TECHNICAL PROGRAM

TMS2013

142nd Annual Meeting & Exhibition

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

Technical Program

5:40 PM
X-Ray Fluorescence Analysis of a Dirty Discrete White Spot in a Nickel 718 Alloy: *Trevor Watt*[1]; Eric Taleff[1]; [1]The University of Texas at Austin

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials General I: Electronic, Photonic, and Bio-Nano Interfaces

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 AM
March 5, 2013
Room: 201
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 Zhou*[1]; Zhenqiang Ma[2]; Hongun Yang[3]; [1]University of Texas at Arlington; [2]University of Wisconsin-Madison; [3]Semerane, Inc.

9:05 AM Invited
Tunable Nanostructures and Printed Electronics: *Horst Hahn*[1]; [1]Karlsruhe Institute of Technology

9:40 AM
Fabrication of Surface Channel Waveguides on a Thin Film of Rare Earth Doped Silicon: *Matthew Murray*[1]; Gin Jose[1]; Billy Richards[1]; Animesh Jha[1]; [1]The University of Leeds

10:00 AM Break

10:15 AM
Characteristic Study for Nano-Scaled 2DEG Properties of AlGaN/GaN: *JaeWoo Suh*[1]; Feyza Berber[1]; Harlan Harris[1]; [1]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 Chabal*[1]; [1]Univ of Texas at Dallas

11:10 AM Invited
Biological Properties of Zinc Oxide-Coated Anodized Aluminum Oxide: S. Skoog[1]; M. Bayati[2]; P. Petrochenko[1]; S. Stafslien[3]; J. Daniels[3]; N. Cilz[3]; D. Comstock[4]; J. Elam[4]; *R. Narayan*[1]; [1]UNC/NCSU Joint Department of Biomedical Engineering; [2]North Carolina State University Department of Materials Science and Engineering; [3]North Dakota State University; [4]Argonne National Laboratory

11:45 AM
Quantitation of Circulating Tumor Cells Using Nanowire Substrate-Based Laser Scanning Cytometry: *Sang-Kwon Lee*[1]; Rong Fan[2]; [1]Chonbuk National University; [2]Yale University

12:05 PM
Synthesis and Characterization of Magnetic Silica Nanoparticles for His-tagged Proteins Capture and Separation: Mahdi Kamali[1]; Mehdi Ghaffari Sharaf[2]; *Seyed Mostafa Amoozadeh*[3]; Hamidreza Javadi[4]; Hamid Kooshki[1]; Jamal Rashidiani[1]; Amir Homayoun Keihan[2]; Manizheh Ramezani[5]; [1]BMSU Nano Biotechnology Research Center; [2]Ibb Institute, University of Tehran; [3]Sharif University of Technology; [4]National Institute of Genetic Engineering and Biotechnology (NIGEB); [5]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; Guifeng Zhou, Wuhan Iron and Steel

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

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

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

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 Long*[1]; Shengping He[1]; Lilong Zhu[1]; Ting Wu[1]; Qian Wang[1]; [1]Chongqing University

9:05 AM
A Study on Production of Fe-Co-V Alloys by Self Propagating High Temperature Synthesis: *Murat Alkan*[1]; Ozlem Altinordu[1]; Seref Sönmez[1]; Bora Derin[1]; Onuralp Yücel[1]; Vladimir Sanin[2]; Vladimir Yukhvid[2]; [1]Istanbul Technical University; [2]Institute of Structural Macrokinetics and Materials Science

9:20 AM
Hot Ductility of Nb-V-Containing Microalloyed Steel during Solidification: Yanhui Sun[1]; *Yanan Zeng*[1]; Kaike Cai[1]; [1]University of Science and Technology, Beijing

9:40 AM
Co-Cr-Mo Alloys Production by Self Propagating High Temperature Synthesis: *Ozlem Okur*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]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 Xue*[1]; Luxing Feng[1]; MengDong Gu[1]; [1]Unversity of Science and Technology Beijing

10:30 AM
Production of Molybdenum Containing Iron Based Alloys via Metallothermic Processes: *Dilek Kirgöz*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

10:50 AM
Production of Boron Containing Iron-Based Alloys by Metallothermic Processes: *Cem Colakoglu*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

11:05 AM
Electrical Resistance of TiB2-C/C Function Gradient Material for Aluminum Reduction Cathodes: *Jun Zhu*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

11:25 AM
Experimental Study of Phosphorus Distribution Between Slag and Metal During Duplex Dephosphorus Converter Processing: Xin Qiu[1]; *Bing Xie*[1]; Lu Jiang[1]; Xie Zhang[1]; Jiang Diao[1]; Hong-Yi Li[1]; [1]Chongqing University

11:40 AM
Effect of Steel Composition on the Scale Layer Composition in Continuous Casting: *Cuihuan Huang*[1]; [1]Northeastern University

11:55 AM
Hot Workability of M42 Tool Steel Additionally Alloyed with Co and Mo: Milan Tercelj[1]; *Goran Kugler*[1]; Matevz Fazarinc[1]; Iztok Peruš[1]; [1]University of Ljubljana

12:15 PM
Synthesis by Hydrogen Reduction and Characterization of FeNi Alloys: Orfelinda Avalo[1]; *Eduardo Brocchi*[2]; Francisco Moura[2]; Rogerio Siqueira[2]; [1]PUC-Peru; [2]PUC-Rio

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

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

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

8:40 AM Keynote
Corrosion of Mild Steel in Extreme Oil and Gas Environments: *Srdjan Nesic*[1]; [1]Ohio University

9:10 AM Invited
Modeling Localized Corrosion in Complex Oil and Gas Environments: *Andre Anderko*[1]; [1]OLI Systems Inc.

9:30 AM Invited
Evaluating Corrosion Mechanisms through Atomistic Modeling: *Christopher Taylor*[1]; [1]Los Alamos National Laboratory

9:50 AM Invited
On the Connection Between Grain Boundary Structure and Intergranular Fracture in Ni: *Michael Demkowicz*[1]; G. Xu; [1]Massachusetts Institute of Technology

10:10 AM Break

10:25 AM Keynote
Fracture Prognosis for Materials Operating in Extreme Hydrogen Environments: *Petros Sofronis*[1]; M. Martin[1]; M. Dadfarnia[1]; P. Somerday[2]; I. Robertson[1]; [1]University of Illinois; [2]Sandia National Laboratories

10:55 AM Invited
Surface Science Investigations for Corrosion Research: *Roland Schulze*[1]; [1]Los Alamos National Laboratory

11:15 AM
Extreme Sampling Tool for High Temperature, Pressure and Highly Corrosive Downhole Environments: *Sebastien Ives*[1]; Danny Killen[1]; Indranil Roy[1]; Stephane Hiron[1]; [1]Schlumberger

11:35 AM Invited
Modeling the Mechanical Response of Metallic Materials at the Nano-scale: *Diana Farkas*[1]; [1]Virginia Tech

11:55 AM
Oil Swellable Elastomer in Sour Environment: *Xiaohong Ren*[1]; Indranil Roy; Travis Hohenberger; [1]Schumberger Rosharon Campus

12:15 PM
Mitigation of Scale Formation using Liquid Impregnated Surfaces: *Srinivas Prasad Bengaluru Subramanyam*[1]; Gisele Azimi[1]; J.David Smith[1]; Kripa Varanasi[1]; [1]Massachusetts Institute of Technology

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

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

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

Session Chair: To Be Announced

8:30 AM Invited
Multilayer Thermal Barrier Coatings: Interplay Among Coating Design, Processing and Properties: *Sanjay Sampath*[1]; Gopal Dwivedi[1]; Vaishak Vishwanathan[1]; Yikai Chen[1]; [1]Stony Brook University

8:50 AM Invited
Failure Mechanisms of EB-PVD TBCs with Pt-Modified NiAl Bondcoats and CMSX-4: *Yongho Sohn*[1]; Le Zhou[1]; [1]University of Central Florida

9:10 AM Invited
Hybrid Powder-Based and Solution Precursor Plasma Spraying of Composite Coatings: *Shrikant Joshi*[1]; G Sivakumar[1]; [1]International Advanced research Centre for Powder Metallurgy & New Materials (ARCI)

9:30 AM
High Temperature Oxidation and Corrosion Behavior of Electroplated Ni-Al-Cr Bond Coating on TiAl: *Kai Tan*[1]; Viola Acoff[1]; [1]The University of Alabama

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

10:00 AM Break

10:15 AM Invited
Bonding Mechanism of Cold Spray Coating on Magnesium Alloys: *Mingxing Zhang*[1]; Qiang Wang[1]; [1]The 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 Villafuerte*[1]; [1]Centerline Windsor Ltd

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

11:05 AM
Nano-Scratch Behavior of Cold Sprayed Al-bulk Metallic Glassy Coating: *Suresh Babu Pitchuka*[1]; Debrupa Lahiri[2]; Sundararajan G[1]; Arvind Agarwal[2]; [1]International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI); [2]Nanomechanics and Nanotribology Laboratory

11:20 AM
Comparative Analysis of the Microstructural, Wear, and Corrosion Properties of Laser Assisted Cold Sprayed Titanium Coatings with Laser Cladded Coatings: *Eyitayo Olakanmi*[1]; Monnamme Tlotleng[1]; Christopher Meacock[2]; Esther Akinlabi[1]; Mukul Shukla[1]; Charl Smal[2]; Herman Burger[2]; Sisa Pityana[2]; Mulalo Doyoyo[1]; Peter Olubambi[3]; [1]University of Johannesburg; [2]Council for Scientific and Industrial Research; [3]Tshwane 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: *Monnamme Tlotleng*[1]; Eyitayo Olakanmi[1]; Christopher Meacock[2]; Mukul Shukla[1]; Esther Akinlabi[1]; Sisa Pityana[2]; Mulalo Doyoyo[1]; [1]University of Johannesburg; [2]Council for Scientific and Industrial Research

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Thermoelectric III

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; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Tuesday AM
March 5, 2013

Room: 007C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Hubert Scherrer, Ecole des Mines; Hsin-jay Wu, National Tsing Hua University

8:30 AM Invited
Multiphase, Multistructure, and Multifunctionality of Interface Engineered Oxide Heterostructures for Energy Conversion and Harvest: *Chonglin Chen*[1]; [1]University of Texas at San Antonio

8:55 AM Invited
Performance Enhanced Nanostructured Thermoelectric Materials and Their Applications: *Zhifeng Ren*[1]; [1]Boston College

9:20 AM
Thermoelectric Properties of Nanostructured Bulk Silicon: *Shinsuke Yamanaka*[1]; Yuji Ohishi[1]; Hiroaki Muta[1]; Yoshinobu Miyazaki[1]; Yusuf Aikebaier[1]; Ken Kurosaki[1]; Noriyuki Uchida[2]; Tetsuya Tada[2]; [1]Osaka University; [2]National Institute of Advanced Industrial Science and Technology

9:40 AM
Thermoelectric Properties of β-$FeSi_2$ Based Alloys Fabricated by Reactive Sintering Process Using Iron Oxide Powder: *Koichiro Takeno*[1]; Yaw Wang Chai[1]; Yoshisato Kimura[1]; [1]Tokyo Institute of Technology

10:00 AM Break

10:15 AM Invited
Path to Predictive Computations of Thermoelectric Effects: Thermal and Electronic Transport.: *Boris Kozinsky*[1]; [1]Bosch Research

10:40 AM
Energy-Dependent Relaxation Time Functions and Electronic Transport: *Md. Hossain*[1]; [1]California Institute of Technology

11:00 AM
Thermomechanical Processing of Fe_2VAl-Based Compounds for Thermoelectric Applications: *Camille van der Rest*[1]; David-Henry Makuanga[1]; Valentin Marchal-Marchant[1]; Aude Simar[1]; Pascal Jacques[1]; [1]Université Catholique de Louvain

11:20 AM
Liquidus Projection of the Ternary Thermoelectric Co-Sb-Ga System: *Yuan-Chun Chien*[1]; Sinn-wen Chen[1]; Jui-shen Chang[1]; G. Jeffrey Snyder[2]; [1]National Tsing Hua University; [2]Materials Science, California Institute of Technology

Alumina and Bauxite: Clarification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Tuesday AM
March 5, 2013

Room: 212B
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 Senaputra*[1]; Phillip Fawell[2]; Franca Jones[3]; Peter Smith[2]; [1]Nanochemistry Research Institute, Curtin University,Perth; [2]CSIRO Process Science and Engineering; [3]Nanochemistry Research Institute, Curtin University

9:00 AM
Improvement on the Operation Management System of Vertical Pressure Filters: Lucélia Moares[1]; *Tatiani Santos*[1]; Aline Sampaio[1]; Humberto Lima[1]; Juarez Borges[1]; Joel Miranda[1]; Alípio Júnior[1]; Milton Maciel[1]; [1]Hydro Alunorte

9:20 AM
Using a Multivariate Statistical in the Identification of Alumina Loss in Red Mud: *Américo Borges*[1]; Alipio Junior[1]; Humberto Lima[1]; Joaquim Ribeiro[1]; Ricardo Podversek[1]; Joel Miranda[1]; Ayana Oliveira[1]; [1]Hydro Alunorte

9:40 AM Break

9:55 AM
Bevill and the Aluminum Industry: *Anthony Schoedel*[1]; [1]Alcoa, Inc.

10:15 AM
New Development Model for Bauxite Deposits - Dedicated Compact Refinery: *Peter-Hans ter Weer*[1]; [1]TWS 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 Golumbfskie, Naval Surface Warfare Center

Tuesday AM
March 5, 2013

Room: 213A
Location: Henry B. Gonzalez Convention Center

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

8:30 AM
Aluminum Sensitization and the Navy: *William Golumbfskie*[1]; [1]Naval Surface Warfare Center, Carderock Division

8:50 AM
Understanding the Influence of Stress on Sensitization in 5xxx Alloys: William Golumbfskie[1]; *Jennifer Gaies*[1]; Mitra Taheri[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]Drexel University

9:10 AM
Effect of Grain Refinement on Sensitization of Al-Mg Alloys: *Ramasis Goswami*[1]; Khershed Cooper[1]; Peter Pao[1]; [1]Naval Research Laboratory

9:30 AM
A Comparative Investigation of UFG and CG AA 2139 Microstuctures and Mechanical Behavior Prepared by Cryomilling and Conventional Routes: *Troy Topping*[1]; Brandon Saller[1]; Tao Hu[1]; Hanry Yang[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis

9:50 AM Break

10:10 AM
Strength and Failure of Ultrafine Grain and Bimodal Al-Mg Alloy at High Temperatures: *Andrew Magee*[1]; Leila Ladani[1]; [1]The University of Alabama

10:30 AM
Influence of Length Scale on the Precipitation Behavior of Ultrafine Grained Al-Zn-Mg alloy: *Tao Hu*[1]; Kaka Ma[1]; Troy Topping[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis

10:50 AM
Investigation of Phase Formation and Microstructural Evolution in a Cryomilled Al-5at% Fe Alloy: *Brandon Saller*[1]; Tao Hu[1]; Troy Topping[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]UC Davis

11:10 AM
Methodologies for Minimizing Corrosion in Aluminum Alloys: *Harovel Wheat*[1]; [1]Univ of Texas at Austin

11:30 AM
Corrosion Fatigue Crack Growth and Stress-Corrosion Cracking in Sensitized Al 5083: *Peter Pao*[1]; Ramasis Goswami[1]; Robert Bayles[1]; Ronald Holtz[1]; [1]Naval Research Laboratory

11:50 AM
Process Development of AA3103 Aluminum Alloy for Automotive Thins: *Marcelo Paes*[1]; Augusto Coelho[1]; Roberto Netto[1]; Fernando Aguiar[1]; [1]Votorantim Metais - CBA

12:10 PM
Microhardness, Corrosion Behaviour and Microstructures of Directionally Solidified Al-Cu Alloys: Alicia Ares[1]; Carlos Rodriguez[1]; Claudia Mendez[2]; *Carlos Schvezov*[1]; Mario Rosenberger[1]; [1]CONICET/FCEQyN-UNaM; [2]FCEQyN-UNaM

12:30 PM
Effect of Mg Contents on Fluidity of Al-xMg Alloys: *Nam-Seok Kim*[1]; Young-Ok Yoon[1]; Gil-Yong Yeom[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

Aluminum Reduction Technology: Fundamentals: Chemistry

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

Tuesday AM
March 5, 2013

Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Arne Ratvik, NTNU

8:30 AM Introductory Comments

8:35 AM
Composition and Thermal Analysis of Crust Formed from Industrial Anode Cover: Qinsong Zhang[1]; Mark Taylor[2]; John Chen[2]; David Cotton[2]; Tania Groutzo[2]; Xiaodong Yang[1]; *Pretesh Patel*[2]; [1]Shenyang Aluminium & Magnesium Engineering & Research Institute Co. Ltd; [2]The University of Auckland

9:00 AM
Liquidus Temperatures of Na_3AlF_6 -AlF_3-CaF_2-KF-LiF-Al_2O_3 Melts: *Di Yuezhong*[1]; Peng Jianping[1]; Bai Yunbin[1]; Feng Naixiang[1]; [1]Northeastern University

9:25 AM
The Effect of Calcium Fluoride on Alumina Solubility in Low Temperature Cryolite Melts: *Pavel Tingaev*[1]; Alexey Apisarov[1]; Alexander Dedyukhin[1]; Alexander Redkin[1]; Yurii Zaikov[1]; [1]Institute of High Temperature Electrochemistry of the Ural Branch of the Russian Academy of Sciences

9:50 AM
Conductivity of KF-NaF-AlF_3 System Low-temperature Electrolyte: *Jianhong Yang*[1]; Wangxing Li[1]; Hengwei Yan[1]; Dan Liu[1]; [1]Zhengzhou Research Institute of CHALCO

10:15 AM Break

10:25 AM
Numerical Analysis of Ionic Mass Transfer in the Electrolytic Bath of an Aluminium Reduction Cell: *Mohsen Ariana*[1]; Martin Désilets[1]; Pierre Proulx[1]; [1]Université de Sherbrooke

10:50 AM
Liquidus Temperature of Electrolytes for Aluminum Reduction Cells: Dong Shi[1]; *Bingliang Gao*[1]; Zhaowen Wang[1]; Zhongning Shi[1]; Xianwei Hu[1]; [1]Northeasten University

11:15 AM
Effect of $LiAlO_2$ and KF on Physicochemical Properties for Industrial Aluminum Electrolyte: Lv Xiaojun[1]; Chen Shiyue[1]; Lai Yanqing[1]; Tian Zhongliang[1]; Li Jie[1]; *Zhang Hongliang*[1]; [1]School of Metallurgical Science and Engineering, Central South University

Aluminum Reduction Technology: Potline Operation I: Smelter Operations

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

Tuesday AM
March 5, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Michel Reverdy, DUBAL

8:30 AM Introductory Comments

8:35 AM
Low Power Operation at Aluminium Dunkerque Smelter: *Jean-Michel Peyneau*[1]; Laurent Fiot[1]; Stéphane Mermet-Guyenet[1]; Olivier Rebouillat[1]; [1]Rio Tinto Alcan

9:00 AM
Maximizing Creeping Value through Rigorous Methodology: Bénédicte Champel[1]; Nicolas Monnet[1]; *Yann El Ghaoui*; [1]Rio Tinto Alcan

9:25 AM
The Quick Shut Down and Restarting of 291 kA Pre Baked Potline at JSC "RUSAL Sayanogorsk" from May to August 2011: *Victor Buzunov*[1]; Andrey Soldatov[1]; Victor Mann[2]; Vasiliy Borisov[1]; Alexander Pavin[1]; Sergey Zatepyakin[1]; Evgeniy Scherbakov[3]; Andrey Gouzenkov[4]; [1]RUSAL "Engeneering and Technological Center"; [2]UC RUSAL; [3]RUSAL Sayanogorsk; [4]RUSAL RUS-Engeneering

9:50 AM
Production Growth and Future Challenges in Aluminium Bahrain (Alba): *Abdulla Ahmed*[1]; [1]Aluminium Bahrain (Alba)

10:15 AM Break

10:25 AM
High Frequency Power Modulation - TRIMET Smelters Provide Primary Control Power for Stabilizing the Frequency in the Electricity Grid: *Andreas Luetzerath*[1]; [1]TRIMET ALUMINIUM AG

10:50 AM
Autonomous Vehicle and Smelter Technologies: *Ashley Tews*[1]; Paulo Borges[1]; [1]CSIRO

11:15 AM
Preventive Maintenance of Transport Vehicles: Is It Improving Production Stability of a Smelter?: *Maarten Meijer*[1]; [1]Hencon

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, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

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

Funding support provided by: Biomaterials Program, National Science Foundation

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

8:30 AM Invited
Nanoparticles, Nanotubes, and Other Nanomaterials: Controlling Cellular Functions to Increase Tissue Growth: *Thomas Webster*[1]; [1]Brown 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: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Junko Hieda[1]; Ken Cho[1]; Hakan Yelmazer[1]; Yoshikazu Todaka[2]; [1]Tohoku University; [2]Toyohashi University of Technology

9:30 AM Invited
Uncovering the Multiscale Structural Origin of Nacre's Exceptional Mechanical Performance: *Xiaodong Li*[1]; [1]University of South Carolina

10:00 AM Break

10:15 AM Invited
Ultrafine Grained Titanium for Dental Applications: Mechanical Properties and Performance: *Marc Meyers*[1]; Carlos Elias[2]; Ruslan Valiev[3]; Sergio Neves Monteiro[2]; Felipe Perisse[2]; [1]UCSD; [2]IME; [3]UFA

10:45 AM
Non-Toxic SPD Processed Ti Alloys for Orthopaedics: *Ajit Panigrahi*[1]; Thomas Waitz[1]; Erhard Schafler[1]; Matthias Bönisch[2]; Mariana Calin[2]; Jürgen Eckert[2]; Annett Gebert[2]; Werner Skrotzki[3]; Michael Zehetbauer[1]; [1]Physics of Nanostructured Materials, University of Vienna, 1090, Vienna, Austria; [2]Institut für Komplexe Materialien, IFW Dresden; [3]Institut für Strukturphysik, TU Dresden

11:00 AM Invited
Surface Modification of Nanostructured Titanium for Biomedical Application: *Irina Semenova*[1]; Ruslan Valiev[1]; Gulnaz Salimgareeva[1]; Alexander Polyakov[1]; Terry Lowe[2]; [1]Ufa State Aviation Technical University; [2]Manhattan Scientifics

11:25 AM Invited
Surface Chemistry of Titanium Dental Implants: *Roland Schulze*[1]; Terry Lowe[2]; [1]Los Alamos National Laboratory; [2]New Mexico Tech

11:50 AM Invited
Natural Armor: Interdisciplinary Convergence Among Engineering, Architecture and Evolutionary Biology: *Christine Ortiz*[1]; [1]Massachusetts Institute of Technology

12:15 PM Invited
Strategies for Improving the Performance of Dental Restorative Composites: *Jamie Kruzic*[1]; Dmitriy Khvostenko[1]; Jack Ferracane[2]; John Mitchell[2]; [1]Oregon State University; [2]Oregon Health & Science University

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

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

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

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

8:30 AM Keynote
Mechanical Behavior of Metallic Liquids and Glasses: *Takeshi Egami*[1]; [1]University of Tennessee

9:00 AM
Time-Dependent Structural Change in BMG Induced by Creep: *Yang Tong*[1]; W. Dmowski[1]; C. P. Chuang[1]; J. Almer[2]; J. Bednarcik[3]; T. Egami[1]; [1]The University of Tennesee-Knoxville; [2]Argonne National Laboratory; [3]DESY, Hasylab

9:15 AM Invited
Atomic Structure and Mechanical Deformation in BMG: *Wojciech Dmowski*[1]; Yang Tong[1]; Chin-Pi Chuang[1]; Takeshi Egami[1]; [1]University of Tennessee

9:35 AM
In-Situ Observation of Transformation-induced Plasticity in Bulk Metallic Glassy Composite: *Yuan Wu*[1]; Dong Ma[2]; A. D. Stoica[2]; X. L. Wang[3]; Z. P. Lu[1]; [1]State Key Lab for Advanced Metals and Materials, USTB; [2]Neutron Scattering Science Division, Oak Ridge National Laboratory; [3]City University of Hong Kong

9:50 AM Invited
Effect of Surface Modifications on Shear Banding and Plasticity in Metallic Glasses: *Taigang Nieh*[1]; [1]University 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 Li[1]; *Christopher Schuh*[1]; [1]MIT

10:45 AM
$Al_{77}Ni_{14.4}Y_{4.8}Zr_{3.8}$+5%$B_4C$ Bulk Metallic Glass Composites Processed Via Gas Atomization and Spark Plasma Sintering: *Baolong Zheng*[1]; Troy Topping[1]; Yizhang Zhou[1]; Somesh Mukherjee[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Aspen Systems, Inc.

11:00 AM Invited
Elastic Properties of Metallic Glasses: *Mo Li*[1]; Hao Wang[1]; [1]Georgia Institute of Technology

11:20 AM
Deformation Behavior of Structural Amorphous Metals (SAM) under Compression: Shima Haghighat[1]; Andrea Hodge[1]; *James Kelly*[2]; Olivia Graeve[2]; [1]USC; [2]Alfred University

11:35 AM Invited
Deformation and Structural Evolution in Shear Band-sized Metallic Glass with In-Situ TEM: *Scott Mao*[1]; Junhang Luo[1]; Jianyu Huang[2]; Li Zhong[1]; [1]Department of Mechanical Engineering and Materials Science, University of Pittsburgh; [2]Center for Integrated Nanotechnologies, Sandia National Laboratories

11:55 AM
Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr Metallic Glasses: *Ilkay Kalay*[1]; Yunus Kalay[2]; Matthew Kramer[3]; Ralph Napolitano[4]; [1]Cankaya University; [2]METU; [3]Ames Laboratory US DOE; [4]Iowa State University

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

12:30 PM
Do Grain Boundaries Behave Like a Layer of Amorphous Material?: *Rainer Birringer*[1]; Christian Braun[1]; Manuel Grewer[1]; [1]Universität des Saarlandes

Cast Shop for Aluminum Production: Aluminum Cast Shop II

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

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

Session Chair: Shridas Ningileri, SECAT Inc.

