]; [1]Edison Welding Institute; [2]The Ohio State University

2:15 PM
Brazing of Titanium Alloys Using Low-melting Eutectic Zr-Ti-Ni(Cu) Filler Alloys: *Dong-Myoung Lee*[1]; Gerhard Welsch[1]; Yong-Soo Kim[2]; Seung-Yong Shin[3]; [1]Case Western Reserve University; [2]Yosan Eng.; [3]KITECH

2:30 PM
Development of Coatings on Titanium Aluminide Alloys Using Chemical and Physical Deposition Methods: *Patrick Masset*[1]; Laurent Bortolotto[2]; Ludovic Charpentier[1]; Michael Schütze[3]; Hans Jürgen Seifert[1]; [1]TU Bergakademie Freiberg; [2]Dechema; [3]DECHEMA

2:45 PM
Precipitation-Strengthened Ferritic Steels with Increased Strength and Ductility: *Monica Kapoor*[1]; Semyon Vaynman[1]; Gautam Ghosh[1]; Dieter Isheim[1]; Yip-Wah Chung[1]; [1]Northwestern University

3:00 PM
Role of Heat Treatments on the Mechanical Properties of Dual-Phase Steel Sheet: *Hossein Seyedrezai*[1]; Keith Pilkey[1]; Doug Boyd[1]; [1]Queen's University

3:15 PM
Friction Stir Processing of Cast Superalloys: *Edward Chen*[1]; Bharat Jasthi[2]; Douglas Bice[1]; William Arbegast[2]; Matthew Heringer[2]; Stanley Howard[2]; [1]Transition45 Technologies, Inc.; [2]South Dakota School of Mines and Technology

3:30 PM
Characterization of Ni-Base Superalloy Die Materials: *Alvaro Mendoza Jr.*[1]; Krishna Ganesan[1]; Gerhard Fuchs[1]; [1]University of Florida

3:45 PM Break

4:00 PM
Metal (Fe-Al)- Fullerene Nanocomposites made by Powder Metallurgy Methods: *Hector Calderon*[1]; [1]ESFM-IPN

4:15 PM
Preparing Titanium Powders by Calcium Vapor Reduction Process of Titanium Dioxide: *Baoqiang Xu*[1]; Bin Yang[1]; Heli Wan[1]; Wei Sen[1]; Yongnian Dai[1]; Dachun Liu[1]; [1]National Engineering Laboratory for Vacuum Metallurgy, Kunming

4:30 PM
Partial Melting Homogenization of Thick Section Austempered Ductile Iron Containing 2% Mn: Seid Ata Sheikholeslami[1]; Mahmoud Nili-Ahmadabadi[1]; *Jafar Rassizadehghani*[1]; [1]University of Tehran

4:45 PM
Formability Evaluation of TRIP Steel Sheets: *Joong Eun Jung*[1]; Jong Bae Jeon[1]; Young Won Chang[1]; [1]POSTECH

5:00 PM
Environment -Friendly Corrosion Inhibition of A20 Carbon Steel By 2-Mercaptobenzimidazole For Citric Acid Pickling: Yunyun Zhang[1]; Daowu Yang[1]; Zhuo Ren[1]; Jin-hui Li[1]; [1]Changsha University of Science and Technology

5:15 PM
Synthesis and Application of Imidazolinylquaternary-Ammonium-Salt Corrosion Inhibition for Hydrochloric Acid Pickling: Yunyun Zhang[1]; Daowu Yang[1]; Yi Liu[1]; Yang Sun[1]; [1]Changsha University of Science and Technology

5:30 PM
Additive Manufacturing of Nickel-Base Superalloys: John Wooten[1]; *Ulf Ackelid*[2]; Frank Medina[3]; Shane Collins[4]; Ryan Wicker[3]; Larry Murr[3]; [1]CalRAM; [2]Arcam AB; [3]University of Texas El Paso; [4]Paramount Inc

Hydrometallurgy Fundamentals and Applications: Session II

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

Thursday PM
March 3, 2011
Room: 16A
Location: San Diego Conv. Ctr

Session Chair: Michael Free, University of Utah

2:00 PM
Investigations on the Mechanism of Acid Leaching of Alkali-Activated Ilmenite Concentrate and Titanium-Rich Slag: *Qian Xu*[1]; Yajun Fu[1]; Jianfeng Jin[1]; Jihong Du[2]; [1]Northeastern University; [2]Northwest Institute for Non-ferrous Metal Research

2:25 PM
Kinetics Study of Alkaline Decomposition of Rubidium Jarosite in Ca(OH)2 Media: Eduardo Cerecedo[1]; *Eleazar Salinas*[1]; Luis Longoria[2]; Francisco Carrillo[3]; Juan Hernández[1]; [1]Universidad Autónoma del Estado de Hidalgo; [2]National Institute of Nuclear Researches; [3]Universidad de Coahuila

2:50 PM
Leaching Behavior of Secondary Zinc Oxide Dusts in Ammonia Solutions: *Yang Yong Bin*[1]; Wang Wen Juan[1]; Jiang Tao[1]; Qian Li[1]; [1]Central South University

3:15 PM
Leaching of Gold in Acid Thiourea-Thiocyanate Solutions Using Ferric Sulfate as Oxidant: Xiyun Yang[1]; *Xichang Shi*[1]; Hui Xu[1]; Michael S Moats[1]; Jan D Miller[1]; Xiang Xiao[1]; Liwen Ma[1]; [1]Central South University

3:40 PM Break

3:55 PM
Studies on the Dissolution of Platinum Powder by Electro-Generated Chlorine in Hydrochloric Acid Solution: Min-Seuk Kim[1]; *Jae-chun Lee*[1]; Eun-Young Kim[1]; Jinki Jeong[1]; Banshi. D. Pandey[2]; [1]Korea Institute of Geoscience and Mineral Resources (KIGAM); [2]National Metallurgical Laboratory, CSIR

4:20 PM
Modeling of Cobalt and Nickel Extraction by Solvent Extraction in Sulfate Media with D2EHPA in Isoparaffin (17/21): *Clenilson Sousa Junior*[1]; Marisa Nascimento[2]; Ivan Masson[2]; Osvaldo Cunha[3]; [1]Federal Institute of Education, Science and Technology of Rio de Janeiro; [2]Centre for Mineral Technology - CETEM; [3]Federal University of Rio de Janeiro - UFRJ

Magnesium Technology 2011: Advanced Materials and Processing

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Thursday PM
March 3, 2011
Room: 6F
Location: San Diego Conv. Ctr

Session Chairs: Karl Kainer, Helmholtz-Zentrum Geesthacht; Venkata Anumalasetty, Carpenter Technology Corporation

2:00 PM
Characterization of Hot Extruded Mg/SiC Nanocomposites Fabricated by Casting: Sunya Nimityongskul[1]; *Noé Alba-Baena*[1]; Hongseok Choi[1]; Milton Jones[1]; Tom Wood[2]; Mahi Sahoo[3]; Roderic Lakes[1]; Sindo Kou[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison; [2]GS Engineering Inc; [3]CANMET Materials Technology Laboratory

2:20 PM
Effects of Silicon Carbide Nanoparticles on Mechanical Properties and Microstructure of As-Cast Mg-12wt.%Al-0.2wt.%Mn Nanocomposites: *Hongseok Choi*[1]; Hiromi Konishi[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

