March 3-7, 2013  •  Henry B. Gonzalez Convention Center
San Antonio, Texas, USA

Technical Program

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5:40 PM
X-Ray Fluorescence Analysis of a Dirty Discrete White Spot in a Nickel 718 Alloy: Trevor Watt1; Eric Taleff1; ‘The University of Texas at Austin

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nilin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yanbin Sun, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Tuesday AM  Room: 201
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Gregory Thompson, University of Alabama; Ashwin Ramasubramaniam, University of Massachusetts Amherst

8:30 AM Invited
Transfer Printed Semiconductor Nanomembrane Photonics: Weidong Zhou1; Zhenqiang Ma2; Hongun Yang3; ‘University of Texas at Arlington; 2University of Wisconsin-Madison; 3Semerane, Inc.

9:05 AM Invited
Tunable Nanostructures and Printed Electronics: Horst Hahn1; 1Karlsruhe Institute of Technology

9:40 AM
Fabrication of Surface Channel Waveguides on a Thin Film of Rare Earth Doped Silicon: Matthew Murray1; Gin Jose1; Billy Richards1; Animesh Jha1; ‘The University of Leeds

10:00 AM Break

10:15 AM
Characteristic Study for Nano-Scaled 2DEG Properties of AlGaN/GaN: JiaeWoo Subh1; Feyza Berber1; Harlan Harris1; ‘Texas A&M University

10:35 AM Invited
Chemical Functionalization of Hydrogen-terminated Silicon Surfaces for Energy and Sensing Applications: Oliver Seitz; Weina Peng; Peter Thissen; Louise Caillard; William De Benedetti; Hue Nguyen; Yuri Gartstein; Anton Malko; Yves Chabaf1; ‘Univ of Texas at Dallas

11:10 AM Invited
Biological Properties of Zinc Oxide-Coated Anodized Aluminum Oxide: S. Skoog1; M. Bayati2; P. Petrochenko1; S. Sfaslién1; J. Daniels3; N. Cilž1; D. Comstock2; J. Elam3; R. Narayen4; 1UNC/NCSU Joint Department of Biomedical Engineering; ‘North Carolina State University Department of Materials Science and Engineering; 3North Dakota State University; 4Argonne National Laboratory

11:45 AM
Quantification of Circulating Tumor Cells Using Nanowire Substrate-Based Laser Scanning Cytometry: Sang-Kwon Lee1; Rong Fan1; ‘Chonbuk National University; ‘Yale University

12:05 PM
Synthesis and Characterization of Magnetic Silica Nanoparticles for His-tagged Proteins Capture and Separation: Mahdi Kamali1; Mehdig Ghaffari Sharaf2; Seyed Mostafa Amoozadeh3; Hamidreza Javadi4; Hamid Kooshki1; Jamal Rashidian1; Amir Homayoun Keihan1; Manizheh Ramezani1; 1BMSU Nano Biotechnology Research Center; 2Ibb Institute, University of Tehran; 3Sharif University of Technology; 4National Institute of Genetic Engineering and Biotechnology (NIGEB); ‘University of Tehran

4th International Symposium on High-Temperature Metallurgical Processing: Alloy and Materials Preparation I
Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee; TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Gufeng Zhou, Wuhan Iron and Steel

Tuesday AM  Room: 008B
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Onuralp YÜCEL, Istanbul Technical University; Jilai Xue, University of Science and Technology Beijing

8:30 AM
The Effect of Aluminum Addition to the ESR Process Slag on IN718 Superalloy Characteristics: Adel Sheikhhosseini1; 1IUT

8:50 AM
Effects of Crystallization of Mould Fluxes on Property of Liquid Slag Film and Its Impact on Peritectic Steel Slab Continuous Casting: Xiao Long1; Shengping He1; Lilong Zhu1; Ting Wu1; Qian Wang1; ‘Chongqing University

9:05 AM
A Study on Production of Fe-Co-V Alloys by Self Propagating High Temperature Synthesis: Murat Alkan1; Ozlem Altimordu1; Sereng Sönmez1; Bora Derin1; Onuralp Yücel1; Vladimir Sanin2; Vladimir Yukhvid2; 1Istanbul Technical University; 2Institute of Structural Macrokinetics and Materials Science

9:20 AM
Hot Ductility of Nb-V-Containing Microalloyed Steel during Solidification: Yanhui Sun1; Jianan Zeng1; Kaike Cai1; ‘University of Science and Technology Beijing

9:40 AM
Co-Cr-Mo Alloys Production by Self Propagating High Temperature Synthesis: Ozlem Okur1; Murat Alkan1; Onuralp Yücel1; ‘Istanbul Technical University

10:00 AM Break

10:20 AM
High-Temperature Oxidation and Corrosion Behaviors of NiFe Alloy for Inert Anode Materials in Aluminum Electrolysis: Jilai Xue1; Luxing Feng1; MengDong Gu1; ‘University of Science and Technology Beijing

10:30 AM
Production of Molybdenum Containing Iron Based Alloys via Metallothermic Processes: Dilek Kırkgöz1; Murat Alkan1; Onuralp Yücel1; ‘Istanbul Technical University
10:50 AM Invited
Production of Boron Containing Iron-Based Alloys by Metallothermic Processes: Cem Colakoglu; Murat Alkan; Onuralp Yücel; Istanbul Technical University

11:05 AM
Electrical Resistance of TiB2-C/C Function Gradient Material for Aluminum Reduction Cathodes: Jun Zhu; Jilai Xue; University of Science and Technology Beijing

11:25 AM
Experimental Study of Phosphorus Distribution Between Slag and Metal During Duplex Dephosphorus Converter Processing: Xin Qiu; Bing Xie; Lu Jiang; Xie Zhang; Jiang Diao; Hong-Yi Li; Chongqing University

11:40 AM
Effect of Steel Composition on the Scale Layer Composition in Continuous Casting: Cuihuan Huang; Northeastern University

11:55 AM
Hot Workability of M42 Tool Steel Additionally Alloyed with Co and Mo: Milan Tercelj; Goran Kugler; Matevz Fazarine; Iztok Perus; University of Ljubljana

12:15 PM
Synthesis by Hydrogen Reduction and Characterization of FeNi Alloys: Orfelinda Avalio; Eduardo Brocchi; Francisco Moura; Rogerio Siqueira; PUC-Peru; PUC-Rio

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**Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Corrosion and Hydrogen Damage**

*Sponsored by:* TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS Nanomaterials Committee

*Program Organizers:* Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaahu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

*Session Chairs:* Indranil Roy, Schlumberger; Virendra Singh, Schlumberger

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**Advances in Surface Engineering: Alloyed and Composite Coatings II: Thermal and Cold Sprayed Coatings**

*Sponsored by:* TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee

*Program Organizers:* Srinivas Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

*Funding support provided by:* Bulk Nanostructured Materials Programs, Office of Naval Research

*Session Chair:* To Be Announced

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**Tuesday AM**

8:30 AM Introductory Comments by Andre Anderko, CMD, OLI

8:40 AM Keynote
Corrosion of Mild Steel in Extreme Oil and Gas Environments: Srđjan Nesic; Ohio University

9:10 AM Invited
Modeling Localized Corrosion in Complex Oil and Gas Environments: Andre Anderko; OLI Systems Inc.

9:30 AM Invited
Evaluating Corrosion Mechanisms through Atomistic Modeling: Christopher Taylor; Los Alamos National Laboratory

9:50 AM Invited
On the Connection Between Grain Boundary Structure and Intergranular Fracture in Ni: Michael Demkowicz; G. Xu; Massachusetts Institute of Technology

10:10 AM Break

10:25 AM Keynote
Fracture Prognosis for Materials Operating in Extreme Hydrogen Environments: Petros Safonov; M. Martin; M. Dadfarnia; P. Somerday; I. Robertson; University of Illinois; Sandia National Laboratories

10:55 AM Invited
Surface Science Investigations for Corrosion Research: Roland Schulze; Los Alamos National Laboratory

11:15 AM
Extreme Sampling Tool for High Temperature, Pressure and Highly Corrosive Downhole Environments: Sebastien Ives; Danny Killen; Indranil Roy; Stephane Hiron; Schlumberger

11:35 AM Invited
Modeling the Mechanical Response of Metallic Materials at the Nano-scale: Diana Farkas; Virginia Tech

11:55 AM
Oil Swellable Elastomer in Sour Environment: Xiaohong Ren; Indranil Roy; Travis Hohenberger; Schlumberger Rosharon Campus

12:15 PM
Mitigation of Scale Formation using Liquid Impregnated Surfaces: Srinivas Prasad Bengaluru Subramanyam; Gises L Azimi; J.David Smith; Kripa Varanasi; Massachusetts Institute of Technology
9:30 AM
High Temperature Oxidation and Corrosion Behavior of Electroplated Ni-Al-Cr Bond Coating on TiAl: Kai Tan; Viola Acoff; 1The University of Alabama

9:45 AM
Mechanical Properties of Stabilised Zirconia NanoCrystalline EB-PVD Coating Evaluated by Micro and Nano Indentation: Maysam Keshavarz; Mohd Hasbullah bin Hj.Idris; 1UTM,Universiti Teknologi Malaysia

10:00 AM Break

10:15 AM Invited
Bonding Mechanism of Cold Spray Coating on Magnesium Alloys: Mingxing Zhang; Qiang Wang; 1The University of Queensland

10:35 AM
State of the Art and Commercial Applications of Downstream Injection Cold Spray Technology for Production of Composite Coatings: Julio Villafiurte; 'Centerline Windsor Ltd

10:50 AM
Cold Sprayed Aluminum Based Glassy Coatings for Improved Corrosion and Wear Resistance: Arvind Agarwal; Debrupa Lahiri; Puneet Gill; Cheng Zhang; Sergio Scudino; J Karthikeyan; Norman Munroe; 1Florida International University; 2IFW Dresden; 3ASB Industries

11:05 AM
Nano-Scratch Behavior of Cold Sprayed Al-bulk Metallic Glassy Coating: Suresh Babu Pitchuka; Debrupa Lahiri; Sundararajan G; Arvind Agarwal; 1University of Texas at San Antonio

11:20 AM
Comparative Analysis of the Microstructural, Wear, and Corrosion Properties of Laser Assisted Cold Sprayed Titanium Coatings with Laser Cladded Coatings: Eiyitayo Olakanni; Momnامme Tiotlend; Christopher Meacock; Esther Akinlabi; Mukul Shukla; Charli Small; Herman Burger; Sisa Pityana; Mulalo Doyoyo; Peter Olubambi; 1University of Johannesburg; 2Council for Scientific and Industrial Research; 3Tshwane University of Technology

11:35 AM
Effect of Component Ratio on the Microstructural, Wear, and Bio-Corrosion Characteristics of Laser Assisted Cold Sprayed Titanium/ Hydroxyapatite (Ti-HAP) Composite: Mомmamme Tiotlend; Eiyitayo Olakanni; Christopher Meacock; Mukul Shukla; Esther Akinlabi; Sisa Pityana; Mulalo Doyoyo; 1University of Johannesburg; 2Council for Scientific and Industrial Research
Alumina and Bauxite: Clarification
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Tuesday AM  Room: 212B
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Paul Shroyer, National Filter Media

8:30 AM Introductory Comments

8:40 AM
Sodalite Solids Formation at the Surface of Iron Oxide and Its Impact on Flocculation: Alexander Senaputra1; Phillip Fawell2; Franca Jones2; Peter Smith3; 1Nanochemistry Research Institute, Curtin University, Perth; 2CSIRO Process Science and Engineering; 3Nanochemistry Research Institute, Curtin University

9:00 AM
Improvement on the Operation Management System of Vertical Pressure Filters: Lucélia Moares1; Tatiani Santos2; Aline Sampaio2; Humberto Lima2; Juarez Borges3; Joel Miranda3; Alípio Júnior3; Milton Maciel3; 1Hydro Alunorte

9:20 AM
Using a Multivariate Statistical in the Identification of Alumina Loss in Red Mud: Américo Borges1; Alípio Junior1; Humberto Lima1; Joaquim Ribeiro1; Ricardo Podversek1; Joel Miranda1; Ayana Oliveira1; 1Hydro Alunorte

9:40 AM Break

9:55 AM
Bevill and the Aluminum Industry: Anthony Schoedel1; 1Alcoa, Inc.

10:15 AM
New Development Model for Bauxite Deposits - Dedicated Compact Refinery: Peter-Hans ter Weer1; 1TWS Services and Advice

10:35 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Corrosion Resistance Performance
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbskie, Naval Surface Warfare Center

Tuesday AM  Room: 213A
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: William Golumbskie, Naval Surface Warfare Center, Carderock Division

8:30 AM
Aluminum Sensitization and the Navy: William Golumbskie1; 1Naval Surface Warfare Center, Carderock Division

8:50 AM
Understanding the Influence of Stress on Sensitization in 5xxx Alloys: William Golumbskie1; Jennifer Gaiers2; Mitra Taheri2; 1Naval Surface Warfare Center, Carderock Division; 2Drexel University
### Aluminum Reduction Technology: Fundamentals: Chemistry

**Sponsored by:** TMS Light Metals Division, TMS: Aluminum Committee  
**Program Organizer:** Mark Cooksey, CSIRO

**Tuesday AM**  
Room: Grand Ballroom C2  
March 5, 2013  
Location: Henry B. Gonzalez Convention Center

**Session Chair:** Arne Ratvik, NTNU

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<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
<th>Affiliation(s)</th>
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<tr>
<td>8:30 AM</td>
<td>Introductory Comments</td>
<td></td>
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<tr>
<td>8:35 AM</td>
<td>Composition and Thermal Analysis of Crust Formed from Industrial Anode Cover</td>
<td>Qinsong Zhang¹; Mark Taylor²; John Chen³; David Cotton³; Tania Groutzo²; Xiaodong Yang³; Pretesh Patel⁴; Shenyang Aluminium &amp; Magnesium Engineering &amp; Research Institute Co. Ltd; The University of Auckland</td>
<td>¹Shenyang Aluminium &amp; Magnesium Engineering &amp; Research Institute Co. Ltd; ²The University of Auckland</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Liquidus Temperatures of Na₃AlF₆₋AlF₃₋CaF₂₋KF₋LiF₋Al₂O₃ Melts</td>
<td>Di Yuezhong¹; Peng Jianping¹; Bai Yunbin¹; Feng Naixiang¹;</td>
<td>¹Northeastern University</td>
</tr>
<tr>
<td>9:25 AM</td>
<td>The Effect of Calcium Fluoride on Alumina Solubility in Low Temperature Cryolite Melts</td>
<td>Pavel Tingaev¹; Alexey Apisarov¹; Alexander Dediyukhin¹; Alexander Redkin¹; Yuriii Zaikov¹; Institute of High Temperature Electrochemistry of the Ural Branch of the Russian Academy of Sciences</td>
<td>¹Northeastern University</td>
</tr>
<tr>
<td>9:50 AM</td>
<td>Conductivity of KF-NaF-AlF³⁻ System Low-temperature Electrolyte</td>
<td>Jianhong Yang¹; Wangxing Li¹; Hengwei Yan¹; Dan Liu¹; Zhengzhou Research Institute of CHALCO</td>
<td>¹Zhengzhou Research Institute of CHALCO</td>
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<td>10:15 AM</td>
<td>Break</td>
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<tr>
<td>10:25 AM</td>
<td>Numerical Analysis of Ionic Mass Transfer in the Electrolytic Bath of an Aluminium Reduction Cell</td>
<td>Mohsen Ariana¹; Martin Désilets¹; Pierre Proulx¹; Université de Sherbrooke</td>
<td>¹Université de Sherbrooke</td>
</tr>
<tr>
<td>10:50 AM</td>
<td>Liquidus Temperatures of Electrolytes for Aluminium Reduction Cells</td>
<td>Dong Shi¹; Bingliang Gao¹; Zhaowen Wang¹; Zhongning Shi¹; Xianwei Hu¹;</td>
<td>¹Northeastern University</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Effect of LiAlO₂ and KF on Physicochemical Properties for Industrial Aluminum Electrolyte</td>
<td>Lv Xiaojun¹; Chen Shiyue¹; Lai Yanqing¹; Tian Zhongliang¹; Li Jie¹; Zhang Hongliang¹; School of Metallurgical Science and Engineering, Central South University</td>
<td>¹School of Metallurgical Science and Engineering, Central South University</td>
</tr>
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### Aluminum Reduction Technology: Potline Operation I: Smelter Operations

**Sponsored by:** TMS Light Metals Division, TMS: Aluminum Committee  
**Program Organizer:** Mark Cooksey, CSIRO

**Tuesday AM**  
Room: Grand Ballroom C1  
March 5, 2013  
Location: Henry B. Gonzalez Convention Center

**Session Chair:** Michel Reverdy, DUBAL

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
<th>Affiliation(s)</th>
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<tr>
<td>8:30 AM</td>
<td>Introductory Comments</td>
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<tr>
<td>8:35 AM</td>
<td>Low Power Operation at Aluminium Dunkerque Smelter: Jean-Michel Peyneau¹; Laurent Fiot¹; Stéphane Mermet-Guyenet¹; Olivier Rebourillat¹; Rio Tinto Alcan</td>
<td>Jean-Michel Peyneau¹; Laurent Fiot¹; Stéphane Mermet-Guyenet¹; Olivier Rebourillat¹; Rio Tinto Alcan</td>
<td>¹Rio Tinto Alcan</td>
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<tr>
<td>9:00 AM</td>
<td>The Quick Shut Down and Restarting of 291 kA Pre Baked Potline at JSC “RUSAL Sayanogorsk” from May to August 2011: Victor Buzunov¹; Andrey Soldatov¹; Victor Mann¹; Vasily Borisov¹; Alexander Pavin¹; Sergey Zatepyakin¹; Evgeniy Scherbakov¹; Andrey Gouzenkov¹; RUSAL “Engeneering and Technological Center”; UC RUSAL; RUSAL Sayanogorsk; RUSAL RUS-Engeneering</td>
<td>Victor Buzunov¹; Andrey Soldatov¹; Victor Mann¹; Vasily Borisov¹; Alexander Pavin¹; Sergey Zatepyakin¹; Evgeniy Scherbakov¹; Andrey Gouzenkov¹; RUSAL “Engeneering and Technological Center”; UC RUSAL; RUSAL Sayanogorsk; RUSAL RUS-Engeneering</td>
<td>¹RUSAL “Engeneering and Technological Center”; ²UC RUSAL; ¹RUSAL Sayanogorsk; ¹RUSAL RUS-Engeneering</td>
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<td>9:25 AM</td>
<td>Production Growth and Future Challenges in Aluminium Bahrain (Alba): Abdulla Ahmed¹; Aluminium Bahrain (Alba)</td>
<td>Abdulla Ahmed¹; Aluminium Bahrain (Alba)</td>
<td>¹Aluminium Bahrain (Alba)</td>
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<td>10:15 AM</td>
<td>Break</td>
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<td>10:25 AM</td>
<td>High Frequency Power Modulation - TRIMET Smelters Provide Primary Control Power for Stabilizing the Frequency in the Electricity Grid: Andreas Luetzerath¹; TRIMET ALUMINIUM AG</td>
<td>Andreas Luetzerath¹; TRIMET ALUMINIUM AG</td>
<td>¹TRIMET ALUMINIUM AG</td>
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<td>10:50 AM</td>
<td>Autonomous Vehicle and Smelter Technologies: Ashley Tews¹; Paulo Borges¹; CSIRO</td>
<td>Ashley Tews¹; Paulo Borges¹; CSIRO</td>
<td>¹CSIRO; ¹Aluminium Bahrain (Alba)</td>
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<td>11:15 AM</td>
<td>Preventive Maintenance of Transport Vehicles: Is It Improving Production Stability of a Smelter?: Maarten Meijer¹; Hencon</td>
<td>Maarten Meijer¹; Hencon</td>
<td>¹Hencon; ¹Aluminium Bahrain (Alba)</td>
</tr>
</tbody>
</table>
**Biological Materials Science Symposium: Ultrafine Grain Materials/Biointerface**

*Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee*

**Program Organizers:** Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

**Funding support provided by:** Biomaterials Program, National Science Foundation

**Session Chairs:** Terry Lowe, Los Alamos National Lab; Candan Tamerler, University of Washington

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**Tuesday AM**

**Room:** 214C

**Location:** Henry B. Gonzalez Convention Center

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**8:30 AM Invited**

Nanoparticles, Nanotubes, and Other Nanomaterials: Controlling Cellular Functions to Increase Tissue Growth: *Thomas Webster*¹; ¹Brown University

**9:00 AM Invited**

Development of Mechanical Biocompatibility of Low-Modulus Beta-Type Titanium Alloy by Introducing Ultrafine-Grain Structure Through High-Pressure Torsion: *Mitsu Niiomia*; Masaaki Nakai¹; Junko Hieda¹; Ken Cho¹; Hakan Yelmazer¹; Yoshikazu Todaka²; ¹Tohoku University; ²Tōyōhashi University of Technology

**9:30 AM Invited**

Uncovering the Multiscale Structural Origin of Nacre’s Exceptional Mechanical Performance: *Xiaodong Li*¹; ¹University of South Carolina

**10:00 AM Break**

**10:15 AM Invited**

Ultrafine Grained Titanium for Dental Applications: Mechanical Properties and Performance: *Marc Meyers*³; Carlos Elias²; Ruslan Valiev³; Sergio Neves Monteiro³; Felipe Perisse³; ¹UCSD; ²IME; ³UFA

**10:45 AM**

Non-Toxic SPD Processed Ti Alloys for Orthopaedics: *Ajit Panigrahi*¹; Thomas Waitz¹; Erhard Schaffer¹; Matthias Bönisch¹; Mariana Calin¹; Jürgen Eckert¹; Annett Gebert¹; Werner Skrotzki¹; Michael Zehetbauer¹; ¹Physics of Nanostructured Materials, University of Vienna, 1090, Vienna, Austria; ²Institut für Komplexe Materialien, IFW Dresden; ³Institut für Strukturphysik, TU Dresden

**11:00 AM Invited**

Surface Modification of Nanostructured Titanium for Biomedical Application: *Irina Semenova*¹; Ruslan Valiev¹; Gulnaz Salimgareeva¹; Alexander Polyakov¹; Terry Lowe¹; ¹Ufa State Aviation Technical University; ²Manhattan Scientifics

**11:25 AM Invited**

Surface Chemistry of Titanium Dental Implants: *Roland Schulze*¹; Terry Lowe¹; ¹Los Alamos National Laboratory; ²New Mexico Tech

**11:50 AM Invited**

Natural Armor: Interdisciplinary Convergence Among Engineering, Architecture and Evolutionary Biology: *Christine Ortiz*¹; ¹Massachusetts Institute of Technology

**12:15 PM Invited**

Strategies for Improving the Performance of Dental Restorative Composites: *Jamie Krazie*¹; Dmitriy Khvostenko¹; Jack Ferracane¹; John Mitchell¹; ¹Oregon State University; ²Oregon Health & Science University

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**Bulk Metallic Glasses X: Structures and Mechanical Properties I**

*Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee*

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

**Funding support provided by:** Materials Processing and Manufacturing Division, National Science Foundation

**Session Chairs:** Takeshi Egami, The University of Tennessee; Christopher Schuh, MIT

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**Tuesday AM**

**Room:** Lone Star Salon D

**Location:** Grand Hyatt

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**8:30 AM Keynote**

Mechanical Behavior of Metallic Liquids and Glasses: *Takeshi Egami*¹; ¹University of Tennessee

**9:00 AM**

Time-Dependent Structural Change in BMG Induced by Creep: *Yang Tong*¹; W. Dmowski¹; C. P. Chuang¹; J. Almer²; J. Bednarcik²; T. Egami¹; ¹The University of Tennessee-Knoxville; ²Argonne National Laboratory; ³DESY, Hasylab

**9:15 AM Invited**

In-Situ Observation of Transformation-induced Plasticity in Bulk Metallic Glassy Composite: *Yuan Wu*¹; Dong Ma¹; A. D. Stoica¹; X. L. Wang¹; Z. P. Lu¹; ¹State Key Lab for Advanced Metals and Materials, USTB; ²Neutron Scattering Science Division, Oak Ridge National Laboratory; ³City University of Hong Kong

**9:50 AM Invited**

Effect of Surface Modifications on Shear Banding and Plasticity in Metallic Glasses: *Taigang Nieh*¹; ¹University of Tennessee

**10:10 AM Break**

**10:25 AM Invited**

Interplay Between Metallic Glass Deformation and Free Volume Evolution: A Study Based on Shear Transformation Zone Dynamics Simulations: *Lin L*¹; *Christopher Schuh*¹; ¹MIT

**10:45 AM**

Al₁₋₂Niₓ₁₋ₓYₓZr₄₋ₓ₋₅%B₄C Bulk Metallic Glass Composites Processed Via Gas Atomization and Spark Plasma Sintering: *Baolong Zheng*¹; Troy Topping¹; Yizhang Zhou¹; Somesh Mukherjee¹; Enrique Lavernia¹; ¹University of California, Davis; ²Aspen Systems, Inc.

**11:00 AM Invited**

Elastic Properties of Metallic Glasses: *Mo Li*¹; Hao Wang¹; ¹Georgia Institute of Technology
11:20 AM
Deformation Behavior of Structural Amorphous Metals (SAM) under Compression: Shima Haghighat1; Andrea Hodge1; James Kelly2; Olivia Graeve3; 1USC; 2Alfred University

11:35 AM Invited
Deformation and Structural Evolution in Shear Band-sized Metallic Glass with In-Situ TEM: Scott Mao1; Junhang Luo1; Jianyu Huang2; Li Zhong1; 1Department of Mechanical Engineering and Materials Science, University of Pittsburgh; 2Center for Integrated Nanotechnologies, Sandia National Laboratories

11:55 AM
Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr Metallic Glasses: Ilkay Kalay1; Yunus Kalay2; Matthew Kramer1; Ralph Napolitano1; 1Cankaya University; 2METU; 3Ames Laboratory US DOE; 4Iowa State University

12:10 PM Invited
Stick-Slip Shear Banding in Metallic Glasses and Its Description Via an Effective Temperature Model: Jörg Löffler1; 1ETH Zurich

12:30 PM
Do Grain Boundaries Behave Like a Layer of Amorphous Material?: Rainer Birringer1; Christian Braun1; Manuel Grewer1; 1Universität des Saarlandes

11:00 AM
Break

10:10 AM Break

11:00 AM
10:30 AM
Plant Scale Investigation of Liquid Aluminum Filtration by Al2O3 and SiC Ceramic Foam Filters: Sarina Bao1; Martin Syvertsen1; Arne Nordmark1; Anne Kvithyld1; Thorvald Engh2; Merete Tangstad2; 1SINTEF; 2NTNU

10:50 AM
Casting Practices Influencing Inclusion Distributions in Billets: Ghadir Razaz1; Torbjörn Carlberg1; 1Mid Sweden University

11:10 AM
Oxidation of Commercial Purity Aluminium Melts: An Experimental Study: Stephen Bonner1; John Taylor1; Ji-Yong Yao2; M. Akbar Rhamdhan1; 1CAST CRC, The University of Queensland; 2HTP Group, Swinburne University of Technology

11:30 AM
Modeling of Mold Filling and Porosity for RSI: Xiaoxuan Li1; Randall Bowers1; Shridas Ningileri2; Gyan Jha3; 1Secat, Inc.; 2University of Kentucky; 3Tri-Arrows Aluminum

Characterization of Materials through High Resolution Coherent Imaging: Electron Based Techniques
Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory

Tuesday AM Room: 206B
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: 10:00 AM 10:50 AM Keynote
8:30 AM Keynote
Electron Ptychography: The Future of High-Resolution Transmission Imaging?: John Rodenburg1; 1University of Sheffield

9:00 AM
On the Precipitation of d Phase in Ni-Base Superalloy 718Plus: Olivier Messe1; Jonathan Barnard1; Edward Pickering1; Cathie Rae1; Svjetlana Stekovic1; 1University of Cambridge; 2Rolls-Royce PLC

9:20 AM
Automated Phase and Orientation Mapping in the TEM: Amith Durbal1; 1NanoMEGAS USA

9:40 AM
Electron Wave Tomography for 3D Atomic Structure Determination: Dirk Van Dyck1; Ciney Tang2; Amy Wang2; Sandra Van Aert2; Fu-Rong Chen1; 1University of ANtwerp; 2National Tsing-Hua University

10:00 AM Break

10:20 AM Keynote
Imaging Atoms in Nanostructures Using Coherent Electrons: Jian Min Zuo1; Sungjin Kang2; Ke Ran3; 1University of Illinois; 2Seoul National University; 3University of Illinois

12:30 PM 1:00 PM
Lunch

1:10 PM
12:30 PM
Oxidation of Commercial Purity Aluminium Melts: An Experimental Study: Stephen Bonner1; John Taylor1; Ji-Yong Yao2; M. Akbar Rhamdhan1; 1CAST CRC, The University of Queensland; 2HTP Group, Swinburne University of Technology

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Characterization of Materials through High Resolution Coherent Imaging: Electron Based Techniques
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12:30 PM 1:00 PM
Lunch

1:10 PM

11:10 AM
Bi-Metal Interface Characterization at the Nanoscale: Subhasis Sinha\(^1\); Anthony Rollett\(^1\); John Carpenter\(^2\); Nathan Mara\(^2\); Irene Beyerlein\(^2\); \(^1\)Carnegie Mellon University; \(^2\)Los Alamos National Laboratory

11:30 AM
Data Mining the Exit Wave of a Crystal Using the Channelling Theory: Amy Wang\(^1\); Fu-Rong Chen\(^2\); Sandra Van Aert\(^1\); Dirk Van Dyck\(^1\); \(^1\)University of ANtwerp; \(^2\)National Tsing-Hua University

11:50 AM
Change in Electrical Resistivity of Pure Ti by ARB: Masato Ueda\(^1\); Kei Ota\(^2\); Masahiko Ikeda\(^2\); Daisuke Terada\(^2\); Nobuhiro Tsuji\(^2\); \(^1\)Kansai University; \(^2\)Kyoto University

11:10 AM
Comparison of Mechanical Vibration on Solidification Structure between Pure Copper and Aluminum: Yanbing Zong\(^1\); Rongsheng LI\(^1\); Chen Wang\(^1\); Yan Gou\(^1\); \(^1\)State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Characterization of Minerals, Metals and Materials 2013: Characterization of Nonferrous Metal and Alloys