8:30 AM
Ultrasonic Degassing and Processing of Aluminum: *Victor Rundquist*[1]; Kiran Manchiraju[1]; [1]Southwire Company

8:50 AM
Kinetics of Ultrasonic Degassing of Aluminum Alloys: *Noe Alba-Baena*[1]; Dmitry Eskin[1]; [1]Brunel University

9:10 AM
Removal of Inclusions in Molten Aluminum by Flux Injection under Counter-Gravity: *Jianmin Zeng*[1]; Hong Gu[1]; [1]Guangxi University

9:30 AM
Advanced Compact Filter: (ACF) An Efficient and Flexible Filtration Process: *Francis Breton*[1]; Peter Waite[1]; Patrice Robichaud[1]; [1]Rio Tinto Alcan

9:50 AM
Electromagnetic Priming of Ceramic Foam Filters (CFF) for Liquid Aluminium Filtration: *Robert Fritzsch*[1]; Mark Kennedy[2]; Shahid Akhtar[3]; Jon Bakken[1]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]Norwegian University of Science and Technology; [3]Hydro Aluminium

10:10 AM Break

10:30 AM
Plant Scale Investigation of Liquid Aluminum Filtration by Al_2O_3 and SiC Ceramic Foam Filters: *Sarina Bao*[1]; Martin Syvertsen[1]; Arne Nordmark[1]; Anne Kvithyld[1]; Thorvald Engh[2]; Merete Tangstad[2]; [1]SINTEF; [2]NTNU

10:50 AM
Casting Practices Influencing Inclusion Distributions in Billets: Ghadir Razaz[1]; *Torbjörn Carlberg*[1]; [1]Mid Sweden University

11:10 AM
Oxidation of Commercial Purity Aluminium Melts: An Experimental Study: *Stephen Bonner*[1]; John Taylor[1]; Ji-Yong Yao[1]; M. Akbar Rhamdhani[2]; [1]CAST CRC, The University of Queensland; [2]HTP Group, Swinburne University of Technology

11:30 AM
Modeling of Mold Filling and Porosity for RSI: *Xiaoxuan Li*[1]; Randall Bowers[1]; Shridas Ningileri[2]; Gyan Jha[3]; [1]Secat, Inc.; [2]University of Kentucky; [3]Tri-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
March 5, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory

8:30 AM Keynote
Electron Ptychography: The Future of High-Resolution Transmission Imaging?: *John Rodenburg*[1]; [1]University of Sheffield

9:00 AM
On the Precipitation of d Phase in Ni-Base Superalloy 718Plus: *Olivier Messe*[1]; Jonathan Barnard[1]; Edward Pickering[1]; Cathie Rae[1]; Svjetlana Stekovic[2]; [1]University of Cambridge; [2]Rolls-Royce PLC

9:20 AM
Automated Phase and Orientation Mapping in the TEM: *Amith Darbal*[1]; [1]NanoMEGAS USA

9:40 AM
Electron Wave Tomography for 3D Atomic Structure Determination: *Dirk Van Dyck*[1]; Ciney Tang[1]; Amy Wang[1]; Sandra Van Aert[1]; Fu-Rong Chen[2]; [1]University of ANtwerp; [2]National Tsing-Hua University

10:00 AM Break

10:20 AM Keynote
Imaging Atoms in Nanostructures Using Coherent Electrons: *Jian Min Zuo*[1]; Sungjin Kang[2]; Ke Ran[1]; [1]University of Illinois; [2]Seoul National University

10:50 AM
Local to Macroscopic Symmetry for Piezoelectric (1-x)Pb($Mg_{1/3}Nb_{2/3}$) O_3-x$PbTiO_3$ Single Crystal in the Morphotropic Phase Boundary Region at x = 0.31: *Kyouhyun Kim*[1]; David Payne[1]; Jian-Min Zuo[1]; [1]University of Illinois

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

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; Zhiwei Peng, Michigan Technological University

Tuesday AM
March 5, 2013

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_4C-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 YLD2000-2d Yield Criterion: *Olivier Dion-Martin*[1]; Mario Fafard[2]; Ahmed Rahem[3]; Guillaume d'Amours[3]; [1]Dynamic-Concept; [2]Aluminium Research Center – REGAL; [3]Aluminium Technology Centre, National Research Council Canada

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*[1]; Martin Fujda[2]; Peter Slama[1]; Libor Kraus[1]; [1]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
Change in Electrical Resistivity of Pure Ti by ARB: *Masato Ueda*[1]; Kei Ota[1]; Masahiko Ikeda[1]; 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

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn 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 AM
March 5, 2013

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*[1]; 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 Hariharaputran*[1]; David Wu[1]; [1]Institute of High Performance Computing

9:10 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; Mark Asta[1]; Yuri Mishin[2]; [1]University of California Berkeley; [2]George Mason University

9:40 AM
Mobility of Partially Faceted Shrinking Grains: *David Olmsted*[1]; Mark Asta[2]; Tamara Radetic[3]; Colin Ophus[4]; Uhlrich Dahmen[4]; [1]University of California, Berkeley; [2]Lawrence Berkeley National Laboratory; University of California, Berkeley; [3]University of Belgrade; Lawrence Berkeley National Laboratory; [4]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

10:45 AM
Molecular Dynamics Simulation of Grain Boundary Migration: Chuang Deng[1]; *Mikhail Mendelev*[2]; Christopher Schuh[3]; David Srolovitz[4]; [1]Department of Mechanical & Manufacturing Eng.; [2]Ames Laboratory; [3]Massachusetts Institute of Technology; [4]Institute 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-Caraballo*[1]; Carlos Capdevila[2]; Paul Bristowe[1]; [1]University of Cambridge; [2]CENIM-CSIC

11:15 AM
A Comprehensive Investigation of Low Angle Grain Boundary Mobility in Pure Al Using Molecular Dynamics Simulations: *Md. Jahidur Rahman*[1]; Hatem S. Zurob[2]; Jeffrey Hoyt[1]; [1]Department of Materials Science and Engineering, McMaster University; [2]Department 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
March 5, 2013
Room: 217C
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 Kapoor[1]; *Rajendra Sadangi*[1]; Chris Haines[1]; Darold Martin[1]; Kendall Mills[1]; [1]US Army, ARDEC

8:50 AM Invited
Selective Laser Melting Technology - Challenges and Opportunities: *Milan Brandt*[1]; Shoujin Sun[1]; Martin Leary[1]; Joe Elambasseril[1]; Qianchu Liu[2]; [1]RMIT University; [2]DSTO

9:10 AM
Isothermal Forging of Microwave Sintered Ti-6Al-4V: *Xiaolin Wu*[1]; Wei Xu[1]; Ya Feng Yang[2]; Shudong Luo[2]; Ma Qian[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]The University of Queensland

9:30 AM
Consolidation of Blended Titanium/Magnesium Powders by Microwave Processing: *M. Ashraf Imam*[1]; Arne Fliflet[1]; Ralph Bruce[1]; Peter Pao[1]; Jerry Feng[1]; [1]Naval 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 Salman*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]The University of Waikato

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

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

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 Han*[1]; Colleen Bettles[1]; Tom Jarvis[1]; Xinhua Wu[1]; [1]ARC 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 Simonelli*[1]; Yau Yau Tse[1]; Chris Tuck[2]; [1]Loughborough University; [2]The 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
March 5, 2013
Room: 210B
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 Wu[1]; Ke An[2]; James Antonaglia[3]; Matthew Wraith[3]; Karin Dahmen[3]; *Peter Liaw*[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory; [3]University of Illinois

9:00 AM Invited
Modeling the Statistics of Slip-Avalanches in Slowly Sheared Light Metals and Alloys: *Karin Dahmen*[1]; James Antonaglia[2]; Wei Wu[3]; Ke An[4]; Matthew Wraith[1]; Jonathan Uhl[5]; Peter Liaw[3]; [1]University of Illinois at Urbana Champaign; [2]Univeristy of Illinois at Urbana Champaign; [3]University of Tennessee at Knoxville; [4]Oak Ridge National Laboratory; [5]Private

9:30 AM
In-Situ Diffraction Studies on Thermo-Mechanical Processes: *Klaus-Dieter Liss*[1]; Kun Yan[2]; Lisa Thoennessen[2]; Saurabh Kabra[1]; Rian Dippenaar[3]; [1]Australian Nuclear Science and Technology Organisation; [2]Australian Nuclear Science and Technology Organisation and University of Wollongong; [3]University of Wollongong

9:50 AM
In-Situ Neutron Diffraction and Acoustic Emission Investigation of Twinning Activity In Magnesium: *Jan Capek*[1]; Kristián Máthis[1]; Premysl Beran[2]; Petr Lukáš[2]; [1]Charles University in Prague; [2]Nuclear 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 Boehlert*[1]; Zhe Chen[1]; Ajith Chakkedath[1]; Maria Teresa Perez Prado[2]; Javier Llorca[2]; Ivan Gutiérrez-Urrutia[3]; Sangborg Yi[4]; Dietmar Letzig[4]; Jan Bohlen[4]; [1]Michigan State University; [2]IMDEA; [3]Max Planck Institute for Iron Research; [4]MagIC

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

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

11:30 AM
Anelastic and Plastic Properties of Magnesium Alloys Based Composites: *Zuzanka Trojanova*[1]; Kristian Mathis[1]; Pavel Lukac[1]; [1]Charles 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 Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday AM
March 5, 2013
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*[1]; Pasquale Calo[1]; Fabienne Virieux[2]; [1]Solios Carbone; [2]Fives Solios

9:00 AM
Measures To Prevent Baked Anode Density Drop When Using High Porosity Cokes: *Vinicius Piffer*[1]; Chin Woo[2]; Fabiana Niceas[1]; Leonardo Paulino[1]; Jeronimo Araujo[1]; Rafael Bacelar[1]; [1]Alumar; [2]Alcoa

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

9:50 AM
Improving Baked Anode Density and Air Permeability Through Process Optimization and Coke Blending: *Bienvenu Ndjom*[1]; Muhammad Shafiq Malik[1]; Amer Al Marzouqi[1]; Tapan Kumar Sahu[1]; Saleh Ahmed Rabba[1]; [1]Dubai 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*[1]; Mohamed Bouazara[1]; Daniel Marceau[1]; Duygu Kocaefe[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

10:50 AM
Driving Cost Reduction and Carbon Plant Productivity Improvement Through Theory of Constraints and Planned Maintenance Capability: *Keith Sinclair*[1]; Barry Sadler[2]; [1]Sinclair Associates, Inc.; [2]Net Carbon Consulting

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

11:40 AM
Comparison of Mixing Process Methods in Prebaked Anode Production: *Sun Yi*[1]; Guan Huai[1]; Zhou Shanhong[1]; Liu Chaodong[1]; Xu Haifei[1]; [1]Shenyang 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; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Tuesday AM
March 5, 2013
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 $LiNO_3$-$NaNO_3$-KNO_3 Ternary Molten Salts for Parabolic Trough Solar Power Generation: *Tao Wang*[1]; Ramana Reddy[1]; [1]The University of Alabama

8:55 AM
A Thermochemical Study of the W/WO_3 System: A Solar to Fuel Converter for Syngas Production: *Jarrod Milshtein*[1]; Soumendra Basu[1]; Srikanth Gopalan[1]; Uday Pal[1]; [1]Boston University

9:15 AM
Technical Viability of Biocoke from Mixtures Coal-Wood Charcoal for Use in Ironmaking: *Marcelo Mourao*[1]; Cesar Narita[1]; Marcio Tanaka[1]; Cyro Takano[1]; [1]University of Sao Paulo

9:35 AM Break

9:55 AM
Supercritical CO_2-Corrosion of Steels in CCS Environment: *Anja Pfennig*[1]; Sabrina Schulz[1]; Axel Kranzmann[2]; [1]HTW Berlin; [2]BAM Federal Institute of Materials Research and Testing

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

10:35 AM
Designing Novel CRIMSON Running System through Numerical Simulation Method for the Purpose of Reducing the Energy Content of Aluminium Investment Casting: *Binxu Zeng*[1]; Mark Jolly[1]; Xiaojun Dai[1]; [1]Cranfield University

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

11:15 AM
Preparation of Modified Semi-Coke from Semi-Coke: Process Optimization: *Xin Wang*[1]; [1]Key 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, 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 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 Maier*[1]; Mathias Göken; Karsten Durst[1]; [1]University Erlangen-Nürnberg

9:00 AM
The Failure Mechanism of Recrystallization-Assisted Cracking of Solder Interconnections: *Toni Mattila*[1]; [1]Aalto University

9:20 AM
Deformation Mechanisms of Ultra-Fine-Grained Aluminium using Elevated Temperature, Strain Rate Jump Indentation: *Jeffrey Wheeler*[1]; Verena Maier[2]; Karsten Durst[2]; Matthias Goeken[2]; Johann Michler[1]; [1]EMPA; [2]Friedrich-Alexander University of Erlangen-Nuremberg

9:40 AM
Size and Environmental Effects on Fracture of Wear-Resistant Oxide Coatings: *Samantha Lawrence*[1]; David Adams[2]; Hussein Zbib[1]; David Bahr[1]; Neville Moody[2]; [1]Washington State University; [2]Sandia National Laboratories

10:00 AM Break

10:20 AM Invited
Lithium-Ion Batteries: When Mechanics Meets Chemistry: *Joost Vlassak*[1]; [1]Harvard University

10:50 AM
Mechanical Behavior of Nanoporous Silicon Subjected to Extensive Deformation: *Xu Jiang*[1]; Eita Tochigi[2]; Andrew Minor[3]; T. John Balk[1]; [1]University of Kentucky; [2]Lawrence Berkeley National Laboratory; [3]University of California, Berkeley

11:10 AM
In Situ Resistance Measurements of Cyclically Stressed Copper Lines on Polyimide: *Oleksandr Glushko*[1]; Megan Cordill[1]; [1]University of Leoben

11:30 AM
Assessing the Electrical and Mechanical Performance of Wear-Tested Au-ZnO Films: *Rachel Schoeppner*[1]; Helena Jin[2]; Somuri Prasad[2]; Ron Goeke[2]; Neville Moody[2]; David Bahr[1]; [1]Washington State University; [2]Sandia 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 Kontsos, Drexel University

Tuesday AM
March 5, 2013
Room: 207B
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 Laflen*[1]; [1]GE

9:10 AM Invited
Application of High Energy Diffraction Microscopy to Fatigue Crack Initiation in a Ni-Based Superalloy: Harris Tucker[1]; Reeju Pokharel[2]; Jonathan Lind[2]; Robert Suter[2]; Clayton Stein[2]; Joseph Tucker[2]; *Anthony Rollett*[2]; S.F. (Frankie) Li[3]; [1]University Michigan; [2]Carnegie Mellon University; [3]Lawrence Livermore Natl Laboratory

9:35 AM Invited
Synchrotron Imaging Characterization and Numerical Simulation of Short Fatigue Crack Propagation in Polycrystals: *Yoann Guilhem*[1]; Wolfgang Ludwig[1]; Henry Proudhon[2]; Jia Li[2]; [1]INSA Lyon UMR 5510 CNRS; [2]MINES 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 Hochhalter*[1]; Vipul Gupta[2]; Vesselin Yamakov[2]; Ashley Spear[3]; Stephen Smith[1]; Edward Glaessgen[1]; [1]NASA LaRC; [2]National Institute of Aerospace; [3]Cornell University

10:45 AM Invited
Novel Techniques for Analyzing Fatigue Crack Microstructures: *I. Robertson*[1]; D. Gross[1]; M. Martin[1]; K. Nygren[1]; [1]University of Illinois Urbana-Champaign

11:10 AM Invited
Grain Boundaries and Twin Boundaries: Stronger or Weaker?: *Zhefeng Zhang*[1]; Zhenjun Zhang[1]; Linlin Li[1]; Peng Zhang[1]; [1]Institute of Metal Research

11:30 AM Invited
Nonlinearity and Acoustic Harmonic Generation from Fatigue-Generated Dislocation Substructures: *Sean Agnew*[1]; J. Cantrell[2]; T. Apple[1]; C. Mayer[1]; C. Amaro[1]; W. Yost[2]; J. Howe[1]; [1]University of Virginia; [2]NASA

11:55 AM Invited
Intra-Granular Stress Distributions in Fatigued Metals: Jun Jiang[1]; Ben Britton[1]; *Angus Wilkinson*[1]; [1]University of Oxford

12:20 PM Concluding Comments

Friction Stir Welding and Processing VII: Friction Stir Welding: High Temperature Materials I

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
March 5, 2013
Room: Grand Ballroom C3
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 Nelson*[1]; Carl Sorensen[1]; [1]Brigham Young University

8:50 AM Invited
Comparison between Friction Stir and Submerged Arc Welding applied to Joining DH36 and E36 Shipbuilding Steel: Stephen Cater[1]; *Jonathan Martin*[1]; Alexander Galloway[2]; Norman McPherson[3]; [1]TWI; [2]University of Strathclyde ; [3]BAE Systems Surface Fleet

9:10 AM
Friction Stir Welding of Pipeline Steels: Murray Mahoney[1]; *Samuel Sanderson*[2]; Zhili Feng[3]; Russell Steel[4]; Scott Packer[5]; Dale Fleck[2]; [1]Retired from Rockwell Scientific; [2]Megastir Technologies; [3]Oak Ridge National Laboratories; [4]MegaStir Technologies; [5]Advanced Metal Products

9:30 AM
Microstructure and Properties of Friction Stir Processed HY80 Steel: Garth Young[1]; William Stewart[2]; Murray Mahoney[3]; Russell Steel[4]; Jon Babb[4]; Sarath Menon[5]; *Terry McNelley*[5]; [1]NAVFAC ESC; [2]US Navy; [3]Consultant; [4]MegaStir Technologies; [5]Naval Postgraduate School

9:50 AM
Microstructure and Mechanical Properties of Friction Stir Welds of 590MPa Grade Dual Phase Steel Sheets: *Sang-Hyuk Kim*[1]; Kwang-Jin Lee[1]; Kee-Do Woo[2]; [1]Korea Institute of Industrial Technology; [2]Chonbuk National University

10:10 AM Break

10:20 AM
Mechanical Properties and Microstructure Characterization of Multilayered Multipass Friction Stir Weld in Steel: *Yong Chae Lim*[1]; Samuel Sanderson[2]; Murray Mahoney[3]; Dongxiao Qiao[1]; Yanli Wang[1]; Wei Zhang[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory; [2]MegaStir Technologies; [3]Advanced Metal Products

10:40 AM
Welding Processes and Mechanical Behaviors of Friction Stir Spot Welded Joints of Dissimilar Ferrous Alloys: *Md. Abu Mowazzem Hossain*[1]; Md. Tariqul Hasan[1]; Sung-Tae Hong[1]; Michael Miles[2]; Hoon-Hwe Cho[3]; Heung Nam Han[3]; [1]University of Ulsan; [2]Brigham Young University; [3]Seoul National University

10:55 AM Invited
Effect of Welding Parameters on Microstructure and Mechanical Properties of Friction Stir Welded 11Cr-Ferritic/Martensitic Steel: *Yutaka Sato*[1]; Hiroyuki Kokawa[1]; Yasuhide Yano[2]; Yoshihiro Sekio[2]; [1]Tohoku University; [2]Japan Atomic Energy Agency

11:15 AM
The Friction-Stir-Welding of Carbon Steels Using a Co-Based Alloy Tool: *Itto Sugimoto*[1]; Akihiro Sato[1]; Seung Hwan Park[1]; Satoshi Hirano[1]; Shinya Imano[1]; Yutaka Sato[2]; Hiroyuki Kokawa[2]; Toshihiro Omori[2]; Kiyohito Ishida[2]; [1]Hitachi Research Laboratory; [2]Tohoku University

11:35 AM
Establishing W-Based Friction Stir Welding Tool Life for Thick Section Steel Applications: *Michael Eff*[1]; Sudarsanam Babu[2]; Brian Thompson[1]; Todd Leonhardt[3]; [1]EWI; [2]The Ohio State University; [3]Rhenium Alloys, Inc.

11:55 AM
Effects of Advancing and Retreating Side Alteration during Power and Temperature Controlled FSW of Copper Canisters: *Lars Cederqvist*[1]; Matts Björck[1]; Olof Garpinger[2]; [1]Swedish Nuclear Fuel and Waste Management Company (SKB); [2]Lund University

12:15 PM
Influence of Heat Input on Friction Stir Welding for the ODS Steel MA956: *Luke Brewer*[1]; Sarath Menon[1]; Bradford Baker[1]; Terry McNelley[1]; Bassem El-Dasher[2]; Sharon Torres[2]; Joseph Farmer[2]; Murray Mahoney[3]; Samuel Sanderson[4]; [1]Naval Postgraduate School; [2]Lawrence Livermore National Laboratory; [3]Rockwell Scientific (retired); [4]MegaStir 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
March 5, 2013
Room: Lone Star Salon F
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 Duan[1]; Steve Cockcroft[1]; *Daan Maijer*[1]; Andre Phillion[1]; Carl Reilly[1]; [1]The University of British Columbia

9:00 AM Invited
The Solute Partition and Segregations of Multi-Component Alloys in Solidification Process: *Wanqi Jie*[1]; Guangyu Yang[1]; Xiaoyan Sun[1]; [1]Northwestern Polytechnical University

9:30 AM
Microscopic Modelling of Freckle Formation during Directional Solidification and Its Verification Via In Situ X-Ray Observation: *Lang Yuan*[1]; Natalia Shevchenko[2]; Sven Eckert[2]; Shyamprasad Karagadde[1]; Peter Lee[1]; [1]The University of Manchester; [2]Helmholtz-Zentrum Dresden-Rossendorf

9:50 AM Break

10:05 AM Invited
Thermomechanics and Residual Stresses in Aluminum Direct Chill Casting: *Jean-Marie Drezet*[1]; Alexander Evans[2]; Pierre Celle[3]; [1]Ecole Polytechnique Federale Lausanne; [2]Institut Laue Langevin Grenoble; [3]Constellium CRV Voreppe

10:35 AM
Application of Granular Modeling to Fusion Welding of Al Alloys: *Hamid Reza Zareie Rajani*[1]; Andre Phillion[1]; [1]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*[1]; Nagy El-Kaddah[1]; [1]The University of Alabama

11:15 AM
Nanoparticles Controlled Solidification of Hypermonotectic Alloys: *Lianyi Chen*[1]; Jiaquan Xu[1]; Hongseok Choi[1]; Xiaochun Li[1]; [1]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
March 5, 2013
Room: 006D
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*[1]; Hojong Kim[1]; Xiaohui Ning[1]; Donald Sadoway[1]; [1]MIT

9:00 AM
Electrochemical Synthesis of AB5-type RE-Ni Based Alloys Via FFC Cambridge Process: *Qian Xu*[1]; Xue Kang[1]; Ximei Yang[1]; Shuang Li[1]; Song Qiushi[1]; [1]Northeastern University

9:30 AM
Electrochemical Preparation of Ti_2AlC in Molten Chloride Bath: *Amr Abdelkader*[1]; [1]University of Manchester

10:00 AM Break

10:20 AM
Electrochemical Formation of Rare Earth-Nickel Alloys in NaCl-KCl Molten Salt: *Kouji Yasuda*[1]; Seitaro Kobayashi[1]; Katsuya Kondo[1]; Toshiyuki Nohira[1]; Rika Hagiwara[1]; [1]Kyoto University

10:50 AM
Electrochemical Behavior of Calcium-Lead Alloys in Molten Salt Electrolytes: *Xiaohui Ning*[1]; Takanari Ouchi[1]; Hojong Kim[1]; Donald Sadoway[1]; [1]MIT

11:20 AM
Using Cyclic Voltammetry to Study Electrochemical Behavior of Hf4+in NaCl-KCl-K_2HfF_6 molten salt: Chen Song[1]; Ye Zhanggen[1]; Cai Zhenping[1]; Wang Lijun[1]; [1]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
March 5, 2013
Room: 205
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*[1]; [1]UNI Basel

9:00 AM Invited
Prediction and Design of Materials from Crystal Structures to Nanocrystal Morphology and Assembly: *Richard Hennig*[1]; [1]Cornell University

9:30 AM Invited
Dissolving the Periodic Table in Zirconia: Data-Mining for Chemical Descriptors: Bryce Meredig[1]; *Chris Wolverton*[1]; [1]Northwestern University

10:00 AM Break

10:20 AM Invited
Finding the Alloy Genome: *Gus Hart*[1]; Lance Nelson[1]; Fei Zhou[2]; Vidvuds Ozolins[2]; [1]Brigham Young University; [2]University of California, Los Angeles

10:50 AM Invited
Compressively Sensed Ab Initio Hamiltonians: Fei Zhou[1]; *Vidvuds Ozolins*[1]; Lance Nelson[2]; Gus Hart[2]; [1]University of California, Los Angeles; [2]Brigham Young University

11:20 AM Invited
Design of Functional Semiconductors with Multi-Target Properties: *Stephan Lany*[1]; [1]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
March 5, 2013
Room: 215
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*[1]; Dongho Shin[1]; Catherine Kammerer[1]; Sarah Brennan[1]; Katrina Bermudez[1]; Joseph Hamilton[1]; [1]University of Central Florida

9:00 AM
On the Strength of Particle-Based Metal-Matrix Nano Composites (MMNCs): *Chang-Soo Kim*[1]; J.B. Ferguson[1]; Benjamin Schultz[1]; Pradeep Rohatgi[1]; [1]University of Wisconsin-Milwaukee

9:20 AM
Effect of Contact Damage on Metal-baded Low-Density Hybrid Structures: *Tania Vodenitcharova*[1]; Mark Hoffman[1]; Kaveh Kabir[1]; Alan Xu[1]; Neil Lazo[1]; [1]University of New South Wales

9:40 AM
Multi-Scale Modeling of Ceramic Fabric Reinforced Aluminum Matrix Composites: *Brandon McWilliams*[1]; Charles Mansfield[2]; Chian Yen[1]; [1]US Army Research Laboratory; [2]University 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 Aghajanian*[1]; Eric Klier[2]; Kevin Doherty[2]; Brian Givens[1]; Matthew Watkins[1]; Allyn McCormick[1]; Prashant Karandikar[1]; [1]M Cubed Technologies, Inc.; [2]US Army Research Laboratory

10:35 AM
Dynamic Properties of Selective Laser Melted Titanium Microlattice Structures: *Peifeng Li*[1]; Nik Petrinic[2]; Clive Siviour[2]; [1]Nanyang Technological University; [2]Oxford University

10:55 AM
Ferroelectric Ceramic-Reinforced Metal Matrix Composites: *Yongmei Jin*[1]; Stephen Kampe[1]; [1]Michigan Technological University

11:15 AM
Diffusion Bonding of Commercially Pure Titanium Using Cu-Zn Interlayer: *Yasser Ahmed*[1]; Bakr Rabeeh[1]; [1]German University in Cairo

Integrated Computational Modeling of Materials for Nuclear Energy: Structural Materials Modeling

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 AM
March 5, 2013
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 Tucker*[1]; Leland Barnard[2]; Dane Morgan[2]; George Young[1]; [1]Knolls Atomic Power Laboratory; [2]University of Wisconsin-Madison

8:50 AM
Influence of Grain Boundary Structure on Segregation of Cr/He Atoms in Fe: *Mark Tschopp*[1]; Fei Gao[2]; Kiran Solanki[3]; Xin Sun[2]; [1]Mississippi State University; [2]PNNL; [3]Arizona State University

9:10 AM
Perservability of Boundary Defect Sink Property under Extreme Radiation in a Iron: *Di Chen*[1]; Jing Wang[1]; Lin Shao[1]; [1]Texas 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 Hansen*[1]; Jakob Ostien[1]; Remi Dingreville[1]; Qiushi Chen[1]; [1]Sandia National Laboratories

10:00 AM Break

10:10 AM
A Multiscale Analysis of Dislocation Climb: *Alankar Alankar*[1]; Alfredo Caro[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

10:30 AM
Modeling Hydrogen Re-Distribution in Zircaloy under a Temperature Gradient: *Olivier Courty*[1]; Ian Davis[1]; Arthur Motta[1]; Kostadin Ivanov[1]; Maria Avramova[1]; [1]Pennsylvania State University

10:50 AM Invited
Evolutionary Constitutive Model of Cyclic Deformation Response Based on Multi-Scale Interactions of Dislocations: *Minh-Son Pham*[1]; Koenraad G. F. Janssens[2]; Edoardo Mazza[3]; Stuart. Holdsworth[1]; [1]Swiss Federal Laboratories for Materials Science and Technology, Empa; [2]Paul Scherrer Institut; [3]Swiss 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 Yang*[1]; Jeremy Busby[1]; [1]Oak Ridge National Lab

11:40 AM
Cluster Dynamics Modeling of Defect Aggregation in Ferritic/Martensitic Iron Chrome: *Aaron Kohnert*[1]; Brian Wirth[1]; Nathan Capps[1]; Djamel Kaoumi[2]; Cem Topbasi[3]; [1]University of Tennessee; [2]University of South Carolina; [3]Pennsylvania 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
March 5, 2013
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 Sediako*[1]; Lukas Bichler[2]; Mitchel VanHanegem[2]; Scott Shook[3]; [1]National Research Council Canada ; [2]University of British Columbia - Okanagan; [3]TH Magnesium Inc.