2:40 PM
Thermally-Stabilized Nanocrystalline Mg-Alloys: *Suveen Mathaudhu*[1]; Kristopher Darling[1]; Laszlo Kecskes[1]; [1]U.S. Army Research Laboratory

3:00 PM
TiNi Reinforced Magnesium Composites by Powder Metallurgy: *Ziya Esen*[1]; [1]Çankaya University

3:20 PM
Nanocrystalline Mg-Matrix Composites with Ultrahigh Damping Properties: *Babak Anasori*[1]; Shahram Amini[1]; Volker Presser[1]; Michel Barsoum[1]; [1]Drexel University

3:40 PM Break

4:00 PM
Effect of Fiber Reinforcement on Corrosion Resistance of Mg AM60 Alloy-based Composites in NaCl Solutions: *Qiang Zhang*[1]; Henry Hu[1]; [1]University of Windsor

4:20 PM
The Production of Powder Metallurgy Hot Extruded Mg-Al-Mn-Ca Alloy with High Strength and Limited Anisotropy: *Ayman Elsayed*[1]; Junko Umeda[1]; Katsuyoshi Kondoh[1]; [1]Osaka University

4:40 PM
Thermal Effects of Calcium and Yttrium Additions on the Sintering of Magnesium Powder: Paul Burke[1]; Chloe Petit[2]; Sonia Yakoubi[2]; *Georges Kipouros*[1]; [1]Dalhousie University; [2]ICAM

5:00 PM
Microstructure and Mechanical Properties of Solid State Recycled Mg Alloy Chips: *Kunio Matsuzaki*[1]; Youich Murakoshi[1]; Toru Shimizu[1]; [1]National Institute of Advanced Industrial Science and Technology

5:20 PM Presentation of the Best Poster Award 2011 by Eric Nyberg

Magnesium Technology 2011: Corrosion and Coatings

Sponsored by: The Minerals, Metals and Materials Society, TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, TNO Science and Industry; Sean Agnew, University of Virginia; Suveen Mathaudhu, US Army Research Laboratory; Neale Neelameggham, US Magnesium LLC

Thursday PM
March 3, 2011
Room: 10
Location: San Diego Conv. Ctr

Session Chairs: Robert McCune, Robert C.McCune and Associates LLC; Neale Neelameggham, US Magnesium LLC

2:00 PM
Salt Spray Corrosion of Mechanical Junctions of Magnesium Castings: Sabrina Grassini[1]; Paolo Matteis[1]; Giorgio Scavino[1]; Marco Rossetto[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

2:20 PM
Comparing the Corrosion Effects of Two Environments on As-Cast and Extruded Magnesium Alloys: *Holly Martin*[1]; M. Horstemeyer[1]; Paul Wang[1]; [1]Center for Advanced Vehicular Systems, Mississippi State University

2:40 PM
Influence of Lanthanum on the Corrosion Behaviour of Binary Mg-La Alloys: *Daniel Hoeche*[1]; Rosario Silva Campos[1]; Carsten Blawert[1]; Karl Ulrich Kainer[1]; [1]GKSS Research Centre

3:00 PM
Cryogenic Burnishing of AZ31B Mg Alloy for Enhanced Corrosion Resistance: *Z. Pu*[1]; Guang-Ling Song[2]; S. Yang[1]; O. Dillon, Jr.[1]; D. Puleo[1]; I. Jawahir[1]; [1]University of Kentucky; [2]GM Global Research &Development

3:20 PM
Advanced Conversion Coatings for Magnesium Alloys: *Syam Nibhanupudi*[1]; Alp Manavbasi[1]; [1]Metalast International

3:40 PM Break

4:00 PM
Development of Zirconium-Based Conversion Coatings for the Pretreatment of AZ91D Magnesium Alloy Prior to Electrocoating: *James Reck*[1]; Yar-Ming Wang[1]; Hong-Hsiang Kuo[1]; [1]General Motors

4:20 PM
Use of an AC/DC/AC Electrochemical Technique to Assess the Durability of Protection Systems for Magnesium Alloys: Sen Song[1]; *Robert C. McCune*[2]; Weidian Shen[1]; Yar-Ming Wang[3]; [1]Eastern Michigan University; [2]Robert C McCune & Associates LLC; [3]General Motors Company

4:40 PM
Effects of Oxidation Time on Micro-Aarc Oxidized Coatings of Magnesium Alloy AZ91D in Aluminate Solution: *Weiyi Mu*[1]; Zhengxian Li[1]; Jihong Du[1]; Ruixue Luo[1]; Zhengping Xi[1]; [1]Northwest Institute for Nonferrous Metal Research

5:00 PM
Composite Coatings Combining PEO Layer and EPD Layer on Magnesium Alloy: *Yongfeng Jiang*[1]; Huashan Yang[1]; Yefeng Bao[1]; [1]Hohai University

5:20 PM Presentation of the Best Poster Award 2011 in Room 6F

Magnetic Materials for Energy Applications: Experimental and Modelling Techniques for the Magnetocaloric Effect

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee; JSPS 147th Committee on Amorphous and Nanocrystalline Materials; Lake Shore Cyrotronics, Inc.; AMT&C
Program Organizers: Victorino Franco, Sevilla University; Oliver Gutfleisch, IFW Dresden; Kazuhiro Hono, National Institute for Materials Science; Paul Ohodnicki, National Energy Technology Laboratory

Thursday PM
March 3, 2011
Room: 11A
Location: San Diego Conv. Ctr

Session Chair: Francis Johnson, GE Global Research

2:00 PM Invited
First to Second Order Magnetocaloric Transition: on Correct Analysis of Experimental Data: *Daniel Fruchart*[1]; Mohamed Balli[1]; [1]CNRS - Institut Néel

2:25 PM Invited
Magnetocaloric Parameters from Measurements of Heat and Temperature: *Ramón Burriel*[1]; Elías Palacios[1]; [1]CSIC - Universidad de Zaragoza

2:50 PM Invited
Experimental Methods of the Magnetocaloric Effect Studies: *Youri Spichkin*[1]; [1]AMTC

3:15 PM Invited
First Principles Modeling of Magnetocaloric Gd5Ge4 Based Materials: *Durga Paudyal*[1]; Y. Mudryk[1]; V. K. Pecharsky[1]; K. A. Gschneidner, Jr.[1]; [1]The Ames Laboratory, U. S. Department of Energy

3:40 PM
Monte Carlo Simulations of the Magnetocaloric Effect and Exchange Bias Effect in Heusler Ni-Mn-Sb Alloys: *Vladimir Sokolovskiy*[1]; Vasiliy Buchelnikov[1]; Ivan Taranenko[1]; Sergey Taskaev[1]; Peter Entel[2]; [1]Chelyabinsk State University; [2]University of Duisburg-Essen

3:55 PM
Structural Entropy Contributions to the Total Magnetocaloric Effect in Materials Which Exhibit a First Order Transition: *Karl Gschneidner*[1]; Yaroslav Mudryk[1]; Vitalij Pecharsky[1]; [1]Iowa State University

4:10 PM
Environmentally Friendly New Air-Conditioning Magnetocaloric System: Christian Muller[1]; *Carmen Vasile*[2]; [1]Cooltech Applications; [2]INSA

