TECHNICAL PROGRAM

TMS2013

142nd Annual Meeting & Exhibition

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

Technical Program

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials General II

*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

Wednesday AM
March 6, 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 Introductory Comments

8:35 AM Invited
Flexoelectricity: *Pradeep Sharma*[1]; [1]University of Houston

9:10 AM
Synthesis and Magnetostrictive Properties of Nanostructured Fe - Tb Alloys: *Pekka Ruuskanen*[1]; [1]Tampere University of Technology

9:30 AM
A Novel Electrochemical Process for Assembling Hierarchically Aligned Carbon Nanotube-Collagen Composite Macrostructures: *Vasiliki Poenitzsch*[1]; Xingguo Cheng[1]; [1]Southwest Research Institute

9:50 AM
Sub-10 nm Cobalt Nanowires Building via Phase Separation: Synthesis, Simulation, and Characterization: *Yuan Tian*[1]; Zhanping Xu[1]; Daniel Schmidt[1]; Tanjore Jayaraman[1]; Chad Briley[1]; Jeffrey Shield[1]; Mathias Schubert[1]; Eva Franke-Schubert[1]; [1]University of Nebraska-Lincoln

10:10 AM Break

10:30 AM
Fluorescence from Polymers in Uniaxially Stretched Melt Spun Scintillation Fiber Mats: *Stephen Young*[1]; Rohit Uppal[1]; Dayakar Penumadu[1]; David Harper[1]; [1]University of Tennessee, Knoxville

10:50 AM
Graphene as an Electron Mediator in Tantalum Oxynitride Based Composites Z-Schem Photocatalytic Water Splitting: Zheng Wang[1]; *Hou Jungang*[1]; Shuqiang Jiao[1]; Kai Huang[1]; Hongmin Zhu[1]; [1]University of Science and Technology Beijing

11:10 AM
Structural and Magnetic Properties of Pr2Co7-xFex Phase Synthesized by Mechanical Alloying: *Lotfi Bessais*[1]; Riadh Fersi[1]; Najeh Mliki[2]; [1]CNRS; [2]University of Tunis

11:30 AM
Methodology to Colloid Stability in Aqueous Silver Nanoparticles from Redox Method for Power Electronics Interconnections: *Yareni Lara-Rodríguez*[1]; Pedro Quintero[1]; [1]UPRM

11:50 AM
Tailoring the Third Dimension in Layered Materials: Direct Synthesis of Layered Intercalation Compounds and Colloidal Single-Layer Nanosheets: Jingfang Yu[1]; Lichen Xiang[1]; Benjamin Martin[1]; Cody Gummelt[1]; Abraham Clearfield[2]; Zhiping Luo[3]; *Luyi Sun*[1]; [1]Texas State University-San Marcos; [2]Texas A&M University; [3]Fayetteville State University

12:10 PM
Vacuum Synthesis and Luminescence Properties of Terbium-Activated Gadolinium Oxysulfide Nanophosphor: *Fei Wang*[1]; Dachun Liu[1]; Bin Yang[1]; Yongnian Dai[1]; [1]Kunming University of Science and Technology

4th International Symposium on High-Temperature Metallurgical Processing: Roasting, Reduction and Smelting

*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

Wednesday AM
March 6, 2013

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

Session Chairs: Jungshin Kang, The University of Tokyo; Jinhui Peng, Kunming University of Science and Technology

8:30 AM
Cost Benefits of EAF Bottom Purging Systems Due to Metallurgical Improvements: *Marcus Kirschen*[1]; Ashraf Hanna[1]; Karl-M Zettl[1]; [1]RHI AG

8:50 AM
Reduction Process Of Zinc From Concentrates With CO2 Reduced Emission: *Edgar Blanco*[1]; [1]FLSmidth Minerals

9:05 AM
Researches on Reduction Roasting of Low-grade Manganese Oxide Ores Using Biomass Charcoal as Reductant: *Yuanbo Zhang*[1]; Daoxian Duan[1]; Zhixiong You[1]; Guanghui Li[1]; Xiaohui Fan[1]; Tao Jiang[1]; [1]Central South University

9:25 AM
Reduction Behavior of Pellets Balled with Bentonite: Tao Jiang[1]; *Guihong Han*[1]; Yanfang Huang[1]; Guanghui Li[1]; Yuanbo Zhang[1]; [1]Central South University

9:40 AM
Vanadium Distribution Between Blast Furnace Slag and Hot Metal: Jia-Rong Yan[1]; *Bing Xie*[1]; Xiao-Yi Zeng[1]; Qing-Yun Huang[1]; Hong-Yi Li[1]; [1]Chongqing University

9:55 AM Break

10:05 AM
Development of Antimony Smelting Technology in China: *Weifeng Liu*[1]; Tianzu Yang[1]; Lin Chen[1]; shu Bin[1]; Wanda Bin[1]; [1]Central South University

10:25 AM
Effect of Reduction Conditons on Pre-reduction Behaviors of Self-fluxed Pellets in COREX Process: *Deqing Zhu*[1]; Zifu Gao[1]; Jian Pan[1]; [1]Central South University

10:45 AM
Upgrade of Titanium Ore by Selective Chlorination: *Jungshin Kang*[1]; Toru Okabe[1]; [1]The University of Tokyo

11:00 AM
Calcination Factors of Rubidium Extraction from Low-grade Muscovite Ore: Shan Zhiqiang[1]; Shu Xinqian[1]; [1]China University of Mining and Technology

11:20 AM
Enhancing the Reduction Ratio of Panzhihua Llmenite Concentrate with Coke and Ferrosilicon: *Run Huang*[1]; Xuewei Lv[1]; Kai Zhang[1]; Chenguang Bai[1]; Liangying Wen[1]; [1]College of Materials Science and Engineering, Chongqing University

11:30 AM
Reduction and Separation of High Iron Content Manganese Ore and iIs Mechanism: *Zhucheng Huang*[1]; Bin Chai[1]; Yi Lingyun[1]; Tao Jiang[1]; [1]Central South University

11:50 AM
Sticking of Iron Ore Pellets in Direct Reduction with Coal Gas: Behavior and Prevention: Zhucheng Huang[1]; *Yi Lingyun*[1]; Tiehui Li[1]; Tao Jiang[1]; [1]Central South University

12:00 PM
Enhancement of Carbothermal Reduction of Panzhihua Titanomagnetite Concentrates by Borax Additive: *Tu Hu*[1]; Chenguang Bai[1]; Xuewei Lv; Zhigang Lun[1]; [1]Chongqing University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Advance Materials & Innovative Solutions for Oil and Gas I

*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

Wednesday AM
March 6, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Manuel Marya, Schlumberger; Nitin Chopra, University of Alabama

8:30 AM Introductory Comments and Plenary Overview Lecture: Hani Elshahawi, Deepwater Technology Advisor, Shell Exploration & Production, Co.

8:55 AM Keynote
Oilfield Corrosion Overview and Research Collaborations: *Brajendra Mishra*[1]; [1]Colorado School of Mines

9:25 AM
Progress on Nano Fluid-based Enhancement of Transport Phenomena for Enhanced Oil Recovery Applications: *M.M. Ohadi*[1]; K.Y. Choo; [1]University of Maryland

9:45 AM
Fluorescent Nanoparticle Tracers for Oil Exploration and Production: *Emmanuel Giannelis*[1]; [1]Cornell University

10:05 AM Break

10:20 AM
Engineered Nanoparticles as Improved Oil Recovery and Flow Assurance Agents Under Harsh Reservoir Conditions: *Chun Huh*[1]; Steven Bryant; Keith Johnston; [1]University of Texas at Austin

10:40 AM Keynote
Analysis of Polymer Materials by Compact and Portable NMR: *Bernhard Bluemich*[1]; [1]RWTH Aachen Univ

11:10 AM Invited
Dynamics of Nanoparticle-Based Complex Fluids in Porous Media: *Jacinta Conrad*[1]; Kai He[1]; Firoozeh Babaye Khorasani[1]; Ramanan Krishnamoorti[1]; [1]University of Houston

11:30 AM
Asphaltenes to Valuable to Burn – New Hybrid Materials: *Russell Chianelli*[1]; [1]Univ of Texas at El Paso

11:50 AM
Development of a First Numerical Approach with an Experimental Confrontation for Diffusion Kinetics and Thermo-diffuso Mechanical Behavior of PVDF/CO2 System: *Severine Boyer*[1]; Jean-Claude Grandidier[2]; Gaelle Rambert[2]; Cedric Baudet[2]; Marie-Helene Klopffer[3]; Laurent CANGEMI[3]; [1]CNRS/ISAE-ENSMA; [2]P PRIME Institute, ISAE-ENSMA; [3]IFP Energies Nouvelles

12:10 PM
In-Service Detection of Damage Severity for Pipeline Steel Inspection: *Angelique Lasseigne*[1]; [1]Generation 2 Materials Technology, LLC

12:30 PM
Novel Reactive Elastomer Composites for Zonal Isolation Packers: On the Swelling Kinetics and Stiffening Mechanism: *Meng Qu*[1]; Dingzhi Han[1]; Travis Hohenberger[2]; Frederick Lemme[2]; Agathe Robisson[1]; [1]Schlumberger-Doll Research; [2]Schlumberger Reservoir Completions

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Wide Bandgap Semiconductor Material Growth and Characterization

*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

Wednesday AM
March 6, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jennifer Hite, Naval Research Laboratory; David Meyer, Naval Research Laboratory

8:30 AM Invited
Growth of Thick 4H-SiC Epilayers and Defect Reduction: *Hidekazu Tsuchida*[1]; Tetsuya Miyazawa[1]; Xuan Zhang[1]; Masahiro Nagano[1]; Ryohei Tanuma[1]; Isaho Kamata[1]; Masahiko Ito[1]; [1]Central Research Institute of Electric Power Industry (CRIEPI)

9:00 AM
On-Axis Homoepitaxial Growth of 4H-SiC PiN Structure for High Power Applications: *Jawad ul Hassan*[1]; Ian Booker[1]; Louise Lilja[1]; Peder Bergman[1]; Anders Halén[2]; M Fagerlind[3]; Erik Janzén[1]; [1]Linköping University; [2]Royal Institute of Technology; [3]Chalmers University of Technology

9:20 AM Invited
BPD Conversion in a Thin SiC Buffer Layer: *Rachael Myers-Ward*[1]; Nadeem Mahadik[1]; Robert Stahlbush[1]; Virginia Wheeler[1]; Luke Nyakiti[1]; Anindya Nath[1]; Charles Eddy[1]; Kurt Gaskill[1]; [1]NRL

9:50 AM
Surface Reactions of Nitrogen on SiC: *Weijie Lu*[1]; Sorrie Ceesay[1]; Roland Barbosa[2]; Xingguang Zhu[3]; Leonard Feldman[3]; [1]Air Force Research Laboratory; [2]Université Libre de Bruxelles; [3]Rutgers University

10:10 AM Break

10:30 AM Invited
Controlling Gallium Nitride Polarity on Native Substrates: *Jennifer Hite*[1]; Mark Twigg[1]; Jaime Freitas[1]; Michael Mastro[1]; Igor Vergaftman[1]; Jerry Meyer[1]; Shawn O'Connor[1]; Nicholas Condon[1]; Francis Kub[1]; Steven Bowman[1]; Charles Eddy[1]; [1]Naval Research Laboratory

11:00 AM Invited
Elements of Power Conversion Integration in Group-III Nitride Heterojunctions: *Christian Wetzel*[1]; [1]Rensselaer Polytechnic Institute

Advances in Surface Engineering: Alloyed and Composite Coatings II: High Temperature, Wear- and Corrosion-Resistant 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

Wednesday AM
March 6, 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
Surface Engineering of Corrosion, Environmental Fracture, Cavitation & Impingement Resistant Materials: *Joseph Farmer*[1]; Alexander Rubenchik[1]; Sarath Menon[2]; Terry McNelley[2]; Lloyd Hackel[3]; [1]Lawrence Livermore National Laboratory; [2]United States Naval Postgraduate School; [3]Curtis-Wright

8:50 AM Invited
Ultrastable Nanoscale Ag Surfaces: A New Paradigm in Surface Oxidation Prevention: Ritesh Sachan[1]; Vanessa Ramos[1]; Abhinav Malasi[1]; Brock Bartley[1]; Gerd Duscher[1]; *Ramki Kalyanaraman*[1]; [1]University of Tennessee

9:10 AM
Effect of Adding 0.2%Zr in D-gun Sprayed Cr3C2 - (NiCr) Coating at High Temperature: *Deepa Mudgal*[1]; Surendra Singh[1]; Satya Prakash[1]; [1]Indian Institute of Technology, Roorkee

9:25 AM
Hot Corrosion Studies of Wire Arc-Spray Coatings on 310S Stainless Steel in an Actual Environment of a Coal Fired Boiler: *Vishwambhar Shukla*[1]; R. Jayaganthan[1]; V K Tewari[1]; [1]Indian Institute of Technology, Roorkee

9:40 AM
Development of Ni-P-TiO2 Nano-Composite Coatings to Resist Environmental Degradation: *Preeti Makkar*[1]; Ramesh Agarwala[1]; Vijaya Agarwala[1]; [1]IIT Roorkee

9:55 AM Break

10:10 AM Invited
Spark Plasma Sintering of Cryomilled Al-Si Claddings onto Al Substrates: *Mathieu Brochu*[1]; Jason Milligan[1]; [1]McGill University

10:30 AM
Effect of Bath Temperature on Corrosion Behavior of Hot-dipped 55%Al-Zn-1.6%Si Coated Steel Sheet in NaCl Solution: *Zengpeng Yang*[1]; Qian Li[1]; Moucheng Li[1]; Jieyu Zhang[1]; Xianxia Yuan[2]; [1]Shanghai University; [2]Shanghai Jiao Tong University

10:45 AM
Microstructure and Wear Properties of Ni-Cu-Cr-Al Multi-component Coatings Prepared by Plasma Spraying: Gautham Prakash[1]; Pramod SL[1]; Prathap Chandran[1]; Cheng Zhang[2]; Arvind Agarwal[2]; Daniel Fabijanic[3]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras; [2]Florida International University; [3]Deakin University

11:00 AM
Electrochemical Studies of Electroless Nickel Phosphorus Coating on Carbon Steel in NaCl and NaOH Solutions: Cui Lin[1]; Nazila Dadvand[2]; *Georges Kipouros*[2]; [1]Nanchang Hanhkong University; [2]Dalhousie University

11:15 AM
Deposition of Zinc-Zinc Phosphate Composite Coatings on Steel by Cathodic Electrochemical Treatment: C Kavitha[1]; *Sankara Narayanan TSN*[2]; K Ravichandran [3]; [1]CSIR-National Metallurgical Laboratory; [2]Chonbuk National University; [3]University of Madras

11:30 AM
Improving Corrosion Resistance by Alodine EC2 Coating on Aluminum Alloys: *Jianhui Shang*[1]; Steve Hatkevich[1]; Larry Wilkerson[1]; [1]American Trim LLC

Alumina and Bauxite: Precipitation and Calcination

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

Wednesday AM
March 6, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Everett Phillips, Nalco Company

8:30 AM Introductory Comments

8:40 AM
Environmentally Safe Operation of Barometric Condensers: *Matthew Jacobs*[1]; [1]Alcoa, Inc.

9:00 AM
Hatch - ETI Aluminyum Precipitation Modeling: Evangelo Stamatiou[1]; *David Chinloy*[1]; Bekir Çelikel[2]; Murat Kayaci[2]; Esra Savkilioglu[2]; [1]Hatch; [2]ETI Aluminyum

9:20 AM
Improve the Classification System in Hydro Alunorte Lines 4/5: *Cleto Junior*[1]; Emerson Moraes[1]; Joaquim Ribeiro[1]; Hans Haraldsen[1]; Everton Santos[1]; José Chartouni[1]; Darlan Gomes[1]; Cesar Magro[1]; [1]Hydro Alunorte

9:40 AM
Increase in the Stability of Gravimetric Classification System of Precipitation at Hydro Alunorte: *Victor Cruz*[1]; Emerson Moraes[1]; Cleto Azevedo Junior[1]; Denise Rodrigues[1]; Adjane Sousa[1]; Alex Furtado[1]; Dauton Silva[1]; [1]Hydro Alunorte

10:00 AM Break

10:15 AM
Experience with Commissioning New Generation Gas Suspension Calciner: *Benny Raahauge*[1]; Susanne Wind[1]; [1]FLSmidth

10:35 AM
Bayer Process Efficiency Improvement: *Songqing Gu*[1]; [1]Chalco

10:55 AM
HyClass(TM) Technology for Improvement of Trihydrate Classification in the Bayer Process: *Jing Wang*[1]; Jaqueline Herrera[1]; Shawn Kostelak[2]; *Kody Frederic*[2]; [1]Nalco an Ecolab Company; [2]Noranda

11:15 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Thermal Mechanical Processing

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

Wednesday AM
March 6, 2013
Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chair: Xiyu Wen, University of Kentucky

8:30 AM Invited
Effects of Homogenization Treatment Conditions on the Recrystallization Behavior of Al-1.2Mn Aluminum Alloy Sheets: Pizhi Zhao[1]; *Xinglin Chen*[1]; Wei Chen[1]; Yonghao Zhang[1]; [1]Suzhou Research Institute for Nonferrous Metals

8:50 AM
Textures, Particle Structures and Mn Solution in Al Matrix of Continuous Cast AA3004 and AA3003 Al Alloys After Cold Rolling and Annealing: *Xiyu Wen*[1]; Jingwu Zhnag[2]; Shridas Ningileri[3]; Tongguang Zhai[1]; [1]University of KentuckyY; [2]Yanshan University, P. R. China; [3]Secat Inc.

9:10 AM
Toward a Recrystallized Microstructure in Extruded AA6005A Alloy: Abbas Bahrami[1]; Andrew den Bakker[2]; *Alexis Miroux*[3]; Jilt Sietsma[4]; [1]Materials Innovation Institute (M2i), Technical University of Delft (TuDelft); [2]Nedal Aluminium B.V.; [3]Materials Innovation Institute (M2i); [4]Technical University of Delft (TUDelft)

9:30 AM
Grain Subdivision and Its Effect on Texture Evolution in an Aluminum Alloy Under Plane Strain Compression: *Q. Ma*[1]; W. Mao[2]; B. Li[1]; P.T. Wang[1]; M.F. Horstemeyer[1]; [1]Mississippi State University; [2]University of Science and Technology Beijing

9:50 AM Break

10:10 AM
Fatigue Analysis of Ultrafine Grained Al 1050 Alloy Produced by Cyclic Forward Backward Extrusion: Hamid Alihosseini[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

10:30 AM
A Study of Precipitates Formed during Homogenization in Modified AA6061 Aluminum Alloy: *Liang Chen*[1]; Wei Wen[1]; Yi Han[2]; Hai Zhang[2]; Tongguang Zhai[1]; [1]University of Kentucky; [2]Suzhou Research Institute for Nonferrous Metals

10:50 AM
Effect of Overheated Solution Treatment on Microstructure and Room Temperature Tensile Properties of 2218 Peak-Aged Al-Cu Alloy: *Wang Po-Han*[1]; Ssu-Ta Chen[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; Fei Yi Hung[1]; [1]National Cheng Kung University

11:10 AM
Effects of Extrusion Ratios and Isothermal Holding Time on Microstructure Evolution of Al-Mg-Si Semisolid Billet Fabricated by Modified SIMA Process: *Yen-Yu Hou*[1]; Fei-Yi Hung[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

11:30 AM
Effect of Zn Content and Process Parameters on Corrosion Behaviour of Twin-Roll Cast Aluminum Brazing Alloys: Murat Dündar[1]; *Mert Günyüz*[1]; Cemil Isiksaçan[1]; Anil Pastirmaci[1]; [1]Assan Aluminyum A.S.

11:50 AM
Deformation Characteristics of a 2139 Aluminum Alloy: *David Snyder*[1]; [1]Illinois Institute of Technology

Aluminum Processing: Aluminum Processing I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Wednesday AM
March 6, 2013
Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM
Strategic Directions of Aluminum Processing: *Adrian Ioana*[1]; [1]University Politehnica of Bucharest

8:50 AM
Experimental Study on the Nanosecond Laser Ablation of Aluminum Alloy 6111: *Parisa Farahmand*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

9:10 AM
Microstructure Changes in Accumulative Roll-Bonding Processed Twin-Roll Cast AA8006 Aluminium Sheets during Annealing: *Miroslav Cieslar*[1]; Michaela Pokova[1]; [1]Charles University in Prague

9:30 AM Break

9:50 AM
Surface Crack Characterization of Twin Roll Caster Shells and Its Influence on As-Cast Strip Surface Quality: Murat Dündar[1]; Baris Beyhan[1]; *Onur Birbasar*[1]; Hatice Mollaoglu Altuner[1]; Cemil Isiksaçan[1]; [1]Assan Alüminyum A.S

10:10 AM
Effect of Grain Size and Microstructure on Corrosion Resistance of Al-Mg Alloy Processed Through Cryorolling: *Dharmendra Singh*[1]; Nageswara rao[1]; Jayaganthan R[1]; [1]IIT Roorkee

10:30 AM
Ageing Behavior and Mechanical Properties of Cryorolled Al 6061-3 Vol. % SiC Composite: *Nageswararao Palukuri*[1]; Jayaganthan R[1]; [1]IIT Roorkee

10:50 AM
Study of Wire Fabrication of Aluminum Treated with Diboride Particles: *David Florian-Algarin*[1]; O. Marcelo Suarez[1]; [1]University of Puerto Rico Mayaguez(UPRM)

Aluminum Reduction Technology: Potline Operation II: Equipment

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

Wednesday AM
March 6, 2013

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

Session Chair: Renaud Santerre, Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM
Solutions to Address Arc Welding Problems in an Operating Potline: *Yann El Ghaoui*[1]; John Anderson[2]; [1]Rio Tinto Alcan; [2]Diverse Technologies

9:00 AM
Replacement of Damaged Electrical Insulators on Live Cross-Over Busbars Inside a Tunnel: A Methodology Based on Risk Assessment and Numerical Simulation: *Daniel Richard*[1]; André Yelle[1]; Olivier Charette[1]; Andre Felipe Schneider[1]; Jean-François Nadeau[2]; Mickael Glière[3]; Yannick Drouet[3]; Philippe Brème[3]; [1]Hatch; [2]Aluminerie de Bécancour Inc.; [3]Rio Tinto Alcan

9:25 AM
A Thermal-Mechanical Approach for the Design of Busbars Details: *Andre Felipe Schneider*[1]; Olivier Charette[1]; Daniel Richard[1]; Charles Turcotte[1]; [1]HATCH Ltd.

9:50 AM Break

10:00 AM
Study of Technology and Equipment on Magnetic Induction Intensity Weaken for Aluminum Reduction Cells Welding in the Condition of Pot Line Current: Ziqian Wang[1]; Bin Cao[1]; *Tao Yang*[1]; Jun Huang[1]; Meng Li[1]; [1]Guiyang Aluminum Magnesium Design Research Institute Company Limited

10:25 AM
Potline Shutdown and Restart Secured Solutions: *Anne-Gaëlle Hequet*[1]; [1]ECL

10:50 AM
Effect of Watering and Non-Watering Cooling Rates on the Mechanical Properties of an Aluminum Smelter's Potshell: *Ayoola Brimmo*[1]; Mohamed Hassan[1]; Mohamed Ibrahiem[2]; Youssef Shatilla[1]; [1]Masdar Institute; [2]Emartes Aluminum

11:15 AM
Mathematical Model of Cooling of a Stopped Pot and Its Validation: *Mohamed Hassan*[1]; Ayoola Brimmo[1]; Mohamed Ibrahiem[2]; Youssef Shatilla[1]; [1]Masdar Institute; [2]Emartes Aluminum

Biological Materials Science Symposium: Innovative Thin Films and Coating for Biological Interactions (Joint session with Biological, Electrical and Functional Thin Films and Coating Symposium)

*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

Wednesday AM
March 6, 2013

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

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Roger Narayan, University of North Carolina at Chapel Hill; Candan Tamerler, University of Washington

8:30 AM
Interfacial Fracture Toughness Measurement of Soft Biological Adhesives: Ahmad Khayer Dastjerdi[1]; Michael Pagano[1]; Mari T. Kaartinen[1]; Marc D. McKee[1]; *Francois Barthelat*[1]; [1]McGill University

8:50 AM
Investigation of the Microscopic Mineral Content Variation in Bone by Electron Probe Microanalyzer (EPMA): *Pei Chun Chou*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

9:10 AM
Processing, Microstructure Characterization and Biological Performance of Hierarchical Surface Coatings for Titanium: *Ellen Sauter*[1]; Grant Crawford[1]; [1]South Dakota School of Mines and Technology

9:25 AM
Characterization of (Ti,Mg)N Thin Film Coatings Produced Via Physical Vapor Deposition: *Sakip Onder*[1]; Gamze Torun Kose[2]; Fatma Nese Kok[1]; Kursat Kazmanli[3]; Mustafa Urgen[3]; [1]Istanbul Technical University, MOBGAM; [2]Yeditepe University, Genetics and Bioengineering; [3]Istanbul Technical University, Metallurgical and Material Engineering

9:45 AM
Bio-Inspired Multi-Layered Nanocomposites Synthesized with High Volume Fractions of Oriented Inorganic Fillers: *Robert Moser*[1]; Kevin Torres-Cancel[1]; Omar Rodriguez[2]; Ruth Hidalgo-Hernandez[1]; Mei Chandler[1]; Paul Allison[1]; Charles Weiss[1]; John Newman[1]; Oscar Suarez[2]; Oscar Perales-Perez[2]; Philip Malone[1]; [1]US Army Engineer Research and Development Center; [2]University of Puerto Rico at Mayaguez

10:05 AM Break

10:20 AM
Bio-inspired Polyelectrolyte Multilayers as Templates for the Deposition of Thin Calcium Phosphate Coatings: *Guy Ladam*[1]; Khalil Abdelkebir[1]; Fabien Gaudière[1]; Béatrice Labat[1]; Sandrine Morin-Grognet[1]; Hassan Atmani[1]; [1]University of Rouen

10:40 AM
Effect of Chemical Treatments on the Mechanical Properties of Poly-lactic Acid (PLA) and Hemp Biocomposites: Shubhashini Oza[1]; Andrew Carlson[1]; *Na Lu*[1]; [1]University of North Carolina at Charlotte

10:55 AM
Titanium/Polymer Sandwich for Medical Applications: *Heinz Palkowski*[1]; Mohamed Harhash[1]; Le Van Quang[2]; Lia Rimondini[3]; Adele Carradò[2]; [1]Clausthal University of Technology; [2]IPCMS; [3]Universita' del Piemonte Orientale "Amedeo Avogadro"

11:15 AM
Morphological Study and Cell Viability on Calcium-phosphate Layer on 316L-polyolefin System: Quang Van Le[1]; Andrea Cochis[2]; Lia Rimondini[3]; Geneviève Pourroy[1]; Vesna Stanic[4]; Heinz Palkowski[5]; *Adele Carradò*[1]; [1]IPCMS, UMR 7504 UDS-CNRS; [2]Universita' del Piemonte Orientale "Amedeo Avogadro"; [3]Universita' del Piemonte Orientale "Amedeo Avogadro"; [4]Brookhaven National Laboratory; [5]Institute of Metallurgy

11:35 AM
Particle Size Effects on the Morphology and Bioactivity of Flame-Sprayed Titanium Alloy-Bioactive Glass Composite Coatings: Greg Nelson[1]; *John Nychka*[1]; Andre McDonald[1]; [1]University of Alberta

11:55 AM
Structural Characterization and Mechanical Evaluations of Abalone Nacre-inspired Multilayer Coatings Synthesized by RF Sputtering and Pulsed Laser Deposition: Chang-Yu Sun[1]; Yu-Chen Chan[1]; Jyh-Wei Lee[2]; Jenq-Gong Duh[1]; *Po-Yu Chen*[1]; [1]National Tsing Hua University; [2]Ming Chi University of Technology

12:10 PM Invited
Micro- and Nanostructured Surfaces for Implants: *Cenk Aktas*[1]; Marina Martinez[1]; JuSeok Lee[1]; [1]INM - Leibniz-Institut für Neue Materialien

12:30 PM Concluding Comments

Bulk Metallic Glasses X: Fatigue and Corrosion

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

Wednesday AM
March 6, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

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

Session Chairs: Despina Louca, University of Virginia; Jamie Kruzic, Oregon State University

8:30 AM Invited
The Effects of Fatigue on the Local Structure and Its Dynamics: *Despina Louca*[1]; [1]University of Virginia

8:50 AM Invited
A Shear-Band Toughened Monolithic Metallic Glass Under Cyclic Loading: *Bernd Gludovatz*[1]; Marios Demetriou[2]; William Johnson[2]; Robert Ritchie[3]; [1]Lawrence Berkeley National Laboratory; [2]California Institute of Technology; [3]University of California Berkeley

9:10 AM Invited
Effect of Loading Frequency on Corrosion Fatigue Crack Growth of Zr-Based Bulk Metallic Glass in the Region Near Threshold: *Yoshikazu Nakai*[1]; Toyohiko Koyama[1]; Bo He[1]; [1]Kobe University

9:30 AM Invited
Investigation of Shear-Band and Crack Microstructures Induced by Three-point Bending Fatigue Testing in Zr-Cu-Al Bulk Metallic Glass: *Pei-Ling Sun*[1]; Gongyao Wang[2]; Peter Liaw[2]; [1]Feng Chia University; [2]The University of Tennessee

9:50 AM Invited
Residual Stress Measurement in Amorphous Materials by the Micro-Slot Cutting Method: Assessment of Stress-Calculation Errors: *Bartlomiej Winiarski*[1]; Ken Mingard[2]; Mark Gee[2]; Philip Withers[1]; [1]University of Manchester; [2]National Physical Laboratory

10:10 AM Break

10:25 AM Invited
A Fracture and Fatigue Resistant Bulk Metallic Glass: *Jamie Kruzic*[1]; Steven Naleway[1]; Bernd Gludovatz[2]; Robert Ritchie[2]; [1]Oregon State University; [2]Lawrence Berkeley National Laboratory

10:45 AM
Fatigue Mechanisms of Bulk Metallic Glasses Under Bending Load: *Gongyao Wang*[1]; P. Sun[2]; Y. Yokoyama[3]; P. Liaw[1]; A. Inoue[3]; [1]University of Tennessee; [2]Feng Chia University; [3]Advanced Research Center of Metallic Glasses

11:00 AM Invited
Electrochemical Micromachining of Bulk Metallic Glasses: *Annett Gebert*[1]; Ralph Sueptitz[1]; Margitta Uhlemann[1]; Juergen Eckert[1]; [1]Leibniz-Institute for Solid State and Materials Research IFW Dresden

11:20 AM Invited
Biocompatibility of Zr-Based Bulk Metallic Glasses: An In Vitro Cellular and Biomolecular Investigation: Lu Huang[1]; Peter Liaw[1]; Tao Zhang[2]; *Wei He*[1]; [1]The University of Tennessee; [2]Beihang University

11:40 AM
Effects of Ca-Implantation on Surface Properties and Bioactivity of a Zr-Based Bulk Metallic Glass: *Lu Huang*[1]; Claudiu Muntele[2]; Peter Liaw[1]; Tao Zhang[3]; Wei He[1]; [1]The University of Tennessee; [2]Alabama A&M University; [3]Beihang University

11:55 AM
Electrochemical Tuning of Metallic Glass Nanostructures: *Sundeep Mukherjee*[1]; [1]University of North Texas

Bulk Metallic Glasses X: Mechanical and Other Properties

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

Wednesday AM
March 6, 2013
Room: Bowie A
Location: Grand Hyatt

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

Session Chairs: Rainer Hebert, University of Connecticut; Jinn Chu, National Taiwan University of Science and Technology

8:30 AM Invited
R-curve Behavior of Zr-Ti-Cu-Al Bulk Metallic Glass with Extraordinary Fracture Toughness: *Jian Xu*[1]; Qiang He[1]; Evan Ma[2]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]The Johns Hopkins University

8:50 AM
Brazing and Interfacial Reaction of Titanium with Zr-Ti-based Metallic Glass Filler Metal: Duck Hwan Yoon[1]; *Jin Kyu Lee*[1]; [1]Kongju National University

9:05 AM Invited
Thermal and Thermomechanical Analysis of (Ce0.72Cu0.28)78.5Al10Fe10Si1.5 Bulk Metallic Glass: Arif Mubarok[1]; *Rainer Hebert*[2]; [1]University of Massachusetts; [2]University of Connecticut

9:25 AM
Variable Plasticity in Molded Metallic Glass Nanowires: *Daniel Magagnosc*[1]; Golden Kumar[2]; Roman Ehrbar[1]; Mo-Rigen He[1]; Jan Schroers[3]; Daniel Gianola[1]; [1]University of Pennsylvania; [2]Texas Tech University; [3]Yale University

9:40 AM Invited
Time-Dependent Mechanical Behavior, Biodegradability, and Cytocompatibility of Amorphous Mg72Zn23Ca5 and Crystalline Mg70Zn23Ca5Pd2 Materials: Eva Pellicer[1]; Sergio Gonzalez[1]; Andreu Blanquer[1]; Leonar Barrios[1]; Elena Ibañez[1]; Jordi Sort[1]; Carme Nogués[1]; *Maria Baro*[1]; [1]UAB

10:00 AM Break

10:15 AM Invited
Intrinsic and Extrinsic Effects on the Mechanical Behavior of BMGs: *Golden Kumar*[1]; [1]Teaxs Tech University

10:35 AM Invited
Shear Band Multiplication of Bulk Metallic Glass by Surface Modification: Cut Rullyani[1]; *Jinn Chu*[1]; W. D. Li[2]; Y. F. Gao[2]; P. Liaw[2]; Chia-Chi Yu[1]; [1]National Taiwan University of Science and Technology; [2]University of Tennessee

10:55 AM
Modeling Deformation Behavior of Metallic Glasses Spanning a Wide Range of Temperature and Strain Rate: *Pengyang Zhao*[1]; Ju Li[2]; Yunzhi Wang[1]; [1]The Ohio State University; [2]Massachusetts Institute of Technology