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhwei Peng, Michigan Technological University

Tuesday AM Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ting-An Zhang, Northeastern University; Zhiwei Peng, Michigan Technological University

8:30 AM
Effect of Ti Addition on The Amount of Residual Al and Mechanical Properties of B_C-Al by Vacuum Infiltration: Wang Chao\(^1\); Xue Xiangxin\(^1\); Cao Xiaozhou\(^1\); Cheng Gongjin\(^1\); \(^1\)Northeastern University

8:50 AM
Characterization of AA5754 Alloy for Identification of Barlat’s Multiscale Modeling of Nanoscale Precipitate Stability in Irradiated Materials: Brian Wirth\(^3\); Alicia Certain\(^2\); Donghua Xu\(^1\); Karl Hammond\(^1\); \(^1\)University of Tennessee; \(^2\)Pacific Northwest National Laboratory; \(^3\)George Mason University

9:10 AM
Characterization of Cu-Zn-Al with Different Morphology: Lee Siegfried\(^1\); \(^1\)UNR

9:30 AM
Enhanced Mechanical Properties and Formability of Cross-Roll-Rolled Ni-10Cr Alloy: Kuk Hyun Song\(^1\); Won Yong Kim\(^1\); \(^1\)Korea Institute of Industrial Technology

9:50 AM
Prediction of Effective Thermal Conductivities of Alloy Series as a Function of Temperature in the Liquid Region: Shahid Mehmood\(^1\); \(^1\)QAU Islamabad

10:10 AM
Respond of Microstructure Modification on Deformation Behaviour of ECAP Processed Aluminium Alloy AA7075: Jozef Zrnik\(^2\); Martin Fujdla\(^2\); Peter Slama\(^2\); Libor Kraus\(^2\); \(^2\)Comtes FHT, Inc.; \(^2\)Technical University of Kosice

10:30 AM
Thermal Stability of Copper Foils with and without Nanotwins: Yifu Zhao\(^1\); Timothy Furnish\(^1\); Michael Kassner\(^1\); Andrea Hodge\(^1\); \(^1\)University of Southern California

10:50 AM
Interface Microstructure Evolution of Heterogeneous Systems under Vacancy Supersaturation: Enrique Martinez Saez\(^1\); Alfredo Caro\(^1\); \(^1\)LANL

9:25 AM
First Order Structural Transformations in Symmetrical Tilt S5 Grain Boundaries in Cu and Ag Studied by Atomistic Simulations: Timofey Frolov\(^1\); David Olmsted\(^1\); Mark Asta\(^1\); Yuri Mishin\(^1\); \(^1\)University of California Berkeley; \(^1\)University of California Berkeley

9:40 AM
Mobility of Partially Faceted Shrinking Grains: David Olmsted\(^1\); Mark Asta\(^1\); Tamara Radetic\(^1\); Colin Ophus\(^1\); Ulrich Dahmen\(^1\); \(^1\)University of California, Berkeley; \(^1\)Lawrence Berkeley National Laboratory; \(^1\)University of California, Berkeley; \(^1\)University of Belgrade; Lawrence Berkeley National Laboratory; \(^1\)Lawrence Berkeley National Laboratory

9:55 AM Break

10:20 AM Invited
Thermodynamics of Metallic Nanoalloys: Towards an Understanding of Nanophase Diagrams by Computer Simulations: Karsten Albe\(^1\); \(^1\)TU Darmstadt

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations I

Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Donghun Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Tuesday AM Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Adri van Duin, Penn State; Michael Demkowicz, MIT

8:30 AM Invited
Multiscale Modeling of Nanoscale Precipitate Stability in Irradiated Materials: Brian Wirth\(^3\); Alicia Certain\(^2\); Donghua Xu\(^1\); Karl Hammond\(^1\); \(^1\)University of Tennessee; \(^2\)Pacific Northwest National Laboratory

8:55 AM
Molecular Dynamics Study of Nucleation during Crystallization: Ramanarayan Harsharupatruni\(^1\); David Wu\(^2\); \(^1\)Institute of High Performance Computing

9:10 AM
Interatomic Mobility of Partially Faceted Shrinking Grains: David Olmsted\(^1\); Mark Asta\(^1\); Tamara Radetic\(^1\); Colin Ophus\(^1\); Ulrich Dahmen\(^1\); \(^1\)University of California, Berkeley; \(^1\)Lawrence Berkeley National Laboratory; \(^1\)University of California, Berkeley; \(^1\)University of Belgrade; Lawrence Berkeley National Laboratory; \(^1\)Lawrence Berkeley National Laboratory

9:40 AM
Change in Electrical Resistivity of Pure Ti by ARB: Masato Ueda\(^1\); Kei Ota\(^2\); Masahiko Ikeda\(^2\); Daisuke Terada\(^2\); Nobuhiro Tsuji\(^2\); \(^1\)Kansai University; \(^2\)Kyoto University

9:55 AM Break

10:20 AM Invited
Thermodynamics of Metallic Nanoalloys: Towards an Understanding of Nanophase Diagrams by Computer Simulations: Karsten Albe\(^1\); \(^1\)TU Darmstadt
10:45 AM
Molecular Dynamics Simulation of Grain Boundary Migration: Chuang Deng¹; Mikhail Mendeleev²; Christopher Schuh¹; David Srolovitz⁴; ¹Department of Mechanical & Manufacturing Eng.; ²Ames Laboratory; ³Massachusetts Institute of Technology; ⁴Institute of High Performance Computing

11:00 AM
Molecular Dynamics Simulations of Grain Boundary Free Energy and Mobility in the BCC FE-20CR System: Isaac Toda-Caraballo¹; Carlos Capdevila¹; Paul Bristowe¹; ¹University of Cambridge; ²CENIM-CSIC

11:15 AM
A Comprehensive Investigation of Low Angle Grain Boundary Mobility in Pure Al Using Molecular Dynamics Simulations: Md. Jahidur Rahman¹; Hatem S. Zurob¹; Jeffrey Hoyt¹; ¹Department of Materials Science and Engineering, McMaster University; ²Department of Materials Science and Engineering, McMaster University

Cost Affordable Titanium IV: Low Cost Processing: Plasma, Microwave, Laser, Melting and Casting
Sponsored by:TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Laboratory; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

Tuesday AM Room: 217C
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: James Withers, MER Corporation; Laurentiu Nastac, The University of Alabama

8:30 AM Invited
Plasma-Spheroidization and Consolidation of Low-Cost Titanium Powders: Deepak Kapoor¹; Rajendra Sadangi¹; Chris Haines¹; Darold Martin¹; Kendall Mills¹; ¹US Army, ARDEC

8:50 AM Invited
Selective Laser Melting Technology - Challenges and Opportunities: Milan Brandt¹; Shoujin Sun¹; Martin Leary¹; Joe Elambasseril¹; Qianchu Liu¹; ¹RMIT University; ²DSTO

9:10 AM
Isothermal Forging of Microwave Sintered Ti-6Al-4V: Xiaolin Wu¹; Wei Xu¹; Ya Feng Yang¹; Shudong Luo¹; Ma Qian¹; Kenong Xia¹; ¹The University of Melbourne; ²The University of Queensland

9:30 AM
Consolidation of Blended Titanium/Magnesium Powders by Microwave Processing: M. Ashraf Imam¹; Arne Fillet¹; Ralph Bruce¹; Peter Pao¹; Jerry Feng¹; ¹Naval Research Laboratory

9:50 AM Break

10:10 AM Invited
Titanium Based Composite Coatings Deposited by High Velocity Oxygen Fuel (HVOF) and Plasma Spraying Methods: Asma Salman¹; Brian Gabbitas¹; Deliang Zhang¹; ¹The University of Waikato

10:30 AM Invited
Advancing Titanium by Continuous Casting: Kuang-O (Oscar) Yu¹; ¹RTI International Metals, Inc.

10:50 AM Invited
Mechanical Properties of Single-Melt Pam Processed Ti-6Al-4V Forgings: Mustafa Guelu¹; ¹Army

11:10 AM
Experimental and Numerical Investigation of the Effect Of Pulse Shaping on the Microstructure of Direct Laser Fabricated Ti-6Al-4V Alloy: Yuanfei Han¹; Colleen Bettles¹; Tom Jarvis¹; Xinhua Wu¹; ¹ARC Centre of Excellence for Design in Light Metals, Monash University

11:30 AM
Evolution of Texture in Ti-6Al-4V Fabricated by Selective Laser Melting: Marco Simonelli¹; Yau Yau Tse¹; Chris Tuck¹; ¹Loughborough University; ²The University of Nottingham

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session II
Sponsored by:TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday AM Room: 210B
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chair: Hahn Choo, University of Tennessee

8:30 AM Invited
Effects of Deformation History on Low-Cycle Fatigue Behavior of a Wrought AZ31B Magnesium Alloy Using Real-Time In-Situ Neutron-Diffraction Measurements: Wei Wu¹; Ke An¹; James Antonaglia¹; Matthew Wraith¹; Karin Dahmen¹; Peter Liaw¹; ¹The University of Tennessee; ²Oak Ridge National Laboratory; ³University of Illinois

9:00 AM Invited
Modeling the Statistics of Slip-Avalanches in Slowly Sheared Light Metals and Alloys: Karin Dahmen¹; James Antonaglia¹; Wei Wu¹; Ke An¹; Matthew Wraith¹; Jonathan Uhl¹; Peter Liaw¹; ¹University of Illinois at Urbana Champaign; ²University of Illinois at Urbana Champaign; ³University of Tennessee at Knoxville; ⁴Oak Ridge National Laboratory; ⁵University of Illinois

9:30 AM
In-Situ Diffraction Studies on Thermo-Mechanical Processes: Klaus-Dieter Liss¹; Kun Yan¹; Lisa Thoennesn¹; Saurabh Kabra¹; Rian Dippenaar¹; ¹Australian Nuclear Science and Technology Organisation; ²Australian Nuclear Science and Technology Organisation and University of Wollongong; ³University of Wollongong

9:50 AM
In-Situ Neutron Diffraction and Acoustic Emission Investigation of Twinning Activity in Magnesium: Jan Capk¹; Kristián Máthis¹; Premysl Beran¹; Petr Lukáš¹; ¹Charles University in Prague; ²Nuclear Physics Institute of the ASCR

10:10 AM Break

10:20 AM Invited
In-Situ Analysis of the Deformation Mechanisms in Mg Alloys between 50-250°C: Carl Boehlert¹; Zhe Chen¹; Ajith Chakkedath¹; Maria Teresa Perez Prado¹; Javier Llorca¹; Ivan Gutiérrez-Urrutia¹; Sangbong Yi¹; Dietmar Letzig¹; Qizhen Li¹; ¹The University of Alabama; ²Naval Research Laboratory; ³University of Wollongong; ⁴University of Victoria; ⁵Private

10:40 AM Invited
Experimental Investigation of Twinning Activity in Magnesium: The University of Alabama; ²Naval Research Laboratory; ³University of Wollongong; ⁴University of Victoria; ⁵Private

11:00 AM
Effects of Deformation History on the Formation of Twinning Activity in Magnesium: Carl Boehlert¹; Zhe Chen¹; Ajith Chakkedath¹; Maria Teresa Perez Prado¹; Javier Llorca¹; Ivan Gutiérrez-Urrutia¹; Sangbong Yi¹; Dietmar Letzig¹; Qizhen Li¹; ¹The University of Alabama; ²Naval Research Laboratory; ³University of Wollongong; ⁴University of Victoria; ⁵Private

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10:50 AM
Mechanical Behavior of Porous Magnesium/Alumina Composites: *Qizhen Li*; Henry Cay; 1University of Nevada, Reno

11:10 AM
Dynamic Damage Evolution and Fracture in Mg, Al, and Ti: George Gray; Ellen Cerreta; 1Los Alamos National Laboratory

11:30 AM
Anelastic and Plastic Properties of Magnesium Alloys Based Composites: Zazanka Trojanova; Kristian Mathis; Pavel Lukac; 1Charles University

Electrode Technology for Aluminium Production: Paste Plant Operations
Sponsored by:TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmeler, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday AM
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Sunil Bhajun, Qatalum

8:30 AM Introductory Comments

8:35 AM
A Green Anode Plant Performance Analysis Tool Fully Embedded In The Plant Control System: Xavier Genin; Pasquale Calo; Fabienne Virieux; 1Solios Carbone; 2Fives Solios

9:00 AM
Measures To Prevent Baked Anode Density Drop When Using High Porosity Cores: Vinicius Piffer; Chin Woo; Fabiana Nicas; Leonardo Paulino; Jeronimo Araujo; Rafael Bacelar; 1Alum; 2Alcoa

9:25 AM
New Green Anode Plant at EMAL – Start-Up and Operation in the First 2 Years: Manfred Beilstein; Raja Akhtar; Rudolf Gemein; 1Outotec GmbH; 2EMAL-Emirates Aluminium

9:50 AM
Improving Baked Anode Density and Air Permeability Through Process Optimization and Coke Blending: Bienvenu Ndjom; Muhammad Shafiq Malik; Amer Al Marzoouqi; Tapan Kumar Sahu; Saleh Ahmed Rabba; 1Dubai Aluminium

10:15 AM Break

10:25 AM
Development of an Analytical Dynamic Model of a Vibro-Compactor Used in Carbon Anode Production: Fatma Rebaïne; Mohamed Bouzaraa; Daniel Marceau; Duygu Kocafe; Brigitte Morais; 1University of Quebec at Chicoutimi; 2Aluminerie Alouette Inc.

10:50 AM

11:15 AM
Optimum Vibration Time for Green Anode Production: Shoulei Gao; Huanxue Wang; Chongai Bao; Shoujun Zhang; Joe Woo; Euel Cutshall; 1Sunstone Development; 2EC Consulting

11:40 AM
Comparison of Mixing Process Methods in Prebaked Anode Production: Sun Yi; Guan Huai; Zhou Shanhong; Liu Chaodong; Xu Haifei; 1Shenyang Aluminium and Magnesium Engineering and Research Institute Co. Ltd

Energy Technologies and Carbon Dioxide Management: Alternative Green Processes
Sponsored by:TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslav Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Tuesday AM
Room: 006C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Animesh Jha, University of Leeds; Soobhankar Pati, MOxST

8:30 AM Introductory Comments

8:35 AM
Thermodynamic Properties of Novel Low Melting Point LiNO3-NaNO3-KNO3 Ternary Molten Salts for Parabolic Trough Solar Power Generation: Tao Wang; Ramana Reddy; 1The University of Alabama

9:15 AM
A Thermochemical Study of the W/WO3 System: A Solar to Fuel Converter for Syngas Production: Jarrod Millsbein; Soumendra Basu; Srikanth Gopalan; Uday Pal; 1Boston University

9:35 AM Break

9:55 AM
Supercritical CO2-Corrosion of Steels in CCS Environment: Anja Pfenning; Sabrina Schulz; Axel Kruzynski; 1HTW Berlin; 2BAM Federal Institute of Materials Research and Testing

10:15 AM
An Experimental Investigation of a Flue Gas Recirculation System for Aluminium Melting Furnaces: James Wiswall; Mark Kruzynski; Srinivas Garimella; 1ALCOA

10:35 AM
Supercritical CO₂-Corrosion of Steels in CCS Environment: Anja Pfenning; Sabrina Schulz; Axel Kruzynski; 1HTW Berlin; 2BAM Federal Institute of Materials Research and Testing

10:55 AM
Infrared Radiation Properties of CuO-ZnO-Based Sintered Material Prepared for Energy-Saving Coating: Chao Lian; Wei Wei; Hao Bai; HongXu Li; 1University of Science and Technology Beijing

11:15 AM
Preparation of Modified Semi-Coke from Semi-Coke: Process Optimization: Xin Wang; 1Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology
Fatigue and Fracture of Thin Films and Nanomaterials: High Temperature and Electrical Properties
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Eric Schmid Institute of Materials Science; Daniel Kiener, Montana University; Xinghang Zhang, Texas A&M University; Daniel Giannela, University of Pennsylvania; Corinne Packard, Colorado School of Mines
Tuesday AM
March 5, 2013
Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chairs: Corinne Packard, Colorado School of Mines; Jeffery Wheeler, EMPA - Materials Science & Technology

8:30 AM Invited
Time- and Temperature-Dependent Deformation Behavior of Ultrafine-Grained Metals Investigated by Novel Nanoindentation Methods: Verena Maier1; Matthias Göken; Karsten Dürst1; 1University Erlangen-Nürnberg
9:00 AM
The Failure Mechanism of Recrystallization-Assisted Cracking of Solder Interconnections: Toni Mattila1; 1Aalto University
9:20 AM
Deformation Mechanisms of Ultra-Fine-Grained Aluminium using Elevated Temperature, Strain Rate Jump Indentation: Jeffrey Wheeler1; Verena Maier2; Karsten Dürst1; Matthias Goeken1; Johann Michler1; 1EMPA; 2Friedrich-Alexander University of Erlangen-Nuremberg
9:40 AM
Size and Environmental Effects on Fracture of Wear-Resistant Oxide Coatings: Samantha Lawrence1; David Adams2; Hussein Zbib1; David Bahr1; Neville Moody2; 1Washington State University; 2Sandia National Laboratories
10:00 AM Break
10:20 AM Invited
Lithium-Ion Batteries: When Mechanics Meets Chemistry: Joost Vlassak1; 1Harvard University
10:50 AM
Mechanical Behavior of Nanoporous Silicon Subjected to Extensive Deformation: Xu Jiang1; Eita Tochigi1; Andrew Minor2; T. John Balk1; 1University of Kentucky; 2Lawrence Berkeley National Laboratory; 4University of California, Berkeley
11:10 AM
In Situ Resistance Measurements of Cyclically Stressed Copper Lines on Polyimide: Oleksandr Glushko1; Megan Cordill1; 1University of Leoben
11:30 AM
Assessing the Electrical and Mechanical Performance of Wear-Tested Au-ZrO Films: Rachel Schoepner1; Helena Jir1; Somuri Prasad2; Ron Goeck2; Neville Moody1; David Bahr1; 1Washington State University; 2Sandia National Laboratories

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Characterization and Modeling of Fatigue
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontos, Drexel University
Tuesday AM
Room: 207B
March 5, 2013
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Sangid, Purdue University

8:30 AM Introductory Comments
8:35 AM Keynote
ICME Activities at GE: James Laflen1; 1GE
9:10 AM Invited
Application of High Energy Diffraction Microscopy to Fatigue Crack Initiation in a Ni-Based Superalloy: Harris Tucker1; Reetu Pokhare1; Jonathan Lind2; Robert Suter3; Clayton Stein2; Joseph Tucker2; Anthony Rollett1; S.F. (Frankie) Li1; 1University Michigan; 2Carnegie Mellon University; 3Lawrence Livermore Natl Laboratory
9:35 AM Invited
Synchrotron Imaging Characterization and Numerical Simulation of Short Fatigue Crack Propagation in Polycrystals: Yoann Guilhem1; Wolfgang Ludwig2; Henry Proudhon2; Jia Li3; 1INSA Lyon UMR 5510 CNRS; 2MINES ParisTech UMR 7633 CNRS
10:00 AM Break
10:20 AM Invited
In-Situ Measurements and Simulations of Grain Boundary Slip Localization in AlCu: Jacob Hochhalter1; Vipul Gupta2; Vesselin Yamakov2; Ashley Spear2; Stephen Smith2; Edward Galessgen1; 1NASA LaRC; 2National Institute of Aerospace; 3Cornell University
10:45 AM Invited
Novel Techniques for Analyzing Fatigue Crack Microstructures: I. Robertson1; D. Gross2; M. Martin1; K. Nygren1; 1University of Illinois Urbana-Champaign
11:10 AM Invited
Grain Boundaries and Twin Boundaries: Stronger or Weaker?: Zhefeng Zhang1; Zhenjun Zhang1; Linlin Li1; Peng Zhang1; 1Institute of Metal Research
11:30 AM Invited
Nonlinearity and Acoustic Harmonic Generation from Fatigue-Generated Dislocation Substructures: Sean Agnew1; J. Cantrell2; T. Apple1; C. Mayer; C. Amaro; W. Yost; J. Howe1; 1University of Virginia; 2NASA
11:55 AM Invited
Intra-Granular Stress Distributions in Fatigued Metals: Jun Jiang1; Ben Britton1; Angus Wilkinson1; 1University of Oxford
12:20 PM Concluding Comments
Sponsored by:TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Tuesday AM  Room: Grand Ballroom C3
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Yutaka Sato, Tohoku University; Glenn Grant, Pacific Northwest National Laboratory; Jonathan Martin, TWI Technology Centre (Yorkshire)

8:30 AM Invited
Understanding the Mechanisms that Affect Microstructural Evolution in Friction Stir Welding: Tracy Nelson1; Carl Sorensen1; 1Brigham Young University

8:50 AM Invited
Comparison between Friction Stir and Submerged Arc Welding applied to Joining DH36 and E36 Shipbuilding Steel: Stephen Cater1; Jonathan Martin1; Alexander Galloway1; Norman McPherson1; 1TWI; 2University of Strathclyde; 3BAE Systems Surface Fleet

9:10 AM
Friction Stir Welding of Pipeline Steels: Murray Mahoney1; Samuel Sanderson2; Zhili Feng3; Russell Steel4; Scott Packer5; Dale Fleck5; 1Retired from Rockwell Scientific; 2MegaStir Technologies; 3Oak Ridge National Laboratories; 4MegaStir Technologies; 5Advanced Metal Products

9:30 AM
Microstructure and Properties of Friction Stir Processed HY80 Steel: Garth Young1; William Stewart1; Murray Mahoney1; Russell Steel1; Jon Babb2; Sarah Menon2; Terry McNelley2; 1NAVFAC ESC; 2US Navy; 3Consultant; 4MegaStir Technologies; 5Naval Postgraduate School

9:50 AM
Microstructure and Mechanical Properties of Friction Stir Welds of 590MPa Grade Dual Phase Steel Sheets: Sang-Hyun Kim1; Kwang-Jin Lee1; Kee-Do Woo1; 1Korea Institute of Industrial Technology; 2Chonbuk National University

10:10 AM Break

10:20 AM
Mechanical Properties and Microstructure Characterization of Multilayered Multipass Friction Stir Weld in Steel: Yongsae Lim1; Samuel Sanderson1; Murray Mahoney1; DongxiaQiao2; Yanli Wang2; Wei Zhang2; Zhili Feng1; 1Oak Ridge National Laboratory; 2MegaStir Technologies; 3Advanced Metal Products

10:40 AM
Welding Processes and Mechanical Behaviors of Friction Stir Spot Welded Joints of Dissimilar Ferrous Alloys: Md. Abu Monazem Hossain1; Md. Tariqul Hasan1; Sung-Tae Hong1; Michael Miles1; Hoon-Hwe Cho1; Heung Nam Han1; 1University of Ulsan; 2Brigham Young University; 3Seoul National University

10:55 AM Invited
Effect of Welding Parameters on Microstructure and Mechanical Properties of Friction Stir Welded 11Cr-Ferritic-Martensitic Steel: Yutaka Sato1; Hiroyuki Kokawa1; Yasuhide Yano2; Yoshihiro Sekio2; 1Tohoku University; 2Japan Atomic Energy Agency

11:15 AM
The Friction-Stir-Welding of Carbon Steels Using a Co-Based Alloy Tool: Itto Sugimoto1; Akihiro Sato1; Seung Hwan Park1; Satoshi Hirano1; Shinya Imano1; Yutaka Sato2; Hiroyuki Kokawa2; Yoshihiro Omori2; Kiyohito Ishida2; 1Hitachi Research Laboratory; 2Tohoku University

11:35 AM
Establishing W-Based Friction Stir Welding Tool Life for Thick Section Steel Applications: Michael Eff1; Sudarsanam Babu2; Brian Thompson1; Todd Leonard1; 1EWI; 2The Ohio State University; 3Rhenium Alloys, Inc.

11:55 AM
Effects of Advancing and Retreating Side Alteration during Power and Temperature Controlled FSW of Copper Canisters: Lars Cedersvi1t; Mats Björek1; Olof Garpinger1; 1Swedish Nuclear Fuel and Waste Management Company (SKB); 2Lund University

12:15 PM
Influence of Heat Input on Friction Stir Welding for the ODS Steel MA956: Luke Brever1; Sarah Menon1; Bradford Baker1; Terry McNelley1; Bassem El-Dasher2; Sharon Torres2; Joseph Farmer1; Murray Mahoney1; Samuel Sanderson1; 1Naval Postgraduate School; 2Lawrence Livermore National Laboratory; 3Rockwell Scientific (retired); 4MegaStir Technologies

Frontiers in Solidification Science: Macroscale Phenomena
Sponsored by:TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Tuesday AM  Room: Lone Star Salon F
March 5, 2013  Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Michel Rappaz, EPFL; Mark Jolly, Cranfield University

8:30 AM Invited
Development of an Inverse Thermal Model of the Low-Pressure Die-Cast (LPDC) A356 Aluminum Alloy Wheels: Jianglan Duan1; Steve Cater1; Andre Phillion1; Carl Reilly1; 1The University of Manchester; 2Helmholtz-Zentrum Dresden-Rossendorf

9:00 AM Invited
The Solute Partition and Segregations of Multi-Component Alloys in Solidification Process: Wangqi Jie1; Guangyu Yang1; Xiaoyan Sun1; 1Northwestern Polytechnical University

9:30 AM
Microscopic Modelling of Freckle Formation during Directional Solidification and Its Verification Via In Situ X-Ray Observation: Lang Yuan1; Natalia Shevchenko1; Sven Eckert1; Shyamprasad Karagadde1; Peter Lee1; 1The University of Manchester; 2Helmholtz-Zentrum Dresden-Rossendorf

9:50 AM Break

10:05 AM Invited
Thermomechanics and Residual Stresses in Aluminum Direct Chill Casting: Jean-Marie Drezet1; Alexander Evans2; Pierre Celle2; 1Ecole Polytechnique Federale Lausanne; 2Institut Laue Langevin Grenoble; 3Constellium CRV Voreppe
10:35 AM Application of Granular Modeling to Fusion Welding of Al Alloys: Hamid Reza Zareie Rajani; Andre Phillion; University of British Columbia

10:55 AM A Model for the Flow in the Mushy Region during Solidification in an Electromagnetically-Stirred Melt: Gregory Poole; Nagy El-Kaddah; The University of Alabama

11:15 AM Nanoparticles Controlled Solidification of Hypermonotectic Alloys: Lianyi Chen; Jiuan Xu; Hongsok Choi; Xiaochun Li; University of Wisconsin Madison

High Temperature Electrochemistry: Energy Storage Devices and Electrochemical Synthesis
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Laboratory

Tuesday AM Room: 006D
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Donald Sadoway, Massachusetts Institute of Technology; Uday Pal, Boston University

8:30 AM Ca-Based Liquid Metal Battery for Grid Scale Energy Storage: Ca-Mg||Bi: Takanari Ouchi; Hojong Kim; Xiaohui Ning; Donald Sadoway; MIT

9:00 AM Electrochemical Synthesis of AB5-type RE-Ni Based Alloys Via FFC Cambridge Process: Qian Xu; Xue Kang; Ximei Yang; Shuang Li; Song Qiushi; Northeastern University

9:30 AM Electrochemical Preparation of Ti2AlC in Molten Chloride Bath: Amr Abdelkader; University of Manchester

10:00 AM Break

10:20 AM Electrochemical Formation of Rare Earth-Nickel Alloys in NaCl-KCl Molten Salt: Kouji Yasuda; Seitaro Kobayashi; Katsuya Kondo; Toshiyuki Nohira; Rika Hagiwara; Kyoto University

10:50 AM Electrochemical Behavior of Calcium-Lead Alloys in Molten Salt Electrolytes: Xiaohui Ning; Takanari Ouchi; Hojong Kim; Donald Sadoway; MIT

11:20 AM Using Cyclic Voltammetry to Study Electrochemical Behavior of HF4-in NaCl-KCl-KHF2 molten salt: Chen Song; Ye Zhaogeng; Cai Zhenping; Wang Lijun; General Research Institute for Non-ferrous Metals

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Materials Genome Approaches I (Joint Session with Computational Discovery of Novel Materials)
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University
Tuesday AM Room: 205
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Axel van de Walle, Brown University; Stefano Curtarolo, Duke University

8:30 AM Invited Crystal Structure Prediction with the Minima Hopping Method: Stefan Goedecker; Uni Basel

9:00 AM Invited Prediction and Design of Materials from Crystal Structures to Nanocrystal Morphology and Assembly: Richard Hennig; Cornell University

9:30 AM Invited Dissolving the Periodic Table in Zirconia: Data-Mining for Chemical Descriptors: Bryce Meredith; Chris Wolverton; Northwestern University

10:00 AM Break

10:20 AM Invited Finding the Alloy Genome: Gus Hart; Lance Nelson; Fei Zhou; Vidvuds Ozolins; Brigham Young University; University of California, Los Angeles

10:50 AM Invited Compressively Sensed Ab Initio Hamiltonians: Fei Zhou; Vidvuds Ozolins; Lance Nelson; Gus Hart; University of California, Los Angeles; Brigham Young University

11:20 AM Invited Design of Functional Semiconductors with Multi-Target Properties: Stephan Lany; NREL

Hybrid and Hierarchical Composite Materials: Metal Matrix Composites
Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin-Milwaukee

Tuesday AM Room: 215
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Brian Justusson, University of Michigan

8:30 AM Diffusion Database for the Development of Magnesium Alloys and Their Hierarchical Composites: Yongho Sohn; Dongho Shin; Catherine Kammerer; Sarah Brennan; Katrina Bermudez; Joseph Hamilton; University of Central Florida
9:00 AM
On the Strength of Particle-Based Metal-Matrix Nano Composites (MMNCs): Chang-Soo Kim1; J.B. Ferguson1; Benjamin Schultz2; Pradeep Rohatgi3; 1University of Wisconsin-Milwaukee

9:20 AM
Effect of Contact Damage on Metal-based Low-Density Hybrid Structures: Tania Vodenitcharova1; Mark Hoffman1; Kaveh Kabiri1; Alan Xu1; Neil Lazo2; 1US Army Research Laboratory; 2University of New South Wales

9:40 AM
Multi-Scale Modeling of Ceramic Fabric Reinforced Aluminum Matrix Composites: Brandon McWilliams1; Charles Mansfield1; Chian Yen2; 1US Army Research Laboratory; 2University of Central Florida

10:00 AM Break

10:15 AM
Processing of Hybrid Structures Consisting of Al-Based Metal Matrix Composites (MMCs) with Metallic Reinforcement of Steel or Titanium: Michael Aghajanian1; Eric Klier2; Kevin Doherty2; Brian Givens1; Matthew Watkins1; Allyn McCormick1; Prashant Karandikar1; 1M Cubed Technologies, Inc.; 2US Army Research Laboratory

10:35 AM
Dynamic Properties of Selective Laser Melted Titanium Microlattice Structures: Peifeng Li1; Nik Petrinic2; Clive Sivivour3; 1Nanyang Technological University; 2Oxford University

10:55 AM
Ferroelectric Ceramic-Reinforced Metal Matrix Composites: Yongmei Jiu1; Stephen Kampe1; 1Michigan Technological University

11:15 AM
Diffusion Bonding of Commercially Pure Titanium Using Cu-Zn Interlayer: Yasser Ahmed1; Bakr Rabeeh1; 1German University in Cairo


Tuesday AM Room: 202B Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM
Role of Solute Additions on Long Range Order in Ni-Cr Alloys: Julie Tucker1; Leland Barnard2; Dane Morgan3; George Young4; 1Knolls Atomic Power Laboratory; 2University of Wisconsin-Madison

8:50 AM
Influence of Grain Boundary Structure on Segregation of Cr/He Atoms in Fe: Mark Tschopp1; Fei Gao2; Kiran Solanki3; Xin Sun4; 1Mississippi State University; 2PNNL; 3Arizona State University

9:10 AM
Preservability of Boundary Defect Sink Property under Extreme Radiation in a Iron: Di Chen1; Jing Wang2; Lin Shao3; 1Texas A&M University

9:30 AM Invited
A Multiscale Metal/Hydride Mechanical Model for Used-Fuel Zircaloy Cladding under Long-Term Storage and Transport: Glen Hansen1; Jakob Ostien2; Remi Dingreville3; Qiushi Chen4; 1Sandia National Laboratories

10:00 AM Break

10:10 AM
A Multiscale Analysis of Dislocation Climb: Alankar Alankar1; Alfredo Caro1; Ricardo Lebensohn2; 1Los Alamos National Laboratory

10:30 AM
Modeling Hydrogen Re-Distribution in Zircaloy under a Temperature Gradient: Olivier Courty1; Ian Davis2; Arthur Motta3; Kostadin Ivanov4; Maria Avramova5; 1Pennsylvania State University

10:50 AM Invited
Evolutionary Constitutive Model of Cyclic Deformation Response Based on Multi-Scale Interactions of Dislocations: Minh-Son Pham1; Koenraad G. F. Janssens2; Edoardo Mazza3; Stuart Holdsworth4; 1Swiss Federal Laboratories for Materials Science and Technology, Empa; 2Paul Scherrer Institut; 3Swiss Federal Institute of Technology Zurich (ETHZ)

11:20 AM
A Study on Thermal Aging Effect on the Microstructure of 316 and CF3M Cast Stainless Steels by Integrating Computational Thermodynamics and Precipitation Modeling: Ying Yang1; Jeremy Busby2; 1Oak Ridge National Lab

11:40 AM
Cluster Dynamics Modeling of Defect Aggregation in Ferritic/Martensitic Iron Chrome: Aaron Kohner1; Brian Wirth1; Nathan Cappes2; Djamel Kaoumi2; Cem Topbas3; 1University of Tennessee; 2University of South Carolina; 3Pennsylvania State University

Magnesium Technology 2013: Mechanical Properties
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Tuesday AM Room: 214A Location: Henry B. Gonzalez Convention Center

Session Chairs: Alan Luo, General Motors Global Research and Development; Menahem Bamberger, Technion

8:30 AM
Compressive Creep Properties Exhibited by Wrought High Temperature Magnesium Alloys in Axial and Transverse Orientation – A Neutron Diffraction Study: Dimitry Sediako1; Lukas Biehler2; Mitchel VanHanege1; Scott Shook3; 1National Research Council Canada; 2University of British Columbia - Okanagan; 3TH Magnesium Inc.