8:50 AM
Creep Behaviour of Mg Binary Solid Solutions: *Saeideh Abaspour*[1]; Carlos Caceres[1]; [1]School of Engineering The University of Queensland

9:10 AM
Influence of Yttrium on Creep Behavior in Nano-Crystalline Magnesium Using Molecular Dynamics Simulation: *Mehul Bhatia*[1]; Kiran Solanki[1]; [1]Arizona State University

9:30 AM
Aging Behavior and Microstructural Evolution in Mg-0.2Zn-3Nd-0.5Zr Alloy: *Amirreza Sanaty Zadeh*[1]; Shawn Xia[1]; Alan Luo[2]; Joseph Jakes[3]; Donald Stone[1]; [1]UW-Madison; [2]General Motors Global Research and Development Center; [3]USDA Forest Product

9:50 AM
Microstructure and Mechanical Properties of Die Cast Magnesium-Aluminum-Tin Alloys: *Alan Luo*[1]; Penghuai Fu[2]; Xiaoqin Zeng[2]; Liming Peng[2]; Bin Hu[3]; Anil Sachdev[1]; [1]General Motors Global Research and Development; [2]Shanghai Jiao Tong University; [3]General Motors China Science Lab

10:10 AM Break

10:30 AM
Evaluation of Mg for Local Energy Absorption: Matthew Pawlicki[1]; *Paul Krajewski*[1]; Mark Voss[1]; Louis Hector[1]; [1]General Motors

10:50 AM
Study on Microstructure and Mechanical Property of Squeeze Casting AZ91D Magnesium Alloy: Yanda Li[1]; *Zhiqiang Han*[1]; Alan Luo[2]; Anil Sachdev[2]; Baicheng Liu[1]; [1]Tsinghua University; [2]General Motors Global Research and Development Center

11:10 AM
Mapping the Mechanical Properties of Alloyed Magnesium (AZ 61): *Jennifer Hay*[1]; Phillip Agee[1]; [1]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[1]; Luc Salvo[1]; Elodie Boller[2]; *Jean-Jacques Blandin*[1]; [1]Université de Grenoble / CNRS; [2]European Synchrotron Radiation Facility (ESRF)

11:50 AM
FE Modelling of Tensile and Impact Behaviours of Squeeze Cast Magnesium Alloy AM60: *Sante DiCecco*[1]; William Altenhof[1]; Henry Hu[1]; [1]University of Windsor

12:10 PM
High Temperature Deformation of Magnesium Alloy TX32-0.4Al-0.8Si: *Chalasani Dharmendra*[1]; K.P. Rao[1]; Norbert Hort[2]; Karl Kainer[2]; [1]City University of Hong Kong; [2]Helmoltz-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: *Jonghyun Kim*[1]; Yoshihito Kawamura[1]; [1]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
March 5, 2013
Room: 217D
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*[1]; Haley Dillon[2]; R. McCallum[1]; Kevin Dennis[1]; Lin Zhou[1]; Andrij Palazyk[1]; Matthew Kramer[1]; Steve Constantinides[3]; [1]Ames Laboratory; [2]Iowa State University; [3]Arnold Magnetic Technologies Corporation

9:00 AM Invited
High Coercivity Carbide Nanoparticles: A New Route to Permanent Magnet: *Vincent Harris*[1]; [1]University of Utah

9:30 AM Invited
Prospects for Improving Alnico Alloys: *Matthew Kramer*[1]; Q. Xing[1]; M. Miller[2]; L. Zhou[1]; H. Dillon[1]; R. McCallum[1]; I. Anderson[1]; S. Constantinides[3]; [1]Ames Laboratory; [2]Oak Ridge National Laboratory; [3]Arnold Magnetic Technologies Corp.

10:00 AM Break

10:15 AM Invited
Microstructural Characterization of Alnico Alloys: *Lin Zhou*[1]; Qingfeng Xing[1]; H. Dillon[1]; R. McCallum[1]; I. Anderson[1]; M. Kramer[1]; D. Smith[2]; M. McCartney[2]; S. Constantinides[3]; [1]Ames Lab; [2]Arizona State University; [3]Arnold Magnetic Technologies Corp

10:45 AM
MnAlC Permanent Magnets with Transition Metal Additives: *Michael Lucis*[1]; Ralph Skomski[1]; Parashu Kharel[2]; Priyanka Manchanda[2]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln; [2]IIT Mandi

11:05 AM
Towards Rare-Earth Free Permanent Magnets: $L1_0$ Ferrous Alloys: Nina Bordeaux[1]; *Ana María Montes*[1]; Bradley West[1]; Katayun Barmak[2]; Laura Lewis[1]; [1]Northeastern University; [2]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
March 5, 2013

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 McKeown*[1]; Sandeep Irukuvarghula[2]; Sangjoon Ahn[2]; Mark Wall[1]; Luke Hsiung[1]; Sean McDeavitt[2]; Patrice Turchi[1]; [1]Lawrence Livermore National Laboratory; [2]Texas A&M University

8:50 AM
Characterization of U-10Zr-2Ce-5In and U-10Zr-2Ce-5Sb Alloys: *Yeon Soo Kim*[1]; Tom Wiencek[1]; Gerard Hofman[1]; Ed O'Hare[1]; Jeff Fortner[1]; [1]Argonne National Laboratory

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

9:30 AM
Interdiffusion and Reaction Between U-Zr and Fe-Cr-Ni Alloys: *Youngjoo Park*[1]; Ke Huang[1]; Bulent Sencer[2]; J. Rory Kennedy[2]; Kevin Coffey[1]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

9:50 AM
Mechanical Properties and Microstructural Characteristics of Fresh U-Mo Fuels: *Ramprashad Prabhakaran*[1]; Barry Rabin[1]; Randy Lloyd[1]; Dennis Keiser[1]; Dan Wachs[1]; Indrajit Charit[2]; [1]Idaho National Laboratory; [2]University of Idaho

10:10 AM Break

10:30 AM
Homogenization of Low Enriched Uranium-10 wt. pct Molybdenum Alloy Monolithic Fuel Foils: Amy Clarke[1]; *Kester Clarke*[1]; David Alexander[1]; Pallas Papin[1]; Tim Tucker[1]; Joel Montalvo[1]; Carl Necker[1]; Robert Aikin[1]; Rodney McCabe[1]; Robert Forsyth[1]; Robert Field[1]; David Dombrowski[1]; [1]Los Alamos National Laboratory

10:50 AM
Barrier Coatings for U-Mo Microspheres Created Via Low Temperature Fluidized Bed Chemical Vapor Deposition: *Marie Arrieta*[1]; Alifya Faizulla[1]; Delia Perez-Nunez[1]; Sean McDeavitt[1]; [1]Texas A&M University

11:10 AM
Fabrication of Enhanced Thermal Conductivity UO2-SiC Composites Using Spark Plasma Sintering: *Ghatu Subhash*[1]; Sunghwan Yeo[1]; James Tulenko[1]; Ronals Baney[1]; Ge LiHao[1]; [1]University of Florida

11:30 AM
Establishment of a Rotating Electrode System for Production of Uranium Alloy Microspheres: Chad Thompson[1]; Carissa Humrickhouse-Helmreich[1]; Rob Corbin[2]; *Sean McDeavitt*[1]; [1]Texas A&M University; [2]TerraPower

11:50 AM
Method for Calculating the Apparent Thermal Conductivity of Packed Beds: *Carissa Humrickhouse-Helmreich*[1]; Rob Corbin[2]; Sean McDeavitt[1]; [1]Texas A&M University; [2]TerraPower

Materials in Clean Power Systems VIII: Durability of Materials : Corrosion, Coating Protection and Lifetime Prediction

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

Tuesday AM
March 5, 2013

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 Dogan*[1]; Benjamin Nielsen[2]; [1]DOE National Energy Technology Laboratory; [2]URS Corporation

9:00 AM
The Effect of High Vanadium Content in Coal-Petcoke Mixtures on the Stability of Solids in Gasification Slags: *Jinichiro Nakano*[1]; Xueyan Song[2]; Kyei-Sing Kwong[1]; James Bennett[1]; [1]NETL; [2]West Virginia University

9:20 AM Invited
Coatings for Improved High Temperature Durability: *Vilupanur Ravi*[1]; Kevin Smith[1]; Abolian Shaghik[1]; Tom Krenek[1]; Stephanie Salas[1]; Armen Kutyan[1]; [1]California 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 Zhang[1]; Brian Bates[2]; Jason Witman[2]; Joseph Simpson[2]; [1]ORNL; [2]Tennessee Technological University

10:40 AM
Sensitivity of Thermal Barrier Coating Degradation to Variations of the Chemical Composition of Molten Deposits: *Timothy Montalbano*[1]; Joe Horwath[1]; Matthew Sullivan[1]; Daniel Mumm[1]; [1]University of California, Irvine

11:00 AM Invited
Creep Life Modeling for High Temperature Processes: *Jeffrey Hawk*[1]; Paul Jablonski[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

11:30 AM
Mechanistic-Based Lifetime Predictions for High Temperature Alloys and Coatings: *Bruce Pint*[1]; Sebastien Dryepondt[1]; Ying Zhang[2]; [1]Oak Ridge National Laboratory; [2]Tennessee Technological Univ.

11:50 AM
A Slag Management System for Gasification Operations: *Kyei-Sing Kwong*[1]; James Bennett[1]; Jinichiro Nakano[2]; [1]NETL, US DOE; [2]URS Corp

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 Collins*[1]; Richard Todd[1]; Angus Wilkinson[1]; [1]University of Oxford

8:50 AM
Aluminum-Added TWIP Steels: Design, Processing and Properties: Markus Bambach[1]; Alireza Saeed-Akbari[1]; Wolfgang Bleck[1]; Alexander Schwedt[1]; Silvia Richter[1]; Onur Güvenc[1]; Dieter Senk[1]; *Petrico von Schweinichen*[1]; [1]RWTH Aachen University

9:10 AM
Inverse Fracture Occurring during Drop Weight Tear Test (DWTT) and Stain Hardening Obtained from Dynamic Compressive Test in Linepipe Steels: *Minju Kang*[1]; Hyunmin Kim[1]; Sang Yong Shin[1]; Nack J Kim[2]; Sunghak Lee[1]; [1]POSTECH; [2]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 Messe*[1]; Svjetlana Stekovic[2]; Mark Hardy[2]; Cathie Rae[1]; [1]University of Cambridge; [2]Rolls-Royce Plc

9:50 AM
Influence of Load Paths and Bake Hardening Conditions on the Mechanical Properties of Dual Phase Steel: *Mehdi Asadi*[1]; Heinz Palkowski[2]; [1]Benteler Automotive; [2]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 Ma*[1]; Fanrong Kong[1]; Radovan Kovacevic[1]; [1]RCAM

10:40 AM
The Effect of Phosphorus and Sulfur on the Crack Susceptibility of Continuous Casting Steel: *Weiling Wang*[1]; Sen Luo[1]; Zhaozhen Cai[1]; Miaoyong Zhu[1]; [1]Northeastern University

11:00 AM
Mathematical Modeling of Heat Transfer and Thermal Behaviour of Tool Steel H13 in Molten Aluminum Alloy A380: *Tina Ding*[1]; Jun Feng Su[1]; Henry Hu[1]; Xueyuan Nie[1]; Ronald Barron[1]; [1]University of Windsor

11:20 AM
Optimization Investigation on the Soft Reduction Parameters of Medium Carbon Microalloy Steel: Chao Xiao[1]; Jiongming Zhang[1]; Yanzhao Luo[1]; Lian Wu[1]; Shunxi Wang[1]; [1]University of Science and Technology Beijing

11:40 AM
Effect of Microstructure Evolution on Hot Cracks of HSLA Steel during Hot Charge Process: Jiang Li[1]; Qian Wang[1]; Yongjian Lu[1]; Banglun Wang[1]; Shaoda Zhang[1]; [1]Chongqing University

12:00 PM
A New Method for Ultrasonic Treatment on the Melt of Steel: *Gand Nie*[1]; Jinwu Kang[1]; Yisen Hu[1]; [1]Tsinghua University

12:20 PM
Characterisation of Oxide Scale of Stainless Steel and Its Effect on Interfacial Behaviour in Hot Rolling: *Dongbin Wei*[1]; Zhengyi Jiang[1]; [1]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 Bojarevics, 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 Grugel*[1]; Lucien Brush[2]; Amrutur Anilkumar[3]; [1]Marshall Space Flight Center; [2]University of Washington; [3]Vanderbilt University

9:00 AM
Surface Oscillation of Levitated Liquid Droplets under Microgravity: *Masahito Watanabe*[1]; Akitoshi Mizuno[1]; Shumpei Ozawa[2]; Taketoshi Hibiya[3]; [1]Gakushuin University; [2]Chiba Institute of Technology; [3]Keio University

9:20 AM Break

9:30 AM Invited
Containerless Processing on ISS: Experiment Preparation for EML: *Stephan Schneider*[1]; Angelika Diefenbach[2]; Rainer Willnecker[2]; [1]DLR / Institut für Materialphysik im Weltraum; [2]DLR / Microgravity User Support Center

10:00 AM
Copper Sphere Dynamics in the MSL-EML Coil System: *Valdis Bojarevics*[1]; Alan Roy[1]; Koulis Pericleous[1]; Georg Lohoefer[2]; Achim Seidel[3]; [1]University of Greenwich; [2]German Aerospace Center (DLR); [3]Astrium Space Transportation

10:20 AM
Investigations on the Falling of Droplets in an Instrumented Drop Tube-Impulse System: Pooya Delshad Khatibi[1]; *Hani Henein*[1]; [1]University of Alberta

10:40 AM
Computational Analysis on the Validation and Application of Modulated Electromagnetic Induction Calorimetry: *Xiao Ye*[1]; Robert Hyers[1]; [1]University of Massachusetts, Amherst

11:00 AM
Turbulent Transition in Electromagnetically Levitated Liquid Metal Droplets: Jie Zhao[1]; Christina Rizer[1]; Doug Matson[2]; Stefan Klein[3]; Stephan Schneider[3]; Robert Hyers[1]; [1]University of Massachusetts; [2]Tufts University; [3]DLR--Cologne

11:20 AM Concluding Comments

Mesoscale Computational Materials Science of Energy Materials: Battery Materials and Electrochemical Processes II

*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 AM
March 5, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Fei Zhou, Department of Materials Science and Engineering; Long-Qing Chen, Penn State University

8:30 AM Invited
Electrochemical Properties of RuO_2-Based Supercapacitors from First-Principles Calculations: *Fei Zhou*[1]; Yongduo Liu[1]; Vidvuds Ozolins[1]; Mark Asta[2]; [1]UCLA; [2]UC Berkeley

9:00 AM Invited
Understanding Solid Oxide Fuel Cell Cathodes from the Molecular Scale: *Dane Morgan*[1]; Yueh-Lin Lee[2]; Yang Shao-Horn[2]; [1]UW Madison; [2]Massachusetts Institute of Technology

9:30 AM
Phase Field and Electrochemistry: Recent Progress: *Nega Alemayehu*[1]; Ulrich Preiss[1]; Ingo Steinbach[1]; [1]ICAMS

9:50 AM Break

10:10 AM
Computational Modeling of Electrochemical Charge/Discharge Behavior of Electrodes in Li-Ion Cells: *K. S. Ravi Chandran*[1]; Madhu Jagannathan[1]; [1]University of Utah

10:30 AM Invited
Experiments to Aid Modeling of Lithium Ion Batteries: *Shen Dillon*[1]; [1]University of Illinois Urbana-Champaign

11:00 AM Invited
Mechanics of Lithiation in Silicon: *Sulin Zhang*[1]; Hui Yang[1]; Adri van Duin[1]; [1]The Pennsylvania State University

11:30 AM
Phase Field Simulations on the Precipitation Kinetics of γ' in Ni-base Superalloy Haynes 282: *Youhai Wen*[1]; [1]National Energy Technology Laboratory

11:50 AM
Computational Modeling of Grain Growth in Ceramics: *Karim Ahmed*[1]; Anter El-Azab[1]; Tony Schulte[2]; Spencer Morris[2]; Clarissa Yablinsky[2]; Todd Allen[2]; [1]Purdue University; [2]University of Wisconsin

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; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Tuesday AM
March 5, 2013
Room: 203A
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 Irradiation Tolerant Nanostructured Ferritic Alloys (NFA): *G. Odette*[1]; Takuya Yamamoto[1]; Yuan Wu[1]; Bo Yao[2]; Rick Kurtz[2]; Danny Edwards[2]; David Hoelzer[3]; Stuart Maloy[4]; Peter Hosemann[5]; James Cisten[6]; Kiyohiro Yabuuchi[7]; Akihiko Kimura[7]; Peter Wells[1]; [1]UC Santa Barbara; [2]Pacific Northwest National Laboratory; [3]Oak Ridge National Laboratory; [4]Los Alamos National Laboratory; [5]UC Berkeley; [6]Lawrence Berkeley National Laboratory; [7]Kyoto University

9:00 AM
Microstructure and Swelling Response of MA957 ODS Steel under High Dose Neutron Irradiation: *Alicia Certain*[1]; Mychailo Toloczko[1]; Matthew Olszta[1]; Daniel Schreiber[1]; [1]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 Toloczko*[1]; Alicia Certain[1]; Stuart Maloy[2]; [1]Battelle/PNNL; [2]LANL

9:40 AM
Atom Probe Tomography Investigation of the Evolution of the Microstructure of Ion Irradiated ODS Ferritic Steels: *Bertrand Radiguet*[1]; Constantinos Hatzoglou[1]; Laurent Chaffron[2]; Yves Serruys[3]; Fabrice Legendre[3]; Philippe Pareige[1]; [1]GPM UMR CNRS 6634 - Université et INSA de Rouen; [2]SRMA - CEA; [3]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 Cunningham*[1]; Peter Wells[1]; Brian Geiser[2]; G. Robert Odette[1]; [1]UC Santa Barbara; [2]Cameca

10:30 AM
Comparison of the Microstructures of High Dose Ion Irradiated and As-Mechanically Alloyed 14YWT: *Michael Miller*[1]; Lan Yao[1]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory

10:50 AM
Solute Segregation to Grain Boundaries in a 14YWT Nanostructured Ferritic Alloy: *Lan Yao*[1]; Michael Miller[1]; [1]ORNL

11:10 AM
Effect of Cryogenic Milling on the Properties of Fe-14Cr ODS Powder: *Jeoung Han Kim*[1]; Thak Sang Byun[2]; Seong Woong Kim[1]; Chan Hee Park[1]; Jong Taek Yeom[1]; [1]Korea Institute of Materials Science; [2]Oak Ridge National Laboratory

11:30 AM
TEM Studies of Nano-Oxides, Bubbles, Dislocations and Grain Boundaries Associations in Dual Ion Irradiated Nanostructured Ferric Alloys: *Yuan Wu*[1]; Takuya Yamamoto[1]; Nicholas Cunningham[1]; Robert Odette[1]; Sosuke Kondo[2]; Akihiko Kimura[2]; [1]UCSB; [2]Kyoto University

11:50 AM
Nanocavity Formation and Hardness Changes by Dual-Beam-Implanted Oxide-Dispersed-Strengthened FeCrAl Alloy: *Asta Richter*[1]; Chun-Liang Chen[2]; Reinhard Koegler[3]; Wolfgang Anwand[3]; [1]Technical University of Applied Sciences Wildau; [2]I-Shou University; [3]HZDR

12:10 PM
Effects of Post-Extrusion Thermo-Mechanical Treatment on Characteristics of 9Cr Nanostructured Ferritic Alloy: *Ji-Hyun Yoon*[1]; Yongbok Lee[1]; Suk-Hoon Kang[1]; Thak Sang Byun[2]; David Hoelzer[2]; [1]Korea Atomic Energy Research Institute; [2]Oak Ridge National Laboratory

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

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Tuesday AM
March 5, 2013
Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Andrew Minor, University of California, Berkeley; Ibrahim Karaman, Texas A&M University

8:30 AM Invited
An Explanation of the Power-Exponent in the Size Effect on Strength in Micro-Crystals: *Alfonso Ngan*[1]; Rui Gu[1]; [1]University of Hong Kong

9:00 AM
Size Effect on the Mechanical Properties of Amorphous Alloys: *G.P. Zheng*[1]; H.Y. Zhang[1]; [1]Hong 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 Minor*[1]; [1]UC Berkeley & LBL

9:50 AM
Length Scale Effects on Experimental Investigations of Nano-Scale Metallic Multilayer Systems: *Rachel Schoeppner*[1]; Niaz Abdolrahim[1]; Hussein Zbib[1]; David Bahr[1]; [1]Washington 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 Ozdemir[1]; *Ibrahim Karaman*[1]; Nathan Mara[2]; [1]Texas A&M University; [2]Los Alamos National Laboratory

10:50 AM
In Situ TEM Compression Testing of Natural Quartz Nanopillars for Paleo-Piezometry: *Eita Tochigi*[1]; Eloisa Zepeda[2]; Hans-Rudolf Wenk[2]; Andrew Minor[1]; [1]Lawrence Berkeley National Laboratory; [2]University of California, Berkeley

11:10 AM
Surface Induced Deformation and Spontaneous Contraction of Nanoporous Gold: Xing-Long Ye[1]; *Hai-Jun Jin*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

11:30 AM
Effect of Zero-Point Vibrations on the Peierls Stress of Dislocations: Laurent Proville[1]; *David Rodney*[2]; Mihai-Cosmin Marinica[1]; [1]Commissariat à l'Energie Atomique; [2]INP Grenoble

11:50 AM
In Situ Transmission Electron Microscopy Studies of Size- Dependent Plasticity in Ceramic Materials: *Sara Kiani*[1]; Suneel Kodambaka[1]; A. M. Minor[1]; Jenn-Ming Yang[1]; [1]UCLA

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

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; Mei Li, Ford Motor Company

Tuesday AM
March 5, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jonathan Madison, Sandia National Laboratories; Jean-Marie Drezet, Ecole Polytechnique Fédérale de Lausanne

8:30 AM Introductory Comments

8:35 AM Invited
Internal Stress Generation During Quenching of Thick Heat Treatable Aluminium Alloys: *Jean-Marie Drezet*[1]; Nicolas Chobaut[1]; Patrick Schloth[1]; Helena Van Swygenhoven[2]; [1]Ecole Polytechnique Federale Lausanne; [2]Paul Sherrer Institut, Switzerland

9:20 AM
Multiscale Modeling of Microstructure Evolution during Thermo-Mechanical Processing: *Ravi Shankar*[1]; Wei-Tsu Wu[1]; Alexandar Bandar[1]; Masoud Anahid[1]; Sivom Manchiraju[1]; Jin Yong Oh[1]; [1]Scientific Forming Technologies Corporation

9:45 AM
Thermo-Metallo-Mechanical Modelling of an Austenitic Stainless Steel Bead-on-Plate Weld: *Koen Decroos*[1]; [1]Catholic 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 Niu*[1]; Wei Liang[1]; [1]Taiyuan University of Technology

11:05 AM
Microstructure Evolution Modeling for Solution Treatment of Aluminum Alloys: Hebi Yin[1]; *Adrian Sabau*[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]Oak Ridge National Laboratory; [2]Vehma International; [3]Prometek Research Centre

11:30 AM
Yield Strength Prediction for Rapid Age-hardening Heat Treatment of Aluminum Alloys: Hebi Yin[1]; *Adrian Sabau*[1]; Gerard Ludtka[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]Oak Ridge National Laboratory; [2]Vehma International; [3]Prometek Research Centre

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
March 5, 2013

Room: 007B
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

8:30 AM Invited
The Electrochemical Flow Capacitor for Efficient Grid-Scale Energy Storage: *Yury Gogotsi*[1]; Chris Dennison[1]; [1]Drexel University

8:50 AM Invited
Nanocomposite Materials for Energy Storage Devices: From Supercapacitors to Li-Ion Batteries: *Gleb Yushin*[1]; [1]Georgia Institute of Technology

9:10 AM Invited
Carbonized Chicken Eggshell Membranes with 3D Architectures as High-Performance Electrode Materials for Supercapacitors: *Zhi Li*[1]; Chris Holt[1]; Babak Shalchi Amirkhiz[1]; Xuehai Tan[1]; David Mitlin[1]; [1]University of Alberta

9:30 AM Invited
Hierarchical Carbon Scaffolds for Batteries and Supercapacitors: *Emmanuel Giannelis*[1]; [1]Cornell University

9:50 AM Invited
Chemical Synthesis, Computational Modeling, and Surface Reactions of Silicon Nanotube Anodes and Silicate Cathodes for Lithium Ion Batteries: *Christopher Hinkle*[1]; Amandeep Sra[1]; David Arreaga-Salas[1]; Joseph Rossi[1]; Roberto Longo[1]; Katy Roodenko[1]; KJ Cho[1]; Yves Chabal[1]; [1]University of Texas at Dallas

10:10 AM Break

10:30 AM Invited
Flexible Nanostructured Composite Electrodes for High Performance Supercapacitors: *Xiaodong Li*[1]; [1]University of South Carolina

10:50 AM Invited
Graphenic Material for High Performance Li-Ion Battery Electrodes: *Harold Kung*[1]; Xin Zhao[1]; Cary Hayner[1]; Mayfair Kung[1]; [1]Northwestern University

11:10 AM Invited
Tobacco Mosaic Virus Enabled Si Anodes and LiFePO4 Cathodes for Li-Ion Batteries: *Chunsheng Wang*[1]; Kang Xu[2]; James Culver[1]; Reza Ghodssi[1]; [1]University of Maryland; [2]Army Research Lab

11:30 AM Invited
Capacitive Energy Storage Using Carbon Supercapacitor: From Modeling to Device: *Jingsong Huang*[1]; Rui Qiao[2]; Vincent Meunier[3]; Bobby Sumpter[1]; [1]Oak Ridge National Laboratory; [2]Clemson University; [3]Rensselaer Polytechnic Institute

11:50 AM Invited
Defective Carbon Nanomaterials as the Cathodes for High Performance Lithium Batteries: *Xinwei Cui*[1]; Weixing Chen[1]; [1]University of Alberta

12:10 PM
Controllable Fabrication of SnO_2/SnCo Nanocomposites as Anodes for Lithium Ion Batteries: *Youlan Zou*[1]; [1]Central 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
March 5, 2013

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 Scardi*[1]; [1]University of Trento

8:55 AM Invited
In Situ X-ray Studies of Reactive Synthesis of Metastable Materials: *Carol Thompson*[1]; Edith Perret[2]; Weronika Walkosz[2]; Matthew Highland[2]; Stephen Streiffer[2]; Paul Fuoss[2]; Peter Zapol[2]; G. Brian Stephenson[2]; [1]Northern Illinois University; [2]Argonne National Laboratory

9:15 AM Invited
Nanosize Heterogeneities in Gum-Metals: *Masato Ohnuma*[1]; S Koppoju[1]; Y Oba[1]; S Kuramoto[2]; T Furuta[2]; M Furusaka[3]; M Eldrup[4]; [1]National Institute for Materials Science; [2]Toyota central research; [3]Hokkaido University; [4]DTU Riso campus

9:35 AM Invited
Advances in Serial Femtosecond Crystallography at XFELs: *Kenneth Beyerlein*[1]; [1]DESY

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 Dunand*[1]; Alix Deymier-Black[1]; Anjali Singhal[1]; Fang Yuan[1]; Jonathan Almer[2]; Catherine Brinson[1]; [1]Northwestern University; [2]Argonne National Laboratory

10:15 AM Invited
Rigorous Simulation of X-Ray Thermal Diffuse Scattering: *Ruqing Xu*[1]; Tai-Chang Chiang[2]; [1]Argonne National Laboratory; [2]University of Illinois at Urbana-Champaign

10:45 AM Invited
New Class of Solid-State Phase Transitions with Purely Dynamical Order: *Michael Manley*[1]; [1]Lawrence Livermore National Laboratory

11:05 AM Invited
In-Situ Neutron Diffraction and Crystal Plasticity Modeling of a-Uranium: Rupalee Mulay[1]; Christopher Calhoun[1]; Elena Garlea[2]; Thomas Sisneros[3]; *Sean Agnew*[1]; [1]University of Virginia; [2]Y-12 National Security Complex; [3]Los 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 Carpenter*[1]; Sven Vogel[1]; Rodney McCabe[1]; Shijian Zheng[1]; Ruifeng Zhang[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

11:45 AM
Anharmonic Phonon Behavior in α-Fe at High Temperatures: *Lisa Mauger*[1]; Matthew Lucas[2]; Jorge Munoz[1]; Sally Tracy[1]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Laboratory

11:55 AM Invited
Investigating Microscopic Heat Transport with Neutron Scattering: *Olivier Delaire*[1]; [1]Oak 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 Weidner*[1]; Stephanie Ackermann[1]; Sebastian Henkel[1]; Dirk Kulawinski[1]; Gerd Lathe[2]; Markus Schwarz[1]; Christian Schimpf[1]; Christian Segel[1]; David Rafaja[1]; Horst Biermann[1]; [1]TU Bergakademie Freiberg; [2]Geofroschungszentrum Potsdam