11:10 AM Invited
Effects of Alloying Elements on Thermal Stability and Properties of Fe-Based Fe-P-C-B Metallic Glasses: *Wei Zhang*[1]; Canfeng Fang[1]; Yanhui Li[1]; Shin-ichi Yamaura[2]; [1]School of Materials Science and Engineering, Dalian University of Technology; [2]Institute for Materials Research, Tohoku University

11:30 AM
Correlation between Chemical Heterogeneity and Mechanical Properties in Cu-Zr-Al-(Y, Gd) Bulk-Forming Metallic Glasses: *Jin Woo Kim*[1]; Chae Woo Ryu[1]; Eun Soo Park[1]; Ryan Ott[2]; [1]Seoul National University; [2]Ames Laboratory

11:45 AM Invited
Early Stage Oxidation Behavior of Metallic Glasses: Ka Ram Lim[1]; Min Young Na[1]; Kang Chul Kim[1]; Won Tae Kim[2]; *Do Hyang Kim*[1]; [1]Yonsei University; [2]Cheongju University

12:05 PM
Surface Modification in the Bulk Metallic Glasses by Laser Shock Peening: *Xie Xie*[1]; Yunfeng Cao[2]; James Antonaglia[3]; Gongyao Wang[1]; Yung Shin[2]; Yang Ren[4]; Karin Dahmen[3]; Peter Liaw[1]; [1]University of Tennessee; [2]Purdue University; [3]University of Illinois at Urbana Champaign; [4]Argonne National Laboratory

12:20 PM Invited
Variability and Partitioning of Shear Modulus in Metallic Glass: *Yong Yang*[1]; Lishan Huo[2]; Weihua Wang[2]; C. T. Liu[1]; [1]City University of Hong Kong; [2]Key Lab of Extreme Conditions, Institute of Physics, Chinese Academy of Science

Characterization of Minerals, Metals and Materials 2013: Characterization for Environmental Applications

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

Wednesday AM
March 6, 2013

Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Gaifeng Xue, Wuhan Iron and Steel Corporation; Bowen Li, Michigan Technological University

8:30 AM
Hydrometallurgical Process for the Separation and Recovery of Product from Waste Serpentine Mine: *Zhu Ping*[1]; [1]Shanghai University

8:50 AM
LaCoO3: The Efficient Catalyst to Purify Pollutant Gases: *Farhad Fazlollahi*[1]; Hossein Atashi[1]; Majid Sarkari[1]; [1]University of Sistan and Baluchestan

9:10 AM
Characteristics and Applications of Copper Stamp Sand: *Bowen Li*[1]; Jiann-Yang Hwang[1]; Domenic Popko[2]; [1]Michigan Technological University; [2]Lesktech Ltd

9:30 AM
Characterization of the Clay Soil of the Neighborhood Codin, Located in Campos (RJ), to Produce Soil-Cement Blocks: Afonso Azevedo[1]; *Jonas Alexandre*[1]; Gustavo Xavier[1]; [1]UENF

9:50 AM
Study of Mortars Used in the Projection Mechanized: Afonso Azevedo[1]; Jonas Alexandre[1]; *Gustavo Xavier*[1]; [1]UENF

10:10 AM
Research on Extraction Process of Zinc from Zinc Containing Wastewater: *Jiang Tao*[1]; Hou Li-Cheng[1]; Yang Yong-Bin[1]; Li Qian[1]; [1]Central South University

10:30 AM
Study on Treatment of Coking Wastewater by Three-Dimensional Fluid Bed Electrode Reactor Combined with Fenton Process: *Lei Zhang*[1]; [1]WISCO

10:50 AM
Study on Correlation between COD and TOC of Coking Wastewater: *Chao Liu*[1]; [1]College of Environmental Science & Engineering, Huazhong University of Science &Technology

11:10 AM
Treatment Process for Zinc Containing Wastewater by Ammonia: *Jiang Tao*[1]; Hou Li-Cheng[1]; Yang Yong-Bin[1]; Li Qian[1]; [1]Central South University

11:30 AM
Photocatalytic Activity of TiO2-Doped Diopside: *He Yang*[1]; Dong Liu[1]; Zejian Yang[1]; Xiangxin Xue[1]; Tao Jiang[1]; Yong Yong[1]; [1]Northeastern University

Characterization of Minerals, Metals and Materials 2013: Green 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

Wednesday AM
March 6, 2013

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

Session Chairs: Sergio Monteiro, State University Northern Rio De Janeiro; Shujing Zhu, WISCO R&D

8:30 AM
Incorporation of Granite Waste Diamond Wire in Cementitious Matrices: *Leonardo Pedroti*[1]; Carlos Maurício Vieira[1]; Sergio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; [1]UENF

8:50 AM
Study on the Hydraulic Ash-Slag Cementitious Composites (HA-SC) Solidification of Dredged Sludge: *Zhu Shu Jing*[1]; [1]R&D of Wisco

9:10 AM
Characterization of Fluorescent Lamp Glass Waste Powders for Incorporation into Clayey Ceramics: *Alline Morais*[1]; Sergio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; Patrícia Pereira[1]; Carlos Maurício Vieira[1]; [1]State University of the North Fluminense

9:30 AM
Investigation on Mineral, Microstructure and Activity of Coal Gangue in Shanxi Province, China: *Yingyi Zhang*[1]; Ling Xu[1]; Lili Liu[1]; Xidong Wang[1]; Zuotai Zhang[1]; [1]Peking University, China

9:50 AM
Evaluation of Sisal Fibers Components by Infrared Spectroscopy: *Frederico Margem*[1]; Artur Camposo[1]; Romulo Loiola[1]; Sergio Monteiro[2]; [1]UENF; [2]IME

10:10 AM
Simplex Network Modeling for Press-Molded Ceramic Bodies Incorporated with Granite Waste: *Leonardo Pedroti*[1]; Carlos Mauricio Vieira[1]; Sérgio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; [1]UENF

10:30 AM
Tensile Behavior of Epoxy Composites Reinforced with Continuous and Thinner Buriti Fibers: *Frederico Margem*[1]; Giulio Altoe[1]; Romulo Loiola[1]; Sergio Monteiro[2]; Noan Simonassi[1]; [1]UENF; [2]IME

10:50 AM
Influence of the Red Mud Content In Mechanical Properties of Natural Fiber-Reinforced Polymeric Composites: *Mauro OIiveira*[1]; [1]Universidade Federal do Pará

11:10 AM
Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Banana Fibers: *Frederico Margem*[1]; Foluke De Assis[1]; Romulo Loiola[1]; Sergio Monteiro[2]; Jean Margem[1]; [1]UENF; [2]IME

Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Meimei Li, Argonne National Laboratory; Jon Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Laboratory; Matthew Kerr, Knolls Atomic Power Laboratory; Paula Mosbrucker, Kinectrics Inc.

Wednesday AM
March 6, 2013

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

Session Chairs: Meimei Li, Argonne National Laboratory; Jonathan Almer, Argonne National Laboratory

8:30 AM Invited
Zirconium Hydride Characterization Using Synchrotron X-Ray Diffraction: Miguel Vicente Alvarez[1]; *Javier Santisteban*[1]; Pablo Vizcaino[2]; Alejandra Flores[2]; Abraham Banchik[2]; Jonathan Almer[3]; [1]Centro Atómico Bariloche; [2]Centro Atómico Ezieza - CNEA; [3]Advanced Photon Source, Argonne National Laboratory

9:00 AM Question and Answer Period

9:05 AM
Synchrotron Studies on the Stress Relaxation near a Notch in Zr-2.5Nb: *Shuai Wan*[1]; Mark Daymond[1]; Paula Mosbrucker[2]; [1]Queen's University; [2]Kinectrics Inc.

9:20 AM Question and Answer Period

9:25 AM
Effect of Stress on Hydride Precipitation Temperature and Hydride Texture in Zr2.5%Nb Pressure Tubes: Pablo Vizcaino[1]; *Javier Santisteban*[1]; Miguel Vicente-Alvarez[1]; Abraham Banchik[1]; Jon Almer[2]; [1]Comision Nacional de Energia Atómica; [2]Argonne National Laboratory

9:40 AM Question and Answer Period

9:45 AM Break

10:00 AM Invited
Synchrotron X-Ray Characterizations of Nuclear Materials Using the MARS Beamline: Brief Review of Current Studies: Bruno Sitaud[1]; Pier Lorenzo Solari[1]; Sandrine Schlutig[1]; Isabelle Llorens[1]; Marc Souilah[1]; Marie-Laure Lescoat[2]; Denis Menut[2]; Jean-Luc Béchade[2]; Nicolas Jonquères[2]; Olivier Bouty[2]; Sylvain Peuget[2]; Rémi Delorme[2]; Philippe Martin[2]; Christophe Valot[2]; *Sebastiano Cammelli*[1]; [1]Synchrotron SOLEIL; [2]CEA

10:30 AM Question and Answer Period

10:35 AM
Effect of Loading Methodology on Internal Strains Measured: *Travis Skippon*[1]; Bjørn Clausen[2]; Mark Daymond[1]; [1]Queen's University; [2]Los Alamos National Laboratory

10:50 AM Question and Answer Period

10:55 AM
In Situ Characterization of Grade 92 Steel during Tensile Deformation Using High Energy X-Ray Diffraction and Small Angle X-Ray Scattering: *Leyun Wang*[1]; Meimei Li[1]; Jonathan Almer[1]; [1]Argonne National Laboratory

11:10 AM Question and Answer Period

11:15 AM
High-Energy Synchrotron Radiation Study on Anisotropic Loading Behavior of Alloy 230 for VHTR Applications: *Kun Mo*[1]; Hsiao-ming Tung[1]; Jonathan Almer[2]; Meimei Li[2]; Xiang Chen[3]; Weiying Chen[1]; James Stubbins[1]; [1]University of Illinois; [2]Argonne National Laboratory; [3]Oak Ridge National Laboratory

11:30 AM Question and Answer Period

11:35 AM
Thermo-mechanical Treatment of Ultrafine Grained T91 Alloy: *Miao Song*[1]; Xinghang Zhang[2]; Karl Hartwig[2]; [1]Material Science and Engieering Program,Texas A&M University; [2]Department of Mechanical Engineering, Texas A&M University

11:50 AM Question and Answer Period

11:55 AM
Monte Carlo and Molecular Dynamics Study of Atomistic Ordering and Properties in Uranium-Zirconium Alloy: *Alex Moore*[1]; Chaitanya Deo[1]; [1]Georgia Institute of Technology

12:10 PM Question and Answer Period

Computational Discovery of Novel Materials: Interfaces and Microstructure

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Wednesday AM
March 6, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Francesca Tavazza, NIST; Richard Hennig, Cornell University

8:30 AM Invited
Design of Damage Resistant Glasses Guided by Computer Simulation: *Liping Huang*[1]; [1]Rensselaer Polytechnic Institute

9:05 AM
A Van Der Waals DFT Study of Nano-Decorated Graphene Based Nanostructures for Hydrogen Storage: Janet Wong[1]; *Chandra Veer Singh*[1]; [1]University of Toronto

9:25 AM
Magnetic Anisotropy of L10-CoPt Thin Ffilm on Piezoelectric Substrate: *Heechae Choi*[1]; Kwang-Ryeol Lee[1]; [1]Korea Institute of Science and Technology

9:45 AM Break

10:00 AM Invited
Shape Memory Metamaterials with Tunable Thermo-Mechanical Response Via Hetero-Epitaxial Integration: *Alejandro Strachan*[1]; Karthik Guda Vishnu[2]; Keith Morrison[1]; [1]Purdue University; [2]Pennsylvania State University

10:35 AM
A Genetic Algorithm Approach to Design the Micro-Structure for TRIP-Assisted Steel: *Shengyen Li*[1]; Ruixian Zhu[1]; Ibrahim Karaman[1]; Raymundo Arroyave[1]; [1]Texas A&M University

10:55 AM
Model Based Redesign of MX Carbonitrides Strengthened Austenitic Heat Resistant Steels: *Qi Lu*[1]; Wei Xu[1]; Sybrand van der Zwaag[1]; [1]Delft University of Technology

11:15 AM
Properties of Zirconia Gadolinia Ytterbia Yttria Thermal Barrier Coating Studied by First Principles Simulation: *Liuxi Tan*[1]; Shengmin Guo[2]; Ebrahim Khosravi[1]; Shizhong Yang[1]; Lei Zhao[1]; [1]Southern University and A&M College; [2]Louisiana State University

Cost Affordable Titanium IV: The Production and Processing of Titanium Powder

*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

Wednesday AM
March 6, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Zhigang Fang, University of Utah; Kartik Rao, Metalysis

8:30 AM
The Production of Titanium Alloy Powder: *James Withers*[1]; V. Shapovalov[1]; R. Storm[1]; R. O. Loutfy[1]; [1]MER Corporation

8:50 AM Invited
Processing of Titanium Powder into Consolidated Parts & Sheet: Kamal Akhtar[1]; *Damien Mangabhai*[1]; Kerem Araci[1]; Nigel Stone[2]; Delphine Cantin[2]; Yukinori Yamamoto[3]; Thomas Muth[3]; [1]International Titanium Powder; [2]CSIRO; [3]Oak Ridge National Laboratory

9:10 AM Invited
Enhancing the Cost Effectiveness of High Performance Titanium Alloy Component Production by Powder Metallurgy: *Deliang Zhang*[1]; Mingtu Jia[1]; Stiliana Raynova[1]; Fei Yang[1]; Brian Gabbitas[1]; [1]The University of Waikato

9:30 AM Break

9:50 AM Invited
Impurity Scavenging from Powder Metallurgy Titanium Alloys by Rare Earth Elements: *Ma Qian*[1]; Ming Yan[1]; [1]The University of Queensland

10:10 AM Invited
Development and Optimization of Rolled Product Forms Using Blended-Elemental Powder-Based Ti-6AL-4V Alloy: *Sami El-Soudani*[1]; Kuang-O (Oscar) Yu[2]; Ernie Crist[2]; Fusheng Sun[2]; Vladimir Moxson[3]; Vlad Duz[3]; [1]The Boeing Company; [2]RTI International Metals, Inc.; [3]Advanced Materials, Inc.

10:30 AM
Rolled Product Form Development and Optimization Using Blended-Elemental Powder-Based Billets of Ti-6AL-4V Alloy: *Sami El-Soudani*[1]; John Fanning[2]; Megan Harper[2]; Stephen Fox[2]; Vladimir Moxson[3]; Vlad Duz[3]; [1]The Boeing Company; [2]Timet, Inc.; [3]Advanced Materials, Inc.

10:50 AM
Comparison of Properties and Microstructure of Ti-6Al-7Nb Alloy Processed by Different Powder Metallurgy Routes: *Leandro Bolzoni*[1]; Hari Babu Nadendla[1]; Elisa María Ruiz-Navas[2]; Elena Gordo[2]; [1]Brunel University; [2]Universidad Carlos III de Madrid

11:10 AM
Effect of Powder Compact Holding Time on the Microstructure and Properties of Ti-6Al-4V Alloy Produced by Powder Compact Extrusion of a Powder Mixture of HDH Titanium and Al-V Master Alloy: *Fei Yang*[1]; Deliang Zhang[1]; Brian Gabbitas[1]; Huiyang Lu[1]; [1]The University of Waikato

11:30 AM
Solid State Processing Routes for Low-Cost Titanium Powder to Produce Sheet and Complex Forgings: *Nick Weston*[1]; Fatos Derguti[1]; Martin Jackson[1]; [1]University of Sheffield

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session IV

*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

Wednesday AM
March 6, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Ke An, Oak Ridge National Laboratory

8:30 AM Invited
There's Plenty of Room at the Bottom...for Mg-Alloys: *Suveen Mathaudhu*[1]; [1]U.S. Army Research Office

9:00 AM
Direct Observations and Characterization of Twinning in Magnesium: *Benjamin Morrow*[1]; Ellen Cerreta[1]; Rodney McCabe[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory

9:20 AM
Inhomogeneity of Slip Activity in Grains Oriented for Exclusively Non-basal Slip in Polycrystalline AZ31: *Ali Khosravani*[1]; Raja K. Mishra[2]; Surya Kalidindi[3]; Roger Doherty[1]; David Fullwood[4]; [1]Materials Science and Engineering Department, Drexel University; [2]General Motors Research and Development Centre; [3]Materials Science and Engineering Department, Mechanical Engineering and Mechanics, Drexel University; [4]Mechanical Engineering Department, Brigham Young University

9:40 AM
Deformation Behavior of Nanocrystalline Mg-Y Alloy: *Dalong Zhang*[1]; Baolong Zheng[1]; Yizhang Zhou[1]; Suveen Mathaudhu[2]; Enrique Lavernia[1]; [1]University of California-Davis; [2]U.S. Army Research Office

10:00 AM Break

10:10 AM Invited
Deformation Behavior of Magnesium Alloys Investigated using Diffraction Measurements and Self-Consistent Modeling: *Bjørn Clausen*[1]; Huamiao Wang[2]; Martin Lentz[3]; Peidong Wu[2]; Sean Agnew[4]; Carlos Tomé[1]; [1]Los Alamos National Laboratory; [2]McMaster University; [3]Technische Universität Berlin; [4]University of Virginia

10:40 AM
Quasi-Static and Cyclic Mechanical Behavior of 41-50 Magnesium Single Crystal: *Qizhen Li*[1]; [1]University of Nevada, Reno

11:00 AM
Modelling Microplastic Flow in an hpdc Mg-Al Alloy: *Bao Zhang*[1]; Carlos Caceres[1]; [1]The University of Queensland

11:20 AM
Atomistic Simulations of Deformation Mechanisms in Light-Weight hcp Mg-Li Alloys: *Shivraj Karewar*[1]; Niraj Gupta[1]; Alfredo Caro[2]; Srinivasan Srivilliputhur[1]; [1]University of North Texas; [2]Los Alamos National Laboratory

11:40 AM
Quantification of Lattice Defects in Severe-plastic Deformed Metals: *Yoji Miyajima*[1]; [1]Tokyo Institute of Technology

Electrode Technology for Aluminium Production: Anode Quality and Performance

*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

Wednesday AM
March 6, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Matvey Golubev, Rusal - ITC

8:30 AM Introductory Comments

8:35 AM
Pilot Scale Anodes for Raw Material Evaluation and Process Improvement: *Lorentz Petter Lossius*[1]; Juraj Chmelar[1]; Inge Holden[2]; Hogne Linga[1]; Michal Tkac[1]; [1]Hydro Primary Metal Technology; [2]Hydro Aluminium Årdal Carbon

9:00 AM
Relationships between Coke Properties and Anode Properties – Round Robin 19: Lorentz Petter Lossius[1]; *Marvin Lubin*[2]; Les Edwards[2]; Julien Wyss[3]; [1]Norsk Hydro ASA; [2]Rain CII Carbon; [3]R&D Carbon

9:25 AM
Application of the Artificial Neural Network (Ann) in Predicting Anode Properties: *Dipankar Bhattacharyay*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

9:50 AM
A Model for Predicting the Electrical Resistivity of Baked Anodes: *Dipankar Bhattacharyay*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

10:15 AM Break

10:25 AM
The Role of Electrode Quality in Metal Purity: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

10:50 AM
Electrochemical Characterization of Anode Performance: *Rebecca Thorne*[1]; Camilla Sommerseth[1]; Espen Sandnes[2]; Ole Kjos[3]; Thor Anders Aarhaug[3]; Lorentz Lossius[2]; Hogne Linga[2]; Arne Ratvik[1]; [1]Norwegian University of Science and Technology (NTNU); [2]Hydro Aluminium; [3]SINTEF

11:15 AM
High Capacity Thermobalance Anode Reactivity Testing: Frank Cannova[1]; *Nick Janssen*[1]; Jim Baker[1]; Barry Sadler[2]; [1]BP; [2]Net Carbon Consulting

11:40 AM
Diagnosing Changes in Baked Anode Properties using a Multivariate Data-driven Approach: *Julien Lauzon-Gauthier*[1]; Carl Duchesne[1]; Jayson Tessier[2]; [1]REGAL - Université Laval; [2]Alcoa

Electrode Technology for Aluminium Production: Cathode Materials and Wear

*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

Wednesday AM
March 6, 2013

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

Session Chair: Pretesh Patel, Light Metals Research Center

8:30 AM Introductory Comments

8:35 AM
Evolution of the Thermo-Mechanical Properties of Ramming Paste from Ambient to Operating Temperature in Hall-Heroult Cell: *Stephane Tremblay*[1]; Lyne St-Georges[1]; Laszlo Kiss[1]; Lyès Hacini[2]; Daniel Marceau[1]; Bénédicte Allard[3]; [1]Université du Québec à Chicoutimi; [2]Rio Tinto Alcan; [3]Carbone Savoie

9:00 AM
New Compaction Method for the Production of Large Ramming Paste Samples for 3d Mechanical Characterization: *Pierre-Olivier St-Arnaud*[1]; Donald Picard[1]; Maxime Noël[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Université Laval; [2]Alcoa Canada

9:25 AM
Technology for Manufacturing Cathodes Used in Aluminum Reduction in China: Hongjie Yang[1]; *Fengqin Liu*[1]; Xiaopei Yang[1]; [1]Chalco

9:50 AM
The Effect Of Cryolite On The Formation of Aluminum Carbide at the Carbon Aluminum Interface: *Bronislav Novak*[1]; Kati Tschöpe[2]; Arne Petter Ratvik[1]; Tor Grande[1]; [1]Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry

10:15 AM Break

10:25 AM
Critical Reflections on Laboratory Wear Tests for Ranking Commercial Cathode Materials in Aluminium Cells: *Kati Tschöpe*[1]; Anne Støre[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; Tor Grande[2]; Arne Petter Ratvik[2]; [1]SINTEF Materials and Chemistry; [2]Norwegian University of Science and Technology (NTNU)

10:50 AM
Model for Excessive Cathode Wear by a "Carbon Pump" at the Cell Bottom: *Asbjorn Solheim*[1]; Kati Tschöpe[2]; [1]SINTEF; [2]NTNU

11:15 AM
Characterization of Porous Structure and Its Correlation to Sodium Expansion of Graphite Cathode Materials Using Image Analysis: *Xiang Li*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

11:40 AM
Studies on the Resistance to Alkali Metal Penetration of Binders for TiB_2-C Composite Cathode Materials: *Fang Zhao*[1]; Zhang Kai[2]; Lai Yan-qing[2]; LI Lin-bo[1]; ZHU Jun[1]; [1]School of Metallurgical Engineering, Xi'an University of Architecture and Technology; [2]Central South University

Energy Technologies and Carbon Dioxide Management: Energy Education

*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

Wednesday AM
March 6, 2013

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

Session Chair: Art Morris, Thermart Software

8:30 AM Introductory Comments

8:35 AM
Global Look at Energy Education and Training: *Arvind Thekdi*[1]; [1]Consultant

9:05 AM
Software for Energy Education: *Art Morris*[1]; Semih Perdahcioglu[2]; [1]Thermart Software; [2]University of Twente

9:35 AM
Courses on Sustainability Issues in Materials Engineering: *Jeffrey Fergus*[1]; [1]Auburn University

10:05 AM Break

10:35 AM
Overview of Industrial Energy Training and Software: *Cynthia Belt*[1]; [1]Consultant

10:55 AM
Report on Subcommittee on Sustainability in Materials Education: *Jeffrey Fergus*[1]; Chris Twigge-Molecey[2]; [1]Auburn University; [2]Hatch

11:25 AM
Teaching about Energy Sources at the University of Illinois (and How to Bring the Subject to Life): *David Ruzic*[1]; [1]University of Illinois

11:55 AM
A Suggestion for Establishing Energy Management Policy in Primary Aluminum Industry by Applying Strategic Management Tools: *Hadi Fanisalek*[1]; [1]Marzban Petro Energy (MPE)

12:25 PM Invited
Perspectives on Energy Education and the Role of TMS: *Garry Warren*[1]; [1]Univ of Alabama

Fatigue and Fracture of Thin Films and Nanomaterials: Micromechancial Testing for Nanomaterial Failure

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

Wednesday AM
March 6, 2013

Room: Bowie C
Location: Grand Hyatt

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

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

8:30 AM Invited
Grain Boundary Fracture at the Micron Scale: a Combined Experimental and FEM Approach: Daniel Kupka[1]; Norbert Huber[1]; *Erica Lilleodden*[1]; [1]Helmholtz-Zentrum Geesthacht

9:00 AM
Nanoscale Time-Dependent Plasticity of 1-D Nanomaterials: Yong-Jae Kim[1]; Won Woo Lee[1]; In-Chul Choi[1]; Won Il Park[1]; *Jae-il Jang*[1]; [1]Hanyang University

9:20 AM
In-Situ ACOM-TEM Nanomechanical Testing of <111> Textured Ultrafine Grained Al Thin Films: Plasticity and Fracture Mechanisms: *Hosni Idrissi*[1]; Aaron Kobler[2]; Behnam Amin-ahmadi[1]; Michael Coulombier[3]; Jean-Pierre Raskin[4]; Chrisitan Kübel[2]; Thomas Pardoen[3]; Dominique Schryvers[1]; [1]EMAT. University of Antwerp; [2]Institute of Nanotechnology (INT); [3]Institute of Mechanics, Materials and Civil Engineering, Université catholique de Louvain; [4]Information and Communications Technologies, Electronics and Applied Mathematics (ICTEAM),Université catholique de Louvain

9:40 AM
Direct Observation of Toughening Mechanism of Nano-Twins in Strombus Gigas Conch Shell: *Yoon Ah Shin*[1]; Subin Lee[1]; Jiseong Im[1]; Ga-Young Shin[1]; Kyung Song[1]; Sang Ho Oh[1]; [1]Pohang University of Science and Technology (POSTECH)

10:00 AM Break

10:20 AM Invited
Mechanical Deformation and Failure of Low Dimensional Carbon Nanomaterials: *Jun Lou*[1]; [1]Rice University

10:50 AM
Size-Dependent Elastic and Plastic Behavior in Pd Nanowhiskers: *Lisa Chen*[1]; Gunther Richter[2]; John Sullivan[3]; Dan Gianola[1]; [1]University of Pennsylvania; [2]Max Planck Institute for Intelligent Systems; [3]Sandia National Laboratories

11:10 AM
Mechanical Characterization of Boron Carbide Nanowires: *Youfei Jiang*[1]; Zhe Guan[1]; Terry Xu[1]; [1]The University of North Carolina at Charlotte

11:30 AM
Mechanical Stability of Quasi One-Dimensional Nanostructures (Nanowires): *Charlotte Ensslen*[1]; Reiner Mönig[1]; Andreas Sedlmayr[1]; Oliver Kraft[1]; [1]Karlsruhe Institute of Technology

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue Property Enhancement and Life Prediction

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

Wednesday AM
March 6, 2013

Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Antonios Kontsos, Drexel University

8:30 AM Keynote
Microstructure-Sensitive Mesoscopic Modeling Fatigue Crack Formation and Early Growth in Polycrystals: Gustavo Castelluccio[1]; William Musinski[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

9:05 AM Invited
A Geometric Approach to Probabilistic Simulation of Microstructurally Small Fatigue Crack Processes in AA 7075-T651: *Anthony Ingraffea*[1]; [1]Cornell University

9:30 AM Invited
Recent Advances in Fatigue Life Prediction: *Michael Sangid*[1]; [1]Purdue University

9:55 AM Break

10:15 AM Invited
History and Future of Fatigue Initiation Analysis in Aerospace Structures: *Mary Lee Gambone*[1]; [1]Rolls-Royce Corporation

10:40 AM Invited
Probabilistic Modeling of Accelerated Fatigue Life Using Step-Stress Loading: *D Gary Harlow*[1]; [1]Lehigh University

11:05 AM Invited
Life-Cycle Performance of Turbine Rotor Materials: A Probabilistic Life-Limit Perspective: James Larsen[1]; *Sushant Jha*[2]; Christopher Szczepanski[1]; Reji John[1]; Andrew Rosenberger[1]; Michael Caton[1]; Patrick Golden[1]; Dennis Buchanan[3]; Jay Jira[1]; Siamack Mazdiyasni[1]; [1]Air Force Research Laboatory; [2]Universal Technology Corporation; [3]University of Dayton Research Institute

11:30 AM Invited
Probabilistic Sensitivity Analysis in Minimum Fatigue Life Prediction of a Shot Peened Titanium Alloy: Reji John[1]; *Sushant Jha*[2]; James Larsen[1]; [1]Air Force Research Laboratory; [2]Universal Technology Corporation

11:55 AM
Life Prediction for Turbopropulsion Systems Under Dwell Fatigue Conditions: *Kwai Chan*[1]; Michael Enright[1]; Jonathan Moody[1]; Ben Hocking[2]; Simeon Fitch[2]; [1]Southwest Research Institute; [2]Elder Research Inc

12:15 PM
Microstructure-Based Fatigue Life Prediction Tool for Gearbox Components: *Raja Pulikollu*[1]; Nathan Bolander[1]; Sandeep Vijayakar[2]; Tony Shen[3]; Matthew Spies[4]; Eric Ames[4]; [1]Sentient Science Corporation; [2]Advanced Numerical Solutions LLC; [3]The Boeing Company; [4]U.S. Army Aviation Applied Technology Directorate

Friction Stir Welding and Processing VII: Friction Stir Welding: Light 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

Wednesday AM
March 6, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ravi Verma, General Motors; Anthony Reynolds, University of South Carolina; Mitsuo Fujimoto, Kawasaki Heavy Industries, Ltd

8:30 AM Keynote
The Benefits and Opportunities for Friction Stir Welding and Processing within the Automotive Industry: *Blair Carlson*[1]; [1]General Motors

8:55 AM Invited
Effect of Tool Pin Features and Geometries on Quality of Weld during Friction Stir Welding: Md. Reza-E-Rabby[1]; Wei Tang[1]; *Anthony Reynolds*[1]; [1]University of South Carolina

9:15 AM
Aluminum Tailor-Welded Blanks for Automotive Applications: *Yuri Hovanski*[1]; John Carsley[2]; Blair Carlson[3]; Siva Pilli[1]; Susan Hartfield-Wunsch[3]; Mark Eisenmenger[4]; [1]Pacific Northwest National Laboratory; [2]General Motor Research & Development; [3]General Motors; [4]TWB Company

9:35 AM
Effect of Friction Stir Processing on Armor Grade Materials: *Timothy Johnson*[1]; Todd Curtis[2]; Bharat Jasthi[3]; Eric East[1]; Christian Widener[1]; Michael West[1]; [1]South Dakota School of Mines and Technology; [2]Zone Four Engineering, LLC; [3]Arbegast Advanced Materials Processing Laboratory

9:55 AM Break

10:05 AM
The Characterization of the Microstructural Zones and the Spatial Variations of the Mechanical Properties in Friction-Stir Welded 2139 Aluminum Alloy: *Jian Yu*[1]; Brian Justusson[2]; Chian-Fong Yen[1]; [1]ARL; [2]University of Michigan

10:25 AM
Effect of Process Parameters on the Microstructure and Mechanical Properties of Friction Stir Welded 2050-T3 Al-Li Alloy: *Harpreet Sidhar*[1]; Rajiv Mishra[1]; Anthony Reynolds[2]; Lucie Johannes[3]; John Baumann[4]; [1]University of North Texas; [2]University of South Carolina; [3]NASA-Johnson Space Center; [4]The Boeing Company

10:40 AM
Analysis of Mechanical and Metallurgical Properties of Friction Stir Butt Welded AA2024: *Sarah Jurak*[1]; Dwight Burford[1]; Michael McCoy[1]; [1]Wichita State University

10:55 AM
An Innovative Process Applied to the Joining of Steel to Aluminum in a Lap-Joint Configuration: *Camille van der Rest*[1]; Aude Simar[1]; Pascal Jacques[1]; [1]Université catholique de Louvain

11:15 AM
Mechanical and Microstructural Properties of FSW Lap Joints: *Egoitz Aldanondo*[1]; Ekaitz Arruti[1]; Pedro Alvarez[1]; Alberto Echeverria[1]; [1]IK4-LORTEK

11:35 AM
Mechanical Properties of Repaired 7075-T73 Friction Stir Weld Butt Welds: Christian Widener[1]; *John Franklin*[1]; Bharat Jasthi[2]; Michael West[1]; [1]South Dakota School of Mines and Technology; [2]Arbegast Advanced Materials Processing Laboratory

11:55 AM
Refill Friction Stir Spot Welding of Aluminum Alloys for Aviation by Using Shoulder First Plunging Method: *Hideki Okada*[1]; [1]Kawasaki Heavy Industries, LTD.

12:15 PM
Process Development of Integral Fasteners Using Friction Stir Spot Welding with "C-Frame" End Effect or on an Aircraft Cabin Door Made from AA6061-T6 and AA2024-T3: *Alan Handyside*[1]; Vishwanath Iyer[1]; Ron Preston[1]; Enkhsaikhan Boldsaikhan[1]; Michael McCoy[1]; [1]Wichita State University

12:35 PM
Effect of Post-weld Aging on the Corrosion Resistance and Mechanical Properties of Friction Stir Welded Aluminum Alloy 7475-T73: Bharat Jasthi[1]; *Erik Klinckman*[2]; Todd Curtis[1]; Christian Widener[2]; Michael West[2]; Robert Ruokolainen[3]; Ashish Dasgupta[3]; [1]Advanced Materials Processing and Joining Laboratory, South Dakota School of Mines and Technology; [2]South Dakota School of Mines and Technology; [3]Focus: HOPE

12:55 PM
Effect of a Two-stage Tool Probe on the Mechanical Strength and Macrostructure of Friction Stir Spot Welded Aerospace Alloys AA 7075 and AA 2024: A.Vishwanath Iyer[1]; *Enkhsaikhan Boldsaikhan*[1]; Dwight Burford[1]; Michael Mccoy[1]; [1]Wichita State University

1:10 PM
Investigation of Microstructural Evolution in the Transition Zone of Multipass Friction Stir Processed Al-Mg Alloy: Pradeep Shivanna[1]; *Vivek Pancholi*[1]; [1]Indian Institute of Technology Roorkee

Frontiers in Solidification Science: Microstructure Formation I: Experimental

*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

Wednesday AM
March 6, 2013
Room: Lone Star Salon F
Location: Grand Hyatt

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

Session Chairs: Christopher Gourlay, Imperial College London; Ulrike Hecht, Access e.V.