8:50 AM
Creep Behaviour of Mg Binary Solid Solutions: Saeideh Abaspour1; Carlos Caceres2; 1School of Engineering The University of Queensland

9:10 AM
Influence of Yttrium on Creep Behavior in Nano-Crystalline Magnesium Using Molecular Dynamics Simulation: Mehul Bhatia1; Kiran Solanki2; 1Arizona State University
9:30 AM
Aging Behavior and Microstructural Evolution in Mg-0.2Zn-3Nd-0.5Zr Alloy: Amirreza Sanaty Zadeh; Shawn Xia; Alan Luo; Joseph Jakes; Donald Stone; UW-Madison; General Motors Global Research and Development Center; USDA Forest Product

9:50 AM
Microstructure and Mechanical Properties of Die Cast Magnesium-Aluminum-Tin Alloys: Alan Luo; Penghuai Fu; Xiaqin Zeng; Liming Peng; Bin Hu; Anil Sachdev; General Motors Global Research and Development; Shanghai Jiao Tong University; General Motors China Science Lab

10:10 AM Break

10:30 AM
Evaluation of Mg for Local Energy Absorption: Matthew Pawlicki; Paul Krajewski; Mark Voss; Louis Hector; General Motors

10:50 AM
Study on Microstructure and Mechanical Property of Squeeze Casting AZ91D Magnesium Alloy: Yanda Li; Zhiqiang Han; Alan Luo; Anil Sachdev; Baicheng Liu; Tsinghua University; General Motors Global Research and Development Center

11:10 AM
Mapping the Mechanical Properties of Alloyed Magnesium (AZ 61): Jennifer Hay; Phillip Agee; Agilent Technologies

11:30 AM
Damage Developed during High Temperature Deformation of Magnesium Alloys: A Continuous 3D Characterisation by X-Ray Micro Tomography: Pierre Lhuissier; Luc Salvo; Elodie Boller; Jean-Jacques Blandin; Université de Grenoble / CNRS; European Synchrotron Radiation Facility (ESRF)

11:50 AM
FE Modelling of Tensile and Impact Behaviours of Squeeze Cast Magnesium Alloy AM60: Sante DiCecco; William Altenhof; Henry Hu; University of Windsor

12:10 PM
High Temperature Deformation of Magnesium Alloy TX32-0.4Al-0.8Si: Chulasani Dharmendra; K.P. Rao; Norbert Hort; Karl Kainer; City University of Hong Kong; Helmut-Zentrum Geesthacht

12:30 PM
Effect of the Extrusion Conditions on the Microstructure and Mechanical Properties of Indirect Extruded Mg-Zn-Y Alloy with LPSO Phase: Jongsung Kim; Yoshihito Kawamura; Kumamoto University

Magnetic Materials for Energy Applications -III: Rare Earth-free Permanent Magnets II
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Tuesday AM
Room: 217D
March 5, 2013
Location: Henry B. Gonzalez Convention Center

Session Chairs: Raju Ramanujan, Nanyang Technological Univ; Frank Johnson, GE Global Research

8:30 AM Invited
Investigation of Gas Atomization and Consolidation Processing of Pre-alloyed Alnico Powder for Near-Net Shape Non-Rare Earth Magnets: Iver Anderson; Haley Dillon; Kevin Dennis; Lin Zhou; Andrij Palazyk; Matthew Kramer; Steve Constantines; Ames Laboratory; Iowa State University; Arnold Magnetic Technologies Corporation

9:00 AM Invited
High Coercivity Carbide Nanoparticles: A New Route to Permanent Magnet: Vincent Harris; University of Utah

9:30 AM Invited
Prospects for Improving Alnico Alloys: Matthew Kramer; Q. Xing; M. Miller; H. Zhou; R. McCallum; I. Anderson; S. Constantines; Ames Laboratory; Oak Ridge National Laboratory; Arnold Magnetic Technologies Corp.

10:00 AM Break

10:15 AM Invited
Microstructural Characterization of Alnico Alloys: Lin Zhou; Qingfeng Xing; H. Dillon; R. McCallum; I. Anderson; M. Kramer; D. Smith; M. McCartney; S. Constantines; Ames Lab; Arizona State University; Arnold Magnetic Technologies Corp

10:45 AM
MnAlC Permanent Magnets with Transition Metal Additives: Michael Lucic; Ralph Skomski; Parashu Kharel; Priyanka Manchanda; Jeffrey Shield; University of Nebraska-Lincoln; IIT Mandi

11:05 AM
Towards Rare-Earth Free Permanent Magnets: L1, Ferrous Alloys: Nina Bordeaux; Ana Maria Montes; Bradley West; Katayan Barnak; Laura Lewis; Northeastern University; Columbia University
Materials and Fuels for the Current and Advanced Nuclear Reactors II: Fuels I
Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday AM
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Brian Cockeram, Bechtel Marine Propulsion Corp

8:30 AM Invited
Microstructural Assessment of U-Rich U-Zr Alloys for Advanced Nuclear Fuels: Joseph McKeown1; Sandeep Irukuvarghula1; Sangjoon Ahn1; Mark Wall1; Luke Hsiung1; Sean McDeavitt1; Patrice Turchi1; 1Lawrence Livermore National Laboratory; 2Texas A&M University

8:50 AM
Characterization of U-10Zr-2Ce-5Sn and U-10Zr-2Ce-5Sb Alloys: Yeon Soo Kim1; Tom Wiencek1; Gerard Hofman1; Ed O’Hare1; Jeff Fortner2; 1Argonne National Laboratory

9:10 AM
Experimental Observation on Redistribution of Composition and Microstructure in U-10wt.%Zr Alloy after Anneals Under Temperature Gradient: William Sproves1; Maria Okniewski1; Yongho Sohn1; 1University of Central Florida; 2Idaho National Laboratory

9:30 AM
Interdiffusion and Reaction Between U-Zr and Fe-Cr-Ni Alloys: Youngjo Park1; Ke Huang1; Bulent Sencer1; J. R. Rooney2; Kevin Coffey1; Yongho Sohn1; 1University of Central Florida; 2Idaho National Laboratory

9:50 AM
Mechanical Properties and Microstructural Characteristics of Fresh U-Mo Fuels: Ramprashad Prabhakaran1; Barry Rabin1; Randy Lloyd1; Dennis Keiser1; Dan Wachs1; Indrajit Charit1; 1Idaho National Laboratory; 2University of Idaho

10:10 AM Break

10:30 AM
Homogenization of Low Enriched Uranium-10 wt. pct Molybdenum Alloy Monolithic Fuel Foils: Amy Clarke1; Kester Clarke2; David Alexander1; Pallas Papin1; Tim Tucker1; Joel Montalvo1; Carl Necker1; Robert Aikin1; Rodney McCabe1; Robert Forsyth1; Robert Field1; David Dombrowski1; 1Los Alamos National Laboratory

10:50 AM
Barrier Coatings for U-Mo Microspheres Created Via Low Temperature Fluidized Bed Chemical Vapor Deposition: Marie Arrieta1; Alifya Faizulla1; Delia Perez-Nunez1; Sean McDeavitt1; 1Texas A&M University

11:00 AM
Fabrication of Enhanced Thermal Conductivity UO2-SiC Composites Using Spark Plasma Sintering: Ghata Subhash1; Sunghwan Yeo1; James Tulenko1; Ronals Baney1; Ge LiHao1; 1University of Florida

11:30 AM
Establishment of a Rotating Electrode System for Production of Uranium Alloy Microspheres: Chad Thompson1; Carissa Humrickhouse-Helmreich1; Rob Corbin1; Sean McDeavitt1; 1Texas A&M University; 2TerraPower

11:50 AM
Method for Calculating the Apparent Thermal Conductivity of Packed Beds: Carissa Humrickhouse-Helmreich1; Rob Corbin2; Sean McDeavitt1; 1Texas A&M University; 2TerraPower

Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee
Program Organizers: Sebastien Dryepondt, ORNL; Kinga Unocic, ORNL; Jeffrey Ferguson, Auburn University; Xingbo Liu, West Virginia University

Tuesday AM
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Sebastien Dryepondt, Oak Ridge National Laboratory; Kinga Unocic, ORNL

8:30 AM Invited
Corrosion of Membrane Materials for Hydrogen Separation from Coal-Derived Syngas: Omer Dogan1; Benjamin Nielsen1; 1DOE National Energy Technology Laboratory; 2URS Corporation

9:00 AM
The Effect of High Vanadium Content in Coal-Petcoke Mixtures on the Stability of Solids in Gasification Slags: Jinichiro Nakano1; Xueyan Song1; Kyei-Sing Kwong1; James Bennett1; 1NETL; 2West Virginia University

9:20 AM Invited
Coatings for Improved High Temperature Durability: Vilapanur Rav1; Kevin Smith1; Abolian Shaghik1; Tom Krenck1; Stephanie Salas1; Armen Kutyan1; 1California State Polytechnic University, Pomona

9:50 AM Break

10:10 AM Invited
An Alternative Low-Cost Process for Deposition of MCrAlY Bond Coats for Advanced Syngas/Hydrogen Turbine Applications: Ying Zhang1; Brian Bates2; Jason Witman2; Joseph Simpson2; 1ORNL; 2Tennessee Technological University

10:40 AM
Sensitivity of Thermal Barrier Coating Degradation to Variations of the Chemical Composition of Molten Deposits: Timothy Montalban1; Joe Horwath1; Matthew Sullivan1; Daniel Mumma1; 1University of California, Irvine

11:00 AM Invited
Creep Life Modeling for High Temperature Processes: Jeffrey Hawk1; Paul Jablonski1; 1U.S. Department of Energy, National Energy Technology Laboratory

11:30 AM
Mechanistic-Based Lifetime Predictions for High Temperature Alloys and Coatings: Bruce Pint1; Sebastien Dryepondt1; Ying Zhang1; 1Oak Ridge National Laboratory; 2Tennessee Technological Univ.

11:50 AM
A Slag Management System for Gasification Operations: Kyei-Sing Kwong1; James Bennett1; Jinichiro Nakano1; 1NETL, US DOE; 2URS Corp

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Materials Processing Fundamentals: Physical Metallurgy of Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Tuesday AM
March 5, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Cong Wang, Saint-Gobain R&D ISA

8:30 AM
Non-Proportional Biaxial Strain Path Effects of Cold-Formed Sheet Steel: David Collins1, Richard Todd1; Angus Wilkinson1; University of Oxford

8:50 AM
Aluminum-Added TWIP Steels: Design, Processing and Properties: Markus Bambach1; Alireza Saeed-Akbari1; Wolfgang Bleck1; Alexander Schwedt1; Silvia Richter1; Onur Güven1; Dieter Senk1; Petric von Schweinichen1; RWTH Aachen University

9:10 AM
Reverse Fracture Occurring during Drop Weight Tear Test (DWTT) and Stain Hardening Obtained from Dynamic Compressive Test in Linepipe Steels: Minju Kang1; Hyunmin Kim1; Sang Yong Shin1; Nak J Kim1; Sungkuk Lee1; POSTECH; Graduate Institute of Ferrous Technology

9:30 AM
On the Effectiveness of the Shot Peening Process in Nickel Based Superalloy for High Temperature Applications: Olivier Messe1; Svjetlana Stekovic2; Mark Hardy1; Cathie Rae1; University of Cambridge; Rolls-Royce Plc

9:50 AM
Influence of Load Paths and Bake Hardening Conditions on the Mechanical Properties of Dual Phase Steel: Mehdi Asadi1; Heinz Palkowski1; Benteler Automotive; TU Clausthal

10:10 AM Break

10:20 AM
Numerical Simulations and Experimental Investigation of the Tensile Shear Test Behavior of Laser Welding of Zero-gap Lap-Joint Galvanized High-Strength DP980 Steels: Junjie Ma1; Fanrong Kong1; Radovan Kovacevic1; RCAM

10:40 AM
The Effect of Phosphorus and Sulfur on the Crack Susceptibility of Continuous Casting Steel: Weiling Wang1; Sen Luo1; Zhaozhen Cai1; Miaoyong Zhu1; Northeastern University

11:00 AM
Mathematical Modeling of Heat Transfer and Thermal Behaviour of Tool Steel H13 in Molten Aluminum Alloy A380: Tina Ding1; Jun Feng Su1; Henry Hu1; Xueyuan Nie1; Ronald Barron1; University of Windsor

11:20 AM
Optimization Investigation on the Soft Reduction Parameters of Medium Carbon Microalloy Steel: Chao Xiao1; Jingming Zhang1; Yanzhao Luo1; Lian Wu1; Shunxi Wang1; University of Science and Technology Beijing

11:40 AM
Effect of Microstructure Evolution on Hot Cracks of HSLA Steel during Hot Charge Process: Jiang Li1; Qian Wang1; Yongqian Lu1; Banglun Wang1; Shaoda Zhang1; Chongqing University

12:00 PM
A New Method for Ultrasonic Treatment on the Melt of Steel: Gand Nie1; Jinfu Kang1; Yisen Hu1; Tsinghua University

12:20 PM
Characterisation of Oxide Scale of Stainless Steel and Its Effect on Interfacial Behaviour in Hot Rolling: Dongbin Wei1; Zhengyi Jiang1; University of Wollongong

Materials Science in Reduced Gravity: Modeling and Properties

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

Program Organizers: Douglas Matson, Tufts University; Robert Hyers, University of Massachusetts Amherst; Hani Henein, University of Alberta

Tuesday AM
March 5, 2013
Room: Lone Star Salon E
Location: Grand Hyatt

Session Chairs: Valdis Bojaevics, University of Greenwich; Richard Grugel, NASA MSFC

8:30 AM Introductory Comments

8:40 AM
Bubble Induced Disruption of a Planar Solid-Liquid Interface during Controlled Directional Solidification in a Microgravity Environment: Richard Grugel1; Lucien Brush2; Amnur Anilkumar2; Marshall Space Flight Center; University of Washington; Vanderbilt University

9:00 AM
Surface Oscillation of Levitated Liquid Droplets under Microgravity: Masahito Watanabe1; Akitoshi Mizuno1; Shumpei Ozawa1; Takeotshi Hibiya1; Chubu University; Chiba Institute of Technology; Keio University

9:20 AM Break

9:30 AM Invited

Containerless Processing on ISS: Experiment Preparation for EML: Stephan Schneider1; Angelika Diefenbach2; Rainer Wilkecker2; DLR / Institut für Materialphysik im Weltraum; DLR / Microgravity User Support Center

10:00 AM
Copper Sphere Dynamics in the MSL-EML Coil System: Valdis Bojaevics1; Alan Roy1; Koulis Pericleous1; Georg Lohoefer2; Achim Seidel2; University of Greenwich; German Aerospace Center (DLR); Astrum Space Transport

10:20 AM
Investigations on the Falling of Droplets in an Instrumented Drop Tube-Impulse System: Pooya Delshad Khatibi1; Hani Henein1; University of Alberta

10:40 AM
Computational Analysis on the Validation and Application of Modulated Electromagnetic Induction Calorimetry: Xiaoye Ye1; Robert Hyers1; University of Massachusetts, Amherst
10:30 AM Concluding Comments

Microstructural Processes in Irradiated Materials: Advanced ODS Alloys
Sponsored by: TMS Structural Materials Division, TMS/ASM:
Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dan D. Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guenée, CEA-Saclay

Tuesday AM  Room: 203A
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Miller, Oak Ridge National Laboratory; Robert Odette, UC Santa Barbara

8:30 AM Invited
Recent Progress in the Development of Irradiation Tolerant Nanostructured Ferritic Alloys (NFA): G. Odette1; Takuya Yamamoto1; Yuan Wu1; Bo Yao2; Rick Kurz3; Danny Edwards1; David Hoelzer1; Stuart Maloyo1; Peter Hesemann1; James Cisten1; Kiyoshi Yabuuchi1; Akhiko Kimura1; Peter Wels1; UC Santa Barbara; Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Los Alamos National Laboratory; UC Berkeley; Lawrence Berkeley National Laboratory; Kyoto University

9:00 AM Microstructure and Swelling Response of MA957 ODS Steel under High Dose Neutron Irradiation: Alicia Certain1; Mychailo Toloczko1; Matthew Olzsza1; Daniel Schreiber1; Pacific Northwest National Laboratory

9:20 AM Tensile Properties of MA957 Neutron Irradiated to 43-103 DPA at Temperatures Ranging from 385-750°C: Mychailo Toloczko1; Alicia Certain1; Stuart Maloyo1; Battelle/PNNL1; LANL

9:40 AM Atom Probe Tomography Investigation of the Evolution of the Microstructure of Ion Irradiated ODS Ferritic Steels: Bertrand Radiguet1; Constantinos Hatzoglou1; Laurent Chaffron1; Yves Serruys1; Philippe Pareige1; GPM UMR CNRS 6634 - Université et INSA de Rouen; SRMA - CEA; SRMP - CEA

10:00 AM Break

10:20 AM Towards Understanding Atom Probe Artifacts: Measuring and Modeling the Effects of Trajectory Aberrations and Variable Field Evaporation Potentials: Nicholas Cunningham1; Peter Wells1; Brian Geiser2; G. Robert Odette1; UC Santa Barbara; Cameca

10:30 AM Comparison of the Microstructures of High Dose Ion Irradiated and As-Mechanically Alloyed 14YWT: Michael Miller1; Lan Yao1; Yanwen Zhang1; Oak Ridge National Laboratory

10:50 AM Solute Segregation to Grain Boundaries in a 14YWT Nanostructured Ferritic Alloy: Lan Yao1; Michael Miller1; ORNL

11:10 AM Effect of Cryogenic Milling on the Properties of Fe-14Cr ODS Powder: Jeoung Han Kim1; Thak Sang Byun1; Seong Woong Kim1; Chan Hee Park1; Jong Taek Yeom1; Korea Institute of Materials Science; Oak Ridge National Laboratory

TUESDAY AM

LECARN • NETWORK • ADVANCE
Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Size Effects

8:30 AM Invited
An Explanation of the Power-Exponent in the Size Effect on Strength in Micro-Crystals: Alfonso Ngun1; Rui Gu1; 1University of Hong Kong

9:00 AM
Size Effect on the Mechanical Properties of Amorphous Alloys: G.P. Zheng2; H.Y. Zhang3; 3Hong Kong Polytechnic University

9:20 AM Invited
Probing the Origin and Evolution of Strength and Ductility in Small Volumes with In Situ TEM Nanomechanical Testing: Andrew Minor1; 1UC Berkeley & LBL

9:50 AM
Length Scale Effects on Experimental Investigations of Nano-Scale Metallic Multilayer Systems: Rachel Schoepfner1; Niaz Abdolrahim1; Hussein Zbib1; David Bahr2; 2Washington State University

10:10 AM Break

10:20 AM Invited
Size Dependent Actuation Mechanisms of Ferromagnetic Shape Memory Alloys in Sub-micron/Nano Size Scale: Nevin Ozdemir1; Ibrahim Karaman1; Nathan Mara2; 2Texas A&M University; 3Los Alamos National Laboratory

10:50 AM
In Situ TEM Compression Testing of Natural Quartz Nanopillars for Paleopiezometry: Eita Tochigi1; Eloisa Zepeda2; Hans-Rudolf Wenk2; Andrew Minor1; 1Lawrence Berkeley National Laboratory; 2University of California, Berkeley

11:10 AM
Surface Induced Deformation and Spontaneous Contraction of Nanoporous Gold: Xing-Long Ye1; Hai-Jun Jin2; 1Institute of Metal Research, Chinese Academy of Sciences

11:30 AM
Effect of Zero-Point Vibrations on the Peierls Stress of Dislocations: Laurent Provival1; David Rodney2; Mihai-Cosmin Marinica3; 1Commissariat à l’Energie Atomique; 2INP Grenoble

11:50 AM
In Situ Transmission Electron Microscopy Studies of Size-Dependent Plasticity in Ceramic Materials: Sara Kiani1; Suneel Kodambaka1; A. M. Minor1; Jenn-Ming Yang2; 2UCLA

Modeling of Multi-Scale Phenomena in Materials Processing - III: Heat Treatment

8:30 AM Introductory Comments

8:35 AM Invited
Internal Stress Generation During Quenching of Thick Heat Treatable Aluminium Alloys: Jean-Marie Drezet1; Nicolas Chobaut2; Patrick Schloth1; Helma Van Swygenhoven1; 1Ecole Polytechnique Federale Lausanne; 2Paul Scherrer Institut, Switzerland

9:20 AM Multiscale Modeling of Microstructure Evolution during Thermo-Mechanical Processing: Ravi Shankar1; Wei-Tsu Wu1; Alexandar Bandar1; Masoud Anahid1; Sivom Manchiraju1; Jin Yong Oh1; 1Scientific Forming Technologies Corporation

9:45 AM Thermo-Metallo-Mechanical Modelling of an Austenitic Stainless Steel Bead-on-Plate Weld: Koen Decroos1; 1Catholic University of Leuven

10:10 AM Break

10:40 AM A High Order Mathematical Model for Calculating Casting Temperature Field Based on ADI Method: Xiaofeng Niu1; Wei Liang1; 1Taiyuan University of Technology

Program Organizers:
- Nathan Mara, Los Alamos National Laboratory; J. Wang, Los Alamos National Laboratory; B. Boyce, Sandia National Laboratories; J. Carter, Case Western Reserve University; A. Rollett, Carnegie Mellon University; J. Zimmerman, Sandia National Laboratories; M. Li, Ford Motor Company
- Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; A. Rollett, Carnegie Mellon University; L. Nastac, The University of Alabama; J. Madison, Sandia National Laboratories; M. Li, Ford Motor Company
- Program Organizers: A. Sabau, Oak Ridge National Laboratory; A. Rollett, Carnegie Mellon University; L. Nastac, The University of Alabama; J. Madison, Sandia National Laboratories; M. Li, Ford Motor Company
- TMS 2013 Annual Meeting Final Program
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session III

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Tuesday AM Room: 007B Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shalhabzian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session III

8:30 AM Invited

The Electrochemical Flow Capacitor for Efficient Grid-Scale Energy Storage: Yury Gogotsi1; Chris Dennison1; 1Drexel University

8:50 AM Invited

Nanostructured Materials for Energy Storage Devices: From Super capacitors to Li-Ion Batteries: Gleb Yushin1; 1Georgia Institute of Technology

9:10 AM Invited

Carbonized Chicken Eggshell Membranes with 3D Architectures as High-Performance Electrode Materials for Supercapacitors: Zhi Li1; Chris Holt1; Babak Shalchi Amirkhiz1; Xuehai Tan1; David Mitlin1; 1University of Alberta

9:30 AM Invited

Hierarchical Carbon Scaffolds for Batteries and Supercapacitors: Emmanuel Giannelis1; 1Cornell University

9:50 AM Invited

Chemical Synthesis, Computational Modeling, and Surface Reactions of Silicon Nanotube Anodes and Silicate Cathodes for Lithium Ion Batteries: Christopher Hinkle1; Ananddeep Sra1; David Arreaga-Salas1; Joseph Rossi1; Roberto Longo1; Kay Roeddenko1; KJ Cho1; Yves Chabal1; 1University of Texas at Dallas

10:10 AM Break

10:30 AM Invited

Flexible Nanostructured Composite Electrodes for High Performance Supercapacitors: Xiaodong Li1; 1University of South Carolina

10:50 AM Invited

Graphenic Material for High Performance Li-Ion Battery Electrodes: Harold Kung1; Xin Zhao1; Cary Hayner1; Mayfair Kung1; 1Northwestern University

11:05 AM Invited

Microstructure Evolution Modeling for Solution Treatment of Aluminum Alloys: Hebi Yin1; Adrian Sabau1; Timothy Skszek2; Xiaoping Niu1; 1Oak Ridge National Laboratory; 2Vehma International; 3Promatek Research Centre

11:30 AM Invited

Yield Strength Prediction for Rapid Age-hardening Heat Treatment of Aluminum Alloys: Hebi Yin1; Adrian Sabau1; Gerard Ludtka1; Timothy Skszek2; Xiaoping Niu1; 1Oak Ridge National Laboratory; 2Vehma International; 3Promatek Research Centre

11:10 AM Invited

Tobacco Mosaic Virus Enabled Si Anodes and LiFePO4 Cathodes for Li-Ion Batteries: Chunsheng Wang1; Kang Xu2; James Culver3; Reza Ghodssi1; 1University of Maryland; 2Army Research Lab

11:30 AM Invited

Capacitive Energy Storage Using Carbon Supercapacitor: From Modeling to Device: Jungsong Huang1; Rui Qiao2; Vincent Meunier2; Bobby Sumpter1; 1Oak Ridge National Laboratory; 2Clemson University; 3Rensselaer Polytechnic Institute

11:50 AM Invited

Defective Carbon Nanomaterials as the Cathodes for High Performance Lithium Batteries: Xinwei Cui1; Weixing Chen1; 1University of Alberta

12:10 PM

Controllable Fabrication of SnO2/SnCo Nanocomposites as Anodes for Lithium Ion Batteries: Youlan Zou1; 1Central South University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction Across the Time and Length Scale

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, University of Tennessee

Tuesday AM Room: 209 Location: Henry B. Gonzalez Convention Center

Session Chairs: Olivier Delaire, ORNL; Xun-Li Wang, City University of Hong Kong

8:30 AM Keynote

Diffraction from Nanocrystalline Materials: Paolo Scardl1; 1University of Trento

8:55 AM Invited

In Situ X-ray Studies of Reactive Synthesis of Metastable Materials: Carol Thompson1; Edith Perret1; Weronika Walkosz2; Matthew Highland3; Stephen Streiffer1; Paul Fuoss2; Peter Zapol1; G. Brian Stephenson1; 1Northern Illinois University; 2Argonne National Laboratory

9:15 AM Invited

Nanosize Heterogeneities in Gum-Metals: Masato Ohnuma1; S Koppouj1; Y Ob1; S Kuramoto2; T Furuta1; M Furusaka1; M Eldrup1; 1National Institute for Materials Science; 2Toyota central research; 3Hokkaido University; 4DTU Riso campus

9:35 AM Invited

Advances in Serial Femtosecond Crystallography at XFELs: Kenneth Beyerlein1; 1DESY