Microstructural Processes in Irradiated Materials: Non-Metals

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Gary Was, University of Michigan; Thak Sang Byun, Oak Ridge National Laboratory; Shenyang Hu, Pacific Northwest National Laboratory; Dane Morgan, UW Madison; Yasuyoshi Nagai, Tohoku University

Thursday PM
March 3, 2011
Room: 3
Location: San Diego Conv. Ctr

Session Chairs: Ming Tang, Los Alamos National Laboratory; Yong Yang, University of Wisconsin-Madison

2:00 PM Invited
Radiation Stability of GFR Candidate Ceramics: *Yong Yang*[1]; Clayton Dickerson[1]; Jian Gan[2]; Todd Allen[1]; [1]University of Wisconsin-Madison; [2]Idaho National Laboratory

2:40 PM
Microstructure and Radiation Damage Tolerance of TiO2 Thin Films: *Mujin Zhuo*[1]; Engang Fu[1]; Wang Yongqiang[1]; Yingying Zhang[1]; Blas Uberuaga[1]; Amit Misra[1]; Michael Nastasi[1]; Quanxi Jia[1]; [1]Los Alamos national Lab

3:00 PM
Computational Studies of Radiation Damage near Grain Boundaries in TiO2: *Xian-Ming Bai*[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

3:20 PM
Interstitial Loading Effects during Irradiation in MgO: *Blas Uberuaga*[1]; Xian-Ming Bai[1]; [1]Los Alamos National Laboratory

3:40 PM Break

4:00 PM
Structure and Mechanical Properties of Swift Heavy Ion Irradiated Tungsten-bearing Delta-phase Oxides Y6W1O12 and Yb6W1O12: *Ming Tang*[1]; Thomas Wynn[1]; Maulik Patel[1]; Nathan Mara[1]; Kurt Sickafus[1]; [1]Los Alamos National Laboratory

4:20 PM
Atomistic and Rate Theory Modeling of Radiation Damage and Amorphization of Nanocrystalline Silicon Carbide: Narasimhan Swaminathan[1]; Dane Morgan[1]; *Izabela Szlufarska*[1]; [1]University of Wisconsin-Madison

4:40 PM
Microstructure and Mechanical Property Characterization of Self-Ion Irradiated 3C-SiC with Novel Micromachined Samples: *Chansun Shin*[1]; Hyung-ha Jin[1]; Suk Hoon Kang[1]; Junhyun Kwon[1]; Ji Yeon Park[1]; [1]KAERI

5:00 PM
TEM Observation of Crack Tip in Heavily Neutron Irradiated Ceramics: *Masashi Watanabe*[1]; Tatsuo Shikama[1]; Yoshiaki Tachi[2]; [1]Tohoku University; [2]Japan Atomic Energy Agency

5:20 PM
Proton Irradiation-Induced Creep Effects in Pyrolytic Carbon and Graphite: *Anne Campbell*[1]; Gary Was[1]; [1]University of Michigan

5:40 PM
Structural Modifications and Mechanical Degradation of Ion Irradiated Glassy Polymer Carbon: *Malek Abunaemeh*[1]; Mohameh Seif[1]; Abdalla Elsamadicy[2]; Claudiu Muntele[1]; Young Yang[3]; Daryush Ila[1]; [1]Alabama A&M University; [2]University of Alabama in Huntsville; [3]University of Wisconsin

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials X: Electrode, Ceramic, Optical, Spintronic, and Coating Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chih-Ming Chen, National Chung Hsing University; Hans Flandorfer, University of Vienna; Sinn-Wen Chen, National Tsing Hua University; Jae-ho Lee, Hongik University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Clemens Schmetterer, TU Bergakademie Freiberg; Ikuo Ohnuma, Tohoku University; Chao-Hong Wang, National Chung Cheng University

Thursday PM
March 3, 2011
Room: 7A
Location: San Diego Conv. Ctr

Session Chairs: Clemens Schmetterer, TU Bergakademie Freiberg; Wojciech Gierlotka, YuanZe University

2:00 PM Invited
Electroless Nickel Plating on Carbon Fibers for Ultra Porous Nickel Electrode: So-Young Chun[1]; So-Youn Park[1]; *Jae-Ho Lee*[1]; [1]Hongik University

2:25 PM Invited
Phase Stabilities and Equilibria in the Lithium–Manganese–Oxygen System: *Damian Cupid*[1]; Toni Lehmann[1]; Olta Cakaj[2]; Hans Seifert[1]; [1]Freiberg University of Mining and Technology; [2]University of Tirana

2:50 PM
Crystallization Kinetics of SiO2-Bi2O3 Glass-Ceramics: *Guo Hongwei*[1]; [1]Shaanxi University of Science and Technology

3:05 PM
Phase-Transformation Induced Changes in the Optical and Electrical Properties of W0.95Ti0.05O3 Films: *Narasimha Kalidindi*[1]; C. Ramana[1]; [1]University of Texas El Paso

3:20 PM Break

3:40 PM
Transparent Conductive Properties of Manganese Zinc Oxide Film Deposited by Chemical Bath Deposition: *Jau-Shiung Fang*[1]; W. Luo[1]; C. Hsu[1]; J. Yang[1]; T. Tsai[1]; [1]National Formosa University

3:55 PM
Electroplating of Nano Silica Dispersed Permalloy Composite Coating: Myung-Won Jung[1]; Jong-Hun Kim[1]; Heung-Yeol Lee[2]; Tai-Hong Yim[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Institute of Industrial Technology

4:10 PM
Optical Properties of the Al2O3-NiP Spectrally Selective Composite Coatings Preparated by Electroless Composite Coating: *Ting Kan Tsai*[1]; Chiao Yin Hsu[1]; Shun Jen Hsueh[1]; Jiing Herng Lee[1]; Jau Shiung Fang[1]; [1]National Formosa University

4:25 PM
Plasma Spray Deposition of CdS Thin Films via Liquid Precursor Route: *Raghavender Tummala*[1]; Ramesh Guduru[1]; Pravansu Mohanty[1]; [1]University of Michigan

Recycling General Session: Building Materials

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizer: Joseph Pomykala, Argonne National Laboratory

Thursday PM
March 3, 2011
Room: 12
Location: San Diego Conv. Ctr

Session Chairs: Jeffrey Spangenberger, Argonne National Laboratory; Joseph Pomykala, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM
The Effect of Binder and Pressure in the Preparation of Recycled Soda Lime Silica Glass Composite Bodies: *Adele Garkida*[1]; Jiann-Yang Hwang[2]; Xiaodi Huang[2]; [1]Ahmadu Bello University; [2]Michigan Technological University

2:25 PM
Production of Rock Wool from Ornamental Rock Wastes: *Joner Alves*[1]; Girley Rodrigues[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]University of Sao Paulo

2:45 PM
Recycling of Fluorescent Lamp Glass into Clayey Ceramic: *Alline Morais*[1]; Thais Caldas[1]; Sergio Monteiro[1]; Carlos Maurício Vieira[1]; [1]State University of the North Fluminense