8:30 AM Invited
Effects of Grain and Interphase Boundary Energy Anisotropy on Directional Solidification Microstructures: *Gabriel Faivre*[1]; Sabine Bottin-Rousseau[1]; Silvere Akamatsu[1]; [1]UPMC

9:00 AM
Cooperative Growth of Primary and Peritectic Phases in Cu-Sn Alloys Solidified at Low Speed: Pseudo-Steady State Regime: *Jonas Valloton*[1]; Jonathan Dantzig[2]; Mathis Plapp[3]; Michel Rappaz[1]; [1]EPFL; [2]EPFL/UIUC; [3]CNRS/Ecole Polytechnique

9:20 AM
Characterization of Fluid Flow Inside Electromagnetically-Levitated Molten Iron-Cobalt Droplets for ISS Experiment for ISS Experiments: *Jonghyun Lee*[1]; Xiao Xiao[1]; Douglas Matson[1]; Robert Hyers[2]; [1]Tufts University; [2]University of Massachusetts

9:40 AM Break

9:55 AM
Enhanced Growth Kinetics in Undercooled FeCo Alloys - Adiabatic Remelting of the Mushy-Zone: *Douglas Matson*[1]; Jackson Dolan[1]; [1]Tufts University

10:15 AM
Crystal Orientation and Morphology Selection in Al-Ag-Cu Ternary Eutectic: *Amber Genau*[1]; Lorenz Ratke[2]; [1]University of Alabama at Birmingham; [2]German Aerospace Center (DLR)

10:35 AM
Nucleation of Twinned Dendrites in Al-Zn-Cr Alloys: Can Icosahedral Solid Clusters Play a Role?: *Güven Kurtuldu*[1]; Philippe Jarry[2]; Michel Rappaz[1]; [1]Computational Materials Laboratory, Ecole Polytechnique Fédérale de Lausanne, Switzerland; [2]Constellium CRV, France

10:55 AM Invited
Ultra-Fast Calorimetry for Studies of Crystallization in Chalcogenides for Phase-Change Memory: *A. L. Greer*[1]; [1]University of Cambridge

11:25 AM
Application of Fast Scanning Calorimetry in the Rapid Solidification of Tin Particles Embedded in Al Matrix: *Weipeng Zhang*[1]; Bingge Zhao[1]; Qijie Zhai[1]; Yulai Gao[1]; [1]School of Materials Science and Engineering, Shanghai University

11:45 AM
Undercooling Dependence on Liquid Overheating by Differential Fast Scanning Calorimetry: *Bin Yang*[1]; John Perepezko[2]; Evgeny Zhuravlev[1]; Yulai Gao[3]; Christoph Schick[1]; [1]University of Rostock; [2]University of Wisconsin-Madison; [3]Shanghai Unviersity

12:05 PM
Size Dependent Nucleation of Single Tin Particles by Differential Fast Scanning Calorimetry: *Bin Yang*[1]; A. S. Abyzov[2]; Evgeny Zhuravlev[1]; Yulai Gao[3]; J. W. P. Schmelzer[1]; Christoph Schick[1]; [1]University of Rostock; [2]National Science Center, Kharkov Institute of Physics and Technology; [3]Shanghai University

High Temperature Electrochemistry: Electrochemistry and Materials Properties

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

Wednesday AM
March 6, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dihua Wang, Wuhan University; Laurent Cassayre, Laboratoire de Genie Chimique

8:30 AM
Ultrahigh-Purity Materials (>99.9999%) by Electrorefining: *Meng Tao*[1]; [1]Arizona State University

9:00 AM
Influence of FeF2 Content on the Corrosion of Ni-Cased Alloys (NiCrW and NiCrMo) in Molten Fluorides: *Laurent Cassayre*[1]; Thierry Auger[2]; Céline Cabet[3]; Isabelle Drouelle[4]; Jérémy Lezac[1]; Laurent Massot[1]; Mathieu Gibilaro[1]; Pierre Chamelot[1]; [1]Laboratoire de Génie Chimique; [2]MSSMAT; [3]CEA; [4]Institut de Chimie Moléculaire et des Matériaux d'Orsay

9:30 AM
Effect of Electrical Conductivity and Porosity of Cathode on Electro-Deoxidation Process of Ilmenite Concentrate: *Xuyang Liu*[1]; Meilong Hu[2]; Chenguang Bai[2]; Xuewei Lv[2]; [1]Chongqing university; [2]Chongqing University

10:00 AM Break

10:20 AM
Oxygen – Permeable Solid/Melt Composite Membranes: *Valery Belousov*[1]; [1]Baikov IMET RAS

10:50 AM
Zirconia Sensor Device for *In-Situ* Monitoring of Metal Powder Oxidation States: *Jarrod Milshtein*[1]; Soumendra Basu[1]; Srikanth Gopalan[1]; Uday Pal[1]; [1]Boston University

11:20 AM
The Kinetics and Mechanism of Catastrophic Oxidation of Copper.: *Anton Klimashin*[1]; [1]Baikov IMET RAS

11:50 AM
On the Preparation of Mg2Ni Alloy by a New Electrochemical Method: *Fuat Erden*[1]; Ishak Karakaya[1]; Metehan Erdogan[1]; [1]Middle East Technical University

12:10 PM
The Influence of F- Ions on the Electrodeposition of Titanium in Molten Fluoride-chloride Salt: Xiaobo Zhu[1]; Qiuyu Wang[1]; Jianxun Song[1]; Shuqiang Jiao[1]; *HongMin Zhu*[1]; [1]University of Science and Technology Beijing

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Alloy Theory II (Joint Session with Computational Thermodynamics and Kinetics)

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

Wednesday AM
March 6, 2013

Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alan Ardell, UCLA; Gus Hart, BYU

8:30 AM Invited
High Entropy Alloys a New Class of Structural Materials: Magnetism and Magnetic Interactions: *G. Malcolm Stocks*[1]; Markus Daene[2]; Junqi Yin[1]; Markus Eisenbach[1]; Aurelian Rusanu[1]; Khorgokhuu Odbadrakh[1]; James Morris[1]; Claudia Troparevsky[1]; [1]ORNL; [2]LLNL

9:00 AM Invited
Hybrid Methods for Hybrid Materials: *Stefan Müller*[1]; [1]Hamburg University of Technology

9:30 AM Break

9:50 AM Invited
Effect of Epitaxial Strain on Phase Stability and Domain Structures in Thin Films: *Long Qing Chen*[1]; [1]Penn State University

10:20 AM Invited
Thermodynamic and Kinetic Properties of High Temperature Materials from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

10:50 AM Invited
Charges States and Their Implications on CALPHAD Modeling: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

Hybrid and Hierarchical Composite Materials: Characterization and Structure-Property Relationships

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

Wednesday AM
March 6, 2013

Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

8:30 AM
Synthesis and Characterization of Inorganic Fullerene Type WS2 and Carbon Nanostructures Composites: Claudia Luhrs[1]; Michael Moberg[1]; *Ashley Maxson*[1]; Luke Brewer[1]; Sarath Menon[1]; [1]Naval Postgraduate School

8:50 AM
Development of Cyclic Damage in Cfrp under Variable Loading Conditions: *Alan Plumtree*[1]; [1]University of Waterloo

9:10 AM
Strain-rate Sensitivity in the Bending Strength of a Forged Turbostratic-Carbon Fiber Composite: *Eric Brannigan*[1]; Alan Jankowski[1]; [1]Texas Tech University

9:30 AM
Effect of Buckypaper Reinforcement on the Hypervelocity Impact Response of Polyethylene Fiber Composites: *Suman Khatiwada*[1]; Enrique Barrera[1]; [1]Rice University

9:50 AM Break

10:05 AM
Characterizing Thin Polyurea Layers Subjected to High Rate Loading: *Charles Randow*[1]; Daniel Casem[1]; Jason Robinette[1]; [1]US Army Research Lab

10:25 AM
Enhanced Permeability of 3D Woven Lattice Material with Experimental Testing and Modeling: *Longyu Zhao*[1]; Seunghyun Ha[1]; Keith Sharp[2]; Andrew Geltmacher[3]; Alex Kinsey[1]; Yong Zhang[1]; Dinc Erdeniz[4]; David Dunand[4]; Kevin Hemker[1]; Jamie Guest[1]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]3TEX, Inc., NC USA; [3]Naval Research Laboratory; [4]Northwestern University

10:45 AM
Composite Crush Response of Hybrid 3D Woven Composites: *Mark Pankow*[1]; Chian-Fong Yen[1]; Anthony Waas[2]; [1]Army Research Laboratory; [2]University of Michigan

11:05 AM
High Rate Through-the-Thickness Response of Hybrid 3D Woven Composites: *Brian Justusson*[1]; Mark Pankow[2]; Anthony Waas[1]; Chian-Fong Yen[2]; [1]University of Michigan; [2]United States Army Research Laboratories

Magnesium-Based Biodegradable Implants Symposium: Performance Assessment and Evaluation

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday AM
March 6, 2013

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

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Wim Sillekens, ESA - European Space Agency; Jörg Löffler, ETH Zurich

8:30 AM Introductory Comments Candan Tamerler / Wim Sillekens

8:40 AM Keynote
How to Standardize Testing of Biodegradable Metals?: *Frank Witte*[1]; [1]Hannover Medical School

9:20 AM
Corrosion Characterization of Biodegradable Mg Alloys: *Yeoheung Yun*[1]; Yongseok Jang[1]; Boyce Collins[1]; Zongqing Tan[2]; Zhongyun Dong[2]; Jag Sankar[1]; [1]NC A & T State University; [2]University of Cincinnnati

9:40 AM
In Vitro and In Vivo Corrosion Characterization of MgZnCa Alloys: *Zhigang Xu*[1]; Boyce Collins[1]; Zongqing Tan[2]; Christopher Smith[1]; Zhongyun Dong[2]; Yeoheung Yun[1]; Jag Sankar[1]; [1]NC A&T State University; [2]University of Cincinnati

10:00 AM Break

10:20 AM
A Dynamic In Vitro Degradation System for Standardized Mg Degradation Studies: *Florian Evertz*[1]; Birgit Glasmacher[1]; [1]Leibniz Universität Hannover

10:40 AM
In Vivo Corrosion Progression of Bioabsorbable Magnesium for Stents Using a Rodent Model: *Patrick Bowen*[1]; Jaroslaw Drelich[1]; Jeremy Goldman[1]; [1]Michigan Technological University

11:00 AM
Influence of Biological Environment on the Suitability of Magnesium Alloys: Robert Thornton[1]; *Paul Lyon*[1]; Julie Gough[2]; Natasha Bhuiyan[2]; [1]Magnesium Elektron; [2]University of Manchester

11:20 AM
In Vivo Study of Effect of Magnesium Degradation on Osteomyelitis: *Ling Ren*[1]; Jinhao Zeng[2]; Ke Yang[1]; Xifan Mei[2]; [1]Institute of Metal Research CAS; [2]Liaoning Medical University

11:40 AM
Stress Corrosion Cracking of Aluminium-Free Magnesium Alloys in a Simulated Human Body Fluid: Lokesh Choudhary[1]; *R. K. Singh Raman*[1]; Joelle Hofstetter[2]; Peter Uggowitzer[2]; [1]Monash University; [2]ETH Zurich

Magnesium Technology 2013: Texture and Wrought Materials I

*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

Wednesday AM
March 6, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science

8:30 AM
Microstructure and Texture Evolution in a Magnesium Alloy during Extrusion at Various Extrusion Speeds: *Q. Ma*[1]; S.J. Horstemeyer[1]; B. Li[1]; Z. McClelland[1]; P.T. Wang[1]; M.F. Horstemeyer[1]; [1]Mississippi State University

8:50 AM
Effect of Grain Size and Basal Texture on Tensile Properties and Fracture Characteristics of Extruded AZ31 Alloy: *Hsiang-Ching Chen*[1]; Lui Truan-Sheng[1]; Chen Li-Hui[1]; [1]National Cheng Kung University

9:10 AM
Microstructure Characterization of Weakly Textured and Fine Grained AZ61 Sheet: *Tracy Berman*[1]; William Donlon[1]; Chung-Kai Hung[1]; Patrick Milligan[1]; Raymond Decker[2]; Tresa Pollock[3]; J. Wayne Jones[1]; [1]University of Michigan; [2]nanoMAG, LLC.; [3]University of California, Santa Barbara

9:30 AM
Texture Development in an Extruded Magnesium Alloy during Compression along the Transverse Direction: *Dyuti Sarker*[1]; Daolun Chen[1]; [1]Ryerson University

9:50 AM
The Texture and Microstructure Evolution of Mg-Zn-Ce Alloys: *Mehdi Sanjari*[1]; Seyed-Amir Farzadfar[1]; Tetsuo Sakai[2]; Hiroshi Utsunomiya[2]; In-Ho Jung[1]; Elhachmi Essadiqi[3]; Steve Yue[1]; [1]McGill ; [2]Osaka University; [3]Universite Internationale de Rabat (UIR) Technopolis

10:10 AM Break

10:30 AM
Evolution of Microstructure during Caliber Rolling of AZ31 Alloy: *Alok Singh*[1]; Hidetoshi Somekawa[1]; Tadanobu Inoue[1]; Toshiji Mukai[2]; [1]National Institute for Materials Science; [2]Kobe University

10:50 AM
Effect of Precipitation on Dynamically Recrystallized Grain Size in a Magnesium Alloy: *Abu Syed Humaun Kabir*[1]; Jing Su[1]; In-Ho Jung[1]; Steve Yue[1]; [1]McGill University

11:10 AM
Annealing of Cold and Warm Rolled AZ31B Magnesium Alloy Sheets: *Litzy Lina Catorceno*[1]; Denise Lopes[1]; [1]USP

11:30 AM
Deformation Behavior and Constitutive Relation of As-Extruded Mg-10Gd-3Y-0.5Zr Alloy: *Foisal Mirza*[1]; Daolun Chen[1]; Dejiang Li[2]; Xiaoqin Zeng[2]; [1]Ryerson University; [2]Shanghai Jiao Tong University

11:50 AM
Flow Behavior and Hot Workability of Pre-Extruded AZ80 Magnesium Alloy: *Lei Gao*[1]; Alan Luo[2]; Shiyi Wang[3]; Xiaoqin Zeng[3]; [1]General Motors China Science Lab; [2]General Motors Global Research and Development Center; [3]Shanghai Jiao Tong University

12:10 PM
Gas-Pressure Bulge Forming of Mg AZ31 Sheet at 450°C: *Alexander Carpenter*[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]General Motors

Magnetic Materials for Energy Applications -III: Novel Materials and Phenomenon

*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

Wednesday AM
March 6, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Victorino Franco, Universidad de Sevilla; Oliver Gutfleisch, Technische Universität Darmstadt

8:30 AM Invited
Optimization of the Mechanical Alloying Process of Soft Magnetic Fe-Based Powders: An Equivalent Time Approach: *Javier Blázquez*[1]; Jhon Ipus[1]; Victorino Franco[1]; Alejandro Conde[1]; [1]University of Seville

9:00 AM Invited
Designing Permanent Magnet Machines for Ferrofluid Immersion: *Andy Judge*[1]; [1]DRS

9:30 AM Invited
Soft Magnetic Fe-Based Amorphous and (Nano)Composite Alloys with Very Good Mechanical Properties: *Mihai Stoica*[1]; [1]IFW Dresden

10:00 AM Break

10:15 AM
Investigation of Domain Structure of Alnico Magnets with Magneto-Optical Kerr Effect (MOKE): *Andriy Palasyuk*[1]; Erick Blomberg[1]; Haley Dillon[1]; Fran Laabs[1]; Lin Zhou[1]; Ruslan Prozorov[1]; Matthew Kramer[1]; R. McCallum[1]; Iver Anderson[1]; [1]Ames Laboratory

10:35 AM
Constant Permeability of Fe-B-Si-Nb Crystal-Glassy Composite Bulk Alloy by B_2O_3 Flux Melting and Casting: *Teruo Bitoh*[1]; Shogo Izumi[1]; [1]Akita Prefectural University

10:55 AM
A Density Functional Theory (DFT) Study of 4d Transition Metal Based Full Heusler Compound Co2YSi: *Dibya Rai*[1]; [1]Mizoram University

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

Wednesday AM
March 6, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin

8:30 AM Invited
Nondestructive Evaluation in the Nuclear Power Industry: *James Wall*[1]; [1]EPRI

9:10 AM
Thermal Embrittlement of Ferritic Stainless Steels: *Julie Tucker*[1]; George Young[1]; Michael Miller[2]; [1]Knolls Atomic Power Laboratory; [2]Oak Ridge National Laboratory

9:30 AM
Stainless Steel Corrosion Fatigue Retardation Behavior at Long Rise Times: *Elaine West*[1]; Nathan Lewis[1]; [1]Knolls Atomic Power Laboratory

9:50 AM
Nanoscale Characterization of Precursor to a Large Best Practice Heat of 14YWT: *Nicholas Cunningham*[1]; Yuan Wu[1]; David Gragg[1]; Kirk Fields[1]; G. Robert Odette[1]; David Hoelzer[2]; Stuart Maloy[3]; [1]UC Santa Barbara; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

10:10 AM Break

10:30 AM
Microstructure Study of 9Cr-1Mo Ferritic-Martensitic Steel during Creep at the Wide Range of Stress: *Behrang Poorganji*[1]; Deepthi Tammana[1]; Peter Nagy[1]; Vijay. K Vasudevan[1]; [1]University of Cincinnati

10:50 AM
Creep-Fatigue Behavior of Alloy 617 and Alloy 230 at 850ºC: *Xiang Chen*[1]; Mikhail Sokolov[1]; Sam Sham[1]; Donald Erdman[1]; Jeremy Busby[1]; James Stubbins[2]; [1]Oak Ridge National Laboratory; [2]University of Illinois at Urbana-Champaign

11:10 AM
Creep Behavior of High Temperature Alloys as Structural Materials in Generation IV Nuclear Power Plant: *Xingshuo Wen*[1]; Laura Carroll[2]; Richard Wright[2]; T-L. (Sam) Sham[3]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory

11:30 AM
Parametric Study on Mechanical Property of Ni Based Alloy for Application to VHTR: *Dong-Jin Kim*[1]; [1]KAERI

11:50 AM
The Oxidation Behavior of Hastelloy X and Its Welds at 1223K (950ºC): W.S. Chen[1]; Wu Kai[1]; L.W. Tsay[1]; J.J. Kai[2]; [1]Institute of Materials Engineering, National Taiwan Ocean University; [2]Department of Engineering and System Science, National Tsing Hua University

Materials Processing Fundamentals: Process 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

Wednesday AM
March 6, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: James Yurko, Materion Brush Beryllium and Composites

8:30 AM
A Simple Method to Measure Wettability and Surface Energy of TiO Coatings: Jonathan Schuster[1]; Mario Rosenberger[1]; *Carlos Schvezov*[1]; [1]Universidad Nacional de Misiones

8:50 AM
Fabrication and Property Evaluation of Mo Sputtering Target by Spark Plasma Sintering Process: *JungHan Ryu*[1]; Hyun Kuk Park[1]; Jun-Ho Jang[1]; Ik-Hyun Oh[1]; Hyeon Taek Son[1]; [1]Korea Institute of Industrial Technology

9:10 AM
TMAH Wet Etching of Silicon Micro- and Nano-Fins for Selective Sidewall Epitaxy of III-Nitride Semiconductors: *Lianci Liu*[1]; Denis Myasishchev[1]; Vladimir Kuryatkov[1]; Sergey Nikishin[1]; Harlan Harris[2]; Mark Holtz[1]; [1]Texas Tech University; [2]Texas A&M University

9:30 AM
Mathematical Modeling of Thermal and Residual Stress Evolution of Direct Metal Deposition(DMD): Hyung Chae[1]; Jyotirmoy Mazumder[1]; [1]University of Michigan

9:50 AM
Metallurgical Characterisation of Direct Laser Deposited IN718: *Zewen Huang*[1]; Rengen Ding[1]; Ian Mitchell[2]; Gavin Baxter[2]; Mark Nordin[2]; Paul Bowen[1]; [1]The University of Birmingham; [2]Rolls-Royce plc

10:10 AM Break

10:20 AM
Tracking Toxic Trace Elements in the Silicon Production Process: A Detailed Study of the Pathways of Pb and Ba from Raw Material To Product: *Ida Kero*[1]; Mari Næss[1]; Gabriella Tranell[1]; [1]Norwegian University of Science and Technology

10:40 AM
Aging of Supersaturated Ni3Mo Solid Solution Prepared by High Energy Milling: *I. Khalfallah*[1]; A. Aning[1]; C. Bolfarini[2]; [1]Virginia Tech; [2]Federal University of Sao Carlos

11:00 AM
Closed-Loop Control and FEM-Based Thermal Management on Laser Curing of Powder Coatings: *Shuang Liu*[1]; Mark Poullos[2]; Mark Poullos[2]; Fanrong Kong[1]; Radovan Kovacevic[1]; [1]Southern Methodist University; [2]PhotoFusion Company

11:20 AM
Purification of Indium by Vacuum Distillation: Yong Deng[1]; Bin Yang[1]; DongSheng Li[1]; Baoqiang Xu[1]; Heng Xiong[1]; [1]Kunming University of Science and Technology

11:40 AM
Investigating Current Efficiency of Aluminum Electrolysis in NaF-KF-AlF3 System: *Huanhuan Ma*[1]; Jilai Xue[1]; Jigang Li[1]; Yanan Zhang[1]; [1]University of Science and Technology Beijing

Mesoscale Computational Materials Science of Energy Materials: Structural Materials Modeling

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

Wednesday AM
March 6, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alphonse Finel, CNRS/ONERA; Anter El-Azab, Purdue University

8:30 AM Invited
Phase Field Modeling of Microstructure Formation: Different Ways to Incorporate Plasticity: *Alphonse FINEL*[1]; Maeva Cottura[1]; Pierre-Antoine GESLIN[1]; Benoît APPOLAIRE[1]; Yann Le Bouar[1]; [1]ONERA-CNRS

9:00 AM Invited
Modeling Deformation Mechanisms in Ni-Base Superalloys: Ning Zhou[1]; Hallee Deutchman[1]; Mike Mills[1]; *Yunzhi Wang*[1]; [1]Ohio State University

9:30 AM
Applications of Field Dislocation Mechanics: Saurabh Puri[1]; Amit Acharya[2]; Dennis Dimiduk[3]; *Satish Rao*[1]; [1]UES, Inc; [2]Carnegie Mellon University; [3]Air Force Research Laboratory

9:50 AM
Mesoscale Modeling of the Ttensile Responses of BCC Fe and Mo in the Athermal Regime: *Ronan Madec*[1]; Ladislas Kubin[2]; [1]CEA, DAM, DIF; [2]LEM (CNRS/ONERA)

10:10 AM Break

10:30 AM
Modeling of Coherency Loss Mechanisms: *Pierre-Antoine Geslin*[1]; Benoît Appolaire[1]; Alphonse Finel[1]; [1]LEM ONERA / CNRS

10:50 AM Invited
Dislocation Simulations of the Structure and Properties of Grain Boundaries and Interfaces: *David Srolovitz*[1]; Siu Sin Quek[2]; Adele Lim[2]; Shuyang Dai[3]; Xiang Yang[3]; [1]University of Pennsylvania; [2]Institute of High Performance Computing; [3]Hong Kong University of Science and Technology

11:20 AM
Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: Cecile Marichal[1]; *Helena Van Swygenhoven*[1]; Steven Van Petegem[1]; Emad Oveisi[2]; Cecile Hébert[2]; [1]Paul Scherrer Institut; [2]EPFL

11:40 AM
Power-Law Creep from Discrete Dislocation Dynamics Simulations: *Amine Benzerga*[1]; Shyam Keralavarma[2]; [1]Texas A&M University; [2]École Polytechnique Fédérale de Lausanne

12:00 PM
Dislocation Avalanche Behavior in Ni Microcrystals for Varying Strain Rates and Deformation Stages: *Dennis Dimiduk*[1]; Michael Uchic[1]; Stefanos Papanikolaou[2]; Jaafar El-Awady[3]; Paul Shade[1]; [1]Air Force Research Laboratory; [2]Yale University; [3]Johns Hopkins University

Microstructural Processes in Irradiated Materials: Austenitic & Duplex Stainless 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

Wednesday AM
March 6, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Christophe Domain, EDF R&D, ; Frank Garner, Radiation Effects Consulting

8:30 AM Invited
Second-Order Radiation Phenomena in Austenitic and High-Nickel Alloys Growing to First Order Importance at Higher Damage Levels Associated with PWR Plant Life Extension: *Frank Garner*[1]; Paula Freyer[2]; Y. Isobe[3]; Larry Greenwood[4]; Maxim Gussev[5]; [1]Radiation Effects Consulting; [2]Westinghouse Electric Company; [3]Nuclear Fuel Industries; [4]Pacific Northwest National Laboratory; [5]Oak Ridge National Laboratory

9:00 AM
Effect of Ni and Cr Alloying on Microstructural Evolution of BOR60-Irradiated Type 304 Stainless Steels: *Lizhen Tan*[1]; Jeremy Busby[1]; [1]Oak Ridge National Laboratory

9:20 AM
Observation of Grain Boundary Segregation in Ion-Irradiated Stainless Steels 316 and Comparison with the Rate Theory Model of a Multicomponent System: *Gyeong-Geun Lee*[1]; Yong-Bok Lee[1]; Hyung-Ha Jin[1]; Junhyun Kwon[1]; [1]Korea Atomic Energy Research Institute

9:40 AM
High Dose Heavy Ion Irradiation of Austenitic Stainless Steels Simulating a Neutron Irradiation: *Jan Michalicka*[1]; Zhijie Jiao[2]; Gary Was[2]; Janelle Wharry[2]; [1]Research Centre Rez; [2]University of Michigan

10:00 AM
Intergranular Cracking at RT of Austenitic Fe-Cr-Ni Alloys Exposed to PWR Conditions: *Young Suk Kim*[1]; Sung Soo Kim[1]; Dae Whan Kim[1]; [1]Korea Atomic Energy Research Institute

10:20 AM Break

10:30 AM
Slip Transfer through Grain Boundaries in Irradiated 304 Stainless Steel: *Bai Cui*[1]; Josh Kacher[1]; Ian Robertson[1]; [1]University of Illinois at Urbana-Champaign

10:50 AM
Relationship between Grain Boundary Character and Crack Initiation of He Irradiated Fe-15Cr-20Ni Ternary Alloy: *Kiyohiro Yabuuchi*[1]; Kazuma Abe[1]; Shuhei Nogami[1]; Akira Hasegawa[1]; [1]Tohoku University

11:10 AM
Effect of Local Environment on Vacancy Properties in BCC FeCr and FCC FeNiCr Alloys by DFT Calculations and Consequences on Diffusion Properties: *Christophe Domain*[1]; Jean Baptiste Piochaud[2]; Davide Costa[1]; Gilles Adjanor[1]; Pär Olsson[3]; Charlotte Becquart[2]; [1]EDF R&D; [2]UMET CNRS EM2VM; [3]KTH

11:30 AM
Influence of Ion Irradiation Coupled with He Implantation on the Swelling Microstructure of Austenitic Stainless Steels: *Xiaoqiang Li*[1]; Franck Fortuna[1]; Aurélie Gentils[1]; [1]Paris-sud University 11

11:50 AM
The Potential for Low-Temperature Swelling in Austentic Stainless Steels: *Roger Stoller*[1]; Alexander Barashev[2]; Stanislav Golubov[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

12:10 PM Invited
Thermodynamic Modelling of Volatile Fission Products during SFR Fuel Irradiation: *Jean-Christophe Dumas*[1]; Tam Ngoc Pham Thi[1]; Vincent Bouineau[1]; Jean-Paul Piron[1]; Nathalie Dupin[2]; Christine Gueneau[3]; Stephane Gosse[3]; Pierre Benigni[4]; Jacques Rogez[4]; Philippe Maugis[4]; [1]CEA Cadarache; [2]Calcul Thermo; [3]CEA Saclay; [4]UMR CNRS 6242 & Aix-Marseille University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Defects at the Atomic Scale

*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

Wednesday AM
March 6, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Douglas Spearot, University of Arkansas; Dallas Trinkle, University of Illinois, Urbana-Champaign

8:30 AM Invited
A Concurrent Atomistic-Continuum Methodology for Passing Waves, Heat and Defects from the Atomistic to the Continuum Region: *Youping Chen*[1]; Liming Xiong[1]; Shengfeng Yang[1]; [1]University of Florida

9:00 AM
A DFT Investigation of the Early Stages of Nanoindentation: the Chemical and Mechanical Interactions between a Diamond Indenter and a Ni Slab: *Francesca Tavazza*[1]; Chandler Becker[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology

9:20 AM
Ab Initio DFT Modeling of the Dislocation and Its Mobility in TiN Ceramic: Satyesh Yadav[1]; Rampi Ramprasad[2]; Richard Hoagland[1]; Jian Wang[1]; Amit Misra[1]; Joe Yasi[3]; Dallas Trinkle[3]; *Xiang-Yang Liu*[1]; [1]Los Alamos National Lab; [2]University of Connecticut; [3]University of Illinois at Urbana–Champaign

9:40 AM Invited
Atomistic Simulations of Grain Boundary Associated Distortion in Metallic Materials: *Douglas Spearot*[1]; Shawn Coleman[1]; [1]University of Arkansas

10:10 AM Break

10:20 AM Invited
Decomposing Atomic-Scale Deformation into Elastic and Plastic Parts and the Automated Identification of Grain Boundary Dislocations: *Alexander Stukowski*[1]; [1]Darmstadt University of Technology

10:50 AM
Microstructure and Crack Size Effects on Fatigue Crack Growth Behavior of Non-Ferrous and Ferrous Structural Materials: *Anastasios Gavras*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

11:10 AM
Ordering of Point Defects on Deformable Elastic Lattices: *Roman Groger*[1]; [1]Academy of Sciences of the Czech Republic

11:30 AM Invited
Predicting Strength and Cross-Slip of Magnesium Alloys: First-Principles, Solute Distribution, and Deformation: *Dallas Trinkle*[1]; Joseph Yasi[1]; Louis Hector[2]; [1]University of Illinois, Urbana-Champaign; [2]General Motors Technical Center

12:00 PM
Estimation of Dislocation Nucleation Stresses from Nanoindentation by Combined Multiscale Modeling and Experiment: *Li Ma*[1]; Francesca Tavazza[1]; Chandler Becker[1]; Douglas Smith[1]; Lyle Levine[1]; [1]NIST

Modeling of Multi-Scale Phenomena in Materials Processing - III: Fluid Dynamics and Solidification

*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

Wednesday AM
March 6, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:35 AM
Numerical Simulating Study on the Solidification Process of Continuous Casting Billet: *Tongbo Zhang*[1]; Jingshe Li[1]; Hongbo Yang[1]; Fangfang Song[1]; Ting Huang[1]; [1]USTB

9:00 AM
Numerical Simulation of Cavitation under Ultrasonic Treatment: *Jinwu Kang*[1]; Yisen Hu[1]; [1]Tsinghua University

9:25 AM
Optimum Effect of Factors Influencing on Sacrificial Cathodic Protection for Steel Wall: *Saad Kaskah*[1]; [1]Ministry of Industry

9:50 AM Break

10:20 AM
Self-Adapting Withdrawal Technology by Numerical Simulation to Optimize Directional Solidification Process of Superalloy Casting: *Hang Zhang*[1]; Qing Yan Xu[1]; Bai Cheng Liu[1]; [1]Tsinghua University

10:45 AM
Modeling on the Fluid Flow and Inclusion Motion in a Continuous Casting FC-Mold: Qiangqiang Wang[1]; *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

11:10 AM
Numerical Simulation of Temperature Field and Pressure in Super Large Regenerative Rotary Hearth Furnace: *Qiang Li*[1]; Huimin Lu[1]; Lian Zhou[1]; [1]Beihang University

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

*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

Wednesday AM
March 6, 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
Pseudocapacitive Properties of Nanostructured Transition Metal Oxides: *Bruce Dunn*[1]; Veronica Augustyn[1]; Jason Kim[1]; Iris Rauda[1]; Sarah Tolbert[1]; [1]UCLA

8:50 AM Invited
Fracture and Delamination in Thin Film Si Electrodes: Hamed Haftbaradaran[1]; *Huajian Gao*[1]; [1]Brown University

9:10 AM
Microstructural Characterization of Damage Mechanisms of Graphite Electrodes in Lithium-ion Cells: *Ahmet Alpas*[1]; A. Reza Riahi[1]; Sandeep Bhattacharya[1]; [1]University of Windsor

9:30 AM Invited
Nanoarchitecture Electrodes for Energy Storage: *Christopher Johnson*[1]; [1]Argonne National Laboratory

9:50 AM Break

10:10 AM Invited
Structure of the Graphite Anode Solid Electrolyte Interphase in Lithium Ion Batteries: *Brett Lucht*[1]; [1]University of Rhode Island

10:30 AM Invited
Silicon Carbide Nanostructures for Micro-Supercapacitor Applications: *Roya Maboudian*[1]; John Alper[1]; Carlo Carraro[1]; [1]University of California at Berkeley

10:50 AM Invited
Nanostructured Vanadium Oxide for Supercapacitor Electrodes: Allison Engstrom[1]; *Fiona Doyle*[1]; [1]University of California, Berkeley

11:10 AM Invited
High Energy Density Anode Materials Based on SiO-SnCo/FeC for Lithium Batteries: *Ali Abouimrane*[1]; Bo Liu[1]; Yang Ren[1]; Zhigang Fang[2]; Khalil Amine[1]; [1]Argonne National Laboratory; [2]University of Utah

11:30 AM Invited
Graphene Fabrication and Lithium Ion Batteries Applications: *Fuqiang Huang*[1]; [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences

11:50 AM
Nanostructured LiNi0.5Mn1.5O4 Cathode Material with Improved Rate Capability for Lithium Ion Battery: *Yi-Chun Jin*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Mesoscale Studies

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

Wednesday AM
March 6, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Emil Zolotoyabko, Technion; Rozaliya Barabash, ORNL

8:30 AM Keynote
Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: *Helena Van Swygenhoven*[1]; Cécile Marichal[1]; Steven Van Petegem[1]; [1]Paul Scherrer Institut

8:50 AM Invited
Advances in 3D Micro-Diffraction with Small Beams.: *Jon Tischler*[1]; Wenjun Liu[1]; Ruqing Xu[1]; B.C. Larson[2]; John Budai[2]; [1]Argonne National Laboratory; [2]Oak Ridge National Laboratory

9:10 AM Invited
A Tunable Multi-Color "Rainbow" Filter for Improved Stress and Dislocation Field Mapping in Polycrystals Using X-Ray Laue Microdiffraction: *Odile Robach*[1]; Jean-Sébastien Micha[2]; Olivier Ulrich[1]; Olivier Geaymond[3]; Olivier Sicardy[4]; Jürgend Härtwig[5]; François Rieutord[1]; [1]CEA-Grenoble / INAC; [2]CNRS / SPrAM; [3]CNRS / Institut Néel; [4]CEA-Grenoble / LITEN; [5]ESRF

9:30 AM Invited
Validating Microstructural Models Using 3D Sub-Micrometer-Resolution X-Ray Characterization: *Lyle Levine*[1]; Peter Geantil[2]; Ben Larson[3]; Jon Tischler[4]; Wenjun Liu[4]; Francesca Tavazza[1]; Mike Kassner[2]; [1]National Institute of Standards and Technology; [2]University of Southern California; [3]Oak Ridge National Laboratory; [4]Argonne National Laboratory

9:50 AM Break

10:00 AM Invited
Metals Behavior at Very High Temperature: *Klaus-Dieter Liss*[1]; Kun Yan[2]; Lisa Thoennessen[2]; Saurabh Kabra[1]; David Carr[1]; Mark Reid[3]; Ali Dehghan-Manshadi[3]; Robert Harrison[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

10:20 AM Invited
Quantification of Preferred Orientation in Crystals by Using the March-Dollase Approach: *Emil Zolotoyabko*[1]; [1]Technion

10:40 AM Invited
X-Ray Diffraction Contrast Tomography: A Combined 3D Imaging and Diffraction Methodology for Characterization of Polycristalline Materials: *Yoann Guilhem*[1]; Peter Reischig[1]; Nicola Vigano[1]; Andrew King[2]; Wolfgang Ludwig[1]; [1]Université de Lyon; [2]ESRF

11:00 AM
In Situ Studies of Large Deformation of Monoclinic NiTi: Twinning vs. Slip: *Aaron Stebner*[1]; [1]Caltech

11:20 AM Invited
Spatially-Resolved X-Ray Microdiffraction Studies Inside Individual Grains and Domains: *John Budai*[1]; Jonathan Tischler[2]; Wenjun Liu[2]; Anthony Rollett[3]; Jason Fowlkes[1]; Alexander Tselev[1]; Evgheni Strelcov[1]; Andrei Kolmakov[4]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory; [3]Carnegie Mellon University; [4]Southern Illinois University at Carbondale

11:40 AM Invited
In Situ Characterization of Twin Nucleation in Ti Using 3DXRD: *Thomas Bieler*[1]; Leyun Wang[2]; Armand Beaudoin[3]; Peter Kenesei[2]; Ulrich Lienert[2]; [1]Michigan State University; [2]Argonne National Laboratory; [3]University of Illinois

12:00 PM Invited
Residual Stress Determination in Cast Bi-Metallic Joints: *Thomas Watkins*[1]; Donald Erdman[1]; Adrian Sabau[1]; Wei Zhang[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]ORNL; [2]Vehma International ; [3]Promatek Research Centre

12:20 PM Invited
New Capabilities for the Analysis of Nanocrystalline Powders Using the WPPPM Approach: *Matteo Leoni*[1]; Paolo Scardi[1]; [1]University of Trento

12:40 PM
Simulation of X-Ray Diffraction Peak Broadening in Dislocated Materials: *Riccardo Gatti*[1]; Benoit Devincre[1]; [1]LEM CNRS-ONERA UMR 104

Ni-Co 2013: Ores and 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

Wednesday AM
March 6, 2013

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

Session Chairs: Corby Anderson, Colorado School of Mines; Phillip Mackey, P J Mackey Technology Inc

8:30 AM
Mineralogical Characterization of Cobaltic Oxides from the Democratic Republic of Congo: *Yves Vanbrabant*[1]; Christian Burlet[1]; Pierre Louis[2]; [1]Royal Belgian Institute for Natural Sciences; [2]PEL Consult

8:55 AM
Nickel and Nitric: *William Drinkard*[1]; [1]Drinkard Metalox Inc.