9:55 AM Break

10:05 AM Invited

Synchrotron X-Ray Diffraction of Bone and Teeth to Study Load Partitioning between Mineral and Protein Phases: David Dunand1; Alix Deymier-Black1; Anjali Singhal1; Fang Yuan1; Jonathan Almer1; Catherine Brimson1; 1Northwestern University; 2Argonne National Laboratory

10:15 AM Invited

Rigorous Simulation of X-Ray Thermal Diffuse Scattering: Ruqing Xu1; Tai-Chang Chiang1; 1Argonne National Laboratory; 2University of Illinois at Urbana-Champaign
10:45 AM Invited
New Class of Solid-State Phase Transitions with Purely Dynamical Order: Michael Manley1; 1Lawrence Livermore National Laboratory

11:05 AM Invited
In-Situ Neutron Diffraction and Crystal Plasticity Modeling of a-Uranium: Rupalee Mulay1; Christopher Calhoun1; Elena Garlea2; Thomas Sisneros1; Sean Agnew1; 1University of Virginia; 2Y-12 National Security Complex; 1Los Alamos National Laboratory

11:25 AM
An In-Situ Diffraction Study of the Thermal Stability of Texture and Microstructure as a Function of Processing Parameters for Cu/Nb Nanolamellar Composites fabricated via Accumulative Roll Bonding: John Carpenter1; Sven Vogel1; Rodney McCabe1; Shijian Zheng1; Ruifeng Zhang1; Irene Beyerlein1; Nathan Mara1; 1Los Alamos National Laboratory

11:45 AM
Anharmonic Phonon Behavior in α-Fe at High Temperatures: Lisa Mauger1; Matthew Lucas2; Jorge Munoz3; Sally Tracy4; Brent Fultz5; 1California Institute of Technology; 2Air Force Research Laboratory

11:55 AM Invited
Investigating Microscopic Heat Transport with Neutron Scattering: Olivier Delaire1; 1Oak Ridge National Laboratory

12:15 PM
In Situ Synchrotron Investigation of the Martensitic Phase Transformation in High-Alloyed Austenitic Cast Trip Steel under High Hydrostatic Pressure: Anja Weidner1; Stephanie Ackermann1; Sebastian Henkel1; Dirk Kulawinski1; Gerd Lathe2; Markus Schwarz1; Christian Schimpf1; Christian Segel1; David Rafaja1; Horst Biermann1; 1TU Bergakademie Freiberg; 2Geoforschungszentrum Potsdam

12:30 PM Invited
In Situ X-Ray Studies of La0.6Sr0.4Co0.2Fe0.8O3-x Thin Films under Applied Electrochemical Potential: Edith Perret1; Mitchell Hopper1; Jeffrey Eastman1; Peter Baldo1; Kee-Chul Chang1; Brian Ingram1; Hoydoo You1; Paul Fuoss1; 1Argonne National Laboratory

Ni-Co 2013: Electrometallurgy
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday AM
Room: 007D
March 5, 2013
Location: Henry B. Gonzalez Convention Center
Session Chairs: Michael Moats, Missouri University of Science and Technology; Nathan Stubina, Barrick Gold Corp

8:30 AM
Acid Mist Abatement in Base Metal Electrowinning: Tim Robinson1; David White2; Ross Grassi3; 1Republic Alternative Technologies; 2Snowden mining Industry Consultants; 3Amec Mining and Metals/ Australia

8:55 AM
Boleo Cobalt Electrowinning Development: Jianming Lu1; David Dreisinger1; Thomas Gluck2; 1University of B.C.; 2Baja Mining

9:20 AM
Comparison of Intercell Contact Bars for Electrowinning Plants: Chris Boon1; Rob Fraser1; Tim Johnston1; Douglas Robinson1; 1Hatch

9:45 AM
Nickel and Cobalt Recovery from a Disseminated Nickel Concentrate Using the CESL Process: Tannice McCoy1; Keith Mayhew1; 1Teck Resources Limited

10:10 AM Break

10:20 AM
High Current Density Electrowinning of Nickel in EMEW Cells: Jeremy Robinson1; Ian Ewart1; Michael Moats2; Shijie Wang1; 1Electrometals USA; 2Missouri University of Science and Technology; 1Rio Tinto Kennecott Utah Copper

10:45 AM
Process Measurement and Controlling of the Electro Refining/Winning Operations: Shijie Wang1; Daniel Kim1; 1Rio Tinto Kennecott Utah Copper

11:10 AM
Helm Tracker™ Cathode Current Sensing Technology: Tim Johnston1; Rob Fraser1; John Yesberg1; Sebastien Nolet1; Chris Boon1; 1Hatch

11:35 AM
The Effects of Dithionate and Thiosulfate Ions on the Deposition of Cobalt and Nickel from Sulfate Solutions: Michael Nicol1; Venny Tjandrawan1; 1Murdoch University
Nano-Powders with Shell-Structures
Ultrasound Atomizer-Microwave Heating Joint Synthesis of ZnO

Properties for WC-FeAl Composites
The Effect of Structural Homogeneity and Refinement on Mechanical Engineering

Nanostructured Multi-Phase Titanium Based Materials Consolidated from Particles by Severe Plastic Deformation: Wei Xu; Xianshun Wei; Edward Lui; Matthieu Bardet; Jean-Francois Silvain; Kenong Xia; 1University of Melbourne; 2CNRS, Universite de Bordeaux

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior I
High Temperature Nanoindentation of Microstructural Constituents in a Sn-rich Pb-Free Solder: Jon Molina-Aldareguia; Saeid Lotfian; Kyle Yazzie; Javier LLorca; Nikhilesh Chawla; 1IMDEA Materials Institute, 28040-Madrid, Spain; 2Arizona State University

Session Chairs: Zak Fang, The University of Utah; Deliang Zhang, The University of Waikato
TUESDAY AM

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: Interfacial Reactions of the Pb-free Solder Joints

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee

Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jia-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Tuesday AM
March 5, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Chih-Ming Chen, National Chung Hsing University; Shien-Ping Feng, The University of Hong Kong

8:30 AM Invited
Reaction Evolution and Alternating Layer Formation in Sn-(Bi-xSb)xTe: Couples: Sun-wen Chen; Hsin-jay Wu; Chih-yu Wu; Chun-wei Chang; Chung-yi Chen; National Tsing Hua University

8:50 AM
Interfacial Reactions in the Cu/Ga/Cu Sandwich Joints: Cheng-liang Cho; Shih-kang Lin; National Cheng Kung University

9:05 AM
Interfacial Reactions between Au-Ge Eutectic Solders and Cu Substrates: Bo-Hsun Hsu; Shih-kang Lin; National Cheng Kung University

9:20 AM
Retardation of Cu-Sn Intermetallic Compounds at the Sn-3.0Ag-0.5Cu Interface during Thermal Aging: Wei-Yu Chen; Chi-Yang Yu; Jenq-Gong Duh; National Tsing Hua University

9:35 AM
Volume Shrinkage Induced by Interfacial Reactions in Micro Joints: C. Li; J. Yu; Z. Zhu; C. Kao; National Taiwan University

9:50 AM
Diffusion Barrier Characteristic and Breakdown Mechanism of Ni3P Crystalline Layer in Sn-3.0Ag-0.5Cu/ENEPG Solder Attachments with Ultrathin Ni-P Deposit: Cheng Ying Ho; Jenq-Gong Duh; National Tsing Hua University

10:05 AM Break

10:20 AM Invited
Kinetics of Solid-State Reactive Diffusion between Sn and Ni-V Alloys: Masanori Kajihara; Tokyo Institute of Technology

10:40 AM
Linear Growth and Cruciform Pattern Formation in Sn-Zn/Ni Interfacial Reactions: Chao-hong Wang; Hsien-hsin Chen; National Chung Cheng University

10:55 AM
EBSD Investigation of Cu-Sn IMC Microstructural Evolution in the Cu/Sn-Ag/Cu Microbumps during Isothermal Annealing: Wei-Hsiang Wu; Ling-Huaing Hsu; Chun-Chieh Wang; Cheng-En Ho; Yuan Ze University

11:10 AM
Solid-State Reactions by Surface and Bulk Diffusion between Sn-3.5Ag Solder and Ag Substrate: Beom-Yong Lee; Joo-Youl Huh; Korea University

11:25 AM
Interfacial Reactions of SAC305 on ECEPIG and EC Surface Finishes: Jia-Hong Hsu; Albert T. Wu; National Central University

11:40 AM
Effects of Pd(P) Thickness on Microstructure and Mechanical Behavior in Sn-3.0Ag-0.5Cu/Au/Pd-Ni-P Solder Joints during Soldering: Wei-Lin Chen; Jenq-Gong Duh; National Tsing Hua University

11:55 AM
Multiphase Intermetallic Growth in Space-Confined Ni/Sn/Cu Diffusion Couples: Wei-Lin Shih; C. Robert Kao; National Taiwan University

Phase Transformation and Microstructural Evolution: General Phase Transformations - Non-Ferrous: Part II


Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State University; Rajarshi Banerjee, University of North Texas; John Morral, Ohio State University; Brian Gleeson, University of Pittsburgh; Carolyn Campbell, National Institute of Standards & Technology; Yongho Sohn, University of Central Florida; Yunzhi Wang, Ohio State University

Tuesday AM
March 5, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dan Thoma, Los Alamos National Laboratory; Robert Field, Los Alamos National Laboratory

8:30 AM
A Microstructurally-Driven Materials Design Approach for Magnesium Alloy Development: Zachary Bryan; Michele Manuel; University of Florida

8:50 AM
Crystallographic and Kinetic Origins of Acicular and Banded Microstructures in U-Nb Alloys: Dan Thoma; Robert Field; Los Alamos National Laboratory

9:10 AM
Cubic to Trigonal Phase Transformation Due to Inclusion of the Boron in the Lattices of Ni3Al Phase Found at the Grain Boundaries of Boron Doped Ni3Al Alloy: Mohammad Shamsuzzoha; University of Alabama

9:30 AM
Effect of Precipitate Microstructure on Strength of Alloy 718: Duchao Lv; Ning Zhou; Donald McAllister; Michael Mills; Yunzhi Wang; OSU MSE
9:50 AM
Evolution of Two-Phase Gamma-Gamma-Prime Microstructure in a Ternary Co-W-Al Alloy: Eric Lass; Peter Bocchini; Kil-Won Moon; Maureen Williams; Carolyn Campbell; Ursula Kattner; David Dunand; David Seidman; NIST; Northwestern University

10:10 AM Break

10:30 AM
Martensite Superelasticity in Beta-Ti Alloys: Oliver Joris; David Dye; Nick Jones; Imperial College; Cambridge

10:50 AM
Martensitic Transformation in NiTi and NiTiCu Shape Memory Alloys: Lagrangian Dynamics Simulation: Oleg Shchyglo; Umut Salman; Alphonse Finel; ICAMS, Ruhr University Bochum; Harvard School of Engineering and Applied Sciences; LEM ONERA-CNRS

11:10 AM
Phase Stability of Ternary Antifluorite Type Compounds in the Quasi-Binary Systems Mg,Zn,MgY (X,Y=Si, Ge, Sn) Via Ab-Initio Calculations: Romain Viennois; Philippe Jaud; Catherine Colinet; Jean-Claude Tédena; Université Montpellier 2; ICMG; Science et Ingénierie des Matériaux et Procédés-CNRS

11:30 AM
Structural Evolution and Phase Transformation in Ni50-xMn39Sn11+x Alloys: Wu Wang; Jinke Yu; Sichuang Xue; Qijie Zhai; Hongxing Zheng; Shanghai University, Laboratory for Microstructures; Shanghai University, Laboratory for Microstructures; Shanghai University, Laboratory of Modern Metallurgy & Materials Processing

11:50 AM
The B2-B19'-BCO Transformation in Ni-Ti: An Ab-Initio Investigation: Anjana Talapatra; Raymundo Arroyave; Texas A&M University

12:10 PM
Investigation of the Effect of Ta Content on the Phase Transformation of a New High-Temperature Co-Based Superalloy: Peyman Samimi; Juah Song; Yue Liu; P. Collins; University of North Texas

8:35 AM Invited
Non-Conventional Transformation Pathways in Titanium Alloys: Hamish Fraser; Yufeng Zheng; Robert Williams; Soumya Nag; Srijivilliputhur Srinivasan; Peter Collins; Rajarshi Banerjee; The Ohio State University; University of North Texas

9:05 AM Invited
Phase Transformation Pathways: Partha Ghosh; A. Arya; R. Tewari; G. Dey; S. Banerjee; Bhabha Atomic Research Centre

9:35 AM
Non-Conventional Microstructure Formation due to Devitrification of Al-RE Metallic Glass: Can Yildiz; Mert Ovun; E. Park; Ryan Ott; Paul Voyles; Matthew Kramer; Eren Kalay; METU; Ames Laboratory US DOE; University of Wisconsin, Madison

9:55 AM Break

10:10 AM Invited
High Magnetic Field Processing: The Enabling Disruptive Science and Technology Path to Achieve the Next Generation of Structural and Functional Materials: Gerard Ludtka; Gail Ludtka; John Wilgen; Roger Kisner; Don Nicholson; Orlando Rios; Chad Parish; Michael Brady; Oak Ridge National Laboratory; Retired from Oak Ridge National Laboratory

10:40 AM Invited
Nitride Precipitation in Compositionally Heterogeneous Alloys: A Non Conventional Phase Transformation Path: Goune Mohamed; Van Landeghem Hugo; Jessner Peter; Danox Frederic; Danox Raphael; Beatrice Hannoyer; Abdelkrim Redjamia; Thierry Epiceri; ICMCB-Bordeaux; JFL; GPM; GPM-Université de Rouen; MATEIS-INSa de Lyon

11:10 AM Invited
Aberration Corrected Lorentz Microscopy of Magnetic Domains in Finely Twinned Ferrimagnetic Shape Memory Alloys: Shan Huai; Abhijet Budruk; Marc De Graef; Carnegie Mellon University

11:40 AM Invited
Deformation-Induced Transformation Reactions: John Perepezko; Zhe Wang; University of Wisconsin-Madison

12:10 PM
Evolution of Microstructure at High Speed Frictional Interfaces: Jacqueline Milhans; James Hammerberg; Ramon Ravelo; Timothy Germann; Brian Holian; Los Alamos National Laboratory; Physics Dept, University of Texas

Tuesday AM
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The Ohio State University

8:30 AM Invited
Effects of Precipitation on the Thermomechanical Response of Ni-Ti-Hf High Temperature Shape Memory Alloys: Xiang Chen; Daniel Coughlin; Michael Mills; Glen Bigelow; Ronald Noebe; Peter Anderson; The Ohio State University; NASA Glenn Research Center
9:00 AM  Characteristics of a New Precipitate Phase in Ni-rich Ni-Ti-Hf and Ni-Ti-Zr High Temperature Shape Memory Alloys: Ruben Santamarta1; Jaume Pons1; Alper Evirgen2; Raymundo Arroyave3; Haluck Karaca1; Ibrahim Karaman2; Ronald Noebe4; 1University of the Balearic Islands; 2Texas A&M University; 3University of Kentucky; 4NASA Glenn Research Center

9:20 AM  Characterizations of a Precipitate Phase in Ni Rich NiTiHf Alloys: Fan Yang1; Patrick Phillips2; Daniel Coughlin1; Limei Yang1; Arun Devaraj1; Libor Kovarik1; Ronald Noebe2; Michael Mills1; 1The Ohio State University; 2University of Illinois at Chicago; 3EMSL, Pacific Northwest National Laboratory; 4NASA Glenn Research Center

9:30 AM  Effects of Composition and Heat Treatments on the Shape Memory Behavior of NiTiHf alloys: Sayed Saghaian1; Haluk Karaca1; Hirobumi Tobe1; Ronald Noebe2; Glen Bigelow2; Mark Weaver4; Gregory Thompson1; 1University of Alabama; 2National Institute for Materials Science; 4NASA Glenn Research Center

10:00 AM  Break

10:20 AM  A Novel Dip-Coating Method for Metalizing Alumina with Aluminum Film: Xiao-shan Ning1; 1Tsinghua University

10:40 AM  CuCoMnOx as a Functional Coating for Solar Absorbers Using Sol Gel Technique: Nahed El Mahallawy1; Ali Yehia1; Shoeib Madiha2; 1The German University in Cairo; 2CMRD

11:00 AM  Effect of Heat Treatment Temperature on Shape Memory Characteristics in Ti38-Ni50-Hf12 Shape Memory Alloy: Chang Seok Bae1; Won Ki Ko1; Jae Il Kim1; 1Dong-a University

11:20 AM  Hardness and Microstructure Stability in Ni-Rich Nitinol Alloys with and without HF Additions: Billy Hornbuckle1; Tsaiuse Sakura2; Ron Noebe1; Glen Bigelow2; Mark Weaver4; Gregory Thompson1; 1University of Alabama; 2National Institute for Materials Science; 4NASA Glenn Research Center

11:40 AM  Effect of Ni Content on Aging Behavior of (88-X)Ti-XNi-12Hf(X=50.0~51.0)(at%) Alloys: Jeung-won Jo1; Nam-seok Kim1; Jong-taek Yeom1; Jae-geun Hong2; Jae-il Kim1; Tae-hyun Nam1; 1Gyeongsang National University; 2Korean Institute of Metals Science; 3University of Dong-A

12:00 PM  Workability and Martensitic Transformation of (88-X)Ti-XNi-12Hf(X=50.0~49.0)(at%) Alloys: Nam-Seok Kim1; Jeung-Won Jo1; Jong-Taik Yeom2; Jae-Geun Hong2; Jae-il Kim1; Tae-Hyun Nam1; 1Gyeongsang National University; 2Korean Institute of Materials Science; 3University of Dong-A
Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites: Processing, Microstructure and Mechanical Properties II
Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Materion Corporation; Golam Newaz, Wayne State University
Tuesday AM
Room: Bowie A
March 5, 2013
Location: Grand Hyatt
Session Chairs: Zariff Chaudhury, Materion Corporation; Martin Pech-Canul, CINVESTAV IPN SALTILLO

8:30 AM
Production and Nanostructure of Carbon Nanotubes and Diamond Based Composite Materials: F. Khalid; "GIK Inst. Eng. Sci & Tech

8:50 AM
Electrical Conductivity and Thermal Shock Resistance of Mo-ZrO2 Cermet: Lei Tang; Yanling Guo; Tao Zeng; Jieyu Zhang; Jifang Xu; Jianchao Li; Fei Ruan; "Shanghai University; "Soochow University; "Vocational and Industry Institute of Hebei

9:10 AM
Electrode Process of Al (III) and Its Surface Alloying on Cu Substrate in AICl3-NaCl Melts: Hongmin Kan; Ning Zhang; Xiaoyang Wang; "Shenyang University

9:30 AM
Behavior of Al, in Al/TiC Composites under Controlled Humid Environment: Evangelina Trujillo-Vazquez; Martin Pech-Canul; Saul Gallardo-Heredia; José Flores-García; "Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

9:50 AM
Effect of Reinforcement Coating, Alloy Chemistry and Aging Treatment on the Moduli of Elasticity and Rupture of Al/SiCp Composites: Ricardo Martinez-Lopez; Martin Pech-Canul; Maxim Pech-Canul; Luis Gonzalez; Zariff Chaudhury; Golam Newaz; "Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; "Materion Corporation; "Wayne State University

Refactory Metals 2013: Refractory Metal-based Materials III
Sponsored by: TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: David Honecker, Climax Molybdenum; Omar Dogan, DOE National Energy Technology Laboratory
Tuesday AM
Room: Mission A
March 5, 2013
Location: Grand Hyatt

8:30 AM
The Manufacture of a Novel Alloy through the Use of Mechanical Alloying and Sintering of Tungsten and Manganese Metal Powders: Shaunn Pickering; Kevin Jaansalu; "Department of National Defence; "Royal Military College of Canada

8:50 AM
Question and Answer Period

8:55 AM
Applications of Bond-Order Potentials for bcc Refractory Metals: Moroslaw Cak; Thomas Hammerschmidt; Ralf Drautz; "ICAMS, Ruhr-Universität Bochum

9:15 AM
Question and Answer Period

9:20 AM
Predicting Deformation of Single Crystal Niobium Using Crystal Plasticity Finite Element Method: Aboozar Mapar; Thomas Bieler; Farhang Pourboghrat; Christopher Compton; "Michigan State University

9:40 AM
Question and Answer Period

9:45 AM
Mechanical Properties and Constitutive Modeling of A New Tantalum Plate: Shuh Rong Chen; G. Gray; John Binger; Mike Lopez; Veronica Livescu; "Carl Trujillo; "Carl Cady; "Los Alamos National Laboratory

10:05 AM
Question and Answer Period

10:10 AM
Break

10:30 AM
Microstructural Observations of Dynamic Abnormal Grain Growth in Tantalum: Nicholas Pedrazza; Thomas Buchheit; Elizabeth Holm; Eric Talieff; "University of Texas at Austin; "Sandia National Laboratories

10:55 AM
Initial Study of a Novel Tungsten – 35at% Manganese Alloy by Mechanical Alloying Technique: Ossama Elsebaie; Kevin Jaansalu; "Royal Military College of Canada

11:15 AM
Question and Answer Period

11:20 AM
Hardness and Microstructure Changes in Tungsten Heavy Alloy Subjected to ECAE: Zachary Levin; K. Hartwig; Robert Barber; David Alven; "Texas A&M University

11:40 AM
Question and Answer Period

11:45 AM
Concluding Comments

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Metal Production
Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kothyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberg, Argonne National Laboratory
Tuesday AM
Room: 006A
March 5, 2013
Location: Henry B. Gonzalez Convention Center
Funding support provided by: Xstrata; SINTEF; Outotec; Umicro, and CR3, the Center for Resource Recovery and Recycling
Session Chairs: Kari Heiskanen, Aalto University; Bart Blanpain, KU Leuven

8:30 AM
Introductory Comments
8:35 AM
Highly Efficient Slag Cleaning – Latest Results from Pilot-Scale Tests:
Juergen Schmidl1; Roland König2; Axel Weyer2; Rolf Degel1; Harald Kaderzeit1; 1Aurubis AG; 2SMS Siemag AG

9:00 AM
The Revival of Onahama Smelter & Refinery from the Disaster by the Great East Japan Earthquake:
Naoki Horihata1; Shoji Kawashima1; Tetsuro Sakai1; 1Onahama Smelting & Refining Co., Ltd

9:25 AM
Leaching of Uranium and Vanadium from Korean Domestic Ore:
Rajesh Kumar Jyothi1; Joon Soo Kim1; 1Korea Institute of Geoscience and Mineral Resources (KIGAM)

9:50 AM Break

10:10 AM
Assessment of Quality Improvements by Delivering Molten Aluminum Alloys Instead of Ingots:
Salem Seifeddine1; Anton Bjurenstedt1; Tomas Liljenfors2; 1School of Engineering/ Jönköping University; 2Stena Aluminium AB

10:35 AM
Study of Adsorption Property of Ga(III) onto Strongly Basic Resin for Ga Extraction from Bayer Liquor:
Zhao Zhao1; Yongxiang Yang1; Hao Lu1; Zhongsheng Hua1; Xiaoling Ma2; 1Anhui University of Technology; 2Shimadzu (China) Co. Ltd

11:00 AM
Synthesis of Organosilicon Complexes from Rice Husk Derived Silica Nanoparticles:
Weixing Wang1; Jarett Martin2; Rong Cai1; Wenxi Huang1; Anhua Liu1; Aijie Han1; Lux Sun1; Haoran Chen2; 1South China University of Technology; 2Texas State University; 3The University of Texas-Pan American

11:25 AM
Pre-drying Eucalyptus Saligna for Carbonization:
Marcoz Moureau1; Lina Cardona1; Cyro Takano1; 1University of Sao Paulo

11:50 AM
PGM Recycling from Catalysts in a Closed Hydrometallurgical Loop with an Optional Cerium Recovery:
Stefan Steinlechner1; 1CDL for Optimization & Biomass Utilization in Heavy Metal Recycling

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Recycling & End-of-Pipe Solutions I
Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMPJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kviithyld, SINTEF; Markus Reuter, Outotec Oy; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krundick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Tuesday AM  Room: 006A
March 5, 2013 Location: Henry B. Gonzalez Convention Center
Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling
Session Chair: Randolph Kirchain, Massachusetts Institute of Technology; Christina Meskers, Umicore Precious Metals Refining; Anne Kviithyld, SINTEF

8:30 AM Introductory Comments

8:35 AM
Thermal Processing of Industrial Ashes for Ferrovanadium Production:
Yanping Xiao1; Yongxiang Yang1; Rob Boom2; 1Anhui University of Technology; 2TU Delft

9:00 AM
Characterization of Copper Slag:
Xuan Wang1; 1K.U.Leuven

9:25 AM
Recovery of Zinc and Iron from Steel Mill Dusts by the Use of a TBRC: A Possible Mini-Mill Solution?
Juergen Antrekowitsch1; 1University of Leoben

9:50 AM Break

10:10 AM
ISASMELT™ for Recycling of Valuable Elements Contributing to a More Sustainable Society:
Gerardo Alvear Flores1; 1Xstrata Technology

10:35 AM
Metal Recovery from Industrial Solid Waste – Contribution to Resource Sustainability:
Yongxiang Yang1; Yanping Xiao2; 1TU Delft; 2Anhui University of Technology

11:00 AM
Secondary Processors and Landfills – Partnerships that Work:
David Roth1; Ben Brewer1; 1By: Ben Brewer / Recycling Ventures LLC

11:20 AM
Material and Energy Beneficiation of the Automobile Shredder Residues:
Noureddine Menad1; Ndue Kanari2; Sylvain Guignot2; Frederic Dior1; Lev Filiippov2; Fabien Thomas2; Jacques Yvon2; 1BRGM; 2University

11:45 AM
Compared Study of a Water Drainage from a Closed Gold Tailing Pond and from a New One: Treatment of the Residual Cyanide:
Begoña Fernández1; Julia Ayala1; Maria Ordiales1; Ana Castañón1; 1Universidad de Oviedo
Synergies of Computational and Experimental Materials Science II: Processing and Phase Transformations

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Laboratory

Tuesday AM  Room: 217A  Location: Henry B. Gonzalez Convention Center
March 5, 2013

Session Chairs: Alessandro Mottura, University of Birmingham; Alexis Lewis, Naval Research Laboratory

8:30 AM  Introductory Comments

8:35 AM  Invited
3D Experiments and Simulations of Growth during Recrystallization: Dorte Jensen1; DTU

9:05 AM  Invited
Comparing Computed and Measured Grain Boundary Properties: Elizabeth Holm1; Gregory Rohrer1; Anthony Rollett1; Stephen Foiles2; Michael Chandross3; Carnegie Mellon University; Sandia National Laboratories

9:35 AM  Invited
Experimental Measurement of 3D Grain Boundary Networks in Polycrystalline Materials: Alexis Lewis1; David Rowenhorst1; Naval Research Laboratory

10:05 AM  Break

10:20 AM  Invited
Synergies between First-Principles Calculations and Experiments in the Development of New Co-Based Superalloys: Alessandro Mottura1; Tresa Pollock2; University of Birmingham; University of California, Santa Barbara

10:50 AM
Modelling and Characterisation of the Grain Growth Behaviour in an Advanced Polycrystalline Nickel-Based Superalloy: David Collins1; Bryce Conduit1; Gareth Conduit2; Mark Hardy2; Rob Mitchell2; Howard Stone2; University of Oxford; University of Cambridge; Rolls-Royce plc

11:10 AM
Investigation of Nucleation Mechanisms for Intergranular Complexion Transitions and Abnormal Grain Growth by Monte Carlo Modeling: William Frazier1; Anthony Rollett1; Gregory Rohrer1; Carnegie Mellon University

11:30 AM
Modeling and Experimental Characterization of Texture Evolution in Zirconium during Dynamic Extrusion: Juan Escobedo1; Carl Trujillo1; Ellen Cerretta1; Ricardo Lebendsohn1; Daniel Martinez1; George Gray1; Los Alamos National Laboratory

11:50 AM
Relating Experimental Liquid Metal Embrittlement Testing and Calculated Surface Energies: Auger Thierry1; Duane Johnson2; LinLin Wang2; Samuel Hemery1; MSSM/Centrale Paris; Iowa State University; Ames Laboratory

12:10 PM
Pressure and Temperature Dependent Anisotropy of Tetragonal Cerium: Adam Cadien1; Howard Sheng1; School of Physics, Astronomy and Computational Sciences, George Mason University

Three-Dimensional Materials Science VII: Characterization of Three-Dimensional Structures: Experimental & Simulated

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhil Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Tuesday AM  Room: 212A  Location: Henry B. Gonzalez Convention Center
March 5, 2013

Session Chairs: Megna Shah, AFRL; Wright Patterson AFB; McLean Echlin, University of California, Santa Barbara

8:30 AM  Invited
The 3D Analysis of Orientation Gradients within Deformed Materials: David Rowenhorst1; Alexis Lewis1; Naval Research Laboratory

9:00 AM
DualBeam™ FIB/EBSD Characterization of Microstructure Morphology in Ti Alloys: Daniel Huber1; John Sosa1; Vikas Dixit1; Brian Welk1; Robert Williams1; Hamish Fraser1; The Ohio State University

9:20 AM  Invited
Simultaneous 3D EBSD and EDS Via Serial Sectioning in a FIB/SEM: Stuart Wright1; Matthew Nowell1; EDAX

9:50 AM  Break

10:05 AM
Interfacial Surface Measures as a Tool for Investigating Porosity in Laser-Welds of 304-L Stainless Steel: Jonathan Madison1; Larry Aagesen1; Sandia National Laboratories; University of Michigan

10:25 AM
Application of Moment Invariants to Automated Microstructure Analysis: Lily Nguyen1; Marc De Graef1; Carnegie Mellon University

10:45 AM
Quantifying the Effect of Spatial Resolution on the Accuracy of Morphological Microstructure Distributions: Gregory Loughnane1; Michael Groeber2; Michael Uchic2; Ramana Grandhi1; Wright State University; Air Force Research Laboratory

11:05 AM  Break

11:20 AM  Invited
Test of the Estimation of the Growth Path Envelope from Size Distribution Evolution Measurements: Robert DeHoff1; Burton Patterson1; David Rule1; Veena Tikare1; Amy Adams1; University of Florida

