4:15 PM Invited
Grain Size Effect on Twinning Propensity in Ultrafine-grained Ti Processed by Dynamic Plastic Deformation: Jingli Sun[1]; Patrick Trimby[2]; Fengkai Yan[3]; *Xiaozhou Liao*[2]; Nairong Tao[3]; Jingtao Wang[1]; [1]Nanjing University of Science and Technology; [2]The University of Sydney; [3]Institute of Metal Research, Chinese Academy of Sciences

4:35 PM Invited
Deformation and Fracture Mechanisms in Gradient Nano-grained Metals: Zhi Zeng[1]; *Ting Zhu*[1]; [1]Georgia Institute of Technology

4:55 PM Invited
Investigation of Deformation Behavior of Surface Nano-crystalline Materials: *Andrey Molotnikov*[1]; Yuntian Zhu[2]; Xiaolei Wu[3]; Yuri Estrin[1]; [1]Monash University; [2]North Carolina State University; [3]Chinese Academy of Sciences

5:15 PM Invited
Influence of Length Scale on Mechanical Behavior of a Multilayered Nanocrystalline Ni-Fe: *Lilia Kurmanaeva*[1]; Hamed Bahmanpour[1]; Haiyan Wang[2]; Jon McCrea[3]; Enrique Lavernia[1]; Amiya Mukherjee[1]; [1]University of California, Davis,; [2]Texas A & M University; [3]Integran Technologies Inc.

2014 Functional Nanomaterials: Synthesis, Properties and Applications — Fabrication and Fundamentals II & Characterization and Properties I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Nitin Chopra, The University of Alabama; Terry Xu, The University of North Carolina at Charlotte; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas - Pan American; Ashwin Ramasubramaniam, University of Massachusetts Amherst; Jung-kun Lee, University of Pittsburgh; Ramki Kalyanaraman, The University of Tennessee, Knoxville; Stephen Turano, Georgia Tech Research Institute

Tuesday AM
February 18, 2014
Room: Ballroom D
Location: San Diego Marriott Marquis & Marina

Session Chairs: Jiyoung Kim, University of Texas at Dallas; Ramki Kalyanaraman, The University of Tennessee; Nitin Chopra, The University of Alabama

8:30 AM
Effect of Water/Tetraehylorthotitanate Ratio on the Morphology of Sol-Gel Derived TiO2 Powder and Its Photocatalytic Activity: *Lutfi Agartan*[1]; Derya Kapusuz[1]; Jongee Park[2]; Abdullah Ozturk[1]; [1]Middle East Technical University; [2]Atilim University

8:50 AM
Electromigration in (111) Oriented Nano-twinned Copper: *Tien-Lin Lu*[1]; Yi-Sa Huang[1]; Chien-Min Liu[1]; Chia-Ling Lu[1]; Han-wen Lin[1]; Chih Chen[1]; [1]National Chiao Tung University

9:10 AM
Hybrid Nanowires Comprised of Oxide Core and Shells with Embedded Pt Nanoparticles: *Caleb Felker*[1]; Wenwu Shi[1]; Nitin Chopra[1]; [1]The University of Alabama

9:30 AM
Nanostructured Cobalt Ferrites, Multifunctional Materials: *Najeh Mliki*[1]; Lilia Ajroudi[1]; Véronique Madigou[2]; Christine Leroux[2]; Lotfi Bessais[3]; [1]LMOP, Faculty of Science of Tunis, University of Tunis El Manar; [2]IM2NP, UMR-CNRS 6242, Université du Sud Toulon-Var; [3]CMTR, ICMPE, UMR7182, CNRS, Université Paris Est

9:50 AM Break

10:10 AM
Novel Laser Thermal Dewetting of Ultrathin Metal Films under Water-glycerol Solutions: *Sagar Yadavali*[1]; Ramki Kalyanaraman[1]; [1]University of Tennessee

10:30 AM Invited
STM Study on Solid-state Reactions in Binary Molecular Assemblies: *Yutaka Wakayama*[1]; [1]National Institute for Materials Science

11:05 AM
The Electrical Properties of Ag Nanoparticle Embedded ZnO Films by One-pot Solution Process: *Po-Shun Huang*[1]; Eric Marksz[1]; Jung-Kun Lee[1]; [1]University of Pittsburgh

11:25 AM
Ultra-flat Transfer of CVD Graphene for Surface Force Measurements: *Jude Britton*[1]; Nico Cousens[1]; Susan Perkin[1]; Nicole Grobert[1]; [1]University of Oxford

11:45 AM
Atomic Resolution STEM Imaging of Tungsten Chalcogenide Nanowires: *Jude Britton*[1]; Michelle Lim[1]; Rebecca Nicholls[1]; Arunvinay Prabakaran[1]; Frank Dillon[1]; Nicole Grobert[1]; [1]University of Oxford

2014 Materials and Manufacturing Innovation — World Views on Materials and Manufacturing Innovation: Regional Perspectives from Government Organizations

Sponsored by: TMS: Materials Innovation Committee
Program Organizers: Charles Ward, Air Force Research Laboratory; Hani Henein, University of Alberta

Tuesday AM
February 18, 2014
Room: 6A
Location: San Diego Convention Center

Session Chair: Charles Ward, Air Force Research Laboratory; Hani Henein, University of Alberta

8:30 AM Introductory Comments

8:35 AM Presentations

Speakers include:
Dr. Yoshio Akimune, General Manager, Technical Planning Division, Innovative Structural Materials Association, Japan
Dr. Cathy Foley, Chief of CSIRO Materials Science and Engineering Division, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
Dr. Han Dong, Vice Chief Engineer of China Iron & Steel Research Institute Group (CISRI Group), Vice President of CISRI, Director of National Engineering Research Center of Advanced Steel Technology, China
Dr. Laurie Locascio, Director, Material Measurement Laboratory, The National Institute of Standards and Technology (NIST), USA
Dr. G. Sundararajan, Director, International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad & Professor, Indian Institute of Technology Madras, India

10:05 AM Break

10:25 AM Presentations (Continued)

11:55 AM Concluding Comments

12:00 PM Panel Discussion

2014 TMS RF Mehl Medal Symposium on Frontiers in Nanostructured Materials and Their Applications — Nanoceramics I--Nanostructured Ceramics-oxides and Thin Film Interfaces

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Ramki Kalyanaraman, University of Tennessee; Haiyan Wang, Texas A&M University; Yuntian Zhu, North Carolina State University; Justin Schwartz, North Carolina State University; Amit Goyal, Oak Ridge National Laboratories

Tuesday AM
February 18, 2014
Room: Ballroom E
Location: San Diego Marriott Marquis & Marina

Session Chairs: Justin Schwartz, North Carolina State University; Haiyan Wang, Texas A&M University

8:30 AM Invited
Resistive Switching Characteristics of Mixed Oxides: *Ram Katiyar*[1]; Rajesh Katiyar[1]; Shojan Pavunny[1]; Geetika Khurana[1]; Pankaj Misra[1]; [1]University of Puerto Rico

8:50 AM Invited
Growth of Multiferroic Thin-film Heterostructures: *John Prater*[1]; Srinivasa Rao[2]; Sudhakar Nori[2]; Jagdish Narayan[2]; [1]U.S. Army Research Office; [2]North Carolina State University

9:10 AM Invited
Oxides for Spintronics: *Ashutosh Tiwari*[1]; [1]University of Utah

9:30 AM Invited
Oxide Based Thin Films, Properties and the Role of Defect Mediation: *Sudhakar Nori*[1]; Jagdish Narayan[1]; [1]North Carolina State University

9:50 AM
Tunable Magnetotransport and Device Application through Controlling Structural Boundaries in Self-assembled Vertically Aligned Nanocomposite Thin Films: Wenrui Zhang[1]; Aiping Chen[1]; Quanxi Jia[2]; Judith MacManus-Driscoll[3]; *Haiyan Wang*[1]; [1]Texas A&M University; [2]Los Alamos National Laboratory; [3]University of Cambridge

10:10 AM Break

10:30 AM Invited
Misfit Accommodation in Oxide Heterostructures: *Matthew Chisholm*[1]; Honghui Zhou[2]; Stephen Pennycook[1]; Jagdish Narayan[3]; [1]Oak Ridge National Laboratory; [2]University of Illinois at Urbana-Champaign; [3]North Carolina State University

10:50 AM Invited
Synchrotron Scattering Studies of the Metal-insulator Phase Transition and Local Domain Formation in VO_2: *John Budai*[1]; Jonathan Tischler[2]; Alexander Tselev[1]; Andrei Kolmakov[3]; Olivier Delaire[1]; Michael Manley[1]; Eliot Specht[1]; Ayman Said[2]; Lynn Boatner[1]; Jagdish Narayan[4]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory; [3]Southern Illinois University; [4]North Carolina State University

11:10 AM Invited
Routes to Low Defect Interfaces between rocksalt Oxides and Wurtzite Nitrides: Elizabeth Paisley[1]; Benjamin Gaddy[1]; James LeBeau[1]; Christopher Shelton[1]; Ramón Collazo[1]; Zlatko Sitar[1]; *Douglas Irving*[1]; Jon-Paul Maria[1]; [1]North Carolina State University

11:30 AM
Simplex Network Modeling for Press-molded Ceramic Bodies Incorporated with Granite Waste: *Leonardo Pedroti*[1]; [1]UENF

5th International Symposium on High Temperature Metallurgical Processing — Fundamental Research of Metallurgical Process

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Mark Schlesinger, Missouri University of Science and Technology; Onuralp Yücel, ITU; Rafael Padilla, University of Concepcion; Phillip Mackey, P.J. Mackey Technology; Guifeng Zhou, Wuhan Iron and Steel

Tuesday AM
February 18, 2014
Room: 18
Location: San Diego Convention Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University ; Ting'an Zhang, Northeastern University

8:30 AM Introductory Comments

8:35 AM
Effect of Water Vapor on the Activities of FeO and MgO in Slags Relevant to a Novel Flash Ironmaking Technology: Hong Yong Sohn[1]; *M. Yousef Mohassab-Ahmed*[1]; [1]University of Utah

8:55 AM
A Comparative Study on the Reduction of Mill Scale from Continuous Casting Processes: *Mehmet Bugdayci*[1]; Ahmet Turan[1]; Murat Alkan[1]; Fahri Cihan Demirci[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

9:10 AM
Activities of NbOx in Some CaO-$A_{l2}O_3$-SiO_2-"Nb_2O_5" Melts at 1873K: *Baijun Yan*[1]; Yixin Wang[1]; Jun Fan[1]; [1]University of Science and Techonology Beijing

9:25 AM
Short Range Order and Fe Oxidation State in Composite Oxide Melts: Anthimos Xenidis[1]; *Georgios Antipas*[1]; Konstantinos Karalis[1]; [1]National Technical University of Athens

9:40 AM
A Methodology for Controlling Grain Size in Friction Stir Processes: *Ali Ammouri*[1]; Ramsey Hamade[1]; [1]American University of Beirut

9:55 AM Break

10:05 AM
Kinetic Model on Modification of MgO.$A_{l2}O_3$ Inclusions: *Shufeng Yang*[1]; Weihua Zhang[1]; Jingshe Li[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

10:20 AM
Reaction Behavior of Sulfides Associated with Stibnite in Low Temperature Molten Salt Smelting Process without Reductant: Ye Long-gang[1]; *Tang Chao-bo*[1]; Chen Yong-ming[1]; Tang Mo-tang[1]; Zhang Wen-hai[1]; [1]School of Metallurgy and Environment, Central South University

10:35 AM
Effect of Silicon on the Viscosity and Solidification Properties of Molten Irons with Titanium: *Mengfang Wei*[1]; [1]University of Science and Technology Beijing

10:45 AM
The Interface Reaction and Transport of Oxygen between the Molten Melt and CaO-MgO-Al2O3 Slag: *Tao Zeng*[1]; Jifang Xu[2]; Jianchao Li[1]; Jieyu Zhang[1]; Yanling Guo[1]; [1]Shanghai University; [2]Soochow University

10:55 AM
High-temperature Creep Deformation and Change in Porous Structure of Graphite Cathode in Aluminum Electrolysis Process: *Chen Tong*[1]; Jilai Xue[1]; Xiang Li[1]; [1]Unversity of Science and Technology Beijing

11:05 AM
The Dissolution Rate of Solid Alumina Inclusion into Molten CaF2-CaO-MgO-Al2O3- SiO2 Slags: *Shi Guan'yong*[1]; Zhang Ting'an[1]; Niu Li'ping[1]; Dou Zhi'he[1]; [1]Northeastern University

A Lifetime of Experience with Titanium Alloys: An SMD Symposium in Honor of Jim Williams, Mike Loretto and Rod Boyer — Loretto Honorary Session I: Phase Stability

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: Adam Pilchak, Air Force Research Laboratory; James Larsen, Air Force Research Laboratory; David Dye, Imperial College London; Jay Tiley, Air Force Research Laboratory

Tuesday AM
February 18, 2014
Room: 1A
Location: San Diego Convention Center

Session Chairs: David Dye, Imperial College London; Rajarshi Banerjee, University of North Texas

8:30 AM Invited
The Application of Advanced Characterization Techniques to Uncover Non-conventional Pathways for Phase Transformations in Ti Alloys: *Hamish Fraser*[1]; Yunzhi Wang[1]; Rajarshi Banerjee[2]; [1]The Ohio State University; [2]University of North Texas

9:00 AM Invited
Omega Precipitation in Titanium Alloys: A Mixed Mode Diffusional-displacive Phase Transformation: *Rajarshi Banerjee*[1]; Srinivasan Srivilliputhur[1]; Hamish Fraser[2]; [1]University of North Texas; [2]The Ohio State University