12:30 PM Invited
In Situ X-Ray Studies of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ Thin Films under Applied Electrochemical Potential: *Edith Perret*[1]; Mitchell Hopper[1]; Jeffrey Eastman[1]; Peter Baldo[1]; Kee-Chul Chang[1]; Brian Ingram[1]; Hoydoo You[1]; Paul Fuoss[1]; [1]Argonne National Laboratory

Ni-Co 2013: Electrometallurgy

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday AM
March 5, 2013
Room: 007D
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 Robinson*[1]; David White[2]; Ross Grassi[3]; [1]Republic Alternative Technologies; [2]Snowden mining Industry Consultants; [3]Amec Mining and Metals/ Australia

8:55 AM
Boleo Cobalt Electrowinning Development: *Jianming Lu*[1]; David Dreisinger[1]; Thomas Gluck[2]; [1]University of B.C.; [2]Baja Mining

9:20 AM
Comparison of Intercell Contact Bars for Electrowinning Plants: *Chris Boon*[1]; Rob Fraser[1]; Tim Johnston[1]; Douglas Robinson[1]; [1]Hatch

9:45 AM
Nickel and Cobalt Recovery from a Disseminated Nickel Concentrate Using the CESL Process: *Tannice McCoy*[1]; Keith Mayhew[1]; [1]Teck Resources Limited

10:10 AM Break

10:20 AM
High Current Density Electrowinning of Nickel in EMEW Cells: *Jeremy Robinson*[1]; Ian Ewart[1]; Michael Moats[2]; Shijie Wang[3]; [1]Electrometals USA; [2]Missouri University of Science and Technology; [3]Rio Tinto Kennecott Utah Copper

10:45 AM
Process Measurement and Controlling of the Electro Refining/ Winning Operations: *Shijie Wang*[1]; Daniel Kim[1]; [1]Rio Tinto Kennecott Utah Copper

11:10 AM
Helm Tracker™ Cathode Current Sensing Technology: *Tim Johnston*[1]; Rob Fraser[1]; John Yesberg[1]; Sebastien Nolet[1]; Chris Boon[1]; [1]Hatch

11:35 AM
The Effects of Dithionate and Thiosulfate Ions on the Deposition of Cobalt and Nickel from Sulfate Solutions: *Michael Nicol*[1]; Venny Tjandrawan[1]; [1]Murdoch University

Novel Synthesis and Consolidation of Powder Materials : Novel Synthesis, Processing and Consolidation of Powder 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 AM
March 5, 2013

Room: Lone Star Salon C
Location: Grand Hyatt

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

8:30 AM
Metallic Nanocomposites Powders Fabricated through Nanoparticle Assembly with Aluminum in Immiscible Molten Salt: *Jiaquan Xu*[1]; Lianyi Chen[1]; Hongseok Choi[1]; Hiromi Konishi[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

8:50 AM Invited
Chemical Synthesis and Physical Dispersion of Cobalt Nanoparticles by Liquid Phase Reduction: *Young Do Kim*[1]; Seoung Yeul Kwak[1]; Jin Ho Lee[1]; Hyun Seon Hong[2]; [1]Hanyang University; [2]Institute for Advanced Engineering

9:20 AM Invited
Fabrication of Structural and/or Functional Powders by Gas Atomization Process: *Soon-Jik Hong*[1]; [1]Kongju National University and Institute for Rare Metals

9:50 AM
Fragmentation of TiN Particles by Ultrasonic Treatment: *Jiyu Ma*[1]; Jinwu Kang[1]; Tianyou Huang[1]; [1]Tsinghua University

10:10 AM Break

10:30 AM
Ultrasound Atomizer-Microwave Heating Joint Synthesis of ZnO Nano-Powders with Shell-Structures: *Lei Guo*[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

10:50 AM
Low-Temperature Combustion Synthesis Method for Preparation of Tungsten Carbide as Gas Diffusion Electrodes Catalyst: *Ping Li*[1]; Liqun Cui[1]; Mingli Qin[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

11:20 AM
Novel Process to Produce Functionally Graded (FG) Cemented Tungsten Carbide and Its Mechanical Properties: *Kyu Sup Hwang*[1]; Xu Wang[1]; Peng Fan[1]; Zhigang Fang[1]; [1]University of Utah

11:40 AM
The Effect of Structural Homogeneity and Refinement on Mechanical Properties for WC-FeAl Composites: *Ryoichi Furushima*[1]; Akihiro Matsumoto[1]; Kiyotaka Katou[1]; Hiroyuki Hosokawa[1]; [1]Nationa Institute of Advanced Industrial Science and Technology

12:00 PM
Nanostructured Multi-Phase Titanium Based Materials Consolidated from Particles by Severe Plastic Deformation: *Wei Xu*[1]; Xianshun Wei[1]; Edward Lui[1]; Matthieu Bardet[1]; Jean-Francois Silvain[2]; Kenong Xia[1]; [1]University of Melbourne; [2]CNRS, Universite de Bordeaux

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh 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 AM
March 5, 2013

Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM
High Temperature Nanoindentation of Microstructural Constituents in a Sn-rich Pb-Free Solder: *Jon Molina-Aldareguia*[1]; Saeid Lotfian[1]; Kyle Yazzie[2]; Javier LLorca[1]; Nikhilesh Chawla[2]; [1]IMDEA Materials Institute, 28040-Madrid, Spain; [2]Arizona State University

8:50 AM
Mechanical Properties of Single Grain Cu6Sn5 Intermetallic Compound (IMC) Using Combined Nanoindentation and Electron Backscatter Diffraction (EBSD) Imaging: *Ousama Abdelhadi*[1]; Leila Ladani[1]; [1]University of Alabama

9:10 AM
Effect of Solder Microstructure on Mechanical and Thermal Shock Properties: Anil Kantarcioglu[1]; Mustafacan Kutsal[1]; *Eren Kalay*[1]; [1]METU

9:30 AM Break

9:50 AM
Influence of the IMC Size on the Mechanical Behavior in Miniaturized Solder Interconnects: *Julien Magnien*[1]; Golta Khatibi[1]; Herbert Ipser[1]; [1]University of Vienna

10:10 AM
Effect of Thermal Cycling on Interface Evolution in Sn-3.5Ag Solder Joints: *Govindarajan Muralidharan*[1]; Chad Parish[1]; Kanth Kurumaddali[1]; Scott Leslie[2]; [1]Oak Ridge National Laboratory; [2]Powerex Inc

10:30 AM
Combined Experimental and Computational Study on the Activity of Slip Systems in Single-Joint Tensile Deformation: *Payam Darbandi*[1]; Farhang Pourboghrat[1]; Thomas Bieler[1]; Tae-Kyu Lee[2]; [1]Michigan State University; [2]Cisco Systems, Inc

10:50 AM
Failure of Solder Joints Investigated at the Relevant Length Scale: *Bastian Philippi*[1]; Andreas Schießl[2]; Angelika Schingale[2]; Gerhard Dehm[3]; [1]Materials Center Leoben; [2]Continental Automotive GmbH; [3]Austrian Academy of Sciences

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; Jae-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/(Bi1-xSbx)$_2$Te$_3$ Couples: *Sinn-wen Chen*[1]; Hsin-jay Wu[1]; Chih-yu Wu[1]; Chun-fei Chang[1]; Chung-yi Chen[1]; [1]National Tsing Hua University

8:50 AM
Interfacial Reactions in the Cu/Ga/Cu Sandwich Joints: *Cheng-liang Cho*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

9:05 AM
Interfacial Reactions between Au-Ge Eutectic Solders and Cu Substrates: Bo-Hsun Hsu[1]; *Shih-kang Lin*[1]; [1]National Cheng Kung University

9:20 AM
Retardation of Cu-Sn Intermetallic Compounds at the Sn-3.0Ag-0.5Cu-0.1Ni/Cu-15Zn Interface during Thermal Aging: *Wei-Yu Chen*[1]; Chi-Yang Yu[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

9:35 AM
Volume Shrinkage Induced by Interfacial Reactions in Micro Joints: *C. Li*[1]; J. Yu[1]; Z. Zhu[1]; C. Kao[1]; [1]National Taiwan University

9:50 AM
Diffusion Barrier Characteristic and Breakdown Mechanism of Ni3P Crystalline Layer in Sn-3.0Ag-0.5Cu/ENEPIG Solder Attachments with Ultrathin Ni-P Deposit: *Cheng Ying Ho*[1]; Jenq-Gong Duh[1]; [1]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*[1]; [1]Tokyo Institute of Technology

10:40 AM
Linear Growth and Cruciform Pattern Formation in Sn-Zn/Ni Interfacial Reactions: *Chao-hong Wang*[1]; Hsien-hsin Chen[1]; [1]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*[1]; Ling-Huang Hsu[1]; Chun-Chieh Wang[1]; Cheng-En Ho[1]; [1]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*[1]; Joo-Youl Huh[1]; [1]Korea University

11:25 AM
Interfacial Reactions of SAC305 on ECEPIG and EC Surface Finishes: *Jia-Hong Hong*[1]; Albert T. Wu[1]; [1]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: *Wen-Lin Chen*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

11:55 AM
Multiphase Intermetallic Growth in Space-Confined Ni/Sn/Cu Diffusion Couples: *Wen-Lin Shih*[1]; C. Robert Kao[1]; [1]National Taiwan Universuty

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

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
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; Carelyn 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*[1]; Michele Manuel[1]; [1]University of Florida

8:50 AM
Crystallographic and Kinetic Origins of Acicular and Banded Microstructures in U-Nb Alloys: *Dan Thoma*[1]; Robert Field[1]; [1]Los Alamos National Laboratory

9:10 AM
Cubic to Trigonal Phase Transformation Due to Inclusion of the Boron in the Lattices of Ni$_3$Al Phase Found at the Grain Boundaries of Boron Doped Ni$_3$Al Alloy: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

9:30 AM
Effect of Precipitate Microstructure on Strength of Alloy 718: *Duchao Lv*[1]; Ning Zhou[1]; Donald Mcallister[1]; Michael Mills[1]; Yunzhi Wang[1]; [1]OSU MSE

9:50 AM
Evolution of Two-Phase Gamma-Gamma-Prime' Microstructure in a Ternary Co-W-Al Alloy: *Eric Lass*[1]; Peter Bocchini[2]; Kil-Won Moon[1]; Maureen Williams[1]; Carelyn Campbell[1]; Ursula Kattner[1]; David Dunand[2]; David Seidman[2]; [1]NIST; [2]Northwestern University

10:10 AM Break

10:30 AM
Martensite Superelasticity in Beta-Ti Alloys: *Oliver Joris*[1]; David Dye[1]; Nick Jones[2]; [1]Imperial College; [2]Cambridge

10:50 AM
Martensitic Transformation in NiTi and NiTiCu Shape Memory Alloys: Lagrangian Dynamics Simulation: *Oleg Shchyglo*[1]; Umut Salman[2]; Alphonse Finel[3]; [1]ICAMS, Ruhr University Bochum; [2]Harvard School of Engineering and Applied Sciences; [3]LEM ONERA-CNRS

11:10 AM
Phase Stability of Ternary Antifluorite Type Compounds in the Quasi-Binary Systems Mg_2X-Mg_2Y (X,Y=Si, Ge, Sn) Via Ab-Initio Calculations: Romain Viennois[1]; *Philippe Jund*[1]; Catherine Colinet[2]; Jean-Claude Tédenac[1]; [1]Université Montpellier 2 - ICGM; [2]Science et Ingénierie des Matériaux et Procédés,CNRS

11:30 AM
Structural Evolution and Phase Transformation in Ni50-xMn39Sn11+x Alloys: *Wu Wang*[1]; Jinke Yu[2]; Sichuang Xue[2]; Qijie Zhai[3]; Hongxing Zheng[2]; [1]Shanghai University, Laboratory for Microstructures ; [2]Shanghai University, Laboratory for Microstructures; [3]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*[1]; Raymundo Arroyave[1]; [1]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*[1]; Juah Song[1]; Yue Liu[1]; P. Collins[1]; [1]University of North Texas

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
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; Carelyn Campbell, National Institute of Standards & Technology; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday AM
March 5, 2013
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 Introductory Comments

8:35 AM Invited
Non-Conventional Transformation Pathways in Titanium Alloys: *Hamish Fraser*[1]; Yufeng Zheng[1]; Robert Williams[1]; Soumya Nag[2]; Srivillipurthur Srinivasan[2]; Peter Collins[2]; Rajarshi Banerjee[2]; [1]The Ohio State University; [2]University of North Texas

9:05 AM Invited
Phase Transformation Pathways: Partha Ghosh[1]; A. Arya[1]; R. Tewari[1]; G. Dey[1]; *S. Banerjee*[1]; [1]Bhabha Atomic Reseach Centre

9:35 AM
Non-Conventional Microstructure Formation through Devitrification of Al-RE Metallic Glass: *Can Yildirim*[1]; Mert Ovun[1]; E. Park[2]; Ryan Ott[2]; Paul Voyles[3]; Matthew Kramer[2]; Eren Kalay[1]; [1]METU; [2]Ames Laboratory US DOE; [3]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*[1]; Gail Ludtka[2]; John Wilgen[1]; Roger Kisner[1]; Don Nicholson[1]; Orlando Rios[1]; Chad Parish[1]; Michael Brady[1]; [1]Oak Ridge National Laboratory; [2]Retired from Oak Ridge National Laboratory

10:40 AM Invited
Nitride Precipitation in Compositionally Heterogeneous Alloys: A Non Conventional Phase Transformation Path: *Goune Mohamed*[1]; Van Landeghem Hugo[2]; Jessner Peter[3]; Danoix Frederic[4]; Danoix Raphael[4]; Béatrice Hannoyer[4]; Abdelkrim Redjaimia[2]; Thierry Epicier[5]; [1]ICMCB-Bordeaux1; [2]IJL; [3]GPM; [4]GPM-Université de Rouen; [5]MATEIS-INSA de Lyon

11:10 AM Invited
Aberration Corrected Lorentz Microscopy of Magnetic Domains in Finely Twinned Ferromagnetic Shape Memory Alloys: Shan Hua[1]; Abhijeet Budruk[1]; *Marc De Graef*[1]; [1]Carnegie Mellon University

11:40 AM Invited
Deformation-Induced Transformation Reactions: *John Perepezko*[1]; Zhe Wang[1]; [1]University of Wisconsin-Madison

12:10 PM
Evolution of Microstructure at High Speed Frictional Interfaces: *Jacqueline Milhans*[1]; James Hammerberg[1]; Ramon Ravelo[2]; Timothy Germann[1]; Brian Holian[1]; [1]Los Alamos National Laboratory; [2]Physics Dept, University of Texas

Physical and Mechanical Metallurgy of Shape Memory Alloys: NiTi (Hf,Zr) 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; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

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

Session Chairs: Ronald Noebe, NASA Glenn; Peter Anderson, Ohio State University

8:30 AM
Effects of Precipitation on the Thermomechanical Response of Ni-Ti-Hf High Temperature Shape Memory Alloys: Xiang Chen[1]; Daniel Coughlin[1]; Michael Mills[1]; Glen Bigelow[2]; Ronald Noebe[2]; *Peter Anderson*[1]; [1]The Ohio State University; [2]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 Santamarta*[1]; Jaume Pons[1]; Alper Evirgen[2]; Raymundo Arroyave[2]; Haluck Karaca[3]; Ibrahim Karaman[2]; Ronald Noebe[4]; [1]University of the Balearic Islands; [2]Texas A&M University; [3]University of Kentucky; [4]NASA Glenn Research Center

9:20 AM
Characterizations of a Precipitate Phase in Ni Rich NiTiHf Alloys: *Fan Yang*[1]; Patrick Phillips[2]; Daniel Coughlin[1]; Limei Yang[1]; Arun Devaraj[3]; Libor Kovarik[3]; Ronald Noebe[4]; Michael Mills[1]; [1]The Ohio State University; [2]University of Illinois at Chicago; [3]EMSL, Pacific Northwest National Laboratory; [4]NASA Glenn Research Center

9:40 AM
Microstructural Characterization and Shape Memory Behaviour in Ni-29.7Ti-20Hf (at.%): *Billy Hornbuckle*[1]; Taisuke Sasaki[2]; Ron Noebe[3]; Glen Bigelow[3]; Mark Weaver[1]; Gregory Thompson[1]; [1]University of Alabama; [2]National Institute for Materials Science; [3]NASA Glenn Research Center

10:00 AM Break

10:20 AM
Effects of Composition and Heat Treatments on the Shape Memory Behavior of NiTiHf alloys: *Sayed Saghaian*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Ronald Noebe[2]; [1]University of Kentucky; [2]NASA Glenn research Center

10:40 AM
Composition and Aging Effects for Nickel Rich NiTiHf Alloys: *Daniel Coughlin*[1]; Glen Bigelow[2]; Anita Garg[2]; Ronald Noebe[2]; Michael Mills[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

11:00 AM
Effect of Heat Treatment Temperature on Shape Memory Characteristics in Ti38-Ni50-Hf12 Shape Memory Alloy: *Chang Seok Bae*[1]; Won Ki Ko[1]; Jae Il Kim[1]; [1]Dong-a University

11:20 AM
Hardness and Microstructure Stability in Ni-Rich Nitinol Alloys with and without Hf Additions: *Billy Hornbuckle*[1]; Taisuke Sasaki[2]; Ron Noebe[3]; Mark Weaver[4]; Gregory Thompson[1]; [1]University of Alabama; [2]National Institute for Materials Science; [3]NASA Glenn Research Center; [4] University of Alabama

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 Jo*[1]; Nam-seok Kim[1]; Jong-taek Yeom[2]; Jae-geun Hong[2]; Jae-il Kim[3]; Tae-hyun Nam[1]; [1]Gyeongsang National University; [2]Korean Institute of Materials Science; [3]University 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 Kim*[1]; Jeung-Won Jo[1]; Jong-Taik Yeom[2]; Jae-Geun Hong[2]; Jae-il Kim[3]; Tae-Hyun Nam[1]; [1]Gyeongsang National University; [2]Korean Institute of Materials; [3]University of Dong-A

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings III

*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; Choong-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 Carradò, IPCMS

Tuesday AM
March 5, 2013

Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chair: N. M. Ravindra, New Jersey Institute of Technology

8:30 AM
A Novel Dip-Coating Method for Metaliziing Alumina with Aluminum Film: *Xiao-shan Ning*[1]; [1]Tsinghua University

8:50 AM
CuCoMnOx as a Functional Coating for Solar Absorbers Using Sol Gel Technique: *Nahed El Mahallawy*[1]; Ali Yehia[1]; Shoeib Madiha[2]; [1]The German University in Cairo; [2]CMRD

9:10 AM
Cu-Ni-Mo Films with Low Electrical Resistivities and High Thermal Stabilities Designed by the Cluster-Plus-Glue-Atom Model: Xiaona Li[1]; Jinn P Zhu[2]; Qing Wang[1]; *Chuang Dong*[1]; [1]Dalian University of Technology; [2]National Taiwan University of Science and Technology

9:30 AM
Orientation Dependence of Interface Layer on High-k/GaN MOS Structures: *Jung Woo*[1]; Derek Johnson[1]; Mary Coan[2]; Harlan Harris[1]; [1]Texas A&M University; [2]National Aeronautics and Space Administration

9:50 AM Break

10:10 AM
Deposition and Characterization of Tungsten Carbide Thin Films by DC Magnetron Sputtering for Wear Resistant Applications: Tolga Tavsanoglu[1]; Ceren Begum[1]; *Murat Alkan*[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

10:30 AM
Effect of Temperature on the Structure and Corrosion Properties of Nano-Twin Cu Thin Film Deposited by Unbalanced Magnetron (UBM) Sputtering: *Kai Hung Yang*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

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 Coporation; Golam Newaz, Wayne State University

Tuesday AM
March 5, 2013
Room: Bowie A
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*[1]; [1]GIK Inst. Eng. Sci & Tech

8:50 AM
Electrical Conductivity and Thermal Shock Resistance of Mo-ZrO_2 Cermet: *Lei Tang*[1]; Yanling Guo[1]; Tao Zeng[1]; Jieyu Zhang[1]; Jifang Xu[2]; Jianchao Li[3]; Fei Ruan[1]; [1]Shanghai University; [2]Soochow University; [3]Vocational and Industry Institute of Hebei

9:10 AM
Electrode Process of Al (III) and Its Surface Alloying on Cu Substrate in AlCl3-NaCl Melts: *Hongmin Kan*[1]; Ning Zhang[1]; Xiaoyang Wang[1]; [1]Shenyang University

9:30 AM
Behavior of Al_4C_3 in Al/TiC Composites under Controlled Humid Environment: Evangelina Trujillo-Vázquez[1]; *Martin Pech-Canul*[1]; Saúl Gallardo-Heredia[1]; José Flores-García[1]; [1]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 Martínez-López[1]; *Martin Pech-Canul*[1]; Maximo Pech-Canul[1]; Luis Gonzalez[1]; Zariff Chaudhury[2]; Golam Newaz[3]; [1]Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; [2]Materion Corporation; [3]Wayne State University

Refractory Metals 2013: Refractory Metal-based Materials III

Sponsored by: TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: David Honecker, Climax Molybdenum; Omer Dogan, DOE National Energy Technology Laboratory

Tuesday AM
March 5, 2013
Room: Mission A
Location: Grand Hyatt

Session Chairs: Todd Leonhardt, Rhenium Alloys, Inc.; Gary Rozak, H.C. Starck Inc.

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[1]; *Kevin Jaansalu*[2]; [1]Department of National Defence; [2]Royal Military College of Canada

8:50 AM Question and Answer Period

8:55 AM
Applications of Bond-Order Potentials for bcc Refractory Metals: *Miroslav Cak*[1]; Thomas Hammerschmidt[1]; Ralf Drautz[1]; [1]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*[1]; Thomas Bieler[1]; Farhang Pourboghrat[1]; Christopher Compton[1]; [1]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*[1]; G. Gray[1]; John Bingert[1]; Mike Lopez[1]; Veronica Livescu[1]; Carl Trujillo[1]; Carl Cady[1]; [1]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 Pedrazas*[1]; Thomas Buchheit[2]; Elizabeth Holm[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]Sandia National Laboratories

10:50 AM Question and Answer Period

10:55 AM
Initial Study of a Novel Tungsten – 35at% Manganese Alloy by Mechanical Alloying Technique: *Ossama Elsebaie*[1]; Kevin Jaansalu[1]; [1]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*[1]; K. Hartwig[1]; Robert Barber[1]; David Alven[1]; [1]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 Kvithyld, SINTEF; Markus Reuter, Outotec 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 AM
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: 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 Schmidl[1]; *Roland König*[2]; Axel Weyer[2]; Rolf Degel[2]; Harald Kadereit[1]; [1]Aurubis AG; [2]SMS Siemag AG

9:00 AM
The Revival of Onahama Smelter & Refinery from the Disaster by the Great East Japan Earthquake: *Naoki Horihata*[1]; Shoji Kawashima[1]; Tetsuro Sakai[1]; [1]Onahama Smelting & Refining Co.,Ltd

9:25 AM
Leaching of Uranium and Vanadium from Korean Domestic Ore: Rajesh Kumar Jyothi[1]; *Joon Soo Kim*[1]; [1]Korea Institute of Geoscience and Mineral Resourses (KIGAM)

9:50 AM Break

10:10 AM
Assessment of Quality Improvements by Delivering Molten Aluminum Alloys Instead of Ingots: *Salem Seifeddine*[1]; Anton Bjurenstedt[1]; Tomas Liljenfors[2]; [1]School of Engineering/ Jönköping University; [2]Stena Aluminium AB

10:35 AM
Study of Adsorption Property of Ga(III) onto Strongly Basic Resin for Ga Extraction from Bayer Liquor: *Zhuo Zhao*[1]; Yongxiang Yang[1]; Hao Lu[1]; Zhongsheng Hua[1]; Xiaoling Ma[2]; [1]Anhui University of Technology; [2]Shimadzu (China) Co. Ltd

11:00 AM
Synthesis of Organosilicon Complexes from Rice Husk Derived Silica Nanoparticles: Weixing Wang[1]; Jarett Martin[2]; Rong Cai[2]; Wenxi Huang[1]; Anhua Liu[1]; Aijie Han[3]; *Luyi Sun*[2]; Haoran Chen[2]; [1]South China University of Technology; [2]Texas State University; [3]The University of Texas-Pan American

11:25 AM
Pre-drying Eucalyptus Saligna for Carbonization: *Marcelo Mourao*[1]; Lina Cardona[1]; Cyro Takano[1]; [1]University of Sao Paulo

11:50 AM
PGM Recycling from Catalysts in a Closed Hydrometallurgical Loop with an Optional Cerium Recovery: *Stefan Steinlechner*[1]; [1]CDL 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 (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec 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 AM
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 Chair: Randolph Kirchain, Massachusetts Institute of Technology; Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF

8:30 AM Introductory Comments

8:35 AM
Thermal Processing of Industrial Ashes for Ferrovanadium Production: Yanping Xiao[1]; *Yongxiang Yang*[2]; Alan Lai[2]; Rob Boom[2]; [1]Anhui University of Technology; [2]TU Delft

9:00 AM
Characterization of Copper Slag: *Xuan Wang*[1]; [1]K.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 Antrekowitsch*[1]; [1]University of Leoben

9:50 AM Break

10:10 AM
ISASMELT™ for Recycling of Valuable Elements Contributing to a More Sustainable Society: *Gerardo Alvear Flores*[1]; Stanko Nikolic[1]; [1]Xstrata Technology

10:35 AM
Metal Recovery from Industrial Solid Waste – Contribution to Resource Sustainability: *Yongxiang Yang*[1]; Yanping Xiao[2]; [1]TU Delft; [2]Anhui University of Technology

11:00 AM
Secondary Processors and Landfills – Partnerships that Work: David Roth[1]; *Ben Brewer*[1]; [1]By: Ben Brewer / Recycling Ventures LLC

11:20 AM
Material and Energy Beneficiation of the Automobile Shredder Residues: *Noureddine Menad*[1]; Ndue Kanari[2]; Sylvain Guignot[1]; Frederic Diot[2]; Lev Filippov[2]; Fabien Thomas[2]; Jacques Yvon[2]; [1]BRGM; [2]University

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 Fernández*[1]; Julia Ayala[1]; Maria Ordiales[1]; Ana Castañon[1]; [1]Universidad 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
March 5, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

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 Jensen*[1]; [1]DTU

9:05 AM Invited
Comparing Computed and Measured Grain Boundary Properties: *Elizabeth Holm*[1]; Gregory Rohrer[1]; Anthony Rollett[1]; Stephen Foiles[2]; Michael Chandross[2]; [1]Carnegie Mellon University; [2]Sandia National Laboratories

9:35 AM Invited
Experimental Measurement of 3D Grain Boundary Networks in Polycrystalline Materials: *Alexis Lewis*[1]; David Rowenhorst[1]; [1]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 Mottura*[1]; Tresa Pollock[2]; [1]University of Birmingham; [2]University of California, Santa Barbara

10:50 AM
Modelling and Characterisation of the Grain Growth Behaviour in an Advanced Polycrystalline Nickel-Base Superalloy: David Collins[1]; *Bryce Conduit*[2]; Gareth Conduit[2]; Mark Hardy[3]; Rob Mitchell[3]; Howard Stone[2]; [1]University of Oxford; [2]University of Cambridge; [3]Rolls-Royce plc.