11:50 AM
Serial Section Investigation of Grain Volume and Topological Distributions: Amy Adams1; Tyler Kaub1; David Rule1; Burton Patterson1; Robert DeHoff1; Veena Tikare1; University of Florida; Sandia National Laboratories

12:10 PM
Topological Event Rates in Grain Growth: Burton Patterson1; Robert DeHoff1; David Rule1; Veena Tikare1; University of Florida; Sandia National Laboratories, New Mexico
2013 Functional Nanomaterials: Synthesis, Properties and Applications: Low-Dimensional Nanomaterials I
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Tuesday PM Room: 201 Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Seung Kang, Qualcomm, Inc; Yuanbing Mao, University of Texas-Pan American

2:00 PM Invited
Self-Organized Synthesis of Bimetallic Nanostructures: Experiments, Modeling and Emergent Behavior: Ritesh Sachan1; Vanessa Ramos1; Sagar Yadavali1; Mikhail Khenner2; Anup Gangopadhayay1; Gerd Duscher3; Ramki Kalyanaraman4; Hernando Garcia5; 1University of Tennessee; 2Western Kentucky University; 3Washington University in St. Louis; 4Southern Illinois University in Edwardsville

2:35 PM Radiation Effects in Nanoporous Gold: Magdalena Serrano de Caro1; Engang Fu1; Luis Zepeda-Ruiz2; Yongqiang Wang3; Kevin Baldwin3; Eduardo Bringa4; Michael Nastasi5; Alfredo Caro6; 1Los Alamos National Laboratory; 2Lawrence Livermore National Laboratory; 3CONICET and Instituto de Ciencias Basicas; 4Nebraska Center for Energy Sciences Research; 5University of the Americas Puebla; 6University of technology of Chile

2:55 PM Enhancement of Catalytic Performance in the Pt Nanoparticle by Doping Zirconia Support with Y or Ce: A DFT Calculation: Myung Shin Ryu1; Hyuck Mo Lee1; 1KAIST

3:15 PM Break

3:35 PM Invited
Magnetic Polypropylene Nanocomposites Reinforced with Maleic Anhydride Grafted Polypropylene as Surfactant: From the Dot-pattern Creation with Supercritical CO2 and Colloidal Solution to the Essence of Nanocrystal Growth: With Catalyst System: Severine Boyer1; Chihiro Iwamoto2; Ryutaro Nakagawa1; Hirohisa Yoshida1; 1CNRS; 2Tokyo Metropolitan University

4:05 PM The Analysis of Orthogonal Experiment Method of Carbon-Coated LiNi1/3Mn1/3Co1/3O2 Via Microwave-pyrolysis Method: Yamei Han1; 1Northeastern University

4:25 PM Comparative Study on the Metal Aluminum Produced from Alumina by Carbothermic Reduction and Carbothermic-Chlorination: Qingchun Yu1; Bin Yang1; Yong Deng1; Fei Wang1; Heng Xiong1; Yongnian Dai1; 1Kunming University of Science and Technology

4:30 PM The Influence of Yttrium Doping on the Structural and Optical Properties of Zinc Oxide Nanowires: Hyung Woo Choi1; Zhongling Ye2; 1Yunnan Copper Co., Ltd.; 2Yunnan Copper Smelting & Processing Complex

4:45 PM An Overview of Research on Au & Ag Recovery in Copper Smelter: Jinfan Shi1; Zhonglin Ye2; 1Yunnan Copper Co., Ltd.; 2Yunnan Copper Smelting & Processing Complex

4:50 PM Synthesis and Luminescence Properties of Core@Shell RE:A2B2O7@A’B’O3 Nanoparticles: Suresh Alaparthi1; Rolando Soto2; Yuanbing Mao3; 1University of Texas - Pan American

5:10 PM

4th International Symposium on High-Temperature Metallurgical Processing: Alloy and Materials Preparation II
Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Tuesday PM Room: 008B Location: Henry B. Gonzalez Convention Center

Session Chairs: Ken Marsden, Idaho National Laboratory; Ting’an Zhang, Northeastern University

2:00 PM Production of Fe-Based Alloys by Metallothermic Reduction of Mill Scales from Continuous Casting Processes: Mehmet Bugdayci1; Murat Alkan1; Onuralp Yücel1; 1Istanbul Technical University

2:20 PM Study of Heat Flux in CSP Continuous Casting Mold: Wen Yang1; Lifeng Zhang1; Xinghua Wang2; 1University of Science and Technology Beijing

2:35 PM The Effect of Thermomechanical Ageing of Aluminium–Copper Alloy (MATLAB Approach): Adekunle Adegbola1; Ajibade Omooyinbo2; Oladayo Olaniran1; Akeem Ghazali3; Olugbenga Fashina4; 1The Polytechnic, Ibadan; 2Federal University of Technology, Akure, Nigeria

2:55 PM Research on Inclusions in CuCr Alloy Prepared by Thermit Reduction: Dong Zhihe1; Zhang Ting’an1; Shi Guanyong1; Du Yanjun1; Niu Liping1; Lv Guozhi2; Liu Yan3; He Jicheng3; 1Northeastern University

3:15 PM Copper-Based Multi-Component Alloys by Vacuum Distillation to Separate Copper Enriched Lead, Silver and Other Valuable Metals Research: Heng Xiong1; Bin Yang1; Dachun Liu1; Baqiang Xu1; Xiumin Chen1; Yong Deng1; 1Kunming University of Science and Technology

3:35 PM Break

3:45 PM An Overview of Research on Au & Ag Recovery in Copper Smelter: Yongnian Dai1; 1Kunming University of Science and Technology
4:45 PM  
Continuous Synthesis and Performance of Cathode Material LiNi1/3Co1/3Mn1/3O2 for Lithium Ion Batteries: Fu Mengbi1; 1Key Laboratory of Unconventional Metallurgy for Education Ministry 

5:05 PM  
Influence of Mechanical Vibration on Grain Refinement of Copper during Solidification: Yanbing Zong1; 1University of Science and Technology Beijing 

5:20 PM  
Tensile Mechanical Properties and Brittle Effect of Austempered Cr-Mo Alloy Steel: Cheng-Yi Chen1; Tuan-Sheng Lui1; Fei-Yi Hung1; Li-Hui Chen1; 1National Cheng Kung University 


Sponsored by: TMS: Materials and Society Committee, TMS: Public and Governmental Affairs Committee, TMS: Materials Innovation Committee 

Program Organizer: Kevin Hemker, Johns Hopkins University 

Tuesday PM  Room:  Lila Cockrell Theatre  
March 5, 2013  Location:  Henry B. Gonzalez Convention Center 

Funding support provided by: Acta Materialia and Elsevier 

Session Chair: Kevin Hemker, Johns Hopkins University 

2:00 PM  Introductory Comments 

2:05 PM  Invited 
The Evolving R&D Model: International Trends and U.S. Competitiveness: Jeffrey Wadsworth1; 1Battelle Memorial Institute 

2:45 PM  Invited 
Linking the Challenges of Materials Technology with Opportunities in Materials Research: William Nix1; 1Stanford University 

3:15 PM  Break 

3:30 PM  Invited 
Research and Development: The Key to Competitiveness in the 21st Century: Craig Barrett1; 1Intel Corporation 

4:00 PM  Invited 
Prospects and Challenges for a Global Expansion of Nuclear Energy: Siegfried Hecker1; 1Center for International Security and Cooperation 

4:30 PM  Invited 
Innovation in the New Era of Global Science and Engineering: Subra Suresh1; 1U.S. National Science Foundation 

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Novel Alloys and Coatings 

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee 

Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta 

Tuesday PM  Room:  Lone Star Salon A  
March 5, 2013  Location:  Grand Hyatt 

Session Chairs: Brajendra Mishra, Colorado School of Mines; Heidi Maupin, U.S. Army Research Office 

2:10 PM  Keynote 
Nanostructuring High-Strength Molybdenum Alloys for Unprecedented Tensile Ductility: Evan Ma1; 1Johns Hopkins University 

2:40 PM  
Nanostructured Nitride-based Thin Films with Enhanced Multifunctionalities: Haiyan Wang1; Fauzia Khatkhatay1; Ichchan Kim1; Liang Jiao1; Xinghang Zhang1; 1Texas A&M University 

3:00 PM  
Thin Films for Gas Sensing at Extreme Temperatures and in Harsh Environments for Advanced Fossil Energy Applications: From Research to Commercialization: Manuel Marya1; Timothy Dunne1; Tatiana Reyes Hernandez1; 1Schlumberger 

3:45 PM  
Catalytic Rare Earth Nanostructure Coatings for Extreme Environments: Sudipta Seal1; Virendra Singh1; 1University of Central Florida 

4:25 PM  
Evolution of Microstructure of NiCrBSi-WC Overlays for Enhancement of Wear Resistant Properties: Tonya Wolfe1; Gary Fisher1; Hani Henein1; 1Alberta Innovates - Technology Futures; 2University of Alberta 

5:05 PM  
High Strain Rate Deformation of Al-Si-Mg Matrix Composites: Nikhil Gupta1; Dung Luong1; Dinesh Pinisetty1; Atef Daoud1; 1Polytechnic Institute of New York University; 2Central Metallurgical R&D Institute 

5:25 PM  Concluding Comments
Advances in Surface Engineering: Alloyed and Composite Coatings II: Laser Processing and Hard Coatings

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee

Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Tuesday PM  Room:  Bowie B
March 5, 2013  Location:  Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair:  To Be Announced

2:00 PM Invited
Laser Melt Injection of Ceramic Particles in Metals: Processing, Microstructure and Properties: Jeff De Hosson; Vasek Ocelik
1University of Groningen

2:25 PM Invited
Laser Surface Modifications of Iron-Based Bulk Amorphous Alloys: Ashish Singh; Sameer Paital; Narendra Dahotre; Sandip Harimkar
1Oklahoma State University; 2University of North Texas

2:40 PM Invited
Laser Welding of Low Carbon Steel Using Fe-based Metallic Glass Filler: Seyyed Habib Alavi; Hitsesh Vora; Narendra Dahotre; Sandip Harimkar
1Oklahoma State University; 2University of North Texas

2:55 PM Invited
Laser Alloying of Ta on Al 1100 for Improved Corrosion Protection: Ravi Rajamure; Hitsesh Vora; Santhanakrishnan S; Srinivasa Sridharpillai; Narendra Dahotre
1University of North Texas

3:10 PM Invited
Characteristics of H13 Tool Steel Coatings by Pulsed Nd:YAG Laser Cladding: Shaodong Wang; Jianyin Chen; Lijue Xue
1National Research Council Canada

3:25 PM Invited
Laser Surface Powder Alloying of Titanium with Nb and Cu Powders: João Fogagnolo; Adilson Rodrigues; Milton Lima; Rubens Carrami
1University of Campinas; 2Instituto de Estudos Avançados

3:40 PM Break

3:55 PM Invited
Experimental Evaluation of Subsurface Damage Due to Rolling Contact Fatigue in Case Hardened Bearing Steel via Micro-Indentation Mapping: Abir Bhattacharyya; Nagaraj Arakere; Ghatu Subhash
1University of Florida

4:10 PM Invited
Numerical Evaluation of Surface and Subsurface Damage Due to Rolling Contact Fatigue in Case Hardened M50-NiL Bearing Steel: Nagaraj Arakere; anup Pandkar; Ghatu Subhash
1University of Florida

4:25 PM Invited
Wear Analysis of D.C. Pulsed Plasma Nitriding of AISI 4340 Low Alloy Steel for Crankshaft Application: Arul Varman; M Balasubramanian
1Indian Institute of Technology-Madras
4:40 PM
Atom Probe Tomography Characterization of CrN Precipitation in Low Temperature Plasma Nitrided 316L Austenitic Stainless Steel: Frederic Danoix; André Martinavicius; Raphaëlle Danoix; Michel Drouet; Gintas Abrasonis; Béatrice Hannoyer; CNRS - Université de Rouen; Institut PPRIME, UPR 3346, CNRS, Université de Poitiers; Helmholtz-Zentrum Dresden Rossendorf

4:55 PM
Characteristics and Wear Performance of Nitrided Ti₆Al₄Va: Farid Siyahjani; 1Istanbul Technical University

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Solar Cells
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Chih-Huang Lai, National Tsing-Hua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Tuesday PM
Room: 007C
Location: Henry B. Gonzalez Convention Center
Session Chairs: Albert Wu, National Central University; Sinn-Wen Chen, National Tsing Hua University

2:00 PM
Effects of Selenizaiton Pressure on CIGS Thin Films by Two-step Process: Wei-Hao Ho; Chia-Hao Hsu; Shih-Yuan Wei; Chuan Chang; Chih-Huang Lai; 1Department of Materials Science and Engineering, National Tsing Hua University

2:20 PM
Simple and Economical Paste Coating of CIGS Based Solar Cell’s Absorber Layer Deposition: Muhammad Aftab Akram; Mohammad Islam; Sofia Javed; Mohammad Mujahid; 1National University of Sciences and Technology Pakistan; 2Center of Excellence for Research in Engineering Materials (CEREM), King Saud University

2:40 PM
Fabrication and Characterization of CGS/n-Si Heterojunction for Photovoltaic Application: Uwadike Obiakagbor; Huda Mohammed; Burcu Ozden; Tamara Isaac-Smith; Okechukwu Akpa; Micheal Awaah; Minseo Park; 1Tuskegee University; 2Auburn University

3:00 PM
Segregation of Ge Nano-crystals in Amorphous SiGe Matrix: Yao Tsung Ouyang; Albert T. Wu; 1National Central Universuty, Department of Chemical and Materials Engineering

3:20 PM Break

3:35 PM
Surface Area Enhancement of Titania Nanopowders Using Instant Microwave Treatment for DSSC Applications: Sofia Javed; Muhammad Aftab Akram; Mohammad Mujahid; 1National University of Sciences and Technology Pakistan

3:55 PM
Experimental and Computational Analysis of New Photoelectric Materials GaN₄As₉x Properties: Shi Zhou; Huimin Lu; Lian Zhou; 1Beihang University

4:15 PM
Invited Materials Genome Approach to Computational Design of Nanostructured Thermoelectrics: J. Doak; S. Hao; Chris Wolverton; 1Northwestern University

4:40 PM
Concluding Comments

Alumina and Bauxite: Red Mud
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa
Tuesday PM
Room: 212B
Location: Henry B. Gonzalez Convention Center
Session Chair: Scott Moffatt, Cytec Industries

2:00 PM
Introductory Comments

2:10 PM
Automatic Control of Drum Filters Operation: Aline Sampaio; 1Alunorte - Alumina do Norte do Brasil S.A.

2:30 PM
A New Technology for Dry Disposal of Alunorte’s Bauxite Residue: Marcelo Castro; Roberto Trindade; Ronald Pantoja; Eduardo Queiroz; 1Hydro Alunorte

2:50 PM
Pilot Test of Bauxite Residue Carbonation With Flue Gas: Luis Venancio; José Antonio Souza; Emanuel Macedo; Fernando Botelho; Gláucia César; 1Federal University of Para; 2Federal University of Para

3:10 PM Break

3:25 PM
Management of Industrial Waste: The Case of Effective Utilization of Red Mud and Fly Ash at Vedanta Aluminium Limited - Lanjigarh: Mukes Kumar; Binlananda Senapati; C. Sateesh Kumar; 1Vedanta Aluminium Limited

3:45 PM
Iron Recovery from Red Mud by Reduction Roasting-Magnetic Separation: Mingjun Rao; Jinqiang Zhuang; Guanghui Li; Jinhua Zeng; Tao Jiang; 1School of Minerals Processing and Bioengineering, Central South University

4:05 PM
Removal of Methylene Blue from Aqueous Solutions Using a Novel Granular Red Mud Mixed with Cement: Lu Shuaidan; L. T. Q. Xuan; Ju Shaoku; Peng Jinhui; Zhang Libo; 1Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

4:25 PM
Concluding Comments
Aluminum Alloys: Fabrication, Characterization and Applications: Casting and Solidification
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Tuesday PM  Room: 213A
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Nagaumi Hiromi, Suzhou Research Institute for Nonferrous Metals

2:00 PM
Atom Probe Analysis of Sr Distribution in AlSi Foundry Alloys: Jenifer Barrirero1; Michael Engstler2; Frank Mülich1; 1Saarland University

2:20 PM
The Role of Sr on Microstructure Formation and Mechanical Properties of Al-Si-Cu-Mg Casting Alloy: Mohammadreza Zamani1; Salem Seifeddine2; 1Jonkoping University

2:40 PM
Modification of the Eutectic Mg2Si-Phase of AlMgSi-Cast Alloys: Thomas Pabel1; Tose Petkov1; Christian Kneissl1; Peter Schumacher2; 1Austrian Foundry Research Institute; 2University of Leoben

3:00 PM
The Influence of Casting Speed in the as Cast Strip Mechanical Properties of 8079 and 8006 Alloys: Dionisios Spathis1; John Tsios1; 1Hellenic Aluminium Industry (ELV AL SA)

3:20 PM
Effect of Cooling Rate on Iron-Rich Intermetallic Phases in 206 Cast Alloys: Kun Liu1; Xingjin Cao1; X. Grant Chen1; 1University of Quebec at Chicoutimi

3:40 PM  Break

4:00 PM
Continuous Casting of Aluminum Clad Ingot by Electromagnetic Stirring: Jong Ho Kim1; 1Research Institute of Industrial Science and Technology

4:20 PM
Effect of the Thermal Modulus and Mould Type on the Grain Size of AlSi,Mg Alloy: Ibon Lizarra1de1; Andrea Niklas1; Ana Fernández-Calvo1; Jacques Lacaze1; 1IK4-AZTERLAN; 1University of Toulouse

4:40 PM
Effect of Iron in Al-Mg-Si-Mn Ductile Diecast Alloy: Shaoxun Ji1; 1Brunel University

5:00 PM
Oxidation Behavior of Al,Ca Added Al-5Mg Alloy in the Liquid State: Young-Ok Yoon1; Hyun Kyu Lim1; Shae K. Kim1; 1Korea Institute of Industrial Technology

5:20 PM
Steel-Cast-Alloy-CastComposite-Castings for High-Performance Die Casting Applications: Heiner Michels1; Andreas Bührig-Polaczek1; Uwe Vroonen1; David Becker1; 1RWTH Aachen University, Foundry Institute; 2Fraunhofer-Institut für Lasertechnik ILT

5:40 PM
Alloy AlSi0 Cast in the Process of Rapid Solidification and Consolidated in the Process of Plastic Forming: Wojciech Szymanski1; Marcin Szymaniek1; Janusz Zelechowski1; Mariusz Bigaj1; Maciej Gawlik1; Bartlomiej Plonka1; 1Institute of Non-Ferrous Metals; 2Institute of Non-Ferrous Metals

Aluminum Reduction Technology: Cell Operations and Process Control
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday PM  Room: Grand Ballroom C2
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Pascal Lavoie, Light Metals Research Centre

2:00 PM  Introductory Comments

2:05 PM
Improvement of Alumina Dissolution Rate through Alumina Feeder Pipe Modification: Jayson Tessier1; Gary Tarcy1; Eliezer Batista1; Xiangwen Wang1; Patrice Doiron1; 1Alcoa

2:30 PM
Reduction Cell Restart Method Influence on Cell Life Evolution: Mikhail Lukin1; Richard Jeltsch2; 1Kubikenborg Aluminium AB; 2Jeltsch Consulting

2:55 PM
Start of an Aluminum Reduction Cell without Liquid Bath: Kayron Lalonde1; Brian Audie1; Willy Kristensen1; Timothy Snyder1; 1Century Aluminum

3:20 PM
A MIMO Modeling Strategy for Bath Chemistry: Fabio Soares1; Roberto Limao1; 1UFPA

3:45 PM  Break

4:00 PM
Cumulative Distributions of Metallic Impurities: Stephen Lindsay1; 1Alcoa, Inc.

4:20 PM
Sodium Content in Aluminum and Current Efficiency - Correlation Through Multivariate Analysis: Lukas Dion1; László Kiss1; Gilles Dufour1; François Lafharme1; Patrice Chartrand1; 1Université du Québec à Chicoutimi; 2Aluminerie Alouette Inc.; 3Polytechnique de Montréal

4:45 PM
Gas-Solid Flow Applications for Powder Handling in Aluminum Smelters Processes: Paulo Douglas Vasconcelos1; Andre Mesquita1; 1Albras Aluminio Brasileiro S.A; 2Federal University of Para

5:10 PM
Operational Experience of Advanced Alumina Handling Technology in a Russian Smelter: Jan Papecke1; Arne Hilek1; Sergey Marshalko1; 1Claudius Peters Projects GmbH; 2Rusal
Aluminum Reduction Technology: Environment I
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday PM Room: Grand Ballroom C1
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Session Chair: Stephan Broek, Hatch Ltd

2:00 PM Introductory Comments

2:05 PM
Reduction in HF Emission Through Improvement in Operational Practices: Gregory Meintjes1; Ali Al Zarouni1; Maryam Al Jallaf1; Devadiga H. R.1; Ali Jassin1; Kamel Al Aswad1; Sharana Gowda1; Milton Khan1; Arvind Kumar1; ‘Dubal’

2:30 PM
Trace Element Concentration in Particulates from Pot Exhaust and Depositions in Fume Treatment Facilities: Heiko Gaertner2; Arne Petter Ratvik3; Thor Anders Aarhaug3; ‘NTNU; ‘SINTEF’

2:55 PM
The Study and Applications of Modern Potline Fume Treatment Plant (FTP): Deng Xiang1; Lv Weining1; Liu Xun1; Deng Qiyi1; Yi Xiaobing2; ‘CHALIECO; ‘CHALIECO’

3:20 PM
F&GTC: Combined Treatment of Pot Gases and Anode Baking Furnace Fumes: Bassam Hureiki1; Chin Lim1; Fabienne Virieux1; ‘SOLIOS ENVIRONNEMENT SA; ‘FIVES SOLIOS’

3:45 PM Break

3:55 PM
Compact Filter Design for Gas Treatment Centers: Peter Verbraak1; Peter Klat1; Travis Turco1; Erik Dupon1; Edo Engel1; ‘Danieli Corus BV; ‘Danieli Corus Technical Services’

4:20 PM
An Innovative Compact Heat Exchanger Solution for Aluminium Off-Gas Cooling and Heat Recovery: El Hani Bouhabila1; Erling Naess2; Victoria Kielland Einenjord3; Fabienne Virieux3; ‘Solios Environment SA; ‘Norwegian University of Science and Technology; ‘HYDRO; ‘Fives Solios’

4:45 PM
Latest Filter Developments Increasing Existing Aluminium Smelter Gas Treatment Centre Capacity and Reducing Emissions: Michael Neate1; Bradley Currell1; ‘Advancetex International’

5:10 PM
Reduced Ventilation of Upper Part of Aluminum Smelting Pot: Potential Benefits, Drawbacks, and Design Modifications: Ruijie Zhao1; Louis Gosselin1; Mario Fafard2; Donald Ziegler2; ‘University Laval and Aluminium Research Centre-REGAL; ‘Alcoa Canada Primary Metals’

5:35 PM
Latest Developments in Potroom Building Ventilation CFD Modelling: Nathalie Menet1; Guillaume Girault1; Nicolas Monnet1; Catherine Turpin1; Lionel Soulhaec1; ‘Rio Tinto Alcan; ‘Sillage Environnement; ‘Université de Lyon, CNRS, Ecole Centrale de Lyon, INSA Lyon, Université Claude Bernard Lyon I’

Biological Materials Science Symposium:
Bioinspired Material Science and Processing
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Tuesday PM Room: 214C
March 5, 2013 Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Paul Allison , US Army Engineer Research and Development Center; Ryan Roeder, University of Notre Dame

2:00 PM Keynote
Micropatterned Artificial Gecko Surfaces: A Path to Switchable Adhesive Function: Eduard Arzt1; ‘INM – Leibniz Institute for New Materials’

2:40 PM
Mechanics without Muscles: The Fast Motion of the Venus Flytrap and Bio-Mimetic Robotics: Qiaohang Guo1; Huang Zheng1; Wei Li1; Yiting Ding1; Guangyou Hao1; Guiping Su1; Junjie Lin1; Wenzhe Chen1; Zi Chen1; ‘Fujian University of Technology; ‘Fuzhou University; ‘Tsinghua University; ‘Arnold Arboretum of Harvard University; ‘Washington University in St. Louis’

3:00 PM
Shape Memory Effects in Moisture-Induced Twisting of Wood Slivers: Nayomi Plaza1; Joseph Jakes2; Donald Stone2; Samuel Zelinka2; ‘UW Madison; ‘Forest Products Laboratories’

3:15 PM Invited
Bioinspired Materials Derived from Butterfly Wing: Tingxiang Fan1; ‘Shanghai Jiaotong University’

3:45 PM Break

3:40 PM Invited
Bioinspired Materials Processing and Forming: Mohan Edirisinghe1; ‘University College London’

4:40 PM Invited
Ice-templated Biomaterials: Ulrike Wegst1; ‘Thayer School of Engineering, Dartmouth College’

5:10 PM
Biomimetic Synthesis and AC-conductivity Studies of Crystalline Bone Graft Material: Pradyumnam P P1; Binitha M P1; ‘University of Calicut’

5:25 PM Invited
Materials by Design: Silk and Silk-Like Protein Materials: Markus Buehler1; David Kaplan2; Joyce Wong2; ‘Massachusetts Institute of Technology; ‘Tufts University; ‘Boston University’
Bulk Metallic Glasses X: Structures and Mechanical Properties II
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Tuesday PM Room: Lone Star Salon D
March 5, 2013 Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: J. Eckert, IFW Dresden; Marios Demetriou, California Institute of Technology

2:00 PM Keynote
Effects of Deformation on the Properties of Metallic Glasses: A. L. Greer; ‘University of Cambridge

2:30 PM Using Artificial Microstructures to Understand Microstructure Property Relationships in Metallic Glasses: Wen Chen; Baran Sarac; Jan Schroers; ‘Yale University

2:45 PM Invited
Mechanistic and Thermodynamic Origins of Toughness in Metallic Glasses: Marias Demetriou; Bernd Gludovatz; William Johnson; Robert Ritchie; ‘California Institute of Technology; ‘Materials Sciences Division, Lawrence Berkeley National Laboratory

3:05 PM Improved Mechanical Behavior of Ni-free Ti-based Bulk Glassy Alloys by Minor Substitution of “Soft” Atoms: Mariana Calin; Na Zheng; Annett Gebert; Jürgen Eckert; ‘IFW Dresden

3:20 PM Invited
Flow and Fracture Studies on Metallic Glasses: John Lewandowski; ‘Case Western Reserve University

3:40 PM Break

3:55 PM Influence of Bonding and Processing on the Mechanical Properties of Pd–Si–Cu-Based Bulk Metallic Glasses: Davide Granata; Erwin Fischer; Victor Wessels; Jörg Löfftzer; ‘ETH Zürich

4:10 PM Invited
Deformation Mechanisms in Metastable CuZrAl Composites: J. Eckert; K.K. Song; S. Pauly; Y. Zhang; R. Li; ‘University of Tennessee; ‘IFW Dresden; ‘Beihang University

4:30 PM Influence of Chemical Composition on Mechanical Properties and Glass Forming Ability of L12 Alloy: Joseph Stevick; James Yurko; Ryan Coniam; Edgar Vidal; ‘Liquidmetal Technologies; ‘Materion Brush Inc.; ‘Visser Precision Cast LLC

4:45 PM Invited
Structural Origins Underlying the Varying Fragility, Excess Specific Heat and Plasticity of Different Glassy Alloys: Evan Ma; ‘Johns Hopkins University

5:05 PM Influence of Severe Plastic Deformation in Different Temperature Regimes on Zr-Based Bulk Metallic Glasses: Denise Beutelschmidt; Sergio Seudino; Steffen Kaiser; Konrad Kosiba; Mihai Stoica; Matthias Hockauf; Uta Kuehn; Juergen Eckert; ‘IFW Dresden

5:20 PM Invited
Making Metallic Glasses Plastic by Control of Stress Gradient: Zhitao Wang; Yi Li; ‘National University of Singapore

5:40 PM Invited
Controlled Shear Band and Fracture in Bulk Metallic Glasses: Chun-Hway Hsieh; ‘National Taiwan University

6:00 PM Crystalization of Phase Separated Pd41.5Ni41.5P17.5 BMGs: Zhenduo Wu; Si Lan; Hin Wing Kui; ‘Chinese University of Hong Kong

Bulk Metallic Glasses X: Structures and Modeling
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee
Tuesday PM Room: Bowie A
March 5, 2013 Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Dong Ma, ORNL; Tao Yuan, Ohio University

2:00 PM Invited
In-Situ Diffraction Studies of Crystallization in Bulk Metallic Glasses: Dong Ma; Alexandru Stoica; Xu-Li Wang; ‘ORNL

2:20 PM Prediction of Amorphous Forming Ability by Thermodynamic Approach in Ferrous Amorphous Alloys: Seungmun Jung; Jeonghyeon Do; Byeong-Joo Lee; Sunghak Lee; ‘Pohang University of Science and Technology

2:35 PM Invited
Statistical Modeling of Size Effects on the Bending-Fatigue Life of a Zirconium-Based Bulk-Metallic Glass: Tao Yuan; Gongyao Wang; Qingming Feng; Peter Liaw; Yoshihiko Yokoyama; Akihisa Inoue; ‘Ohio University; ‘The University of Tennessee, Knoxville; ‘Tohoku University

2:55 PM Numerical Simulations of High-Strain-Rate Plate Impact of an Iron-Based Bulk Metallic Glass: Gauri Khanolkar; Veronica Eliasson; ‘University of Southern California

3:10 PM Invited
Studies of the Local Atomic Packing in a Metallic Glass: Cang Fan; C. T. Liu; P. Liaw; ‘Nanjing University of Science and Technology; ‘City University of Hong Kong; ‘University of Tennessee

3:30 PM Invited
Molecular Dynamics Simulation of Solidification and Vitrification in Al-Sm Alloys: Mikhail Mendelev; Matthew Kramer; ‘Ames Laboratory

3:50 PM Break

4:05 PM Invited
Molecular Dynamics Study on a Thermal Rejuvenation of Amorphous Metals: Masato Wakeda; Junji Saida; Shigenobu Ogata; ‘Osaka University; ‘Tohoku University

4:25 PM Invited
Polytetrahedral Packing in Metallic Glasses: Yongjiang Cheng; Evan Ma; ‘Oak Ridge National Laboratory; ‘Johns Hopkins University

5:05 PM Invited
Structural Evolution of SiP Ni Alloys: Matthew Kramer; ‘Ames Laboratory
Glass-Forming Ability

Ti36.2Zr30.3Fe4Cu8.3Be21.2 Bulk Metallic Glass with Exceptional An Early-Stage Spinodal Decomposition Microstructural

5:20 PM

An Early-Stage Spinodal Decomposition Microstructural Ti36.2Zr30.3Fe4Cu8.3Be21.2 Bulk Metallic Glass with Exceptional Glass-Forming Ability: Long Zhang1; Hai Feng Zhang1; Zheng Wang Zhu1; 1Institute of Metal Research, Chinese Academy of Sciences

Cast Shop for Aluminum Production: Aluminum

Cast Shop III

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee

Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Tuesday PM  Room: 210A
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Randall Bowers, SECAT Inc.