9:20 AM
PolyMet Mining Corporation's NorthMet Process Development: *David Dreisinger*[1]; [1]PolyMet Mining

9:45 AM Break

10:05 AM
Talvivaara Nickel Mine – from a Project to a Mine and Beyond: *Lauri Palmu*[1]; Marja Riekkola-Vanhanen[1]; [1]Talvivaara Mining Company Plc

10:30 AM
The Sintering Character of Limonitic Nickel Laterite: *Hongxu Li*[1]; Chao Wu[1]; Yu Chen[1]; Zhiqian Zhang[1]; Chao Li[1]; [1]University of Science and Technology

10:45 AM
New Techniques for Ore Sorting in Non-Ferrous Mining and Mineral Processing Operations with an Emphasis on Nickel Ores: *A.S. Bamber*; *N.A. Barcza*[1]; [1]MineSense Technologies Ltd

11:10 AM
The Starved Acid Leaching Technology (SALT) for Recovery of Nickel and Cobalt from Saprolites and Caron Plant Residues: *David Dreisinger*[1]; James Clucas[1]; [1]Search Minerals Inc.

Novel Synthesis and Consolidation of Powder Materials : Additive Manufacturing and Novel 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

Wednesday AM
March 6, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Hilda Chikwanda, Council for Scientific and Industrial Research (CSIR); Kenong Xia, University of Melbourne

8:30 AM
Science and Applications of Gradient Alloys Fabricated through Additive Manufacturing: *Douglas Hofmann*[1]; John-Paul Borgonia[1]; [1]NASA JPL/Caltech

8:50 AM Invited
Selective Laser Melting of Low Modulus Titanium Alloys for Biomedical Applications: *Lai-Chang Zhang*[1]; Timothy Sercombe[2]; [1]Edith Cowan University; [2]The University of Western Australia

9:20 AM Invited
Near-Net-Shape Consolidation of Lightweight PM Materials: *James Knapp*[1]; [1]Materion Brush Beryllium & Composites

9:50 AM
Microstructural and Mechanical Properties of Sintered and Extruded TiNi Alloys by Using TiNi Pre-Alloyed Powder with TiO_2 Particles: *Takayuki Yonezawa*[1]; Tomohiro Yoshimura[1]; Junko Umeda[2]; Katsuyoshi Kondoh[2]; Ryouichi Souba[3]; [1]Osaka University; [2]Joining and Welding Research Institute, Osaka University; [3]TERUMO Corporation

10:10 AM Break

10:30 AM Invited
High Density Powder Forming Using Dynamic Pressing DMC Technology: *Bhanu Chelluri*[1]; Edward Knoth[1]; [1]IAP Research Inc

11:00 AM Invited
Consolidation of Blended Magnesium and Ceramic Powders by Microwave Heating: *M. Ashraf Imam*[1]; Arne Fliflet[1]; Ralph Bruce[2]; Peter Pao[1]; Jerry Feng[1]; [1]Naval Research Lab; [2]Vanderbilt University

11:30 AM
Sensitivity of the Tensile Ductility of Powder Metallurgy a, a+ß and Nearly ß Ti Alloys to Oxygen: *Ya-Feng Yang*[1]; K Kondoh[2]; Ma Qian[1]; [1]University of Queensland; [2]Osaka University

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Sn Whiskering 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

Wednesday AM
March 6, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Stress and Microstructure Around Whisker-Forming Grains in Sn Coatings: *Eric Chason*[1]; Fei Pei[1]; Nitin Jadhav[1]; [1]Div of Engineering

8:50 AM
Sn Whisker Mitigation by Introducing Various Thin Films as Diffusion Barrier: *I Made Wahyu Diyatmika*[1]; Jinn Chu[1]; Yee-wen Yen[1]; [1]National Taiwan University of Science and Technology

9:10 AM
Study of Influencing Parameters on Growth of Zn Whiskers on Galvanized Steel in Electronic Components: *Juan Manuel Cabrera Anaya*[1]; Agnès Lina[2]; Patrick Favaro[2]; Yves Bréchet[3]; Marc Verdier[3]; Laurent Cretinon[2]; [1]EDF R&D / INP Grenoble; [2]EDF R&D; [3]INP Grenoble

9:30 AM Break

9:50 AM
Combinatorial Materials Science as an Alloy Screening Method for the Mitigation of Tin Whiskers in Pb-Free Electronics: *Alfredo Díaz-González*[1]; Pedro Quintero-Aguiló[1]; [1]University of Puerto Rico at Mayaguez

10:10 AM
Effect of Sn Whisker Mitigation by Addition of a Small Amount of Bi: *Jung-Lae Jo*[1]; Kyoko Hamasaki[1]; Toru Sugahara[1]; Masanobu Tsujimoto[2]; Katsuaki Suganuma[1]; [1]Osaka University; [2]Uyemura & Co., Ltd.

Phase Transformation and Microstructural Evolution: General Phase Transformations: Materials

*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

Wednesday AM
March 6, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Adam Creuziger, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory

8:30 AM
Formation of the Nb2C Phase in the Nb-1Zr-0.1C Alloy: A Case of Interstitial Ordering: *Raghvendra Tewari*[1]; B. Vishwanadh[1]; Gautam Dey[1]; [1]Bhabha Atomic Resrach Centre

8:50 AM
In Situ Raman Analysis of the Indentation Induced Phase Transformation of Crystalline and Amorphous Silicon: *Yvonne Gerbig*[1]; Chris Michaels[1]; Aaron Forster[1]; Santiago Solares[2]; Robert Cook[1]; [1]NIST; [2]University of Maryland

9:10 AM
Uncertainty Analysis in Orientation Distribution Functions: *Adam Creuziger*[1]; Komal Syed[2]; Thomas Gnaeupel-Herold[2]; [1]National Institute of Standards and Technology; [2]University of Maryland

9:30 AM
Optical, Structural, and Electrical Properties of Vanadium Dioxide Grown on Sapphire Substrates with Different Orientations: *Mohammad Nazari*[1]; Yong Zhao[1]; Yanhan Zhu[1]; Ayrton Bernussi[1]; Zhaoyang Fan[1]; Mark Holtz[1]; [1]Texas Tech University

9:50 AM
Thermodynamic in γ→ε Phase Transformation and γ→α' Phase Transformation in Fe-Mn Alloy during Near-rapid Solidification: *Qin Peng*[1]; Changjiang Song[2]; Wenbin Xia[2]; Qijie Zhai[2]; [1]RWTH Aachen; [2]Shanghai Unviersity

10:10 AM
Microstructural Evolution of Alloy Steels: Simone Novarino[1]; Giorgio Scavino[1]; Graziano Ubertalli[1]; Paolo Matteis[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

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

Wednesday AM
March 6, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Hamish Fraser, The Ohio State University; Srikumar Banerjee, Bhabha Atomic Research Centre

8:30 AM Invited
Atomic Level Observations of Phase Transformations Occurring during Surface Hardening of TiAl: *Fritz Appel*[1]; [1]Helmholtz Zentrum Geesthacht

9:00 AM
Control of γ-TiAl Lamellae Precipitation from Supersaturated a_2-Ti_3Al Single Crystal by Local Plastic Straining: *Yuichiro Koizumi*[1]; Toshihiro Yamazaki[1]; Akihiko Chiba[1]; Hiroaki Nishiyama[2]; [1]Tohoku University; [2]Hokkaido University

9:20 AM
Effect of Initial Microstructure on Fracture Toughness of 1200 MPa-Class High Strength Steel with Ultrafine Elongated Grain Structure: *Meysam Jafari*[1]; Warren Garrison[1]; Kaneaki Tsuzaki[2]; [1]Carnegie Mellon University; [2]National Institute for Materials Science (NIMS)

9:40 AM
Effect of Microstructure on the Nitrogen Distribution in a Gas Nitrided Carbon Steel: *Masato Yuya*[1]; [1]Sumitomo Metal Industries Ltd.

10:00 AM Break

10:10 AM
BCC-HCP Transition in Fe: Effect of Stress on Transition Mechanisms and Lattice Preferred Orientations: *Sebastien Merkel*[1]; Ainhoa Lincot[2]; Sylvain Petitgirard[3]; Philippe Cardin[2]; [1]Universite Lille 1; [2]Université J. Fourier Grenoble; [3]ESRF

10:30 AM
Microstructural Evolution of Cu/Nb Nanolaminates during Sliding Wear: *Fuzeng Ren*[1]; Aaron Dahlke[1]; Pascal Bellon[1]; Nathan Mara[1]; Irene Beyerlein[1]; [1]University of Illinois at Urbana-Champaign

10:50 AM
Self-Organized Nanolayering Induced by Sliding Wear in Cu-Ag: *Fuzeng Ren*[1]; Salman Arshad[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign

11:10 AM
Strain-Induced Martensitic Transformation in Tensile/Compression Cyclic Deformations of Biomedical Co-Cr-Mo-N Alloy: *Takuya Mitsunobu*[1]; Yuichiro Koizumi[1]; Byoung-Soo Lee[1]; Akihiko Chiba[1]; [1]Tohoku University

11:30 AM
Grain Size Evolution under Tribological Loading as a Function of Sliding Energy Density: *Christian Greiner*[1]; Peter Gumbsch[1]; [1]Karlsruhe Institute of Technology

11:50 AM
Microstructure and Texture Evolution of Cu-Nb Nano-Laminates Subjected To HPT: *Elvan Ekiz*[1]; Timothy Lach[1]; Pascal Bellon[1]; Robert Averback[1]; Nathan Mara[2]; Mohsen Pouryazdan[3]; Horst Hahn[3]; [1]University of Illinois Urbana Champaign; [2]Los Alamos National Laboratory; [3]Karlsruhe Institute of Technology

12:10 PM
Scaling Behavior of Shear Induced Mixing with Length Scale: *Salman Arshad*[1]; Timothy Lach[1]; Mohsen Pouryazdan[2]; Horst Hahn[2]; Pascal Bellon[1]; Shen Dillon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign; [2]Karlsruhe Institut für Technologie (KIT) Institut für Nanotechnologie

Physical and Mechanical Metallurgy of Shape Memory Alloys: Magnetic and Fe-based 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

Wednesday AM
March 6, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Ibrahim Karaman, Texas A&M University; Yasukazu Murakami, Tohoku University

8:30 AM
TEM Studies on Antiphase Boundaries in Magnetic Shape Memory Alloys: *Yasukazu Murakami*[1]; Hyun Soon Park[2]; Daisuke Shindo[1]; Ryosuke Kainuma[1]; [1]Tohoku University; [2]RIKEN

9:00 AM
Segmented Twin Boundaries in 10M Modulated Ni-Mn-Ga Martensite: Robert Chulist[1]; Ladislav Straka[2]; Nataliya Lanska[3]; Aleksandr Soroka[3]; Carl-Georg Oertel[1]; Alexei Sozinov[3]; *Werner Skrotzki*[1]; [1]TU Dresden; [2]Aalto University School of Science and Technology; [3]AdaptaMat Ltd.

9:20 AM
Crystallography and Magnetic Field Induced Strain by Co Doping NiCoMnGa Heusler Alloy: *Takuo Sakon*[1]; Yoshiya Adachi[2]; Hiroyuki Nojiri[3]; Takeshi Kanomata[4]; [1]Ryukoku University; [2]Yamagata University; [3]Tohoku University; [4]Tohoku Gakuin University

9:40 AM
Intra-Variant Boundary in Non-Modulated Ni-Mn-Ga: *Brittany Muntifering*[1]; Libor Kovarik[2]; Robert Pond[3]; Nigel Browning[2]; Peter Müllner[1]; [1]Boise State University; [2]Pacific Northwest National Laboratory; [3]University of Exeter

10:00 AM Break

10:20 AM
Metamagnetic Behavior in Polycrystalline NiCoMnAl Thin Film Alloys: *Steven Rios*[1]; Daniel Bufford[1]; Ibrahim Karaman[1]; Xinghang Zhang[1]; [1]Texas A&M University

10:40 AM
Observation of Strain Glass Transitions in Various Shape Memory Alloys: *James Monroe*[1]; Ibrahim Karaman[1]; Ryosuke Kainuma[2]; [1]Texas A&M University; [2]Tohoku University

11:00 AM
Effects of Alloy Composition and Heat Treatment on Martensitic Transformation in Fe-Ni-Co-Ti-B Alloys: *Doyup Lee*[1]; Toshihiro Omori[1]; Ryousuke Kainuma[1]; [1]Tohoku University

11:20 AM
The Effect of Nano-Precipitates on Superelastic Properties of FeNiCoAlTa Shape Memory Alloy Single Crystals: *Ji Ma*[1]; Billy Hornbuckle[2]; Gregory Thompson[2]; Ibrahim Karaman[1]; Zhiping Luo[1]; [1]Texas A&M University; [2]University of Alabama

11:40 AM
Cyclic Deformation Behavior of Aged FeNiCoAlTa Single Crystals: *Philipp Krooß*[1]; Thomas Niendorf[1]; Ibrahim Karaman[2]; Yuri Chumlyakov[3]; Hans Maier[1]; [1]University of Paderborn; [2]Texas A&M University; [3]Tomsk State University

12:00 PM
Characterization of the Shape Memory Behavior of Single Crystalline FeNiCoAlNb Shape Memory Alloys: *Ali Turabi*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Peizhen Li[1]; Burak Basaran[1]; Yuri Chumlyakov[2]; [1]University of Kentucky; [2]Tomsk State University

12:20 PM
Superelastic Response of a Single Crystalline FeMnAlNi Shape Memory Alloy: *Li-Wei Tseng*[1]; Ji Ma[1]; Ibrahim Karaman[1]; Zhiping Luo[1]; Y.I. Chumlyakovc[2]; [1]Texas A&M university; [2]Siberian Physical Technical Institute

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Systems Modelling and Design, 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

Wednesday AM
March 6, 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: William Rankin, CSIRO; Diana A. Lados, Worcester Polytechnic Institute

8:30 AM Introductory Comments

8:35 AM
A Green Urban Mobility System Solution from the EU Ingrid Project: *Fabrizio D'Errico*[1]; Marco Romeo[2]; Adamo Screnci[3]; [1]Politecnico di Milano; [2]CiaoTech - PNO Consultants Group; [3]Mc Phy Energy

9:00 AM
Recycling-Oriented Product Characterization for Electric and Electronic Equipment as a Tool to Enable Recycling of Critical Metals: Susanne Rotter[1]; Perrine Chancerel; *Maximilian Ueberschaar*; [1]TU-Berlin

9:25 AM Break

9:45 AM
Critical Analysis of Existing Recyclability Assessment Methods for New Product in Order to Define a Reference Method: *Elisabeth Maris*[1]; Daniel Froelich; [1]Institut Arts et Metiers Paris

10:10 AM
Rock Smelting of Copper Ores with Waste Heat Recovery: *Terry Norgate*[1]; Sharif Jahanshahi[1]; Nawshad Haque[1]; [1]CSIRO

10:35 AM
Re-Processing of Mining Waste: An Alternative Way to Secure Metal Supplies of European Union: *Anne-Gwénaëlle Guezennec*[1]; Françoise Bodenan[1]; Guillaume Bertrand[1]; Daniel Cassard[1]; Annabelle Fuentes[1]; Gael Bellenfant[1]; Patrick D'Hugues[1]; Maurice Save[1]; [1]BRGM

11:00 AM
Potential of Steelmaking Slag as New Phosphorous Resource in Terms of Total Materials Requirement.: *Eiji Yamasue*[1]; Kazuyo Matsubae[2]; Kenichi Nakajima[3]; Tetsuya Nagasaka[2]; [1]Kyoto University; [2]Tohoku University; [3]National Institute for Environmental Studies

11:25 AM
Assessing a Reclaimed Concrete Up-Cycling Scheme through Life-Cycle Analysis: *Sylvain Guignot*[1]; Yannick Menard[1]; [1]BRGM

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through the Physics of Metals & Materials Processing

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

Wednesday AM
March 6, 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: Gabriella Tranell, Norwegian University of Science & Technology; Markus Reuter, Outotec Oyj

8:30 AM Introductory Comments

8:35 AM
Removal of Heavy Metals from Water by Fly Ash from Coal and Steel Dust, Laboratory Tests: *Francisco Carrillo-Pedroza*[1]; Ma de Jesus Soria-Aguilar[1]; Antonia Martinez-Luevanos[1]; [1]Universidad Autonoma de Coahuila

9:00 AM
Cyanide and Copper Recovery from Barren Solution of the Merrill Crowe Process: *Jose Parga*[1]; Jesus Valenzuela[2]; [1]Technology Institute of Saltillo; [2]Universidad de Sonora

9:25 AM
Northern Regions of Russia as Alternative Sources of Pure Water for Sustainable Development: Challenges and Solutions: Viacheslav Tsukerman[1]; *Anton Gudkov*[1]; Stanislav Ivanov[1]; [1]KSC RAS

9:50 AM Break

10:10 AM
Selective Extraction of Vanadium from the APV-Precipitated Waste Water: Cui Li[1]; *Hong-Yi Li*[1]; Chun-Bin Tu[1]; Tao Zhang[1]; Hai-Xing Fang[1]; Bing Xie[1]; [1]Chongqing University

10:30 AM
Study of Modified Semi-Coke on the Advanced Treatment of Coking Wastewater's Oil: *Chao Liu*[1]; Jiang Huang[1]; [1]Development & Research Center of WISCO

10:55 AM
Pt-doped TiO2 Nanoparticles for Photocatalytic Degradation of Phenols in Wastewater: *Mohamed Barakat*[1]; [1]KAU University

Solar Cell Silicon: Silicon Production and Refining

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

Wednesday AM
March 6, 2013

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

Session Chairs: Gabriella Tranell, Norwegian University of Science & Technology; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

8:30 AM Introductory Comments

8:40 AM
Reactive Molecular Dynamic Studies on the Reaction Mechanisms of Carbothermal Silicon Production: *Jan-Philipp Mai*[1]; Gabriele Raabe[2]; Juergen Koehler[2]; [1]JPM Silicon GmbH; [2]University of Braunschweig - Institute of Technology

9:00 AM
Production of Silicon from Silica: Solid-Oxide-Membrane Based Electrolysis Process: *Yihong Jiang*[1]; JiaPeng Xu[1]; Brian Lo[1]; Uday Pal[1]; Soumendra Basu[1]; [1]Boston University

9:20 AM
Carbochlorination Reduction of Silica Oxides: Mei Song[1]; *Meilong Hu*[1]; Lu Liu[1]; Qingyu Deng[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]Chongqing University

9:40 AM
Quantifying Fracture Behavior of Polycrystalline Silicon Grown via Fluidized Bed Reactor: *Mohamad Zbib*[1]; David Bahr[1]; Matthew Miller[2]; [1]Washington State University; [2]REC Silicon

10:00 AM Break

10:20 AM
Challenges in the Solar Grade Silicon Production through Metallurgical Processes: *Jafar Safarian*[1]; Gabriella Tranell[1]; [1]Norwegian University of Science and Technology

10:40 AM
Solar Grade Silicon Purification Using Liquid Phase Migration Technique: *Kunitoshi Matsunaga*[1]; Takeshi Yoshikawa[1]; Kazuki Morita[1]; [1]The University of Tokyo

11:00 AM
Alloying Refining of Metallurgical Grade Silicon with Rare Earth Elements: *Yulia Meteleva-Fischer*[1]; Yongxiang Yang[2]; Rob Boom[1]; Bert Kraaijveld[3]; Henk Kuntzel[3]; [1]Materials innovation institute (M2i) / Delft University of Technology; [2]Delft University of Technology; [3]RGS development B.V.

11:20 AM
Removal of Boron from Silicon by Reactive Gas Refining: *Øyvind Sortland*[1]; Merete Tangstad[1]; [1]NTNU

11:40 AM
Effect of Oxygen and carbon on Lifetime in Cz Silicon Pulled from Top-Cuts of Casted Multicrystalline Ingot: *Song Zhang*[1]; Eivind Øvrelid[2]; [1]Norwegian University of Science and Technology; [2]SINTEF

12:00 PM
Effect of Impurities in Monocrystalline Silicon for Solar Cells: *Michael Knudson*[1]; Mari Juel[2]; Eivind Øvrelid[2]; Marisa Di Sabatino[1]; [1]NTNU; [2]SINTEF

Symposium on High Entropy Alloys: Alloy Development and Applications

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Wednesday AM
March 6, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yoshihiko Yokoyama, Tohoku University; Hongbin Bei, Oak Ridge National laboratory

8:30 AM Invited
Automatic Fabrication of High-Entropy Alloys and Their Properties: *Yoshihiko Yokoyama*[1]; Xie Xie[2]; James Antonaglia[3]; Michael Hemphill[2]; Tang Zhi[2]; Tao Yuan[4]; Gongyao Wang[2]; Che-Wei Tsai[5]; Jien-Wei Yeh[5]; Andrew Chuang[2]; Karin Dahmen[3]; Peter Liaw[2]; [1]Tohoku University; [2]University of Tennessee; [3]University of Illinois at Urbana Champaign; [4]Ohio University; [5]National Tsing Hua University

8:55 AM
Search for Lower Density High Entropy Alloys: *James Cotton*[1]; Abraham Munitz[2]; Ryan Oliver[3]; Rodinei Gomes[2]; Gerald Bourne[2]; Michael Kaufman[2]; [1]Boeing Research and Development; [2]Colorado School of Mines; [3]University of Wisconsin-Milwaukee

9:10 AM Invited
Assessing High Temperature Structural Application Potential of FCC Based HEAs: *Young-Won Kim*[1]; Sang-Lan Kim[2]; Christopher Woodward[3]; [1]Gamteck; [2]UES; [3]AFRL

9:35 AM Invited
High Entropy Alloys in the Fe7W6 Frank-Kasper Phase Forming Family: *Michael Widom*[1]; [1]Carnegie Mellon University

10:00 AM Break

10:15 AM Invited
Families of Multiple-Component Single-Phase Solid-Solution High Entropy Alloys: *Hongbin Bei*[1]; [1]Oak Ridge National laboratory

10:40 AM Invited
High-Entropy Glassy Alloys Designed from Ti_2Ni Structure Using Digitalized Crystallographic Database: *Akira Takeuchi*[1]; Junqiang Wang[1]; Na Chen[1]; Wei Zhang[2]; Yoshihiko Yokoyama[2]; Kunio Yubuta[2]; [1]WPI-Advanced Institute for Materials Research, Tohoku University; [2]Institute for Materials Research, Tohoku University

11:05 AM
High-Entropy Alloy to Nitride Coatings Deposited by Reactive DC Sputtering: *Kuo-Cheng Yang*[1]; Chun-Yang Cheng[1]; Szu-Chien Tseng[1]; An-Chou Yeh[1]; Jien-Wei Yeh[1]; [1]National Tsing Hua University

11:20 AM
Non-Equilibrium and Equilibrium Phases in AlCoCrFeNi High-Entropy Alloys: *Zhi Tang*[1]; Oleg Senkov[2]; Chad Parish[3]; Lou Santodonato[1]; Daniel Miracle[2]; Gongyao Wang[1]; Chuan Zhang[4]; Fan Zhang[4]; Peter Liaw[1]; [1]The University of Tennessee; [2]Air Force Research Laboratory; [3]Oak Ridge National Laboratory; [4]CompuTherm LLC

Synergies of Computational and Experimental Materials Science II: Mechanical Behavior: Fatigue and Failure

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 Lab

Wednesday AM
March 6, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Anthony Rollet, Carnegie Mellon University; Robert Suter, Carnegie Mellon University

8:30 AM Introductory Comments

8:35 AM Invited
On an Integrated Experimental and Computational Approach to Derive Phenomenological Equations to Predict Fracture Toughness in Titanium Alloys: Iman Ghamarian[1]; Brian Welk[2]; Hamish Fraser[2]; *P. Collins*[1]; [1]University of North Texas; [2]The Ohio State University

9:05 AM
Microstructure-Based Probabilistic Modeling of Life-Limiting Fatigue Mechanisms: *Sushant Jha*[1]; Christopher Szczepanski[2]; Robert Brockman[3]; Craig Przybyla[2]; Reji John[2]; James Larsen[2]; [1]Air Force Research Laboratory/Universal Technology Corporation; [2]US Air Force Research Laboratory; [3]University of Dayton Research Institute

9:25 AM Invited
Combining X-Ray Microtomography with the Finite Elements Method to Study Damage and Cracking in Stuctural Materials: *Henry Proudhon*[1]; Jia Li[1]; Yoann Guilhem[2]; Lucien Laiarinandrasana[1]; Thilo Morgeneyer[1]; Wolfgang Ludwig[2]; Arjen Roos[3]; Samuel Forest[1]; [1]MINES ParisTech; [2]Universite de Lyon; [3]ONERA

9:55 AM Break

10:10 AM Invited
High Energy X-Ray Diffraction Microscopy Combined with Tomography: Creating a Direct Link Between Mesoscale Computational Models and Experimental Measurements: *Robert Suter*[1]; [1]Carnegie Mellon University

10:40 AM
Determination of High Strain Rate Behavior of Steel Using Finite Element Analysis and High Strain Rate Experimentation: *Jeremy Schreiber*[1]; Tim Eden[1]; Ivi Smid[1]; [1]Penn State

11:00 AM
Failure Mode Prediction of a Resistance Spot Weld in Advanced High Strength Steels: *Lili Zheng*[1]; Yanli Wang[1]; Srdjan Simunovic[1]; Wei Zhang[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory

11:20 AM
Modeling Bending of α-Titanium with Embedded Crystal Plasticity and Analytical Yield Surface Formulations in Implicit Finite Elements: *Marko Knezevic*[1]; Ricardo Lebensohn[1]; Oana Cazacu[2]; Benoit Revil-Baudard[2]; Gwénaëlle Proust[3]; Sven Vogel[4]; Michael Nixon[5]; [1]Materials Science and Technology Division, Los Alamos National Laboratory; [2]Department of Mechanical and Aerospace Engineering, University of Florida; [3]School of Civil Engineering, University of Sydney; [4]Los Alamos Neutron Science Center, Los Alamos National Laboratory; [5]Air Force Research Laboratory, Munitions Directorate

11:40 AM
Correlating Microstructural Features with Dynamic Damage Nucleation: *Veronica Livescu*[1]; John Bingert[1]; Thomas Mason[1]; Daniel Mason[2]; Curt Bronkhorst[1]; [1]Los Alamos National Laboratory; [2]Brigham Young University

Three-Dimensional Materials Science VII: Specialty Session on Three-Dimensional Tools

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

Wednesday AM
March 6, 2013

Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jonathan Madison, Sandia National Laboratories; David Rowenhorst, Naval Research Laboratory

8:30 AM Introductory Comments

8:40 AM Invited
RoboMet.3D: A Fully Automated, Serial Sectioning System for 3D Microstructural Investigations: *Murali Gorantla*[1]; [1]UES, Inc

9:05 AM Invited
Using the TriBeam to Quantitatively Analyze CuW Composites: *McLean Echlin*[1]; Alessandro Mottura[2]; Tresa Pollock[1]; [1]UC Santa Barbara; [2]University of Birmingham

9:30 AM Invited
An Open-Source Engine for the Processing of Electron Backscatter Patterns: *Philippe Pinard*[1]; Marin Lagacé[2]; Pierre Hovington[2]; Raynald Gauvin[3]; Silvia Richter[1]; [1]RWTH Aachen University; [2]Institut de recherche d'Hydro-Québec; [3]McGill University

9:55 AM Break

10:05 AM Invited
Development and Application of Novel Tools and Techniques for the Three-Dimensional Characterization of Numerous Complex Materials: *John Sosa*[1]; Daniel Huber[1]; Vikas Dixit[1]; Peter Collins[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

10:30 AM Invited
Stochastic Segmentation of Material Images and Image Stacks: Emine Gulsoy[1]; Michael Jackson[2]; Mary Comer[3]; Jeff Simmons[4]; *Marc De Graef*[5]; [1]Northwestern University; [2]BlueQuartz Software; [3]Purdue University; [4]Air Force Research Laboratory; [5]Carnegie Mellon University

10:55 AM Invited
Digital Representation Environment for the Analysis of Microstruccture in 3D (DREAM.3D): *Michael Groeber*[1]; Mike Jackson[2]; [1]AFRL; [2]BlueQuartz Software

11:20 AM Invited
Fast Fourier Transform-Based Micromechanical Modeling of Polycrystals with Direct Input from 3-D Microstructural Images: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

11:45 AM Invited
3D Image Based Modelling for Materials Applications: Philippe Young[1]; Kerim Genc[2]; Ali Abdul-Aziz[3]; *Simon Richards*; [1]University of Exeter; [2]Simpleware Ltd.; [3]NASA Glenn Research Center

12:10 PM Invited
Studying Complex Microstructure Geometry and Topology with HEDM: An Adaptive, Forward Modeling Approach: *S.F. Li*[1]; Joel Bernier; Bryan Reed; Mukul Kumar; J. Lind; C.M. Hefferan; Robert Suter; Ulrich Lienert; [1]Lawrence Livermore National Lab

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Low-Dimensional Nanomaterials II

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

Wednesday PM
March 6, 2013

Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Jiyoung Kim, University of Texas; Yuanbing Mao, University of Texas-Pan American

2:00 PM
Carbon Encapsulated Platinum Nanoparticles: Growth, Characterization, and Applications: *Nitin Chopra*[1]; Junchi Wu[1]; [1]The University of Alabama

2:20 PM
Green Synthesis of Anisotropic CdSe Nanoparticles under Ambient Condition Via a Non -Phosphine Based Method: Vuyelwa Ncapayi[1]; *Oluwafemi Oluwatobi*[1]; Odey Akpa[1]; Sandile Songca[1]; [1]Walter Sisulu University

2:40 PM
Synthesis of Rhenium Nanoparticles by Gamma Irradiation: *Jessika Rojas*[1]; Carlos Castano[1]; [1]Missouri University of Science and Technology

3:00 PM
Non-Exponential Decay of Quantum Dot Photoluminescence: *Karel Kral*[1]; Miroslav Mensik[2]; [1]Inst. Phys. ASCR, v.v.i.; [2]Institute of Macromolecular Chemistry, ASCR

3:20 PM Break

3:40 PM
Enhanced Electrochemical Performance of Oxide-carbon Composite Nanofibers with Tunable Morphology: *Qiang Li*[1]; Aleksey Altecor[1]; Karen Lozano[1]; Yuanbing Mao[1]; [1]University of Texas Pan-America

4:00 PM
Fluorinated Graphene as a Low-k Dielectric for Graphene Devices: *Srikar Jandhyala*[1]; Greg Mordi[1]; David Hinojos[1]; Hyunjung Shin[2]; Robert Wallace[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]Kookmin University

4:20 PM
Application of Graphene Oxide to the Construction of Electrochemical Biosensor for Environmental Monitoring: *Li Dan*[1]; Haixia Tong[1]; Xin Li[1]; Zhenyu An[1]; Wenqi Li[1]; Wei Liu[1]; Xiaofeng Zhang[1]; Qian Wang[1]; [1]Changsha University of Science and Technology

4:40 PM
Electrochemical Biosensors Based on T-ZnO Nanostructures and ZnO Nanowires for Highly Sensitive and Real-time Detection of Glucose and Uric Acid: *Yanguang Zhao*[1]; Xiaoqin Yan[1]; Yue Zhang[1]; [1]University of Science & Technology Beijing(USTB)

5:00 PM Concluding Comments Best Graduate Student Paper Award Talks

2013 Materials Innovation Plenary: Innovation in Materials & Manufacturing: 2013 Materials Innovation Plenary Session

*Sponsored by:*TMS: Materials Innovation Committee
Program Organizers: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

Wednesday PM
March 6, 2013

Room: Lila Cockrell Theatre
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Georgia Institute of Technology.