3:05 PM
Clayey Ceramic Incorporated with Powder from the Sintering Plant of a Steel-Making Industry: *Mônica Ribeiro*[1]; Sergio Monteiro[2]; Carlos Vieira[2]; [1]Fluminense Federal Institute of Education, Science and Technology; [2]State University of the North Fluminense

3:25 PM
Recycling of Ornamental Rock Waste into Clayey Ceramics: *Carlos Maurício Vieira*[1]; Mariane Costalonga de Aguiar[1]; Sergio Neves Monteiro[1]; [1]State University of the North Fluminense

3:45 PM Break

3:55 PM
Use of Ash from the Incineration of Urban Garbage into Clayey Ceramic: Carlos Maurício Vieira[1]; *Ana Paula de Sá*[1]; Jhonatas Vitorino[1]; Sergio Monteiro[1]; [1]State University of the North Fluminense

4:15 PM
Gas Emission Analysis of Clay Incorporated with Rejected Sanitary Ware Mass: *Shirley Cosin*[1]; Francisco Diaz[1]; Vanessa Souza[2]; Roberto Faria Jr.[2]; [1]Escola Politécnica da Universidade de São Paulo; [2]Universidade Estadual do Norte Fluminense Darcy Ribeiro

4:35 PM
Purification of Vegetable Oils Post-Consumption Residential and Commercial Clay with Two Brazilian: Elaine Araújo[1]; *Edcleide Araújo*[1]; Marcus Fook[1]; Shirley Cavalcanti[1]; Divânia Silva[1]; Arthur Mesquita[1]; [1]Federal University of Campina Grande

4:55 PM
Influence of Fly Ash and Fluorgypsum on Hydration Heat and Mortar Strength of Cement: *Daowu Yang*[1]; Yan Yao[1]; Julan Zeng[1]; Yi Liu[1]; [1]Changsha University of Science & Technology

5:15 PM
Study on Solidification/Sintering Brick Making with EMD Residue: Wang Jia[1]; *Peng Bing*[1]; Chai Li-yuan[1]; Zhang Jin-long[1]; Zhang Qiang[1]; [1]Central South University

Refractory Metals 2011: Molybdenum, Niobium, Tantalum, Rhenium

Sponsored by: The Minerals, Metals and Materials Society, TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Jim Ciulik, University of Texas, Austin

Thursday PM
March 3, 2011
Room: 19
Location: San Diego Conv. Ctr

Session Chairs: Todd Leonhardt, Rhenium Alloys; Thomas Bieler, Michigan State University

2:00 PM
Dynamic Abnormal Grain Growth and the Production of Single Crystals in Tantalum: Nicholas Pedrazas[1]; Daniel Worthington[1]; *Eric Taleff*[1]; Elizabeth Holm[2]; [1]University of Texas Austin; [2]Sandia National Laboratories

2:20 PM
Factors Affecting Dynamic Abnormal Grain Growth in Molybdenum: *Daniel Worthington*[1]; Eric Taleff[1]; [1]University of Texas Austin

2:40 PM
Effects of Processing Methods on the Properties and Structure of Molybdenum: *Gary Rozak*[1]; Dincer Bozkaya[1]; Mark Zody[1]; [1]H. C. Starck Inc.

3:00 PM
Hot Extruding Powder Metallurgy Rhenium: *Todd Leonhardt*[1]; James Ciulik[2]; [1]Rhenium Alloys Inc.; [2]University of Texas Austin

3:20 PM Break

3:40 PM
Work Hardening Behavior of Commercial-Purity Rhenium Sheet: *James Ciulik*[1]; Todd Leonhardt[2]; [1]University of Texas Austin; [2]Rhenium Alloys, Inc.

4:00 PM
Textural Evolution during Dynamic Recovery and Static Recrystallization of Molybdenum: *Sophie Primig*[1]; Harald Leitner[1]; Wolfram Knabl[2]; Alexander Lorich[2]; Helmut Clemens[1]; Roland Stickler[3]; [1]Montanuniversität Leoben; [2]Plansee Metall GmbH; [3]University of Vienna

4:20 PM
Recrystallization Microstructures in High Purity Niobium: *Shreyas Balachandran*[1]; Richard Griffin[2]; Karl Hartwig[1]; [1]Texas A&M University; [2]Texas A&M University Qatar

4:40 PM
Simulation of Tensile Testing of Single Crystal Niobium Using an Optimized FEM: *Payam Darbandi*[1]; Farhang Pourboghrat[1]; Derek Baars[1]; Thomas Bieler[1]; Chris Compton[1]; [1]Michigan State University

5:00 PM
The Swelling, Microstructure, and Hardening of LCAC, TZM, and ODS Molybdenum Following Neutron Irradiation: *Brian Cockeram*[1]; R. Smith[1]; L. Snead[2]; [1]Bechtel-Bettis; [2]Oak Ridge National Laboratory

5:20 PM
Micron-Scale Resistance Spot Welding of Mo-Re Alloys: *Tongguang Zhai*[1]; Jianhui Xu[2]; [1]University of Kentucky; [2]Smith International Inc.

Sensors, Sampling, and Simulation for Process Control: Steel Processing; Online Sensors

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Brian Thomas, University of Illinois at Urbana-Champaign; Andrew Campbell, WorleyParsons; Srinath Viswanathan, University of Alabama; Lifeng Zhang, Missouri University of Science and Technology; James Yurko, 22Ti LLC; Thomas Battle, Midrex Technologies

Thursday PM
March 3, 2011
Room: 13
Location: San Diego Conv. Ctr

Session Chairs: James Yurko, 22Ti LLC; Robert Hyers, University of Massachusetts Amherst

2:00 PM Introductory Comments

2:05 PM
High Impact Computer Integrated Level 2 Melt Shop Management Systems: *John Middleton*[1]; [1]Multon Process Technology Ltd

2:30 PM
Analysis of the Transient Phenomena during Steel Continuous Casting through the On-Line Detection Data: *Lifeng Zhang*[1]; [1]Missouri University of Science and Technology

2:55 PM
Advancements in Process Optimization and Process Control in the Youngstown, Ohio Melt Shop of V&M Star: *Eric Schmidt*[1]; [1]Vallourec Research Aulnoye

3:20 PM
Use of Statistical Process Control in the Manufacture of HSLA Line Pipe: Richard Hill[1]; *Felipe Ramirez*[2]; [1]Consultant ; [2]Consultant

3:45 PM Break

4:05 PM
High-Temperature Sensors from Aerospace: *Robert Hyers*[1]; [1]University of Massachusetts

4:30 PM
Rugged, Verifiable In-Situ Oxygen Analyzers for Combustion Optimization in Steel Reheat Operations and Process Chemical Production: *Yvonne Boltz*[1]; Eric Boltz[1]; Justin Clark[1]; [1]Marathon Monitors Inc.