11:10 AM
Investigation of Nucleation Mechanisms for Intergranular Complexion Transitions and Abnormal Grain Growth by Monte Carlo Modeling: *William Frazier*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

11:30 AM
Modeling and Experimental Characterization of Texture Evolution in Zirconium during Dynamic Extrusion: *Juan Escobedo*[1]; Carl Trujillo[1]; Ellen Cerreta[1]; Ricardo Lebensohn[1]; Daniel Martinez[1]; George Gray[1]; [1]Los Alamos National Laboratory

11:50 AM
Relating Experimental Liquid Metal Embrittlement Testing and Calculated Surface Energies: *Auger Thierry*[1]; Duane Johnson[2]; LinLin Wang[3]; Samuel Hemery[1]; [1]MSSMAT/Ecole Centrale Paris; [2]Iowa State University; [3]Ames Laboratory

12:10 PM
Pressure and Temperature Dependent Anisotropy of Tetragonal Cerium: *Adam Cadien*[1]; Howard Sheng[1]; [1]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; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

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

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 Rowenhorst*[1]; Alexis Lewis[1]; [1]Naval Research Laboratory

9:00 AM
DualBeam™ FIB/EBSD Characterization of Microstructure Morphology in Ti Alloys: *Daniel Huber*[1]; John Sosa[1]; Vikas Dixit[1]; Brian Welk[1]; Robert Williams[1]; Hamish Fraser[1]; [1]The Ohio State University

9:20 AM Invited
Simultaneous 3D EBSD and EDS Via Serial Sectioning in a FIB/SEM: *Stuart Wright*[1]; Matthew Nowell[1]; [1]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 Madison*[1]; Larry Aagesen[2]; [1]Sandia National Laboratories; [2]University of Michigan

10:25 AM
Application of Moment Invariants to Automated Microstructure Analysis: *Lily Nguyen*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

10:45 AM
Quantifying the Effect of Spatial Resolution on the Accuracy of Morphological Microstructure Distributions: *Gregory Loughnane*[1]; Michael Groeber[2]; Michael Uchic[2]; Ramana Grandhi[1]; [1]Wright State University; [2]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 DeHoff*[1]; Burton Patterson[1]; David Rule[1]; Veena Tikare[1]; Amy Adams[1]; [1]University of Florida

11:50 AM
Serial Section Investigation of Grain Volume and Topological Distributions: *Amy Adams*[1]; Tyler Kaub[1]; David Rule[1]; Burton Patterson[1]; Robert DeHoff[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories

12:10 PM
Topological Event Rates in Grain Growth: *Burton Patterson*[1]; Robert DeHoff[1]; David Rule[1]; Veena Tikare[2]; [1]University of Florida; [2]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
March 5, 2013
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 Sachan[1]; Vanessa Ramos[1]; Sagar Yadavali[1]; Mikhail Khenner[2]; Anup Gangopadhyay[3]; Gerd Duscher[1]; *Ramki Kalyanaraman*[1]; Hernando Garcia[4]; [1]University of Tennessee; [2]Western Kentucky University; [3]Washington University in St. Louis; [4]Southern Illinois University in Edwardsville

2:35 PM
Radiation Effects in Nanoporous Gold: *Magdalena Serrano de Caro*[1]; Engang Fu[1]; Luis Zepeda-Ruiz[2]; Yongqiang Wang[1]; Kevin Baldwin[1]; Eduardo Bringa[3]; Michael Nastasi[4]; Alfredo Caro[1]; [1]Los Alamos National Laboratory; [2]Lawrence Livermore National Laboratory; [3]CONICET and Instituo de Ciencias Basicas ; [4]Nebraska Center for Energy Sciences Research

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

3:15 PM Break

3:35 PM Invited
Magnetic Polypropylene Nanocomposites Reinforced with Maleic Anhydride Grafted Polypropylene as Surfactant: Qingliang He[1]; Suying Wei[1]; *John Zhanhu Guo*[1]; [1]Lamar University

4:10 PM
Solution Growth of ZnO Thin Films from Different Seeded Substrates: *Ruihong Zhang*[1]; Elliott Slamovich[1]; Carol Handwerker[1]; [1]Purdue University

4:30 PM
The Influence of Yttrium Doping on the Structural and Optical Properties of Zinc Oxide Nanowires: *Hyung Woo Choi*[1]; Kyu-Sung Lee[2]; T. Alford[1]; [1]Arizona State University; [2]Electronics and Telecommunications Research Institute (ETRI)

4:50 PM
Interactions of Gold Nanoparticles and Amphiphilic Block Copolymer Mask: From the Dot-pattern Creation with Supercritical CO_2 and Colloidal Solution to the Essence of Nanocrystal Growth with Catalyst System: *Severine Boyer*[1]; Chihiro Iwamoto[2]; Ryutaro Nakagawa[2]; Hirohisa Yoshida[2]; [1]CNRS ; [2]Tokyo Metropolitan University

5:10 PM
Synthesis and Luminescence Properties of Core@Shell RE:A2B2O7@A'B'O3 Nanoparticles: Suresh Alaparthi[1]; Rolando Soto[1]; Yuanbing Mao[1]; [1]University of Texas - Pan American

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
March 5, 2013
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 Bugdayci*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

2:20 PM
Study of Heat Flux in CSP Continuous Casting Mold: Wen Yang[1]; *Lifeng Zhang*[1]; Xinghua Wang[1]; [1]University of Science and Technology Beijing

2:35 PM
The Effect of Thermomechanical Ageing of Aluminium–Copper Alloy (MATLAB Approach): Adekunle Adegbola[1]; *Ajibade Omotoyinbo*[2]; Oladayo Olaniran[2]; Akeem Ghazali[1]; Olugbenga Fashina[1]; [1]The Polytechnic, Ibadan; [2]Federal University of Technology, Akure, Nigeria

2:55 PM
Research on Inclusions in CuCr Alloy Prepared by Thermit Reduction: *Dou Zhihe*[1]; Zhang Ting'an[1]; Shi Guanyong[1]; Du Yanjun[1]; Niu Liping[1]; Lv Guozhi[1]; Liu Yan[1]; He Jicheng[1]; [1]Northeastern University

3:15 PM
Copper-Based Multi-Component Alloys by Vacuum Distillation to Separate Copper Enriched Lead, Silver and Other Valuable Metals Research: *Heng Xiong*[1]; Bin Yang[1]; Dachun Liu[1]; Baoqiang Xu[1]; Xiumin Chen[1]; Yong Deng[1]; [1]Kunming University of Science and Technology

3:35 PM Break

3:45 PM
An Overview of Research on Au & Ag Recovery in Copper Smelter: *Yifeng Shi*[1]; Zhonglin Ye[2]; [1]Yunnan Copper Co., Ltd.; [2]Yunnan Copper Smelting & Processing Complex

4:05 PM
The Analysis of Orthogonal Experiment Method of Carbon-Coated $LiNi_1/3Mn_1/3Co1/3O_2$ Via Microwave-pyrolysis Method: Yamei Han[1]; *Zhengfu Zhang*[1]; Libo Zhang[1]; Jinhui Peng[1]; Mengbi Fu[1]; [1]Kunming University of Science and Technology

4:25 PM
Comparative Study on the Metal Aluminum Produced from Alumina by Carbothermic Reduction and Carbothermic-Chlorination: *Qingchun Yu*[1]; Bin Yang[1]; Yong Deng[1]; Fei Wang[1]; Heng Xiong[1]; Yongnian Dai[1]; [1]Kunming University of Science and Technology

4:45 PM
Continuous Synthesis and Performance of Cathode Material LiNi1/3Co1/3Mn1/3O2 for Lithium Ion Batteries: *Fu Mengbi*[1]; [1]Key Laboratory of Unconventional Metallurgy for Education Ministry

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

5:20 PM
Tensile Mechanical Properties and Brittle Effect of Austempered Cr-Mo Alloy Steel: *Cheng-Yi Chen*[1]; Truan-Sheng Lui[1]; Fei-Yi Hung[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

Acta Materialia Materials and Society Award Special Symposium: "Global R&D Trends – Implications for Material Sciences": Global R&D Trends -- Implications for Material Sciences

*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
March 5, 2013
Room: Lila Cockrell Theatre
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 Wadsworth*[1]; [1]Battelle Memorial Institute

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

3:15 PM Break

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

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

4:30 PM Invited
Innovation in the New Era of Global Science and Engineering: *Subra Suresh*[1]; [1] U.S. National Science Foundartion

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

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

2:00 PM Introductory Comments Brajendra Mishra, Colorado School of Mines

2:10 PM Keynote
Nanostructuring High-Strength Molybednum Alloys for Unprecedented Tensile Ductility: *Evan Ma*[1]; [1]Johns Hopkins University

2:40 PM
Nanostructured Nitride-based Thin Films with Enhanced Multifunctionalities: *Haiyan Wang*[1]; Fauzia Khatkhatay[1]; Ichchan Kim[1]; Liang Jiao[1]; Xinghang Zhang[1]; [1]Texas A&M University

3:00 PM
Thin Films for Gas Sensing at Extreme Temperatures and in Harsh Environments for Advanced Fossil Energy Applications: *Paul Ohodnicki*[1]; Thomas Brown[1]; Congjun Wang[1]; John Baltrus[1]; Michael Buric[1]; [1]National Energy Technology Laboratory

3:20 PM
Novel Precipitation Hardened Aluminum Alloys for Oilfield Applications: From Research to Commercialization: *Manuel Marya*[1]; Timothy Dunne[1]; Tatiana Reyes Hernandez[1]; [1]Schlumberger

3:40 PM Break

3:55 PM Keynote
Oxides as Energy Materials in Extreme Environments: *Shriram Ramanathan*[1]; [1]Harvard University

4:25 PM
Catalytic Rare Earth Nanostructure Coatings for Extreme Environments: *Sudipta Seal*[1]; Virendra Singh; [1]University of Central Florida

4:45 PM
Evolution of Microstructure of NiCrBSi-WC Overlays for Enhancement of Wear Resistant Properties: *Tonya Wolfe*[1]; Gary Fisher[1]; Hani Henein[2]; [1]Alberta Innovates - Technology Futures; [2]University of Alberta

5:05 PM
High Strain Rate Deformation of Al-Si-Mg Matrix Composites: *Nikhil Gupta*[1]; Dung Luong[1]; Dinesh Pinisetty[1]; Atef Daoud[2]; [1]Polytechnic Institute of New York University; [2]Central Metallurgical R&D Institute

5:25 PM Concluding Comments

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Advanced Materials for High Power, High Temperature, and High Frequency Power Electronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Tuesday PM
March 5, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory

2:00 PM Introductory Comments

2:05 PM Keynote
Power Magnetic Materials: Ayman El-Refaie; Satish Prabhakaran; Vijay Srivastava; *Francis Johnson*[1]; [1]GE Global Research

2:50 PM Invited
Capacitors for Wide Operating Temperatures: *Erik Brandon*[1]; Marshall Smart[1]; Linda Del Castillo[1]; Harish Manohara[1]; Mohammad Mojarradi[1]; Elizabeth Kolawa[1]; Keith Chin[1]; [1]Caltech/JPL

3:20 PM Break

3:40 PM Invited
Components for Advanced Power Conditioning Techniques: *William Reass*[1]; [1]Los Alamos National laboratory

4:10 PM Invited
Optimization of Amorphous and Nanocrystalline Soft Magnetic Materials for High Frequency Inductors: *Christian Polak*[1]; Giselher Herzer[1]; [1]Vacuumschmelze GmbH & Co. KG

4:40 PM Invited
Nanocomposite Magnets for Power Electronic Applications: IEEE Distinguished Lecture: *Michael McHenry*[1]; Samuel Kernion[1]; Alex Leary[1]; Vincent DeGeorge[1]; Matthew Lucas[1]; Paul Ohodinicki[1]; [1]Carnegie Mellon University

5:10 PM
Texture and Magnetic Property of Rolled Fe-6.5%Si Thin Sheets: Yongchuang Yao[1]; *Yuhui Sha*[1]; Jinlong Liu[1]; Fang Zhang[1]; Liang Zuo[1]; [1]Northeastern University

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
March 5, 2013
Room: Bowie B
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*[1]; Vasek Ocelik[1]; [1]University of Groningen

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

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

2:55 PM
Laser Alloying of Ta on Al 1100 for Improved Corrosion Protection: *Ravi Rajamure*[1]; Hitesh Vora[1]; Santhanakrishnan S[1]; Srinivasan Srivilliputhur[1]; Narendra Dahotre[1]; [1]University of North Texas

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

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

3:40 PM Break

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

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

4:25 PM
Wear Analysis of D.C. Pulsed Plasma Nitriding of AISI 4340 Low Alloy Steel for Crankshaft Application: *Arul Varman*[1]; M Balasubramanian[1]; [1]Indian 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*[1]; Andrius Martinavicius[1]; Raphaële Danoix[1]; Michel Drouet[2]; Gintas Abrasonis[3]; Béatrice Hannoyer[1]; [1]CNRS - Université de Rouen; [2]Institut PPRIME, UPR 3346, CNRS, Université de Poitiers; [3]Helmholtz-Zentrum Dresden Rossendorf

4:55 PM
Characteristics and Wear Performance of Nitrided Ti_6Al_4Va: *Farid Siyahjani*[1]; [1]Istanbul 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; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Tuesday PM
March 5, 2013
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*[1]; Chia-Hao Hsu[1]; Shih-Yuan Wei[1]; Chuan Chang[1]; Chih-Huang Lai[1]; [1]Department 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*[1]; Mohammad Islam[2]; Sofia Javed[1]; Mohammad Mujahid[1]; [1]National Uiversity of Sciences and Technology Pakistan; [2]Center 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: *Uwadiae Obahiagbon*[1]; Hudu Mohammed[1]; Burcu Ozden[2]; Tamara Isaac-Smith[2]; Okechukwu Akpa[1]; Micheal Awaah[1]; Minseo Park[2]; Kalyan Das[1]; [1]Tuskegee University; [2]Auburn University

3:00 PM
Segregation of Ge Nano-crystals in Amorphous SiGe Matrix: *Yao Tsung Ouyang*[1]; Albert T. Wu[1]; [1]National 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*[1]; Muhammad Aftab Akram[1]; Mohammad Mujahid[1]; [1]National University of Sciences and Technology Pakistan

3:55 PM
Experimental and Computational Analysis of New Photoelectric Materials GaN_XAs_{1-X} Properties: *Shi Zhou*[1]; Huimin Lu[1]; Lian Zhou[1]; [1]Beihang University

4:15 PM Invited
Materials Genome Approach to Computational Design of Nanostructured Thermoelectrics: J. Doak[1]; S. Hao[1]; *Chris Wolverton*[1]; [1]Northwestern 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
March 5, 2013
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*[1]; [1]Alunorte - Alumina do Norte do Brasil S.A.

2:30 PM
A New Technology for Dry Disposal of Alunorte's Bauxite Residue: *Marcelo Castro*[1]; Roberto Trindade[1]; Ronaldo Pantoja[1]; Eduardo Queiroz[1]; [1]Hydro Alunorte

2:50 PM
Pilot Test of Bauxite Residue Carbonation With Flue Gas: *Luis Venancio*[1]; José Antonio Souza[2]; Emanuel Macedo[2]; Fernando Botelho[2]; Gláucia César[2]; [1]Federal University of Para ; [2]Federal 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: *Mukesh Kumar*[1]; Bimlananda Senapati[1]; C. Sateesh Kumar[1]; [1]Vedanta Aluminium Limited

3:45 PM
Iron Recovery from Red Mud by Reduction Roasting-Magnetic Separation: *Mingjun Rao*[1]; Jinqiang Zhuang[1]; Guanghui Li[1]; Jinghua Zeng[1]; Tao Jiang[1]; [1]School 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[1]; L. T. Q. Xuan[1]; *Ju Shaohua*[1]; Peng Jinhui[1]; Zhang Libo[1]; [1]Key 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
March 5, 2013
Room: 213A
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 Barrirero*[1]; Michael Engstler[1]; Frank Mücklich[1]; [1]Saarland University

2:20 PM
The Role of Sr on Microstructure Formation and Mechanical Properties of Al-Si-Cu-Mg Casting Alloy: *Mohammadreza Zamani*[1]; Salem Seifeddine[1]; [1]Jonkoping University

2:40 PM
Modification of the Eutectic Mg_2Si-Phase of AlMgSi-Cast Alloys: Thomas Pabel[1]; Tose Petkov[1]; Christian Kneissl[1]; *Peter Schumacher*[2]; [1]Austrian Foundry Research Institute; [2]University of Leoben

3:00 PM
The Influence of Casting Speed in the as Cast Strip Mechanical Properties of 8079 and 8006 Alloys: *Dionisios Spathis*[1]; John Tsiros[1]; [1]Hellenic Aluminium Industry (ELVAL SA)

3:20 PM
Effect of Cooling Rate on Iron-Rich Intermetallic Phases in 206 Cast Alloys: Kun Liu[1]; Xinjin Cao[1]; *X. Grant Chen*[1]; [1]University of Quebec at Chicoutimi

3:40 PM Break

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

4:20 PM
Effect of the Thermal Modulus and Mould Type on the Grain Size of $AlSi_7Mg$ Alloy: Ibon Lizarralde[1]; Andrea Niklas[1]; Ana Fernández-Calvo[1]; *Jacques Lacaze*[2]; [1]IK4-AZTERLAN; [2]Université de Toulouse

4:40 PM
Effect of Iron in Al-Mg-Si-Mn Ductile Diecast Alloy: *Shouxun Ji*[1]; [1]Brunel University

5:00 PM
Oxidation Behavior of Al_2Ca Added Al-5Mg Alloy in the Liquid State: *Young-Ok Yoon*[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

5:20 PM
Steel-Cast-Alloy-Composite-Castings for High-Performance Die Cooling Applications: *Heiner Michels*[1]; Andreas Bührig-Polaczek[1]; Uwe Vroomen[1]; David Becker[2]; [1]RWTH Aachen University, Foundry Institute; [2]Fraunhofer-Institut für Lasertechnik ILT

5:40 PM
Alloy $AlSi_30$ Cast in the Process of Rapid Solidification and Consolidated in the Process of Plastic Forming: *Wojciech Szymanski*[1]; Marcin Szymanek[2]; Janusz Zelechowski[2]; Mariusz Bigaj[2]; Maciej Gawlik[2]; Bartlomiej Plonka[2]; [1]Institute of Non-Ferrous Metals ; [2]Institute 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
March 5, 2013
Room: Grand Ballroom C2
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 Tessier*[1]; Gary Tarcy[1]; Eliezer Batista[1]; Xiangwen Wang[1]; Patrice Doiron[1]; [1]Alcoa

2:30 PM
Reduction Cell Restart Method Influence on Cell Life Evolution: *Mikhail Lukin*[1]; Richard Jeltsch[2]; [1]Kubikenborg Aluminium AB; [2]Jeltsch Consulting

2:55 PM
Start of an Aluminum Reduction Cell without Liquid Bath: Kayron Lalonde[1]; *Brian Audie*[1]; Willy Kristensen[1]; Timothy Snyder[1]; [1]Century Aluminum

3:20 PM
A MIMO Modeling Strategy for Bath Chemistry: *Fabio Soares*[1]; Roberto Limao[1]; [1]UFPA

3:45 PM Break

3:55 PM
Cumulative Distributions of Metallic Impurities: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

4:20 PM
Sodium Content in Aluminum and Current Efficiency - Correlation Through Multivariate Analysis: *Lukas Dion*[1]; László Kiss[1]; Gilles Dufour[2]; François Laflamme[2]; Patrice Chartrand[3]; [1]Université du Québec à Chicoutimi; [2]Aluminerie Alouette Inc.; [3]Polytechnique de Montréal

4:45 PM
Gas-Solid Flow Applications for Powder Handling in Aluminum Smelters Processes: *Paulo Douglas Vasconcelos*[1]; Andre Mesquita[2]; [1]Albras Alumínio Brasileiro S.A; [2]Federal University of Para

5:10 PM
Operational Experience of Advanced Alumina Handling Technology in a Russian Smelter: *Jan Paepcke*[1]; Arne Hilck[1]; Sergey Marshalko[2]; [1]Claudius Peters Projects GmbH; [2]Rusal

Aluminum Reduction Technology: Environment I

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

Tuesday PM
March 5, 2013

Room: Grand Ballroom C1
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 Meintjes[1]; Ali Al Zarouni[1]; Maryam Al Jallaf[1]; Devadiga H. R.[1]; Ali Jassim[1]; Kamel Al Aswad[1]; Sharana Gowda[1]; Milton Khan[1]; Arvind Kumar[1]; [1]Dubal

2:30 PM
Trace Element Concentration in Particulates from Pot Exhaust and Depositions in Fume Treatment Facilities: *Heiko Gaertner*[1]; Arne Petter Ratvik[1]; Thor Anders Aarhaug[2]; [1]NTNU; [2]SINTEF

2:55 PM
The Study and Applications of Modern Potline Fume Treatment Plant (FTP): *Deng Xiang*[1]; Lv Weining[1]; Liu Xun[1]; Deng Qiyi[1]; Yi Xiaobing[2]; [1]CHALIECO; [2]CHALIECO

3:20 PM
F&GTC: Combined Treatment of Pot Gases and Anode Baking Furnace Fumes: *Bassam Hureiki*[1]; Chin Lim[1]; Fabienne Virieux[2]; [1]SOLIOS ENVIRONNEMENT SA; [2]FIVES SOLIOS

3:45 PM Break

3:55 PM
Compact Filter Design for Gas Treatment Centers: *Peter Verbraak*[1]; Peter Klut[1]; Travis Turco[1]; Erik Dupon[2]; Edo Engel[2]; [1]Danieli Corus BV; [2]Danieli Corus Technical Services

4:20 PM
An Innovative Compact Heat Exchanger Solution for Aluminium Off-Gas Cooling and Heat Recovery: *El Hani Bouhabila*[1]; Erling Naess[2]; Victoria Kielland Einenjord[3]; Fabienne Virieux[4]; [1]Solios Environnement SA; [2]Norwegian University of Science and Technology; [3]HYDRO; [4]Fives Solios

4:45 PM
Latest Filter Developments Increasing Existing Aluminium Smelter Gas Treatment Centre Capacity and Reducing Emissions: *Michael Neate*[1]; Bradley Currell[1]; [1]Advancetex International

5:10 PM
Reduced Ventilation of Upper Part of Aluminum Smelting Pot: Potential Benefits, Drawbacks, and Design Modifications: *Ruijie Zhao*[1]; Louis Gosselin[1]; Mario Fafard[1]; Donald Ziegler[2]; [1]University Laval and Aluminium Research Centre-REGAL; [2]Alcoa Canada Primary Metals

5:35 PM
Latest Developments in Potroom Building Ventilation CFD Modelling: *Nathalie Menet*[1]; Guillaume Girault[1]; Nicolas Monnet[1]; Catherine Turpin[2]; Lionel Soulhac[3]; [1]Rio Tinto Alcan; [2]Sillage Environnement; [3]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, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Tuesday PM
March 5, 2013

Room: 214C
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 Arzt*[1]; [1]INM – Leibniz Institute for New Materials

2:40 PM
Mechanics without Muscles: The Fast Motion of the Venus Flytrap and Bio-Mimetic Robotics: Qiaohang Guo[1]; Huang Zheng[2]; Wei Li[3]; Yiting Ding[4]; Guangyou Hao[5]; Guiping Su[1]; Junjie Lin[1]; Wenzhe Chen[3]; *Zi Chen*[6]; [1]FuJian University of Technology; [2]Fujian Radio and Television University; [3]Fuzhou University; [4]Tsinghua University; [5]Arnold Arboretum of Harvard University; [6]Washington University in St. Louis

3:00 PM
Shape Memory Effects in Moisture-Induced Twisting of Wood Slivers: *Nayomi Plaza*[1]; Joseph Jakes[2]; Donald Stone[1]; Samuel Zelinka[2]; [1]UW Madison; [2]Forest Products Laboratories

3:15 PM Invited
Bioinspired Materials Derived from Butterfly Wing: *Tongxiang Fan*[1]; [1]Shanghai Jiaotong University

3:45 PM Break

4:00 PM Keynote
Bioinspired Materials Processing and Forming: *Mohan Edirisinghe*[1]; [1]University College London

4:40 PM Invited
Ice-templated Biomaterials: *Ulrike Wegst*[1]; [1]Thayer School of Engineering. Dartmouth College

5:10 PM
Biomimetic Synthesis and AC-conductivity Studies of Crystalline Bone Graft Material: *Pradyumnan P P*[1]; Binitha M P[1]; [1]University of Calicut

5:25 PM Invited
Materials by Design: Silk and Silk-Like Protein Materials: *Markus Buehler*[1]; David Kaplan[2]; Joyce Wong[3]; [1]Massachusetts Institute of Technology; [2]Tufts University; [3]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
March 5, 2013
Room: Lone Star Salon D
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[1]; [1]University of Cambridge

2:30 PM
Using Artificial Microstructures to Understand Microstructure Property Relationships in Metallic Glasses: *Wen Chen*[1]; Baran Sarac[1]; Jan Schroers[1]; [1]Yale University

2:45 PM Invited
Mechanistic and Thermodynamic Origins of Toughness in Metallic Glasses: *Marios Demetriou*[1]; Bernd Gludovatz[2]; William Johnson[1]; Robert Ritchie[2]; [1]California Institute of Technology; [2]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*[1]; Na Zheng[1]; Annett Gebert[1]; Jürgen Eckert[1]; [1]IFW Dresden

3:20 PM Invited
Flow and Fracture Studies on Metallic Glasses: *John Lewandowski*[1]; [1]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*[1]; Erwin Fischer[1]; Victor Wessels[1]; Jörg Löffler[1]; [1]ETH Zürich

4:10 PM Invited
Deformation Mechanisms in Metastable CuZrAl Composites: J. Eckert[1]; K.K. Song[2]; S. Pauly[2]; Y. Zhang[2]; R. Li[3]; [1]University of Tennessee; [2]IFW Dresden; [3]Beihang University

4:30 PM
Influence of Chemical Composition on Mechanical Properties and Glass Forming Ability of LM1b Alloy: *Joseph Stevick*[1]; James Yurko[2]; Ryan Coniam[3]; Edgar Vidal[2]; [1]Liquidmetal Technologies; [2]Materion Brush Inc.; [3]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*[1]; [1]Johns Hopkins University

5:05 PM
Influence of Severe Plastic Deformation in Different Temperature Regimes on Zr-Based Bulk Metallic Glasses: *Denise Beitelschmidt*[1]; Sergio Scudino[1]; Steffen Kaiser[1]; Konrad Kosiba[1]; Mihai Stoica[1]; Matthias Hockauf[1]; Uta Kuehn[1]; Juergen Eckert[1]; [1]IFW Dresden

5:20 PM Invited
Making Metallic Glasses Plastic by Control of Stress Gradient: Zhitao Wang[1]; *Yi Li*[1]; [1]National University of Singapore

5:40 PM Invited
Controlled Shear Band and Fracture in Bulk Metallic Glasses: *Chun-Hway Hsueh*[1]; [1]National Taiwan University

6:00 PM
Crystallization of Phase Separated Pd41.5Ni41.5P17.5 BMGs: *Zhenduo Wu*[1]; Si Lan[1]; Hin Wing Kui[1]; [1]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
March 5, 2013
Room: Bowie A
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*[1]; Alexandru Stoica[1]; Xun-Li Wang[1]; [1]ORNL

2:20 PM
Prediction of Amorphous Forming Ability by Thermodynamic Approach in Ferrous Amorphous Alloys: *Seungmun Jung*[1]; Jeonghyeon Do[1]; Byeong-Joo Lee[1]; Sunghak Lee[1]; [1]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*[1]; Gongyao Wang[2]; Qingming Feng[2]; Peter Liaw[2]; Yoshihiko Yokoyama[3]; Akihisa Inoue[3]; [1]Ohio University; [2]The University of Tennessee, Knoxville; [3]Tohoku University

2:55 PM
Numerical Simulations of High-Strain-Rate Plate Impact of an Iron-Based Bulk Metallic Glass: *Gauri Khanolkar*[1]; Veronica Eliasson[1]; [1]University of Southern California

3:10 PM Invited
Studies of the Local Atomic Packing in a Metallic Glass: *Cang Fan*[1]; C. T. Liu[2]; P. Liaw[3]; [1]Nanjing University of Science and Technology; [2]City University of Hong Kong; [3]University of Tennessee

3:30 PM Invited
Molecular Dynamics Simulation of Solidification and Vitrification in Al-Sm Alloys: *Mikhail Mendelev*[1]; Matthew Kramer[1]; [1]Ames Laboratory

3:50 PM Break

4:05 PM Invited
Molecular Dynamics Study on a Thermal Rejuvenation of Amorphous Metals: *Masato Wakeda*[1]; Junji Saida[2]; Shigenobu Ogata[1]; [1]Osaka University; [2]Tohoku University

4:25 PM Invited
Polytetrahedral Packing in Metallic Glasses: *Yongqiang Cheng*[1]; Evan Ma[2]; [1]Oak Ridge National Laboratory; [2]Johns Hopkins University

4:45 PM
Analysis System (NSYS)-Based Simulation and Optimization on the Temperature Field of Amorphous Ingots Made by Water Quenching: *Gong Li*[1]; Wei Zhao[2]; Zhiqian Sun[1]; P. Liaw[1]; Riping Liu[2]; [1]UTK; [2]Yanshan University

5:00 PM Invited
Microyielding Mechanisms Study of Polycrystalline Dendrites Embedded in a Bulk-Metallic Glass within Engineering Elastic Limit: *E-Wen Huang*[1]; Junwei Qiao[2]; Peter Liaw[3]; [1]National Central University; [2]Taiyuan University of Technology; [3]University of Tennessee

5:20 PM
An Early-Stage Spinodal Decomposition Microstructural Ti36.2Zr30.3Fe4Cu8.3Be21.2 Bulk Metallic Glass with Exceptional Glass-Forming Ability: *Long Zhang*[1]; Haifeng Zhang[1]; Zhengwang Zhu[1]; [1]Institute 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
March 5, 2013
Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: Randall Bowers, SECAT Inc.