9:20 AM
Quantifying Omega Phase Evolution in Beta-titanium Alloys: *James Coakley*[1]; Vassili Vorontsov[1]; Paul Bagot[2]; Nick Jones[3]; David Dye[1]; [1]Imperial College London; [2]Oxford University; [3]University of Cambridge

9:40 AM
The Influence of Oxygen on the Omega Formation in Ti-15Mo-O: *Herbert Boeckels*[1]; Robert Williams[2]; Colin McMillen[1]; William Pennington[1]; Hamish Fraser[2]; Henry Rack[1]; [1]Clemson University; [2]The Ohio State University

10:00 AM Break

10:15 AM
Ti-Mo Alloys: Effects of Composition and Aging Heat Treatment on Microstructure and Mechanical Behavior: *Rubens Caram*[1]; Alessandra Cremasco[1]; Eder Lopes[1]; [1]University of Campinas

10:35 AM
Role of Beta Phase Separation vs Non-classical Pseudospinodal Mechanism on Nucleation of Fine-scale Alpha in Beta Titanium Alloys: *Soumya Nag*[1]; Arun Devaraj[2]; Robert Williams[3]; Amit Behera[1]; Pavani Kami[1]; Yufeng Zheng[3]; Deep Choudhuri[1]; Jaimie Tiley[4]; Hamish Fraser[3]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Pacific Northwest National Laboratory; [3]The Ohio State University; [4]Air Force Research Laboratory

10:55 AM
Composition Non-uniformity Induced Refined Alpha Precipitates in Beta Ti-alloys: *Dong Wang*[1]; Rajarshi Banerjee[1]; Yunzhi Wang[2]; [1]University of North Texas; [2]The Ohio State University

11:15 AM
Ab Initio Study of Vacancy Diffusion in Metastable Beta Ti-Mo Alloys: *Niraj Gupta*[1]; Rajarshi Banerjee[1]; Srinivasan Srivilliputhur[1]; [1]University of North Texas

11:35 AM
The Influence of Heating Rate on Phase Transformations in Ti-3Al-8V-6Cr-4Mo-4Zr: *Herbert Boeckels*[1]; Henry Rack[1]; [1]Clemson University

11:55 AM
Nucleation Mechanism of Super-refined Alpha Microstructure in Beta Titanium Alloys: *Yufeng Zheng*[1]; R. E. A. Williams[1]; P. Kami[2]; S. Nag[2]; Y. Gao[1]; D. Wang[2]; R. Shi[1]; Y. Wang[1]; R. Banerjee[2]; H. L. Fraser[1]; [1]The Ohio State University; [2]University of North Texas

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Modeling — Simulation and Modeling

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Peter Hosemann, University of California Berkeley; Julie Tucker, Knolls Atomic Power Laboratory; James Cole, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

Tuesday AM
February 18, 2014
Room: 33B
Location: San Diego Convention Center

Session Chair: Julie Tucker, Oregon State University

8:30 AM
Multiscale Modeling of Defect Cluster Evolution in Irradiated Structural Materials: *Brian Wirth*[1]; Donghua Xu[1]; Aaron Kohnert[1]; [1]University of Tennessee

9:10 AM
A First-principles Model for the Effect of He Damage on Mechanical Properties of Tungsten Alloys: *Duc Nguyen-Manh*[1]; S.L. Dudarev[1]; C.S. Becquart[2]; C. Domain[3]; [1]Culham Centre for Fusion Energy; [2]Universite de Lille; [3]EDF-R&D

9:30 AM
Calculation of Displacement Doses for Ion Beam Simulation of Neutron Damage in Metals and Structural Alloys: M. Bratchenko[1]; *V. Bryk*[1]; S. Dyuldya[1]; A. Kalchenko[1]; N. Lazarev[1]; V. Voyevodin[1]; Frank Garner[2]; M. Toloczko[3]; L. Greenwood[3]; [1]Kharkov Institute of Physics and Technology; [2]Radiation Effects Consulting; [3]Pacific Northwest National Laboratory

9:50 AM
Effects of Strain on Damage Generation in bcc Fe: *Benjamin Beeler*[1]; Mark Asta[2]; Peter Hosemann[2]; Niels Grønbech-Jensen[1]; [1]University of California, Davis; [2]University of California, Berkeley

10:10 AM Break

10:30 AM
Combined First-principle and CALPHAD Modeling of Multi-phase Mn-Ni-Si-rich Precipitation in RPV Steels: *Huibin Ke*[1]; Wei Xiong[1]; Leland Barnard[1]; Ramanathan Krishnamurthy[1]; Dane Morgan[1]; Peter Wells[2]; Nicholas Cunningham[2]; George Odette[2]; [1]University of Wisconsin-Madison; [2]University of California-Santa Barbara

10:50 AM
Modeling the Effect of Irradiation on Plasticity and Creep in Zr and Zircoloy: *Alankar Alankar*[1]; Ricardo Lebensohn[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory

11:10 AM
Novel View of the Effect of Crystal Lattice on Novel View of the Effect of Crystal Lattice on Microstructure Evolution in Irradiated Metallic Materials: *Stanislav Golubov*[1]; Bachu Singh[2]; Alexander Barashev[1]; Roger Stoller[1]; [1]ORNL; [2]RISO National Laboratory, Technical University of Denmark

11:30 AM
Tuning Ideal Tensile Strengths and Intrinsic Ductility of BCC Refractory Alloys: *Liang Qi*[1]; Daryl Chrzan[1]; [1]University of California,Berkeley

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Strain and Plasticity

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Materials Characterization Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Marko Knezevic, University of New Hampshire; Irene Beyerlein, Los Alamos National Laboratory

Tuesday AM
February 18, 2014
Room: 8
Location: San Diego Convention Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratory

8:30 AM Invited
3D Probing of Dislocations and Strain Gradients near Buried Interfaces at Mesoscale: *Rozaliya Barabash*[1]; [1]Oak Ridge National Laboratory

9:00 AM
Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms in Superalloys at Elevated Temperatures: *Jennifer Carter*[1]; Michael Mills[2]; Somnath Ghosh[3]; [1]Case Western Reserve University; [2]The Ohio State University; [3]Johns Hopkins University

9:20 AM
Plastic Deformation in Polycrystalline Cu: A Comparison between nf-HEDM Experiment and Full-field VPFFT Model: *Reeju Pokharel*[1]; Jonathan Lind[1]; Shiu Fai Li[2]; Peter Kenesei[3]; Ricardo Lebensohn[4]; Anthony Rollett[1]; Robert Suter[1]; [1]CMU; [2]Lawrence Livermore National Laboratory; [3]Argonne National Laboratory; [4]Los Alamos National Lab

9:40 AM Invited
High Resolution Reciprocal Space Mapping Revealing Reversible Changes in Deformation Structures during Unloading and Reloading in Tension: *Wolfgang Pantleon*[1]; Felix Thiel[2]; Ulrich Lienert[3]; [1]Technical University of Denmark; [2]TU Bergakademie Freiberg; [3]DESY Photon Science

10:10 AM Break

10:30 AM Invited
Interaction between Dislocations and Lath Boundaries during High Temperature Deformation in 9Cr Heat-Resistant Steel: *Masatoshi Mitsuhara*[1]; Masaki Miake[1]; Shigeto Yamasaki[1]; Satoshi Hata[1]; Hideharu Nakashima[1]; Minoru Nishida[1]; Junichi Kusumoto[2]; Akihiro Kanaya[2]; [1]Kyushu University; [2]Kyushu Electric Power Co. Inc.

11:00 AM
Combining Discrete Dislocation Dynamics with Scanning Transmission Electron Microscopy Image Simulations: Caizhi Zhou[1]; Richard LeSar[2]; *Marc De Graef*[3]; [1]Missouri University of Science and Technology; [2]Iowa State University; [3]Carnegie Mellon University

11:20 AM
Studying the Deformation of Metals Using EBSD and High Resolution DIC: *Joao Fonseca*[1]; [1]The University of Manchester

11:40 AM
Atomic Imaging of Edge Dislocation and Twin in MnS Inclusion Embedded in a Stainless Steel: *Yang-Tao Zhou*[1]; Zhang Bo[1]; Ma Xiu-liang[1]; [1]Institute of Metal Research

Advanced Composites for Aerospace, Marine, and Land Applications — Mechanical and Material Property Evaluation

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Michael Peretti, GE Aviation; Tirumalai Srivatsan, The University of Akron

Tuesday AM
February 18, 2014
Room: 6F
Location: San Diego Convention Center

Session Chairs: Yang Ren, Argonne National Laboratory; C.K.H. Dharan, University of California, Berkeley

8:30 AM Invited
A New Class of Metal Nanocomposites with Superior Mechanical Properties: Unusual Thermal Expansion in NbTi-Nanowires/TiNi-matrix Composite: Shijie Hao[1]; Daqiang Jiang[1]; Cun Yu[1]; Lishan Cui[1]; *Yang Ren*[2]; [1]China University of Petroleum; [2]Argonne National Laboratory

9:10 AM
Thermo-mechanical Response and Damping Behavior of Shape Memory Alloy-MAX Phase Composites: *Ankush Kothalkar*[1]; Rogelio Benitez[1]; Liangfa Hu[1]; Miladin Radovic[1]; Ibrahim Karaman[1]; [1]Texas A&M University

9:30 AM
Cyclic Loading Effects on Carbon Nanotube/Glass Fiber Composites: *C.K.H. Dharan*[1]; [1]University of California, Berkeley

9:50 AM
Data-fusion NDE for Progressive Damage Quantification in Composites: *Jefferson Cuadra*[1]; Prashanth Vanniamparambil[1]; Kavan Hazeli[1]; Ivan Bartoli[1]; Antonios Kontsos[1]; [1]Drexel University

10:10 AM Break

10:30 AM
Computational Prediction of Mechanical Properties of Glassy Polymer Blends and Thermosets: *David Rigby*[1]; Paul Saxe[1]; Clive Freeman[1]; Benoit Leblanc[1]; [1]Materials Design, Inc.

10:50 AM
Multiscale Characterization of SiC/SiC Composite Materials: *David Frazer*[1]; Christina Back[2]; Christian Deck[2]; Peter Hosemann[1]; Manuel Abad[1]; [1]University of California, Berkeley; [2]General Atomics

11:10 AM Invited
Processing Fracture Toughness and Damage Mechanics Studies on Metal Matrix Composites for Aerospace Applications: Ajit Bhandakkar[1]; *R C*[1]; Shankar ML Sastry[2]; [1]IIT, Bombay; [2]WUSTL

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion II — Wide Bandgap Semiconductors Materials 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; Michael McHenry, Carnegie Mellon University; Matthew Willard, Case Western Reserve University; Rachael Myers-Ward, NRL; Mike Lanagan, Penn State University; Clive Randall, Penn State University

Tuesday AM
February 18, 2014
Room: Cardiff
Location: San Diego Marriott Marquis & Marina

Session Chair: Travis Anderson, Naval Research Laboratory

8:30 AM Invited
Progress in 4H SiC Wafers and Epitaxy for Power Electronics Applications: *Darren Hansen*[1]; Mark Loboda[1]; Stephan Mueller[1]; Jie Zhang[1]; Bernd Thomas[1]; Jeff Quast[1]; Ian Manning[1]; Clinton Whiteley[1]; Gil Chung[1]; [1]Dow Corning Compound Semiconductor

9:00 AM Invited
Silicon Carbide in Power Electronics: Overcoming the Obstacle of Bipolar Degradation: *Birgit Kallinger*[1]; Christian Ehlers[1]; Patrick Berwian[1]; Jochen Friedrich[1]; Mathias Rommel[1]; [1]Fraunhofer IISB

9:30 AM
Growth of Thick, On-axis SiC Epitaxial Layers by High Temperature Halide CVD for High Voltage Power Devices: Mark Fanton[1]; *David Snyder*[1]; Marek Skowronski[2]; Randall Cavalero[1]; Kathy Trumbull[1]; Greg Pastir[1]; Brian Weiland[1]; [1]Penn State Applied Research Lab; [2]Carnegie Mellon University

9:50 AM Break

10:10 AM
Interface Fermi Level Unpinning in Ni/4H-SiC Schottky Diodes Fabricated on Epilayers Grown by Tetrafluorosilane-based Chemical Vapor Deposition: *Sabih Omar*[1]; Tawhid Rana[1]; MVS Chandrashekhar[1]; Tangali Sudarshan[1]; [1]University of South Carolina

10:30 AM Invited
Materials Issues for GaN-based HEMTs for Power Electronics: *James Speck*[1]; [1]University of California, Santa Barbara

11:00 AM
Point Defect Control in Power III-Nitride Semiconductors: *Benjamin Gaddy*[1]; Isaac Bryan[1]; Zachary Bryan[1]; Ronny Kirste[1]; Marc Hoffmann[1]; Baxter Moody[2]; Rafael Dalmau[2]; Ramon Collazo[1]; Zlatko Sitar[1]; Douglas Irving[1]; [1]North Carolina State University; [2]HexaTech, Inc

Advances in Surface Engineering: Alloyed and Composite Coatings III — High Temperature Coatings

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Jeff De Hosson, Univ of Groningen; Roger Narayan, University of North Carolina and North Carolina State University; Efstathios (Stathis) Meletis, University of Texas at Arlington; Virendra Singh, Schlumberger Rosharon Campus; Srinivasa Bakshi, Indian Institute of Technology-Madras; Mathieu Brochu, McGill University; Arvind Agarwal, Florida International University; Jian Luo, UC San Diego; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS; Choong-un Kim, University of Texas at Arlington; Amit Pandey, Rolls Royce LG Fuel Cell