4:55 PM
High Performance Wireless Sensors System for Structural Health Monitoring: *Gerges Dib*[1]; Janardhan Padiyar[2]; Lassaad Mhamdi[1]; Nizar Lajnef[1]; Tariq Khan[1]; Jung-Wuk Hong[1]; Lalita Udpa[1]; Krishnan Balasubramaniam[2]; [1]Michigan State University; [2]IIT Madras

Silicon Production, Purification and Recycling for Photovoltaic Cells: Session II

Sponsored by: The Minerals, Metals and Materials Society, TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Anne Kvithyld, SINTEF; Gregory Hildeman, Consultant; Gabriella Tranell, Norwegian University of Science and Technology (NTNU); Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

Thursday PM
March 3, 2011
Room: 14A
Location: San Diego Conv. Ctr

Session Chair: Shadia Ikhmayies, Al Isra University

2:00 PM
Review of Developments in Production of Silicon for Photovoltaics: *David Lynch*[1]; Wade Ben[1]; Xiaoyang Ji[1]; Feng Jiang[1]; Alex Salce[1]; Evan Morey[1]; Yubo Jiao[1]; [1]University of Arizona

2:20 PM
Distribution Measurements of Dopants in Compensated Silicon Ingots by Fast-Flow High Resolution Glow Discharge Mass Spectrometry: Xinwei Wang[1]; *Karol Putyera*[1]; Johnny Liu[1]; Dominic Leblanc[2]; [1]Evans Analytical Group LLC; [2]Becancour Silicon Inc.

2:40 PM
Preparation of High Purity Silicon by Electrolysis-Vacuum Distillation: Jidong Li[1]; Mingjie Zhang[1]; Zhuo Zhang[1]; *Yaowu Wang*[1]; [1]Liaoning University of Science and Technology

3:00 PM
Effect of Calcium Addition and Solidification Conditions on the Microstructure of Metallurgical Grade Silicon: *Yulia Meteleva-Fischer*[1]; Yongxiang Yang[1]; Rob Boom[1]; [1]Delft University of Technology

3:20 PM
Purification of Silicon by Electron Beam Melting Technique: *Takashi Nagai*[1]; Tomoki Kageyama[1]; Masafumi Maeda[1]; [1]The University of Tokyo

3:40 PM Break

4:00 PM
STRC's Process for Producing Low Cost Solar Silicon: *David Lynch*[1]; [1]Solar Technology Research Corporation

4:20 PM
The Rate of Boron Elimination from Molten Silicon by Slag and Cl_2 Gas Treatment: *Hiroshi Nishimoto*[1]; Kazuki Morita[1]; [1]The University of Tokyo

4:40 PM
Silicon Surface Texturing by Electro-Deoxidation of a Thin Silica Layer in Molten Salt: Eimutis Juzeliunas[1]; Antony Cox[1]; *Derek Fray*[1]; [1]University of Cambridge

5:00 PM
Solid Oxide Membrane Process for Solar Grade Silicon Production Directly from Silicon Dioxide: *Alexander Roan*[1]; Soobhankar Pati[1]; Soumendra Basu[1]; Uday Pal[1]; [1]Boston University

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
Feb 28-Mar 2, 2011

Room: Exhibit Hall
Location: San Diego Conv. Ctr

A Low Cost Method for Manufacturing of Aluminum/Alumina Composite by Anodizing and CRB Process: Roohollah Jamaati[1]; *Mohammad Reza Toroghinejad*[1]; E. Zahrani[1]; [1]Isfahan University of Technology

A Model for Diffusion Bonding of Cu and Al Plate by Hot Compression: *Yong-Shin Lee*[1]; Sang-Hun Yoon[1]; Sangmok Lee[2]; [1]Kookmin University; [2]KITECH

A Study on the Characteristics of Truck Materials Using Structural Steel: *Sung Cheol Yoon*[1]; [1]Korea Railroad Research Institute

A Study on the Effect of Sintering Atmosphere on the Microstructural Properties of Injection Molded T42 High-Speed Steel: *Kyoung-Rok Do*[1]; Sung-hyun Choi[1]; Jinhwa Kim[1]; Young-Sam Kwon[2]; Young-Sam Kwon[2]; Kwon-Koo Cho[1]; In-Shup Ahn[1]; [1]Gyeongsang National University; [2]Cetatech, Inc

A Study on the Structural Safety of the High-Speed Railroad: *Sung Cheol Yoon*[1]; Jeongguk Kim[1]; Joon Hyung Ryu[1]; Kang Youn Choe[1]; Gyeong Hoan Park[2]; [1]Korea Railroad Research Institute; [2]Hyundai Rotem

Abnormal Grain Growth in Alloy 2195 Friction Stir Welds: *Anupam Kundu*[1]; Tony Reynolds[1]; [1]University of South Carolina

Aerosol Route Synthesis of Lithium Borate Spheres Using Lithium Nitrate and Boric Acid Solution: *Burcak Ebin*[1]; Sebahattin Gurmen[1]; Cuneyt Arslan[1]; [1]Istanbul Technical University

Aging Effect of Aluminized Coating Layer for Ni-Base Superalloy: *Tae Sun Jo*[1]; Jeong Hun Lim[1]; Dae Kyung Kim[1]; Young Do Kim[1]; [1]Hanyang University

An Empirical Model of Rehydration/Rehydroxylation Kinetics for Archaeological Ceramics: *Patrick Bowen*[1]; Timothy Scarlett[1]; Jaroslaw Drelich[1]; [1]Michigan Technological University

An Investigation of the Electrochemical Properties of TiAlCrN PVD Coated in STS304: *Min-Seok Moon*[1]; Kee-Do Woo[2]; Chan-Won Kwak[3]; Jin-Won Han[3]; Myeong Han Yoo[2]; Dae Up Kim[4]; [1]Chonbuk National University, Jeonju Institute of Machinery Carbon Composites; [2]Chunbuk National University; [3]Se-Won Hard Facing Co., Ltd.; [4]KITECH

An Investigation of Wire Drawing of Hyper-eutectoid Steel Wires: *Byung In Jung*[1]; [1]POSCO

Analysis of Human Osteoporosis Compact Bones by Neutron Scattering and X-Ray Diffraction Methods: *Yong Choi*[1]; A. Pirogov[1]; Doo Jin Baik[1]; E. J. Shin[1]; B.S. Seong[1]; [1]Sunmoon University

Application of the Creep Continuum Damage Mechanics Unified Law for a Gas Turbine Rotor: *Ali Nayebi*[1]; Hamid Ranjbar[1]; [1]Iran

CALPHAD and DFT Assessment of Metallic Alloy Fuel Materials: *Saurabh Bajaj*[1]; Raymundo Arroyave[1]; Alexander Landa[2]; Patrice Turchi[2]; [1]Texas A&M University; [2]Lawrence Livermore National Laboratory

Characteristics of the Gas Dispersion Generated through a Jet Sparger in AqueousMedia: RamiroGarcia[1]; *FranciscoTavera*[1]; [1]UniversidadMichoacana

Characterization and Synthesis of Adsorption Material with Hematite and Polystyrene: *He Dewen*[1]; Zhou Huannian[1]; [1]Central South University

CO2-Corrosion of Steels Exposed to Saline Water Environment: *Anja Pfennig*[1]; [1]HTW Berlin

Coarsening of Beta´ Precipitates in an Isothermally-Aged Fe75-Ni10-Al15 Alloy: Orlando Soriano Vargas[1]; *Victor Lopez-Hirata*[2]; Hector Dorantes-Rosales[2]; Maribel Saucedo-Muñoz[2]; Erika Avila-Davila[3]; Susana Lezama-Alvarez[2]; [1]Universidad Autonoma del Estado de Mexico; [2]Instituto Politecnico Nacional (ESIQIE); [3]Instituto Tecnologico de Pachuca