2:00 PM
Optimisation of Grain Refinement: *John Courtenay*[1]; Rein Vainik[1]; Bader Saglam[2]; [1]MQP Limited; [2]Eti Aluminium Co.Inc.

2:20 PM
Grain Refiner for Al-Si Alloys: Hari Babu Nadendla[1]; Magdalena Nowak[1]; *Leandro Bolzoni*[1]; [1]Brunel University

2:40 PM
AlTi5B1 Grain Refiners on the Casting of DIN 226 Aluminum Alloys: *Onuralp Yucel*[1]; Ceyhun Yapici[1]; Ahmet Turan[1]; [1]Istanbul Technical University

3:00 PM
Production of Al–Ti–B Grain Refining Master Alloys from B_2O_3 and K_2TiF_6 by Microwave Irradiation: *Zhou Cai*[1]; [1]Chongqing University of Science and Technology

3:20 PM
The Mechanism of Grain Refinement of Aluminium by Zirconium: *Feng Wang*[1]; Dong Qiu[1]; Zhilin Liu[1]; John Taylor[1]; Mark Easton[2]; Mingxing Zhang[1]; [1]School of Mechanical and Mining Engineering, The University of Queensland; [2]School 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 Li*[1]; Peter Schumacher[1]; [1]The University of Leoben

4:20 PM
Development of Al-TiC Alloys Using Powder Metallurgy as Grain Refiners for Aluminum and Its Alloys: *Abdel-Nasser Omran*[1]; [1]Mining and Metallurgical Department, Faculty of Engineering-Al-Azhar University

4:40 PM
Influence of Vanadium on the Microstructure of A356 Foundry Alloy: *Thomas Ludwig*[1]; Paul Schaffer[2]; Lars Arnberg[1]; [1]NTNU Trondheim; [2]Hydro Aluminium

Characterization of Minerals, Metals and Materials 2013: Characterization of Inorganic Materials

*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; Zhiwei Peng, Michigan Technological University

Tuesday PM
March 5, 2013
Room: 206A
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-SiO_2-V_2O_3-TiO_2 Slag: Rui Tang[1]; Yu Wang[1]; Shuo Wang[1]; Kun Wen[1]; *Hong-Yi Li*[1]; Bing Xie[1]; [1]Chongqing University

2:20 PM
Estimation of Slag in Ferrochromium: *Robert Kozicki*[1]; Eric Graham[1]; George Wrightson[1]; [1]Andrew S. McCreath & Son, Inc.

2:40 PM
Experimental Characterization of Heterogeneous Phase Blast Furnace Slag Bearing Titania: Lu Zhang[1]; *Tao Jiang*[1]; Xiangxin Xue[1]; [1]Northeastern University

3:00 PM
Improved Thermal Shock Resistance of Shaped Alumina-Chromia Products: *Sonja Breyner*[1]; Klaus Santowski[1]; Thomas Prietl[1]; [1]RHI AG

3:20 PM
Solidification Characteristics of Fe-Mn Alloy during Near-Rapid Solidification: *Yuanyi Guo*[1]; Ke Xie[1]; Wenbin Xia[1]; Shichao Zhao[1]; Changjiang Song[1]; Qijie Zhai[1]; [1]Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University

3:40 PM
The Effect of Work-Hardening and Heat Treatment of Mild-Carbon Steel on Cyclic Deformation Behavior: *Gerhard Tober*[1]; Christian Ruback[1]; Maria Kuttig[1]; Petra Maier[1]; [1]University of Applied Sciences Stralsund

4:00 PM
Thermal Stability and Mechanical Properties of nanocrystalline Fe-Ni-Zr Alloys: *Hasan Kotan*[1]; Mostafa Saber[1]; Carl Koch[1]; Ronald Scattergood[1]; [1]North Carolina State University

4:20 PM
Prediction of Ductility Parameter and Its Correlation with Electrical Resistivity of Microwave Annealed TiAl Intermetallics: *Debesh Mishra*[1]; Amarpreet Bir[1]; Tula Ram[1]; Vijaya Agarwala[1]; Ramesh Agarwala[1]; [1]IIT Roorkee

4:40 PM
Experimental Investigation on Oxidation Modification of Granulated Copper Slag at Intermediate Temperature: Bo Zhang[1]; Shuai Niu[1]; Zengli Liao[1]; Pu Tang[1]; Jienan Liu[1]; Huaiwei Zhang[1]; Xin Hong[1]; [1]Shanghai University

5:00 PM
Research on the Process of Alkaline Pressure Oxidation for Pretreating Anode Slime: *Weifeng Liu*[1]; Tianzu Yang[1]; Lin Chen[1]; Wanda Bin[1]; Shu Bin[1]; [1]Central South University

5:20 PM
Experimental Study on Optimization of Slag Splashing Modifiers with Magnesite Tailings: *Jing Li*[1]; XiaoFeng Qi[1]; [1]Liaoning 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: 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; 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 Humphrey*[1]; Charles Bouman[2]; Marc De Graef[1]; [1]Carnegie Mellon University; [2]Purdue University

2:20 PM
Application of Precession Electron Diffraction in Density Calculations of Geometrically Necessary Dislocations: *Yue Liu*[1]; Iman Ghamarian[1]; P. Collins[1]; [1]University 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): *Subhasis Sinha*[1]; Elvan Ekiz[2]; Nathan Mara[3]; Anthony Rollett[1]; Pascal Bellon[2]; Robert Averback[2]; Mohsen Pouryazdan[4]; Horst Hahn[4]; [1]Carnegie Mellon University; [2]University of Illinois Urbana Champaign; [3]Los Alamos National Laboratory; [4]Karlsruhe Institute of Technology

3:00 PM
Automated Quantification of SiC-Particles in Solidified A356 Aluminum Using Image Pro-Plus 7.0: *Robert Fritzsch*[1]; Behzad Mirzaei[1]; Mark Kennedy[2]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]Norwegian University of Science and Technology

3:20 PM
Development of a High-Pressure Scanning Probe Microscope Used to Study In Situ Corrosion Mechanisms: *Christophe Harder*[1]; Lilian Berlu[1]; Benoît Reneaume[1]; [1]CEA

3:40 PM
Fractography as a Tool to Assess the Occurrence of Fatigue Fractures in Complex-Microstructure Structural Components: *Donato Firrao*[1]; Paolo Matteis[1]; [1]Politecnico 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 Woracek[1]; Stephen Young[1]; Dayakar Penumadu[1]; *Jason Leszczewicz*[2]; Edward Kintzel[3]; [1]University of Tennessee, Knoxville; [2]Western Kentucky University ; [3]Western Kentucky University

4:20 PM
High Resolution Electron Backscatter Diffraction: *T Ben Britton*[1]; Jun Jiang[1]; Angus Wilkinson[1]; [1]Department 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 Gesing*[1]; Paul Marchwica[2]; Sharon Lackie[2]; Jerry Sokolowski[2]; [1]GCI; [2]University of Windsor

5:00 PM
Three-Dimensional Duplex Morphology of MnS-AlN and Thermodynamic Analysis: *Yue Gong*[1]; ChuanJie Cai[1]; Jing Chen[1]; ShaoBo Zheng[1]; HuiGai Li[1]; [1]Shanghai University

5:20 PM
Yield Maps and Texture Analysis of Pure Copper: *Joel House*[1]; Erica Cosmutto[2]; Richard Harris[1]; Joseph Chason[2]; Michael Nixon[1]; Pavol Stofke[3]; [1]Air Force Research Laboratory; [2]Florida State University; [3]US Army ARDEC

5:40 PM
Combinational TEM and APT Characterization of ODS Alloys by SPS: *Y. Wu*[1]; Kerry Allahar[1]; Jatuporn Burns[1]; Brian Jaques[1]; Indrajit Charit[1]; Darryl Butt[1]; James Cole[1]; [1]Boise State University

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn 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 Duin*[1]; Osvalds Verners[1]; Chenyu Zou[1]; Yun-Kyung Shin[1]; Karthik Vishnu[1]; [1]Penn 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 Vishnu*[1]; Adri C.T. van Duin[1]; [1]Penn 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 Shin*[1]; Adri vdn Duin[1]; Hyunwook Kwak[2]; Alex Vasenkov[2]; [1]Pennsylvania State University; [2]CFD Research Corporation

2:55 PM
Formation of Intermetallic Phase during Reactive Wetting of Al on Ni: *Ying Sun*[1]; Edmund Webb[2]; [1]Drexel University; [2]Lehigh University

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

3:25 PM Break

3:50 PM Invited
Gas Diffusion in Disordered Nanoporous Carbon: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

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

4:30 PM
Molecular Dynamics Simulations of the Structure Transformation during the Cu Heating process under Vacuum: *Sun Shu-Hong*[1]; Chen Xiu-Min[1]; Zhang Feng-Xia[2]; Yang Bin[1]; [1]Kunming University of Science and Technology; [2]Faculty 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 Chen*[1]; Jincheng Du[1]; [1]University 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
March 5, 2013
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 Niinomi*[1]; Masaaki Nakai[1]; Junko Hieda[1]; Ken Cho[1]; Toshikazu Akahori[2]; Tomokazu Hattori[2]; Masahiko Ikeda[3]; [1]Tohoku University; [2]Meijo University; [3]Kansai University

2:20 PM
Phase Transformation and Orientation in Direct Consolidation of TiH_2 Powder and Their Effects on Tensile Behavior of P/M Extruded Ti Material: Takanori Mimoto[1]; *Katsuyoshi Kondoh*[1]; Junko Umeda[1]; [1]Osaka University

2:40 PM Invited
Phase Constitution and Heat Treatment Behavior of Low Cost Ti-Mn System Alloys: *Masahiko Ikeda*[1]; Masato Ueda[1]; Kaoru Imaizumi[2]; Mitsuo Niinomi[3]; [1]Kansai University; [2]Daido Steel Co. Ltd.; [3]Tohoku 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 Li*[1]; Huimin Lu[1]; Panpan Wang[1]; [1]Beihang University

3:20 PM
Simulation of Powder Compact Forging Process for Producing a Titanium Component: *Navaneeth Velluvakkandi*[1]; Deliang Zhang[1]; Mingtu Jia[1]; [1]University of Waikato

3:40 PM Break

4:00 PM
Microstructure Evolution and Phase Transformations during Sintering Titanium Hydride in Controlled Hydrogen Atmosphere: *Pei Sun*[1]; Zhigang Fang[1]; [1]The University of Utah

4:20 PM
Novel Use of Cold and Hot Isostatic Pressing in Manufacturing Low Cost Ti-6Al-4V Forge Preforms: *Fatos Derguti*[1]; Nicholas Jones[2]; Martin Jackson[1]; [1]University of Sheffield; [2]Cambridge University

4:40 PM
Manufacturing Affordability Associated with an Innovative High-Strength Titanium Alloy: *Luis Ruiz*[1]; [1]ATI

5:00 PM
Precipitation Behaviour in Severe Plastic Deformed Beta-type Titanium Alloy: *Wei Xu*[1]; Xiaolin Wu[1]; Darren Edwards[2]; Mihai Stoica[3]; Mariana Calin[3]; Eckert Jürgen[3]; Kenong Xia[1]; [1]University of Melbourne; [2]Defence Science and Technology Organisation; [3]IFW Dresden

5:20 PM
Composition Design of Multi-Component β-Ti Alloys Based on a Cluster Model: *Qing Wang*[1]; Xiaona Li[1]; Jianbing Qiang[1]; Yingmin Wang[1]; Chuang Dong[1]; [1]Dalian 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
March 5, 2013
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: *Guney Yapici*[1]; Ibrahim Karaman[2]; Hans Maier[3]; [1]Ozyegin University; [2]Texas A&M University; [3]University of Paderborn

2:15 PM
Dwell Sensitive Fatigue of Ordered Ti-6Al-4V: *Ananthi Sankaran*[1]; Trevor Lindley[1]; David Dye[1]; [1]Imperial College

2:30 PM
Effect of Al,V,Fe,O Content on Dynamic Properties of Ti-Al-V Titanium Alloys: *Rui Liu*[1]; Song-xiao Hui[1]; Wen-jun Ye[1]; [1]General 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 Song[1]; Guangshan Hu[1]; Yang Yu[1]; Rui Liu[1]; Wenjun Ye[1]; Songxiao Hui[1]; [1]General 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 Tamirisa*[1]; Ernie Crist[1]; Pat Russo[1]; [1]RTI 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 Li*[1]; Carl Boehlert[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State Univeristy

3:45 PM
Mechanical Properties of UFG Ti-15Mo-(0.35-0.5) O: *Herbert Boeckels*[1]; Henry Rack[1]; [1]Clemson University

4:00 PM
Texture Development of Aluminum in Multilayered Ti/Al/Nb Sheets Produced by Accumulative Roll-Bonding: *Liming Zhou*[1]; Viola Acoff[1]; [1]The University of Alabama

4:15 PM
Oxidation of Titanium Alloys: *David Brice*[1]; Peyman Samimi[1]; R. Banerjee[1]; J. Cotton[2]; M. Kaufman[3]; P. Collins[1]; [1]University of North Texas; [2]Boeing; [3]Colorado 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 Joost*[1]; Sreeramamurthy Ankem[1]; [1]University of Maryland

4:45 PM
High Temperature Deformation and Microstructural Evolution of TiAlNbCrMo Alloys: *Glenn Bean*[1]; Hans Seifert[2]; Fereshteh Ebrahimi[1]; Michele Manuel[1]; [1]University of Florida; [2]Karlsruhe Institue 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 Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday PM
March 5, 2013
Room: 213B
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 Tkac[1]; Anders Ruud[1]; Inge Holden[2]; Hogne Linga[1]; [1]Primary Metal Technology; [2]Årdal Carbon

2:30 PM
Use of Mathematical Modelling to Study the Behavior of a Horizontal Anode Baking Furnace: *Yasar Kocaefe*[1]; Noura Oumarou[1]; Mounir Baiteche[1]; Duygu Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette inc.

2:55 PM
Study on Anode Baking Parameters in Open-Top and Closed-Type Ring Furnaces: *Mohsen Ameri*[1]; Borzu Baharvand[2]; Mohammad Nabi Batoei[2]; Saeb Sadeghi[2]; [1]Almahdi-Hormozal Aluminum Corporation; [2]Almahdi-hormozal Aluminum Corporation

3:20 PM
Energy Efficiency Improvement in Anode Baking Furnaces: *Cassio Linhares*[1]; [1]Alcoa

3:45 PM Break

3:55 PM
Anode Baking Process Optimization at ALRO: *Pierre Mahieu*[1]; Nicolas Fiot[1]; Arnaud Trillat[1]; Ovidiu Balu[2]; Cristian Stanescu[2]; Fabienne Virieux[3]; [1]Solios Carbone; [2]ALRO; [3]Fives Solios

4:20 PM
Operational and Environmental Benefits on the New Baking Furnace at Boyne Smelter by Use of an Advanced Firing Technology: Detlef Maiwald[1]; Domenico Di Lisa[1]; *Andreas Himmelreich*[1]; Glenn Cordon[2]; Sathya Moodley[2]; [1]Innovatherm; [2]Boyne Smelters Limited

4:45 PM
Laser Mapping of Carbon Bake Furnaces: *Ashley Tews*[1]; Michael Bosse[1]; Robert Zlot[1]; Paul Flick[1]; Meaghan Noonan[2]; [1]CSIRO; [2]Pacific 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
March 5, 2013
Room: 006C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jarek Drelich, MTU; Cong Wang, Saint Gobain

2:00 PM Introductory Comments

2:05 PM
Waste Heat Recovery Opportunities in a Magnesium Silicothermic Reduction Plant: *James Sever*[1]; [1]Nevada Clean Magnesium, Inc.

2:25 PM
Effect Of Batch Charging Equipment On Glass Furnace Efficiency: Nasim Soleimanian[1]; *Mark Jolly*[1]; [1]Cranfield University

2:45 PM
Thermodynamic Properties of ORC System with Zeotropic Mixed Working Fluids for Low Temperature Waste Heat Recovery: Xin Zhang[1]; *Hao Bai*[1]; Ning Li[1]; Mengqi Li[1]; Xinrong Zhang[1]; Hongxu Li[1]; Daqiang Cang[1]; [1]University of Science and Technology Beijing

3:05 PM
Energy Saving in a Crude Distillation Unit by a Retrofit Design of Heat Exchanger Networks: Hossein Rezaei[1]; Farhad Shahraki[1]; *Farhad Fazlollahi*[1]; Majid Sarkari[1]; [1]University 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 Haxhiaj*[1]; Egzon Haxhiaj[1]; [1]University of Prishtina

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

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
March 5, 2013
Room: Bowie C
Location: Grand Hyatt

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

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversiaet Leoben

2:00 PM Invited
Time and Temperature Dependent Mechanical Properties of Materials at Nanometer Length Scale: *Syed Asif Syed Amanulla*[1]; Jeremiah Vieregge[1]; Richard Nay[1]; [1]Hysitron Inc.

2:20 PM Invited
High Temperature Mechanical Behaviour of Nanoscale Multilayers: *Jon Molina-Aldareguia*[1]; Saeid Lotfian[1]; Miguel Monclus[1]; Javier Llorca[1]; Nikhilesh Chawla[2]; Irene Beyerlein[3]; Nathan Mara[3]; [1]IMDEA Materials Institute; [2]Arizona State University; [3]LANL

2:40 PM Invited
Elastic and Plastic Properties of Combinatorial Thin Films Determined by Nanoindentation: *Stephanie Reeh*[1]; Tetsuya Takahashi[1]; Jochen Schneider[1]; Ude Hangen[2]; [1]Materials Chemistry RWTH Aachen University; [2]Hysitron Inc.

3:00 PM Invited
Small Scale Mechanical Testing on Oxide Layers: *Peter Hosemann*[1]; Marisa Rebelo de Figueiredo[1]; David Frazer[1]; Scott Parker[1]; Kenji Kikuchi[2]; Christian Mitterer[3]; [1]UC Berkeley; [2]Ibaraki University; [3]Montanuniversitaet Leoben

3:20 PM Break

3:40 PM Invited
Novel Techniques for Measuring the Piezoelectric Properties of Thin Films with a Nanoindenter: *Esteban Broitman*[1]; Lars Hultman[1]; [1]Linköping University

4:00 PM Invited
Electric Contact Measurements during Indentation of Compliant Carbon Nanotube Turfs: *David Bahr*[1]; Anqi Qiu[1]; [1]Washington State University

4:20 PM Invited
MEMS-Enabled In-Situ Nanomechanical Testing in Electron Microscopes: *Oden Warren*[1]; Yunje Oh[1]; Zhiwei Shan[1]; Douglas Stauffer[1]; Sanjit Bhowmick[1]; Ryan Major[1]; S.A. Syed Asif[1]; [1]Hysitron, Inc.

4:40 PM Invited
Microbeam Bend Tests for Fracture and Fatigue Studies in (Pt,Ni) Al Bond Coats: *Nagamani Jaya*[1]; Kaustubh Venkatraman[1]; Vikram Jayaram[1]; Sanjay Biswas[1]; [1]Indian 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
Room: 207B
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]; [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: *Caoimhe Sweeney*[1]; Willem Vorster[2]; Sean Leen[1]; Eisaku Sakurada[3]; Peter McHugh[1]; Fionn Dunne[4]; [1]National University of Ireland, Galway; [2]Oxford University; [3]Nippon Steel Corporation; [4]Imperial College London

3:00 PM
Combining DIC and Ultrasonic Fatigue to Investigate the Very High Cycle Fatigue Behavior of Ti-6242: *Jason Geathers*[1]; J. Wayne Jones[1]; Samantha Daly[1]; [1]University of Michigan

3:20 PM Break

3:40 PM Invited
Integrating Computational Materials Engineering into Probabilistic Damage Tolerance Analysis for Component Design: *Craig McClung*[1]; Michael Enright[1]; Wei-Tsu Wu[2]; Ravi Shankar[2]; [1]Southwest Research Institute; [2]Scientific Forming Technologies Corporation

4:05 PM
Microstructurally Small Fatigue Cracking in an Al-Mg-Si Alloy: Experiments and Modeling: *Ashley Spear*[1]; S.F. Li; J. Lind; Robert Suter; Albert Cerrone[1]; Jacob Hochhalter[2]; Anthony Ingraffea[1]; [1]Cornell University; [2]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 Wen[1]; Alfonso Ngan[2]; *Tongguang Zhai*[1]; [1]University of Kentucky; [2]The University of Hong Kong

4:45 PM
High Temperature Tensile and Fatigue Deformation Behavior of Al-1wt%Mg-1.1wt%Si Alloy Hardened by New Cu-Mn based Solid Solution Phase: Kyu-Sik Kim[1]; Si-Young Sung[2]; Bum-Seok Han[2]; Jung-Cheol Park[3]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]KATECH; [3]RIST

Friction Stir Welding and Processing VII: Friction Stir Welding: High Temperature Materials II

*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
Room: Grand Ballroom C3
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 Fonda*[1]; Keith Knipling[1]; [1]Naval Research Laboratory

2:20 PM Invited
Fast Diffusers in Friction Stir Welding of Titanium Alloys: *Jennifer Wolk*[1]; Richard Everett[2]; Stephen Szpara[1]; Marc Zupan[3]; Sal Nimer[3]; [1]Naval Surface Warfare Center; [2]Naval Research Laboratory; [3]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 Buhl*[1]; Guntram Wagner[1]; Dietmar Eifler[1]; Markus Gutensohn[2]; Frank Zillekens[2]; [1]University of Kaiserslautern; [2]PFW Aerospace

3:00 PM
Microstructural Evolution in Commercially Pure Titanium Thermal Stir Welds: *Richard Fonda*[1]; Keith Knipling[1]; Adam Pilchak[2]; [1]Naval Research Laboratory; [2]Air Force Research Laboratory

3:20 PM
Longitudinal and Transverse Microsample Characterization of Friction Stir Welded Ti-5111: *Salahudin Nimer*[1]; Jennifer Wolk[2]; Richard Everett[3]; Marc Zupan[1]; [1]University of Maryland Baltimore County; [2]Naval Surface Warfare Center Carderock Division; [3]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 Application: *JungHan Ryu*[1]; Hyun-Kuk park[1]; Jun-Ho Jang[1]; Ik-Hyun Oh[1]; Han-Sur Bang[2]; Hee-Seon Bang[2]; [1]Korea Institute of Industrial Technology; [2]Chosun University

4:15 PM Invited
Studies on Additive Friction Stir In-625 Coating on HY80 Steel: *Kumar Kandasamy*[1]; Liam Renaghan[1]; Zachary Morrey[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

4:35 PM
Investigation of Microstructure and Mechanical Properties of Friction Stir Lap Jointed Monel 400 and Inconel 600: *Kuk Hyun Song*[1]; Won Yong Kim[1]; Kazuhiro Nakata[2]; [1]Korea Institute of Industrial Technology; [2]Joining and Welding Research Institute

4:55 PM
Fatigue Behavior of Friction Stir Spot Welds in Lap-Shear Specimens of Dissimilar Advanced High Strength Steels: Seung-Hoon Hong[1]; Katherine Avery[1]; Jwo Pan[1]; *Tsung-Yu Pan*[2]; Zhili Feng[2]; Michael Santella[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

5:15 PM
Microstructure and Mechanical Properties of Oxide Dispersion Strengthened Copper Produced by Friction Stir Processing: *Aude Simar*[1]; Marie-Noëlle Avettand-Fènoël[2]; Rajashekhara Shabadi[2]; Roland Taillard[2]; [1]Universite catholique de Louvain; [2]Université Lille 1

5:35 PM
Mechanical Propeties and Fabrication of WC-Binderless and WC-Binder Hard Materials for Friction Stir Welding Tool Application by Rapid Sintering Method: *Hyun-Kuk Park*[1]; Jung-Han Ryu[1]; Jun-Ho Jang[1]; In-Jin Shon[2]; Ik-Hyun Oh[1]; [1]KITECH / Automotive Components Center; [2]Chonbuk National University / Division of Advanced Materials

5:50 PM
Microstructure and Mechanical Properties of FSW Lap Joint between Pure Copper and 1018 Mild Steel Using Refractory Metal Pin Tools: *Md Shamsujjoha*[1]; Bharat Jasthi[2]; Michael West[1]; Christian Widener[2]; [1]South Dakota School of Mines and Technology; [2]Arbegast Advanced Materials Processing and Joining Laboratory

6:05 PM
Effect of Tool Pin Profile on Microstructure and Mechanical Properties of Friction Stir Welded Pure Copper Joints: *Hamid Khodaverdizadeh*[1]; Akbar Heidarzadeh[1]; Abbas Mahmoudi[1]; [1]Sahand University of Technology

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; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Tuesday PM
March 5, 2013

Room: Lone Star Salon F
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 Gourlay*[1]; Tomoya Nagira[2]; Catherine O'Sullivan[1]; Hideyuki Yasuda[2]; [1]Imperial College London; [2]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 Reinhart*[1]; Henri Nguyen-Thi[1]; Nathalie Mangelinck-Noël[2]; Bernard Billia[2]; [1]IM2NP - Aix-Marseille Univ; [2]IM2NP - CNRS

3:00 PM
The Influence of Thermo-Solutal Convection on Freckle Formation and Dendritic Growth: *Natalia Shevchenko*[1]; Stephan Boden[1]; Gunter Gerbeth[1]; Sven Eckert[1]; [1]Helmholtz-Zentrum Dresden-Rossendorf

3:20 PM
Dynamic In-Situ Imaging during Al-Cu Alloy Solidification: *Joseph McKeown*[1]; Andreas Kulovits[2]; Thomas LaGrange[1]; Bryan Reed[1]; Jörg Wiezorek[2]; Geoffrey Campbell[1]; [1]Lawrence Livermore National Laboratory; [2]University of Pittsburgh

3:40 PM Break

3:50 PM
A Newly Designed Experiment for High-Pressure Solidification of Transparent Materials: *Severine Boyer*[1]; Charles-Andre Gandin[2]; Jean-Marc Haudin[3]; [1]CNRS/ISAE-ENSMA; [2]CNRS/MINES ParisTech; [3]MINES ParisTech

4:10 PM Invited
Experimental Aspects of Microstructure Formation during Solidification Transients: *Ulrike Hecht*[1]; Victor Witusiewicz[1]; Anne Drevermann[1]; Gerhard Zimmermann[1]; [1]Access e.V.