Tuesday AM
February 18, 2014
Room: 1B
Location: San Diego Convention Center

Session Chair: Arvind Agarwal, Florida International University

8:30 AM Invited
High Temperature Coating Design using Interdiffusion Microstructure Maps: *John Morral*[1]; Xiaoqin Ke[1]; Yunzhi Wang[1]; [1]The Ohio State University

8:50 AM Invited
In Situ TEM Studies of Thermal Stability of FIB-prepared TEM Samples: *Suneel Kodambaka*[1]; Isabelle Jouanny[1]; Chilan Ngo[1]; Justinas Palisaitis[2]; Paul Mayrhofer[3]; Lars Hultman[2]; Per Persson[2]; [1]University of California, Los Angeles (UCLA); [2]Linköping University; [3]Vienna University of Technology

9:10 AM Invited
Thermal Sprayed Coatings for Heat Exchangers in Heat Storage Applications: *Patrick Masset*[1]; Sebastian Schuster[1]; [1]Fraunhofer UMSICHT

9:30 AM
Thermodynamic High-temperature Stability in Nano Metallic Multilayers: *Mikhail Polyakov*[1]; Andrea Hodge[1]; [1]University of Southern California

9:45 AM
High Temperature Oxidation of Nanostructured NiCoCrAlY: *Cory Kaplin*[1]; Mathieu Brochu[1]; [1]McGill University

10:00 AM Invited
High Temperature Corrosion Behaviour of Nanostructured Co-Al Coating: *Jayaganthan R*[1]; Atikur Rahman[2]; [1]IIT Roorkee; [2]NIT Srinagar

10:20 AM Break

10:30 AM
Microstructure and Optical Appearance of Friction Stir Processed and Anodized Al-TiO_2 Surface Composites: *Visweswara Gudla*[1]; Flemming Jensen[1]; Stela Canulescu[1]; Aude Simar[2]; Rajashekhara Shabadi[3]; Jørgen Schou[1]; Rajan Ambat[1]; [1]Technical University of Denmark; [2]Université catholique de Louvain; [3]Universite Lille1

10:45 AM
Effects of Thermal Oxidation Process on Surface Hardness and Wear Properties of Ti-6Al-4V Alloy: *Sarala Upadhya*[1]; Muralidhara B K[1]; [1]University Visvesvaraya College Engineering

11:00 AM
Oxidation Studies of HVAS-sprayed Nanostructured Coatings at Elevated Temperature: *V N Shukla*[1]; R Jayaganthan[1]; V K Tewari[1]; [1]Indian Institute of Technology, Roorkee

11:15 AM
STEM Investigations on Element Redistribution at Interfaces in a Thermal Barrier Coating after Isothermal Oxidation: *Y.L. Zhu*[1]; Y.Z. Liu[1]; H. Wei[2]; X.L. Ma[1]; [1]Shenyang National Lab for Materials Science, Institute of Metal Research, Chinese Academy of Sciences,; [2]Institute of Metal Research, Chinese Academy of Sciences,

11:30 AM
Original Coating & Surface Treatment Solutions for Temporarily Protecting a Water-sensitive Material: *Manuel Marya*[1]; Virendra Singh[1];

Indranil Roy[1]; Tatiana Reyes Hernandez[1]; Timothy Dunne[1]; Chunnong Wang[1]; [1]Schlumberger Technology Corporation

Algorithm Development in Computational Materials Science and Engineering — Towards Higher Length Scales: Mesoscale Modeling and Scale Bridging: Part I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Douglas Spearot, University of Arkansas; Adrian Sabau, Oak Ridge National Laboratory; Mark Tschopp, Army Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology

Tuesday AM — Room: 31B
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Adrian Sabau, Oak Ridge National Laboratory; Ryan Sills, Stanford University

8:30 AM Invited
Characterizing Interface Dislocations by Atomically Informed Frank-Bilby Theory: *Jian Wang*[1]; Ruifeng Zhang[1]; Caizhi Zhou[1]; Irene Beyerlein[1]; Amit Misra[1]; [1]Los Alamos National Laboratory

9:10 AM
Advanced Time Integration Algorithms for Dislocation Dynamics: *Ryan Sills*[1]; Wei Cai[1]; [1]Stanford University

9:30 AM
Temperature and Strain Rate Effects on the Dislocation Plasticity of BCC Transition Metals: *Hojun Lim*[1]; Christopher Weinberger[1]; Corbett Battaile[1]; Jay Carroll[1]; Brad Boyce[1]; [1]Sandia National Laboratories

9:50 AM
Refining the FFT Method for Full-field Micro-mechanical Problems: Ricardo Lebensohn[1]; Benjamin Anglin[2]; Richard Lesar[3]; *Anthony Rollett*[2]; [1]Los Alamos National Laboratory.; [2]Carnegie Mellon University; [3]Iowa State University

10:10 AM Break

10:30 AM
Implementation of Cross Slip Mechanisms in Discrete Dislocation Dynamics Simulations: *Ahmed Hussein*[1]; Satish Rao[2]; Michael Uchic[3]; Jaafar El-Awady[1]; [1]Johns Hopkins University; [2]UES Inc.; [3]Air Force Research Laboratory AFRL/RXCM

10:50 AM
Numerical Integration of a Crystal Plasticity Model with Additional Slip Constraints Imposed by Material Interfaces: *Jason Mayeur*[1]; Irene Beyerlein[1]; Curt Bronkhorst[1]; Hashem Mourad[1]; [1]Los Alamos National Laboratory

11:10 AM
FFT-based Micromechanical Modeling of Polycrystalline Materials: New Algorithms for Complex Constitutive Behaviors: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

Alumina and Bauxite — Process Control

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Ian Duncan, Hatch Ltd

Tuesday AM — Room: 15B
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Carlos Suarez, Ma'aden Aluminium Company

8:30 AM Introductory Comments

8:35 AM
Votorantim Metais – CBA Alumina Refinery Precipitation Modeling: *Thiago Franco*[1]; Roberto Seno[1]; [1]CBA / Votorantim Metais

9:00 AM
Value of Systems Integration to Optimize Operation in Alumina Refineries: *Hugues Tremblay*[1]; [1]Hatch

9:25 AM
Study of Influences on the Bauxite Moisture and Solids in Filtrate in the Hyperbaric Filters through Design of Experiments (DOE) Statistic Tool: *Enio Silva*[1]; Américo Borges[1]; Alex Pinheiro[1]; [1]Hydro Alunorte

9:50 AM
Increased Operational Flexibility in CFB Alumina Calcination: *Linus Perander*[1]; Ioannis Chatzilamprou[1]; Cornelis Klett[1]; [1]Outotec

10:15 AM
Increasing Extraction Efficiency Using a Closed Grinding Circuit: *Júlia Meira*[1]; Roberto Seno[1]; [1]CBA - Votorantim Metais

Aluminum Alloys: Development, Characterization and Applications — Processing, Texture and Formability

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Xiyu Wen, University of Kentucky

Tuesday AM — Room: 12
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Xiyu Wen, University of Kentucky

8:30 AM
An Experimental and Modeling Investigation on High-rate Formability of Aluminum: *Aashish Rohatgi*[1]; Richard Davies[1]; Ayoub Soulami[1]; Elizabeth Stephens[1]; Mark Smith[1]; [1]Pacific Northwest National Laboratory

8:50 AM
Comparison of Microstructure, Texture and Formability between Direct Chill and Continuous Casting 5xxx Aluminum Alloy Sheets at O Temper: *Xiyu Wen*[1]; Jingwu Zhang[2]; Shridas Ningileri[3]; [1]University of Kentucky; [2]Yanshan University; [3]Secat Inc.

9:10 AM
Influence of Chemical Composition and Process Parameters on Mechanical Properties and Formability of AlMgSi-scheets for Automotive Application: *Ramona Prillhofer*[1]; Josef Berneder[1]; Gunther Rank[1]; Helmut Antrekowitsch[2]; Peter Uggowitzer[3]; Stefan Pogatscher[3]; [1]AMAG Rolling GmbH; [2]Montanuniversität Leoben; [3]ETH-Zürich

9:30 AM
Investigation of Superplastic Forming Properties in the Multipass Friction Stir Processed Al-Mg Alloy: *Vivek Pancholi*[1]; Pradeep Shivanna[1]; [1]Indian Institute of Technology Roorkee

9:50 AM
Friction Stir Back Extruded Aluminum Tubes: Mechanical Properties and Microstructural Evolution: *Fadi Abu-Farha*[1]; [1]Clemson University

10:10 AM Break

10:25 AM
High Strength Aluminum Brazing Sheets for Condenser Fins of Automotive Heat Exchangers: *Kwangjun Euh*[1]; Hyoung-Wook Kim[1]; Su-Hyeon Kim[1]; [1]Korea Institute of Materials Science

10:45 AM
Al-0.6 wt. % Sc Alloy Processed through Spray Forming and Powder Metallurgical Routes: *Harshal Agrawal*[1]; Raghukiran Nadimpalli[2]; Ravi Kumar[2]; [1]Visvesvaraya National Institute of Technology, Nagpur; [2]Indian Institute of Technology, Madras

11:05 AM
Flow Stress Behavior of Hypereutectic Al-Si Alloy: *Ying Zhang*[1]; [1]CHALCO

11:25 AM
High-temperature Processes Occurring during Homogenization of AA6082 Aluminum Alloy: *Miroslav Cieslar*[1]; Jan Bajer[1]; Michal Hajek[1]; Vladivoj Ocenasek[2]; [1]Charles University in Prague; [2]SVUM a.s.

11:45 AM
Microstructural Effects on Deformation Behavior of Al-Cu-Li Alloys: *Ramasis Goswami*[1]; [1]Naval Research Laboratory

Aluminum Processing — Aluminum Processing: Extrusion & Miscellaneous Processes

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

Tuesday AM
February 18, 2014
Room: 13
Location: San Diego Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM
AL-Ceramic Composites Liquid Metal Mixed, History: Hot Work Microstructures, Failures, Constitutive, Extrusion Modeling: *Hugh McQueen*[1]; Enrico Evangelista[2]; [1]Concordia University; [2]University of Ancona

8:55 AM
A Study of the Effects of Homogenization Scenarios and Extrusion Conditions on Recrystallization Mechanisms via Analysis of Texture and Microstructure Evolution in AA3003 Alloy: *Jingqi Chen*[1]; Warren Poole[1]; Lina Grajales[1]; Nick Parson[2]; [1]The University of British Columbia; [2]Rio Tinto Alcan

9:15 AM
A Numerical and Experimental Study of Homogenization of Al-Si-Mg Alloys: *Pikee Priya*[1]; Matthew Krane[1]; David Johnson[1]; [1]Purdue University

9:35 AM
Development of Extremely Thin Wall Aluminum Fin Tube by Hot Extrusion: Sanjay Jha[1]; *N Saibaba*[1]; Kumar Vaibhaw[1]; GVS Rao[1]; [1]Nuclear Fuel Complex

9:55 AM
Effect of Mg2Si Phase on Extrusion of AA6005 Aluminum Alloy: *Yiwei Sun*[1]; David Johnson[1]; Kevin Trumble[1]; Pikee Priya[1]; Matthew Krane[1]; [1]Purdue University

10:15 AM Break

10:30 AM
Warm Forming of High-strength Al-Zn-Mg Alloys for Car Body Applications: Paolo Matteis[1]; Graziano Ubertalli[1]; Giorgio Scavino[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

10:50 AM
Shaping the Mechanical Properties by Heat Treating the Cast Alloy AlSi30 Obtained by Rapid Solidification: *Dawid Kapinos*[1]; Marcin Szymanek[1]; [1]Institute of Non - Ferrous Metals

11:10 AM
Analysis of the Evolution and Deformation of Pore Morphology during Compression: *Li Wei*[1]; Tingan Zhang[2]; Yuan Fang[1]; Yunan Tian[1]; [1]Shenyang Ligong University; [2]Northeastern University

11:30 AM
Friction Stir Processing and Welding of Wrought and Cast Aluminum Alloys: Property Evaluations and Novel Applications: *Yi Pan*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institution

Aluminum Reduction Technology — Cell Design and Performance - Cathodes and Anodes Joint Session with Electrode Technology

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Margaret Hyland, University of Auckland

Tuesday AM
February 18, 2014
Room: 14A
Location: San Diego Convention Center

Session Chair: Arne Petter Ratvik, SINTEF

8:30 AM Introductory Comments

8:35 AM
Influence of the Cathode Surface Geometry on the Metal Pad Current Density: *Marc Dupuis*[1]; Valdis Bojarevics[2]; [1]GéniSim Inc; [2]Greenwich University

9:00 AM
On the Influence of MHD Driven Convection on Cathode Wear: *Kristian Etienne Einarsrud*[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; [1]SINTEF

9:25 AM
Effect of Innovative Cathode on Bath/Metal Interface Fluctuation in Aluminum Electrolytic Cell: *Qiang Wang*[1]; Baokuan Li[1]; Naixiang Feng[1]; [1]Northeastern University of China

9:50 AM
Simulation and Optimization of Cathode Current Distribution to Reduce the Hortizontal Current in the Aluminum Liquid: Wangxing Li[1]; Yanfang Zhang[1]; *Dengpeng Chai*[2]; Jianhong Ynag[2]; Shilin Qiu[2]; Yueyong Wang[2]; [1]School of Metallurgy and Enviroment, Central South University; [2]Zhengzhou Research Institute of Chalco