Session Chairs: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

2:00 PM Introductory Comments

2:05 PM Invited
International Space Station as an Innovation Laboratory: Materials Research and Beyond: *Julie Robinson*[1]; [1]NASA Johnson Space Center -- International Space Station

2:35 PM Question and Answer Period

2:40 PM Invited
The National Network for Manufacturing Innovation: *Frank Gayle*[1]; [1]NIST

3:10 PM Question and Answer Period

3:15 PM Invited
New Approaches to Manufacturing Innovation in DOE: *Robert Ivester*[1]; [1]Department of Energy

3:45 PM Question and Answer Period

3:50 PM Invited
Integrated Computational Materials Engineering (ICME): A Study on ICME Implementation in the Aerospace, Automotive, and Maritime Industries: *Tresa Pollock*[1]; [1]University of California Santa Barbara

4:20 PM Question and Answer Period

4:25 PM Panel Discussion

4th International Symposium on High-Temperature Metallurgical Processing: Simulation and Modeling

*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

Wednesday PM
March 6, 2013

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

Session Chairs: Mansoor Barati, University of Toronto; Xiaohui Fan, Central Sourth University

2:00 PM
Simulations for Optimising Plant Flowsheets for Brownfield Improvements: *Andrew Campbell*[1]; Michael Reed[1]; [1]WorleyParsons

2:20 PM
Study on Apprasial Model of Iron Ores Based on Multi-level Fuzzy Comprehensive Evaluation: *Xiao-hui Fan*[1]; Ying Li[1]; Xu-ling Chen[1]; [1]The Central South University

2:40 PM
The Numerical Simulation and Application of Oxygen Lance in 120t BOF of PANSTEEL: *Yong Chen*[1]; Xin-teng Liang[2]; Jian-hua Zeng[2]; Gui-jun LI[3]; Sen-xiang Yang[3]; [1]PANsteel Group Research Institute Co., Ltd. ; [2]PANsteel Group Research Institute Co., Ltd.; [3]Vanadium Recovery & Steelmaking Plant of PZH Steel

3:00 PM
CFD Model Development for Gaseous Reduction of Iron Ore Fines Using Multilayer Moving-fluidized Bed: *Huiqing Tang*[1]; [1]University of Science and Technology Beijing,Beijing

3:15 PM
Modelling the Hardening of Steel AISI 5115 by the Method Kuyucak: Eliana Agaliotis[1]; Mario Rosenberger[2]; *Carlos Schvezov*[1]; Gustavo Sanchez Sarmiento[3]; [1]UNaM - CONICET; [2]UNaM; [3]UBA

3:30 PM
Deformation Simulation of Copper Plates of Slab Continuous Casting Mold: *Xiang-Ning Meng*[1]; [1]Northeastern University

3:50 PM Break

4:00 PM
An Estimation Model for the Viscosities of CaF2(-CaO)-Al2O3 Slags: *Shi Guanyong*[1]; Zhang Ting'an[1]; Niu Liping[1]; Dou Zhihe[1]; [1]Northeastern University

4:20 PM
Numerical Simulation of Slag Foaming in BOS Converter Steelmaking with Population Balance Modeling: *Md Sattar*[1]; Jamal Naser[1]; Geoffrey Brooks[1]; [1]Swinburne University of Technology

4:35 PM
Thermodynamic Modeling of the CaO-FetO-CaF2 System for Application in Electroslag Remelting: *Dmitri Nassyrov*[1]; In-Ho Jung[1]; [1]McGill University

4:55 PM
Determination of Liquidus Temperatures from Viscosity for CaO-Al2O3 Based Slags: Jifang Xu[1]; *Lei Tang*[2]; Minqi Sheng[1]; Jianchao Li[3]; Jieyu Zhang[2]; Kang Wan[1]; [1]Soochow University; [2]Shanghai University; [3]Vocational and Industry Institute of Hebei

5:15 PM
Numerical Simulation of Electromagnetic Fields in Microwave Gas Heating System: Influence of the Dielectric Properties: Xiaobiao Shang[1]; *Junruo Chen*[2]; Nanshang Shen[3]; Yifeng Shi[4]; Bangqi Zhang[4]; Guo Chen[5]; Jinhui Peng[6]; [1]Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology,; [2]Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology; [3]Yunnan Copper Industry (Group) Co Ltd.; [4]Yunnan Copper Company Limited; [5]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology; [6]Key Laboratory of Unconventional Metallurgy,Kunming University of Science and Technology

5:35 PM
Research and Application of Intelligence Control System for Rotation Speed of Main Exhaust Fan in Sintering Plant: *Li Qiang*[1]; [1]TISCO

5:40 PM
Numerical Modelling of Oxygen Enriched Top-Blown Smelting Reduction Furnace: *Qing Shan*[1]; Wang Hua[1]; Yang Ni[1]; Li Wentao[1]; Wang Junyong[1]; [1]Kunming University of Science and Technology

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Materials Challanges in Hostile Environments

*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

Wednesday PM
March 6, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Rashmi Bhavsar, Schlumberger; JEFFERSON DE OLIVEIRA, Petrobras - CENPES

2:00 PM Introductory Comments Rashmi Bhavsar, Global Materials Metier Manager and Advisor, Schlumberger

2:10 PM Keynote
Microstructure Engineering of the Heat Affected Zone of X80 Welds for Arctic Applications: *Warren Poole*[1]; Matthias Militzer[1]; [1]The University of British Columbia

2:40 PM
Ultra-Deep Strong Acidizing and Sour Gas Environments: A Materials Evaluation: *Dean Gambale*[1]; [1]Tantaline

3:00 PM Invited
Stability and Reactivity of Iron Sulfide Films in Sour Environments: William Herbert[1]; Aravind Krishnamootry[1]; Minh Dinh[1]; Sidney Yip[1]; Krystyn Van Vliet[1]; *Bilge Yildiz*[1]; [1]Massachusetts Institute of Technology

3:20 PM
Concentration of Corroding Species Affecting pH of Active Solutions and Its Effect on Corrosion Rates: Experiments and Modeling: *Jefferson Rodrigues*[1]; Indranil Roy[2]; [1]Petrobras; [2]Schlumberger

3:40 PM Break

3:55 PM Keynote
Materials Challenges in Hostile Environments for Hydrocarbon Recovery: *Rashmi Bhavsar*[1]; [1]Schlumberger

4:25 PM
High Strength Nickel Alloys for Extreme Oil and Gas Environments: *Raul Rebak*[1]; [1]GE Global Research

4:45 PM
Getting There and Staying There-Challenges to Materials in the HPHT Drilling and Completion Environments: *Michael Freeman*[1]; [1]M-I SWACO

5:05 PM
Effect of Tempering Treatment on Recovery Kinetics of Quenched and Tempered Steels: *Santiago Serebrinsky*[1]; Nicolás Romualdi[1]; Roberto Casanovas[1]; Martín Valdez[1]; Gustavo Kissner[1]; [1]Tenaris

5:25 PM
Assessing Susceptibility of Downhole Alloys to Embrittlement in Completions Brines: *Tatiana Hernandez*[1]; Indranil Roy; Virendra Singh; Manuel Marya; [1]Schlumberger

5:45 PM Concluding Comments

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Wide Bandgap Semiconductor Device Processing and Characterization

*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

Wednesday PM
March 6, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rachael Myers-Ward, Naval Research Laboratory; Jennifer Hite, Naval Research Laboratory

2:00 PM Advisory: This Session Begins at 2:30 p.m.

2:30 PM
Characterization of ALD Beryllium Oxide as a Potential High-κ Gate Dielectric for AlGaN/GaN High Electron Mobility Transistors (HEMTs): *Derek Johnson*[1]; Jung Yum[2]; Christopher Bielawski[2]; Todd Hudnall[3]; Sanjay Banerjee[2]; H. Harris[1]; [1]Texas A&M University; [2]University of Texas at Austin; [3]Texas State University

2:50 PM
Effect of Oxidation on GaN Studied by Photoluminescence and Raman Spectroscopy: *Gulten Karaoglan*[1]; Vladimir Kuryatkov[1]; Sergey Nikishin[1]; Mark Holtz[1]; Mary Coan[2]; Derek Johnson[2]; Jung Woo[2]; Iman Rezanezhad[2]; Rusty Harris[2]; [1]Texas Tech University; [2]Texas A&M University

3:10 PM Invited
Advanced Dielectric Integration in GaN High Frequency Devices: *David Meyer*[1]; [1]Naval Research Laboratory

3:40 PM Break

4:00 PM
High-Temperature Si Electronics Based on Record-High Schottky Barriers: *Meng Tao*[1]; [1]Arizona State University

4:20 PM Invited
High Energy Dielectrics for Pulse Power and Power Electronic Applications: *Mike Lanagan*[1]; Clive Randall[1]; [1]Penn State University

Advances in Surface Engineering: Alloyed and Composite Coatings II: Engineered 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

Wednesday PM
March 6, 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
The Hardening Mechanism of Electrodeposited Nanocrystalline Ni-P Alloys During Post-electrodeposition Ageing: *Hiroyuki Miyamoto*[1]; Yosuke Kasazaki[1]; Hiroshi Fujiwara[1]; [1]Doshisha University

2:20 PM
Electrodeposition, Structure and Composition of Ternary Zn-Ni-P Alloys: *Nikolai Boshkov*[1]; Vassil Bachvarov[1]; Miglena Peshova[1]; [1]Institute of Physical Chemistry, Bulgarian Academy of Sciences

2:40 PM
Growth and Structural Characterization of Dual Layer Nano–Microcrystalline Composite Diamond Coatings Deposited on WC–Co substrates: *Ravikumar Dumpala*[1]; Maneesh Chandran[1]; Kumaran Ramamoorthy[1]; Ramamoorthy Balakrishnan[1]; Sri Ramachandra Rao Mamidanna[1]; [1]Indian Institute of Technology Madras

3:00 PM
Surface Modification of Hard Alloys by High Current Pulsed Electron Beam Irradiation: Sheng Zhi Hao[1]; Yue Zhang[1]; Yang Xu[1]; *Chuang Dong*[1]; [1]Dalian University of Technology

3:20 PM
Surface Pretreatment of Galvanized Steel Sheets Relevant to Adhesion Performance of UV Curable Coatings: *Liu Fengguo*[1]; Wang Ying[1]; Xue Xiangxin[1]; [1]Northeastern University

3:40 PM Break

3:55 PM
Protective Silica-Based Coating for Aluminum 6092/SiCp Metal Matrix Composite in Chloride Media: *Abdel Salam Makhlouf*[1]; Feras Alfosail[2]; Zuhair Gasem[2]; [1]Central Metallurgical Research and Development Institute; [2], King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia

Alumina and Bauxite: Impurities

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

Wednesday PM
March 6, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Ajai Kumar, Sherwin Alumina Company, LLC

2:00 PM Introductory Comments

2:10 PM
Metallic Impurities from the Mine to Metal Products: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

2:30 PM
The Control of Fluoride Concentration in ETI Alüminyum Bayer Refinery Liquor: *Esra Savkilioglu*[1]; Carl Carton[2]; Kemal Dinç[1]; Meral Baygül[1]; Serkan Ertugral[1]; Seyit Avcu[1]; [1]ETI Alüminyum; [2]Carton Consulting

2:50 PM
Beneficiation of High Silica Bauxite Ores of India – An Innovative Approach: Mukesh Kumar[1]; *Bimalananda Senapati*[1]; C. Sateesh Kumar[1]; [1]Vedanta Aluminium Limited

3:10 PM
Morphological Investigation of Sodium Oxalate Crystals Grown in Aqueous Sodium Hydroxide Solution: *Weng Fu*[1]; James Vaughan[1]; [1]University of Queensland

3:30 PM
Impurities in Raw Gas and Secondary Alumina: *Svetlana Kalyavina*[1]; Arne Petter Ratvik[1]; Thor Anders Aarhaug[2]; [1]NTNU; [2]SINTEF

3:50 PM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Solutioning and Aging

*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

Wednesday PM
March 6, 2013
Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM
Grain Boundary Plane Distribution in Aluminim and Aluminium Alloys: *Valerie Randle*[1]; Lisa Hill[1]; [1]Swansea University

2:20 PM
Microchemistry of Grain Boundary Precipitates and Correlations with Stress Corrosion Cracking Resistance in Al 7079: *Ramasis Goswami*[1]; Ronald Holtz[1]; Stanley Lynch[2]; [1]Naval Research Laboratory; [2]Defence Science and Technology Organisation

2:40 PM
Growth Ledges on Silver-Segregated θ' (Al_2Cu) Precipitates: *Julian Rosalie*[1]; Laure Bourgeois[2]; [1]National Institute for Materials Science; [2]Monash University

3:00 PM
On the Aging Behavior of AA2618 DC Cast Alloy: Peng Shen[1]; Emad Elgallad[1]; *X. Grant Chen*[1]; [1]University of Quebec at Chicoutimi

3:20 PM
Exploring the Spatial Distribution of β Phase Precipitation and Corrosion in 5xxx Alloys: *Daniel Satko*[1]; Joshua Shaffer[2]; Surya Kalidindi[3]; [1]Drexel University; [2]Materials Resources, LLC; [3]Georgia Institute of Technology

3:40 PM Break

4:00 PM
Influence of Elastic Stress Aging on the Precipitation Free Zones of an AA7075 Aluminum Alloy: *Jingwu Zhang*[1]; Wei Gou[1]; Meng Yang[1]; Hui Li[1]; Xiyu Wen[2]; [1]Yanshan University; [2]University of Kentucky

4:20 PM
The Effect of Cold Work on the Precipitation and Recrystallization Kinetics in Al-Sc-Zr Alloys: *C.T. McNamara*[1]; S. Kampe[1]; P.G. Sanders[1]; D.J. Swenson[1]; [1]Michigan Technological University

4:40 PM
An Investigation of β-Phase Precipitation in Al-Mg Alloys during In-Situ TEM Heating/Straining Experiments: *Daniel Scotto D'Antuono*[1]; Jennifer Gaies[2]; William Golumbfskie[2]; Mitra Taheri[3]; [1]Drexel University; [2]Naval Surface Warfare Center; [3]Drexel University

5:00 PM
A Novel Solution Heat Treatment of 7075 -Type Alloy: Mohamed Ibrahim[1]; Agnes Samuel[1]; Saleh Alkahtani[2]; *Fawzy Samuel*[1]; [1]UQAC; [2]Salman bin Abdulaziz University

5:20 PM
Experimental Study of the Al-rich Corner of the Al-Si-Ti System at 500\176C: *Yang Li*[1]; Qun Luo[1]; Jieyu Zhang[1]; Qian Li[1]; [1]Shanghai University

5:40 PM
The Microstructure Evulution and Mechanical Property of Al-Si alloy with Sr Addition with Different Heat Treatment: *Meng Wang*[1]; Qingyou Han[1]; [1]Purdue University

Aluminum Processing: Aluminum Processing II

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Wednesday PM
March 6, 2013

Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
The Effect of Magnesium Content on Microstructure Evolution During Hot Deformation of Aluminum Alloys: *Trevor Watt*[1]; Shinya Yasuda[2]; Koji Ichitani[2]; Ken Takata[3]; Alex Carpenter[4]; Jakub Jodlowski[5]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]Furukawa-Sky Aluminum Corp.; [3]Nippon Steel Corp.; [4]Southwest Research Institute; [5]Schlumberger Technology Center

2:20 PM
High Strength Nanostructured Al-Zn-Mg-Cu-Zr Alloy Manufactured by High-Pressure Torsion: *Chao An*[1]; Huimin Lu[1]; Shilai Yuan[1]; [1]Beihang University

2:40 PM
Corrosion Behavior of 2024 Aluminum Alloy Anodized in Sulfuric Acid Containing Inorganic Inhibitor: *Maysam Mohammadi*[1]; Ali Yazdani[2]; Farzad Mohammadi[1]; Akram Alfantazi[1]; [1]University of British Columbia; [2]Shiraz University

3:00 PM
Laboratory Simulation of Wear during Hot Extrusion of Aluminium: *Goran Kugler*[1]; Milan Tercelj[1]; [1]University of Ljubljana, NTF-OMM

3:20 PM Break

3:40 PM
The Production of Wrought Alloy AlSi30Cu1,5Mg1,2Ni1,5Fe0,8 with Ultrafine Structure: *Marcin Szymanek*[1]; Boguslaw Augustyn[1]; Wojciech Szymanski[1]; Dawid Kapinos[1]; [1]Institute of Non-Ferrous Metals

4:00 PM
The Structure and Properties of Wrought Aluminium Alloys Series 6xxx with Vanadium for Automotive Industry: Marzena Lech-Grega[1]; *Wojciech Szymanski*[1]; Bartlomiej Plonka[1]; Sonia Boczkal[1]; Maciej Gawlik[1]; Mariusz Bigaj[1]; Piotr Korczak[1]; [1]Institute of Non-Ferrous Metals

Aluminum Reduction Technology: Environment II: PFCs

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

Wednesday PM
March 6, 2013

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

Session Chair: Michael Gershenzon, Alcoa

2:00 PM Introductory Comments

2:05 PM
A Study of Low Voltage PFC Emissions at Dubal: Michel Reverdy[1]; *Abdalla Zarouni*[1]; Ali Al Zarouni[1]; K Venkatasubramaniam[1]; [1]DUBAL

2:30 PM
Continuous PFC Emissions Measured on Individual 400kA Cells: David Wong[1]; *Jerry Marks*[2]; [1]University of Auckland; [2]J Marks & Associates LLC

2:55 PM
PFC and CO2 Emissions from an Australian Aluminium Smelter Using Time-Integrated Stack Sampling and GC-MS, GC-FID Analysis: Paul Fraser[1]; Paul Steele[1]; *Mark Cooksey*[1]; [1]CSIRO

3:20 PM
Investigation on Formation Mechanism of Non-Anode Effect Related PFC Emissions from Aluminum Reduction Cells: *Xiping Chen*[1]; Wangxing Li[1]; Chris Bayliss[2]; [1]Zhengzhou Research Institute of Chalco; [2]the International Aluminium Institute

3:45 PM Break

3:55 PM
On the Mechanism Behind Low Voltage PFC Emissions: *Jomar Thonstad*[1]; Sverre Rolseth[2]; Rudolf Keller[2]; [1]Norwegian Univ. Sc. Technology; [2]SINTEF Materials and Chemistry

4:20 PM
Frequency Response Analysis of Anode Current Signals as a Diagnostic Aid for Detecting Approaching Anode Effects in Aluminum Smelting Cells: *Cheuk-Yi Cheung*[1]; Chris Menictas[1]; Jie Bao[1]; Maria Skyllas-Kazacos[1]; Barry Welch[1]; [1]The University Of New South Wales

4:45 PM
Reduction Strategies for PFC Emissions from Chinese Smelters: *Xiping Chen*[1]; Wangxing Li[1]; Chris Bayliss[2]; [1]Zhengzhou Research Institute of Chalco; [2]The International Aluminium Institute

5:10 PM
Off-gas Analysis of Laboratory-Scale Electrolysis Experiments with Anodes of Various Compositions: *Ole Kjos*[1]; Thor Anders Aarhaug[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; Henrik Gudbrandsen[1]; [1]SINTEF

5:35 PM
Hydrolysis of Carbonyl Sulfide (COS) on Smelting Grade Alumina: *Aleksandr Mikhonin*[1]; Neal Dando[1]; Michael Gershenzon[1]; [1]Alcoa

Battery Recycling: Battery Recycling

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory; John Sullivan, Argonne National Lab

Wednesday PM
March 6, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Gregory Krumdick, Argonne National Laboratory; John Sullivan, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM
A Sustainable Design for a Spent Lithium-Ion Battery Pre-Recycling Process: *Xue Wang*[1]; Gabrielle Gaustad[1]; Callie Babbitt[1]; Chelsea Bailey[1]; [1]Rochester Institute of Technology

2:30 PM
Best Practices and Emerging Trends Shaping Future Battery Collection and Recycling Initiatives: *Marcus Boolish*[1]; [1]Energizer Battery Manufacturing, Inc.

2:55 PM
Cost, Energy, Emissions, and Resource Assessment of the Production of Automotive Batteries: Michael Wang[1]; *John Sullivan*[1]; Danilo Santini[1]; Jennifer Dunn[1]; Kevin Gallagher[1]; Linda Gaines[1]; [1]Argonne National Laboratory

3:20 PM
Dismantling (H)EV Battery Packs, an Integral Part of Umicore's Recycling Solution: *Mark Caffarey*[1]; [1]Umicore USA

3:45 PM Break

4:00 PM
Recovery and Refunctionalization of LiFePO4 Cathode from End-of-Life Commercial Lithium Ion Batteries: *Matthew Ganter*[1]; Gabrielle Gaustad[1]; Callie Babbitt[1]; Brian Landi[2]; [1]Golisano Institute for Sustainability, Rochester Institute of Technology; [2]Chemical Engineering, Rochester Institute of Technology

4:25 PM
Modeling of Synergistic Effect of Cyanex 302 and D2EHPA on Separation of Nickel and Cadmium from Sulfate Leach Liquors of Spent Ni–Cd Batteries: *Ehsan Vahidi*[1]; Ataollah Babakhani[2]; Fereshteh Rashchi[2]; Alireza Zakeri[3]; [1]University of South Florida; [2]University of Tehran; [3]Iran University of Science and Technology

4:50 PM
Recycling of Exhaust Batteries in Lead-Foam Electrodes: *Girolamo Costanza*[1]; Maria Elisa Tata[1]; [1]University of Rome "Tor vergata"

5:15 PM
Chloride Leaching of Spent Lead-Acid Battery Paste: *Mohammad Mehdi Salarirad*[1]; Atefe Sarvi[1]; Narges Bokaian[1]; [1]Amirkabir University of Tech.

5:40 PM
Technical Status and Progress of Lead Recycling of Battery: Wei-feng Li[1]; Li-hua Jiang[1]; *Jing Zhan*[1]; Chuang-fu Zhang[1]; [1]Central South University

Biological Materials Science Symposium: Hierarchical Composites and Biological Materials (Joint session with Hybrid and Hierarchically Structured Composites)

*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

Wednesday PM
March 6, 2013
Room: 215
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Tomoko Sano, US Army Research Laboratory; Po-Yu Chen, National Tsing Hua University

2:00 PM Invited
Insect Joints: Hierarchical Biocomposites with Superior Mechanical and Tribological Properties: *Mustafa Akbulut*[1]; [1]Texas A&M

2:30 PM
Hierarchical Structure and Mechanical Design of Natural Dermal Armors: *Chang-Yu Sun*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

2:50 PM
Finite Element Modeling of Multilayered Structures of Fish Scales: *Mei Chandler*[1]; Paul Allison[1]; Rogie Rodríguez[2]; Wayne Hodo[1]; Robert Moser[1]; Alan Kennedy[3]; [1]US Army Engineer Research and Development Center, Geotechnical and Structures Laboratory; [2]University of Puerto Rico-Mayaguez; [3]US Army Engineer Research and Development Center, Environmental Laboratory

3:10 PM
Axial Compression of a Hollow Cylinder Filled with a Foam: A Porcupine Quill Study: *Wen Yang*[1]; Joanna McKittrick[1]; [1]University of California, San Diego

3:30 PM Break

3:40 PM Invited
Bioinspired Composites Fabricated by Magnetic Freeze Casting: *Joanna McKittrick*[1]; Michael Porter; Pei-Chun Chiu; Po-Yu Chen; Marc Meyers; [1]University of California, San Diego

4:10 PM
Nature Inspired "Nacre-like" Ceramic-Polymer (SiC-PMMA) Composites: *Valentina Naglieri*[1]; Bernd Gludovatz[1]; Antoni Tomsia[1]; Robert Ritchie[2]; [1]Lawrence Berkeley National Laboratory; [2]University of California Berkeley

4:30 PM
Statistical Model of Fracture in Double Network Gels: *Mark Jhon*[1]; [1]Institute of High Performance Computing

4:50 PM
Effect of Loading Rate on the Mechanical Response of Penetration Experiments on the Biological Multilayered Material System, Atractosteus Spatula Scales:
P. G. Allison[1]; M.Q. Chandler[1]; B.A. Williams[1]; R.D. Moser[1]; A.J. Kennedy[1]; [1]US Army Engineer Research & Development Center

5:10 PM
The Structure and Mechanics of a High-performance Armor: Fish Scales: Deju Zhu[1]; Lawrence Szewciw[1]; Franck Vernerey[1]; *Francois Barthelat*[1]; [1]McGill University

5:30 PM
Water-lubricated Surface as Deadly Trap: Composite Structure and Surface Properties of Insect-Eating Pitcher Plants: *Chiao-Peng Hsu*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

Biological Materials Science Symposium: Nanoscale Systems and Surfaces for Biological Interactions

*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

Wednesday PM
March 6, 2013
Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Mohan Edirisinghe, University College of London; Jamie Kruzic, Oregon State University

2:00 PM Keynote
Biocompatible Nanoparticle Materials in Cancer Research: *Xiaoyuan Chen*[1]; [1]National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health

2:40 PM
Nanoparticle X-Ray Contrast Agents: *Ryan Roeder*[1]; Cole Lisa[1]; Matthew Meagher[1]; Tracy Vargo-Gogola[1]; Ryan Ross[1]; [1]University of Notre Dame

3:00 PM
Peptide-enabled Hybrid Gold Nanoprobes for Targeted Cell Bioimaging and Biosensing: *Marketa Hnilova*[1]; Nichole Shaw[1]; Meera Shenoy[1]; James Park[1]; Hilal Yazici[1]; Carolyn Gresswell[1]; Mustafa Gungormus[1]; Mehmet Sarikaya[1]; Candan Tamerler[1]; [1]University of Washington

3:15 PM Invited
Nanoparticles for Enzymatic Therapies: *Sadik Esener*[1]; Inanc Ortac[1]; Michael Benchimol[1]; [1]UCSD

3:45 PM Break

3:55 PM Invited
Interferometric Reflectance Imaging Sensor: Detection and Classification of Nanoparticles and Viral Pathogens: Selim Unlu[1]; *Carlos Lopez*; [1]Boston University

4:25 PM
Matrix-Chaperone Technology: Coated MicroSpheres for the Preservation of Biospecimens Dry, at Ambient Temperature: *Michael Hogan*[1]; Tammy Beckham[1]; [1]Texas A&M

4:45 PM Invited
Antibacterial Nanosized Silver Substituted Hydroxyapatite with Enhanced Mechanical Properties: *Sumit Goenka*[1]; Jatin Bhatt; [1]Shanghai University

5:15 PM
Hierarchically Ordered Nanostructures from Functionalized Nano Building Blocks: Rahul Mavinkurve[1]; Jermaine Coffman[1]; Michael Klem[1]; *Rajendra Kasinath*[1]; [1]Montana Tech of the University of Montana

5:35 PM Invited
Graphene Penetrates Cell Membranes Through Atomically Thin Corners and Edges: *Huajian Gao*[1]; [1]Brown University

6:05 PM
Fibronectin Adhesion on Polystyrene Tissue Culture Plates: *Sina Youssefian*[1]; Shawn Regis[2]; Sankha Bhowmick[2]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute; [2]University of Massachusetts - Dartmouth

6:20 PM
Effect of Host Media on Microbial Influenced Corrosion Due to Desulfovibrio Desulfurican: *Ajay Singh*[1]; [1]IIT Roorkee

6:40 PM
Vermiculite Powder Carrying Copper and Silver: A New Antibacterial Material: *Bowen Li*[1]; Jiann-Yang Hwang[1]; Susan Bagley[1]; [1]Michigan Technological University

Bulk Metallic Glasses X: Simulation 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

Wednesday PM
March 6, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

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

Session Chairs: Dan Miracle, AF Research Laboratory; Karin Dahmen, University of Illinois at Urbana Champaign

2:00 PM
A Topological Approach to the Discovery of New High Glass-forming Alloys - The Effective Radius Ratio Method: *Kevin Laws*[1]; Daniel Miracle[2]; Karl Shamlaye[1]; Jake Cao[1]; John Scicluna[1]; Michael Ferry[1]; [1]School of Materials Science and Engineering, University of New South Wales; [2]United States Air Force Research Laboratory, Materials and Manufacturing Directorate

2:15 PM Invited
Ab Initio Calculations on Zr-Cu-Al Bulk Metllic Glasses: *Wai-Yim Ching*[1]; Yungfeng Shi[2]; Despina Louca[3]; Gongyao Wang[4]; Peter Liaw[4]; [1]University of Missouri-Kansas City; [2]Rensselaer Polytechnic Institute,; [3]University of Virginia; [4]University of Tennessee

2:35 PM
Analysis of Glass Forming Ability in Aluminum-Based Metallic Glasses Through Atomistic Modeling: *David Riegner*[1]; Logan Ward[1]; Wolfgang Windl[1]; Katherine Flores[2]; [1]The Ohio State University; [2]Washington University

2:50 PM Invited
A Computationally-Driven, Combinatorial Approach to Designing Metallic Glass Alloys: Logan Ward[1]; Peter Tsai[2]; Wolfgang Windl[1]; Kevin Laws[3]; *Katharine Flores*[2]; [1]The Ohio State University; [2]Washington University; [3]University of New South Wales

3:10 PM
Localized Phase Transformation in Amorphous Fe-Si-B Ribbons Using Laser Processing: Atom Probe Analysis and Thermal Model Study: *Shravana Katakam*[1]; Arun Devaraj[2]; Mark Bowden[2]; Daniel Perea[2]; Hitesh Vora[1]; Jun Hwang[1]; Rajarshi Banerjee[1]; Suntharampillai Thevuthasan[2]; Narendra Dahotre[1]; [1]University of North Texas; [2]Pacific Northwest National Laboratory

3:25 PM Break

3:40 PM Invited
The Effects of Potential and Chemical Ordering on Fragility of Liquids: *James Morris*[1]; Takeshi Egami[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

4:00 PM Invited
Simple Models for Plastic Deformation and the Statistics of Serrations in the Stress Versus Strain Curves of Bulk Metallic Glasses: *Karin Dahmen*[1]; James Antonaglia[1]; Xie Xie[2]; Matthew Wraith[1]; Junwei Qiao[3]; Y Zhang[4]; Jonathan Uhl[5]; Peter Liaw[2]; [1]University of Illinois at Urbana Champaign; [2]University of Tennessee at Knoxville; [3]Taiyuan University of Technology; [4]University of Science and Technology of Beijing; [5]Private

4:20 PM Invited
Intrinsic Ductility of Glassy Solids: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

4:40 PM
Atomistic Modeling of Shear Delocalization of Metallic Glasses under High Compressive Stress: *Narumasa Miyazaki*[1]; Masato Wakeda[1]; Fanqiang Meng[2]; Koichi Tsuchiya[3]; Shigenobu Ogata[1]; [1]University of Osaka; [2]University of Tsukuba; [3]National Institute for Materials Science

4:55 PM
Predicting the Production of Glass Former Alloys by Mathematical Simulation of Spray Forming: *Claudemiro Bolfarini*[1]; Regis Cava[1]; Walter Botta[1]; Claudio Kiminami[1]; [1]Universidade Federal de São Carlos

Bulk Metallic Glasses X: Structures and Mechanical Properties III

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

Wednesday PM — Room: Bowie A
March 6, 2013 — Location: Grand Hyatt

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

Session Chairs: Oleg Senkov, UES, Inc.; Wu Kai, Taiwan Ocean University

2:00 PM Invited
Air Oxidation of a Binary $Cu_{64.5}Zr_{35.5}$ Bulk Metallic Alloy at 573 – 723 K (300 – 450°C): *Wu Kai*[1]; W.S. Chen[2]; Y.H. Wu[2]; P.C. Kao[2]; P.C. Lin[2]; C. P. Chuang[3]; P. Liaw[3]; [1]Institute of Materials Engineering, National Taiwan Ocean University,; [2]Institute of Materials Engineering, National Taiwan Ocean University; [3]Department of Materials Science and Engineering, University of Tennessee

2:20 PM
Mechanical Analysis of Structural Relaxation in Zr50Cu45Al5 Metallic Glass Ribbons by Broadband Nanoindentation Creep: *Zenon Melgarejo*[1]; Joseph Jakes[2]; Jinwoo Hwang[1]; Eren Kalay[3]; Matthew Kramer[3]; Paul Voyles[1]; Donald Stone[1]; [1]University of Wisconsin-Madison; [2]USA Forest Service; [3]Iowa State University