4:40 PM
Anisotropy Effects in Al-Zn Alloys Revealed by X-Ray Tomographic Microscopy and Phase-Field Simulation: *Paolo Di Napoli*[1]; Jonathan Dantzig[2]; Jonathan Friedli[1]; Julie Fife[3]; Michel Rappaz[1]; [1]EPFL; [2]University of Illinois at Urbana-Champaign; [3]Paul Scherrer Institut

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 Bergeon[1]; *Liang Chen*[1]; Bernard Billia[1]; Rohit Trivedi[2]; Damien Tourret[3]; Alain Karma[3]; Rahma Guérin[1]; Jean-Marc Debierre[1]; [1]IM2NP (CNRS - Aix Marseille Université); [2]Iowa State University; [3]Northeastern University

5:20 PM
Quasi-Periodic Recalescence Behaviour in Undercooled Eutectic Alloys: *Andrew Mullis*[1]; Caroline Clopet[1]; Robert Cochrane[1]; [1]University of Leeds

5:40 PM
Dendritic Growth Velocities in Undercooled Melts of B20-Type Intermetallic Compounds: *Jianrong Gao*[1]; Lianghua Zhang[1]; Chao Yang[1]; [1]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
March 5, 2013

Room: 006D
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 Herrmann*[1]; Brian Westphal[1]; Guy Fredrickson[1]; Sung Bin Park[2]; Si Hyung Kim[2]; [1]Idaho National Laboratory; [2]Korea Atomic Energy Research Institute

2:30 PM
Purity of Uranium Product from Electrochemical Recycling of Used Metallic Fuel: *Ken Marsden*[1]; Brian Westphal[1]; Mike Patterson[1]; Batric Pesic[1]; [1]Idaho National Laboratory

3:00 PM
Assessment of Mass Balance of the Electrorefining System for Spent LWR Nuclear Fuel Cycle: *Sungbin Park*[1]; Jeong-Guk Kim[1]; Sung-jai Lee[1]; Hansoo Lee[1]; [1]Korea Atomic Energy Research Institute

3:30 PM Break

3:50 PM
Electrochemical Impedance Spectroscopy of Uranium Chloride in Molten LiCl-KCl Eutectic: *Kerry Allahar*[1]; Michael Shaltry[1]; Mark Orazem[2]; Darryl Butt[1]; Supathorn Phongikaroon[3]; Michael Simpson[4]; [1]Center for Advanced Energy Studies; [2]University of Florida; [3]University of Idaho; [4]Idaho National Laboratory

4:20 PM
Electrochemical Studies and Analysis of Uranium Chloride in Molten LiCl-KCl Eutectic: Robert Hoover[1]; Michael Shaltry[1]; *Supathorn Phongikaroon*[1]; Sean Martin[2]; Kumar Sridharan[2]; Michael Simpson[3]; [1]University of Idaho; [2]University of Wisconsin-Madison; [3]Idaho National Laboratory

4:50 PM
Electrochemistry of LiCl-Li_2O-H_2O Molten Salt Systems: *Natalie Gese*[1]; Batric Pesic[2]; [1]Idaho National Laboratory; [2]Department of Chemical & Materials Engineering

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Materials Genome Approaches II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Tuesday PM
March 5, 2013
Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Vidvuds Ozolins, UCLA; Richard Hennig, Cornell

2:00 PM Invited
Adaptive Genetic Algorithm Method for Crystal Structure Prediction: *Kai Ming Ho*[1]; Manh Cuong Nguyen[1]; Xin Zhao[1]; Feng Zhang[1]; Ian McBrearty[1]; Shunqing Wu[2]; Min Ji[1]; Cai Zhuang Wang[1]; [1]Iowa State University; [2]Xiamen University

2:30 PM Invited
Solving the Global Space-Group Optimization Problem by Evolutionary Algorithms: *Giancarlo Trimarchi*[1]; [1]Northwestern University

3:00 PM Invited
High-Temperature/High-Strength Intermetallic Compounds – Property Correlations and Systematics: *John R. Rodgers*[1]; [1]Innovative Materials Technologies

3:30 PM Break

3:50 PM Invited
Atomistic Calculations of Thermodynamic and Electronic Structure Properties in Chemical Compound Space: *O. Anatole von Lilienfeld*[1]; [1]Argonne National Laboratory

4:20 PM Invited
High-throughput Approach for Predicting Thermodynamic Stability of Solids: *Vladan Stevanovic*[1]; [1]National Renewable Energy Laboratory

4:50 PM Invited
The Quest for Descriptors in High-Throughput Searches: Robustness and Fragility of Topological Insulators: *Stefano Curtarolo*[1]; Kesong Yang[1]; Shidong Wang[1]; Marco Buongiorno Nardelli[1]; [1]Duke University

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

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

Session Chairs: Charles Randow, U.S. Army Research Laboratory; Mark Pankow, North Carolina State University

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

2:20 PM
Optimal Topology for 3D Woven Lattice Materials: *Seung-Hyun Ha*[1]; Yong Zhang[1]; Longyu Zhao[1]; Keith Sharp[1]; Timothy Weihs[1]; Kevin Hemker[1]; James Guest[1]; [1]Johns Hopkins University

2:40 PM
Transient Analysis of Thermo-Mechanical Loads and Elastic Behaviour of Double Contact Functionally Graded Brake Disks with Temperature-Dependent Material Properties: *Ramesh Kumar Lalwani*[1]; [1]DBIT

3:00 PM
Micromechanical Investigation of Impact on Fluid-Filled Auxetic and Honeycomb Aluminum Cores: *Ryan Karkkainen*[1]; Jerome Tzeng[1]; [1]U.S. Army Research Laboratory

3:20 PM
Application of ALE3D in Modeling Mechanical Properties of Freeze Cast Components: *John Densmore*[1]; Albert Nichols[1]; Rose McCallen[1]; Octavio Cervantes[1]; Alexander Gash[1]; John Molitoris[1]; Luke Brewer[2]; Joseph Hooper[2]; [1]Lawrence Livermore National Laboratory; [2]Naval Postgraduate School

3:40 PM Break

3:55 PM
Modeling and Simulation of the Failure Mechanism of Ceramics during Low Velocity Impact Used in Protective Systems: *Costas Fountzoulas*[1]; Raymond Brennan[1]; [1]U.S. Army Research Laboratory

4:15 PM
Multilength Scale Characterization of Additively Manufactured Hybrid Nickel-Copper Fused Deposition Model Sandwich Cores: *Steven Storck*[1]; Marc Zupan[1]; [1]UMBC

4:35 PM
Mechanical Properties and Failure Mechanisms in Microtruss Materials With Nanocrystalline Hollow Struts: Eral Bele[1]; *Chandra Veer Singh*[1]; Glenn Hibbard[1]; [1]University of Toronto

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
March 5, 2013
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
March 5, 2013
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 Ardelean*[1]; Antoine Seyeux[1]; Sandrine Zanna[1]; Philippe Marcus[1]; Sophie Pettier[2]; Nathalie Le Pottier[2]; Daniel Lecuru[2]; [1]LPCS UMR 7045 Chimie Paristech; [2]Eurocopter Marignane

2:20 PM
Galvanic Corrosion of Mg-Zr Alloy and Steel or Graphite in Mineral Binders: *David Lambertin*[1]; Adrien Rooses[1]; Fabien Frizon[1]; [1]CEA/DEN

2:40 PM
The Influence of Mg-Zr Master Alloy Microstructure on the Corrosion of Mg: *Darren Gandel*[1]; Mark Easton[2]; Nick Birbilis[1]; Mark Gibson[3]; Trevor Abbott[4]; [1]Monash University; [2]CAST CRC; [3]CSIRO; [4]Magontec Ltd

3:00 PM
Corrosion of Ultrasonic Spot Weldbonds of Magnesium to Steel: *Tsung-Yu Pan*[1]; Zhili Feng[1]; Michael Santella[1]; Jian Chen[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM
A Superior Corrosion Resistant Conversion Coating for Mg-Alloys: *Xiaobo Chen*[1]; Trevor Abbott[2]; Mark Easton[1]; Nick Birbilis[1]; [1]Monash University; [2]Magontec Pty Ltd

4:00 PM
Corrosion and Adhesion Properties of Cerium-Based Conversion Coatings on Mg Alloys: *Surender Maddela*[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

4:20 PM
Corrosion Behavior of Cerium-Based Conversion Coatings on Magnesium Alloys Exposed to Ambient Conditions: *Carlos Castano*[1]; Surender Maddela[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

4:40 PM
Formation of Vanadate Conversion Coating on AZ31 Magnesium Alloy: *S. Salman*[1]; K. Kuroda[1]; M Okido[1]; [1]Nagoya University

Magnetic Materials for Energy Applications -III: MagnetoCaloric and Magnetostrictive 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
March 5, 2013
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 McHenry[1]; Huseyin Ucar[1]; David Laughlin[1]; [1]Carnegie Mellon University

2:30 PM Invited
Crystallographic Alignment Effects on the Magnetocaloric Effect of near-Ni_2MnGa Alloys: Anit Giri[1]; Brigitte Paterson[2]; Michael McLeod[3]; Cindi Dennis[2]; Bhaskar Majumdar[3]; Kyu Cho[1]; *Robert Shull*[2]; [1]U.S. Army Research Laboratory; [2]National Institute of Standards and Technology; [3]New 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 Skorvanek*[1]; Jozef Marcin[1]; Bogdan Idzikowski[2]; Piotr Gebara[3]; Piotr Pawlik[3]; [1]Institute of Experimental Physics; [2]Institute of Molecular Physics; [3]Czestochowa University of Technology

3:30 PM Break

3:40 PM Invited
Magnetostriction of Permendur: T Ren[1]; Harsh Chopra; A Lisfi[2]; Armen Khachaturyan; *Manfred Wuttig*[3]; [1]University of Maryland; [2]Morgan State University; [3]Univ of Maryland

4:10 PM Invited
Magnetization and Magnetostriction of Terfenol-D near Spin Reorientation Boundary: *Yongmei Jin*[1]; Ben Wang[1]; [1]Michigan Technological University

4:40 PM
Modeling of Magnetic and Structural Phase Transformations in Co-Ni-Al and Co-Ni-Ga Ferromagnetic Shape Memory Alloys FSMA's: *Hassan Thawabi*[1]; Navdeep Singh[1]; Raymundo Arroyave[1]; [1]Texas A&M University

5:00 PM
The Effect of Annealing on Magneto-Caloric Effect in $Ni_{43}Mn_{42}Co_4Sn_{11}$ Magnetic Shape Memory Alloys: *Nickolaus Bruno*[1]; C. Yegin[1]; I. Karaman[1]; J. Ross[1]; J. Liu[2]; [1]Texas A&M University; [2]Ningbo Institute of Material Technology and Engineering

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Fuels II

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 PM
March 5, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory

2:00 PM
Release Behavior of Silver in TRISO fuel: Comparison of Experimental Data with Predictions for the AGR-1 Irradiation Experiment: *Paul Demkowicz*[1]; Jason Harp[1]; Blaise Collin[1]; David Petti[1]; [1]Idaho National Laboratory

2:20 PM
Characterization of Irradiated of Metal Waste from the Pyrometallurgical Treatment of Used EBR-II Fuel: *Brian Westphal*[1]; Ken Marsden[1]; William McCartin[1]; Steve Frank[1]; Dennis Keiser[1]; Tae Yoo[1]; DeeEarl Vaden[1]; Dan Cummings[1]; Ken Bateman[1]; [1]Idaho National Laboratory

2:40 PM
In Situ TEM Study of Xe Implantation in U-Mo and U-Zr Alloys: *Di Yun*[1]; Marquis Kirk[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory

3:00 PM
Uranium-Zirconium Alloy Simulation by Diffusion Couple: *Daniel Koury*[1]; Andrew Conant[2]; Katie Cook[2]; Gerald Egeland[1]; [1]Harry Reid Center, University of Nevada - Las Vegas; [2]Georgia Institute of Technology

3:20 PM
Investigation of Freeze-Cast Scaffolds as an Advanced Reactor Fuel Form: *Clarissa Yablinsky*[1]; Philipp Hunger[2]; Amanda Lang[1]; Shih-Feng Chou[2]; Thomas Gage[1]; Ulrike Wegst[2]; Todd Allen[1]; [1]University of Wisconsin; [2]Dartmouth College

3:40 PM Break

4:00 PM
Interaction of Cd with Ce and Nd in Nuclear Fuel Recycling: Thermochemistry and Phase Equilibria: Barbara Skolyszewska-Kühberger[1]; Rajesh Ganesan[2]; *Herbert Ipser*[1]; [1]University of Vienna; [2]Indira Gandhi Centre for Atomic Research

4:20 PM
Phase Equilibria in the Systems Cd-Pr and Cd-Gd Relevant for Recycling of Nuclear Fuels: *Thomas Reichmann*[1]; Rajesh Ganesan[2]; Herbert Ipser[1]; [1]University of Vienna; [2]Indira Gandhi Centre for Atomic Research

4:40 PM
Evolution of U-Mo Alloy Microstructures During Irradiation: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Jian Gan[1]; Brandon Miller[1]; Adam Robinson[1]; Pavel Medvedev[1]; [1]Idaho National Laboratory

5:00 PM
Interdiffusion between Uranium and Iron: *Assel Aitkaliyeva*[1]; Chao-Chen Wei[2]; Di Chen[2]; Bulent Sencer[1]; J. Kennedy[1]; Lin Shao[2]; [1]Idaho National Laboratory; [2]Texas A&M University

Materials Processing Fundamentals: Metallurgy of Non-Ferrous 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 PM
March 5, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Antoine Allanore, Massachusetts Institute of Technology

2:00 PM
Annealing of Oxide Dispersion Strengthened Alloys Consolidated by Spark Plasma Sintering: *Kerry Allahar*[1]; Jatuporn Burns[1]; Brian Jaques[2]; Y.Q. Wu[1]; Indrajit Charit[3]; Darryl Butt[1]; James Cole[4]; [1]Center for Advanced Energy Studies; [2]Boise State University; [3]University of Idaho; [4]Idaho National Laboratory

2:20 PM
Corrosion Resistance of Zn-Sn Alloys Horizontally Directionally Solidified: Claudia Mendez[1]; Miriam Parra[1]; *Carlos Schvezov*[2]; Alicia Ares[2]; [1]FCEQyN-UNaM; [2]CONICET/FCEQyN-UNaM

2:40 PM
Controlling Plasticity in Nanometer-Scale Accumulative Roll Bonded Cu/Nb Lamellar Composites through Processing Conditions: *John Carpenter*[1]; Rodney McCabe[1]; Sven Vogel[1]; Shijian Zheng[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

3:00 PM
High Speed Twin Roll Casting of Al-33 wt. % Cu Strips with Layered Structure -Inspired by Mathematical Modeling: *Seshadev Sahoo*[1]; Sudipto Ghosh[1]; [1]IIT Kharagpur

3:20 PM
Lorentz Force Velocimetry (LFV) Based on an Electromagnet System: *Fatoumata Santara*[1]; André Thess[1]; [1]Institute of Thermodynamics and Fluid Mechanics/Ilmenau University of Technology

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[1]; Akshay Dvivedi[1]; *Pradeep Kumar*[1]; [1]Indian Institute of Technology Roorkee

4:10 PM
Multicriteria Optimization of Rotary Tool Electric Discharge Machining on Metal Matrix Composite: Manjot Cheema[1]; *Akshay Dvivedi*[1]; Apurbba Sharma[1]; Sudeep Biswas[1]; [1]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*[1]; Marco Starink[1]; Nong Gao[1]; [1]University of Southampton

4:50 PM
Characterization of Pore Formation in A356 Alloy with Different Oxide Levels during Directional Solidification: *Hengcheng Liao*[1]; Wan Song[1]; Qigui Wang[2]; [1]Southeast University; [2]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
March 5, 2013
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*[1]; Thomas Garnier[1]; [1]CEA

2:30 PM
An Atomistic Toolkit for the Calculation of Free Energy Functions of Materials: *Daniel Schwen*[1]; Enrique Martinez[1]; Alfredo Caro[1]; [1]Los Alamos National Laboratory

2:50 PM Invited
Multiscale Modeling of He Effects on Microstructure Evolution in Alpha-Fe: *Fei Gao*[1]; Li Yang[2]; Shenyang Hu[1]; Howard Heinisch[1]; Richard Kurtz[1]; [1]Pacific Northwest National Laboratory; [2]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*[1]; Emmanuel Clouet[1]; [1]CEA Saclay DEN/DMN/SRMP

4:00 PM Invited
Mesoscopic Modeling of Dislocation-Defect Interactions and Flow Localization in Irradiated BCC Metals: Anirban Patra[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

4:30 PM
Microstructure and Defect Disorder in UO_2: *Abdel-Rahman Hassan*[1]; Jianguo Yu[2]; Anter El-Azab[1]; [1]Purdue University; [2]Idaho National Laboratory

4:50 PM
A Continuum Model for Dynamics of Dislocation Arrays and Applications to Low Angle Grain Boundaries: *Yang Xiang*[1]; Xiaohong Zhu[2]; Shuyang Dai[1]; [1]Hong Kong University of Science and Technology; [2]Jinan University

5:10 PM
Hydrogen-Dislocation Interactions and Cross-Slip Inhibition in FCC Ni: Yizhe Tang[1]; Satish Rao[2]; *Jaafar El-Awady*[1]; [1]Johns Hopkins University; [2]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
March 5, 2013
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*[1]; Colin English[1]; Paul Styman[2]; Keith Wilford[3]; [1]National Nuclear Laboratory; [2]Oxford University; [3]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[1]; *Bertrand Radiguet*[1]; Philippe Pareige[1]; Yves Serruys[2]; [1]GPM UMR CNRS 6634 - Université et INSA de Rouen; [2]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*[1]; Jonathan Hyde[1]; Sergio Lozano-Perez[1]; Keith Wilford[2]; Chris Grovenor[1]; [1]The University of Oxford; [2]Rolls Royce

3:10 PM
Ni-Si-Mn Dominated Late Blooming Phases in RPV Steels at High Fluence and Flux: *Peter Wells*[1]; G. Odette[1]; Nicholas Cunningham[1]; Tim Milot[1]; Yuan Wu[1]; Takuya Yamamoto[1]; Doug Klingensmith[1]; James Cole[2]; Brandon Miller[2]; [1]UC Santa Barbara; [2]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*[1]; Akira Kuramoto[1]; Yasuko Nozawa[1]; Yoshitaka Matsukawa[1]; Masayuki Hasegawa[1]; Matti Valo[2]; Yasuyoshi Nagai[1]; [1]Tohoku University; [2]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 Yamamoto*[1]; Takeshi Toyama[2]; Peter Wells[1]; Akira Kuramoto[2]; Yasuyoshi Nagai[2]; G. Robert Odette[1]; [1]Univ. California Santa Barbara; [2]Tohoku University

4:20 PM
APT Characterizations of High Nickel, Low Copper Welds from the Ringhals Surveillance Program: *Michael Miller*[1]; Randy Nanstad[1]; [1]Oak 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 Nagai*[1]; Yuta Kakubo[1]; Tomoaki Takeuchi[2]; Yoshitaka Matsukawa[1]; Takeshi Toyama[1]; Jun Kameda[1]; Yutaka Nishiyama[2]; Jinya Katsuyama[2]; Kunio Onizawa[2]; [1]Tohoku University; [2]JAEA

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 Vessel Steels: *Yoshi Matsukawa*[1]; Tomoaki Takeuchi[2]; Yuta Kakubo[1]; Naoki Ebisawa[1]; Yasuko Nozawa[1]; Takeshi Toyama[1]; Yoshihito Yamaguchi[2]; Jinya Katsuyama[2]; Yutaka Nishiyama[2]; Yasuyoshi Nagai[1]; [1]Tohoku University; [2]Japan Atomic Energy Agency

5:20 PM
Neutron Irradiation Effect on ECAP'ed Steel: *Ahmad Alsabbagh*[1]; Ruslan Valiev[2]; K. Murty[1]; [1]North Carolina State University; [2]Ufa 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 Garner*[1]; Victor Voyevodin[2]; Mychailo Toloczko[3]; Stuart Maloy[4]; Valery Pechenkin[5]; [1]Radiation Effects Consulting; [2]Kharkov Institute of Physics and Technology; [3]Pacific Northwest National Laboratory; [4]Los Alamos National Laboratory; [5]Institute of Physics and Power Engineering

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Interfaces at Low Length Scales

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Tuesday PM
March 5, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Irene Beyerlein, Los Alamos National Laboratory; Stephen Foiles, Sandia National Laboratories

2:00 PM Invited
3D Grain Boundary Networks for Integrated Computational Materials Engineering: *Alexis Lewis*[1]; David Rowenhorst[1]; [1]Naval Research Laboratory

2:30 PM
Study of the Relationships between Local Stress State and Slip Activity in Heterogeneous Deformation of Polycrystalline Ti-5Al-2.5Sn with CPFE Simulation: *Chen Zhang*[1]; Hongmei Li[1]; Philip Eisenlohr[2]; Thomas Bieler[1]; Martin Crimp[1]; Carl Boehlert[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung

2:50 PM Invited
Multi-Scale Model for Bi-Metal Interface Evolution: *Irene Beyerlein*[1]; Jason Mayeur[1]; Curt Bronkhorst[1]; Nathan Mara[1]; Jian Wang[1]; Hashem Mourad[1]; [1]Los Alamos National Laboratory

3:20 PM
Interface Controlled Plastic Flow Modeled by Strain Gradient Plasticity Theory: *Thomas Pardoen*[1]; Thierry Massart[2]; [1]UCL; [2]ULB

3:40 PM Break

3:50 PM
Deformation Twinning in Cu/Nb Nanolamellar Composites Fabricated by Accumulative Roll Bonding (ARB) Measured Using Electron Backscatter Diffraction(EBSD): *Rodney McCabe*[1]; John Carpenter[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

4:10 PM Invited
A Predictive Model for Microstructure Evolution in Metallic Multilayers with Immiscible Constituents: *Yao Shen*[1]; Haibo Wan[1]; Xuejun Jin[1]; Jian Wang[2]; [1]Shanghai Jiao Tong University; [2]Los Alamos National Laboratory

4:40 PM Invited
Experimental Observations of the Interactions between Dislocations and Twin Boundaries in Nanocrystalline Face-Centred Cubic Metallic Materials: Yang Cao[1]; Song Ni[1]; Yanbo Wang[1]; *Xiaozhou Liao*[1]; [1]The University of Sydney

5:10 PM
Surface Groove Induced Strain Relaxation and Strengthening of Fivefold-Twinned Silver Nanowire: *Chuang Deng*[1]; [1]University of Manitoba

5:30 PM Invited
Molecular Dynamics Simulation of Grain Growth and Plastic Deformation during Surface Indentation of Nanocrystalline Nickel: Garritt Tucker[1]; *Stephen Foiles*[1]; [1]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; Mei Li, Ford Motor Company

Tuesday PM
March 5, 2013
Room: 216
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*[1]; Christopher Weinberger[1]; Corbett Battaile[1]; Thomas Buchheit[1]; [1]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[1]; *Zhiqiang Han*[1]; Alan Luo[2]; Anil Sachdev[2]; Baicheng Liu[1]; [1]Tsinghua University; [2]General Motors Global Research and Development Center

3:05 PM
Parametric Study of a Cellular Automata Recrystallization Model: *David Rule*[1]; Jon Madison[2]; Veena Tikare[2]; Liz Holm[2]; [1]University of Florida; [2]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*[1]; Mark Jolly[1]; Xiaojun Dai[1]; Carl Reilly[2]; [1]Cranfield University; [2]The University of British Columbia

4:15 PM
Simulation of Electromagnetic Vibration on the Inclusions Agglomeration Behavior in Aluminum Melt: *Leyuan Qiu*[1]; Qiulin Li[2]; Wei Liu[2]; [1]Tsinghua University, China; [2]Tsinghua University

4:35 PM
Predicting the Rate of Dislocation Cross Slip: *Wei Cai*[1]; Jie Yin[1]; [1]Stanford University

4:55 PM
Simulation of Microstructural Morphology Evolution of Ni-45wt.%Mo Droplets during Rapid Solidification Process: *Ma Jie*[1]; Zhang Jie-Yu[2]; Zhao Shun-Li[3]; Zhao Jian[2]; [1]Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; [2]Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; [3]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*[1]; Arun Srinivasa[1]; Zu Sung[2]; Peter Lee[2]; Karl Hartwig[1]; [1]Texas A&M university; [2]National High Magnetic Field Laboratory

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors 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
March 5, 2013
Room: 007B
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*[1]; Maowen Xu; Jie Song; Yuhao Lu; John Goodenough; [1]Univ of Texas at Austin

2:20 PM Invited
New Type of Nanostructured Battery Electrode Materials: *Robert Huggins*[1]; [1]Stanford University

2:40 PM Invited
Multiple-Stripe Lithiation of Individual SnO2 Nanowires: *Scott Mao*[1]; Jianyu Huang[2]; Li Zhong[1]; [1]Department of Mechanical Engineering and Materials Science, Univ. of Pittsburgh; [2]Center for Integrated Nanotechnologies, Sandia National Laboratories

3:00 PM Invited
High Energy Density Lithium Capacitors Using Carbon-Carbon Electrodes: *Jim Zheng*[1]; Wanjun Cao[1]; [1]Florida State University

3:20 PM Invited
In Situ and In Operando Studies of High Capacity Cathodes: *Jason Graetz*[1]; Sung-Wook Kim[2]; Feng Wang[1]; Xiaoya Wang[2]; [1]Brookhaven National Laboratory; [2]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*[1]; Amy Marschilok[1]; Kenneth Takeuchi[1]; [1]Stony Brook University

4:20 PM Invited
Nanostructured Vanadium Pentoxides as Cathodes for Lithium-Ion Batteries: *Guozhong Cao*[1]; [1]University of Washington

4:40 PM Invited
Light-Metal Hydrides as Novel Conversion Mateirals for Li-ion Battery Anodes: *Eric Majzoub*[1]; Tim Mason[1]; Alyssa McFarlane[1]; [1]University of Missouri - St. Louis

5:00 PM Invited
Pressure-Gradient Dependent Diffusion and Crack Propagation in Lithiated Silicon Nanowires: *Vivek Shenoy*[1]; [1]University of Pennsylvania

5:20 PM Invited
Ultrathin Multifunctional Surface Coatings for Lithium Ion Batteries: *Xingcheng Xiao*[1]; [1]General Motors Global R&D Center

5:40 PM Invited
Laser Created Nanostructured Aluminum Current Collector for Supercapacitor Applications: *Dongfang Yang*[1]; [1]National Research Council Canada

6:00 PM
Cyclability Study of Si/TiN/C Composite Anode with High Rate Capability for Lithium-Ion Batteries: *Jiguo Tu*[1]; Shuqiang Jiao[1]; Jungang Hou[1]; Hongmin Zhu[1]; [1]University 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
March 5, 2013
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 Groma*[1]; Peter Ispanovity[1]; Daniel Tuzes[1]; [1]Eotvos University Budapest

2:25 PM Invited
High-Resolution EBSD and X-Ray Diffraction Analysis of Dislocation Structures in Deformed Copper Single Crystals: Claire Maurice[1]; *Andras Borbely*[1]; [1]Ecole des Mines de Saint-Etienne

2:45 PM Invited
Characterisation of Deformation Induced Microstructures by In-Situ X-ray Synchrotron Bragg Profile Analysis: *Erhard Schafler*[1]; Michael Kerber[1]; Roman Schuster[1]; Florian Spieckermann[1]; Harald Wilhelm[1]; Gerald Polt[1]; Sigrid Bernstorff[1]; Michael Zehetbauer[1]; Tamas Ungar[2]; [1]University of Vienna, Faculty of Physics; [2]Eötvös 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 Pantleon*[1]; [1]Technical 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 Bourlot*[1]; Olivier Castelnau[2]; Brigitte Bacroix[1]; Damien Faurie[1]; [1]LSPM, Univ. Paris Nord; [2]PIMM-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 Tome*[1]; Levente Balogh[1]; Laurent Capolungo[2]; Anand Kanjarla[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory; [2]Georgia Institute of Technology

4:15 PM Invited
Phenomenological and Physically Based Approaches to Line-Broadening Analysis: *Davor Balzar*[1]; [1]University of Denver

4:35 PM Invited
The Role of Orientation Factors in XRD Analysis of Microstructure: *Radomir Kuzel*[1]; [1]Charles 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 Zehetbauer*[1]; Erhard Schafler[1]; Michael Kerber[1]; [1]University of Vienna

5:15 PM Invited
Texture Evolution in NiAl Deformed by High Pressure Torsion Studied with Synchrotron Radiation: *Werner Skrotzki*[1]; Christine Traenkner[1]; Robert Chulist[1]; Benoit Beausir[2]; Thomas Lippmann[3]; Jelena Horky[4]; Michael Zehetbauer[4]; [1]TU Dresden; [2]Univ. Metz; [3]Helmholtz-Zentrum Geesthacht; [4]Univ. Wien

5:35 PM Invited
Development of the Dislocation Structure of Ferritic Steel during Quenching, Cold Rolling and Annealing: *Peter Szabó*[1]; [1]Budapest University of Technology and Economics

5:55 PM Invited
Application of Line Profile Analysis for the Study of Dislocations in Deep Earth Minerals: *Sebastien Merkel*[1]; Carole Nisr[1]; Gábor Ribárik[2]; Tamás Ungár[2]; Gavin Vaughan[3]; Patrick Cordier[1]; [1]Universite Lille 1; [2]Eötvös University; [3]ESRF

6:15 PM
Microstructure of B2 CoTi and CoZr Determined by 3D X-Ray Diffraction: *Gabor Ribarik*[1]; Tamas Ungar[1]; Levente Balogh[2]; Rupalee Mulay[3]; Sean Agnew[3]; Ulrich Lienert[4]; [1]Eotvos Lorand University, Institute of Physics, Budapest, Hungary; [2]Materials Science and Technology Division, Los Alamos National Laboratory; [3]Materials Science and Engineering, University of Virginia; [4]DESY Photon Science, Deutsches Elektronen-Synchroton

Ni-Co 2013: Pyrometallurgy - Solid-State Processing

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday PM
March 5, 2013
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 Adham*[1]; [1]Hatch Ltd.