10:15 AM Break

10:30 AM
Numerical Simulation of Full Lifecycle Cathode Assembly Performances for Design Optimization: *Guorong Cao*[1]; Xinquan Zhang[2]; Hao Zhang[1]; [1]Pacific Aluminium; [2]Rio Tinto Alcan

10:55 AM
Bar to Block Contact Resistance in Aluminum Reduction Cell Cathode Assemblies: *Richard Beeler*[1]; [1]Alcoa Inc

11:20 AM
Anode Rod to Beam Contact.: *David Molenaar*[1]; Tony Kilpatrick[1]; [1]CSIRO

11:45 AM
Towards Decreasing Energy Consumption of Aluminum Reduction by Using Anodes with Holes and Channels: *Feng Naixiang*[1]; PENG Jianping[1]; Zhan Lei[2]; He Hua[2]; [1]Northeastern University; [2]Ningxia Qingtongxia Energy Aluminum Group Co., Ltd

Biological Materials Science Symposium — Multi-scale Characterization and Modeling of Biological Materials (Joint session with Characterization of Minerals, Metals and Materials 2014 Symposium)

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Po-Yu Chen, National Tsing Hua University; Rajendra Kasinath, Johnson and Johnson Company; Dwayne Arola, University of Washington; Kalpana Katti, North Dakota State University

Tuesday AM
February 18, 2014
Room: 33A
Location: San Diego Convention Center

Session Chairs: Kalpana Katti, North Dakota State University; John Nychka, University of Alberta

8:30 AM Invited
Engineering Science and Mechanics as Key to the Mathematical Identification of "Universal" Patterns Pervading Mineralized Biological Tissues, and Beyond: *Christian Hellmich*[1]; [1]Vienna University of Technology

9:00 AM
Deciphering Interfacial Chemomechanics in Biomaterial Interfaces Using Nanomechanical Spectroscopy Combined with Molecular Simulations: Tao Qu[1]; Yang Zhang[1]; *Vikas Tomar*[1]; [1]Purdue University

9:20 AM
Fracture Toughness of Geologic and Biogenic Calcite Using Nanoindentation: *Shefford Baker*[1]; Lauren Mangano[1]; Miki Kunitake[1]; Lara Estroff[1]; [1]Cornell University

9:40 AM
Hybrid Nanoparticle Architecture for Cellular Uptake and Bioimaging: *Dilip Depan*[1]; R.D.K. Misra[1]; [1]University of Louisiana at Lafayette

10:00 AM Break

10:10 AM Keynote
Biomaterials by Design: Modeling, Synthesis, Testing: *Markus Buehler*[1]; [1]Massachusetts Institute of Technology

10:50 AM
Compositional Characterization of Kidney Stones Using Thermal Methods: *Naina Raje*[1]; Bhupesh Kalekar[1]; Darshana Ghonge[1]; Alok Srivastava[2]; AVR Reddy[1]; [1]BARC; [2]University

11:10 AM
Nano Scale Structure and Mechanical Properties of Hydrogels: *Hossein Salahshoor*[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute

11:30 AM Invited
Biomechanical Approaches to Study Red Blood Cell-borne Diseases: Ming Dao[1]; [1]Massachusetts Institute of Technology

Bulk Metallic Glasses XI — Structures and Mechanical Properties II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; H. Choo, University of Tennessee; Y. Gao, University of Tennessee; Y. F. Shi, Rensselaer Polytechnic Institute

Tuesday AM
February 18, 2014
Room: 2
Location: San Diego Convention Center

Session Chairs: Takeshi Egami, University of Tennessee; Katharine Flores, Washington University

8:30 AM Keynote
Atomistic Mechanism of Metallic Glass Formation: *Takeshi Egami*[1]; [1]University of Tennessee

9:00 AM
Crystallization Mechanisms and Structural Relaxation in Cu-Zr Metallic Glasses: *Ilkay Kalay*[1]; Eren Kalay[2]; Matthew Kramer[3]; Ralph Napolitano[4]; [1]Cankaya University; [2]Middle East Technical University; [3]Ames Laboratory US DOE; [4]Iowa State University

9:10 AM Invited
Slip Avalanches in Amorphous Metals: Wendelin Wright[1]; Rachel Byer[1]; Xiajun Gu[1]; *Todd Hufnagel*[2]; James Antonaglia[3]; Jonathan Uhl[4]; Karin Dahmen[3]; [1]Bucknell University; [2]Johns Hopkins University; [3]University of Illinois-Urbana Champaign; [4]Retired

9:30 AM
Recovering Compressive Plasticity of BMGs by Thermo-creep: *Yang Tong*[1]; W. Dmowksi[1]; Y. Yokoyama[2]; G. Y. Wang[1]; P. K. Liaw[1]; T. Egami[1]; [1]The University of Tennesee-Knoxville; [2]Institute for Materials Research,Tohoku University

9:40 AM Invited
Atomistic Mechanism of the Thermo-mechanical Creep in BMG: *Wojciech Dmowski*[1]; Yang Tong[1]; Takuya Iwashita[1]; Takeshi Egami[1]; [1]University of Tennessee

10:00 AM Break

10:20 AM Invited
Fracture Behavior of Metallic Glasses in Bending vs. Tension: Bernd Gludovatz[1]; Jamie Kruzic[2]; Marios Demetriou[3]; William Johnson[3]; *Robert Ritchie*[1]; [1]Lawrence Berkeley National Laboratory; [2]Oregon State University; [3]California Institute of Technology

10:40 AM Invited
Understanding the Mechanical Properties of Metallic Glass Matrix Composites: *Katharine Flores*[1]; Kelly Kranjc[1]; Michael Gibbons[2]; David Riegner[2]; Oscar Restrepo[2]; Douglas Hofmann[3]; Allen Hunter[4]; Emmanuelle Marquis[4]; Wolfgang Windl[2]; [1]Washington University; [2]The Ohio State University; [3]Jet Propulsion Laboratory; [4]University of Michigan

11:00 AM
Investigating the Fracture Mechanics of Wear Resistant, High Glass Forming Bulk Metallic Glasses: *Laura Andersen*[1]; Douglas Hofmann[2]; Kenneth Vecchio[1]; [1]University of California, San Diego; [2]NASA Jet Propulsion Laboratory/California Institute of Technology

11:10 AM Invited
Inhomogeneous Deformation of Bulk Metallic Glasses and Effective Temperature Modeling: *Jörg Löffler*[1]; [1]ETH Zurich

11:30 AM Invited
In Situ High-energy X-ray Diffraction Studies of Deformation-induced Phase Transformation in Ti-based Amorphous Alloy Composites: *Yandong Wang*[1]; Juan Mu[1]; Haifeng Zhang[2]; [1]Northeastern University; [2]Institute of Metal Research, Chinese Academy of Sciences

11:50 AM Invited
Microyielding of Core-shell Crystal Dendrites in a Metallic-glass Matrix Composite Investigated by Complementary In Situ Synchrotron Diffraction Measurements and Molecular-dynamics Simulation: *E-Wen Huang*[1]; Junwei Qiao[2]; Wen-Jay Lee[3]; Peter Liaw[4]; Bartlomiej Winiarski[5]; Mario Scheel[6]; [1]National Central University; [2]Taiyuan University of Technology; [3]National Center for High-Performance Computing; [4]University of Tennessee; [5]University of Manchester; [6]European Synchrotron Radiation Facility

Cast Shop for Aluminum Production — Recycling/ Cast Shop

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Edward Williams, Alcoa

Tuesday AM — Room: 15A
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Anne Kvithyld, SINTEF

8:30 AM Introductory Comments

8:35 AM
Summary of the 2013 International Workshop on Aluminum Recycling: *John Hryn*[1]; Anne Kvithyld; [1]Argonne

8:55 AM
Life Cycle Assessment of Secondary Aluminium Refining: *Gro Gilstad*[1]; Johanne Hammervold[2]; [1]Student NTNU; [2]MiSA AS

9:20 AM
A Material Flow Model for Impurity Accumulation in Beverage Can Recycling Systems: *Amund Lovik*[1]; Daniel Müller[1]; [1]Norwegian University of Science and Technology (NTNU)

9:45 AM
The Viability of a "Voluntary Refund/Deposit System" for U.S. Aluminum Can Recycling: *Jack Buffington*[1]; [1]Royal Institute of Technology/MillerCoors

10:10 AM Break

10:25 AM
Operational Strategies for Two Stage Aluminum Remelter Operations: Increasing Scrap Use: *Elsa Olivetti*[1]; Jiyoun Chang[1]; Randolph Kirchain[1]; [1]MIT

10:45 AM
Oxide Skin Strength Measurements on Molten Aluminum-manganese Alloys With and Without Salt on Surface: *Martin Syvertsen*[1]; [1]SINTEF Materials and Chemistry

11:10 AM
Oxidation of Manganese-containing Aluminum Alloys: *Shawn Wilson*[1]; Thorvald Abel Engh[2]; Gabriella Tranell[2]; Anne Kvithyld[1]; [1]SINTEF Materials and Chemistry; [2]NTNU

11:35 AM
Development of a Sampling Device for Melting Furnace Dross: *Anne Kvithyld*[1]; Sarina Bao[1]; Arne Nordmark[1]; Mark Schlesinger[2]; Anders Johansson[3]; [1]SINTEF Materials and Chemistry; [2]Missouri University of Science and Technology; [3]Sapa Heat Transfer

Celebrating the Megascale: An EPD Symposium in Honor of David G.C.Robertson — Non-Ferrous Smelting, Converting, and Refining

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Phillip Mackey, P.J. Mackey Technology; Rodney Jones, Mintek; Eric Grimsey, Curtin University, W A School of Mines; Geoffrey Brooks, Swinburne University of Technology

Tuesday AM — Room: 16A
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Michael Moats, Missouri University of Science and Technology; Katie Schumacher, Stillwater Mining Corporation

8:30 AM Introductory Comments

8:35 AM Invited
Redoubling Platinum Group Metal Smelting Intensity - Operational Challenges and Solutions: *Rodney Hundermark*[1]; Lloyd Nelson[1]; Bertus de Villiers[1]; July Ndlovu[1]; Diale Mokwena[1]; Phillimon Mukumbe[1]; Bart Pieterse[1]; Whitey Seyanund[1]; Paul van Manen[1]; [1]Anglo American Platinum

8:55 AM Invited
Pyrometallurgical Processing Technologies for Treating High Arsenic Copper Concentrates: *Patrick Taylor*[1]; [1]Colorado School of Mines

9:15 AM
Arsenic and Antimony Capacities in Ni-Cu Mattes and Slags: *Ramana Reddy*[1]; [1]The University of Alabama

9:35 AM
Quartz-cristobalite Transformation and Its Effect on Reactions in Si Production, Initial Studies: *Eli Ringdalen*[1]; Leiv Kolbeinsen[2]; Merete Tangstad[2]; [1]Sintef Materials and Chemistry; [2]NTNU

9:55 AM Break

10:15 AM Invited
Modifications to a Smelter to Accommodate Recycled Materials: Katie Schumacher[1]; [1]Stillwater Mining Company

10:35 AM Invited
Removal of Pb from Molten Copper by FetO-SiO2(-CaO,Al2O3) Slag Treatment in Mitsubishi Process: *Soo Sang Park*[1]; Joohyun Park[2]; [1]LS-Nikko Copper; [2]Hanyang University

10:55 AM
Simulation of the Gas Flow in a Peirce-Smith Converter: Wagner Moulin Silva[1]; *Bruno Ribeiro Soares*[1]; Felipe Terra Elias[1]; [1]Magnesita Refratarios S.A.

11:15 AM Invited
From Phase Equilibrium and Thermodynamic Modelling to Freeze Linings – The Development of Techniques for the Analysis of Complex Slag Systems: Ata Fallah Mehrjardi[1]; Peter Hayes[1]; *Evgueni Jak*[1]; [1]PYROSEARCH, The University of Queensland

11:35 AM
Modelling Simulation and Comparison of Refractory Corrosion at RHI`s Technology Center: *Dean Gregurek*[1]; Angelika Ressler[1]; Anna Franzkowiak[1]; Alfred Spanring[1]; [1]RHI AG

Characterization of Minerals, Metals and Materials 2014 — Characterization of Environmental Materials

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

Tuesday AM — Room: 7A
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Shadia Ikhmayies, Al Isra University; Jian Li, CanmetMATERIALS

8:30 AM
Subsurface De-alloying during SCW Exposure: *Jian Li*[1]; Yimin Zeng[1]; Wenyue Zheng[1]; Pei Liu[1]; Catherine Bibby[1]; [1]CanmetMATERIALS

8:50 AM
Characterization of Clay Brick Incorporated with Ash from the Incineration of Urban Garbage: *Nicolle Coutinho*[1]; Sergio Monteiro[2]; Carlos Maurício Vieira[1]; [1]Universidade Estadual do Norte Fluminense; [2]Instituto Militar de Engenharia

9:10 AM
Concrete of Steel Slag Composite for Paved Road and Its Hydration Microstructure: Honfei Fang[1]; *Jiann-Yang Hwang*[1]; Gaifenf Xue[1]; Lijun Lu[1]; [1]R&D Center of WISCO

9:30 AM
Direct Precipitation of Sr-doped LaP3O9 Thin Film Electrolytes for Intermediate-temperature Fuel Cells in Condensed Phosphoric Acid Solutions: *Kota Takahashi*[1]; Yoshinobu Adachi[1]; Naoyuki Hatada[1]; Tetsuya[1]; [1]Kyoto University

9:50 AM
Method for Removal of Mercury from Oil Field Brine with Calcium Carbonate Co-precipitation: *Farhad Fazlollahi*[1]; Larry L Baxter[1]; Abdolmohammad Alamdari[1]; Mohammad Mehdi Zarei[1]; [1]Brigham Young University