2:00 PM

Optimization of Grain Refinement: John Courtenay1; Rein Vainik1; Bader Saglam2; 1MQP Limited; 2Eti Aluminium Co.Inc.

2:20 PM

Grain Refiner for Al-Si Alloys: Hari Babu Nadendla1; Magdalena Nowak1; Leandro Bolzoni1; 1Brunel University

2:40 PM

AlTi5B1 Grain Refiners on the Casting of DIN 226 Aluminum Alloys: Onuralp Yucel1; Ceyhun Yapici1; Ahmet Turan1; 1Istanbul Technical University

3:00 PM

Production of Al–Ti–B Grain Refining Master Alloys from B2O3 and K2TiF6 by Microwave Irradiation: Zhou Cai1; 1Chongqing University

3:20 PM

The Mechanism of Grain Refinement of Aluminum by Zirconium: Feng Wang1; Dong Qiu1; Zhilin Liu1; John Taylor1; Mark Easton1; Mingxing Zhang1; 1School of Mechanical and Mining Engineering, The University of Queensland; 2School of Physics and Materials Engineering, Monash University

3:40 PM Break

4:00 PM

Effects of Yb Additions on Refinement of Eutectic Si in Al-5Si Alloys: Jiehua Li2; Peter Schumacher1; 1The University of Leoben

4:20 PM

Development of Al-TiC Alloys Using Powder Metallurgy as Grain Refiners for Aluminum and Its Alloys: Abdel-Nasser Omran1; 1Mining and Metallurgical Department, Faculty of Engineering-Al-Azhar University

4:40 PM

Influence of Vanadium on the Microstructure of A356 Foundry Alloy: Thomas Ludwig1; Paul Schaffer2; Lars Arnberg1; 1NTNU Trondheim; 2Hydro Aluminium


Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

Program Organizers: Jianh-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ihmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Tuesday PM  Room: 206A
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: John Aveson, University of Cambridge; Lei Zhang, WISCO R&D

2:00 PM

Dissolution Mechanism of Lime in FeOx-SiO2-V2O5-TiO2 Slag: Rui Tang1; Yu Wang1; Shuo Wang1; Kun Wen1; Hong-Yi Li1; Bing Xie1; 1Chongqing University

2:20 PM

Estimation of Slag in Ferrochromium: Robert Kozicki1; Eric Graham1; George Wrightson1; 1Andrew S. McCreath & Son, Inc.

2:40 PM

Experimental Characterization of Heterogeneous Phase Blast Furnace Slag Bearing Titania: Lu Zhang1; Tao Jiang1; Xiangxin Xue1; 1Northeastern University

3:00 PM

Improved Thermal Shock Resistance of Shaped Alumina-Chromia Products: Sonja Breyner1; Klaus Santowski1; Thomas Priest1; 1RHI AG

3:20 PM

Solidification Characteristics of Fe-Mn Alloy during Near-Rapid Solidification: Yuanyi Guo1; Ke Xie1; Wenbin Xia1; Shichao Zhao1; Changjiang Song1; Qijie Zhai1; 1Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University

3:40 PM

The Effect of Work-Hardenning and Heat Treatment of Mild-Carbon Steel on Cyclic Deformation Behavior: Gerhard Tober1; Christian Ruback1; Maria Kuttig1; Petra Maier1; 1University of Applied Sciences Stralsund

4:00 PM

Thermal Stability and Mechanical Properties of nanocrystalline Fe-Ni-Zr Alloys: Hasan Kotan1; Mostafa Saberi1; Carl Koch1; Ronald Scartagno1; 1North Carolina State University

4:20 PM

Prediction of Ductility Parameter and Its Correlation with Electrical Resistivity of Microwave Annealed TiAl Intermetallics: Debeh Misra1; Amarpreet Bir1; Tula Ram1; Vijaya Agarwala1; Ramesh Agarwala1; 1IIT Roorkee
4:40 PM
Experimental Investigation on Oxidation Modification of Granulated Copper Slag at Intermediate Temperature: Bo Zhang1; Shuai Niu1; Zengli Liao1; Pu Tang1; Jienan Liu1; Huaiwei Zhang1; Xin Hong1; 1Shanghai University

5:00 PM
Research on the Process of Alkaline Pressure Oxidation for Pretreating Anode Slime: Weifeng Liu1; Tianzu Yang1; Lin Chen1; Wanda Bin1; Shu Bin1; 1Central South University

5:20 PM
Experimental Study on Optimization of Slag Splashing Modifiers with Magnesite Tailings: Jing Li1; XiaoFeng Qi1; 1Liaoning University of Science & Technology

Characterization of Minerals, Metals and Materials 2013: Characterization Technologies
Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jianh-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Elkhayami, Al Iara University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Tuesday PM
March 5, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center
Session Chair: John Carpenter, DOE LANL

2:00 PM
An Iterative Approach to the 3D Reconstruction of Magnetic Vector Fields Using Lorentz Electron Tomography: Emma Humphrey1; Charles Bouman2; Marc De Graef3; 1Carnegie Mellon University; 2Purdue University

2:20 PM
Application of Precession Electron Diffraction in Density Calculations of Geometrically Necessary Dislocations: Yue Liu1; Imam Ghamarian1; P. Collins2; 1University of North Texas

2:40 PM
Applying Precession Electron Diffraction (PED) to Study the Effect of Deformation by High Pressure Torsion (HPT) on the Texture Evolution in Copper-Niobium Nanostructured Multilayers Fabricated by Accumulative Roll Bonding (ARB): Sushanta Sinha1; Elvan Ekiz2; Nathan Mara1; Anthony Rollett2; Pascal Bellon1; Robert Averback1; Mohsen Pouryazdan3; Horst Hahn4; 1Carnegie Mellon University; 2University of Illinois Urbana Champaign; 3Los Alamos National Laboratory; 4Karlsruhe Institute of Technology

3:00 PM
Automated Quantification of SiC-Particles in Solidified A356 Aluminum Using Image Pro-Plus 7.0: Robert Fritzsche1; Behzad Mirafzal1; Mark Kennedy2; Raghunath Aune1; 1Norwegian University of Science and Technology; 2Norwegian University of Science and Technology

3:20 PM
Development of a High-Pressure Scanning Probe Microscope Used to Study In Situ Corrosion Mechanisms: Christophe Harder1; Lilian Berlu1; Benoit Reneau1; 1CNRS-CEA

3:40 PM
Fractography as a Tool to Assess the Occurrence of Fatigue Fractures in Complex-Microstructure Structural Components: Donato Firrao1; Paolo Matteis1; 1Politecnico di Torino

4:00 PM
High Capacity Mechanical Testing System for In-Situ Investigations in a Large (1.5 Meter) Chamber Scanning Electron Microscope (SEM): Robin Woracek1; Stephen Young1; Dayakar Penumadu1; Jason Lesczczewicz2; Edward Kintzel2; 1University of Tennessee, Knoxville; 2Western Kentucky University; 3Western Kentucky University

4:20 PM
High Resolution Electron Backscatter Diffraction: T Ben Britton1; Jun Jiang1; Angus Wilkinson1; 1Department of Materials, University of Oxford

4:40 PM
Quantitative X-Ray Fluorescence Determination of Elemental Composition of Micro-constituents Smaller than the Electron Probe Volume: Adam Geszt1; Paul Marchwicza1; Sharon Lackie2; Jerry Sokolowski1; 1University of Windsor

5:00 PM
Three-Dimensional Duplex Morphology of MnS-AlN and Thermodynamic Analysis: Yue Gong1; Chuanjie Cai2; Jing Chen2; ShaoBo Zheng1; HuGai Li1; 1Shanghai University

5:20 PM
Yield Maps and Texture Analysis of Pure Copper: Joel House1; Erica Cosmutto2; Richard Harris3; Joseph Chason1; Michael Nixon1; Pavol Stofcik3; 1Air Force Research Laboratory; 2Florida State University; 3US Army ARDEC

5:40 PM
Combinational TEM and APT Characterization of ODS Alloys by SPS: Y. Wu1; Kerry Allahar1; Jatuporn Burns1; Brian Jaques1; Indrajit Chari1; Darryl Butt1; James Cole1; 1Boise State University

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations II
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carolyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; ZI Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Tuesday PM
March 5, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center
Session Chairs: Yunfeng Shi, Rensselaer Polytechnic Institute; Brian Wirth, University of Tennessee

2:00 PM Invited
ReaxFF Reactive Force Field: Applications to Atomistic-Scale Simulations of Reactions and Properties of Complex Alloys And Mixed-Metal Oxides: Adri van Duin1; Osvalds Verners1; Chenyu Zou1; Yun-Kyung Shin1; Karthik Vishnu1; 1Penn State
2:25 PM  Molecular Dynamics Simulations of Vacancy and Oxygen Diffusion in Pure Ni and NiAl Alloys Using ReaxFF Reactive Force Fields: Karthik Guda Vinshu1; Adria C.T. van Duin1; 1Penn State University

2:40 PM  Development of ReaxFF Reactive Force Fields for Fe/Al/Ni/O/S Alloy and the Study of Oxidation Behavior on the Ordered Metallic Alloy Surface in Sulfurous Environment: Yun Kyung Shin1; Adria vdn Duin1; Hyunwook Kwak2; Alex Vasenkov2; 1Pennsylvania State University; 2CFD Research Corporation

2:55 PM  Formation of Intermetallic Phase during Reactive Wetting of Al on Ni: Ying Sun1; Edmund Webb2; 1Drexel University; 2Lehigh University

3:10 PM  Higher-Order Interface Stiffness Measurements via Molecular Dynamics Simulation: S. R. Wilson3; 1Ames Laboratory, USDOE

3:25 PM Break

3:50 PM Invited  Gas Diffusion in Disordered Nanoporous Carbon: Yunfeng Shi1; 1Renselaer Polytechnic Institute

4:15 PM  Effect of Grain Boundary Structural Transformation on Grain Boundary Diffusion: A Molecular Dynamic Study: Y. Mishin1; Mark Asta2; Timofey Frolov; 1George Mason University; 2University of California Berkeley

4:30 PM  Molecular Dynamics Simulations of the Structure Transformation during the Cu Heating process under Vacuum: Sun Sha-Hong1; Chen Xiu-Min1; Zhang Feng-Xia2; Yang Bin1; 1Kunming University of Science and Technology; 2Faculty of Metallurgy and Materials, Kunming Metallurgy College

4:45 PM  Diffusion of Lithium Ions in Lithium Lanthanum Titanate Crystals and Amorphous Grain Boundaries: A Molecular Dynamics Simulation Study: Chao-hsu Chen1; Jincheng Du1; 1University of North Texas

Cost Affordable Titanium IV: Low Cost Processing: Fundamentals
Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

Tuesday PM  Room: 217C  Location: Henry B. Gonzalez Convention Center

Session Chairs: Deepak Kapoor, US Army, ARDEC; Deliang Zhang, The University of Waikato

2:00 PM Invited  Research and Development of Low-cost Titanium Alloys for Biomedical Applications: Mitsuo Niinomi1; Masaaki Naka1; Junko Hieda1; Ken Cho1; Toshikazu Akahori2; Tomokazu Hattori2; Masaichi Ikeda1; 1Tohoku University; 2Meijo University; 1Kansai University

2:20 PM  Phase Transformation and Orientation in Direct Consolidation of TiH, Powder and Their Effects on Tensile Behavior of P/M Extruded Ti Material: Takanori Mimoto1; Katsuyoshi Kondoh1; Junko Umeda1; 1Osaka University

2:40 PM Invited  Phase Constitution and Heat Treatment Behavior of Low Cost Ti-Mn System Alloys: Masahiko Ikeda1; Masato Ueda1; Kaoru Imaizumi2; Mitsuo Niinomi1; 1Kansai University; 2Daido Steel Co. Ltd.; 3Tohoku University

3:00 PM  Parameters Optimization of the Process of Ti-46.6Al-1.4Mn-2Mo Alloy by Hot-press Sintering Based on GA and BP Neural Network: Xuguang Li1; Huimin Lu1; Panpan Wang1; 1Beihang University

3:20 PM  Simulation of Powder Compact Forging Process for Producing a Titanium Component: Navaneeth Veilakkannidi1; Deliang Zhang1; Mingtu Jia1; 1University of Waikato

3:40 PM Break

4:00 PM  Microstructure Evolution and Phase Transformations during Sintering Titanium Hydride in Controlled Hydrogen Atmosphere: Pei Sun1; Zhigang Fang1; 1The University of Utah

4:20 PM  Novel Use of Cold and Hot Isostatic Pressing in Manufacturing Low Cost Ti-6Al-4V Forge Preforms: Fatos Derguti1; Nicholas Jones2; Martin Jackson3; 1University of Sheffield; 2Cambridge University

4:40 PM  Manufacturing Affordability Associated with an Innovative High-Strength Titanium Alloy: Luis Ruiz1; 1ATI

5:00 PM  Precipitation Behaviour in Severe Plastic Deformed Beta-type Titanium Alloy: Wei Xi1; Xiaolin Wu1; Darren Edwards2; Mihai Stoica1; Mariana Calin1; Eckert Jürgen1; Kenong Xia1; 1University of Melbourne; 2Defence Science and Technology Organisation; 1IFW Dresden

5:20 PM Composition Design of Multi-Component β-Ti Alloys Based on a Cluster Model: Xiang Wang1; Xiaona Li1; Jianbing Qiang1; Yingmin Wang1; Chuang Dong1; 1Dalian University of Technology

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session III
Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday PM  Room: 210B  Location: Henry B. Gonzalez Convention Center

Session Chair: Bjorn Clausen, Los Alamos National Laboratory

2:00 PM  Deformation Characteristics of Bulk Ultra-Fine Grained Titanium with Varying Impurity Levels: Guanen Yapici1; Ibrahim Karaman2; Hans Maier3; 1Ozyegin University; 2Texas A&M University; 3University of Paderborn
2:15 PM  Dwell Sensitive Fatigue of Ordered Ti-6Al-4V: Ananthi Sankaran1; Trevor Lindley1; David Dye1; 1Imperial College

2:30 PM  Effect of Al, V, Fe, O Content on Dynamic Properties of Ti-Al-V Titanium Alloys: Rui Liu1; Song-xiao Hui1; Wen-jun Ye1; 1General Research Institute for Nonferrous Metals

2:45 PM  Effect of Rolling Process on the Texture and Mechanical Properties of Ti-15V-3Cr-3Sn-3Al Alloy Sheet: Xiaoyun Song1; Guangshan Hu1; Yang Yu1; Rui Liu1; Wenjun Ye1; Songxiao Hui1; 1General Research Institute of Nonferrous Metals

3:00 PM  Heat Treat Study to Improve Damage Tolerance of Titanium Alloy Ti-6Al-2Sn-2Zr-2Mo-2Cr for Aerospace Applications: Sesh Tamirisa1; Ernie Crist1; Pat Russo1; 1RTI International Metals, Inc.

3:15 PM  Break

3:25 PM  In-Situ Scanning Electron Microscopy (SEM) Observations of Tensile and Tensile-Creep Deformation of Ti-3Al-2.5V (wt. %): Hongmei Li1; Carl Boehlert1; Thomas Bieler1; Martin Crimp1; 1Michigan State University

3:45 PM  Mechanical Properties of UFG Ti-15Mo-(0.35-0.5) O: Herbert Boeckels1; Henry Rack1; 1Clemson University

4:00 PM  Texture Development of Aluminum in Multilayered Ti/Al/Nb Sheets Produced by Accumulative Roll-Bonding: Lining Zhao1; Viola Acoff1; 1The University of Alabama

4:15 PM  Oxidation of Titanium Alloys: David Brice1; Peyman Samimi1; R. Banerjee1; J. Cotton2; M. Kaufman1; P. Collins1; 1University of North Texas; 2Boeing; 3Colorado School of Mines

4:30 PM  Modeling the Effects of Orientation, Microstructure, and Interaction Stress on Local Schmid Factor in Two-Phase Titanium Alloys: William Joost1; Sreeramamurthy Ankem1; 1University of Maryland

4:45 PM  High Temperature Deformation and Microstructural Evolution of TiAlNbCrMo Alloys: Glenn Bean1; Hans Seifert2; Fereishteh Ebrahim1; Michele Manuel1; 1University of Florida; 2Karlsruhe Institute of Technology

Electrode Technology for Aluminium Production: Bake Furnace Design and Operation
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajum, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Protesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday PM  Room: 213B
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Juraj Chmelar, Hydro Aluminium AS

2:00 PM  Introductory Comments

2:05 PM  Hydro Aluminium’s Historical Evolution of Closed Type Anode Baking Furnace Technology: Michal Tkac1; Anders Ruud1; Inge Holden1; Hogne Linga1; 1Primary Metal Technology; 2Årdal Carbon

2:30 PM  Use of Mathematical Modelling to Study the Behavior of a Horizontal Anode Baking Furnace: Yasar Kocaefe1; Noura Oumarou1; Mounir Baiteche1; Duygu Kocaefe1; Brigitte Morais1; Marc Gagnon1; 1University of Quebec at Chicoutimi; 2Aluminerie Alouette inc.

2:55 PM  Study on Anode Baking Parameters in Open-Top and Closed-Type Ring Furnaces: Mohsen Ameri1; Borzu Baharvand1; Mohammad Nabi Batoei1; Saeb Sadeghi1; 1Almahdi-Hormozal Aluminum Corporation; 2Almahdi-hormozal Aluminum Corporation

3:20 PM  Energy Efficiency Improvement in Anode Baking Furnaces: Cassio Linhares1; 1Alcoa

3:45 PM  Break

3:55 PM  Anode Baking Process Optimization at ALRO: Pierre Mahieu1; Nicolas Fiot1; Arnaud Trillat1; Ouidid Balu1; Cristiano Stanesca1; Fabienne Virieux1; 1Solios Carbone; 2ALRO; 3Fives Solios

4:20 PM  Operational and Environmental Benefits on the New Baking Furnace at Boyne Smelter by Use of an Advanced Firing Technology: Detlef Maiwald1; Domenico Di Lisa1; Andreas Himmelreich1; Glenn Cordon1; Sathiya Moodley1; 1Innovatherm; 2Boyne Smelters Limited

4:45 PM  Laser Mapping of Carbon Bake Furnaces: Ashley Tews1; Michael Bosse1; Robert Zlot1; Paul Flick1; Meaghan Noonan1; 1CSIRO; 2Pacific Aluminium
Energy Technologies and Carbon Dioxide Management: Waste Heat Recovery and Furnace Technology
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO
Tuesday PM  Room: 006C
March 5, 2013  Location: Henry B. Gonzalez Convention Center
Session Chairs: Jarek Drelich, MTU; Cong Wang, Saint Gobain

Fatigue and Fracture of Thin Films and Nanomaterials: Advanced Indentation-based Techniques
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A&M University; Daniel Gianola, University of Pennsylvania; Corinne Packard, Colorado School of Mines
Tuesday PM  Room: Bowie C
March 5, 2013  Location: Grand Hyatt
Funding support provided by: Hysitron, Inc. and Nanomechanics, Inc.
Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben

2:00 PM Introductory Comments
2:05 PM
Waste Heat Recovery Opportunities in a Magnesium Silicothermic Reduction Plant: James Sever1; 1Nevada Clean Magnesium, Inc.

2:25 PM
Effect Of Batch Charging Equipment On Glass Furnace Efficiency: Nasim Soleimanian1; Mark Jolly1; 1Cranfield University

2:45 PM
Thermodynamic Properties of ORC System with Zeotropic Mixed Working Fluids for Low Temperature Waste Heat Recovery: Xin Zhang1; Hao Bai1; Ning Li1; Mengqi Li1; Xinrong Zhang1; Hongxu Li1; Daqiang Cang1; 1University of Science and Technology Beijing

3:05 PM
Energy Saving in a Crude Distillation Unit by a Retrofit Design of Heat Exchanger Networks: Hossein Rezaei1; Farhad Shahraei1; Farhad Fazlollahi1; Majid Sarkari1; 1University of Sistan and Baluchestan

3:25 PM Break
3:45 PM
The Optimization of Gases and Thermal Energy in the Upper Zone of Electric Furnaces in Drenas: Ahmet Hashiaji1; Egzon Hashiaji1; 1University of Prishtina

4:05 PM
Economical Energy Responsive Housing with the Lowest Environmental Effects (Focus on Semi-Arid Climate): Roya Faghania1; 1University of Trento

2:00 PM Invited
Time and Temperature Dependent Mechanical Properties of Materials at Nanometer Length Scale: Syed Asif Syed Amanulla1; Jeremiah Vieregge1; Richard Nay1; 1Hysitron Inc.

2:20 PM Invited
High Temperature Mechanical Behaviour of Nanoscale Multilayers: Jon Molina-Aldareguia1; Saeid Lotfian1; Miguel Monclus1; Javier Llorca1; Nikhilesh Chawla2; Irene Beyerlein3; Nathan Mara3; 1IMDEA Materials Institute; 2Arizona State University; 3LANL

2:40 PM Invited
Elastic and Plastic Properties of Combinatorial Thin Films Determined by Nanoindentation: Stephanie Reeh1; Tetsuya Takahashi1; Jochen Schneider1; Ude Hangen1; 1Materials Chemistry RWTH Aachen University; 2Hysitron Inc.

3:00 PM Invited
Small Scale Mechanical Testing on Oxide Layers: Peter Hosemann1; Marisa Rebello de Figueiredo1; David Frazer1; Scott Parker1; Kenji Kikuchi1; Christian Mitterer1; 1UC Berkeley; 2Ibaraki University; 3Montanuniversitaet Leoben

3:20 PM Break
3:40 PM Invited
Novel Techniques for Measuring the Piezoelectric Properties of Thin Films with a Nanoindenter: Esteban Broitman1; Lars Hultman1; 1Hysitron Inc.

3:40 PM Invited
MEMS-Enabled In-Situ Nanomechanical Testing in Electron Microscopes: Oden Warren1; Yanfei Li1; Zhiwei Shan1; Douglas Stauffer1; Sanjit Bhowmick1; Ryan Major1; S.A. Syed Asif1; 1Hysitron, Inc.

4:40 PM Invited
Microbeam Bend Tests for Fracture and Fatigue Studies in (Pt,Ni) Al Bond Coats: Nagamani Jaya1; Kaustubh Venkatraman1; Vikram Jayaram1; Sanjay Biswas1; 1Indian Institute of Science
Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Microstructure-Property-Fatigue Deformation & Damage Relationships
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University
Tuesday PM  March 5, 2013  Location: Henry B. Gonzalez
Convention Center
Session Chair: Antonios Kontsos, Drexel University

2:00 PM Keynote
Multi-Time Scaling Image Based Crystal Plasticity FE Models Dwell Fatigue Initiation in Polycrystalline Ti Alloys: Somnath Ghosh
1 Johns Hopkins University

2:35 PM Invited
The Role of Elastic Anisotropy, Length Scale and Crystallographic Slip in Fatigue Crack Nucleation, with Application to Stent Fatigue: Caominhe Sweeney1; Willem Vorster2; Sean Leen3; Eisaku Sakurada4; Peter McHugh5; Fionn Dunne6; National University of Ireland, Galway; Oxford University; Nippon Steel Corporation; Imperial College London

3:00 PM
Combining DIC and Ultrasonic Fatigue to Investigate the Very High Cycle Fatigue Behavior of Ti-6242: Jason Geathers1; J. Wayne Jones2; Samantha Daly3; University of Michigan

3:20 PM Break

3:40 PM Invited
Integrating Computational Materials Engineering into Probabilistic Damage Tolerance Analysis for Component Design: Craig McClung1; Michael Enright2; Wei-Tsu Wu3; Ravi Shankar2; Southwest Research Institute; Scientific Forming Technologies Corporation

4:05 PM
Microstructurally Small Fatigue Cracking in an Al-Mg-Si Alloy: Experiments and Modeling: Ashley Spear1; S.F. Li2; J. Lind3; Robert Suter1; Albert Cerrone1; Jacob Hochhalter1; Anthony Ingraffea1; Cornell University; NASA Langley Research Center

4:25 PM Invited
The Quantification of Resistance of Grain Boundaries to Short Fatigue Crack Propagation in Three-Dimensions in High Strength Al Alloys: Wei Wen1; Alfonso Ngar2; Tongguang Zhai3; University of Kentucky; The University of Hong Kong

4:45 PM
High Temperature Tensile and Fatigue Deformation Behavior of Al-1wt%Mg-1wt%Si Alloy Hardened by New Cu-Mn based Solid Solution Phase: Kyu-Sik Kim1; Si-Young Sung2; Bum-Seok Han2; Jung- Cheol Park3; Kee-Ahn Lee1; Andong National University; KATECH; RIST

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors
Tuesday PM  March 5, 2013  Location: Henry B. Gonzalez
Convention Center
Session Chairs: Yuri Hovanski, Pacific Northwest National Laboratory; Hidetoshi Fujii, Osaka University; Jennifer Wolk, Naval Surface Warfare Center

2:00 PM Invited
Enhanced Friction Stir Welding of Titanium Using Elemental Foils: Richard Fonda1; Keith Knipling1; Naval Research Laboratory

2:20 PM Invited
Fast Diffusers in Friction Stir Welding of Titanium Alloys: Jennifer Wolk1; Richard Everett2; Stephen Szpara3; Marc Zupan1; Sal Nimer3; Naval Surface Warfare Center; Naval Research Laboratory; University of Maryland Baltimore County

2:40 PM
Microstructural and Mechanical Investigations of Friction Stir Welded Ti/Ti- and Ti-alloy/Ti-Alloy-Joints: Nico Buhl1; Guntram Wagner2; Dietmar Eifler3; Markus Gutensohn4; Frank Zillekens5; University of Kaiserslautern; PFW Aerospace

3:00 PM
Microstructural Evolution in Commercially Pure Titanium Thermal Stir Welds: Richard Fonda1; Keith Knipling1; Adam Pilchak2; Naval Research Laboratory; Air Force Research Laboratory

3:20 PM
Longitudinal and Transverse Microsample Characterization of Friction Stir Welded Ti-5111: Salabudin Nimer1; Jennifer Wolk2; Richard Everett3; Marc Zupan1; University of Maryland Baltimore County; Naval Surface Warfare Center Carderock Division; U.S. Naval Research Laboratory

3:40 PM Break

3:55 PM
Fabrication and Mechanical Properties of WC-TiC-Co Hard Materials by Spark Plasma Sintering Method for FSW Tool Applications: JungHan Ryu1; Hyun-Kuk park2; Jun-Ho Jang3; Il-Hyun Oh4; Han-Sur Bang5; Hee-Seon Bang5; Korea Institute of Industrial Technology; Chosun University

4:15 PM Invited
Studies on Additive Friction Stir In-625 Coating on HY80 Steel: Kumar Kandasamy1; Liam Renaghan1; Zachary Morrey1; Jeffrey Schultz1; Aeroprobe Corporation

4:35 PM
Investigation of Microstructure and Mechanical Properties of Friction Stir Lap Jointed Monel 400 and Inconel 600: KuK Hyun Song1; Won Yong Kim2; Kazuhiro Nakata3; Korea Institute of Industrial Technology; Joining and Welding Research Institute
Frontiers in Solidification Science: In-situ Observations and X-ray Imaging

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvia Akamatsumi, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Tuesday PM  Room: Lone Star Salon F
March 5, 2013  Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Andre Phillion, University of British Columbia; Peter D. Lee, The University of Manchester

2:00 PM Invited
Dilatancy during Semi-Solid Deformation: Christopher Gourlay1; Tomoya Nagira1; Catherine O’Sullivan1; Hideyuki Yasuda1; Imperial College London; Osaka University

2:30 PM Invited
Analysis by Synchrotron X-Ray Imaging of the Equiaxed Grain Evolution during Columnar-to-Equiaxed Transition in Directional Solidification: Guillaume Reinhart1; Henri Nguyen-Thi1; Nathalie Mangelinck-Noël1; Bernard Billia1; IM2NP - Aix-Marseille Univ; IM2NP - CNRS

3:00 PM
The Influence of Thermo-Solutal Convection on Freckle Formation and Dendritic Growth: Natalia Shevchenko1; Stephan Boden1; Gunter Gerbehi1; Sven Eckert1; Helmholtz-Zentrum Dresden-Rossendorf

3:20 PM
Dynamic In-Situ Imaging during Al-Cu Alloy Solidification: Joseph McKeown1; Andreas Kulovits1; Thomas LaGrange1; Bryan Reed1; Jörg Wiezorek1; Geoffrey Campbell1; Lawrence Livermore National Laboratory; University of Pittsburgh

3:40 PM Break

3:50 PM
A Newly Designed Experiment for High-Pressure Solidification of Transparent Materials: Severine Boyer1; Charles-Andre Gandin1; Jean-Marc Haadini2; CNRS/ISA-ENSMA; CNRS/MINES ParisTech; MINES ParisTech

4:10 PM Invited
Experimental Aspects of Microstructure Formation during Solidification Transients: Ulrike Hecht1; Victor Witusiewicz2; Anne Drevermann3; Gerhard Zimmermann3; Access e.V.