2:25 PM
Direct Reduction of Transition Metal (Ni, Co, Cr) Oxides with Carbon in the Presence of Calcium Sulphate: *Animesh Jha*[1]; Yotamu Hara[1]; [1]University of Leeds

2:50 PM
Fe and Ni Enriched and Concentrated from Laterite by Coal Base Pre Reduction Followed with Magnetic Separation: *Hongxu Li*[1]; Yu Chen[1]; Chao Wu[1]; Peng Zhang[1]; Chao Li[1]; [1]University of Science and Technology

3:10 PM
Effect of Refractory Materials on Preparation of Ferronickel Nugget by Rotary Hearth Furnace: Donghai Li[1]; Cheng Pan[1]; *Xuewei Lv*[1]; Enguang Guo[1]; Pan Chen[1]; [1]Chongqing University

3:35 PM Break

3:55 PM
Experimental Study on Reduction-Magnetic Separation Process of Low-Grade Nickel Laterite Ore: Fatao Chen[1]; Bo Zhang[1]; Wencai Li[1]; Qiang Wang[1]; Xin Hong[1]; [1]Shanghai University

4:20 PM
New Route for Nano-Structured Ni-Co Alloy Preparation: D. de Macedo; *Eduardo Brocchi*[1]; F. Moura; [1]PUC-Rio

4:40 PM
Solid State Selective Reduction of Nickel from Nickel Laterite Ores: Manuel Zamolla; *Nagendra Tripathi*[1]; [1]Koniambo Nickel SAS

5:00 PM
State of the Art Refractory Corrosion Test Work for the Nonferrous Metals Industry: *Dean Gregurek*[1]; Angelika Ressler; Viktoria Reiter[1]; Anna Franzkowiak[1]; Alfred Spanring[1]; Bob Drew[1]; Dayle Flynn[1]; [1]RHI AG

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
March 5, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Eugene Olevsky, San Diego State University; Young Do Kim, Hanyang University

2:00 PM Keynote
Nanostructured Materials Based on Powder Metallurgy Route: *Bernd Kieback*[1]; Thomas Weissgaerber[2]; Thomas Schubert[2]; Lars Röntzsch[2]; [1]Technische Universitaet Dresden; [2]Fraunhofer Institute for Manufacturing and Advanced Materials IFAM

2:40 PM
Consolidation of Nanocrystalline Si by Shock Waves: *Nikoloz Chikhradze*[1]; Akaki Gigineishvili[2]; Mikheil Chikhradze[2]; Bagrat Godibadze[1]; [1]Mining Institute/Georgian Technical University; [2]Georgian Technical University

3:00 PM
Synthesis and Properties of Amorphous and Nanocrystalline W-Based Alloys and Composites: *Steven Livers*[1]; Megan Beck[1]; Kosette Leperi[1]; Zachary Cordero[2]; Hyon-Jee Voigt[2]; Emily Huskins[3]; Daniel Casem[4]; Brian Schuster[3]; Lee Magness[3]; Michael Hurley[1]; Christopher Schuh[2]; Megan Frary[1]; [1]Boise State University; [2]Massachusetts Institute of Technology; [3]Army Research Laboratory; [4]Army Research Laboratory

3:20 PM Break

3:40 PM Invited
New Class of High Strength Nanostructured Steel for Large Scale Industrial Components: *Daniel Branagan*[1]; Jason Walleser[1]; Brian Merkle[1]; Patrick Mack[1]; Alla Sergueeva[1]; Brian Meacham[1]; [1]The NanoSteel Company

4:10 PM Invited
Bulk Nanostructured Materials from Consolidation of Particles by Severe Plastic Deformation: Understanding and Opportunities: *K. Xia*[1]; [1]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 Machining Chips: *Jiamiao Liang*[1]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University

5:00 PM
Microstructural Characterization of a Powder-Processed Quasicrystal-Reinforced Al-Cr-Mn-Co-Zr Alloy: *Mauricio Gordillo*[1]; Iuliana Cernatescu[2]; Thomas Watson[2]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt and Whitney Aircraft

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: Nikhilesh 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
March 5, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Evaluation of Impact Property of Low-Melting-Point Solder Joints on Cu Pad: *Hiroshi Nishikawa*[1]; Terumasa Yamamoto[1]; [1]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*[1]; Jenq-Gong Duh[1]; [1]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 Xolders: *José Spinelli*[1]; Amauri Garcia[2]; [1]Federal University of São Carlos; [2]University of Campinas

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 Lee*[1]; Choong-Un Kim[2]; Thomas Bieler[3]; [1]Cisco Systems; [2]University of Texas, Arlington; [3]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: *Huili Xu*[1]; Choong-Un Kim[1]; Tae-Kyu Lee[2]; [1]University of Texas at Arlington; [2]Cisco

4:00 PM
A Microstructurally Adaptive Composite Model for Steady State Creep of Two-phase Sn-Ag-Cu based Solders: *Babak Talebanpour*[1]; Uttara Sahaym[1]; Praveen Kumar[2]; Indranath Dutta[1]; [1]Washington State University; [2]Indian Institute of Sciences

4:20 PM
Study on Solder Grain Orientation and Texture Effect on the Mechanical Reliability: Fay Hua[1]; *K. Lee*[1]; [1]Intel 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 Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

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

Session Chairs: Shih-Kang Lin, National Cheng Kung University; Jae-Ho Lee, Hongik University

2:00 PM Invited
Synthesis, Characterization and Applications of Cu, Cu_2O and CuO Nanoparticles: *Hyuck Mo Lee*[1]; Chung Seok Choi[1]; Na Rae Kim[1]; Yun Hwan Jo[1]; Inyu Jung[1]; [1]KAIST

2:20 PM
Effects of Bath Conditions and Operating Parameters on Electroless Nickel-Iron Alloy Plating for Microelectronic Applications: Myung-Won Jung[1]; *Jae-Ho Lee*[1]; Sung Kang[2]; [1]Hongik University; [2]IBM Watson Research Center

2:35 PM
Influence of Bath Composition and Operating Parameters on the Composition of Ni-Fe Alloy Deposits: Ju-Hwan Kim[1]; Ho-Kyung Um[2]; Tai-Hong Yim[3]; Ildong Choi[4]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Institute of Industrial Technology; [3]Korea Institute of Industrial Technology; [4]Korea Maritime University

2:50 PM
Evaluating the Stability of Barrierless Cu-Alloy Film as a Buffer Layer in Microelectronic Devices: *Chon-Hsin Lin*[1]; [1]Asia-Pacific Institute of Creativity

3:05 PM
Study of Wetting Behavior of Gold-Tin Solder on the Gold, Silver Bi-Layer: *Yu-Jin Hu*[1]; [1]National Central University

3:20 PM
Synthesis and Characterization of Sn/SnO_2 Coated Multi-Walled Carbon Nanotubes: *Chien-I Lin*[1]; Mohanty Udit Surya[1]; Kwang-Lung Lin[1]; [1]National 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: *Jau-Shiung Fang*[1]; Wu-Jia Su[1]; Meng-Shuo Huang[1]; Tsung-Shune Chin[2]; [1]National Formosa University; [2]Feng Chia University

4:10 PM
Preparation of AgCu Alloy Nanoparticles Using Thermal Decomposition Process for the Printed Electronics: Na Rae Kim[1]; Inyu Jung[1]; Yun Hwan Jo[2]; *Hyuck Mo Lee*[1]; [1]KAIST; [2]Samsung Display

4:25 PM
Optical Properties of Al_xO_y/Ni/Al_xO_y Multilayer Absorber Coatings Prepared by Reactive Magnetron Sputtering: *Ting-Kan Tsai*[1]; Shun-Jen Hsueh[1]; Jau-Shiun Fang[1]; [1]Nation Formosa University

4:40 PM
Electron Transport and Magnetic Performance of Ni-Nb-Zr Metallic Glass: Haibing Wang[1]; *Jin Chen*[1]; Chuang Dong[1]; Chonglin Chen[2]; [1]Dalian Univ of Technology; [2]University of Texas at San Antonio

4:55 PM
The Preparation and Properties of Hexadecanoic Acid/Polyaniline Phase Change Materials: *Zhang Ling*[1]; Zhu Furong[1]; Zeng Julan[1]; Zheng Shuanghao[1]; Yan Wenpei[1]; Deng Guangrong[1]; [1]Changsha University of Science and Technology

5:10 PM
Investigation of GaN Nucleation on Various Powder Compounds through Hydride Vapor Phase Epitaxy: Seongki Hong[1]; *Hyo-Jong Lee*[1]; Jun-Seok Ha[2]; Soon-Ku Hong[3]; Seog Woo Lee[4]; Meoung Whan Cho[4]; Takafumi Yao[4]; [1]Dong-A University; [2]Chonnam National University; [3]Chungnam National University; [4]Tohoku University

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

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
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
March 5, 2013
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-Ce-Mn Alloy: *Mauricio Gordillo*[1]; Iuliana Cernatescu[2]; Thomas Watson[2]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt and Whitney Aircraft

2:20 PM
Nanoscale Precipitation-Strengthened Al-Sc-(V,Nb,Ta) Alloys: *Keith Knipling*[1]; Nhon Vo[2]; David Dunand[2]; David Seidman[2]; [1]Naval Research Laboratory; [2]Northwestern University

2:40 PM
Optimization of a Dilute Al-Er-Sc-Zr-Si Alloy for High-Temperature Applications: *Nhon Vo*[1]; David Dunand[1]; David Seidman[1]; [1]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*[1]; Yipeng Gao[2]; Yunzhi Wang[2]; Jian-Feng Nie[1]; [1]Monash University; [2]The Ohio State University

3:20 PM
The Influence of Sr on Primary Silicon Morphology in Al-Si Hypereutectic Alloys: *Anilajaram Darlapudi*[1]; Sofiane Terzi[2]; Arne Dahle[2]; David StJohn[2]; [1]CAST CRC, Materials Engineering, University of Queensland; [2]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*[1]; Wu Jun[1]; Erwin Povden-Karadeniz[2]; Ahmad Falahati[1]; Carsten Melzer[3]; Ernst Kozeschnik[4]; [1]Vienna University of Technology; [2]Vienna University of Technology,Christian Doppler Laboratory; [3]Austria Metall GmbH; [4]Vienna University of Technonlogy & Christian Doppler Laboratory

4:00 PM
Normal Grain Growth in Cu-Al-Mn Shape Memory Alloy: *Takashi Saito*[1]; Tomoe Kusama[2]; Toshihiro Omori[1]; Ikuo Ohnuma[1]; Ryosuke Kainuma[1]; [1]Tohoku University; [2]Furukawa Electric Co., Ltd.

4:20 PM
The Effect of Vitrification Method on the Phase Selection Dynamics of Cu-Zr Alloys: *Tim Cullinan*[1]; Ralph Napolitano[1]; [1]Iowa State University / Ames Laboratory

4:40 PM
The Study of Transformations in Titanium and Ti Alloys by Electrical Resistivity Measurement: *Petr Harcuba*[1]; Michal Hájek[1]; Jana Šmilauerová[1]; Josef Stráský[1]; Irina Semenova[2]; Miloš Janecek[1]; [1]Charles University in Prague; [2]Ufa State Aviation Technical University

5:00 PM
The Interrelationship of Phase Crystallography on Microstructures in Tantalum Carbides: *Gregory Thompson*[1]; Robert Morris[1]; Billie Wang[1]; Christopher Weinberger[2]; [1]University of Alabama; [2]Sanida National Laboratories

5:20 PM
Thermal Stability of Nanotwinned Thin Films: *Eun Soo Park*[1]; Matthew Besser[1]; Matthew Kramer[1]; Ryan Ott[1]; [1]Ames Laboratory

5:40 PM
Thermodynamic Reassessment of the La-Mg-Ni System and Its Application to Hydrogen Storage System: *Xuehui An*[1]; Kong-Bao Wu[1]; Jie-Yu Zhang[1]; Shuang-Lin Chen[1]; Qian Li[1]; [1]Shanghai University

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

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
March 5, 2013

Room: 204A
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: *Huseyin Lus*[1]; Gokhan Ozer[1]; Caglar Yuksel[1]; [1]Yildiz Technical University

2:30 PM
On the Formation of Hierarchically Structured $L2_1$-Ni_2TiAl Precipitates in a Ferritic Alloy: *Christian Liebscher*[1]; Velimir Radmilovic[2]; Ulrich Dahmen[3]; Mark Asta[1]; Gautam Ghosh[4]; [1]UC Berkeley; [2]University of Belgrade; [3]Lawrence Berkeley National Laboratory; [4]Northwestern University

2:50 PM
Pseudospinodal Nucleation in Beta-Ti Alloys: *Andrew Boyne*[1]; Soumya Nag[1]; Rajarshi Banerjee[1]; Yunzhi Wang[1]; [1]University of North Texas

3:10 PM Break

3:30 PM
Solidification of Al-Pb Alloy in a Static magnetic field: Hai-Li Li[1]; *Jiu-Zhou Zhao*[2]; [1]Patent Examination Cooperation Center of the Patent Office, SIPO; [2]Institute of Metal Research, CAS

3:50 PM
The Influence of Pressure and Temperature on the High Pressure Phase Transformation in Zirconium: *Ellen Cerreta*[1]; Juan Escobedo[1]; Paulo Rigg[1]; Frank Addessio[1]; Turab lookman[1]; Curt Bronkhorst[1]; Carl Trujillo[1]; Donald Brown[1]; George Gray[1]; [1]Los Alamos National Laboratory

4:10 PM
Transmission Electron Microscopy of Rapid Solidification of AlxCu100-x Thin Films: *Andreas Kulovits*[1]; Jorg Wiezorek[1]; Thomas LaGrange[1]; Bryan Reed[1]; Joseph Mckeown[1]; Geoffrey Campbell[1]; [1]University of Pittsburgh

4:30 PM
Effect of Cooling Rate on Phase Transformation of Continuous Casting Strand: *Mujun Long*[1]; Dengfu Chen[1]; Zhihua Dong[1]; Xing Zhang[1]; [1]Chongqing University

4:50 PM
In-Situ Identification of Phase Transformation During Material Synthesis Processes: Lijun Song[1]; Cunshan Wang[1]; *Jyotirmoy Mazumder*[1]; [1]University of Michigan

5:10 PM
Non-Classical Mechanism of Gamma Prime Precipitation in Nickel Base Alloys: *Tanaporn Rojhirunsakool*[1]; Subhashish Meher[1]; Soumya Nag[1]; Junyeon Hwang[2]; Jaimie Tiley[3]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Korea Institute of Science and Technology; [3]Air Force Research Laboratory

5:30 PM Invited
Experimental Study and Simulation of Reverse Spinodal Decomposition: *Jacques Lacaze*[1]; Eric Andrieu[1]; [1]Université de Toulouse

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; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Tuesday PM
March 5, 2013
Room: Lone Star Salon B
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 Acar*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Fan Yang[2]; Michael Mills[2]; Ron Noebe[3]; [1]University of Kentucky; [2]The Ohio State University; [3]NASA Glenn Research Center

2:20 PM
Effect of Precipitation on the Martensitic Transformation Characteristics of a Ni-Rich NiTiZr Alloy: *Alper Evirgen*[1]; Ibrahim Karaman[1]; Ronald Noebe[2]; Ruben Santamarta[3]; Jaume Pons[3]; [1]Texas A&M University; [2]NASA Glenn Research Center; [3]Universitat de les Illes Balears

2:40 PM
The Effect of Aluminum Additions on the Shape Memory Behavior of NiTiHf Alloys: *Derek Hsen Dai Hsu*[1]; Hunter Henderson[1]; B. Hornbuckle[1]; Gregory Thompson[1]; Michele Manuel[1]; [1]University of Florida

3:00 PM
Effect of Alloy Composition on the Phase Transformation and the Shape Memory Behavior of TiPd Alloys: *Yoko Yamabe-Mitarai*[1]; Raju Arockiakumar[1]; Toru Hara[1]; Mamiko Kawakita[1]; Madoka Takahashi[2]; Satoshi Takahashi[2]; Hideki Hosoda[3]; [1]National Institute for Materials Science; [2]IHI Co.; [3]Tokyo Institute of Technology

3:20 PM
Effect of Alloying and Hot Rolling on the Shape Memory Behavior of Ti-Pd Alloys: *Arockiakumar R.*[1]; H. Maheshwari[1]; M. Kawakita[1]; M. Takahashi[2]; S. Takahashi[2]; Yoko-Yamabe Mitarai[1]; [1]NIMS; [2]IHI.Co.

3:40 PM Break

4:00 PM
Study of Phase Transformations in the Ti-Pt System for High Temperature SMAs: Karem Tello[1]; *Michael Kaufman*[1]; Ronald Noebe[2]; [1]Colorado School of Mines; [2]NASA Glenn Research Center

4:20 PM
Effect of Cr Addition on Phase Transformation of AuTi and AuTiCo Shape Memory Alloys: *Hyunbo Shim*[1]; Toshiyuki Kawamura[1]; Masaki Tahara[1]; Tomonari Inamura[1]; Kenji Goto[2]; Hiroyasu Kanetaka[3]; Yoko Yamabe-Mitarai[4]; Hideki Hosoda[1]; [1]Tokyo Institute of Technology; [2]Tanaka Kikinzoku Kogyo K.K.; [3]Tohoku University; [4]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 Hudish*[1]; Ronald Noebe[2]; Glen Bigelow[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]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 Wadood*[1]; M. Takahashi[2]; S. Takahashi[2]; Hideki Hosoda[3]; Yoko Yamabe-Mitarai[1]; [1]National Institute for Materials Science; [2]IHI Co.; [3]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; Choong-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 Carradò, IPCMS

Tuesday PM
March 5, 2013
Room: 214D
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-terrell*[1]; Michael Miller[1]; Ronghua Wei[1]; [1]Southwest Research Institute

2:20 PM
Protection of Magnesium Alloy Sheets by Hot Cladding of Aluminium: *Heinz Palkowski*[1]; Rudolph Kai-Michael[2]; [1]Clausthal University of Technology; [2]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 Das[1]; *Terry Alford*[1]; [1]Arizona State University

3:00 PM
Sol-Gel Derived Electrochromic Tungsten Trioxide (WO3) Film: *Huige Wei*[1]; Xingru Yan[1]; Shijie Wu[2]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University; [2]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 Lee*[1]; Tzu-Chin Tseng[1]; Sung-Hsiu Huang[2]; Tsung-Eong Hsieh[2]; Jenq-Gong Duh[3]; Yu-Chen Chan[3]; Hsien-Wei Chen[3]; [1]Ming Chi University of Technology; [2]National Chiao Tung University; [3]National Tsing Hua University

4:05 PM
Influence of Si Addition on the Microstructures and Mechanical Properties of CrZrSiN Thin Films: *Jyh-Wei Lee*[1]; [1]Ming Chi University of Technology

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Life Cycle Management, LCA and Industrial Ecology

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 Kvithyld, SINTEF; Markus Reuter, Outotec 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 Müller*[1]; Gang Liu[1]; Colton Bangs[2]; [1]NTNU; [2]Umicore

2:30 PM
Lifecycle and System Perspectives on the Recycling of Paper and Packaging from the Solid Waste Stream: Adam Gesing[1]; *Jiyoun Chang*[2]; Elsa Olivetti[2]; Gabrielle Gaustad[2]; Randolph Kirchain[2]; Subodh Das[3]; [1]GCI; [2]MIT; [3]Phinix LLC

2:55 PM
Sustainable Production of c-Si Solar Cell Materials – A Competitive Advantage?: *Gabriella Tranell*[1]; [1]Norwegian University of Science & Technology

3:20 PM Break

3:40 PM
Phosphorus Flow Analysis for Food Production and Consumption: *Kazuyo Matsubae*[1]; Kenichi Nakajima[2]; Keisuke Nansai[2]; Tetsuya Nagasaka[1]; [1]Tohoku University; [2]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 Duan*[1]; T. Miller[1]; Jeremy Gregory[1]; Randolph Kirchain[1]; [1]MIT

4:30 PM
Life Cycle Assessment of NdFeB Rare Earth Magnet Recycling: Brent Dolan[1]; Can Erdem[1]; Zhou Lin[1]; David Dornfeld[1]; *Fiona Doyle*[1]; [1]University of California, Berkeley

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Process Design, Modeling & Simulation

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 Kvithyld, SINTEF; Markus Reuter, Outotec 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 Tikasz*[1]; Dennis Biroscak[2]; Scheale Duvah Pentiah[1]; Robert McCulloch[1]; [1]Bechtel Canada Co.; [2]BECHTEL Co.

2:35 PM
Preparation and Characterization of Fibrous Copper Powder Used for Conductive Filler: *Youqi Fan*[1]; Yongxiang Yang[2]; Yanping Xiao[2]; Zhuo Zhao[1]; [1]Anhui University of Technology; [2]Delft University of Technology

3:00 PM
Silver Selenide Thermodynamics for Copper Anode Slime Refining: *Dawei Feng*[1]; Pekka Taskinen[1]; [1]Aalto University

3:25 PM Break

3:45 PM
Measurement of Thermodynamic Properties of Tellurium in Molten Iron by Transpiration Method: *Shumpei Suzuki*[1]; Takeshi Yoshikawa[1]; Takayuki Nishi[2]; Kazuki Morita[1]; [1]University of Tokyo; [2]Sumitomo Metals Intustries, Ltd

4:10 PM
Thermodynamic Model for Acidic Metal Sulfate from Solubility Data: *Petri Kobylin*[1]; Hannu Sippola[1]; Pekka Taskinen[1]; [1]Aalto University

4:35 PM
Practical Thermodynamic Model for Acidic Sulfate Solutions: *Hannu Sippola*[1]; Petri Kobylin[1]; Pekka Taskinen[1]; [1]Aalto University

5:00 PM
Thermodynamic Analysis of Lead-Fluoride Ion-Water System: Jiayuan Li[1]; Tianzu Yang[1]; *Lin Chen*[1]; Weifeng Liu[1]; [1]Central South University

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 Swygenhoven*[1]; [1]Paul Scherrer Institut

2:35 PM
Size-Affected Behavior in Pure Compression of Micron-Sized Metallic Crystals: *Satish Rao*[1]; Dennis Dimiduk[2]; Michael Uchic[2]; Triplicane Parthasarathy[1]; Jaafar El-Awady[3]; Ahmed Hussein[3]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]Johns Hopkins University

2:55 PM
Twinning Dominated Texture Evolution in Bulk Cu-Nb Nano-Lamellar Composites: *Shijian Zheng*[1]; John Carpenter[1]; Jian Wang[1]; Weizhong Han[1]; Robert Dickerson[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

3:15 PM
Building Metrological Foundations for Nanoindentation: Coupled Experiments and Modeling: *Lyle Levine*[1]; Chandler Becker[1]; Ron Dixson[1]; Joseph Fu[1]; Yvonne Gerbig[1]; Li Ma[1]; Boon Ng[1]; Bartosz Nowakowski[1]; Ndubuisi Orji[1]; William Osborn[1]; Douglas Smith[1]; Francesca Tavazza[1]; Maureen Williams[1]; [1]National Institute of Standards and Technology

3:35 PM Break

3:50 PM Invited
Orientation Fragmentation in Polycrystals Subjected to Large-Strain Deformations: *Paul Dawson*[1]; Romain Quey[2]; [1]Cornell University; [2]Ecole des Mines de Saint Etienne

4:20 PM
Microstructural Effects on Ductile Damage of Polycrystalline Materials: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

4:40 PM
Evaluating Raman and Electron Diffraction Nanoscale Strain-Mapping Techniques Via AFM and Finite Element Modeling: *Lawrence Friedman*[1]; Mark Vaudin[1]; Stephan Stranick[1]; Gheorghe Stan[1]; Yvonne Gerbig[1]; William Osborn[1]; Robert Cook[1]; [1]National Institute of Standards and Technology

5:00 PM Invited
Microstructure Effects on Local Plasticity: Closing the Loop Between Experiment and Simulation: *Michael Groeber*[1]; Paul Shade[1]; Michael Uchic[1]; Yoon-Suk Choi[1]; Todd Turner[1]; [1]AFRL

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
March 5, 2013
Room: 212A
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 Gibbs[1]; Chal Park[2]; Begum Gulsoy[1]; Julie Fife[3]; Katsuyo Thornton[2]; *Peter Voorhees*[1]; [1]Northwestern University; [2]University of Michigan; [3]Paul Scherrer Institut

2:30 PM
Temporal Evolution of Gamma Prime Precipitates in a Co-Al-W-Ni Quaternary Superalloy: *Daniel Sauza*[1]; Peter Bocchini[1]; Ronald Noebe[2]; David Seidman[1]; David Dunand[1]; [1]Northwestern University; [2]NASA Glenn Research Center

2:50 PM
Temporal Evolution of Three Dimensional Microstructure and Associated Chemical Partitioning in Cobalt Base Superalloys: *Subhashish Meher*[1]; Soumya Nag[1]; Jaimie Tiley[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Air 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 Carlo*[1]; Nicholas Schwarz[2]; XIanghui Xiao[2]; Kamel Fezzaa[2]; Steve Wang[2]; Chris Jacobsen[2]; Nikhilesh Chawla[3]; Florian Fusseis[3]; [1]Sandia National Laboratories; [2]Argonne National Laboratory; [3]Arizona State University; [4]Ruhr-Universität Bochum

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 Mertens*[1]; Jason Williams[1]; Nikhilesh Chawla[1]; [1]Arizona State University

4:15 PM Break

4:30 PM Invited
Modeling Heterogeneous Materials via Statistical Microstructural Descriptors: *Yang Jiao*[1]; Nikhilesh Chawla[1]; [1]Arizona State University

5:00 PM
Coarsening of Complex Microstructures Simulated Via Phase-Field Method: *Chal-Lan Park*[1]; Peter Voorhees[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]Northwestern University

5:20 PM
Spherical Images of Faces, Edges and Corners in Grain Structures: *Veena Tikare*[1]; Robert DeHoff[2]; Burton Patterson[2]; David Rule[2]; [1]Sandia National Laboratories, New Mexico; [2]University of Florida

5:40 PM
Topological Paths in Grain Growth: *David Rule*[1]; Burton Patterson[1]; Robert DeHoff[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories, New Mexico