Combined Processing of ECAP and Cold Rolling to Enhance the Performance of Metallic Materials: *Hiroyuki Miyamoto*[1]; [1]Doshisha University

Composition Control of CaO-MgO-Al2O3-SiO2 and CaS Inclusions in Pipe Line Steel: *Suzhou Wu*[1]; Jiongming Zhang[2]; Pan Gao[2]; Zhizheng Li[2]; [1]Wuhan University of Science and Technology; [2]University of Science and Technology Beijing

Correlation of Porosity Detected by Computed Tomography and Fatigue Strength of Aluminium Alloys: Thomas Pabel[1]; Georg Geier[1]; Daniel Habe[1]; Joerdis Rosc[1]; Peter Schumacher[1]; Tose Petkov[1]; [1]Austrian Foundry Research Institute

Determination of Coating Thickness of Anti-Fingerprint Steel Coils Using Ultraviolet Spectra: *Chi-Hyuck Jun*[1]; Yong Sun Shim[1]; Sang Moo Hwang[1]; [1]POSTECH

Development and Characterization of Milled Silver Powder Addition to Polypropylene Feedstock for Injection Molding: *Kübra Yumakgil*[1]; A. Umut Söyler[1]; Gizem Yilmaz[1]; Candan Tamerler[1]; Burak Özkal[1]; [1]Istanbul Technical University

Development on Management Information System on Cleaner Production Assessment in Electrolytic Aluminum Industry: *He Dewen*[1]; Liu Lei[1]; Zhou Huangnian[1]; [1]Central South University

Diffusion Bonding Process for Aerospace Components: *Ho-Sung Lee*[1]; Jong-Hoon Yoon[1]; Dong-Hyuk Shin[2]; [1]Korea Aerospace Research Institute; [2]Hanyang University

Effect of Beam Width on Melt Pool Geometry and Solidification Microstructure in Beam-Based Solid Freeform Fabrication: *Srikanth Bontha*[1]; Nathan Klingbeil[2]; [1]Temple University; [2]Wright State University

Effect of Cooling Rates and Mn Content on Grain Boundary Serration of Silicon Steel: Xianyong He[1]; *Qin Peng*[1]; Quanzhi Sun[1]; Lei Wang[1]; Changjiang Song[1]; Qijie Zhai[1]; [1]Shanghai University

Effect of Magnesium Ion on Electrodeposited Zinc: *Gang Xie*[1]; Yu Xiaohua[1]; Li Rongxing; [1]Technology Center of Yunnan Metallurgy Group Co.Ltd.

Effect of Microstructure Change on Magnetic Property of Nd-Fe-B Sintered Magnets: *Jin Woo Kim*[1]; Se Hoon Kim[1]; Dae-Gun Kim[1]; Young Do Kim[1]; [1]Hanyang University

Effect of Ni Addition on the Production of As-Cast Bainitic Ductile Iron: *Alex Ossa*[1]; Sandra Murcia[1]; Marco Paniagua[1]; [1]Eafit University

Effect of Predeformation and Heat Treatment Conditions in the Modified SIMA Process on Microstructural of a New Developed Super High-Strength Aluminum Alloy Modified by Al-8B Grain Refiner: Mohammad Alipour[1]; Masoud Emamy[1]; *Jafar Rasizadeh*[1]; Mostafa Karamouz[1]; Mortaza Azarbarmas[1]; [1]Kargar Street

POSTERS

Effect of Pulse Magnetic Field on Normal Grain Growth of Grain Oriented Silicon Steels during Primary Recrystallization Annealing: *Qiangqiang Xia*[1]; Lijuan Li[1]; Junjun Huang[1]; Lihua Liu[1]; Qijie Zhai[1]; [1]School of Materials Science and Engineering, Shanghai University

Effect of Soldering Flux in Sn3.0Ag0.5Cu on Electrochemical Migration: *Junghwan Bang*[1]; [1]Korea Institute of Industrial Technology(KITECH)

Effect of Tungsten on the Microstructure and Mechanical Properties of the Ni-Base Superalloy Inconel 740: *Sung-yong Lee*[1]; Kyoung Soo Shin[1]; Sun Jin Kim[1]; [1]Hanyang Univ.

Effects of Al–5Ti–1B Grain Refiner on The Structure, Hardness and Tensile Properties of Al-12Zn-3Mg-2.5Cu Aluminum Alloy: Mohammad Alipour[1]; Masoud Emamy[2]; *Jaafar Rasizadeh*[1]; Mortaza Azarbarmas[2]; Mostafa Karamouz[2]; [1]Kargar street; [2]Tehran University

Effects of Silicon Content and Cooling Rate on Distribution and Size of Inclusion in Silicon Steel Thin Strip: *Qin Peng*[1]; Lei Wang[1]; Xianyong He[1]; Rong Yang[1]; Changjiang Song[1]; Qijie Zhai[1]; [1]Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University

Electrical Properties of SiOC Low-k Films: *Teresa Oh*[1]; [1]Cheongju University

Electron Backscatter Diffraction of Ni and Cu Powder Particles Impacted at High Velocity: *Yu Zou*[1]; Eric Irissou[2]; Jean-Gabriel Legoux[2]; Stephen Yue[1]; [1]McGill University; [2]Industrial Materials Institute (IMI), National Research Council Canada (NRC)

Electron Beam Melting and Recycling of Hafnium: *Katia Vutova*[1]; Vania Vassileva[1]; Georgi Mladenov[1]; Elena Koleva[1]; Tirthalli Prakash[2]; Nagegownivari Munirathnam[2]; [1]Institute of electronics, Bulgarian Academy of Sciences; [2]Centre for Materials for Electronics technology

Electrosynthesis, Characterization, and Thermal Property Analysis of Pentakis(Diethylamido)Tantalum: *Yang Jian-guang*[1]; [1]Central South University

Evaluation of the Effect of Residual Silver in Copper on the Cementation Process by Factorial Design and Multiple Regression Analysis: *Duygu Agaogullari*[1]; Ismail Duman[1]; Özgül Keles[1]; [1]Istanbul Technical University

Evaluation of the Structural Strength in Railroad Car: *Sung Cheol Yoon*[1]; Jeongguk Kim[1]; [1]Korea Railroad Research Institute

Explosive Generation of High Pressures and Temperatures and Areas of Their Application: *Nikoloz Chikhradze*[1]; V. Kabulashvili[1]; [1]Georgian Technical University

Flux Effect on Electrochemical Migration of Sn3.0Ag0.5Cu Solders: *Junghwan Bang*[1]; Sehoon Yoo[1]; Changwoo Lee[1]; [1]Korea Institute of Industrial Technology(KITECH)

Generation and Control of Two Way Shape Memory Effect for SMA Coil Spring: *Kwang Jee*[1]; Jun Han[1]; Woo Jang[2]; Je Min Park[3]; [1]Korea Institute of Science and Technology; [2]Chosun Univ.; [3]Hongik University

High Temperature Corrosion of Ni-25Cr-20Co Alloys at 1073-1373 K in SO2 Gases: *JaeHo Lee*[1]; SangHwan Bak[1]; Minjung Kim[1]; DongBok Lee[1]; [1]Sungkyunkwan University