10:10 AM Break

10:20 AM
Optical Parameters of Thermally Evaporated CdTe Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

10:40 AM
Obtaining the Polystyrene-bentonite Nanocomposite as an Alternative to Polystyrene Discarded Recycling: *Messias Machado*[1]; Hélio Wiebeck[1]; Francisco Valenzuela-Diaz[1]; Maria das Graças Valenzuela.[1]; Valquiria Justo[1]; [1]Universidade de São Paulo-Escola Politécnica

11:00 AM
Modified Hydrotalcites as Desulfurization Adsorbents: Preparation, Characterization, and Performance Test: Andrew Gomes[1]; *Mozammel Mozumder*[1]; David Cocke[1]; Hylton McWhinney[2]; Tracy Benson[1]; [1]Lamar University; [2]Prairie View A&M University

11:20 AM
Thermal Analysis and Characterization of Elephant Grass Ash (Pennisetum Purupureums Shaum) into Clay Matrix: *Roberto Faria*[1]; Aline Silva[1]; Rosane Toledo[1]; Sergio Monteiro[1]; Carlos Vieira[1]; [1]State University of North Rio de Janeiro

11:40 AM
Characterization of High-arsenic Sludge in Copper Metallurgy Plant: *Xing Zhu*[1]; [1]Kunming University of Science and Technology

Computational Modeling and Simulation of Advanced Materials for Energy Applications — MGI, ICME and Education (This is a joint session with Energy Technologies and Carbon Dioxide Management Symposium)

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Lan Li, Boise State University; Laura Bartolo, Kent State University; Cong Wang, Northwestern University; Chandler Becker, NIST

Tuesday AM
February 18, 2014
Room: Mission Hills
Location: San Diego Marriott Marquis & Marina

Session Chair: Laura Bartolo, Kent State University

8:30 AM Introductory Comments

8:35 AM Invited
Materials Genome Approach to Computational Design of Nanostructured Thermoelectrics: Jeff Doak[1]; Shiqiang Hao[1]; *Chris Wolverton*[1]; [1]Northwestern University

9:05 AM Invited
Computational Phase-stability Research and Education in Energy Materials: Some Examples in Hydrogen Storage, Thermoelectrics and Nuclear Materials: *Raymundo Arroyave*[1]; Anchalee Junkaew[1]; Thien Duong[1]; [1]Texas A & M University

9:35 AM Invited
Computational Materials Education and Training in the MGI Era: *Katsuyo Thornton*[1]; Mark Asta[2]; [1]University of Michigan; [2]University of California, Berkeley

10:05 AM Break

10:25 AM Invited
Reaching and Inspiring Student Engineers (RISE) through Simulations Based on Popular Video Games: *Walter Voit*[1]; Ryan Marcotte[1]; [1]UT Dallas

10:55 AM Invited
Energy Education for Engineers: Needs and Opportunities: *Jeffrey Fergus*[1]; [1]Auburn University

11:25 AM Invited
Five Years of Innovation in Energy/Sustainability Education at Northwestern University: *David Dunand*[1]; Mark Ratner[1]; Bradley Sageman; [1]Northwestern University

Computational Thermodynamics and Kinetics — Thermodynamics and Kinetics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Long Qing Chen, Penn State University; Guang Sheng, Scientific Forming Technologies Corporation; Jeffrey Hoyt, McMaster University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Tuesday AM
February 18, 2014
Room: 30D
Location: San Diego Convention Center

Session Chairs: Dane Morgan, University of Wisconsin–Madison; Zi-Kui Liu, The Pennsylvania State University

8:30 AM Invited
The MGI and Computational Thermodynamics and Kinetics: *James Warren*[1]; [1]NIST

8:55 AM Invited
Thermodynamic Origin of Negative Thermal Expansion and Its Applications: *Zi-Kui Liu*[1]; Yi Wang[1]; Shunli Shang[1]; [1]The Pennsylvania State University

9:20 AM Invited
Computational Thermodynamics and Kinetics in Materials Design: *Michele Manuel*[1]; [1]University of Florida

9:45 AM Invited
Thermodynamics and Kinetics of High Temperature Materials: *Anton Van der Ven*[1]; [1]University of California

10:10 AM Break

10:30 AM Invited
Modeling Thermokinetics of Perovskites and Related Oxides for Solid Oxide Fuel Cells: *Dane Morgan*[1]; Yueh-Lin Lee[1]; Milind Gadre[1]; Tam Mayeshiba[1]; Anh Ngo[1]; Yang Shao-Horn[2]; Stuart Adler[3]; [1]University of Wisconsin - Madison; [2]Massachusetts Institute of Technology; [3]University of Washington

10:55 AM Invited
Kinetics of Radiation Defects in Metals Revisited by Ab Initio Calculations: *Mihai-Cosmin Marinica*[1]; Christophe Domain[2]; Alexandre Legris[3]; Rebecca Alexander[1]; Chu-Chun Fu[1]; Francois Willaime[1]; [1]CEA; [2]EDF R&D; [3]CNRS & Université Lille 1

11:20 AM
Thermodynamics and Phase Equilibrium in Nanoalloys: Particles Assemblies: *Mathieu Fevre*[1]; Yann Le Bouar[2]; Alphonse Finel[1]; [1]Onera; [2]Cnrs

11:40 AM
Thermodynamic Investigations in Systems Relevant for Laves-phase Hardened Steels: *Clemens Schmetterer*[1]; Aurelie Jacob[1]; Torsten Markus[1]; [1]Forschungszentrum Juelich GmbH

Data Analytics for Materials Science and Manufacturing — Emerging Big Data Opportunities in Materials Science

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Jeff Simmons, Air Force Research Laboratory; Charles Bouman, Purdue University; Fariba Fahroo, Air Force Office of Scientific Research; Surya Kalidindi, Georgia Institute of Technology; Jeremy Knopp, Air Force Research Laboratory; Peter Voorhees, Northwestern University

Tuesday AM
February 18, 2014
Room: 32B
Location: San Diego Convention Center

Session Chairs: Krishna Rajan, Iowa State University; Carelyn Campbell, National Institute of Standards

8:30 AM Invited
Effective Extraction of Both Impurity Diffusion Coefficients and Interdiffusion Coefficients for Diffusivity Database Establishment: Qiaofu Zhang[1]; *Ji-Cheng Zhao*[1]; [1]The Ohio State University

8:55 AM Invited
Grain Boundary Data as a Big Data Problem: *Gregory Rohrer*[1]; [1]Carnegie Mellon University

9:20 AM Invited
Linking 3D X-ray Imaging and Simulations: *Erik Lauridsen*[1]; [1]Technical University of Denmark

9:45 AM
Fully Automated, High-throughput Powder X-ray Data Analysis: *Bryce Meredig*[1]; Kyle Michel[2]; Greg Mulholland[1]; Chris Wolverton[2]; [1]Citrine Informatics; [2]Northwestern University

10:05 AM Break

10:30 AM Invited
Compressed Sensing for Fast Electron Microscopy: *Hyrum Anderson*[1]; Jason Wheeler[1]; Kurt Larson[1]; [1]Sandia National Laboratories

10:55 AM Invited
Autonomous Research Systems for Materials Science: *Daylond Hooper*[1]; Benji Maruyama[2]; [1]UES, Inc.; [2]AFRL/RXAS

11:20 AM Invited
The Challenge of Combining Massive, High-dimensionality Data Streams from the Atomscope: *Michael Miller*[1]; T. Kelly[2]; K. Rajan[3]; Simon Ringer[4]; [1]Oak Ridge National Laboratory; [2]CAMECA Instruments; [3]Iowa State University; [4]The University of Sydney

Deformation, Damage, and Fracture of Light Metals and Alloys III — Mg Alloys

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday AM
February 18, 2014
Room: 19
Location: San Diego Convention Center

Session Chair: Qizhen Li, University of Nevada, Reno

8:30 AM Invited
Deformation Anisotropy of HCP Single Crystals under Nanoindentation: *Yanfei Gao*[1]; Jonghan Kwon[2]; Michael Mills[2]; Dhiraj Catoor[3]; Lin Li[1]; George Pharr[1]; Easo George[3]; [1]University of Tennessee; [2]Ohio State University; [3]Oak Ridge National Laboratory

9:00 AM
In Situ Compression Study of Small-scale Mg Single Crystals: *Jiwon Jeong*[1]; Ruth Treml[2]; Daniel Kiener[2]; Sang Ho Oh[1]; [1]POSTECH; [2]Montanuniversität Leoben

9:20 AM
Dislocation Structure of <0001> Mg Single Crystal under Quasi-static and Dynamic Loading Compressions: *Kelvin Xie*[1]; Neha Dixit[1]; Simon Lockyer-Bratton[1]; K.T. Ramesh[1]; Kevin Hemker[1]; [1]Johns Hopkins University

9:40 AM
Corrosion Fatigue Behavior of an Extruded AM30 Magnesium Alloy in Sodium Chloride Solution Environment: *Weiwei Song*[1]; Holly Martin[1]; Marcos Lugo[1]; Christopher Walton[1]; Mark Horstemeyer[1]; Paul Wang[1]; [1]Mississippi State University

10:00 AM Break

10:15 AM
Study of Plastic Deformation in a Wrought Magnesium Alloy by Real-time In Situ Neutron and Synchrotron X-ray Microbeam Diffraction: *Wei Wu*[1]; Ke An[2]; Hua Qiao[3]; Peidong Wu[3]; Yanfei Gao[1]; Wenjun Liu[4]; Peter Liaw[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory; [3]McMaster University; [4]Argonne National Laboratory

10:35 AM
Deformation Behavior of $AZ_{31}B$ Magnesium Alloy during Uniaxial Loading: In Situ Neutron Diffraction and EVPSC Modeling: *Cheol Yoon*[1]; Wei Wu[2]; Huamiao Wang[3]; Peidong Wu[3]; Michael Gharghouri[4]; Jinru Luo[4]; Anna Paradowska[5]; Ke An[6]; Peter Liaw[2]; Soo Yeol Lee[1]; [1]Chungnam National University; [2]The University of Tennessee; [3]McMaster University; [4]Canadian Neutron Beam Centre; [5]Australian Nuclear Science and Technology Organisation; [6]Oak Ridge National Laboratory

10:55 AM
Influence of Texture on Hall-Petch Relationship in a Mg Alloy: *Yi Wang*[1]; Hahn Choo[1]; [1]University of Tennessee

11:15 AM
Effects of Microstructure on Deformation Behaviour of $AZ_{91}D$ Cast Alloy: *Hoda Dini*[1]; Nils-Eric Andersson[1]; Anders Jarfors[1]; [1]Jönköping University, School of Engineering

11:35 AM
Stacking Faults and Deformation Mechanisms in Mg-Y Alloys: *Dalong Zhang*[1]; Baolong Zheng[1]; Yizhang Zhou[1]; Enrique Lavernia[1]; Suveen Mathaudhu; [1]University of California-Davis

Dynamic Behavior of Materials VI – An SMD Symposium in Honor of Professor Marc Meyers — Simulations and Modeling of Phase Transformations and Reactions

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Tuesday AM
February 18, 2014
Room: 3
Location: San Diego Convention Center

Session Chairs: Bruce Remington, Lawrence Livermore National Laboratory; Eugene Olevsky, San Diego State University

8:30 AM Keynote
Atomic Level Calculations of Spall and Phase Transformations: *Michael Baskes*[1]; Niraj Gupta[2]; Srivilliputhur Srinivasan[2]; [1]UCSD; [2]University of North Texas

9:00 AM Invited
Plastic Activity Due to Deformation of Nanovoids: *Eduardo Bringa*[1]; Diego Tramontina[1]; Carlos Ruestes[1]; Joaquin Rodriguez-Nieva[1]; Yizhe Tang[2]; Marc A. Meyers[2]; [1]CONICET- Universidad Nacional de Cuyo; [2]University of California, San Diego

9:20 AM
Stress-induced Grain Growth in High Strain-rate Simulations of Al-Al Sliding Interfaces: *Jacqueline Milhans*[1]; James Hammerberg[1]; Ramon Ravelo[1]; Timothy Germann[1]; Brian Holian[1]; [1]Los Alamos National Laboratory

9:40 AM
Micromechanics of Dynamic Solid-to-solid Phase Transformations: Francis Addessio[1]; Turab Lookman[1]; *Curt Bronkhorst*[1]; Don Brown[1]; Ellen Cerreta[1]; Paulo Rigg[1]; [1]Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited
Atomistic Simulation Studies of Shock-induced Spall in Cu Bicrystals: Effects of Grain Size and Strain Rate: *Timothy Germann*[1]; Sheng-Nian Luo[2]; [1]Los Alamos National Laboratory; [2]Sichuan University

10:40 AM
Mechanical Behavior of Polycrystalline and Ultrafine-grained Light Metal Alloys at High Strain Rates: *Vladimir Skripnyak*[1]; Evganiya Skripnyak[1]; Nataliya Skripnyak[1]; [1]National Research Tomsk State University

11:00 AM
Computational Modeling of Mechanically Induced Reactions in Heterogeneous Reactive Materials: *Eric Herbold*[1]; Ryan Austin[1]; Efrem Vitali[1]; [1]Lawrence Livermore National Laboratory

11:20 AM
Modeling and Simulation of the Failure Mechanism of Fiber Reinforced Structural Alumina during Low Velocity Impact Used in Protective Systems: *Costas Fountzoulas*[1]; Raymond Brennan[1]; [1]U.S. Army Research Laboratory

Electrode Technology for Aluminium Production — Paste Plant Operations

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Andre Proulx, Rio Tinto Alcan