2:35 PM Invited
Combinatorial Influence of Bimodal Size of B2 TiCu Compounds on Plasticity of Ti-Cu-Ni-Zr-Sn-Si Bulk Metallic Glass Composites: Seung Hwan Hong[1]; *Ki Buem Kim*[1]; [1]Sejong University

2:55 PM
Evaluation of Microstructure and Mechanical Properties of Nitrogen Doped ZrCuNiAl Thin Film Metallic Glasses: *Jyh-Wei Lee*[1]; Tzu-Pin Hsiao[2]; Yung-Chin Yang[2]; Chia-Lin Li[3]; Jinn Chu[3]; [1]Ming Chi University of Technology; [2]National Taipei University of Technology; [3]National Taiwan University of Science and Technology

3:15 PM
Nanomechanics of BMGs at Elevated Temperature In Situ in the SEM: *Jeffrey Wheeler*[1]; Rejin Raghavan[1]; Johann Michler[1]; [1]EMPA

3:30 PM Break

3:45 PM Invited
Monitoring of Deformation in Metallic Glasses by Electrical Resistance Measurement: *Eun Soo Park*[1]; [1]Seoul National University

4:05 PM
Oxygen-Assisted Deformation Processes in Zr-Cu-Al Metallic Glasses Via First-principle Molecular Dynamics Simulation: *Chun-Yi Wu*[1]; Yunche Wang[1]; Pei-Ling Sun[2]; [1]National Cheng Kung University; [2]Feng Chia University

4:20 PM Invited
Notch Effect on Deformation and Fracture Behaviours of Bulk Metallic Glasses: *Zhefeng Zhang*[1]; Ruitao Qu[1]; [1]Institute of Metal Research

4:40 PM
Shear Banding Evolution of Metallic Glasses: *Rui Tao Qu*[1]; Zhe Feng Zhang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

4:55 PM
Study on Fracture Strength Reliability of Mg-Zn-Ca Bulk Metallic Glasses: You Junhua[1]; *Bai Xiaojun*[1]; [1]Shenyang University of Technology

Cast Shop for Aluminum Production: Aluminum Cast Shop IV

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

Wednesday PM
March 6, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chair: Gyan Jha, Tri-Arrows Aluminum

2:00 PM
Influence of Die and Casting Temperatures and Titanium and Strontium Contents on the Technological Properties of Die-Cast A356 in the As-Cast and T6 Condition: *Sebastian Fischer*[1]; Veronika Groten[1]; Johannes Brachmann[1]; Carolin Fix[1]; Thomas Vossel[1]; Andreas Bührig-Polaczek[1]; [1]RWTH Aachen University

2:20 PM
Mechanism of Microstructure Changes of Al-Si Casting Alloy Applying Ultrasonic Vibration: *Jie Song*[1]; Qingyou Han[1]; [1]Purdue University

2:40 PM
Modeling and Simulation of Microstructure Evolution in Solidification and Solution Treatment of Hypoeutectic Al-Si Alloy: *Shi Feng*[1]; [1]Tsinghua University

3:00 PM
The Influence of Tramp Elements to Heterogeneous Modification of AlSi7Mg- Alloys under High Purity Condition: *Veronika Groten*[1]; Andreas Bührig-Polaczek[1]; [1]RWTH Aachen University

3:20 PM Break

3:40 PM
Horizontal Single Belt Strip Casting (HSBC) of Al-Mg-Sc-Zr Alloys: *Mert Celikin*[1]; Donghui Li[1]; Luis Calzado[1]; Mihaiela Isac[1]; Roderick Guthrie[1]; [1]McGill Metals Processing Centre

4:00 PM
Quality Improvement of Aluminium Alloy Castings by Application of a New Casting Facility instead of a Conventional Sand Casting Process: *Xiaojun Dai*[1]; Mark Jolly[1]; Binxu Zeng[1]; [1]Cranfield University

4:20 PM
Preventing Molten Aluminium Water Explosions through the Use of Organic Coatings: *Alex Lowery*[1]; George Stavnes[2]; [1]Wise Chem LLC; [2]Pyrotek Inc

4:40 PM
The Particle Pushing Problem and Its Theory of Aluminum Alloy: *Meng Wang*[1]; Qingyou Han[1]; [1]Purdue University

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

Wednesday PM
March 6, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chair: Shadia Ikhmayies, Al Isra University

2:00 PM
A Comparison between the Properties of SnO2:F Thin Films Prepared by Using Different Doping Compounds: HF and NH4F: *Shadia Ikhmayies*[1]; [1]Al Isra University

2:20 PM
Ab-Initio Calculations of the Optical Properties of d-NbN Single Crystal: *Shadia Ikhmayies*[1]; Bothina Hamad[2]; Jamil Khalifeh[2]; [1]Al Isra University; [2]University of Jordan

2:40 PM
Interface Phase Formation and their Mechanical Properties of Annealed U-Zr Binary Diffusion System: *Chao-Chen Wei*[1]; Robert Balerio[1]; Lin Shao[1]; [1]Texas A&M University

3:00 PM
Phase Equilibrium and Characterization Studies of Pentaglycerol, Tris(Hydroxymethyl)Aminomethane and 2-Amino-2-Methyl-1, 3-Propanediol Ternary Systems: *Wen-Ming Chien*[1]; Ivan Gantan[1]; Amrita Mishra[1]; Dhanesh Chandra[1]; Vamsi Kamisetty[1]; Prathyusha Mekala[1]; [1]University of Nevada, Reno

3:20 PM
Photoluminescence of n-Type CdS Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

3:40 PM
Photoluminescence of P-Type CdTe Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

4:00 PM
Structural and Electronic Properties of d-NbN Single Crystal: First Principles Calculations: *Shadia Ikhmayies*[1]; Bothina Hamad[2]; Jamil Khalifeh[2]; [1]Al Isra University; [2]University of Jordan

4:20 PM
Electrochemical Characterization of Lead-Calcium Alloy in Agitated Zinc Electrowinning Electrolyte: *Maysam Mohammadi*[1]; Farzad Mohammadi[1]; Akram Alfantzai[1]; [1]University of British Columbia

4:40 PM
Effects of Rare Earth Pr on the Mechanical and Electrochemical Properties of Pb-based Alloys: *Liangxing Jiang*[1]; Bo Hong[1]; Xiaoying Yu[1]; Xiaocong Zhong[1]; Junfeng Gui[1]; *Hongliang Zhang*; Yanqing Lai[1]; Yexiang Liu[1]; [1]Central South University

5:00 PM
Synthesis and Characterization of Pb Free Piezoelectric Ceramics - Barium Zirconate Titanate – Barium Calcium Titanate: *Paul Praveen*[1]; Kranti Kumar[1]; T.V. Jayaraman[2]; A R James[3]; Dibakar Das[1]; [1]School of Engineering Sciences and Technology, University of Hyderabad; [2]Department of Mechanical and Materials Engineering, University of Nebraska; [3]Defence Metallurgical Research Laboratory, Hyderabad, India

5:20 PM
Vacuum Hot Pressing Sintering of the High- Dense BN-Ni Composites: *Wang Chao*[1]; [1]Northeastern University

Characterization of Minerals, Metals and Materials 2013: Characterization of High Performance 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

Wednesday PM
March 6, 2013
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jian Li, CANMET; Lifeng Zhang, University of Science and Technology Beijing

2:00 PM
Characterizing Primary Dendritic Microstructures to Quantify the Processing-Structure-Property Relationship in Single Crystal Nickel-Based Superalloys: *Mark Tschopp*[1]; Andrew Oppedal[1]; Jon Miller[2]; Michael Groeber[2]; Andrew Rosenberger[2]; Kiran Solanki[3]; [1]Mississippi State University; [2]AFRL; [3]Arizona State University

2:20 PM
Creep Cavitation and Fracture in Single Crystal Superalloy: *Jinqian Zhao*[1]; Jiarong Li[1]; Shizhong Liu[1]; [1]Beijing Institute of Aeronautical Materials

2:40 PM
Deformation Mechanisms at Varying Temperatures in Alloy 718 Ni-Base Superalloy: *Donald McAllister*[1]; Duchao Lv[1]; Patrick Phillips[2]; Ning Zhou[3]; Ben Peterson[4]; Yunzhi Wang[1]; Michael Mills[1]; [1]The Ohio State University; [2]University of Illinois at Chicago; [3]GE Global Research Center; [4]Honeywell Aerospace

3:00 PM
Effects of Microstructure on High Temperature Crack Growth under Sustained Load in a Nickel Based Superalloy: *Yongmin Lu*[1]; Hangyue Li[1]; Zewen Huang[1]; Gavin Baxter[2]; Paul Bowen[1]; [1]University of Birmingham; [2]Rolls-Royce plc

3:20 PM
Investigation of Negative Creep in a Polycrystalline Ni-based Superalloy: *Hallee Deutchman*[1]; Jay Tiley[2]; Robert Hayes[3]; Michael Mills[1]; [1]The Ohio State University; [2]Materials and Manufacturing Directorate, Wright Patterson US Air Force Base; [3]Metals Technology, Inc

3:40 PM
Metallurgical Characterization of Two Different Samples of Waspaloy, Presenting Variation on Chemical Composition, Microstructure, and Hardness: *Miguel Neri*[1]; Alberto Martinez-Villafane[1]; Caleb Carreno-Gallardo[1]; Alma Gonzalez-Escarcega[1]; Octavio Covarrubias-Alvarado[2]; [1]CIMAV, S.C.; [2]FRISA FORJADOS S.A. de C.V.

4:00 PM
The Impact of γ' Precipitate Evolution on the Mechanical Properties of Microstructural Gradients in the Low Solvus High Refractory (LSHR) Nickel Base Superalloy: *Samuel Kuhr*[1]; Babu Viswanathan[2]; Jaimie Tiley[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]Air Force Research Laboratory

4:20 PM
X-Ray Imaging of the Solidification of Nickel-Based Superalloy CMSX4: *John Aveson*[1]; Guillaume Reinhart[2]; Henri Nguyen-Thi[2]; Nathalie Magnelinck-Noël[2]; Amina Tandjaoui[2]; Tamzin Lafford[3]; Neil D'Souza[4]; Bernard Billia[2]; Howard Stone[1]; [1]University of Cambridge; [2]Aix Marseille Univ & CNRS IM2NP; [3]European Synchrotron Radiation Facility; [4]Rolls-Royce plc.

4:40 PM
Combined Cavitation and Slurry Erosion of 16Cr-5Ni Martensitic Stainless Steel: *H J Amarendra*[1]; Gajanan Chaudhari[1]; Sameer Nath[1]; [1]Indian Institute of Technology Roorkee

5:00 PM
Microstructure and Mechanical Properties of Bulk Nanocrystalline 304 Stainless Steel Prepared by an Aluminothermic Reaction Casting and Followed Annealing: *Peiqing La*[1]; Ting Shi[1]; Chengang Chu[1]; [1]Lanzhou University of Technology

5:20 PM
SCW Corrosion Resistance of Candidate Stainless Steels: *Jian Li*[1]; Wenyue Zheng[1]; Penttila S.[2]; Pei Liu[1]; Catherine Bibby[1]; [1]CanmetMATERIALS; [2]VTT

Computational Thermodynamics and Kinetics: Phase Field Simulations

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

Wednesday PM
March 6, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Shenyang Hu, Pacific Northwest National Laboratory; James Warren, NIST

2:00 PM Invited
A Phase-Field Crystal Model Coupled to a Vapor Phase: Edwin Schwalbach[1]; *James Warren*[1]; Kuo-An Wu[2]; Peter Voorhees[3]; [1]NIST; [2]National Tsing Hua University; [3]Northwestern University

2:25 PM
An Arbitrary Lagrangian-Eulerian (ALE) Method for Thermal and Dispersed-Phase Analysis of Nano Fluid Using CFD-A Hybrid Approach for Cooling Purpose: *France Kumar Behera*[1]; [1]Konark Institute of Science and Technology

2:40 PM
A PFC Study of Thermodynamical Quantities on Rapid Solidification and Solute Trapping: *Harith Humadi*[1]; Jeff Hoyt[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

2:55 PM
Phase-Field Simulations of Magnetic Response in Irradiated Fe-Cr Alloys with Distributed Cr Rich Precipitates: *Yulan Li*[1]; Shenyang Hu[1]; John McCloy[1]; Charles Henager[1]; Robert Montgomery[1]; [1]Pacific Northwest National Laboratory

3:10 PM Break

3:35 PM Invited
Computational Study of Microstructure and Property Relations in Ferroelectric Polycrystals: *Yu Wang*[1]; Jie Zhou[1]; [1]Michigan Tech

4:00 PM
Fluctuations in Phase Field Crystal Models Using Capillary-Wave Theory: *Nana Ofori-Opoku*[1]; Jeffrey Hoyt[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

4:15 PM
Effects of Additive Elements on Lamellar Structure Formation in C40-$NbSi_2$/C11$_b$-$MoSi_2$ Duplex Silicide: A First Principles Based Phase-Field Study: *Toshihiro Yamazaki*[1]; Yuichiro Koizumi[1]; Akihiko Chiba[1]; Koji Hagihara[2]; Takayoshi Nakano[2]; Koretaka Yuge[3]; Kyosuke Kishida[3]; Haruyuki Inui[3]; [1]Tohoku University; [2]Osaka University; [3]Kyoto University

Cost Affordable Titanium IV: Low Cost Powder Processing and Characterization

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

Wednesday PM
March 6, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Peter Collins, University of North Texas; Kamal Akhtar, International Titanium Powder

2:00 PM Invited
Recent Progress in the Development of Titanium alloys Processed using Low Cost ADMA TiH2 Powder: *Curt Lavender*[1]; Vineet Joshi[1]; Vladimir Moxon[2]; Vlad Duz[2]; [1]Pacific Northwest National Laboratory; [2]ADMA Advanced Materials

2:20 PM Invited
Critical Experimental Results for Cost Affordable Titanium – From Powder to Applications: *Peter Collins*[1]; Graciela Penso[1]; Peyman Samimi[1]; Juah Song[1]; Thomas Ales[1]; Pete White[1]; [1]University of North Texas

2:40 PM Invited
Sintering of Ti in Hydrogen – Striving for High Performance-to-Cost Ratio: *Zhigang Fang*[1]; Pei Sun[1]; [1]University of Utah

3:00 PM
Developing a Cost Affordable Technology Via PM HIP of Ti Alloys: *Victor Samarov*[1]; [1]Synertech PM Inc.

3:20 PM Break

3:40 PM
Controlled Atmosphere Sintering of Hydrides: An Alternative Route to Produce Ultrafine Grained Titanium by Powder Metallurgy Processes: *Brady Butler*[1]; James Paramore; Pei Sun; Zhigang Fang; [1]US Army Research Lab

4:00 PM
Effects of Lubrication on Density Gradient of Titanium Powder Compact: *Jia Lou*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]The University of Waikato

4:20 PM
Fracture Toughness of Powder Metallurgy and Wrought Titanium Alloys – A Review: *Ajit Singh*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]University of Waikato

4:40 PM
TiCuSi and TiCuSiBAlloys Produced by Powder Forging and Heat Treatment: *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

5:00 PM
Effects of Processing Parameters on Macrozone Formation in Ti-6Al-4V Alloys: *Kai Zhang*[1]; Xinhua Wu[1]; Colleen Bettles[1]; Chris Davies[1]; [1]Monash Univ

5:20 PM
The Effect of P2O5 Content on the Crystallization Behaviors of Ti-Bearing Blast Furnace Slag Using Single Hot Thermocouple Technique: *Sun Qi*[1]; Z.T. Zhang[1]; [1]Peking University

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session V

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

Wednesday PM
March 6, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Suveen Mathaudhu, U.S. Army Research Office

2:00 PM Invited
Influence of the Grain Size and Initial Texture on the Yield and Hardening Behaviors of a Mg Alloy: *Hahn Choo*[1]; Yi Wang[1]; [1]Univ of Tennessee

2:30 PM
Characterization of Deformation Anisotropy and Damage in AZ31 alloy: *Babak Kondori*[1]; Amine Benzerga[1]; [1]Texas A&M University

2:50 PM
Effects of Initial Texture on Surrounding Plasticity around Fatigue Crack-tip in a Wrought Magnesium Alloy Using In-Situ Synchrotron X-ray Diffraction Measurements: *Wei Wu*[1]; Chih-Pin Chuang[1]; Ke An[2]; Yanfei Gao[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory

3:10 PM
ECAP Deformations of Mg Single Crystals: *Hiromoto Kitahara*[1]; Fumiaki Maruno[1]; Masayuki Tsushida[1]; Shinji Ando[1]; [1]Kumamoto University

3:30 PM
Investigation and Characterization of the Mechanical and Thermal Properties of Ultra-Light Mg-Li-Al Alloys: *Ryan Hooper*[1]; Zachary Bryan[1]; Abhinav Seetharamiah[1]; Michele Manuel[1]; [1]University of Florida

3:50 PM Break

4:00 PM
Mechanical Properties and Microstructure of Pure Magnesium Experienced Rolling and Annealing: *Qizhen Li*[1]; Bing Tian[1]; [1]University of Nevada, Reno

4:20 PM
OOrientation Dependence of Bending Deformation Behavior in Magnesium Single Crystals: *Shinji Ando*[1]; Hiromoto Kitahara[1]; [1]Kumamoto University

4:40 PM
Atomic-Scale Growth Mechanism of {-1012}-Type Twins in Magnesium: *Ben Xu*[1]; David Rodney[1]; Laurent Capolungo[2]; [1]INP Grenoble; [2]Georgia Tech Lorraine

5:00 PM
Effect of Microstructural Factors on Damping Capacity in Pure Magnesium: *Hiroyuki Watanabe*[1]; Yasuyoshi Sasakura[2]; Toshiji Mukai[2]; [1]Osaka Municipal Technical Research Institute; [2]Kobe University

5:20 PM
Dynamic Micro-Strain Observation of the Ultrafine-Grained Al-Mg Alloy Using Digital Image Correlation Technique: *Yuzheng Zhang*[1]; Troy Topping[2]; Enrique Lavernia[2]; Steven Nutt[1]; [1]University of Southern California; [2]University of California, Davis

Electrode Technology for Aluminium Production: CBF Environmental & Anode Electrical Connections

*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

Wednesday PM
March 6, 2013
Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Marc Gagnon, Alouette

2:00 PM Introductory Comments and Session Chair Introduction

2:05 PM
Fume Treatment Systems Based on RTO Technology for Carbon Baking Furnaces: *Matthias Hagen*[1]; Bernd Schricker[1]; [1]LTB

2:30 PM
AHEX-A New, Combined Waste Heat Recovery and Emission Control System for Anode Bake Furnaces: *Anders Sorhuus*[1]; Sivert Ose[1]; Geir Wedde[1]; [1]Alstom

2:55 PM
Successful Start-Up of the Fume Treatment Centre at Boyne Smelter Carbon Bake Furnace #4: Jonathan Higley[1]; Glenn Cordon[1]; *Peter Klut*[2]; Rick Oliana[2]; Erik Dupon[3]; Edo Engel[3]; [1]Boyne Smelters Limited; [2]Danieli Corus BV; [3]Danieli Corus Technical Services

3:20 PM
Thermo-Electro-Mechanical Characterization of Anode Interfaces at Operating Conditions: *Hugues Fortin*[1]; Marie-Hélène Martin[2]; Nédeltcho Kandev[1]; Guillaume Gauvin[3]; Donald Ziegler[2]; Mario Fafard[3]; [1]Hydro-Quebec; [2]Alcoa; [3]Université Laval

3:45 PM Break

3:55 PM
A Fully Coupled Thermal-Electrical-Mechanical Transient FEA Model for a 3D Anode Assembly: Dayalan Gunasegaram[1]; *David Molenaar*[1]; [1]CSIRO

4:20 PM
Experimental and Numerical Investigation of Voltage Drop in Anode Assemblies: Ebrahim Jeddi[1]; *Daniel Marceau*[1]; Laszlo Kiss[1]; Lyne St-Georges[1]; Denis Laroche[2]; Lyès Hacini[2]; [1]Université du Québec à Chicoutimi; [2]Rio Tinto Alcan

4:45 PM
Optimization of the Anode-Stub Contact: Effect of Casting Temperature, Contact Stress, Temperature and Surface Roughness: *Bjarte Oye*[1]; Anne Store[1]; Elin Haugland[2]; Jørund Hop[2]; [1]SINTEF; [2]Hydro Aluminium

5:10 PM
Experimental Investigation of Factors Affecting The Electrical Performance of the Stub to Carbon Connection: *David Molenaar*[1]; Tony Kilpatrick[1]; Alex Montalto[2]; [1]CSIRO; [2]RMIT University

Electrode Technology for Aluminium Production: Inert Anodes, Cell Materials and Alternative Processes

*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

Wednesday PM
March 6, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Elaine Sum, Rio Tinto Alcan

2:00 PM Introductory Comments

2:05 PM
Mechanically Alloyed Cu-Ni-Fe-Y Material as Inert Anode for Al Production: *Valery Ouvarov*[1]; Daniel Guay[1]; Lionel Roue[1]; [1]INRS University

2:30 PM
Cold Spray Deposition of Mechanically Alloyed Cu-Ni-Fe Material for Application as Inert Anodes for Aluminum Production: *Gregory Goupil*[1]; Sebastien Helle[1]; Eric Irissou[2]; Dominique Poirier[2]; Jean Gabriel Legoux[2]; Daniel Guay[1]; Lionel Roué[1]; [1]INRS-EMT; [2]CNRC

2:55 PM
Initial 1000A Aluminum Electrolysis Testing in Potassium Cryolite-Based Electrolyte: *John Hryn*[1]; Olga Tkacheva[1]; Jeff Spangenberger[1]; [1]ANL

3:20 PM
Electrochemical Behavior of Cermet Anodes in Na_3AlF_6-K_3AlF_6-Based Low-Melting Electrolytes for Aluminum Electrolysis: *Guihua Wang*[1]; Xiaofei Sun[1]; [1]University of Science and Technology Beijing

3:45 PM Break

3:55 PM
Production of Aluminum Sulfide through Carbosulfidation Utilising H2S: Md Huda[1]; *M Rhamdhani*[1]; G Brooks[1]; B Monaghan[2]; L Prentice[3]; [1]Swinburne University of Technology; [2]University of Wollongong; [3]CSIRO

4:20 PM
Microstructural Evolution of Cast Iron Used for Cathode Rodding in Aluminum Electrolysis Cell: *Alireza Hekmat-Ardakan*[1]; Gervais Soucy[1]; Loig Rivoaland[2]; [1]Université de Sherbrooke; [2]Rio Tinto Alcan

5:10 PM Concluding Comments

4:45 PM
Preparing Al-Sc-Zr Alloys in Aluminum Electrolysis Process: *Yi Qian*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

Energy Technologies and Carbon Dioxide Management: Carbon Footprint Analysis

*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

Wednesday PM
March 6, 2013

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

Session Chairs: Neale Neelameggham, Ind LLC; Leon Prentice, CSIRO

2:00 PM Introductory Comments

2:05 PM
Carbon Foot Printing - A Tool to Identify Improvement Areas in GHG Reduction: *Narasimharaghavan Puliyur Krishnaswamy*[1]; Neha Sahu[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

2:25 PM
Measuring the CO2 Captured on Bauxite Residue Carbonation: *Luis Venancio*[1]; José Antonio Souza[1]; Emanuel Macedo[1]; Otacílio Dias[1]; Iara Santos[1]; [1]Federal University of Para

2:45 PM
Study on Capture, Recovery and Utilization of Carbon Dioxide: *Lian Zhou*[1]; Huimin Lu[1]; Panpan Wang[1]; [1]Beihang University

3:05 PM
Carbon Footprint and Carbon Deficit Analysis of Iron and Steel Industry from 1991 to 2010 in China: Xin Lu[1]; *Hao Bai*[1]; Hebin Zhu[1]; Fuming Wang[1]; [1]University of Science and Technology Beijing

3:30 PM Break

3:55 PM
The Life Cycle Assessment of Metal Materials Used for Automobile Body Materials and Castings: *Hongxu Li*[1]; Zhiqian Zhang[1]; Xiangxin Hao[1]; [1]University of Science and Technology

4:15 PM
It *Is* Rocket Science: the Engineering and Impact of Carbothermal Magnesium Technology: *Leon Prentice*[1]; [1]CSIRO

Fatigue and Fracture of Thin Films and Nanomaterials: Deformation and Strengthening Mechanisms of Nanomaterials

*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

Wednesday PM
March 6, 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; Xinghang Zhang, Texas A &M University

2:00 PM Invited
Exploring the Ductility of Nanocrystalline Metals: *Brad Boyce*[1]; John Sharon[1]; [1]Sandia National Labs

2:30 PM
Synthesis, Characterization and Mechanical Behavior of Nanocrystalline Al-O Thin Films: *Mo-Rigen He*[1]; Patrick Malone[1]; Gang Feng[2]; Saritha Samudrala[3]; Julie Cairney[3]; Daniel Gianola[1]; [1]University of Pennsylvania; [2]Villanova University; [3]University of Sydney

2:50 PM
Mechanical Behavior of Nanostructured Cu/Fe Multilayers: *Youxing Chen*[1]; Yue Liu[1]; Xinghang Zhang[1]; [1]Texas A&M University

3:10 PM
Interface Structures in Al/Nb and Cu/Nb Nanocomposites: *M Polyakov*[1]; A Hodge[1]; [1]University of Southern California

3:30 PM Break

3:50 PM Invited
Nanoindentation of Mineralized Tissues: Current Experimental Methods and Analysis: Virginia Ferguson[1]; Sara Campbell[2]; [1]Colorado School of Mines; [2]University of Colorado, Boulder

4:20 PM
Failure of Nanoscale Tensile Samples Observed by Quantitative In Situ TEM Testing: *Daniel Kiener*[1]; Petra Kaufmann[1]; Andrew Minor[2]; [1]University of Leoben; [2]University California Berkeley

4:40 PM
Microspecimen Testing of the Mechanical Properties of Nanoporous Metals: *Nicolas Briot*[1]; Tobias Kennerknecht[2]; Chris Eberl[2]; John Balk[1]; [1]University of Kentucky; [2]Fraunhofer Institute for Mechanics of Materials IWM

5:00 PM
True Quantitative Scanning Probe Microscopy for Nanoscale Mechanics: *Douglas Stauffer*[1]; Yunje Oh[1]; Ryan Major[1]; S.A. Syed Asif[1]; [1]Hysitron, Inc.

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue in Advanced Materials & Environmental Effects

*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

Wednesday PM
March 6, 2013
Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Tony Zhai, University of Kentucky

2:00 PM Invited
Understanding Fatigue and Corrosion-Fatigue Behavior by In Situ 3D X-ray Synchrotron Tomography: *Nikhilesh Chawla*[1]; [1]Arizona State University

2:25 PM Invited
Fatigue Behavior of Bulk-Metallic Glasses: *Peter Liaw*[1]; Gongyao Wang[1]; Yoshihiko Yokoyama[2]; Xiaoqing Jin[3]; Leon Keer[3]; Akihisa Inoue[2]; [1]University of Tennessee; [2]Advanced Research Center of Metallic Glasses; [3]Northwestern University

2:50 PM
In-Situ Characterization of Fatigue Behavior of Metastable Austenitic Steels Using Electromagnetic Acoustic Transducers: *Dietmar Eifler*[1]; Marek Smaga[1]; Andreas Sorich[1]; Iris Altpeter[2]; Gerd Dobmann[2]; [1]University of Kaiserslautern, Institute of Materials Science and Engineering; [2]Fraunhofer Institute for Non-Destructive Testing,

3:10 PM Invited
A Two-Parameter Model for Fatigue Strength Estimation of High-Strength Steels in Very-High-Cycle-Fatigue Regime: Chengqi Sun[1]; *Youshi Hong*[1]; [1]Institute of Mechanics, Chinese Academy of Sciences

3:35 PM Break

3:55 PM Invited
Effect of Heat Treatment on Fatigue Behavior and Mechanical Properties of Al 7021-T6: *Yasser Ahmed*[1]; [1]German University in Cairo

4:20 PM
Micro Heterogonous Fatigue Cracking Behavior in Dual Phase Materials: *Guocai Chai*[1]; [1]Sandvik Materials Technology

4:40 PM
Micro Structural Model to Analyze Fatigue Behavior on Open Cell Metal Foam: *Hernan Pinto*[1]; Sanjay Arwade[2]; [1]Pontificia Universidad Católica de Valparaíso; [2]University of Massachusetts Amherst

5:00 PM
Effect of Tempering on the Fatigue Resistance of a 5160 Spring Steel: *Diego Lozano*[1]; Rafael Mercado-Solís[1]; [1]Universidad Autónoma de Nuevo León

Friction Stir Welding and Processing VII: Friction Stir Welding: Light 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

Wednesday PM
March 6, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Blair Carlson, General Motors; Kevin Doherty, US Army Research Laboratory; Brian Thompson, EWI

2:00 PM Invited
Friction Stir Spot Welding of Aluminum to Magnesium Alloy Sheets: *Wei Yuan*[1]; Harsha Badarinarayan[1]; [1]Hitachi America Ltd.