Horizontal Directional Solidification of Zn-Al Alloys: *Alicia Ares*[1]; Sergio Gueijman[2]; Carlos Schvezov[1]; [1]CONICET/FCEQyN-UNaM; [2]FCEQyN-UNaM

How to Control Strength and Grain Structure of 304L Stainless Steel during Forging: *Nathan Switzner*[1]; Jamie McQueen[1]; Wayne McLarren[1]; Robert Bergen[2]; Chris San Marchi[3]; [1]Honeywell FM&T; [2]Precision Metal Products; [3]Sandia National Labs - Livermore

Improved Dual Duct Boosted Suction (DDBS) System Doubles Pot Suction, Reduces Roof Emission: *Peter Klut*[1]; Erik Dupon[1]; [1]Danieli-Corus

Influence of Cr Addition on Crystallization Behaviour and GMI Properties of FeCoBSi Amorphous Wire: *Rajat Roy*[1]; Satnam Singh[1]; Partha Sarkar[1]; Ashis Panda[1]; Amitava Mitra[1]; [1]National Metallurgical Laboratory (CSIR)

Influence of Limestone Composition on Lime Desilication of Green Liquors: *Andrey Panov*[1]; Alexander Suss[1]; Natalia Kuznetsova[1]; Irina Paromova[1]; [1]RUSAL VAMI

Influences of Alloying Elements on Grain Sizes in Friction Stir Processed Pure Aluminum and Aluminum Alloys: *Tomotake Hirata*[1]; Taiki Morishige[2]; Masato Tsujikawa[2]; Kenji Higashi[2]; [1]Technology Research Institute of Osaka Prefecture; [2]Department of Materials Science, Osaka Prefecture University

Interfacial Microstructure and Mechanical Properties of the Friction Stir Welds between AA6061 and Ti-6Al-4V Alloy Sheets: *Kwang-jin Lee*[1]; [1]Korea Institute of Industrial Technology

Interfacial Reactions at the Sn-xBi/Au Couples: *Yee-wen Yen*[1]; Wei-Kai Liou[2]; Chao-Ming Chen[3]; Meng-Kuang Huang[3]; [1]National Taiwan University of Science and Technology; [2]Lunghwa University of Science and Technology; [3]National Taipei University of Technology

Intermetallic Phases and Microstructure in AlSi Alloys Influenced by Fluid Flow: *Piotr Mikolajczak*[1]; Lorenz Ratke[2]; [1]German Aerospace Center, Poznan University of Technology; [2]German Aerospace Center

Investigation of Inclusion Evolution Mechanism during the Refining and Continuous Casting Process of 28MnCr5 Steel: *Suzhou Wu*[1]; Zhizheng Li[2]; [1]Wuhan Univeristy of Science and Technology; [2]University of Science and Technology,Beijing

Investigation of Molybdenum Double Perovskites for Use in Anode Supported Solid Oxide Fuel Cells: *Adam Weisenstein*[1]; Stephen Sofie[1]; [1]Montana State University

Investigation of the Thermodynamic Factor of Diffusion Coefficient for Lithium Ion Migration in Lithium Titanium Dioxide: *Zheng Liang*[1]; Guangsha Shi[1]; [1]University of Michigan

Libyan Industrial Complex Case Study and Gear Failure: Ali Tajouri[1]; *Mosbah Akreem*[2]; [1]Faculty of Engineering, University of Alfatah; [2]Libyan Industrila Research Center

Libyan Made Steels Quality and Standers: *Ali Tajouri*[1]; [1]faculty of eng.,Uni.of Alfatah

Liquid Phase Sintering and Age Hardening of Different P/M Aluminum Alloys: *Padmavathi Chandran*[1]; Anish Upadhyaya[1]; [1]Indian Institute of Technology, Kanpur, India

Manufacture and Properties of Cold Spray Deposited Large Thickness Cu Coating Material for Sputtering Target: Jin-Hyeon Cho[1]; Young-Min Jin[1]; Dong-Yong Park[2]; Hyung-Jun Kim[3]; Ik-Hyun Oh[4]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]Tae-Kwang Tech.; [3]RIST; [4]KITECH

Manufacturing and Macroscopic Properties of Cold Sprayed Cu-In Coating Material for Sputtering Target: *Kee-Ahn Lee*[1]; Young-Min Jin[1]; Jin-Hyeon Cho[1]; Dong-Yong Park[2]; Ju-Ho Kim[2]; [1]Andong National University; [2]Tae-Kwang Tech

Measurement of Fatigue Damage in Al/Ni and TiW/Ni Metal Interconnections on Glass by Nanoindentation: *Jae Ho Kim*[1]; Chul Min Joe[1]; Yeo Hyoun Yun[1]; Yong Jun Oh[1]; [1]Hanbat university

Mechanical Performance of Tungsten Inert Gas Welded Aluminum Alloy 6061-T6: Daniel Steves[1]; *Jahan Rasty*[1]; [1]Texas Tech University

Mechanical Property of In-Situ Particulate Reinforced Titanium Matrix Composites by Investment Casting: *Bong-Jae Choi*[1]; Seul Lee[1]; Jeong-Il Youn[1]; Young-Jig Kim[1]; [1]Sungkyunkwan University

Membranes Obtained from PA6/HDPE Blends Via Precipitation by Immersion: Carlos Cunha[1]; Gustavo Brito[1]; *Pankaj Agrawal*[1]; Helio Lira[1]; Tomas Melo[1]; [1]Federal University of Campina Grande - UFCG

Microstructural and Mechanical Performance of Cold-Rolled Al Base Alloys: S.R. Casolco[1]; *S. Valdez*[2]; [1]ITESM-Puebla; [2]UNAM-ICF

Microstructural and Mechanical Properties (Hardness) Investigations of 0.61%Al-1.11%Si Austempered Ductile Iron: Ali-Reza Kiani-Rashid[1]; *Behtash Hashemi*[1]; [1]Ferdowsi University of Mashhad

Microstructural Characterization of Sintered Fe-Mn-Si Based Shape Memory Alloy Prepared Via Mechanical Alloying Technique: *A. Umut Soyler*[1]; Burak Özkal[1]; Leandru G. Bujoreanu[2]; [1]Istanbul Technical University; [2]The "Gh. Asachi" Technical University

Microstructural Evolution in Fe-based Oxide Dispersion Strengthened Alloys - A Computational Study: *Samrat Choudhury*[1]; Christopher Stanek[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

Microstructural Observations and Electromagnetic Interference Shielding Characteristics of Tin Based Alloy Thin Films: Hung Fei-Yi[1]; *Hung Fei-Shuo*[2]; Chiang Che-Ming[2]; [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

Microstructural Properties and TEM Analysis of Amorphous Reinforced Aluminum Matrix Composite by Friction Stir Processing: *Liu Peng*[1]; [1]Shandong Jianzhu University

Microstructure and Properties of Laser Shock Processed Ti6Al4V, X5CrNi18-10 Steel and Pure Aluminum Materials: *Kusinski Jan*[1]; Magdalena Rozmus-Górnikowska[1]; [1]AGH University of Sciences and Technology

Modeling and Experimental Activities for Heavy Castings and Forgings: *Dianzhong Li*[1]; Mingyue Sun[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Modeling of Weld Penetration in High Velocity GTAW: *Ustun Duman*[1]; Patricio Mendez[2]; [1]Colorado School of Mines; [2]University of Alberta