Tuesday AM
February 18, 2014
Room: 14B
Location: San Diego Convention Center

Session Chair: Ronald Logan, Sunstone Development

8:30 AM Introductory Comments

8:35 AM
Characterization of Packing Ability of Coke Particles: *Kamran Azari*[1]; Asem Hussein[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Laval University; [2]Alcoa

9:00 AM
Texture Analysis of Anode Paste Images: *Julien Lauzon-Gauthier*[1]; Carl Duchesne[1]; Jayson Tessier[2]; [1]Laval University; [2]Alcoa Global Primary Metals

9:25 AM
High Temperature Compression Test to Determine the Anode Paste Mechanical Properties: *Stéphane Thibodeau*[1]; Hicham Chaouki[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Université Laval; [2]Alcoa Primary Metals

9:50 AM
Viscoplastic Modeling of the Green Anode Forming Process: *Hicham Chaouki*[1]; Stéphane Thibodeau[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Laval University; [2]Alcoa Primary Metals

10:15 AM Break

10:25 AM
Characterization of Homogeneity of Green Anodes through X-ray Tomography and Image Analysis: *Kamran Azari*[1]; Behzad Majidi[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Laval University; [2]Alcoa

10:50 AM
Field Experience with the Buss Kneader Type KX: Highest Quality and throughput Targets Attained: *Hans-Ulrich Siegenthaler*[1]; Christian Hauser[1]; [1]Buss AG

11:15 AM
Maximizing Green Anode Slots Height through a Rigorous Methodology and Finite Elements Modeling: Yann El Ghaoui[1]; *Philippe Contard*[1]; Jean-Louis Abeille[1]; Patrick Sornin[1]; Alexandre Gagnon[1]; Marc Gagnon[1]; Franck Fruleux[1]; François Moralès[1]; [1]Rio Tinto Alcan

11:40 AM
High Performance of "Eolios" Pitch Fume Treatment System: Salima Sendid[1]; Alix Courau[2]; [1]Solios Carbone; [2]Solios Environnement

Energy Technologies and Carbon Dioxide Management — Carbon Dioxide Management

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Education Committee, TMS: Energy Committee
Program Organizers: Cong Wang, Northwestern University; Jan de Bakker, BBA, Inc; Cynthia Belt, Consultant; Animesh Jha, University of Leeds; Neale Neelameggham, Ind LLC; Soobhankar Pati, MOxST Inc.; Leon Prentice, CSIRO

Tuesday AM
February 18, 2014
Room: Balboa
Location: San Diego Marriott Marquis & Marina

Session Chairs: Leon Prentice, CSIRO; Soobhankar Pati, IIT, Bhubaneswar

8:30 AM Invited
Comparative Analysis of US Metal Flow and Recycling for Key Nonferrous Metals - Aluminum, Copper, Magnesium and Titanium - Using Energy and Emissions Sustainability Parameters: *Subodh Das*[1]; Adam Gesing[1]; Joseph Cresko[2]; Sujit Das[3]; [1]Phinix,LLC; [2]US Department of Energy; [3]National Transportation Research Center

9:00 AM
CO2 Emission Reduction through Innovative Molten Salt Electrolysis Technologies Using Inert Anodes: *Dihua Wang*[1]; [1]Wuhan University

9:20 AM
CO2 Sequestration by Accelerated Carbonation of Alkaline Solid Waste and Scope for CCUS: Thenepalli Thriveni[1]; *Ahn Whan*[1]; [1]Korea Research Institute of Geoscience and Mineral Resources(KIGAM)

9:40 AM
Study on Utilization of Cyclic Heat Stewed Steel Slag Washing Water to Mineralize CO2: Dou Zhi'he[1]; Zhang Zi'mu[1]; Liu Yan[1]; Lv Guo'zi[1]; *Zhang Ting'an*[1]; Jiang Xiao'li[1]; [1]Northeastern University

10:00 AM Break

10:20 AM Invited
Thermodynamic Phase Stability in Gasification Carbon Feedstock Slags Influenced by Extensive Vanadium Oxide Concentration: *Jinichiro Nakano*[1]; Marc Duchesne[2]; James Bennett[1]; Kyei-Sing Kwong[1]; Xueyan Song[3]; [1]US DOE NETL; [2]Natural Resources Canada CanmetENERGY; [3]West Virginia University

10:40 AM Invited
Recent Advances in Carbon Dioxide Mineralization to Nano-size Calcium Carbonate Utilizing Waste Water: *Zhang Ting'an*[1]; Zhao Hongliang[1]; Liu Yan[1]; Dou Zhihe[1]; Lv Guozhi[1]; Zhao Qiuyue[1]; Li Yan[1]; [1]Northeastern University

11:00 AM Invited
Development of Materials-by-design for CO_2 Capture Applications: Izaak Williamson[1]; *Lan Li*[1]; [1]Boise State University

11:20 AM
The GHG Emissions List Analysis of Aluminum Industry in China: Yuanyuan Wang[1]; *Hao Bai*[1]; Guangwei Du[1]; Yuhao Ding[1]; Kang Zhou[1]; [1]University of Science and Technology Beijing

11:40 AM
Charge Effects on the Cu Pyramidal Nanoparticle and It's Application as a CO2 Conversion Catalyst: Kihyun Shin[1]; Da Hye Kim[2]; *Hyuck Mo Lee*[1]; [1]KAIST; [2]KITECH

Energy Technologies and Carbon Dioxide Management — MGI, ICME and Education (This is a joint session with the Computational Modeling and Simulation of Advanced Materials for Energy Applications symposium)

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Education Committee, TMS: Energy Committee
Program Organizers: Cong Wang, Northwestern University; Jan de Bakker, BBA, Inc; Cynthia Belt, Consultant; Animesh Jha, University of Leeds; Neale Neelameggham, Ind LLC; Soobhankar Pati, MOxST Inc.; Leon Prentice, CSIRO

Tuesday AM
February 18, 2014
Room: Mission Hills
Location: San Diego Marriott Marquis & Marina

Session Chair: Laura Bartolo, Kent State University

8:30 AM Joint Session with Computational Modeling and Simulation of Advanced Materials for Energy Applications A joint session with the Computational Modeling and Simulation of Advanced Materials for Energy Applications symposium is planned. This session will be held in the Mission Hills room of the Marriott. For complete session details, turn to the Computational Modelng symposium entry in the program book or online.

8:30 AM Introductory Comments

8:35 AM Invited: Materials Genome Approach to Computational Design of Nanostructured Thermoelectrics; presented by Chris Wolverton, Northwestern University

9:05 AM Invited: Computational Phase-stability Research and Education in Energy Materials: Some Examples in Hydrogen Storage, Thermoelectrics and Nuclear Materials; presented by Raymundo Arroyave, Texas A & M University

9:35 AM Invited: Computational Materials Education and Training in the MGI Era; presented by Katsuyo Thornton, University of Michigan

10:05 AM Break

10:25 AM Invited: Reaching and Inspiring Student Engineers (RISE) through Simulations Based on Popular Video Games; presented by Walter Voit, UT Dallas

10:55 AM Invited: Energy Education for Engineers: Needs and Opportunities; presented by Jeffrey Fergus, Auburn University

11:25 AM Invited: Five Years of Innovation in Energy/Sustainability Education at Northwestern University; presented by David Dunand, Northwestern University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Microstructure-properties-fatigue Relationships

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday AM
February 18, 2014
Room: 7B
Location: San Diego Convention Center

Session Chairs: Antonios Kontsos, Drexel University; Jacob Hochhalter, NASA LaRC

8:30 AM Introductory Comments

8:35 AM Keynote
Hot Spots in Fatigued Ti-6Al-4V: *Angus Wilkinson*[1]; Philip Littlewood[1]; T Britton[2]; Jun Jiang[1]; [1]University of Oxford; [2]Imperial College London

9:15 AM Invited
New Insight to the Evolved Microstructure under Fatigue Loading: David Gross[1]; Kelly Nygren[1]; May Martin[1]; Moshen Dadfarnia[1]; Petros Sofronis[1]; *Ian Robertson*[2]; [1]University of Illinois; [2]University of Wisconsin-Madison

9:35 AM Invited
In Situ Microscale Fatigue Testing of an a + ß Titanium Alloy, Ti-6246: *Christopher Szczepanski*[1]; Sushant Jha[2]; Paul Shade[1]; Robert Wheeler[3]; James Larsen[1]; [1]US Air Force Research Laboratory; [2]UTC/AFRL; [3]UES/Microtesting Solutions

9:55 AM
Evolution of Microstructure and Mechanical Properties During Rolling Contact Fatigue of Graded High Strength Bearing Steels: *Ghatu Subhash*[1]; Nagaraj Arakere[1]; [1]University of Florida

10:15 AM Break

10:35 AM
Nano-indentation Based Study of Slip Transmission across Grain Boundaries and the Effect of Aging and Grain Orientation on the Indentation Response in Al-Cu Alloys: *Vipul Gupta*[1]; Jacob Hochhalter[2]; Stephen Smith[2]; [1]National Institute of Aerospace; [2]NASA Langley Research Center

10:55 AM
Performance Characterization of Aluminum Sensory Alloys: *John Newman*[1]; William Leser[1]; Jacob Hochhalter[1]; Vipul Gupta[1]; Darren Hartl[2]; Stephen Cornell[2]; [1]NASA Langley Research Center; [2]Texas A&M Univerisity

11:15 AM Invited
Mechanism of Crack Initiation and Modeling of Fatigue Life for Very-high-cycle Fatigue of High Strength Steels: *Youshi Hong*[1]; Chengqi Sun[1]; Zhengqiang Lei[1]; [1]Institute of Mechanics, Chinese Academy of Sciences

11:35 AM
Characterization of Deformation Mechanisms under Cyclic and Dwell Fatigue in a Polycrystalline Ni-based Superalloy: *Tim Smith*[1]; Patrick Phillips[2]; Yunzhi Wang[1]; David Mourer[3]; Andrew Wessman[3]; Dan Wei[3]; Michael Mills[1]; [1]The Ohio State University; [2]University of Illinois-Chicago; [3]GE Aviation

11:55 AM Concluding Comments

Gamma TiAl Alloys 2014 — Session III

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Titanium Committee
Program Organizers: Young-Won Kim, Gamteck, Inc.; Wilfried Smarsly, MTU Aero Engines GmbH; Junpin Lin, University of Science and Technology Beijing; Dennis Dimiduk, Air Force Research Laboratory; Fritz Appel, Helmholtz Zentrum Geesthacht

Tuesday AM
February 18, 2014
Room: 6B
Location: San Diego Convention Center

Session Chairs: Yuyong Chen, Harbin Institute of Technology; Patrick Masset, AZT

8:30 AM Invited
Physical Metallurgy and Performance of the TNB and Gamma-Md-alloy Systems: *Fritz Appel*[1]; Michael Oehring[1]; Jonathan Paul[1]; [1]Helmholtz Zentrum Geesthacht

8:55 AM
Manufacturing and Properties of High Nb-TiAl Sheet Materials: *Yongfeng Liang*[1]; Zhengzhang Shen[1]; Heng Wang[1]; Laiqi Zhang[1]; Guojian Hao[1]; Junpin Lin[1]; [1]University of Science and Technology Beijing

9:15 AM
Influence of Extrusion Texture on the Microstructure and Mechanical Properties of Fully Lamellar Ti-47Al-2Cr-2Nb-0.15B: *Renci Liu*[1]; Dong Liu[1]; Yuyou Cui[1]; Jun Tan[1]; Rui Yang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

9:35 AM
Fatigue Thresholds of a Lamellar Gamma-TiAl Alloy: *Hangyue Li*[1]; Shiyuan Wang[1]; Jing Yang[1]; Dawei Hu[1]; Nigel Martin[2]; Mark Dixon[2]; Paul Bowen[1]; [1]The University of Birmingham; [2]Rolls-Royce plc.

9:55 AM
Microstructure Stability and Mechanical Properties in Gamma Plus Sigma Titanium Aluminides: *Glenn Bean*[1]; Cameron Palmer[1]; Hans Seifert[2]; Fereshteh Ebrahimi[1]; Michele Manuel[1]; [1]University of Florida; [2]Karlsruhe Institute for Technology

10:15 AM Break

10:35 AM Invited
Recent Advances in Wrought Processing: *Yuyong Chen*[1]; [1]Harbin Institute of Technology

10:55 AM
On the Problem of Low-temperature Ductility Improvement of Ti-Al and Ti-Al-Nb Based Alloys: Nadezhda Nochovnaya[1]; *Pavel Panin*[1]; Evgeny Alexeev[1]; Dmitry Kablov[1]; [1]FSUE "VIAM"

11:15 AM Invited
Experimental Research on the Recycling Potential of Precision Cast Gamma-TiAl during Electroslag Remelting: Bernd Friedrich[1]; Peter Spiess[1]; Todor Stoyanov[2]; Julio Aguilar[2]; *Marek Bartosinski*[1]; [1]RWTH Aachen University; [2]ACCESS e.V.