4:40 PM
Anisotropy Effects in Al-Zn Alloys Revealed by X-Ray Tomographic Microscopy and Phase-Field Simulation: Paolo Di Napoli1; Jonathan Dantzig1; Jonathan Friedli1; Julie Fife1; Michel Rappaz2; EPFL; University of Illinois at Urbana-Champaign; Paul Scherrer Institute

5:00 PM
In Situ and Real Time Characterization of 3D Patterns in Directional Solidification: Comparison between Experiments in Microgravity Aboard the International Space Station and Terrestrial Ones, Convection Influence: Nathalie Bergeon1; Liang Chen1; Bernard Billia2; Rohit Trivedi2; Damien Tourret3; Alain Karma2; Rahima Guérin1; Jean-Marc Debierre1; IM2NP (CRNS - Aix Marseille Université); Iowa State University; Northeastern University

5:20 PM
Quasi-Periodic Recalescence Behaviour in Undercooled Eutectic Alloys: Andrew Mallis1; Caroline Clopet1; Robert Cochrane1; University of Leeds

5:40 PM
Dendritic Growth Velocities in Undercooled Melts of B20-Type Intermetallic Compounds: Jianrong Gao1; Lianghua Zhang1; Chao Yang1; Northeastern University

High Temperature Electrochemistry: Nuclear Materials

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

Tuesday PM  Room: 006D
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Steven Herrmann, Idaho National Laboratory; Carsten Schwandt, University of Cambridge

2:00 PM
Pyroprocessing of Used Light Water Reactor Fuel — A Study of Integrated Unit Operations at Laboratory Scale: Steven Herrmann1; Brian Westphal1; Guy Fredrickson1; Sung Bin Park1; Si Hyung Kim1; Idaho National Laboratory; Korea Atomic Energy Research Institute

2:30 PM
Purity of Uranium Product from Electrochemical Recycling of Used Metallic Fuel: Ken Marsden1; Brian Westphal1; Mike Patterson1; Batric Pesic1; Idaho National Laboratory

2:50 PM
The Influence of Thermo-Solutal Convection on Freckle Formation and Dendritic Growth: Natalia Shevchenko1; Stephan Boden1; Gunter Gerbehi1; Sven Eckert1; Helmholtz-Zentrum Dresden-Rossendorf

3:20 PM
Dynamic In-Situ Imaging during Al-Cu Alloy Solidification: Joseph McKeown1; Andreas Kulovits1; Thomas LaGrange1; Bryan Reed1; Jörg Wiezorek1; Geoffrey Campbell1; Lawrence Livermore National Laboratory; University of Pittsburgh

3:40 PM Break

3:50 PM
A Newly Designed Experiment for High-Pressure Solidification of Transparent Materials: Severine Boyer1; Charles-Andre Gandin1; Jean-Marc Haadini2; CNRS/ISA-ENSMA; CNRS/MINES ParisTech; MINES ParisTech

4:10 PM Invited
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4:40 PM
Anisotropy Effects in Al-Zn Alloys Revealed by X-Ray Tomographic Microscopy and Phase-Field Simulation: Paolo Di Napoli1; Jonathan Dantzig1; Jonathan Friedli1; Julie Fife1; Michel Rappaz2; EPFL; University of Illinois at Urbana-Champaign; Paul Scherrer Institute

5:00 PM
In Situ and Real Time Characterization of 3D Patterns in Directional Solidification: Comparison between Experiments in Microgravity Aboard the International Space Station and Terrestrial Ones, Convection Influence: Nathalie Bergeon1; Liang Chen1; Bernard Billia2; Rohit Trivedi2; Damien Tourret3; Alain Karma2; Rahima Guérin1; Jean-Marc Debierre1; IM2NP (CRNS - Aix Marseille Université); Iowa State University; Northeastern University

5:20 PM
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5:40 PM
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High Temperature Electrochemistry: Nuclear Materials

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

Tuesday PM  Room: 006D
March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Steven Herrmann, Idaho National Laboratory; Carsten Schwandt, University of Cambridge

2:00 PM
Pyroprocessing of Used Light Water Reactor Fuel — A Study of Integrated Unit Operations at Laboratory Scale: Steven Herrmann1; Brian Westphal1; Guy Fredrickson1; Sung Bin Park1; Si Hyung Kim1; Idaho National Laboratory; Korea Atomic Energy Research Institute

2:30 PM
Purity of Uranium Product from Electrochemical Recycling of Used Metallic Fuel: Ken Marsden1; Brian Westphal1; Mike Patterson1; Batric Pesic1; Idaho National Laboratory
3:00 PM
Assessment of Mass Balance of the Electrorefining System for Spent LWR Nuclear Fuel Cycle: Sunghin Park1; Jeong-Guk Kim1; Sung-jai Lee1; Hansoo Lee1; 1Korea Atomic Energy Research Institute

3:30 PM
Break

3:50 PM
Electrochemical Impedance Spectroscopy of Uranium Chloride in Molten LiCl-KCl Eutectic: Kenny Allahar1; Michael Shaltry2; Supathorn Phongikaroon3; Michael Simpson3; 1Center for Advanced Energy Studies; 2University of Florida; 3Idaho National Laboratory

4:20 PM
Electrochemical Studies and Analysis of Uranium Chloride in Molten LiCl-KCl Eutectic: Robert Hoover1; Michael Shaltry2; Supathorn Phongikaroon3; Sean Martin3; Kumar Sridharan3; Michael Simpson3; 1University of Idaho; 2University of Wisconsin-Madison; 3Idaho National Laboratory

4:50 PM
Hybrid and Hierarchical Composite Materials: Modeling and Design

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin-Milwaukee
Room: 215
Location: Henry B. Gonzalez Convention Center
Session Chairs: Charles Randow, U.S. Army Research Laboratory; Mark Pankow, North Carolina State University

Tuesday PM
March 5, 2013

2:00 PM
FEA Modeling of Stress Distribution in the Drug-Polymer Coating Composites of Drug-Eluting Stent (DES) Medical Devices: Sol Ki Lee1; Chang-Soo Kim2; 1University of Wisconsin-Milwaukee

2:20 PM
Application of ALE3D in Modeling Mechanical Properties of Freeze Cast Components: John Denismore1; Albert Nichols1; Rose McCallen1; Octavio Cervantes1; Alexander Gash1; John Molitoris1; Luke Brewer2; Joseph Hooper2; Lawrence Livermore National Laboratory; Naval Postgraduate School

3:00 PM
Micromechanical Investigation of Impact on Fluid-Filled Auxetic and Honeycomb Aluminum Cores: Ryan Karkkainen1; Jerome Tzeng1; 1U.S. Army Research Laboratory

3:20 PM
Solving the Global Space-Group Optimization Problem by Evolutionary Algorithms: Giancarlo Trimarchi1; 1Northwestern University

3:30 PM
Break

3:50 PM
Invited
High-temperature/High-strength Intermetallic Compounds – Property Correlations and Systematics: John R. Rodgers1; 1Innovative Materials Technologies

4:15 PM
Multilength Scale Characterization of Additively Manufactured Hybrid Nickel-Copper Fused Deposition Model Sandwich Cores: Steven Storek1; Marc Zupan1; 1UMBC

4:35 PM
Mechanical Properties and Failure Mechanisms in Microtuss Materials With Nanocrystalline Hollow Struts: Eral Bele1; Chandra Veer Singh2; Glenn Hibbard3; 1University of Toronto

**TUESDAY PM**
Integrated Computational Modeling of Materials for Nuclear Energy: Future Directions
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Remi Dingreville, Sandia National Laboratories; Koenraad Janssens, Paul Scherrer Institute; Timothy Bartel, Sandia National Laboratories
Tuesday PM  Room: 202B Location: Henry B. Gonzalez Convention Center
Session Chair: To Be Announced

2:00 PM Panel Discussion: Future Directions for Integrated Computational Modeling of Materials for Nuclear Energy
Panelists:
• Dr. Marius Stan, Senior Scientist, Argonne National Laboratory
• Dr. Diana Farkas, Program Director, National Science Foundation
• Dr. Simone Massara, Nuclear Science Section of the OECD Nuclear Energy Agency (NEA)
Moderators:
• Remi Dingreville and Timothy J. Bartel, Sandia National Laboratories

Magnesium Technology 2013: Corrosion
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron
Tuesday PM  Room: 214A Location: Henry B. Gonzalez Convention Center
Session Chairs: Liming Peng, Shanghai Jiaotong University; Carlos Caceres, The University of Queensland

2:00 PM Efficiency of a New Hexavalent Chromium-Free Chemical Pickling Process Based on Organic and Inorganic Acids on Magnesium Alloys Mg-Y-RE-Zr and Mg-Zn-RE-Zr: Helene Ardelean1; Antoine Seyeux1; Sandrine Zanna1; Philippe Marcus1; Sophie Pettier2; Nathalie Le Pottier2; Daniel Lecuru2; 1LPCS UMR 7045 Chimie Paristech; 2Eurocopter Marignane

2:20 PM Galvanic Corrosion of Mg-Zr Alloy and Steel or Graphite in Mineral Binders: David Lambert1; Adrien Rooses1; Fabien Frizon1; 1CEA/DEN

3:00 PM Corrosion of Ultrasonic Spot Weldbonds of Magnesium to Steel: Tsung-Yu Pan1; Zhili Feng1; Michael Santella1; Jian Chen1; 1Oak Ridge National Laboratory

3:20 PM Break

3:40 PM A Superior Corrosion Resistant Conversion Coating for Mg-Alloys: Xiaobo Chen1; Trevor Abbott2; Mark Easton2; Nick Birbilis2; 1Monash University; 2Magontec Pty Ltd

4:00 PM Corrosion and Adhesion Properties of Cerium-Based Conversion Coatings on Mg Alloys: Surendra Maddela1; Matthew O’Keefe1; 1Missouri University of Science and Technology

4:20 PM Corrosion Behavior of Cerium-Based Conversion Coatings on Magnesium Alloys Exposed to Ambient Conditions: Carlos Castano1; Surendra Maddela1; Matthew O’Keefe1; 1Missouri University of Science and Technology

4:40 PM Formation of Vanadate Conversion Coating on AZ31 Magnesium Alloy: S. Salmon1; K. Kuroda1; M Okido1; 1Nagoya University

Magnetic Materials for Energy Applications -III: MagnetoCaloric and Magnetostriuctive Materials
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt
Tuesday PM  Room: 217D Location: Henry B. Gonzalez Convention Center
Session Chairs: Oliver Gutfleisch, Technische Universität Darmstadt; Matthew Willard, Naval Research Laboratory

2:00 PM Invited γ-FeNi Alloy Nanostructures for Magnetocaloric Applications: Michael McHenry1; Huseyin Ucar2; David Laughlin2; 1Carnegie Mellon University

2:30 PM Invited Crystallographic Alignment Effects on the Magnetocaloric Effect of near-Ni,MnGa Alloys: Anit Giri1; Brigitte Paterson2; Michael McLeod2; Cindi Dennis2; Bhaskar Majumdar2; Kyu Cho3; Robert Shull4; 1U.S. Army Research Laboratory; 2National Institute of Standards and Technology; 3New Mexico Institute of Mining and Technology

3:00 PM Invited LaFeCoSi- and GdFeAl-Based Composites with Enhanced Refrigerant Capacity and Table-Like Magnetocaloric Effect: Ivan Skorvanek1; Jozef Marcin1; Bogdan Idzikowski2; Piotr Gebara2; Piotr Pawlik2; 1Institute of Experimental Physics; 2Institute of Molecular Physics; 3Czestochowa University of Technology

3:30 PM Invited
3:00 PM  Invited  
Release Behavior of Silver in TRISO fuel: Comparison of Experimental Data with Predictions for the AGR-1 Irradiation Experiment: Paul Demkowicz2; Jason Harp3; Blaise Collin4; David Pettit3; 1Idaho National Laboratory  

2:40 PM  Corrosion of Irradiated Metal Waste from the Pyrometallurgical Treatment of Used EBR-II Fuel: Brian Westphal3; Ken Marsden1; William McCartin1; Steve Frank1; Dennis Keiser1; Tae Yoo1; DeeEarl Vaden1; Dan Cummings1; Ken Bateman1; 1Idaho National Laboratory  

2:20 PM  Characterization of Irradiated Metal Waste from the Pyrometallurgical Treatment of Used EBR-II Fuel: Brian Westphal3; Ken Marsden1; William McCartin1; Steve Frank1; Dennis Keiser1; Tae Yoo1; DeeEarl Vaden1; Dan Cummings1; Ken Bateman1; 1Idaho National Laboratory  

2:40 PM  Invited  
Interaction of Cd with Ce and Nd in Nuclear Fuel Recycling: Thomas Gage1; Ulrike Wegst2; Todd Allen1; 1University of Maryland  

3:00 PM  Invited  
Magnetostriiction of Permdur: T Ren1; Harsh Chopra; A Lisi2; Armen Khachatryan; Manfred Wuttig1; 1University of Maryland; 2Morgan State University; 3Univ of Maryland  

4:10 PM  Invited  
Magnetization and Magnetostriiction of Terfenol-D near Spin Reorientation Boundary: Yongmei Jin1; Ben Wang1; 1Michigan Technological University  

4:00 PM  Invited  
Interaction of Cd with Ce and Nd in Nuclear Fuel Recycling: Thomas Gage1; Ulrike Wegst2; Todd Allen1; 1University of Maryland; 2Morgan State University; 3Univ of Maryland  

3:40 PM  Break  

4:10 PM  Invited  
Magnetization and Magnetostriiction of Terfenol-D near Spin Reorientation Boundary: Yongmei Jin1; Ben Wang1; 1Michigan Technological University  

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3:40 PM  Break  


3:50 PM
Finite Element Modeling of Material Removal Rate in Powder Mixed Electrical Discharge Machining of Al-SiC Metal Matrix Composites: Umesh Vishwakarma; Akshay Dwivedi; Pradeep Kumar; Indian Institute of Technology Roorkee

4:10 PM
Multicriteria Optimization of Rotary Tool Electric Discharge Machining on Metal Matrix Composites: Manjot Cheema; Akshay Dwivedi; Apurba Sharma; Sudeep Biswas; IIT Roorkee

4:30 PM
Structural Modifications during Linear Heating of a Bulk Ultrafine-Grained Al-Cu-Mg Alloy Produced by High-Pressure Torsion: Ying Chen; Marco Starink; Nong Gao; University of Southampton

4:50 PM
Characterization of Pore Formation in A356 Alloy with Different Oxide Levels during Directional Solidification: Hengcheng Liao; Wan Song; Qigui Wang; Southeast University; GM Global Powertrain Engineering

Mesoscale Computational Materials Science of Energy Materials: Irradiation and Defects
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Tuesday PM
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Fei Gao, Pacific Northwest National Laboratory; Alfredo Caro, Los Alamos National Laboratory

2:00 PM Invited
A Cellular Monte Carlo Code for the Prediction of Phase Separation and Radiation Induced Segregation in Alloys: Maylise Nastar; Thomas Garnier; CEA

2:30 PM
An Atomistic Toolkit for the Calculation of Free Energy Functions of Materials: Daniel Schwen; Enrique Martinez; Alfredo Caro; Los Alamos National Laboratory

2:50 PM Invited
Mesoscale Modeling of He Effects on Microstructure Evolution in Alpha-Fe: Fei Gao; Li Yang; Shenyang Hu; Howard Heinisch; Richard Kurz; Pacific Northwest National Laboratory; University of Electronic Science and Technology of China

3:20 PM Break

3:40 PM
Atomic Scale Modeling of Point Defects in Materials: Coupling Ab Initio and Elasticity Approaches: Celine Varvenne; Emmanuel Clouet; CESA Saclay DEN/DMN/SRMP

4:00 PM Invited
Mesoscopic Modeling of Dislocation-Defect Interactions and Flow Localization in Irradiated BCC Metals: Anirban Patra; David McDowell; Georgia Institute of Technology

4:30 PM
Microstructure and Defect Disorder in UO2: Abdel-Rahman Hassan; Jiaqiao Yu; Anter El-Azab; Purdue University; Idaho National Laboratory

4:50 PM
A Continuum Model for Dynamics of Dislocation Arrays and Applications to Low Angle Grain Boundaries: Yang Xiang; Xiaohong Zhu; Shuyang Dai; Hong Kong University of Science and Technology; Jinan University

5:10 PM
Hydrogen-Dislocation Interactions and Cross-Slip Inhibition in FCC Ni: Yihe Tang; Satish Rase; Jaafar El-Awady; Johns Hopkins University; UES Inc.

Microstructural Processes in Irradiated Materials: Ferritic & RPV Steels
Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Tuesday PM
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Takuya Yamamoto, Univ. California Santa Barbara; Jonathan Hyde, National Nuclear Laboratory

2:00 PM Invited
Uncertainties and Assumptions Associated with APT and SANS Characterisation of Irradiation Damage in RPV Steels: Jonathan Hyde; Colin English; Paul Stymans; Keith Wilford; National Nuclear Laboratory; Oxford University; Rolls Royce

2:30 PM
Evaluation of the Presence of Vacancies in Irradiation Induced Solute Clusters in Ferritic Model Alloys by Combination of Atom Probe Tomography and X Ray Absorption Spectroscopy: Sebastiano Cammelli; Bertrand Radiguet; Philippe Pariège; Yves Serruys; GPM UMR CNRS 6634 - Université et INSA de Rouen; SRMP - CEA

2:50 PM
Use of APT, EFTEM, HRTEM and STEM to Search for Slow-Blooming Phases in High Dose Reactor Pressure Vessel Steels: Joven Lim; Jonathan Hyde; Sergio Lozano-Perez; Keith Wilford; Chris Grovenor; The University of Oxford; Rolls Royce

3:10 PM
Ni-Si-Mn Dominated Late Blooming Phases in RPV Steels at High Fluence and Flux: Peter Wells; G. Odette; Nicholas Cunningham; Tim Milor; Yuan Wu; Takuya Yamamoto; Doug Klingsenith; James Cole; Brandon Miller; UC Santa Barbara; Idaho National Laboratory

3:30 PM
Effects of Post-Irradiation Annealing and Re-irradiation on Microstructure in Surveillance Test Specimens of RPV Steel Studied by 3D-AP and Positron Annihilation: Takeshi Toyama; Akira Kuramoto; Yasuko Nozawa; Yoshitaka Matsukawa; Masayuki Hasegawa; Matti Valo; Yasuyoshi Nagai; Tohoku University; VTT Technical Research Centre of Finland

3:50 PM Break
4:00 PM
Microstructural Characterization of Test Reactor Irradiated RPV Steels by Post-Irradiation Annealing and State-of-the-Art Characterization Tools: Takuya Yamamoto1; Takeshi Toyama2; Peter Wells1; Akira Kuramoto3; Yasuyoshi Nagai2; G. Robert Odette1; 1Univ. California Santa Barbara; 2Tohoku University

4:20 PM
APT Characterizations of High Nickel, Low Copper Welds from the Ringhals Surveillance Program: Michael Miller1; Randy Nanstad1; 1Oak Ridge National Laboratory

4:40 PM
Relationship between Microstructural Change and Hardening by Thermal Aging in Stainless Steel Weld Overlay Cladding of Nuclear Reactor Pressure Vessels: Yasuyoshi Nagai1; Yuta Kakubo1; Tomaaki Takeuchi2; Yoshihata Matsukawa1; Takeshi Toyama1; Jun Kameda2; Yutaka Nishiyama2; Jinya Katsuyama1; Kunio Onizawa3; 1Tohoku University; 2Japan Atomic Energy Agency

5:00 PM
Crystal Structure Analysis of Nanometer-Sized G-Phase Precipitates in a d/γ Duplex Stainless Steel Weld Overlay Cladding of Light-Water Reactor Pressure Vessels: Yoshi Matsukawa1; Tomaaki Takeuchi2; Yuta Kakubo1; Naoki Ebisawa1; Yasuko Nozawa1; Takeshi Toyama1; Yoshihito Yamaguchi2; Jinya Katsuyama1; Yutaka Nishiyama2; Yasuyoshi Nagai2; 1Tohoku University; 2Japan Atomic Energy Agency

5:20 PM
Neutron Irradiation Effect on ECAP’ed Steel: Ahmad Alsabbagh1; Ruslan Valiev2; K. Murty1; 1North Carolina State University; 2Ufa State Aviation Technical University

5:40 PM
Examination of Factors Influencing the Simulation of Neutron-Induced Void Swelling in ODS Ferritic-Martensitic Steels Using Self-Ion Irradiation: Frank Garner1; Victor Voyevodin2; Mychailo Toloczko2; Stuart Maloy1; Valery Pechenkin1; 1Radiation Effects Consulting; 2Kharkov Institute of Physics and Technology; 3Pacific Northwest National Laboratory; 4Los Alamos National Laboratory; 5Los Alamos National Laboratory; 6Shanghai Jiao Tong University; 7Los Alamos National Laboratory

3:20 PM
Interface Controlled Plastic Flow Modeled by Strain Gradient Plasticity Theory: Thomas Pardoen1; Thierry Massart2; 1UCL; 2ULB

4:10 PM
A Predictive Model for Microstructure Evolution in Metallic Multilayers with Immiscible Constituents: Yao Shen1; Haibo Wan2; Xuejun Jin3; Jian Wang1; 1Shanghai Jiao Tong University; 2Los Alamos National Laboratory

4:40 PM
Experimental Observations of the Interactions between Dislocations and Twin Boundaries in Nanocrystalline Face-Centred Cubic Metallic Materials: Yang Cao1; Song Ni2; Yanbo Wang3; Xiaozhou Liao4; 1The University of Sydney; 2The University of Manchester; 3Shanghai Jiao Tong University; 4Hong Kong University of Science and Technology

5:10 PM
Surface Groove Induced Strain Relaxation and Strengthening of Fivefold-Twinned Silver Nanowire: Chuang Deng1; 1University of Manitoba
5:30 PM Invited
Molecular Dynamics Simulation of Grain Growth and Plastic Deformation during Surface Indentation of Nanocrystalline Nickel: Garrick Tucker, Stephen Foiles; Sandia National Laboratories

Modeling of Multi-Scale Phenomena in Materials Processing - III: Microstructure Effects
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM; Computational Materials Science and Engineering Committee, TMS; Process Technology and Modeling Committee, TMS; Integrated Computational Materials Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Meij Li, Ford Motor Company

Tuesday PM Room: 216
March 5, 2013 Location: Henry B. Gonzalez Convention Center
Session Chairs: Anthony Rollett, Carnegie Mellon University; Wei Cai, Stanford University

2:00 PM Introductory Comments
2:05 PM Invited
BCC Crystal Plasticity Model Incorporating Non-Schmid Effect: Hojun Lim; Christopher Weinberger; Corbett Battaile; Thomas Buchheit; Sandia National Laboratories

2:45 PM
Study on Effect of Interfacial Anisotropy and Elastic Interaction on Morphology Evolution and Growth Kinetics of a Single Precipitate in Mg-Al Alloy by Phase Field Modeling: Guomin Han, Zhiquiang Han; Alan Luo; Anil Sachdev; Baicheng Liu; Tsinghua University; General Motors Global Research and Development Center

3:05 PM
Parametric Study of a Cellular Automata Recrystallization Model: David Rule, Jon Madison, Veena Tikare; Liz Holm; University of Florida; Sandia National Laboratories

3:25 PM Break
3:55 PM
Comparison of the Conventional Gravity Sand Casting Process with the Novel CRIMSON Casting Process: Binxu Zeng; Mark Jolly; Xiaojun Dai; Carl Reilly; Cranfield University; The University of British Columbia

4:15 PM
Simulation of Electromagnetic Vibration on the Inclusions Agglomeration Behavior in Aluminum Melt: Leyuan Qiu; Qiulin Li; Wei Liu; Tsinghua University, China; Tsinghua University

4:35 PM
Predicting the Rate of Dislocation Cross Slip: Wei Cai; Jie Yin; Stanford University

4:55 PM
Simulation of Microstructural Morphology Evolution of Ni-45wt.%Mo Droplets during Rapid Solidification Process: Ma Jie; Zhang Jie-Yu; Zhao Shun-Li; Zhao Jian; Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; Baosteel research institute; Baoshan Iron & Steel Co., Ltd.

5:15 PM
Microstructure Evolution of a Nb Bicrystal Subjected to Equal Channel Angular Extrusion: Experiment and Modeling: Shreyas Balachandran; Arun Srinivasa; Zu Sun; Peter Lee; Karl Hartwig; Texas A&M university; National High Magnetic Field Laboratory

Nanostructured Materials for Lithium Ion Batteries and for Super capacitors: Nanostructured Materials for Lithium Ion Batteries and for Super capacitors Session IV
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS; Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Tuesday PM Room: 007B
March 5, 2013 Location: Henry B. Gonzalez Convention Center
Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

2:00 PM Invited
Toward a Na-Ion Battery: Long Wang; Maowen Xu; Jie Song; Yuhao Lu; John Goodenough; Univ of Texas at Austin

2:20 PM Invited
New Type of Nanostructured Battery Electrode Materials: Robert Hoggins; Stanford University

2:40 PM Invited
Multiple-Strip Lithiation of Individual SnO2 Nanowires: Scott Mao; Jianyu Huang; Li Zhong; Department of Mechanical Engineering and Materials Science, Univ. of Pittsburgh; Center for Integrated Nanotechnologies, Sandia National Laboratories

3:00 PM Invited
High Energy Density Lithium Capacitors Using Carbon-Carbon Electrodes: Jin Zheng; Wanjun Cao; Florida State University

3:20 PM Invited
In Situ and In Operando Studies of High Capacity Cathodes: Jason Graetz; Sung-Wook Kim; Feng Wang; Xiaoya Wang; Brookhaven National Laboratory; Stony Brook University

3:40 PM Break

4:00 PM Invited
The Important Role of Nanostructure in Material and Electrode Design on Electrochemical Performance: Esther Takeuchi; Amy Marschilok; Kenneth Takeuchi; Stony Brook University

4:20 PM Invited
Nanostructured Vanadium Pentoxides as Cathodes for Lithium-Ion Batteries: Guozhong Cao; University of Washington

4:40 PM Invited
Light-Metal Hydrides as Novel Conversion Materials for Li-ion Battery Anodes: Vivek Shenoy; Eric Majzoub; Tim Mason; Alyssa McFarlane; University of Missouri - St. Louis

5:00 PM Invited
Pressure-Gradient Dependent Diffusion and Crack Propagation in Lithiated Silicon Nanowires: Fivel Sheno; University of Pennsylvania

5:20 PM Invited
Ultrathin Multifunctional Surface Coatings for Lithium Ion Batteries: Xingcheng Xiao; General Motors Global R&D Center
5:40 PM Invited
Laser Created Nanostructured Aluminum Current Collector for Supercapacitor Applications: Dongfang Yang1; 1National Research Council Canada

6:00 PM
Cyclability Study of Si/TiN/C Composite Anode with High Rate Capability for Lithium-Ion Batteries: Jiguo Yu1; Shuqiang Jiao1; Jungang Hou1; Hongmin Zhu1; 1University of Science and Technology Beijing

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: In honor of Prof. T. Ungar: “Advanced Line Profile Analysis”
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Tuesday PM
Room: 209
Location: Henry B. Gonzalez Convention Center
Session Chairs: Andras Borbely, EMSE, France; Lavente Balogh, LANL

2:00 PM Introductory Comments

2:05 PM Invited
Asymmetric X-Ray Line Broadening: From the Composite Model to the Dislocation Polarization Induced by External Stress: Istvan Groma1; Peter Ispanovity1; Daniel Tuzes1; 1Eotvos University Budapest

2:25 PM Invited
High-Resolution EBSD and X-Ray Diffraction Analysis of Dislocation Structures in Deformed Copper Single Crystals: Claire Maurice1; Andras Borbely1; 1Ecole des Mines de Saint-Etienne

2:45 PM Invited
Characterisation of Deformation Induced Microstructures by In-Situ X-ray Synchrotron Bragg Profile Analysis: Erhard Schafler1; Michael Kerber1; Roman Schuster1; Florian Speckermann1; Harald Wilhelm1; Gerald Polt1; Sigrid Bernstorff1; Michael Zehetbauer1; Tamas Ungar1; 1University of Vienna, Faculty of Physics; 2Eotvos University Budapest, Department of Material Physics

3:05 PM Invited
Asymmetric X-Ray Line Profiles Revisited: Dissecting Dislocation Structures by High Resolution Reciprocal Space Mapping: Wolfgang Pantleoon1; 1Technical University of Denmark

3:25 PM Invited
Elasto-Plastic Transition of a Duplex Steel from Combined X-Ray Diffraction, Neutron Diffraction, and Micromechanical Modeling: Christophe Le Bourlot1; Olivier Castelnau2; Brigitte Bacroix1; Damien Faurie1; 1LSPM, Univ. Paris Nord; 2PIMM-CNRS

3:45 PM Break

3:55 PM Invited
Extracting Dislocation Densities from Peak Broadening Analysis: A Multiscale Analysis of Predicted and Experimental Diffraction Peak Profiles: Carlos Tome1; Levente Balogh1; Laurent Capolungo1; Anand Kanjarla1; Ricardo Lebensohn1; 1Los Alamos National Laboratory; 2Georgia Institute of Technology

4:15 PM Invited
Phenomenological and Physically Based Approaches to Line-Broadening Analysis: Davor Balzar1; 1University of Denver

4:35 PM Invited
The Role of Orientation Factors in XRD Analysis of Microstructure: Radomir Kuzel1; 1Charles University in Prague, Faculty of Mathematics and Physics

4:55 PM Invited
Understanding Physical Properties of Nanomaterials from Parameters Obtained by X-Ray Bragg Profile Analysis: Michael Zehetbauer1; Erhard Schafler1; Michael Kerber1; 1University of Vienna

5:15 PM Invited
Texture Evolution in NiAl Deformed by High Pressure Torsion Studied with Synchrotron Radiation: Werner Skrotzki1; Christine Traenkner1; Robert Chulist1; Benoit Beausir1; Thomas Lippmann1; Jelena Horky1; Michael Zehetbauer1; 1TU Dresden; 2Univ. Metz; 3Helmholtz-Zentrum Geesthacht; 1Univ. Wien

5:35 PM Invited
Development of the Dislocation Structure of Ferritic Steel during Quenching, Cold Rolling and Annealing: Peter Szabo1; 1Budapest University of Technology and Economics

5:55 PM Invited
Application of Line Profile Analysis for the Study of Dislocations in Deep Earth Minerals: Sebastien Merkel1; Carole Nisr1; Gabor Ribarik2; Tamás Ungár1; 1Eotvos University; 2Eötvös University