Modulation of the Degree of Heterogeneity with Compositional Control and Heat Treatment in Cu-Zr-(Y, Gd)-Al Bulk-Forming Metallic Glasses: Jin Woo Kim[1]; *Eun Soo Park*[1]; [1]Seoul National University

Modulus Dependence on Large Scale Porosity: *Paul Allison*[1]; Mark Horstemeyer[2]; Hayley Brown[2]; [1]US Army Engineer Research and Development Center; [2]Mississippi State University

MWCNT Based Structures as Negative Electrodes for High Capacity Lithium Ion Batteries: *Indranil Lahiri*[1]; Sung-Woo Oh[2]; Yang-Kook Sun[2]; Wonbong Choi[1]; [1]Florida International University; [2]Hanyang University

Nanocomposites Based on Polymer Blends: Effect of the Organoclay on the Thermo-Mechanical Properties and Morphology of PA6/HDPE and PA6/Compatibilizer/HDPE Blends: *Pankaj Agrawal*[1]; Akidauana Oliveira[1]; Gustavo Brito[1]; Carlos Cunha[1]; Edcleide Araujo[1]; Tomas Melo[1]; [1]Federal University of Campina Grande - UFCG

NiAl2O4/Al2O3 Nanoparticles with Perfect Catalytic Activity: *S. F. Rahnemaye Rahsepar*[1]; H. Dastjerd[2]; E. Zahrani[2]; [1]Islamic Azad University, Shareza; [2]Isfahan University of Technology

Nondestructive Characterization of Railway Bogies Using Infrared Thermography Technique: *Jeongguk Kim*[1]; [1]Korea Railroad Research Institute

Optical Properties and Electrical Properties of Transparent Conductive Films of Magnesium Hydroxide Based Compounds: *Masafumi Chiba*[1]; Mikiteru Higashi[1]; Hideo Kiyota[1]; Mikihiko Maizono[1]; Toshiro Kuji[1]; [1]Tokai University

Oxidation Behavior of Spark Plasma Sintered ZrB2-SiC Composites: Ipek Akin[1]; Filiz Sahin[1]; Onuralp Yucel[1]; *Gultekin Goller*[1]; [1]Istanbul Technical University

Phase Change Materials in Thermal Energy Storage for Concentrating Solar Power (CSP): *Corey Hardin*[1]; Anoop Mathur[2]; Rajan Kasetty[2]; Chris Dames[1]; Reza Abbaschian[1]; Javier Garay[1]; [1]UC Riverside; [2]Terrafore Inc.

Phase Diagram Calculation and Its Applications to Materials Design and Development: *Fan Zhang*[1]; Weisheng Cao[1]; Shuanglin Chen[1]; Y. Austin Chang[1]; [1]CompuTherm, LLC

Phase Transformation and Magnetic Properties of Pr2Co7 Intermetallics: *Najeh Mliki*[1]; Riadh Fersi[2]; Lotfi Bessais[3]; [1]LMOP, Faculté des Sciences de Tunis [2]LMOP, Faculté des Sciences de Tunis and CMTR, ICMPE; [3]CMTR, ICMPE

Prediction of Hexagonal Lattice Parameters of Non-Stoichiometric Apatites by Artificial Neural Networks: *Zafer Evis*[1]; Umit Kockan[1]; [1]Midde East Technical University

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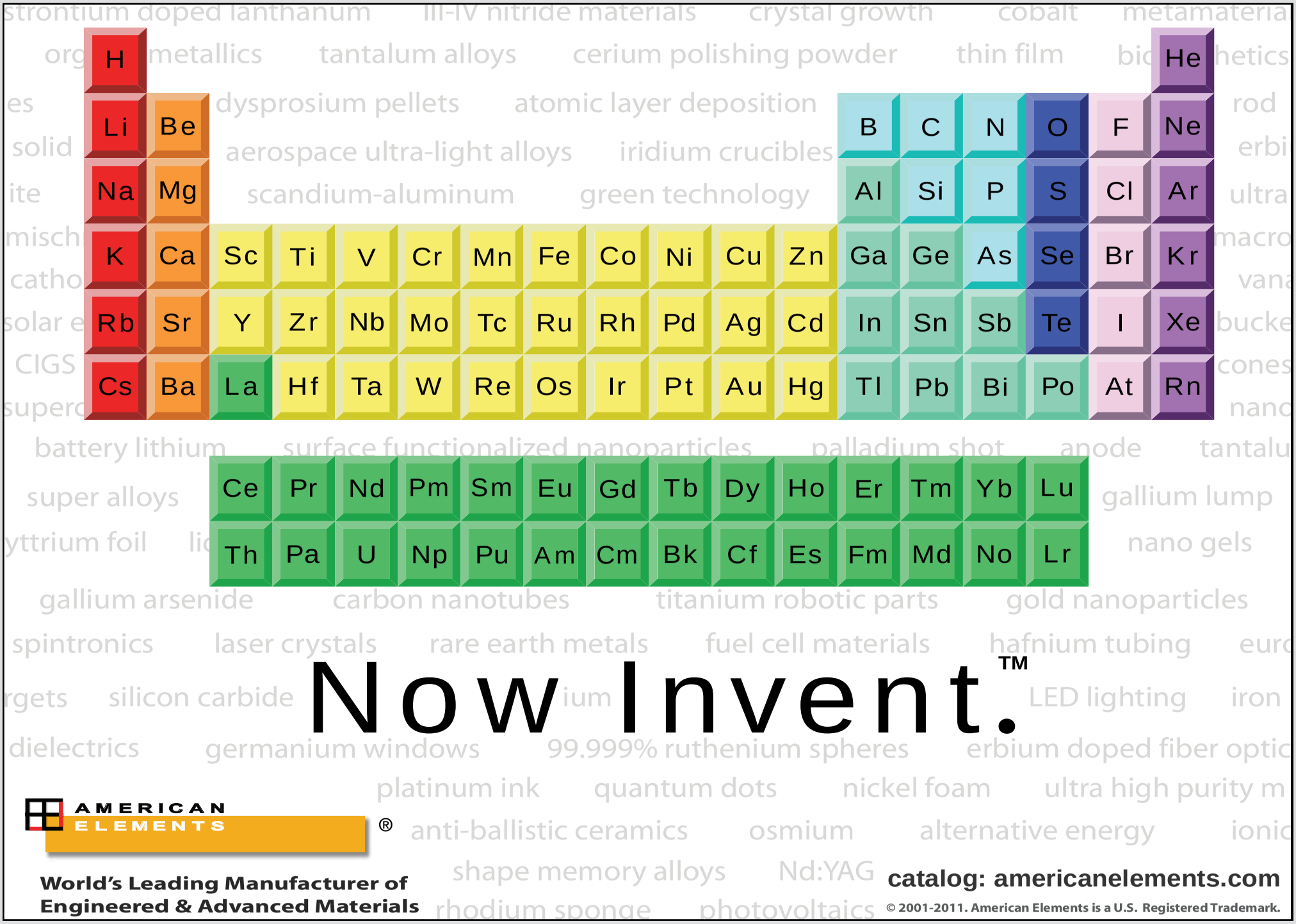
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