11:40 AM
Solid-state Reactions in Heating of Multilayer Ti / Al Foils: *Zhengzhang Shen*[1]; Yongfeng Liang[1]; Laiqi Zhang[1]; Guojian Hao[1]; Jianping He[1]; Junpin Lin[1]; [1]University of Science and Technology Beijing

High-temperature Gamma (f.c.c.) /Gamma-Prime (L12 structure) Co-Al-W Based Superalloys — Processing, Deformation and Interfaces

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: David Seidman, Northwestern University; David Dunand, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center; Carelyn Campbell, National Institute of Standards and Technology; Ursula Kattner, National Institute of Standards and Technology; David Dye, Imperial College

Tuesday AM
February 18, 2014
Room: 5A
Location: San Diego Convention Center

Session Chairs: David Seidman, Northwestern University; Akane Suzuki, GE Global Research

8:30 AM Plenary
High Temperature Properties of Single Crystal Cobalt -base Alloys: *Tresa Pollock*[1]; Michael Titus; Alessandro Mottura; [1]University of California Santa Barbara

9:10 AM Invited
Creep Properties and Segregation Behavior of γ'-Strengthened Co-base Superalloys: *Mathias Göken*[1]; Steffen Neumeier[1]; [1]University Erlangen-Nürnberg

9:40 AM
On the Role of Alloying Composition and Processing Parameters in Co-Base γ – γ' Composites: Bonta Srinivasarao[1]; Marta Carton-Cordero[2]; Monica Campos[2]; *Jose Torralba*[1]; [1]IMDEA Materials Institute; [2]Universidad Carlos III Madrid

10:00 AM Break

10:20 AM Invited
Co-Al-W Superalloys, Interface Width and Dislocations: *David Dye*[1]; Vassili Vorontsov[1]; Paul Bagot[2]; Rajarshi Banerjee[3]; Matthias Knop[1]; Hui Yu Yan[1]; [1]Imperial College; [2]Oxford University; [3]University of North Texas

10:50 AM
Alloying Effects on the Matrix-precipitate Interface Width in Co-Al-W Base Superalloys.: *Vassili Vorontsov*[1]; Hui-Yu Yan[1]; Jonathan Barnard[2]; Paul Midgley[2]; David Dye[1]; [1]Imperial College London; [2]University of Cambridge

11:10 AM
Atomic Scale Observation of the Structure and Composition of Order/Disorder Gamma Prime/Gamma Interfaces in Cobalt-base Superalloys: *Subhashish Meher*[1]; R.E.A. Williams[2]; Soumya Nag[1]; Hamish Fraser[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]The Ohio State University

11:30 AM
Creep Deformation Mechanisms in $L1_2$-Containing Co-Al-W-base Superalloys: *Michael Titus*[1]; Yolita Eggeler[2]; Akane Suzuki[3]; Tresa Pollock[1]; [1]University of California, Santa Barbara; [2]University of Erlangen-Nuernberg; [3]GE Global Research Center

High-temperature Material Systems for Energy Conversion and Storage — Solid Oxide Fuel Cells II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Xingbo Liu, West Virginia University; Kevin Huang, University of South Carolina

Tuesday AM
February 18, 2014
Room: Carlsbad
Location: San Diego Marriott Marquis & Marina

Session Chairs: Xingbo Liu, West Virginia University ; Jinhua Tong, Colorado School of Mines

8:30 AM Invited
Surface Reaction Processes for Doped Ceria Using Electrical Conductivity Relaxation Technique: Yunlong Wang[1]; *Changrong Xia*[1]; [1]University of Science and Technology of China

9:00 AM
Improving Long-term Stability of Intermediate Temperature Solid Oxide Fuel Cell Cathodes with Atomic Layer Deposition: *Kevin Huang*[1]; [1]University of South Carolina

9:20 AM
Surface Segregation and Phase Formation in Thin Films of SOFC Cathode Materials: Jacob Davis[1]; Yang Yu[1]; Deniz Cetin[1]; Karl Ludwig[1]; Uday Pal[1]; Srikanth Gopalan[1]; *Soumendra Basu*[1]; [1]Boston University

9:40 AM
Mitigation of Chromium Poisoning in Solid Oxide Fuel Cell System by Choosing New BoP Material and Modifying Electrode-electrolyte Interface: *Na Li*[1]; Le Ge[1]; Prabhakar Singh[1]; [1]Uconn

10:00 AM Break

10:20 AM
An Interrupted In Situ Method for Electrochemical Formation of Mg-Ni Intermetallics: *Fuat Erden*[1]; Ishak Karakaya[1]; Metehan Erdogan[2]; [1]Middle East Technical University; [2]Yildirim Beyazit Üniversitesi

10:40 AM
Elastic Properties of Thin Ceramic Multilayers in a Solid Oxide Fuel Cell: *Amit Pandey*[1]; Amit Shyam[1]; Zhien Liu[2]; Richard Goettler[2]; [1]ORNL; [2]LG Fuel Cell Systems Inc.

Hume-Rothery Award Symposium: Thermodynamics and Kinetics of Engineering Materials — Light Alloy Systems

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Hans Juergen Seifert, Karlsruhe Institute of Technology (KIT); Alan Luo, The Ohio State University; Peter Uggowitzer, ETH Zürich; Fan Zhang, CompuTherm, LLC

Tuesday AM
February 18, 2014
Room: 6C
Location: San Diego Convention Center

Session Chairs: Ursula Kattner, NIST; Tetsuo Mohri, Hokkaido University

8:30 AM Invited
Modeling Precipitation and Hardening in Mg Alloys: Yipeng Gao[1]; Hong Liu[2]; Jian-Feng Nie[2]; *Yunzhi Wang*[1]; [1]Ohio State University; [2]Monash University

8:50 AM Invited
Precipitation Simulation of Mg-Al Based Magnesium Alloys: *Fan Zhang*[1]; Chuan Zhang[1]; Weisheng Cao[1]; Shuanglin Chen[1]; Jun Zhu[1]; [1]CompuTherm, LLC

9:10 AM Invited
Calphad Data and File Repositories for the Development of Design Tools for Magnesium Alloys: *Ursula Kattner*[1]; Carelyn Campbell[1]; Alden Dima[1]; Laura Bartolo[2]; [1]National Institute of Standards and Technology; [2]Kent State University

9:30 AM
Experimental Investigation and Thermodynamic Modeling of the Mg-rich Corner of Mg-Zn-Sm Ternary System: *Xiangyu Xia*[1]; Amirreza Zadeh[1]; Chuan Zhang[1]; Xiaoqin Zeng[1]; Alan Luo[1]; Donald Stone[1]; [1]University of Wisconsin Madison

9:50 AM
SIMS-based Experimental Studies of Tracer Diffusion: *Nagraj Kulkarni*[1]; Robert Warmack[2]; Jerry Hunter[3]; Yongho Sohn[4]; Kevin Coffey[4]; Graeme Murch[5]; Irina Belova[5]; [1]Knoxville, TN; [2]Oak Ridge National Laboratory; [3]Virginia Polytechnic Institute and State University; [4]University of Central Florida; [5]The University of Newcastle

10:10 AM Break

10:30 AM Invited
The Kinetics of β" Precipitation in Al-Mg-Si Alloys: *Junsheng Wang*[1]; Mei Li[1]; Zhenzhen Yu[2]; Jiashi Miao[3]; Zhili Feng[2]; John Allison[3]; [1]Ford Motor Company; [2]Oak Ridge National Laboratory; [3]University of Michigan

10:50 AM Invited
Phase Stability in Titanium Based Ternary Systems: *Jean Claude Tedenac*[1]; Alexandre Berche[1]; Philippe Jund[1]; Catherine Colinet[1]; Iuliia Fartushna Fartushna[1]; Marina Bulanova[1]; [1]ICG

11:10 AM
Systematic Analysis and Thermodynamic Optimizations of the Binary Mn-RE Systems: *Junghwan Kim*[1]; In-Ho Jung[1]; [1]McGill University

ICME: Linking Microstructure to Structural Design Requirements — ICME: Linking Microstructure to Structural Design Requirements III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Rajiv Mishra, University of North Texas; David Furrer, Pratt & Whitney; Peter Collins, University of North Texas; Charles Ward, Air Force Research Laboratory; Craig McClung, Southwest Research Institute

Tuesday AM
February 18, 2014
Room: 31A
Location: San Diego Convention Center

Session Chair: Craig McClung, Southwest Research Institute

8:30 AM Invited
Integrated Computational Materials Engineering for Metallic Materials in the Airframe Industry: *Ryan Glamm*[1]; James Cotton[1]; [1]Boeing Research and Technology

9:10 AM
Multiscale Corrosion Modeling of Aerospace Coatings Systems: *Erik Sapper*[1]; [1]The Boeing Company

9:30 AM
Yield Asymmetry Design and Crashworthiness Improvement of Magnesium Alloys by Integrated Computational Materials Engineering: *Dongsheng Li*[1]; Vineet Joshi[1]; Curt Lavender[1]; Moe Khaleel[2]; Said Ahzi[3]; [1]Pacific Northwest National Laboratory; [2]Qatar Foundation Research and Development; [3]University of Strasbourg

9:50 AM
Microstructure Modeling to Ductility Prediction of Mg Alloys: *Erin Barker*[1]; Xin Sun[1]; Kyoo Sil Choi[1]; [1]Pacific Northwest National Lab

10:10 AM Break

10:30 AM Invited
Integrated Modelling Applied to Process Design: FSW of Aluminium Alloys: *Anne Denquin*[1]; Aude Simar[2]; Christophe Gallais[1]; Bruno de Meester[2]; Thomas Pardoen[2]; Yves Bréchet[3]; [1]Onera; [2]Université catholique de Louvain; [3]SIMaP/INP Grenoble

11:10 AM
Development and Implementation of ICME in Designing Welded Structures: *Yu-Ping Yang*[1]; Jerry Gould[1]; Bill Mohr[1]; Ed Herderick[1]; [1]EWI

11:30 AM
Characterization of Mechanical Property Variation across an Inertia Friction Weld of a CrMoV Steel: *Christopher Bennett*[1]; Omar Iracheta Cabrera[1]; Wei Sun[1]; [1]The University of Nottingham

Length Scaling of Lamellar and Patterned Microstructures During Solid-Solid Phase Transformations and Solidification — Dendrites

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee, TMS: Solidification Committee
Program Organizers: Robert Hackenberg, Los Alamos National Lab; Carlos Capdevila-Montes, CENIM-CSIC; Amy Clarke, Los Alamos National Laboratory; John Perepezko, University of Wisconsin-Madison

Tuesday AM
February 18, 2014
Room: 32A
Location: San Diego Convention Center

Session Chairs: John Perepezko, University of Wisconsin-Madison; Christoph Beckermann, University of Iowa

8:30 AM Invited
Capillary Bias Fields and Interface Branching: *Martin Glicksman*[1]; [1]Florida Institute of Technology

9:00 AM Invited
Scaling Behavior of Alloy Dendrites: *Christoph Beckermann*[1]; [1]University of Iowa

9:30 AM Invited
Multiscale Modeling of Dendritic Microstructures: Bridging the Tip and Grain Scales: *Alain Karma*[1]; Damien Tourret[1]; Younggil Song[1]; [1]Northeastern University

10:00 AM Break

10:20 AM
Oscillatory Dynamics of Cellular Patterns in 3D Directional Solidification: *Damien Tourret*[1]; Alain Karma[1]; Nathalie Bergeon[2]; Bernard Billia[2]; Jean-Marc Debierre[2]; Rahma Guérin[2]; Liang Chen[2]; Anthony Ramirez[2]; Rohit Trivedi[3]; [1]Northeastern University; [2]Aix-Marseille University and CNRS; [3]Iowa State University

10:45 AM Invited
The Morphological Stability of Lamellar Microstructures: Larry Aagesen[1]; Anthony Johnson[2]; Julie Fife[3]; Michael Miksis[2]; Erik Lauridsen[4]; *Peter Voorhees*[2]; [1]University of Michigan; [2]Northwestern University; [3]Paul Scherrer Institut; [4]Technical University of Denmark

11:15 AM
In Situ Examinations of Dynamic Solid-liquid Interface Instability in Metallic Alloys: *Amy Clarke*[1]; Paul Gibbs[1]; Seth Imhoff[1]; Jason Cooley[1]; Wah-Keat Lee[2]; Kamel Fezzaa[3]; Alain Karma[4]; Damien Tourret[4]; Alex Deriy[3]; Martha Katz[1]; Kester Clarke[1]; Robert Field[1]; James Smith[1]; Dan Thoma[1]; David Teter[1]; [1]Los Alamos National Laboratory; [2]Brookhaven National Laboratory; [3]Argonne National Laboratory; [4]Northeastern University

11:40 AM
Solutal Melting: In Situ Observations Using Laser Scanning Confocal Microscopy and Determination of Interface Compositions: *Léa Deillon*[1]; Julien Zollinger[1]; Dominique Daloz[1]; Miha Založnik[1]; Hervé Combeau[1]; [1]Université de Lorraine

Light-metal Matrix (Nano)-composites — Microstructure-Property Relationships II: Modeling and Advanced Characterization

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, European Space Agency; Dmitry Eskin, Brunel University

Tuesday AM
February 18, 2014
Room: 17B
Location: San Diego Convention Center

Session Chair: Xiaochun Li, University of California

8:30 AM
Phase Formation and Mechanical Properties of Al-Mg-Mn-Ti-B-Zr-Sc Composite Material: *Elena Kurbatkina*[1]; Nikolay Belov[1]; Alexander Alabin[1]; [1]National University of Science and Technology "MISiS"

8:50 AM
Fabrication and Tensile Properties of $A_{l2}O_3$ Particle and Fibre Hybrid Magnesium (AM60)-based Composites: *Xuezhi Zhang*[1]; Xueyuan Nie[1]; Henry Hu[1]; [1]University of Windsor

9:10 AM
Physico-mechanical and Electrical Properties of Aluminum-based Composite Materials with Carbon Nanoparticles: Sergey Vorozhtsov[1]; Dmitry Eskin[2]; *Alexander Vorozhtsov*[1]; Sergey Kulkov[1]; [1]Tomsk State University; [2]Brunel University Brunel Centre for Advanced Solidification Technology (BCAST)