2:20 PM
On Friction Stir Welding of Mg–Zn-Zr-RE Alloy using Threaded Tools for Aerospace Application: *Manas Mahapatra*[1]; S.P Madavan[1]; Kumar Pradeep[1]; [1]Indian Institute of Technology Roorkee

2:40 PM
Effect of Process Conditions on Friction Stir Spot Welding of ZEK100 Mg Alloy: *Harish Rao*[1]; J Jordon[1]; [1]The University of Alabama

3:00 PM
Evolution of Micro-Texture in Friction Stir Processed Mg-4Y-3RE Alloy: *Nilesh Dendge*[1]; Nilesh Kumar[1]; Deep Choudhuri[1]; J Hwang[1]; Rajiv Mishra[1]; Rajarshi Banerjee[1]; [1]University of North Texas

3:15 PM
Magnesium-based Surface Composite Via Friction Stir Processing: *Shamiparna Das*[1]; Rajiv Mishra[1]; Kevin Doherty[2]; Kyu Cho[2]; Bruce Davis[3]; Rick DeLorme[4]; [1]University of North Texas; [2]U.S. Army Research Laboratory; [3]Magnesium Elektron ; [4]Magnesium Elektron

3:30 PM Break

3:45 PM
Effect of Initial Microstructure on the Microstructural Evolution and Joint Efficiency of a WE43 Alloy during Friction Stir Welding: *Sivanesh Palanivel*[1]; Rajiv Mishra[2]; B. Davis[3]; R. DeLorme[3]; Kevin Doherty[4]; Kyu Cho[4]; [1]Department of Materials Science and Engineering, University of Texas; [2]Department of Materials Science and Engineering, University of North Texas; [3]Magnesium Elektron North America Inc.; [4]U.S. Army Research Laboratory, Materials and Manufacturing Science Division

4:00 PM
Microstructure in Dissimilar Friction Spot Weld of Al to Mg Alloys Observed by Stop-Action Technique: *Uceu Suhuddin*[1]; Vanessa Fischer[1]; Jorge dos Santos[1]; [1]Helmholtz-Zentrum Geesthacht

4:20 PM
Microstructure and Mechanical Properties of Dissimilar Friction Stir Welds between AA6061 and AZ31 Alloy Sheets: *Kwang-jin Lee*[1]; Sang-Hyuk Kim[1]; Kee-Do Woo[2]; [1]Korea Institute of Industrial Technology; [2]Chonbuk National University

4:40 PM
Effect of Corrosion in NaCl-Based Solutions on the Mechanical Properties of Friction-Stir Welded AZ31B Sheet: *Joseph McDermid*[1]; Joseph Kish[1]; Jennifer Thuss[1]; [1]McMaster University

5:00 PM
Metallurgical Characterization of Friction Stir Welded Aluminum Matrix Composites: *Issac Dinaharan*[1]; Santhiyagu Joseph Vijay[1]; Kumaravel Kalaiselvan[2]; B Ashok Kumar[3]; Natarajan Murugan[4]; [1]Karunya University; [2]K.S.Rangasamy College of Technology; [3]Erode Builder Educational Trust's Group of Institutions; [4]Coimbatore Institute of Technology

5:20 PM
Microstructural Gradients and Intermetallic Compounds in Friction Stir Welding of Dissimilar Metals: *Erin Patterson*[1]; Yuri Hovanski[2]; David Field[1]; [1]Washington State University; [2]Pacific Northwest National Laboratory

5:35 PM
Optimization of Wear Rate of Friction Stir Welded Al-B4C Composite: *Kalaiselvan Kumaravel*[1]; Murugan Natarajan[1]; [1]K.S.Rangasamy College of Technology

Frontiers in Solidification Science: Microstructure Formation II: Simulation

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

Wednesday PM
March 6, 2013

Room: Lone Star Salon F
Location: Grand Hyatt

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

Session Chairs: Silvere Akamatsu, CNRS - UPMC; Alain Karma, Northeastern University

2:00 PM Invited
Modelling Late Stage Solidification: *Nikolas Provatas*[1]; Rameez Ashraf[2]; David Montiel[2]; Nana Ofori-Opoku[2]; Vahid Fallah[3]; Jonathan Stolle[2]; [1]McGill University; [2]McMaster University; [3]Waterloo

2:30 PM Invited
Phase-Field Simulations and Geometrical Analysis of Cellular Solidification Fronts: *Mathis Plapp*[1]; Yiwen Ma[1]; [1]CNRS/Ecole Polytechnique

3:00 PM
Phase-Field Approaches to Anisotropic Eutectic Solidification: *Laszlo Granasy*[1]; Tamas Pusztai[1]; Gyula Toth[1]; [1]Wigner Research Centre for Physics

3:20 PM
Phase-Field Simulation of Dendrite Fragmentation: *Christoph Beckermann*[1]; [1]University of Iowa

3:40 PM Break

3:50 PM
Phase Field Modeling of Spiral Eutectic Dendrites: *Tamás Pusztai*[1]; László Rátkai[1]; Attila Szállás[1]; László Gránásy[1]; [1]Wigner Research Centre for Physics

4:10 PM Invited
Liquid Metal Embrittlement: Linking Small Scale Wetting Phenomena and Mesoscopic Pattern Formation: Robert Spatschek[1]; *Claas Hueter*[1]; Fabian Twiste[1]; Efim Brener[2]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung; [2]Forschungszentrum Juelich

4:40 PM
Mesoscopic Modeling of Thermosolutal Equiaxed Dendrites: Valerio De Felice[1]; *Miha Založnik*[1]; Hervé Combeau[1]; Christoph Beckermann[2]; [1]Institut Jean Lamour; [2]University of Iowa

5:00 PM
Computational Study of Competitive Grain Growth and Dendritic Microstructure Selection in Alloy Directional Solidification: *Damien Tourret*[1]; Alain Karma[1]; [1]Northeastern University

5:20 PM
Combined Phase Field – Lattice Boltzmann Simulation of Dendritic Solidification with Fluid Flow and Solid Particle Motion: Dmitry Medvedev[1]; *Oleg Shchyglo*[1]; Fathollah Varnik[1]; Ingo Steinbach[1]; [1]ICAMS, Ruhr University Bochum

5:40 PM
A Three-dimensional Lattice Boltzmann-Cellular Automaton Model for Dendritic Solidification under Convection: *Mohsen Eshraghi*[1]; Bohumir Jelinek[1]; Sergio Felicelli[1]; [1]Mississippi State University

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Semiconductor Alloys

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

Wednesday PM
March 6, 2013

Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Stephan Lany, NREL; Stefan Mueller, Technische Universität Hamburg-Harburg (TUHH)

2:00 PM Invited
Understanding of the Electronic, Optical, and Defect Properties of Cu2ZnSn(S,Se)4 Alloys for Thin-Film Solar Cell Absorbers: *Su-Huai Wei*[1]; [1]National Renewable Energy Lab

2:30 PM Invited
Semiconductor Alloy Calculations: Electronic Structures, Isoelectronic Defect States and Atomic Structure Ordering: *Lin-Wang Wang*[1]; [1]Lawrence Berkeley National Laboratory

3:00 PM Invited
All-Electron Electronic Structure Accuracy for Real Materials and Molecules: *Volker Blum*[1]; Matthias Scheffler[1]; [1]Fritz Haber Institute

3:30 PM Break

3:50 PM Invited
Thermodynamic Theory of Epitaxial Alloys: First-Principles Mixed-Basis Cluster Expansion of (In, Ga)N Alloy Film: *Zhe Liu*[1]; [1]Monash University

4:20 PM Invited
Thermal Conductance at Atomically Clean and Disordered Silicon/Aluminum Interfaces: *Kwiseon Kim*[1]; Sreekant Narumanchi[1]; Woon-Ih Choi[1]; [1]National Renewable Energy Lab

Magnesium-based Biodegradable Implants Symposium: Alloy Development

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday PM
March 6, 2013
Room: 214D
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Jaroslaw Drelich, Michigan Tech; Frank Witte, Hannover Medical School

2:00 PM
Density-Functional Theory (DFT) Study on the Alloying Element Effects of Biodegradable Magnesium Alloys: *Marjan Nezafati*[1]; Chang-Soo Kim[1]; [1]University of Wisconsin Milwaukee

2:20 PM
Design and Investigation of the Oxidation Behavior and Degradation Rates of Self-Passivating Mg Alloys: *Ida Berglund*[1]; Harpreet Brar[1]; Jordan Ball[1]; Josephine Allen[1]; Benjamin Keselowsky[1]; Malisa Sarntinoranont[1]; Michele Manuel[1]; [1]University of Florida

2:40 PM
Magnesium-based Alloys for Application in Biomedical Implants: *Telma Matias*[1]; Claudemiro Bolfarini[1]; Bruno Ramasco[1]; Gabriel Asato[1]; [1]Universidade Federal de São Carlos

3:00 PM
Improved Cell Viability, Corrosion Behavior, and Mechanical Properties of Mg-Zn and Mg-Y Based Polycrystalline Alloys for Orthopedic Applications: *Prashant Kumta*[1]; Daeho Hong[1]; Da-Tren Chou[1]; Partha Saha[1]; Oleg Velikokhatnyi[1]; [1]University of Pittsburgh

3:20 PM
Study on the Cell Viability and Cell Adhesion of MgZnCa Alloys: *Christopher Smith*[1]; Zhigang Xu[1]; Jenora Waterman[1]; Jagannathan Sankar[1]; [1]North Carolina A&T State University

3:40 PM Break

4:00 PM
Influence of Neodymium and Heat Treatment on the Mechanical and Corrosive Properties of Cast Mg10Gd Base Alloy: *Petra Maier*[1]; Chamini Mendis[2]; Gerhard Tober[1]; Christian Ruback[1]; Maria Kuttig[1]; Norbert Hort[2]; [1]University of Applied Sciences Stralsund; [2]Helmholtz-Zentrum Geesthacht

4:20 PM
Biodegradable Mg-Zn-Y Alloys with Long-Period Stacking Ordered Structure: Mechanical Properties and In Vitro Degradation Rate: *Jian Xu*[1]; Xu Zhao[1]; Ling-ling Shi[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

4:40 PM
Development of Biodegradable Mg Alloys for Orthopedic Applications.: *Hyung-Seop Han*[1]; Young-Yul Kim[2]; Yu-Chan Kim[1]; Hyun-Kwang Seok[1]; Seok-Jo Yang[3]; [1]Korea Institute of Science and Technology; [2]The Catholic University; [3]Chungnam National University

5:00 PM
In Vivo Evaluation of Mg Alloy Scaffold for Bone Tissue Engineering: *Xingguo Cheng*[1]; [1]Southwest Research Institute

5:20 PM
MgNd2 – A Future Resorbable Magnesium Based Implant Material?: *Jan-Marten Seitz*[1]; Danielle Fau[2]; Rainer Eifler[1]; Jessica Stahl[3]; Manfred Kietzmann[3]; Friedrich-Wilhelm Bach[1]; [1]Leibniz Universität Hannover; [2]University of Pennsylvania; [3]Stiftung Tieraerztliche Hochschule Hannover

5:40 PM
Biodegradable Magnesium Alloys for Cardiovascular Applications: *Waseem Haider*[1]; Edgar Munoz[1]; Kevin Corona[1]; Zia ur Rahman[1]; Luis Pompa[1]; [1]University of Texas Pan American

Magnesium Technology 2013: Wrought Materials II

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

Wednesday PM
March 6, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Julian Rosalie, National Institute for Materials Science; Jennifer Hay, Agilent Technologies

2:00 PM
Investigation of Mechanical Properties and Deformation Behavior of CaO Added Mg-6Zn-1.2Y Sheets: *Hyun Kyu Lim*[1]; Young-Ok Yoon[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

2:20 PM
Recrystallization Behavior of a MgAlCa Alloy during Thermomechanical Processing And Subsequent Heat Treatment: *Victoria Miller*[1]; Tresa Pollock[1]; [1]University of California Santa Barbara

2:40 PM
Temperature-Dependent Forming Limit Surface (FLS) for Warm/Hot Forming of Magnesium Alloy Sheets: *Fadi Abu-Farha*[1]; [1]Clemson University

3:00 PM
The Influence of Deformation Mechanisms on Rupture of AZ31b Magnesium Alloy Sheet at Elevated Temperatures: *Aravindha Antoniswamy*[1]; Alexander Carpenter[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]General Motors Corporation

3:20 PM
Influence of Temperature and Rolling Speed on Twin Roll Cast Strip: *Gerrit Kurz*[1]; Lennart Stutz[1]; Dietmar Letzig[1]; Karl Kainer[1]; [1]Helmholtz-Zentrum Geesthacht

3:40 PM Break

4:00 PM
Mathematical Modeling of the Effect of Roll Diameter on the Thermo-Mechanical Behavior of Twin Roll Cast AZ31 Magnesium Alloy Strips: *Amir Hadadzadeh*[1]; Mary Wells[1]; [1]University of Waterloo

4:20 PM
A Multi-Stage Approach for Predicting Fatigue Damage in Friction Stir Spot Welded Joints of Mg AZ31 Alloy: *Harish Rao*[1]; J Jordon[1]; [1]The University of Alabama

4:40 PM
Friction Stir Forging (FSF) and Friction Stir Back Extrusion (FSBE) of Mg AZ31B-F: A Preliminary Investigation: *Fadi Abu-Farha*[1]; [1]Clemson University

5:00 PM
Microstructure Modification and Performance Improvement of Mg-RE Alloys by Friction Stir Processing: Yujuan Wu[1]; *L. M Peng*[1]; F.Y. Zheng[1]; X.W. Li[1]; D.J. Li[1]; W.J. Ding[1]; [1]Shanghai Jiao Tong University

5:20 PM
Increasing Volume Fraction of Precipitates and Strength of a Mg-Zn-Y Alloy by Pre-Aging Deformation: *Julian Rosalie*[1]; Hidetoshi Somekawa[1]; Alok Singh[1]; Toshiji Mukai[2]; [1]National Institute for Materials Science; [2]Kobe University

5:40 PM
Inverse Strain Rate Sensitivity of Bendability of an AZ31 Sheet in Three-Point Bending: *Bin Li*[1]; Stephen Horstemeyer[1]; Andrew Oppedal[1]; Paul Wang[1]; Mark Horstemeyer[1]; [1]Center for Advanced Vehicular Systems

Magnetic Materials for Energy Applications -III: Rare Earth Magnets

*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

Wednesday PM
March 6, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jeff Shield, University of Nebraska, Lincoln; Yongmei Jin, Michigan Tech

2:00 PM Invited
Interfaces at the Atomic Scale in Nd-Fe-B Permanent Magnets: *Thomas Woodcock*[1]; Gino Hrkac[2]; Quentin Ramasse[3]; Thomas Schrefl[4]; Oliver Gutfleisch[5]; [1]IFW Dresden; [2]University of Sheffield; [3]SuperSTEM Facility; [4]St. Pölten University of Applied Sciences; [5]TU Darmstadt

2:35 PM
Performance and Endurance of Nd-Fe-B Sintered Magnets in E-Motor Application Conditions: *Martina Moore*[1]; Ralph Sueptitz[1]; Margitta Uhlemann[1]; Annett Gebert[1]; Ludwig Schultz[1]; Oliver Gutfleisch[2]; [1]IFW Dresden; [2]TU Darmstadt

2:55 PM
Development of High Energy Product Permanent Magnets through Different Additions in Sm-Co System: *Xiujuan Jiang*[1]; Najla Zogheib[1]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln

3:15 PM
Grain Boundary Micromagnetism Characterization of Nd-Fe-B Sintered Magnet by Synchrotron Radiation Magnetic Circular Dichroism: *Tetsuya Nakamura*[1]; Tomoki Fukagawa[2]; Sepehri Hossein[3]; Takeshi Nishiuchi[2]; Tomohito Maki[2]; Yoshinori Kotani[1]; Yasuo Narumi[4]; Hiroyuki Nojiri[4]; Kazuhiro Hono[3]; Toyohiko Kinoshita[1]; Satoshi Hirosawa[3]; [1]Japan Synchrotoron Radiation Research Institute (JASRI); [2]Hitachi Metals, Ltd.; [3]National Institute for Materials Science; [4]Institute for Materials Research, Tohoku University

3:45 PM Break

4:00 PM
Investigation of Coercivity Mechanisms in High Performance (Nd,Dy)-Fe-B Permanent Magnets with Core-Shell Structure: *Konrad Löwe*[1]; T. Woodcock[2]; Christoph Brombacher[3]; Matthias Katter[3]; Oliver Gutfleisch[1]; [1]Technical University Darmstadt; [2]IFW Dresden; [3]Vacuumschmelze GmbH & Co. KG

4:30 PM
Single Grain and Textured Sub-Micron Particles of Nd2Fe14B for the Preparation of High Energy Density Nanocomposite Magnets: *Santosh Pal*[1]; Ludwig Schultz[1]; Oliver Gutfleisch[2]; [1]IFW Dresden; [2]T U Darmstadt

4:50 PM
Tuning the Electrical Resistivity in Hot-Deformed Nd-Fe-B Magnets: *Simon Sawatzki*[1]; Imants Dirba[2]; Ludwig Schultz[2]; Oliver Gutfleisch[1]; [1]TU Darmstadt; [2]IFW Dresden

5:10 PM
The Temperature Dependence of Magnetic Properties in$(Sm_{0.12}Co_{0.88-y}Fe_y)_{100-2x}Ti_xC_x$ Ferromagnets: *Xiujuan Jiang*[1]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln

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

Wednesday PM
March 6, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Stuart Maloy, Los Alamos National Laboratory

2:00 PM Invited
Materials Corrosion in Molten Fluoride Salts: *Kumar Sridharan*[1]; Robert Sellers[1]; Guiqiu Zheng[1]; Guoping Cao[1]; Mark Anderson[1]; Todd Allen[1]; [1]University of Wisconsin

2:40 PM
Characterization on the Advanced Core and Cladding Steels after Electro Magnetic Pulse Welding: *Yong Yang*[1]; Todd Allen[2]; Sindo Chou[2]; [1]University of Florida; [2]University of Wisconsin-Madison

3:00 PM
Influence of Dissolved Oxygen, Grain Growth and Segregation on the Transport Properties of Zircaloy: *J. B. Henderson*[1]; [1]Netzsch Instruments North America LLC

3:20 PM
Influence of Thermal Aging on Microstructure and Mechanical Properties of CLAM Steel: Lixin Huang[1]; *Yiyin Shan*[2]; Wei Yan[2]; Wei Wang[2]; Ke Yang[2]; [1]College of Materials Science and Engineering, Yanshan University; [2]Institute of Metal Research, Chinese Academy of Sciences

3:40 PM Break

4:00 PM
Microhardness of Hafnium Aluminide Composite Material for Nuclear Reactor Applications: *Donna Guillen*[1]; Bryan Forsmann[2]; [1]Idaho National Laboratory; [2]Boise State University-Idaho Falls

4:20 PM
Fracture Resistance of a Zirconium Alloy with Reoriented Hydrides: *Kwai Chan*[1]; Xihua He[1]; Yi-Ming Pan[1]; [1]Southwest Research Institute

4:40 PM
Diffusional Interactions between HT9 Alloy in Contact with Vanadium and Zirconium: *E. Perez*[1]; J. Cole[1]; J. Gan[1]; R. Fielding[1]; [1]Idaho National Laboratory

5:00 PM
Characteristics of Zircaloy-4 Joints Brazed by a Be-Free Zr-Base Amorphous Sputter Coating: *Minku Lee*[1]; [1]Korea Atomic Energy Research Institute

5:20 PM
Joining of 20Cr-4.5Al ODS Steel and Modified 9Cr-1Mo Steel by Friction Welding; Microstructural Investigation: *Jinsung Jang*[1]; Seok Hoan Jeong[1]; Boyoung Lee[1]; Chang Hee Han[1]; Suk Hoon Kang[1]; [1]Korea Atomic Energy Research Institute

Materials Processing Fundamentals: Recirculation of Materials and Environments

*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

Wednesday PM
March 6, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Justin Mandel Crapps, Los Alamos National Lab

2:00 PM
Effects of Ca and Na Containing Additives on WO3 Content in Sheelite Concentrates after Floatation Separation Process: *Jun Zhu*[1]; Jilai Xue[1]; Kang Liu[1]; [1]Unversity of Science and Technology Beijing

2:20 PM
Copper Removal from Molybdenite by Sulfidation-Leaching Process: *Rafael Padilla*[1]; Hugo Letelier[1]; Maria Ruiz[1]; [1]University of Concepcion

2:40 PM
Analysis of Forming Mechanism of Sulfur Dioxide in Iron Ore Sintering Bed: *Zhengjian Liu*[1]; Jianliang Zhang[1]; [1]University of Science and Technology Beijing

3:00 PM
Physical Chemistry of Roasting and Leaching Reactions for Chromium Chemical Manufacturing and Its Impact on Environment – A Review: *Sergio Sanchez-Segado*[1]; Animesh Jha[1]; [1]University of Leeds

3:20 PM
Electrophoretic Classification of Ultrafine Silica Particles in Dilute Aqueous Suspension: *Ryan Corpuz*[1]; Lyn Marie De Juan[2]; [1]MSU-IIT; [2]UP Diliman

3:40 PM Break

4:00 PM
QEMSCAN Analysis of Wadi-Shattu Iron Ore (Libya): *Ali Tajouri*[1]; [1]Faculty of Engineering, University Of Tripoli

4:20 PM
Removal of Arsenic from Enargite Rich Copper Concentrates: *Maria Ruiz*[1]; Ricardo Bello[1]; Rafael Padilla[1]; [1]University of Concepcion

4:40 PM
Effect of Calcium on the Solubility of Zinc Oxide in the Sodium Hydroxide Solution: Chen Ai Liang[1]; Zhu Wei Xiong[1]; Xu Dong[1]; Chen Xing yu[1]; LIu Xu Heng[1]; [1]Hydrometallurgy

5:00 PM
Comprehensive Comparison Study of Different metallurgical Waste for Preparation of Glass-Ceramics: *Yanbing Zong*[1]; Xianbin AI[1]; Quanrui Liu[1]; [1]State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Materials Science of Nuclear Waste Management I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Ming Tang, Los Alamos National Laboratory (LANL); Kevin Fox, Savannah River National Laboratory (SRNL); Peng Xu, Westinghouse Electric Company

Wednesday PM
March 6, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Kyle Brinkman, Savannah River National Laboratory; Peng Xu, Westinghouse Electric Company

2:00 PM Invited
Simulation of Alpha-Decay Damage in Nuclear Waste Ceramics using Ion Irradiation: *William Weber*[1]; [1]University of Tennessee

2:30 PM Invited
Thermodynamic Stability of Ceramic Waste Forms Incorporating Strontium and Cesium and the Chemical Effect of Radioactive Decay: *Alexandra Navrotsky*[1]; [1]UC Davis

3:00 PM
Ion Irradiation-Induced Amorphization in Vanadate-Phosphate Apatites: *Jie Lian*[1]; Zhili Dong[2]; Rodney Ewing[3]; [1]Rensselaer Polytechnic Institute; [2]Nanyang Technological University; [3]University of Michigan

3:20 PM
Radiation Stability Study on Glass Ceramic and Crystalline Ceramic Waste Forms for an Advanced Nuclear Fuel Cycle: *Ming Tang*[1]; Anna-Eden Kossoy-Simakov[1]; Gordon Jarvinen[1]; Jarrod Crum[2]; Laura Turo[2]; Kyle Brinkman[3]; Kevin Fox[3]; James Marra[3]; [1]Los Alamos National Laboratory; [2]Pacific Northwest National Laboratory; [3]Savannah River National Laboratory

3:40 PM Break

3:50 PM
Structure and Stability of Wadeite Analogues for Radioactive Cs Disposal: *Hongwu Xu*[1]; [1]LANL

4:10 PM
Valence and Coordination of Iron and Manganese in Simulated SB6 Nuclear Waste Glasses: *Sergey Stefanovsky*[1]; Andrey Shiryaev[2]; Yan Zubavichus[3]; Alex Choi[4]; James Marra[4]; [1]SIA Radon; [2]Institute of Physical Chemistry and Electrochemistry RAS; [3]NRC "Kurchatov Institute"; [4]Savannah River National Laboratory

4:30 PM Invited
Accelerated Chemical Aging of Crystalline Nuclear Waste Forms: *Chris Stanek*[1]; Blas Uberuaga[1]; Brian Scott[1]; Laura Wolfsberg[1]; Meiring Nortier[1]; Wayne Taylor[1]; Nigel Marks[2]; [1]Los Alamos National Laboratory; [2]Curtin University of Technology

5:00 PM
Electronic Structure, Vibrational Spectroscopy, and Thermodynamics of I-Apatite from a First-Principles Study: *Jianwei Wang*[1]; [1]University of Michigan

5:20 PM
Perovskite Structured Oxides for Simultaneous Incorporation of Fission Products: *Siwei Wang*[1]; Ming Tang[1]; Kyle Brinkman[2]; Fanglin Chen[3]; [1]Los Alamos National Laboratory; [2]Savannah River National Laboratory; [3]University of South Carolina

Microstructural Processes in Irradiated Materials: Fusion Materials

*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

Wednesday PM
March 6, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Roger Stoller, Oak Ridge National Laboratory; Steven Zinkle, Oak Ridge National Laboratory

2:00 PM Invited
Radiation Effects on a High Strength, High Conductivity Copper Alloy: *Steven Zinkle*[1]; [1]Oak Ridge National Laboratory

2:30 PM
Effect of Grain Boundary Characters on Sink Efficiency: *Weizhong Han*[1]; Michael Demkowicz[2]; Engang Fu[1]; Yongqiang Wang[1]; Amit Misra[1]; [1]Los Alamos National Lab; [2]MIT

2:50 PM
Correlation between Irradiation Hardening and Microstructural Evolution in High Purity Reference V-4Cr-4Ti Alloy for Fusion Reactor: *Takuya Nagasaka*[1]; Takeo Muroga[1]; Hideo Watanabe[2]; Takeshi Miyazawa[3]; Masanori Yamazaki[4]; [1]National Institute for Fusion Science; [2]Research Institute for Applied Mechanics, Kyushu University; [3]The Graduate University for Advanced Studies; [4]International Research Center for Nuclear Materials Science, Institute for Materials Research, Tohoku University

3:10 PM
A Replica Technique for Extracting Precipitates from Neutron-Irradiated or Thermal-Aged Vanadium Alloys for TEM Analysis: *Ken-ichi Fukumoto*[1]; Masahiro Iwasaki[2]; [1]RINE/Univ. of Fukui; [2]Univ. of Fukui

3:30 PM
Microstructures of Heavily Neutron-Irradiated SiC/SiC Composites: *Yutai Katoh*[1]; Keith Leonard[1]; Peng Dou[1]; Lance Snead[1]; [1]Oak Ridge National Laboratory

3:50 PM Break

4:00 PM Invited
Multiple Simultaneous Ion Beam (MSIB) Examination of Inertial Fusion Energy Candidate Materials: *Michael Fluss*[1]; Luke Hsiung[1]; William Choi[1]; Peter Hosemann[2]; Estelle Meslin[3]; Jaime Marian[1]; David Hoelzer[4]; [1]LLNL; [2]UC Berkeley; [3]CEA-Saclay; [4]ORNL

4:30 PM
The Microstructure Development of Dispersion-Strengthened Tungsten due to Neutron Irradiation: *Makoto Fukuda*[1]; Akira Hasegawa[1]; Shuhei Nogami[1]; Kiyohiro Yabuuchi[1]; [1]Tohoku University

4:50 PM
Theoretical and Experimental Study of Spatial Effects in 3He Implantation in W: Andrée De Backer[1]; Christophe Ortiz[2]; Christophe Domain[3]; Marie France Barthe[4]; *Charlotte Becquart*[1]; [1]UMET, UMR 8207, EM2VM; [2]Laboratorio Nacional de Fusión por Confinamiento Magnético – CIEMAT; [3]EDF, EM2VM; [4]CNRS, UPR3079 CEMHTI

5:10 PM
The Change in Mechanical Properties of Tungsten after Self-Ion Irradiation: *James Gibson*[1]; David Armstrong[1]; Steve Roberts[1]; [1]Oxford University

5:30 PM
Deuterium Retention in Ion Damaged Tungsten with and without the Presence of Helium: *Yongqiang Wang*[1]; Chunping Xu[1]; Joseph Barton[2]; Nate Mara[1]; Russ Doerner[2]; George Tynan[2]; [1]Los Alamos National Laboratory; [2]University of California

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Multiscale Behavior at Extreme Conditions

*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

Wednesday PM
March 6, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Steven Valone, Los Alamos National Laboratory; Nik Chawla, Arizona State University

2:00 PM Invited
Anomalous High Temperature Response of Twin Boundaries in FCC Metals: *Yashashree Kulkarni*[1]; Tanushree Sinha[1]; [1]University of Houston

2:30 PM
Atomics Based Predictive Mechanism of Hydrogen Embrittlement in Iron: *Jun Song*[1]; William Curtin[2]; [1]McGill University; [2]EPFL

2:50 PM
Defect Accumulation during Super-Elastic Load Cycling of Gum Metal.: *Vassili Vorontsov*[1]; Nicholas Jones[2]; David Dye[1]; [1]Imperial College London; [2]University of Cambridge

3:10 PM Invited
High Temperature Mechanical Characterization and Modeling of Al/SiC Nanolaminates: Jon Molina-Aldareguía[1]; S. Lotfian[1]; Kyle Yazzie[2]; Huxiao Xie[2]; Javier LLorca[1]; J. Kevin Baldwin[3]; Amit Misra[3]; *Nikhilesh Chawla*[2]; [1]IMDEA Materials Institute, 28040-Madrid, Spain; [2]Arizona State University; [3]Los Alamos National Laboratory, Los Alamos, NM

3:40 PM Break

3:50 PM
Determination of Strengthening Induced by Dislocation Loops in Irradiated 316 L Steels: From Atomic to Dislocation Dynamics Simulations: *Ghiath Monnet*[1]; Dmitry Terentyev[2]; [1]EDF; [2]SCK-CEN

4:10 PM Invited
Interfaces on Shock-Induced Damage in Two-Phase Metals: Copper-Lead: Saryu Fensin[1]; *Steven Valone*[1]; Ellen Cerreta[1]; George Gray[1]; Adam Farrow[1]; Carl Trujillo[1]; [1]Los Alamos National Laboratory

4:40 PM
Modelling of Size Effects on Behavior of Thin Sheet Metals for Bipolar Plate Manufacturing: *Muammer Koc*[1]; Sasawat Mahabunpachai[2]; [1]Istanbul Sehir University; [2]MTEC

5:00 PM
Molecular Dynamics Study of Strain Rate Sensitivity of Deformation Mechanisms in Nanocrystalline BCC Tantalum: *Laura Smith*[1]; Diana Farkas[1]; Jonathan Zimmerman[2]; Lucas Hale[2]; [1]Virginia Polytechnic Institute and State University; [2]Sandia National Laboratories

5:20 PM
Study of Cyclic Deformation of Mg Single Crystal in [0001] Direction Utilizing In Situ Optical Microscopy: *Qin Yu*[1]; Jian Wang[2]; Yanyao Jiang[1]; [1]Department of Mechanical Engineering, University of Nevada, Reno; [2]Materials Science and Technology Division, Los Alamos National Laboratory

5:40 PM
Laser Induced Projectile Impact Test for High-Strain Rate Characterization of Nanomaterials: *Jae-Hwang Lee*[1]; Edwin Thomas[1]; [1]Rice University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Polycrystalline Multiscale Plasticity

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

Wednesday PM
March 6, 2013
Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Curt Bronkhorst, Los Alamos National Laboratory; Carlos Tome, Los Alamos National Laboratory

2:00 PM Invited
High Energy X-ray Diffraction Microscopy Tracking of Internal Polycrystal Responses to Tensile Deformation: *Robert Suter*[1]; Shiu Fai Li[1]; Jonathan Lind[1]; Reeju Pokharel[1]; Christopher Hefferan[1]; Xi Tan[1]; Ulrich Lienert[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

2:30 PM
Combining Laue Microdiffraction and Digital Image Correlation for Improved Measurements of the Elastic Strain Field with Micrometer Spatial Resolution: Johann Petit[1]; Olivier Castelnau[2]; Michel Bornert[3]; Fengguo Zhang[2]; Odile Robach[4]; JS Micha[4]; olivier ulrich[4]; *Christophe Le Bourlot*[5]; damien Faurie[5]; Felix hofmann[6]; A Korsunsky[6]; [1]PIMM-CNRS; [2]Arts et Metiers ParisTech; [3]École des ponts ParisTech; [4]CEA Grenoble; [5]LSPM; [6]University of Oxford

2:50 PM
A Single Crystal Yield Model for Tantalum Based on Atomistic Simulations: *Lucas Hale*[1]; Jonathan Zimmerman[1]; Christopher Weinberger[1]; [1]Sandia National Laboratories

3:10 PM Invited
Modeling the Crystallographic Texture of Cu/Nb Layered Composites by Accumulated Roll Bonding: *Curt Bronkhorst*[1]; Benjamin Hansen[1]; Hashem Mourad[1]; John Carpenter[1]; Jason Mayeur[1]; Irene Beyerlein[1]; Rodney McCabe[1]; Nathan Mara[1]; Stephen Sintay[1]; [1]Los Alamos National Laboratory

3:40 PM Break

3:50 PM
Modeling Mechanical Response and Texture Evolution of α-Uranium as a Function of Strain Rate and Temperature Using Polycrystal Plasticity: *Marko Knezevic*[1]; Rodney McCabe[1]; Carlos Tomé[1]; Ricardo Lebensohn[1]; Bogdan Mihaila[1]; [1]Materials Science and Technology Division, Los Alamos National Laboratory

4:10 PM Invited
Stress States Associated with Twin Nucleation, Propagation and Detwinning: Anand Kanjarla[1]; Stephen Niezgoda[1]; H. Wang[1]; Jian Wang[1]; P.D. Wu[1]; *Carlos Tome*[1]; [1]Los Alamos National Laboratory

4:40 PM
Understanding Micro-Mechanical Deformation in Zirconium with Nanoindentation, Micro-Cantilevers and High Resolution Electron Backscatter Diffraction: *T Ben Britton*[1]; Jicheng Gong[1]; Edmund Tarleton[1]; Angus Wilkinson[1]; Steve Roberts[1]; [1]Department of Materials, University of Oxford

5:00 PM Invited
Validating Crystal Plasticity Finite Element Simulations with DIC and EBSD Experiments: *Corbett Battaile*[1]; Hojun Lim[1]; Christopher Weinberger[1]; Jay Carroll[1]; Thomas Buchheit[1]; Brad Boyce[1]; [1]Sandia National Laboratories

5:30 PM
Revisiting PSBs Modeling: *Ladislas Kubin*[1]; Maxime Sauzay[2]; [1]LEM, CNRS-ONERA; [2]CEA, SRMA

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

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

Wednesday PM
March 6, 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
Stress, Fracture, and Coupled Mechanical-chemical Degradation in Lithium Ion Battery Electrodes: *Yang-Tse Cheng*[1]; Rutooj Deshpande[1]; Juchuan Li[1]; Mark Verbrugge[2]; [1]University of Kentucky; [2]General Motors Research and Development Center

2:20 PM Invited
Inkjet-Printed Graphene for Micro-Supercapacitor: *Linh Le*[1]; Matthew Ervin[2]; De Kong[1]; Brian Fuchs[3]; James Zunino[3]; Woo Lee[1]; [1]Stevens Institute of Technology; [2]U.S. Army Research Lab; [3]Picatinny Arsenal

2:40 PM Invited
Nanostructured Co3O4 Electrodes for Na-Ion Battery Applications from Solution Plasma Spray Technique: *Xuan Zhou*[1]; Ramesh Kumar Guduru[1]; Raghavender Tummala[1]; Pravansu Mohanty[1]; [1]University of Michigan-Dearborn

3:00 PM Invited
Predicting and Imaging Nanocrystals in Metal Alloy Electrodes: *Michael Fleischauer*[1]; A.D.W. Todd[2]; P.P. Ferguson[3]; [1]National Institute for Nanotechnology; [2]National Research Council; [3]Université de Moncton

3:20 PM Break

3:40 PM Invited
Spray Pyrolysis for Synthesis of Nanostructured, High Energy $xLi_2MnO_3 \cdot (1-x)LiMO_2$ (M= Mn, Ni, Co) Cathode Materials: *Richard Axelbaum*[1]; Xiaofeng Zhang[2]; Miklos Lengyel[1]; Ilias Belharouak[2]; Gal Atlas[1]; [1]Washington University in St. Louis; [2]Argonne National Laboratory

4:00 PM Invited
Multinuclear Solid and Liquid State NMR Studies of Battery Materials: *Steve Greenbaum*[1]; [1]Hunter College of CUNY

4:20 PM Invited
***In Situ* Stress Study of Porous V2O5 Films as Li-ion Battery Electrodes**: *Dawei Liu*[1]; Clement Edouard[2]; Brian Sheldon[2]; [1]Alfred University; [2]Brown University

4:40 PM Invited
MXene - A New Family of Two Dimensional Materials for Use in Lithium Ion Batteries and Lithium Ion Capacitors: Michael Naguib[1]; Yohan Dallagnese[1]; Olha Mashtalir[1]; Jérémy Come[2]; Pierre-Louis Taberna[2]; Volker Presser[1]; Patrice Simon[2]; Michel Barsoum[1]; *Yury Gogotsi*[1]; [1]Drexel University; [2]Université Paul Sabatier

5:00 PM Invited
Novel Design of Nanostructured Si Anode on Nanohair Array Polymer Substrate: Min-Suk Jung[1]; Young-Chang Joo[1]; Myoung-Woon Moon[2]; *In-suk Choi*[2]; [1]Seoul National University; [2]Korea Institute of Science and Technology

5:20 PM
Si Thin Film Electrode on TiNi Shape Memory Alloy (Current Collector) with Martensitic Phase: *Yeon-min Im*[1]; Sang-hun Lee[1]; Jung-phil Noh[1]; Gyu-bong Cho[1]; Tae-hyun Nam[1]; [1]Gyeongsang National University

5:40 PM
Synthesis of Nanosheet TiO2(B) with Open Structure for Applications in High-Rate Lithium-ion Batteries: *Ming-Yan Hou*[1]; Yu-Sheng Lin[1]; Jenq-Gong Duh[1]; [1]Department of Materials Science and Engineering, National Tsing Hua University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction Studies of Phase Transtions

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

Wednesday PM
March 6, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Watkins, ORNL; Brent Fultz, CALTECH

2:00 PM Keynote
Strain in Semiconductor Nano-Structures using X-ray Bragg Coherent Diffraction Imaging: *Vincent Favre-Nicolin*[1]; Francesca Mastropietro[2]; Joël Eymery[3]; Gerardina Carbone[4]; François Andrieu[5]; Julien Claudon[3]; Jean-Michel Gérard[3]; [1]CEA-Université de Grenoble; [2]Université Aix-Marseille; [3]CEA; [4]ESRF; [5]CEA-LETI