6:15 PM
Microstructure of B2 CoTi and CoZr Determined by 3D X-Ray Diffraction: Gabor Ribarik1; Tamas Ungar1; Levente Balogh1; Rupalee Mulay1; Sean Agnew1; Ulrich Lienert1; 1Eotvos Lorand University, Institute of Physics, Budapest, Hungary; 2Materials Science and Technology Division, Los Alamos National Laboratory; 3Materials Science and Engineering, University of Virginia; 4DESY Photon Science, Deutsches Elektronen-Synchrotron

Ni-Co 2013: Pyrometallurgy - Solid-State Processing
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday PM
Room: 007D
Location: Henry B. Gonzalez Convention Center
Session Chair: Shijie Wang, Rio Tinto Kennecott Utah Copper Corp

2:00 PM
Cobalt Recovery through Sulphating Roast of Cu/Co Concentrate of Katanga Mining: Kamal Adham1; 1Hatch Ltd.
2:25 PM
Direct Reduction of Transition Metal (Ni, Co, Cr) Oxides with Carbon in the Presence of Calcium Sulphate: Animesh Jha; Yotamu Hara; 'University of Leeds

2:50 PM
Fe and Ni Enriched and Concentrated from Laterite by Coal Base Pre Reduction Followed with Magnetic Separation: Hongwei Li; Yu Chen; Chao Wu; Peng Zhang; Chao Li; 'University of Science and Technology

3:10 PM
Effect of Refractory Materials on Preparation of Ferronickel Nugget by Rotary Hearth Furnace: Donghai Li; Cheng Pan; Xuewei Lv; Enguang Guo; Pan Chen; 'Chongqing University

3:35 PM Break

3:55 PM
Experimental Study on Reduction-Magnetic Separation Process of Low-Grade Nickel Laterite Ore: Fatao Chen; Bo Zhang; Wencui Li; Qiang Wang; Xin Hong; 'Shanghai University

4:20 PM
New Route for Nano-Structured Ni-Co Alloy Preparation: D. de Macedo; Eduardo Brocchi; F. Moura; 'PUC-Rio

4:40 PM
Solid State Selective Reduction of Nickel from Nickel Laterite Ores: Manuel Zamolla; Nagendra Tripathi; 'Koniambro Nickel SAS

5:00 PM
State of the Art Refractory Corrosion Test Work for the Nonferrous Metals Industry: Dean Gregurek; Angelika Ressler; Viktoria Retter; Anna Franzkowiak; Alfred Spanring; Bob Drew; Dayle Flynn; 'RHI AG

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Novel Synthesis and Consolidation of Powder Materials: Nanostructured or Nanocrystalline Materials

Sponsored by: TMS Materials Processing and Manufacturing Division. TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Tuesday PM
Room: Lone Star Salon C
March 5, 2013
Location: Grand Hyatt

Session Chairs: Eugene Olevsky, San Diego State University; Young Do Kim, Hanyang University

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2:00 PM Keynote
Nanostructured Materials Based on Powder Metallurgy Route: Bernd Kieback; Thomas Weissgaerber; Thomas Schubert; Lars Rönzsch; 'Technische Universitaet Dresden; 'Fraunhofer Institute for Manufacturing and Advanced Materials IFAM

2:40 PM
Consolidation of Nanocrystalline Si by Shock Waves: Nikoze Chikhradze; Akaki Gogishvili; Mikhail Chikhradze; Bagrat Godidze; 'Mining Institute/Georgian Technical University; 'Georgian Technical University

3:00 PM
Synthesis and Properties of Amorphous and Nanocrystalline W-Based Alloys and Composites: Steven Livers; Megan Beck; Kosette Leperi; Zachary Cordero; Hyon-Jeong Voigt; Emily Huskins; Daniel Casem; Brian Schuster; Lee Magness; Michael Hurley; Christopher Schuh; Megan Frary; 'Boise State University; 'Massachusetts Institute of Technology; 'Army Research Laboratory; 'Army Research Laboratory

3:20 PM Break

3:40 PM Invited
New Class of High Strength Nanostructured Steel for Large Scale Industrial Components: Daniel Brunagan; Jason Walleser; Brian Merkle; Patrick Mack; Alla Sergeeva; Brian Meacham; 'The NanoSteel Company

4:10 PM Invited
Bulk Nanostructured Materials from Consolidation of Particles by Severe Plastic Deformation: Understanding and Opportunities: K. Xia; 'University of Melbourne

4:40 PM
Nanostructured Al-7wt%Si-0.3wt%Mg Alloy Powders Prepared by High Energy Ball Milling of A356 Aluminium Casting Alloy: Jianjiao Liang; Deliang Zhang; 'Shanghai Jiao Tong University

5:00 PM
Microstructural Characterization of a Powder-Processed Quasicrystal-Reinforced Al-Cr-Mn-Co-Zr Alloy: Mauricio Gordillo; Iuliana Cerneascu; Thomas Watson; Mark Aindow; 'University of Connecticut; 'Pratt and Whitney Aircraft

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TUESDAY PM

2:00 PM
Evaluation of Impact Property of Low-Melting-Point Solder Joints on Cu Pad: Hiroshi Nishikawa; Terumasa Yamamoto; 'Osaka University

2:20 PM
Assessment of Impact Reliability of Sn-Ag-Cu/Cu-xZn Solder Joints in Consideration with Microstructural Evolution Via EBSD Analysis: Chi-Yang Yu; Jenq-Gong Duh; 'National Tsing Hua University

2:40 PM
Development of Solidification Microstructure and Tensile Mechanical Properties of Sn-0.7Cu and Sn-0.7Cu-2.0Ag Solder: José Spinelli; Amauri Garcia; 'Federal University of São Carlos; 'University of Campinas

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Pb-free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior II
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhil Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Tuesday PM
Room: 217B
March 5, 2013
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced
TUESDAY PM

3:00 PM
Impact of Cooling Rate on Low Silver Sn-Ag-Cu Solder Interconnect Board Level Mechanical Shock and Thermal Cycling Performance: Tae-Kyu Lee1; Choong-Un Kim2; Thomas Bieler2; 1Cisco Systems; 2University of Texas, Arlington; 'Michigan State University

3:20 PM Break

3:40 PM
Isothermal Fatigue Properties and Their Relation to the Reliability of Lead Free Solder Joints in BGA Assembly: Hwan Jo1; Inyu Jung1; 1KAIST

4:00 PM
A Microstructurally Adaptive Composite Model for Steady State Creep of Two-phase Sn-Ag-Cu based Solders: Babak Talebanpour1; Uttara Sahaym1; Praveen Kumar1; Indranath Dutta1; 1Washington State University; 'Indian Institute of Sciences

4:20 PM
Study on Solder Grain Orientation and Texture Effect on the Mechanical Reliability: Fay Hua1; K. Lee1; 1Intel Corporation

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: General Issues in Microelectronics
Sponsored by:TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang1; National Central University; Chih-Ming Chen1; National Chung Cheng University; Jae-Ho Lee1; Hongik University; Ikuo Ohnuma1; Tohoku University; Clemens Schmetterer1; TU Bergakademie Freiberg; Yee-Wen Yen1; National Taiwan University of Science and Technology; Shien-Ping Feng1; The University of Hong Kong; Shih-Kang Lin1; National Cheng Kung University

Tuesday PM Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Shih-Kang Lin1; National Cheng Kung University; Jae-Ho Lee1; Hongik University

2:00 PM Invited
Synthesis, Characterization and Applications of Cu, CuO and Cu2O Nanoparticles: Hyuck Mo Lee1; Chung Seok Choi1; Na Rae Kim1; Yun Hwan Jo1; Inyu Jung1; 'KAIST

2:20 PM
Effects of Bath Conditions and Operating Parameters on Electroless Nickel-Iron Alloy Plating for Microelectronic Applications: Myung-Won Jung1; Jae-Ho Lee1; Sung Kang1; 'Hongik University; 1IBM Watson Research Center

2:35 PM
Influence of Bath Composition and Operating Parameters on the Composition of Ni-Fe Alloy Deposits: Ju-Hwan Kim1; Ho-Kyung Um1; Tai-Hong Yim1; Ildong Choi1; Jae-Ho Lee1; 'Hongik University; 1Korea Institute of Industrial Technology; 2Korea Institute of Industrial Technology; 'Korea Maritime University

2:50 PM
Evaluating the Stability of Barrierless Cu-Alloy Film as a Buffer Layer in Microelectronic Devices: Chon-Hsin Lin1; 1Asia-Pacific Institute of Creativity

3:05 PM
Study of Wetting Behavior of Gold-Tin Solder on the Gold, Silver Bi-Layer: Ji-Jin Hu1; 1National Central University

3:20 PM
Synthesis and Characterization of Sn/SnO2 Coated Multi-Walled Carbon Nanotubes: Chien-1 Lin1; Mohanty Udit Surya1; Kwang-Lung Lin1; 1National Cheng Kung University

3:35 PM Break

3:50 PM Invited
Characteristics of Plasma-Treated Amorphous Ta-Si-C Film as a Diffusion Barrier for Copper Interconnection: Jiu-Shiang Fang1; Wumi-Jia Su1; Meng-Shuo Huang1; Tsung-Shune Chini1; 1National Formosa University; 'Feng Chia University

4:10 PM
Preparation of AgCu Alloy Nanoparticles Using Thermal Decomposition Process for the Printed Electronics: Na Rae Kim1; Inyu Jung1; Yun Hwan Jo1; Hyuck Mo Lee1; 'KAIST; 1Samsung Display

4:25 PM
Optical Properties of Al2O3/Ag/Al2O3 Multilayer Absorber Coatings Prepared by Reactive Magnetron Sputtering: Ting-Kan Tsai1; Shun-Jen Hsueh1; Jau-Shiun Fang1; 'Nation Formosa University

4:40 PM
Electron Transport and Magnetic Performance of Ni-Nb-Zr Metallic Glass: Haibing Wang1; Jin Chen1; Chuang Dong1; Chonglin Chen1; 1Dalian Univ of Technology; 'University of Texas at San Antonio

4:55 PM
The Preparation and Properties of Hexadecanoic Acid/Polyaniline Phase Change Materials: Zhang Ling1; Zhi Furong1; Zeng Julan1; Zheng Shuanghao1; Yan Wenpei1; Deng Guangrong1; 1Changsha University of Science and Technology

5:10 PM
Investigation of GaN Nucleation on Various Powder Compounds through Hydride Vapor Phase Epitaxy: Seongki Hong1; Hye-Jong Lee1; Jun-Seok Ha1; Soon-Ku Hong1; Seong Woo Lee1; Meoung Whan Cho1; Takaumi Yamao1; 1Dong-A University; 2Chonnam National University; 3Chungnam National University; 'Tohoku University

Phase Transformation and Microstructural Evolution: General Phase Transformations - Non-Ferrous: Part III
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleseson, University of Pittsburgh; Crelmy Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday PM Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Matthew Kramer, Ames Laboratory; Greg Thompson, University of Alabama

2:00 PM
Metastable Phases in a Powder Processed Al-Ge-Mn Alloy: Mauricio Gordillo1; Juliana Cernatescu1; Thomas Watson1; Mark Aindow1; 1University of Connecticut; 2Pratt and Whitney Aircraft
2:20 PM  Nanoscale Precipitation-Strengthened Al-Sc-(V,Nb,Ta) Alloys: Keith Knippling; Nhon Vo; David Dunand; David Seidman; Naval Research Laboratory; Northwestern University

2:40 PM  Optimization of a Dilute Al-Er-Sc-Zr-Si Alloy for High-Temperature Applications: Nhon Vo; David Dunand; David Seidman; Northwestern University

3:00 PM  Prediction of the Critical Resolved Shear Stress of an Al-Cu-Sn Alloy Containing Shear-Resistant Precipitate Plates: Hong Liu; Yipeng Gao; Yunzhi Wang; Jian-Feng Nie; Monash University; The Ohio State University

3:20 PM  The Influence of Sr on Primary Silicon Morphology in Al-Si Hypereutectic Alloys: Anilajaram Darlapudi; Sofiane Terzi; Arne Dahle; David StJohn; CAST CRC; Materials Engineering, University of Queensland; University of Queensland

3:40 PM  Thermo -Dynamic & -Kinetic Modeling to Quantify the Evolution of Primary Intermetallics and Dispersoid Phases during Casting and Homogenization in 6xxx Al-Alloys: Kerem Öksüz; Wu Jun; Erwin Povden-Karadeniz; Ahmad Fahalati; Carsten Melzer; Ernst Kozeschnik; Vienna University of Technology; Vienna University of Technology, Christian Doppler Laboratory; Austria Metall GmbH; Vienna University of Technology & Christian Doppler Laboratory

4:00 PM  Normal Grain Growth in Cu-Al-Mn Shape Memory Alloy: Takashi Saito; Tomoe Kusama; Toshihiro Omori; Ikuo Ohnuma; Ryosuke Kaiunma; Tohoku University; Furukawa Electric Co., Ltd.

4:20 PM  The Effect of Vitrification Method on the Phase Selection Dynamics of Cu-Zr Alloys: Tim Cullinan; Ralph Napolitano; Iowa State University; Ames Laboratory

4:40 PM  The Study of Transformations in Titanium and Ti Alloys by Electrical Resistivity Measurement: Petr Hacebura; Michal Hájek; Jana Šmilauerová; Josef Stráský; Irina Semenova; Miloš Janecek; Charles University in Prague; Ufa State Aviation Technical University

5:00 PM  The Interrelationship of Phase Crystallography on Microstructures in Tantalum Carbides: Gregory Thompson; Robert Morris; Billie Wang; Christopher Weinberger; University of Alabama; Sanida National Laboratories

5:20 PM  Thermal Stability of Nanotwinned Thin Films: Eun Soo Park; Matthew Besser; Matthew Kramer; Ryan Ott; Ames Laboratory

5:40 PM  Thermodynamic Reassessment of the La-Mg-Ni System and Its Application to Hydrogen Storage System: Xuehui An; Kong-Bao Wu; Jie-Yu Zhang; Shuang-Lin Chen; Qian Li; Shanghai University

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part II
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday PM  Room: 204A  March 5, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Gregory Olson, Northwestern University; Jian Nie, Monash University

2:00 PM  Introductory Comments

2:10 PM  Microstructure Evolution of Cu – 15 wt.%Sn Alloy in Semisolid Remelting Processing: Husseyin Lus; Gokhan Ozer; Casgar Yuksel; Yildiz Technical University

2:30 PM  On the Formation of Hierarchically Structured L21-Ni2TiAl Precipitates in a Ferritic Alloy: Christian Liebscher; Velimir Radmilovic; Ulrich Dahmen; Mark Asta; Gautam Ghosh; UC Berkeley; University of Belgrade; Lawrence Berkeley National Laboratory; Northwestern University

2:50 PM  Pseudospinodal Nucleation in Beta-Ti Alloys: Andrew Boyne; Soumya Nag; Rajarshi Banerjee; Yunzhi Wang; University of North Texas

3:10 PM  Break

3:30 PM  Solidification of Al-Pb Alloy in a Static magnetic field: Hai-Li Li; Jiuzhou Zhao; Patent Examination Cooperation Center of the Patent Office, SIPO; Institute of Metal Research, CAS

3:50 PM  The Influence of Pressure and Temperature on the High Pressure Phase Transformation in Zirconium: Ellen Cerretta; Juan Escobedo; Paulo Rigg; Frank Addessio; Turab lookman; Curt Bronkhorst; Carl Trujillo; Donald Brown; George Gray; Los Alamos National Laboratory

4:10 PM  Transmission Electron Microscopy of Rapid Solidification of AlxCu100-x Thin Films: Andreas Kalovits; Jorg Wiezorek; Thomas LaGrange; Bryan Reed; Joseph Mckeown; Geoffrey Campbell; University of Pittsburgh

4:30 PM  Effect of Cooling Rate on Phase Transformation of Continuous Casting Strand: Mujun Long; Dengfu Chen; Zhihua Dong; Xing Zhang; Chongqing University

3:10 PM  Effect of Pressure and Temperature on the High Pressure Phase Transformation in Zirconium: Ellen Cerretta; Juan Escobedo; Paulo Rigg; Frank Addessio; Turab lookman; Curt Bronkhorst; Carl Trujillo; Donald Brown; George Gray; Los Alamos National Laboratory
Physical and Mechanical Metallurgy of Shape Memory Alloys: High Temperature Shape Memory Alloys
Sponsored by: TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryoosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn
Tuesday PM Room: Lone Star Salon B
March 5, 2013 Location: Grand Hyatt
Session Chairs: Michael Kaufman, Colorado School of Mines; Ruben Santamarta, University of the Balearic Islands

2:00 PM
Shape Memory Response of NiTiHfPd High Strength and High Hysteresis Shape Memory Alloys: Emre Acar1; Haluk Karaca1; Hirobumi Tobe1; Fan Yang2; Michael Mills3; Ron Noebe1; University of Kentucky; NASA Glenn Research Center

2:20 PM
Effect of Precipitation on the Martensitic Transformation Characteristics of a Ni-Rich NiTiZr Alloy: Alper Evirgen1; Ibrahim Karaman1; Ronald Noebe2; Ruben Santamarta3; Jaume Pons1; Texas A&M University; NASA Glenn Research Center; Université de les Illes Balears

2:40 PM
The Effect of Aluminum Additions on the Shape Memory Behavior of NiTiHfAlloys: Derek Hsien Dai Hsu1; Hunter Henderson1; B. Hornbuckle1; Gregory Thompson1; Michele Manuel1; University of Florida

3:00 PM
Effect of Alloy Composition on the Phase Transformation and the Shape Memory Behavior of TiPd Alloys: Yoko Yamabe-Mitarai1; Raja Arockiakumar1; Toru Hara1; Mamiko Kawakita2; Madoka Takahashi2; Satoshi Takahashi2; Hideki Hosoda2; National Institute for Materials Science; IHI Co.; Tokyo Institute of Technology

3:20 PM
Effect of Alloying and Hot Rolling on the Shape Memory Behavior of Ti-Pd Alloys: Arockiakumar R1; H. Maheshwari1; M. Kawakita2; M. Takahashi2; S. Takahashi2; Yoko-Yamabe-Mitarai1; IHI Co.; NASA Glenn Research Center

3:40 PM Break

4:00 PM
Study of Phase Transformations in the Ti- Pt System for High Temperature SMAs: Karern Tello1; Michael Kaufman1; Ronald Noebe1; Colorado School of Mines; NASA Glenn Research Center

4:20 PM
Effect of Cr Addition on Phase Transformation of AuTi and AuTiCo Shape Memory Alloys: Hyunbo Shim1; Toshiyuki Kawamura1; Masaki Tahara1; Tomorihiro Inamura1; Kenji Goto2; Hiroyasu Kanetaka2; Yoko Yamabe-Mitarai2; Hideki Hosoda2; Tokyo Institute of Technology; Tanaka Kikinzoku Kogyo K.K.; Tohoku University; National Institute for Materials Science

4:40 PM
Microstructural Influence on the Load Biased Response of Two Ti-lean, Ni-Ti-Pt High Temperature Shape Memory Alloys: Grant Hudish3; Ronald Noebe2; Glen Bigelow2; Michael Kaufman1; Colorado School of Mines; NASA Glenn Research Center

5:00 PM
Improvement of Mechanical and Shape Memory Properties in Near-Equiatomic Ti-Pt High Temperature Shape Memory Alloys by Addition of Group IV Elements: Abdul Wadood1; M. Takahashi2; S. Takahashi2; Hideki Hosoda2; Yoko Yamabe-Mitarai1; National Institute for Materials Science; IHI Co.; Tokyo Institute of Technology

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings IV
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: R. Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Chooong-Un Kim, University of Texas at Arlington; Jian Luo, Clemson University; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carrado, IPCMS
Tuesday PM Room: 214D
March 5, 2013 Location: Henry B. Gonzalez Convention Center
Session Chairs: Terry Alford, Arizona State University; Nancy Michael, UT Arlington

2:00 PM
Effects of Surface Roughness and Surface Energy on Ice Adhesion Strength: Carol Ellis-terrell1; Michael Miller1; Ronghua Wei2; Southwest Research Institute

2:20 PM
Protection of Magnesium Alloy Sheets by Hot Cladding of Aluminium: Heinz Palkowskip; Rudolph Kai-Michaelp; Clausthal University of Technology; Arcelor Mittal Duisburg

2:40 PM
Effect of Low Temperature Microwave Processing and Copper Content on the Properties of Ag-Cu Thin Film Alloys: Sayantan Das1; Terry Alford1; Arizona State University

3:00 PM
Sol-Gel Derived Electrochromic Tungsten Trioxide (WO3) Film: Hui-Wei Lee1; Xingru Yan1; Shijie Wu1; Suying Wei1; Zhanhu Guo1; Lamar University; Agilent Technologies, Inc

3:20 PM Break

3:45 PM
Influence of Si Addition on the Microstructures and Mechanical Properties of CrZrSiN Thin Films: Jyh-Wei Lee1; Tzu-Chin Tseng2; Sung-Hsiu Huang2; Tsung-Eong Hsieh2; Jenq-Gong Duh2; Yu-Chen Chan3; Hisen-Wei Chen3; Ming Chi University of Technology; National Chiao Tung University; National Tsing Hua University
4:05 PM
Influence of Si Addition on the Microstructures and Mechanical Properties of CrZrSiN Thin Films: Jyh-Wei Lee⁠¹; Ming Chi University of Technology

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meiskes, Umicore Precious Metals Refining; Anne Kvitlynd, SINTEF; Markus Reuter, Outopec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory
Tuesday PM
March 5, 2013
Room: 006B
Location: Henry B. Gonzalez Convention Center
Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling
Session Chairs: Gabrielle Gaustad, Rochester Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM
Stock Dynamics and Emission Pathways for the Global Aluminum Cycle: Daniel Müller⁠¹; Gang Liu⁠¹; Colton Bangs⁠²; NTNU; Umicore

2:30 PM
Lifecycle and System Perspectives on the Recycling of Paper and Packaging from the Solid Waste Stream: Adam Gesing⁠¹; Jiyou Chang⁠¹; Elsa Olivietti⁠¹; Gabrielle Gaustad⁠¹; Randolph Kirchain⁠¹; Subodh Das⁠¹; GCI; MIT; Phinix LLC

2:55 PM
Sustainable Production of c-Si Solar Cell Materials – A Competitive Advantage? Gabriella Tranell⁠²; Norwegian University of Science & Technology

3:20 PM Break

3:40 PM
Phosphorus Flow Analysis for Food Production and Consumption: Kazuyo Matsubae⁠¹; Kenichi Nakajima⁠¹; Keisuke Nansai⁠¹; Tetsuya Nagasaka⁠¹; Tohoku University; National Institute for Environmental Studies

4:05 PM
Quantifying the Export Flow of Used Electronics from the United States: The Case of Laptop Computers: Huabo Duan⁠¹; T. Miller⁠¹; Jeremy Gregory⁠¹; Randolph Kirchain⁠¹; MIT

4:30 PM
Life Cycle Assessment of NdFeB Rare Earth Magnet Recycling: Brent Dolan⁠¹; Can Erdem⁠¹; Zhou Lin⁠¹; David Dornfeld⁠¹; Fiona Doyle⁠¹; University of California, Berkeley

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meiskes, Umicore Precious Metals Refining; Anne Kvitlynd, SINTEF; Markus Reuter, Outopec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory
Tuesday PM
March 5, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center
Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling
Session Chairs: Yongxiang Yang, TU Delft; Juergen Antrekowitsch, University of Leoben

2:00 PM Introductory Comments

2:10 PM
Moving Equipment and Workers to a Mine Construction Site at a Logistically Challenged Area: Laszlo Tikazs⁠¹; Dennis Biroskla⁠²; Scheale Duvah Pentillah⁠¹; Robert McCulloch⁠¹; Bechtel Canada Co.; BECHTEL Co.

2:35 PM
Preparation and Characterization of Fibrous Copper Powder Used for Conductive Filler: Youqi Fan⁠¹; Yongxiang Yang⁠¹; Yanping Xiao⁠¹; Zhuo Zhao⁠¹; Anhui University of Technology; Delft University of Technology

3:00 PM Silver Selenide Thermodynamics for Copper Anode Slime Refining: Davie Feng⁠¹; Pekka Taskinen⁠¹; Aalto University

3:25 PM Break

3:45 PM
Measurement of Thermodynamic Properties of Tellurium in Molten Iron by Transpiration Method: Shumpei Suzuki⁠¹; Takeshi Yoshikawa⁠¹; Takayuki Nishi⁠¹; Kazuki Morita⁠¹; University of Tokyo; Sumitomo Metals Industries, Ltd

4:10 PM Thermodynamic Model for Acidic Metal Sulfate from Solubility Data: Petr Kobylin⁠¹; Hannu Sippola⁠¹; Pekka Taskinen⁠¹; Aalto University

4:35 PM Practical Thermodynamic Model for Acidic Sulfate Solutions: Hannu Sippola⁠¹; Petr Kobylin⁠¹; Pekka Taskinen⁠¹; Aalto University

5:00 PM Thermodynamic Analysis of Lead-Fluoride Ion-Water System: Jiyoun Li⁠¹; Tianzu Yang⁠¹; Lin Chen⁠¹; Weifeng Liu⁠¹; Central South University
Tuesday PM

Synergies of Computational and Experimental Materials Science II: Mechanical Behavior: Plasticity
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Laboratory
Tuesday PM
March 5, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Buchheit, Sandia National Laboratories; David Rowenhorst, Naval Research Laboratory

2:00 PM Introductory Comments

2:05 PM Invited
Deformation Mechanisms in Nanocrystalline Metals: In-Situ Diffraction Experiments and Atomistic Simulations: Helena Van Swygenhoven1; 1Paul Scherrer Institut

2:35 PM
Size-Affected Behavior in Pure Compression of Micron-Sized Metallic Crystals: Satish Rao1; Dennis Dimiduk2; Michael Uchic2; Trilpicane Parthasarathy1; Jaafar El-Awady2; Ahmed Hussein2; Christopher Woodward1; 1UES Inc.; 2Air Force Research Laboratory; 3Johns Hopkins University

2:55 PM
Twining Dominated Texture Evolution in Bulk Cu-Nb Lamellar Composites: Shijian Zheng1; John Carpenter1; Jian Wang1; Weizhong Han1; Robert Dickerson1; Irene Beyerlein1; Nathan Man1; 1Los Alamos National Laboratory

3:15 PM
Building Metropolitan Foundations for Nanointoentation: Coupled Experiments and Modeling: Lyle Levine1; Chandler Becker1; Ron Dixon1; Joseph Fu1; Yvonne Gerbig1; Li Ma1; Boon Ng1; Bartosz Nowakowski1; Ndubuisi Orji1; William Osborn1; Douglas Smith1; Francesca Tavazza1; Maureen Williams1; 1National Institute of Standards and Technology

3:35 PM Break

3:50 PM Invited
Orientation Fragmentation in Polycrystals Subjected to Large-Strain Deformations: Paul Dawson2; Romain Quey3; 1Cornell University; 2Ecole des Mines de Saint Etienne

4:20 PM
Microstructural Effects on Ductile Damage of Polycrystalline Materials: Ricardo Lebensohn1; 1Los Alamos National Laboratory

4:40 PM
Evaluating Raman and Electron Diffraction Nanoscale Strain-Mapping Techniques Via AFM and Finite Element Modeling: Lawrence Friedman1; Mark Vaudin1; Stephan Stranick1; Gheorghe Stan1; Yvonne Gerbig1; William Osborn1; Robert Cook1; 1National Institute of Standards and Technology

5:00 PM Invited
Microstructure Effects on Local Plasticity: Closing the Loop Between Experiment and Simulation: Michael Groeber1; Paul Shade1; Michael Uchic1; Yoon-Suk Choi1; Todd Turner1; 1AFRL

Three-Dimensional Materials Science VII: From 3D-4: New Data Representation Paradigms and Advanced Characterization in Four Dimensions
Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Tuesday PM
Room: 212A
March 5, 2013
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Groeber, AFRL, Wright Patterson AFB; Alexis Lewis, Naval Research Laboratory

2:00 PM Invited
Four-Dimensional Measurement of Interfacial Morphology: John Gibbs1; Chal Park2; Begum Gulsoy1; Julie Fife3; Katsuyo Thornton2; Peter Voorhees1; 1Northwestern University; 2University of Michigan; 3Paul Scherrer Institut

2:30 PM
Temporal Evolution of Gamma Prime Precipitates in a Co-Al-W-Ni Quaternary Superalloy: Daniel Sautza1; Peter Bocchini2; Ronald Nobe2; David Seidman1; David Dunand1; 1Northwestern University; 2NASA Glenn Research Center

2:50 PM
Temporal Evolution of Three Dimensional Microstructure and Associated Chemical Partitioning in Cobalt Base Superalloys: Subhashish Meher1; Soumya Nag1; Jaimie Tiley1; Rajarshi Banerjee1; 1University of North Texas; 2Air Force Research Laboratory

3:10 PM Break

3:25 PM Invited
Challenges in Data Intensive Science at Synchrotron Based 3D X-Ray Imaging Facilities: Francesco De Carlo1; Nicholas Schwarz2; Xianghui Xiao1; Kamil Fezzaa1; Steve Wang1; Chris Jacobsen1; Nikhilesh Chawla1; Florian Fussei1; 1Sandia National Laboratories; 2Argonne National Laboratory; 3Paul Scherrer Institut

3:55 PM
Design and Construction of a High-Resolution, Lab-Scale X-Ray Computed Tomography (XCT) System for Four Dimensional (4D) Materials Science: James Mertens1; Jason Williams1; Nikhilesh Chawla1; 1Arizona State University

4:15 PM Break

4:30 PM Invited
Modeling Heterogeneous Materials via Statistical Microstructural Descriptors: Yang Jiao1; Nikhilesh Chawla1; 1Arizona State University

5:00 PM
Coarsening of Complex Microstructures Simulated Via Phase-Field Method: Chai-Lun Park1; Peter Voorhees2; Katsuyo Thornton3; 1University of Michigan; 2Northwestern University

5:20 PM
Spherical Images of Faces, Edges and Corners in Grain Structures: Veena Tikare1; Robert Dehoff2; Burton Patterson2; David Rule2; 1Sandia National Laboratories, New Mexico; 2University of Florida

5:40 PM
Topological Paths in Grain Growth: David Rule1; Burton Patterson1; Robert Dehoff1; Veena Tikare1; 1University of Florida; 2Sandia National Laboratories, New Mexico