2:20 PM
Probing the Local Structure of the Lead-Free Piezoelectric Na0.5Bi0.5TiO3 by X-Ray and Neutron Scattering: *Jens Kreisel*[1]; [1]CRP Lippmann & Luxembourg University

2:35 PM Invited
What Neutrons Tell Us about Magnetic Shape Memory Materials?: *Volodymyr Chernenko*[1]; Jose Manuel Barandiarán[1]; Patricia Lázpita[1]; Jon Gutiérrez[1]; [1]University of Basque Country (UPV/EHU)

2:55 PM
Time-Resolved High-Energy Small-Angle X-ray Scattering of the γ' Precipitates in a Polycrystalline Nickel-Base Superalloy: *David Collins*[1]; Thomas Connolley[2]; Leigh Connor[2]; Howard Stone[3]; [1]University of Oxford; [2]Diamond Light Source; [3]University of Cambridge

3:10 PM Invited
Using Small Angle Scattering and Atom Probe Tomography as Complementary Tools for Characterising Precipitate Microstructures at the Nanoscale: *Alexis Deschamps*[1]; Frédéric De Geuser[2]; Vicente Araullo-Peters[3]; Julie Cairney[3]; Laurent Couturier[1]; Baptiste Gault[4]; Christophe Sigli[5]; [1]Grenoble Institute of Technology; [2]CNRS, SIMAP; [3]University of Sydney; [4]McMaster University; [5]Constellium Voreppe research Centre

3:30 PM Invited
Monitoring Nanomaterials in Situ Elaboration, Structure, Morphology and Operando Activity by Synchrotron X-Rays Scattering: *Gilles Renaud*[1]; [1]CEA-Grenoble

3:50 PM Break

4:00 PM
Phonon Anharmonicity of Zirconia and Yttirum-Stabilized Zirconia at Elevated Temperatures: A Neutron Scattering Study: *Chen Li*[1]; Hillary Smith[1]; Jorge Munoz[1]; Lisa Mauger[1]; Doug Abernathy[2]; Brent Fultz[1]; [1]Caltech; [2]Oak Ridge National Lab

4:15 PM
Polymer Crystallization in Processing Conditions: Synchrotron SAXS and WAXS Analysis with Millisecond Time Resolution: *Giuseppe Portale*[1]; Dario Cavallo[2]; Gerrit Peters[2]; Giovanni Alfonso[3]; Luigi Balzano[4]; Wim Bras[1]; [1]DUBBLE-CRG, European Synchrotron Radiation Facility; [2]Eindhoven University of Technology; [3]University of Genova; [4]DSM Research

4:30 PM
Study of Formation and Growth of Omega Phase in TIMETAL LCB Using Small Angle X-Ray Scattering: *Jana Smilauerova*[1]; Milos Janecek[1]; Vaclav Holy[1]; Henry Rack[2]; Radomir Kuzel[1]; [1]Charles University; [2]Clemson University

4:40 PM
Thermal Residual Stresses and Strains in Depleted Uranium: *Christopher Calhoun*[1]; James Wollmershauser[1]; Donald Brown[2]; Rupalee Mulay[1]; Elena Garlea[3]; Sean Agnew[1]; [1]University of Virginia; [2]Los Alamos National Laboratory; [3]Y-12 National Security Complex

4:55 PM Invited
Binary Semiconductor Nano-Sized Structures and the Regularities of Diffracted Intensity Pattern Formation under Grazing Incidence Conditions.: *Danylo Grygoryev*[1]; Sergey Lazarev[1]; Philipp Schroth[1]; Mathew Helfrich[1]; Andrey Minkevich[1]; Taras Slobodskyy[2]; Tilo Baumbach[1]; [1]Karlsruhe Institute for Technology; [2]University of Hamburg

5:15 PM
Analysis of Phase Distribution in Thin Surface Layers Comparable to the Penetration Depth of X-Rays: *Paul Rozenak*[1]; [1]Hydrogen Energy Batteries LTD

5:35 PM
Three-Dimensional Diffuse-Scattering Analysis of the Phase Transition in a Ni_2MnGa Ferromagnetic Shape-Memory Alloy by In-Situ High-Energy X-Ray Measurement: *Gang Wang*[1]; [1]Northeastern University

5:50 PM
In-Situ Bragg Edge Imaging for Strain and Phase Mapping under Multi-Axial Loading: *Robin Woracek*[1]; Daykar Penumadu[2]; Anton Tremsin[3]; Nikolay Kardjilov[4]; Andre Hilger[4]; Mirko Boin[4]; Akawut Siriruk[2]; Ingo Manke[4]; Markus Strobl[5]; Joe Kelleher[6]; [1]University of Tennessee & Helmholtz Zentrum Berlin; [2]University of Tennessee; [3]University of California at Berkeley; [4]Helmholtz Zentrum Berlin; [5]ESS design update programme ; [6]STFC Rutherford Appleton Laboratory

Ni-Co 2013: Pyrometallurgy - Smelting

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

Wednesday PM
March 6, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Antoine Allanore, MIT - DMSE/ Sadoway Group; Rodney Jones, Mintek

2:00 PM
HPOXAL of Furnace and Converter Slags - What Have We Learned?: Ilya Perederiy[1]; *Vladimiros Papangelakis*[2]; [1]Vale; [2]University of Toronto

2:25 PM
Nickel, Cobalt and Copper Recovery from Sea Nodules by Direct Smelting Process: *Kamala Sahu*[1]; S. Agarwal[1]; D. Mishra[1]; A. Agrawal[1]; K. M. Godiwalla[1]; R. K. Jana[1]; [1]CSIR-National Metallurgical Laboratory

2:45 PM
Water Atomization of Iron-Nickel Alloys: *Rodney Jones*[1]; [1]Mintek

3:10 PM
Alternative Coolants and Cooling System Designs for Safer Freeze Lined Furnace Operation: *Mark Kennedy*[1]; Mark Weaver[2]; Per Nos[3]; Mia Bratt[4]; [1]Norwegian University of Science and Technology; [2]Alcoa Technical Center; [3]Termek Technology; [4]Elkem AS Research

3:30 PM Break

3:50 PM
Outotec's Ausmelt Top Submerged Lance (TSL) Technology for the Nickel Industry: *Ross Andrews*[1]; Robert Matusewicz[1]; Lauri Aspola[1]; Stephen Hughes[1]; [1]Outotec

4:10 PM
Processing of PGM Containing Ni/Cu Bulk Concentrates in a Sustainable Way by Outotec Direct Nickel Flash Smelting Process: *Satu Jyrkonen*[1]; Matti Luomala[1]; Janne Karonen[1]; Paivi Suikkanen[2]; Kaarlo Haavanlammi[1]; [1]Outotec (Finland) Oy; [2]Boliden Harjavalta Oy

4:30 PM
Nickel-Chromium-Boron Alloys Production by Aluminothermic Processes: *Ozge Caglar Yilmaz*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

Novel Synthesis and Consolidation of Powder Materials: Metal Injection Moulding and Advanced Powder Processing

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

Wednesday PM
March 6, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Ping Li, University of Science and Technology Beijing; Stefan Gulizia, CSIRO Materials Science and Engineering

2:00 PM Invited
Room and High Temperature Properties of Injection Molded Superalloy Compacts: *Hideshi Miura*[1]; Syunsuke Morinaka[1]; Toshiko Osada[1]; Hyungoo Kang[1]; Fujio Tsumori[1]; [1]Kyushu University

2:30 PM
Rheological Properties of Feedstock Composed of Titanium Alloy Powder and Polyethylene Glycol-based Binder System for Metal Injection Moulding: *Gnanavinthan Thavanayagam*[1]; Deliang Zhang[1]; Kim Pickering[1]; [1]Waikato Centre for Advanced Materials, School of Engineering, The University of Waikato

2:50 PM Invited
Advances in Lubrication Technology in PM to Promote Higher Sintered Densities: *Francis Hanejko*[1]; [1]Hoeganaes Corporation

3:20 PM Break

3:40 PM Invited
Effect of Surfactants in Pre-Mixing Powders for Oxide Dispersion Strengthened Steel Processing: *Selçuk Kuyucak*[1]; Carlo Tesone[1]; Jian Li[1]; [1]CanmetMATERIALS

4:10 PM
Characterization and Consolidation of Mechanically Modified Titanium Powders for Cold Spray Application: *Stefan Gulizia*[1]; mahnaz jahedi[2]; darren fraser[2]; [1]CSIRO Materials Science & Engineering/Future Manufacturing Flagship; [2]CSIRO Materials Science & Engineering

4:30 PM
Magnetic Property Improvement of PM Fe-50%Ni Soft Magnetic Alloy: *Mingli Qin*[1]; Jidong Ma[1]; Lusha Tian[1]; Lin Zhang[1]; Xiaofeng Zhang[1]; Ping Li[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

4:50 PM
WC–17Co Nanostructured Coating Prepared by Air Plasma Spraying: *Hui Chen*[1]; [1]Southwest Jiaotong University

5:10 PM
Real-Time Diagnostics on Attritor Mill: Towards a Better Scale-Up Model: *Priya Radhi Santhanam*[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Sn Whiskering and Electromigration

*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

Wednesday PM
March 6, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Tin Whisker and Hillock Growth Mechanism Via Grain Boundary Sliding Coupled with Shear Induced Grain Boundary Migration: *Pylin Sarobol*[1]; John Blendell[1]; Carol Handwerker[1]; [1]Purdue University

2:20 PM
Correlating Whisker/Hillock Growth with Compressive Stress in Sn during Thermal Cycling: *Fei Pei*[1]; Nitin Jadhav[1]; Eric Chason[1]; [1]Brown University

2:40 PM
Effect of Plastic Deformation on Sn Whisker Growth in Electroplated Sn and Sn-Ag: *Jaewon Chang*[1]; Sung Kang[2]; Jaeho Lee[3]; Keun-Soo Kim[4]; Hyuck Mo Lee[1]; [1]KAIST; [2]IBM T.J. Watson Research Center; [3]Hongik University; [4]Hoseo University

3:00 PM
Effects of POSS-Silanol Addition on the Whisker Formation in Sn-Based Pb-Free Electronic Solders: *Sihan Liu*[1]; Yutian Shu[1]; KN Subramanian[2]; Andre Lee[2]; Fu Guo[1]; [1]Beijing University of Technology; [2]Michigan State University

3:20 PM Break

3:40 PM
Two-Dimensional Simulation of Intermetallic Compound Growth during the Lead-Free Soldering under the Influence of Electromigration: *Min Soo Park*[1]; Sean Gibbons[1]; Raymundo Arroyave[1]; [1]Texas A&M University

4:00 PM
The Behavior of Zn-Rich Phase in Sn-9Zn Solder Alloys under Current Stressing: *Jian-Yang He*[1]; Tsung-Chieh Chiu[1]; Albert T. Wu[2]; Kwang-Lung Lin[1]; [1]National Cheng Kung University; [2]National Central University

4:20 PM
The Effect of Current Stressing on Solder Grain Growth and Orientation: *Yu-Lung Lin*[1]; Chih Chen[1]; [1]National Chiao Tung University

4:40 PM
An EBSD Investigation of the Effect of Sn Orientation on Electromigration in Idealized SnAgCu Interconnects: *Christopher Kinney*[1]; Xioranny Linares[1]; Kyu-Oh Lee[2]; J.W. Morris[1]; [1]University of California, Berkeley; [2]Intel Corporation

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

*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

Wednesday PM
March 6, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dong-Woo Suh, Pohang Institute of Science and Technology (POSTECH); Marc De Graef, Carnegie Mellon University

2:00 PM Invited
Materials Design for Joinability: FSW Aluminum: *Greg Olson*[1]; [1]Northwestern University

2:30 PM
Electron Microscopy Characterization of the Microstructural Evolution of Similar and Dissimilar Titanium Alloys Following Solid State Welding: *Jonathan Orsborn*[1]; Daniel Huber[1]; Robert Williams[1]; Hamish Fraser[1]; [1]The Ohio State University

2:50 PM
Microstructural Evolution in a Weld Overlay Cladding of a Ni-Based Alloy on 2.25Cr-1Mo Steel during Thermal Aging: *Hassan Saghafifar*[1]; [1]Cameron

3:10 PM Break

3:20 PM
Correlation Microstructure/Thermo-Mechanical Process Parameters for Ti6Al4V Alloy: *Kalenda Mutombo*[1]; [1]CSIR

3:40 PM
Microstructural Evolution in Haynes 282 After High Temperature Creep Exposure: *Jeffrey Hawk*[1]; Paul Jablonski[1]; John Sears[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

4:00 PM
Microstructural Evolution in Ti-5Al-5Mo-5V-3Cr during Continuous Heating: *Yufeng Zheng*[1]; Robert Williams[1]; Soumya Nag[2]; Rajarshi Banerjee[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

4:20 PM
Modeling Precipitate Microstructure Evolution during Continuous Cooling: *Qing Chen*[1]; Herng-Jeng Jou[2]; Gustaf Sterner[1]; Kaisheng Wu[3]; Johan Bratberg[1]; Anders Engström[1]; Paul Mason[3]; [1]Thermo-Calc Software AB; [2]QuesTek Innovations LLC; [3]Thermo-Calc Software, Inc

4:40 PM
Phase Transformation as a Result of Mechanical Loading and Turning of Metastable Austenitic Steels: *Marek Smaga*[1]; Robert Skorupski[2]; Dietmar Eifler[2]; Patrick Mayer[3]; Jan C. Aurich[3]; [1]Institute of Materials Science and Engineering, University of Kaiserslautern; [2]Institute of Materials Science & Engrg, University of Kaiserslautern; [3]Institute for Manufacturing Technology & Production Systems, University of Kaiserslautern

5:00 PM
TEM Observation of FCC 9R Phase Transformation in Nanocrystalline Pd Thin Films during Hydriding/Dehydriding Cycles: *Hosni Idrissi*[1]; Behnam Amin-ahmadi[1]; Montserrat Galceran[2]; Renaud Delmelle[3]; Marie-Stéphane Colla[3]; Jean-Pierre Raskin[4]; Stéphane Godet[2]; Joris Proost[3]; Thomas Pardoen[3]; Dominique Schryvers[1]; [1]EMAT. University of Antwerp; [2]Service 4 MAT. Université libre de Bruxelles (ULB); [3]IMMC. Université catholique de Louvain; [4]ICTEAM, Université catholique de Louvain

Phase Transformation and Microstructural Evolution: Scale and Subsurface Phase Transformations during High-Temperature Oxidation

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

Wednesday PM
March 6, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Brian Gleeson, University of Pittsburgh; John Morral, The Ohio State University

2:00 PM Invited
Evolution of Scale and Subsurface Alloy Microstructures During Oxidation of Chromia-Forming Alloys in CO2: *David Young*[1]; Thomas Gheno[1]; Daniel Monceau[2]; [1]University of New South Wales; [2]ENSIACET

2:30 PM
Environmental and Compositional Factors Affecting the Establishment of a Stable Alumina Scale: *Xu Liu*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

2:50 PM
Comparison of the High-Temperature Oxidation Behavior of Subsolvus and Supersolvus Treated Advanced Powder Metallurgy Disk Alloys: *Chantal Sudbrack*[1]; Jonathan Yu[2]; Timothy Gorman[3]; Tim Gabb[1]; David Hull[1]; [1]NASA Glenn Research Center; [2]Stanford University; [3]University of Dayton

3:10 PM
Investigation of Oxygen Contents in Various Phases in Gamma-TiAl by Laser-Pulsed Atom Probe Tomograph: *Gopal Das*[1]; Michael Miller[2]; [1]P&W; [2]Oak Ridge National Laboratory

3:30 PM Break

3:50 PM Invited
Internal Oxidation – from Wagner to Interdiffusion Genome: *John Agren*[1]; [1]Royal Institute of Technology

4:20 PM
Phase Field Modeling of Metal Oxidation Kinetics and Its Microstructure Dependence: *Tian-Le Cheng*[1]; Youhai Wen[1]; [1]National Energy Technology Laboratory

4:40 PM
Phase Field Modeling of Tetragonal to Monoclinic Phase Transformation at Zirconium Oxide: Mahmood Mamivand[1]; *Mohsen Asle Zaeem*[2]; Haitham El Kadiri[1]; [1]Mississippi State University; [2]Missouri University of Science and Technology

5:00 PM
Phase Transformations in the Sub-Oxide Layer during the Oxidation of Beta-21s Beta Titanium Alloy: *Amit Behera*[1]; Kristopher Mahdak[1]; Hamidreza Mohseni[1]; Soumya Nag[1]; Jaimie Tiley[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Air Force Research Laboratory

5:20 PM
Phase Evolution Characterization of a Multi-Component Oxide Welding Slag and Its Effect on Weld Properties: *Badri Narayanan*[1]; Amir Avishai[2]; [1]The Lincoln Electric Company; [2]Case Western Reserve University

Physical and Mechanical Metallurgy of Shape Memory Alloys: Multiscale Modeling and Applications

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

Wednesday PM
March 6, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Yunzhi Wang, The Ohio State University; Darren Hartl, Texas A&M University

2:00 PM
Simulation of Twinning and Slip in Shape Memory Allloys: *Huseyin Sehitoglu*[1]; Jifeng Wang[1]; Tawhid Ezaz[1]; Hans Maier[2]; [1]University of Illinois; [2]University of Paderborn

2:30 PM
Phase Field Modeling of Domain Structures and Properties of Doped Ferroelastic Systems: Dong Wang[1]; Xiaobing Ren[2]; *Yunzhi Wang*[3]; [1]Xi'an Jiaotong University; [2]National Institute for Materials Science; [3]The Ohio State University

3:00 PM
Modeling Shape Memory Alloy Single Crystalline Responses Using an Anisotropic Yield Surface: *Darren Hartl*[1]; Bjoern Kiefer[2]; Andreas Menzel[2]; [1]Texas A&M University; [2]Technical University Dortmund

3:20 PM
A Finite Element/Phase Field Approach to Study Martensitic Phase Transformations in Shape Memory Alloys: *Harshad Paranjape*[1]; Sivom Manchiraju[1]; Yipeng Gao[1]; Yunzhi Wang[1]; Peter Anderson[1]; [1]The Ohio State University

3:40 PM Break

4:00 PM
The Effect of Ternary Additions and Their Content on the Properties of NiTi Alloys: *Navdeep Singh*[1]; Thien Duong[1]; Sean Gibbons[1]; Anchalee Junkaew[1]; Anjana Talapatra[1]; Shengyen Li[1]; Hassan Thawabi[1]; Raymundo Arróyave[1]; [1]Texas A&M University

4:20 PM
Characterization and Modeling of Trained Nitinol Torsional Actuators under Reverse Bias Loads: James Mabe[1]; Brian Fisher[1]; *Darren Hartl*[2]; [1]The Boeing Company; [2]Texas A&M University

4:40 PM
The Superelastic Behavior of Ti-Ni Superelastic Wire Rope: *Kazuhiro Kitamura*[1]; Yusuke Oda[1]; Yukiharu Yoshimi[2]; [1]Aichi University of Education; [2]Yoshimi Inc.

5:00 PM
Copper Based Shape Memory Alloy a Modern Opportunity to Change Classic Casting Dental Alloys: Irena Gurau[1]; Gheorghe Gurau[2]; Carmela Gurau[2]; [1]University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania; [2]Dunarea de Jos University of Galati, Romania

5:20 PM
Fabricating Tubes of Ni-Mn-Ga Magnetic Shape Memory Alloys by Interdiffusion of Mn and Ga into Ni Tubing: Bin Yuan[1]; Paul Lindquist[2]; *Peiqi Zheng*[3]; Peter Müllner[2]; David Dunand[3]; [1]South China University of Technology; [2]Boise State University; [3]Northwestern University

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Education and Consumer Awareness

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

Wednesday PM
March 6, 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: Cong Wang, Saint-Gobain High Performance Materials; Brajendra Mishra, Colorado School of Mines

2:00 PM Introductory Comments

2:05 PM Invited
Embedding Sustainable Development into Research – Vision of Umicore: *Maurits Van Camp*; Karolien Vasseur; Mieke Campforts; Christina Meskers[1]; [1]Umicore Precious Metals Refining

2:30 PM Invited
The Sustainable Inorganic Materials Management (SIM2) Consortium at KU Leuven: *Bart Blanpain*[1]; [1]KU Leuven

2:55 PM Invited
Having Productive Conversations About Sustainability: Pitfalls and Pathways: *Jason Jay*[1]; [1]MIT Sloan Initiative for Sustainable Business and Society

3:20 PM Break

3:40 PM Invited
Resource Efficient Metal and Material Recycling: *Markus Reuter*[1]; Antoinette van Schaik; [1]Outotec Oyj

4:05 PM Invited
Education, Materials, Sustainability: Joining the Dots: *Philippe Radlovic*[1]; [1]Granta Design Ltd.

4:30 PM Invited
Toward a Closed-Loop Society: Ideas, Education, and Consumer Awareness: *Shinichiro Nakamura*[1]; [1]Waseda University

Solar Cell Silicon: Slag-based Refining of Silicon and Solar Cell Advances

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

Wednesday PM
March 6, 2013

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

Session Chairs: Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

2:00 PM
Thermodynamic Calculations for the Removal of B from Liquid Si Using Molten Slag: *In-Ho Jung*[1]; Yumin Zhang[1]; [1]McGill University

2:20 PM
Reductive Removal of Phosphorus in Silicon Using CaO-CaF2 Slag: *Hiroaki Kawamura*[1]; Yutaka Yanaba[1]; Takeshi Yoshikawa[1]; Kazuki Morita[1]; [1]Institute of Industrial Science, The University of Tokyo

2:40 PM
Boron and Phosphors Distribution Equilibria among the Molten Si, Slag and Metal Phases: *Kai Tang*[1]; Egil Krystad[2]; Gabriella Tranell[2]; Merete Tangstad[2]; [1]SINTEF Materials and Chemistry; [2]Norwegian University of Science and Technology

3:00 PM
Distribution of Boron between Silicon and CaO-MgO-SiO_2 Slags: *Lars Klemet Jakobsson*[1]; Merete Tangstad[1]; [1]NTNU

3:20 PM
The Kinetics of boron removal from silicon by oxidative slag refining in the SiO_2-CaO slag system: *Egil Krystad*[1]; Gabriella Tranell[1]; [1]NTNU

3:40 PM Break

4:00 PM
Progress in Developing an Automated Repairing System for Solar Cells by Laser Enabled Silicon Post-Processing: *Joerg Schmauder*[1]; Radovan Kopecek[1]; Radim Barinka[2]; Pavlina Barinkova[2]; Axier Bollar[3]; Dimitris Koumanakos[4]; Nerea Otero[5]; Pablo Romero[5]; [1]ISC Konstanz; [2]Solartec s.r.o.; [3]Ingenieria y Soluciones en Energias Alternativas S.L.; [4]G. Zarlas – D. Koumanakos O.E.; [5]AIMEN Technology Centre

4:20 PM
Potential of Silicon Solar Cells from Metallurgical Process Route: *Pirmin Preis*[1]; Kristian Peter[1]; Erik Enebakk[2]; Anne-Karin Soiland[2]; [1]ISC Konstanz e.V.; [2]Elkem Solar AS

4:40 PM
Segregation of Impurities in Silicon for Solar Cells: *Marisa Di Sabatino*[1]; Antoine Autruffe[1]; Chiara Modanese[1]; Lars Arnberg[1]; [1]NTNU

5:00 PM
Stress and Fracture of Silicon Solar Cells as Revealed by Synchrotron X-Ray Microdiffraction: *Arief Budiman*[1]; Arief Budiman[1]; Alexander Caldwell[1]; C. Bonelli[2]; M. Kunz[3]; N. Tamura[3]; D. Verstraeten[2]; [1]SunPower Corporation; [2]TOTAL Gas & Power; [3]Advanced Light Source (ALS)

5:20 PM
Antireflective Silicon Nanostructures Fabricated by Cheap Chemical Etchant and Coated by Atomic Layer Deposited Al2O3 Layer: *Zhihao Yue*[1]; Honglie Shen[1]; [1]Nanjing University of Aeronautics and Astronautics

5:40 PM
Scale Length Effect on the Fracture Strength of Silicon Wafers: *Tania Vodenitcharova*[1]; Oscar Borrero-López[1]; Mark Hoffman[1]; [1]The University of New South Wales

Symposium on High Entropy Alloys: Modeling and Other

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Wednesday PM
March 6, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Takeshi Egami, The University of Tennessee; Michael Gao, National Energy Technology Lab

2:00 PM Invited
Properties of High-Entropy Alloys under Irradiation: *Takeshi Egami*[1]; [1]University of Tennessee

2:25 PM Invited
Preparation and Simulation of FCC High Entropy Alloys: *Douglas Irving*[1]; Carl Koch[1]; Changning Niu[1]; Alexander Zaddach[1]; [1]North Carolina State University

2:50 PM
Ordering Behavior in the Al(x)CoCrCuFeNi High-Entropy Alloys: *Louis Santodonato*[1]; Yang Zhang[2]; Michael Gao[3]; Chad Parish[2]; Mikhail Feygenson[2]; Zhi Tang[4]; Joerg Neuefeind[2]; Richard Weber[5]; Peter Liaw[4]; [1]ORNL and UT; [2]Oak Ridge National Laboratory; [3]National Energy Technology Laboratory; [4]The University of Tennessee; [5]Materials Development Inc.

3:05 PM Invited
Atomistic Simulation of High-Entropy Alloys: *Yongqiang Cheng*[1]; [1]Oak Ridge National Lab

3:30 PM Break

3:45 PM Invited
Computational Thermodynamics Aided High-Entropy Alloy Design: *Chuan Zhang*[1]; Fan Zhang[1]; Shuanglin Chen[1]; Weisheng Cao[1]; Jun Zhu[1]; Zhi Tang[2]; Peter Liaw[2]; [1]CompuTherm LLC; [2]University of Tennessee

4:10 PM
Comparative Studies of the Ground State Properties for $Nb_{25}Mo_{25}Ta_{25}W_{25}$ and $V_{20}Nb_{20}Mo_{20}Ta_{20}W_{20}$ Alloys: *Oleg Starovoytov*[1]; Michael Gao[2]; Shengmin Guo[3]; Ebrahim Khosravi[1]; Jialin Lei[1]; Liuxi Tan[1]; Shizhong Yang[1]; [1]Southern University and A&M College; [2]National Energy Technology Laboratory; [3]Louisiana State University

4:25 PM Invited
Statistical Fatigue-Life Modeling for High-Entropy Alloys: *Tao Yuan*[1]; Michael Hemphill[2]; Zhi Tang[2]; Gongyao Wang[2]; Andrew Chuang[2]; CheWei Tsai[3]; Jien-Wei Yeh[3]; Peter Liaw[2]; [1]Ohio University; [2]The University of Tennessee, Knoxville; [3]National Tsing Hua University

4:50 PM Invited
Oxidation Behavior of TaNbHfZrTi Alloy: A First Principles Simulation Study: *Shizhong Yang*[1]; Michael Gao[2]; Shengmin Guo[3]; [1]Southern University and A&M College; [2]National Energy Technology Laboratory; [3]Louisiana State University

Ultrasonic Welding II: Ultrasonic Welding: Design Principles and Light Metal Joints

*Sponsored by:*TMS Light Metals Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Young Leaders Committee, ASM-MSCTS: Materials and Processing Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Frank Balle, University of Kaiserslautern

Wednesday PM
March 6, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guntram Wagner, University of Kaiserslautern, Institute of Materials Science and Engineering ; Frank Balle, University of Kaiserslautern, Institute of Materials Science and Engineering and State Research Focus Advanced Materials Engineering (AME)

2:00 PM Introductory Comments

2:15 PM
A Design Procedure for Sonotrodes Based on Dynamic Finite Elements and Laser Triangulation Measurements: Massimiliano Annoni[1]; *Michele Carboni*[1]; [1]Politecnico di Milano

2:35 PM
Fatigue Behavior of Dissimilar Ultrasonic Spot Welds in Lap-Shear Specimens of Magnesium and Steel Sheets with Adhesive: *William Lai*[1]; Jwo Pan[1]; Tsung-Yu Pan[2]; Zhili Feng[2]; Michael Santella[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

2:55 PM
Temperature Distribution in Ultrasonic Spot Welding of Al/Al and Al/Mg Sheets Via Infrared Thermography Method: *Yansong Zhang*[1]; [1]School of Mechanical Engineering,Shanghai Jiao Tong University

3:15 PM Break

3:45 PM
Ultrasonic Torsion Welding of Light Metals – Process Monitoring and Property Analysis: Jens Magin[1]; *Frank Balle*[1]; [1]Institute of Materials Science and Engineering, University of Kaiserslautern (Germany)

4:05 PM Invited
Microstructural Investigation of Aluminum and Titanium Welds after Ultrasonic Torsion Welding: *Kinga Unocic*[1]; Frank Balle[2]; [1]ORNL; [2]Institute of Materials Science and Engineering, University of Kaiserslautern, Germany

4:25 PM
Microstructure and Mechanical Properties of Ultrasonic Spot Welded Aluminum Alloy to High Strength Low Alloy Steel: *Vikas Patel*[1]; Sanjeev Bhole[1]; Daolun Chen[1]; [1]Ryerson University

4:45 PM
An Analysis of the Tensile-Shear Fatigue Behavior of Lap-Joints Obtained by Ultrasonic Spot Welding and Ultrasonic Spot Welding Plus Adhesive Bonding: *Michele Carboni*[1]; [1]Politecnico di Milano

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Structural 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

Thursday AM
March 7, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Yongho Sohn, University of Central Florida

8:30 AM Introductory Comments Best Graduate Student Paper Award Ceremony

8:45 AM Invited
Bulk Nanostructured Metals with Multifunctional Properties: *Ruslan Valiev*[1]; Ilchat Sabirov[2]; Alexander Zhilyaev[3]; Terence Langdon[4]; [1]Ufa State Aviation Technical University; [2]IMDEA Materials Institute; [3]Institute for Metals Superplasticity Problems, Russian Academy of Science; [4]University of Southampton

9:20 AM Invited
Nano-Scale Grain Size Effects Observed on Aluminum Metal Matrix Composites: Strengthening, Stability and Growth: *Yongho Sohn*[1]; Bo Yao[1]; Clara Hofmeister[1]; Catherine Kammerer[1]; Bhaskar Maumdar[2]; Anit Giri[3]; Kyu Cho[3]; [1]University of Central Florida; [2]New Mexico Institute of Mining and Technology; [3]U.S. Army Research Laboratory

9:55 AM Break

10:15 AM Break
Structural Ordering in Fe-Au Nanoclusters: *Pinaki Mukherjee*[1]; Matthew Kramer[2]; Jeffrey Shield[1]; [1]University of Nebraska- Lincoln and Nebraska Center for Materials and Nanoscience; [2]Ames Laboratory and Iowa State University

10:35 AM
Bulk Nanostructured Cu and Cu-based Alloys: Production, Characterization, Mechanical Properties and Deformation Behavior: *Mohsen Samadi Khoshkhoo*[1]; Sergio Scudino[2]; Hamed Bahmanpour[3]; Alexander Kauffmann[2]; Jens Freudenberger[2]; Michael Zehetbauer[4]; Ronald Scattergood[5]; Carl Koch[5]; Jürgen Eckert[2]; [1]Leibniz Institute for Solid State and Materials Research (IFW); [2]Leibniz Institute for Solid State and Materials Research (IFW); [3]University of California Davis; [4]University of Vienna; [5]North Carolina State University

10:55 AM
Nanocrystalline Diamond (NCD) Coatings on High Speed Steel and WC-Co Tools for Metal Forming Applications: *Somaiah Gowthama*[1]; Maneesh Chandran[1]; S S Bhattacharya[1]; M S Ramachandra Rao[1]; P Shanmugam[2]; R Natarajan[2]; [1]Indian Institute of Technology Madras; [2]Tube Investments of India limited, Chennai

11:15 AM
Deformation Behavior of a New Aluminum Alloy Matrix Base Nanocomposite: Rabindra Mahapatra[1]; *Horst Adams*[2]; [1]Naval Air Systems Command; [2]Adamco, Inc.

11:35 AM
Applying Precession Electron Diffraction (PED) to Nano-Twin Copper: *Subhasis Sinha*[1]; Matthew Kramer[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Ames Laboratory, Iowa State University

11:55 AM
Effect of Carbon Nanotube Reinforcement on the Phase Transformation of Zirconia: *Neelima Mahato*[1]; Pratyasha Mohapatra[2]; Siddharth Rawat[1]; Kantesh Balani[1]; [1]Indian Institute of Technology; [2]National Institute of Technology

4th International Symposium on High-Temperature Metallurgical Processing: Sintering and Pelletization

*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

Thursday AM
March 7, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guanghui Li, Central South University; Xuewei Lv, Chongqing university

8:30 AM
Production of Crude Ferronickel from Sivrihisar Laterite Ores of Turkey: *Ender Keskinkilic*[1]; Saeid Pournaderi[2]; Ahmet Geveci[2]; Yavuz A. Topkaya[2]; [1]Atilim University; [2]Middle East Technical University

8:50 AM
Sintering Process of Phosphorite from Leshan,China: Enguang Guo[1]; Donghai Li[1]; Cheng Pan[1]; Mei Liu[1]; *Xuewei Lv*[1]; [1]Chongqing University

9:05 AM
Comprehensive Effect of Coke Breeze and Limestone Particle Size on Sinter Performance in Sintering of a Coarse Hematite Iron Ore: Wang Zhe[1]; Zhang Jianliang[1]; Xing Xiangdong[1]; Ren Shan[1]; Gao Bing[1]; Zhang Xueqi[2]; [1]University of Science and Technology of Beijing; [2]Tianjin Iron and Steel Group Co., LTD

9:20 AM
Mechanisms of Iron and Slag Separation in Carbon Composite Iron Ore Pellets at Lower Temperature: Hongliang Han[1]; *Dongping Duan*[1]; Xing Wang[1]; Yunshu Guo[1]; [1]Institute of Process Engineering, Chinese Academy of Sciences

9:35 AM
Effect of the Raw Material Characteristic of Iron Concentrates on Ballability: *Jian Pan*[1]; Shouyan Yue[1]; Deqing ZHU[1]; Zheng He[1]; [1]Central South University