9:30 AM
Enhancing Tensile and Compressive Strength of AZ_{41} Magnesium Alloy by Adding Nano-sized $A_{l2}O_3$: *Md Ershadul Alam*[1]; Abdelmagid Hamouda[2]; [1]King Fahd University of Petroleum and Minerals, Saudi Arabia; [2]Qatar University

9:50 AM Break

10:10 AM Invited
Phase-field Modeling of Solidification in Light-metal Matrix Nanocomposites: *Tamás Pusztai*[1]; László Rátkai[1]; Attila Szállás[1]; László Gránásy[1]; [1]Wigner Research Centre for Physics

10:30 AM
Contactless Acoustic Wave Generation in a Melt by Electromagnetic Induction: Georgi Djambazov[1]; Valdis Bojarevics[1]; Bruno Lebon[1]; *Koulis Pericleous*[2]; [1]University of Greenwich; [2]University of Greenwich

10:50 AM
Brownian Motion Effects on the Particle Settling and Its Application to Solidification Front in Metal Matrix Composites: *Chang-Soo Kim*[1]; J.B. Ferguson[1]; Benjamin Schultz[1]; Pradeep Rohatgi[1]; [1]University of Wisconsin-Milwaukee

11:10 AM
Advanced Characterization of Metal Matrix Nano-composites: *Maher Mounib*[1]; Williams Lefebvre[1]; [1]Groupe de Physique des Matériaux (GPM)

11:30 AM
X-ray Tomography and Small-angle Neutron Scattering Characterization of Nano-composites: Static and In Situ Experiments: *Sofiane Terzi*[1]; Rémi Daudin[2]; Julie Villanova[3]; Prakash Srirangam[4]; Pierre Lhuissier[2]; Hartmut Lemmel[5]; Elodie Boller[3]; Jean jacques Blandin[2]; Ralf Schweins[6]; Peter Lindner[6]; Peter Lee[4]; Luc Salvo[2]; [1]ESA; [2]SIMAP; [3]ESRF; [4]University of Manchester; [5]TU WIEN; [6]ILL

Long-term Stability of High Temperature Materials — Surface Degradation II and Exposure Effects on Mechanical Behavior

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Awadh Pandey, Pratt & Whitney Rocketdyne; David Mourer, General Electric Aircraft Engines; Jeffrey Hawk, National Energy Technology Laboratory

Tuesday AM
February 18, 2014
Room: 4
Location: San Diego Convention Center

Session Chairs: Mark Hardy, Rolls-Royce plc; Jeffrey Hawk, National Energy Technology Laboratory; David Mourer, GE Aircraft Engines; Awadh Pandey, Pratt & Whitney Rocketdyne

8:30 AM
Effect of Surface Preparation on the Oxidation of Single Crystal Nickel-based Superalloys for Disk Applications: *Chantal Sudbrack*[1]; Devon Beckett[2]; Rebecca MacKay[1]; [1]NASA Glenn Research Center; [2]NASA LERCIP - Drexel University

8:50 AM
Minimum Dwell Cycling and Its Effect on the Fatigue and Environmental Response of RR1000: *James O'Hanlon*[1]; Mark Hardy[2]; Benjamin Foss[3]; Martin Bache[1]; [1]Swansea University; [2]Rolls-Royce plc; [3]Imperial College

9:10 AM
Creep Behavior of Thin-walled Specimens - Experiment and Modelling: *Uwe Glatzel*[1]; Matthias Bensch[1]; Rainer Völkl[1]; Ernst Affeldt[2]; Atsushi Sato[3]; Niels Warnken[3]; Roger Reed[4]; [1]University Bayreuth; [2]MTU Aero Engines; [3]University Birmingham; [4]University Oxford

9:30 AM
Impact of γ" and Secondary Carbides Precipitations on Alloy 625 High Temperature Tensile and LCF Properties: Lorena Mataveli Suave[1]; Denis Bertheau[1]; *Jonathan Cormier*[1]; Patrick Villechaise[1]; Aurélie Soula[2]; Zéline Hervier[3]; Florence Hamon[1]; Johanne Laigo[4]; [1]ENSMA / P' Institute - UPR CNRS 3346; [2]Aircelle – Safran Group; [3]Turbomeca – Safran Group; [4]Snecma – Safran Group

9:50 AM
Long Term Thermal Stability of HAYNES 244 Alloy: *Michael Fahrmann*[1]; [1]Haynes International Inc.

10:10 AM Break

10:30 AM
High Temperature Creep Behavior of Cross-weld Specimens of Weld Joint between T92 Martensitic and Super304H Austenitic Steels: Myung-Yeon Kim[1]; Suk-Chul Kwak[1]; Jung-Chel Chang[2]; *Jin-Yoo Suh*[1]; Woo-Sang Jung[1]; Young-Kook Lee[3]; [1]Korea Institute of Science and Technology; [2]KEPCO Research Institute; [3]Yonsei University

10:50 AM
Rejuvenation of Nickel-based Superalloys GTD444(DS) and René N5(SX): *Luke Rettberg*[1]; Tresa Pollock[1]; [1]University of California Santa Barbara

11:10 AM
Elevated Temperature Stress Relaxation in Ni-base Superalloys: *Jeffrey Evans*[1]; Stephen Pierce[1]; Alex McCool[1]; [1]University of Alabama in Huntsville

11:30 AM
Factors Affecting the Corrosion Fatigue Life in Nickel-based Superalloys for Disc Applications: *Andrew Girling*[1]; Hollie Rosier[1]; Karen Perkins[1]; Grant Gibson[2]; Jonathan Leggett[2]; [1]Swansea University; [2]Rolls-Royce plc

Magnesium Technology 2014 — Deformation I

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Martyn Alderman, Magnesium Elektron; Norbert Hort, Helmholtz-Zentrum Geesthacht; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Tuesday AM
February 18, 2014
Room: 17A
Location: San Diego Convention Center

Session Chairs: Fabrizio D'Errico, Polytecnico di Milano; Alok Singh, National Institute for Materials Science

8:30 AM
The Athermal Component of the Strength of Binary Mg Solid Solutions: *Saeideh Abaspour*[1]; Carlos Caceres[1]; [1]ARC Centre of Excellence for Design in Light Metals

8:50 AM
Crack Propagation under Bending in Cast $Mg_{10}GdxNd$-T_4 Alloys: *Petra Maier*[1]; Chamini Mendis[2]; Martin Wolff[2]; Norbert Hort[2]; [1]University of Applied Sciences Stralsund; [2]Helmholtz-Zentrum Geesthacht

9:10 AM
High Shear Deformation to Produce High Strength and Energy Absorption in Mg Alloys: *Vineet Joshi*[1]; Saumyadeep Jana[1]; Dongsheng Li[1]; Hamid Garmestani[2]; Eric Nyberg[1]; Curt Lavender[3]; [1]PNNL; [2]Geogia Institute of Technology; [3]Pacific Northwest National Laboratory

9:30 AM
As-cast Microstructure and Texture of Twin-roll Casting AZ_{31}: *Mohsen Masoumi*[1]; Mihriban Pekguleryuz[1]; [1]McGill University

9:50 AM
Post Deformation Annealing Behavior of Mg-Al-Sn Alloys: *Abu Syed Humaun Kabir*[1]; Jing Su[1]; Mehdi Sanjari[1]; In-Ho Jung[1]; Stephen Yue[1]; [1]McGill University

10:10 AM Break

10:30 AM
Acoustic Emission Analysis of Plane Strain Compressed Mg Single Crystals: *Daria Drozdenko*[1]; Patrik Dobron[1]; Michal Knapek[1]; Dietmar Letzig[2]; Jan Bohlen[2]; František Chmelik[1]; [1]Charles University in Prague; [2]Helmholtz-Zentrum Geesthacht

10:50 AM
Precipitation Strengthening of a Mg-Zn Alloy in Tension and Compression: *Julian Rosalie*[1]; Hidetoshi Somekawa[1]; Alok Singh[1]; [1]National Institute for Materials Science

11:10 AM
Characterization of Damage in Magnesium Using Digital Image Correlation and Electron Backscattered Diffraction Patterning: *Michael Nemcko*[1]; Pauline Mas[1]; Moisei Bruhis[1]; David Wilkinson[1]; [1]McMaster University

11:30 AM
Low Cycle Fatigue Properties of Extruded Mg10GdxNd Alloys: *Gerhard Tober*[1]; Petra Maier[1]; Sören Müller[2]; Norbert Hort[3]; [1]University of Applied Sciences Stralsund; [2]Extrusion Research and Development Center TU Berlin; [3]Helmholtz-Zentrum Geesthacht

11:50 AM
Quantification of Microstructure-properties-behavior Relations in Mg Alloys Using a Hybrid Approach: *Kavan Hazeli*[1]; Jefferson Cuadra[1]; Prashanth Vanniamparambil[1]; Rami Carmi[1]; Antonios Kontsos[1]; [1]Drexel University

Magnetic Materials for Energy Applications IV — Rare Earth Free Permanent Magnets

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Magnetic Materials Committee
Program Organizers: Thomas G. Woodcock, IFW Dresden; Julia Lyubina, Evonik Industries AG; Matthew Willard, Case Western Reserve University

Tuesday AM
February 18, 2014
Room: Ballroom G
Location: San Diego Marriott Marquis & Marina

Session Chairs: Kazuhiro Hono, NIMS; George C. Hadjipanayis, University of Delaware

8:30 AM Invited
Recent Developments in Rare Earth Lean/Free High Energy Magnets: *George Hadjipanayis*[1]; [1]University of Delaware

9:00 AM Invited
Nanoscale and Atomic Structuring of Permanent Magnets: *Ralph Skomski*[1]; Priyanka Manchanda[2]; Pankaj Kumar[2]; B. Balamurugan[1]; Arti Kashyap[2]; Jeff Shield[1]; Laura Lewis[3]; D. Sellmyer[1]; [1]University of Nebraska; [2]Indian Institute of Technology Mandi; [3]Northeastern University

9:30 AM
Metallurgical Synthesis of Extraterrestrial Permanent Magnet – Tetrataenite,Tt (FeNi $L1_0$).: *Arif Mubarok*[1]; Roger Ristau[2]; Eric Poirier[3]; Nina Bordeaux[4]; Nicole Ellison[3]; M Balogh[3]; Frederick Pinkerton[3]; Laura Lewis[4]; Joseph Goldstein[1]; [1]University of Massachusetts; [2]University of Connecticut; [3]GM R&D Center; [4]Northeastern University

9:50 AM
Fabrication of α"-$Fe_{16}N_2$ Bulk Magnets by High-pressure Warm Compaction: *Kenta Takagi*[1]; Misaho Akada[2]; Kimihiro Ozaki[1]; Naoya Kobayashi[3]; Tomoyuki Ogawa[4]; Migaku Takahashi[4]; [1]National Institute of Advanced Industrial Science and Tecnology; [2]Research Association of Magnetic Materials for High-Efficiency Motors; [3]T&T Innovations Inc.; [4]Tohoku University

10:10 AM Break

10:25 AM
Development of MnBi Permanent Magnet: *jun Cui*[1]; Matthew Kramer[2]; Guosheng Li[1]; Melania Marinescu[3]; Jungpyung Choi[1]; Ichiro Takeuchi[4]; Evgueni Polikarpov[1]; Jens Darsell[1]; Jared Templeton[1]; Hayden Reeve[5]; Ping Liu[6]; [1]Pacific Northwest National Laboratory; [2]AMES Laboratory; [3]Electron Energy Corp.; [4]University of Maryland; [5]United Technologies Research Center; [6]University of Texas at Arlington

10:45 AM
Processing Effects on High Temperature Microstructure and Magnetic Properties of Alnico 8 Alloys: *Haley Dillon*[1]; Ramya Chandrasekar[1]; Andriy Palasyuk[1]; Iver Anderson[1]; William McCallum[1]; [1]Ames Laboratory

11:05 AM
High Temperature X-ray Diffraction Characterization of Alnico 8 Made by Pre-alloyed Powder Processing: *Ramya Chandrasekar*[1]; Haley Dillon[1]; Matthew Besser[1]; Andriy Palasyuk[1]; R. William McCallum[1]; Matthew Kramer[1]; Iver Anderson[1]; [1]Ames Laboratory

11:25 AM
Microstructural Characterization of Gas Atomized Alnico Alloys: *Lin Zhou*[1]; Trevor Bailey[1]; H. Dillon[1]; R. Chandrasekar[1]; R. McCallum[1]; Iver Anderson[1]; M. Kramer[1]; [1]Ames Lab

11:45 AM
Effects of Cr-Ga Substitution on Structural and Magnetic Properties of Hexaferrite (BaFe12O19) Synthesized by Sol-gel Auto-combustion Route: *Ihsan Ali*[1]; [1]Bahauddin Zakariya University

Materials and Fuels for the Current and Advanced Nuclear Reactors III — Structural Materials I

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday AM
February 18, 2014
Room: 33C
Location: San Diego Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin

8:30 AM Invited
Materials Challenges in Next Generation Nuclear Reactors: *Korukonda Murty*[1]; Apu Sarkar[1]; [1]North Carolina State University

8:55 AM
Alloy Selection for Accident Tolerant Fuel Cladding in Commercial Light Water Reactors: *Raul Rebak*[1]; [1]GE Global Research

9:10 AM
Development and Testing Advanced Ferritic Steels for Fast Reactor Applications: *Stuart Maloy*[1]; Osman Anderoglu[1]; Tarik Saleh[1]; Mychailo Toloczko[2]; G. Odette[3]; Thak Byun[4]; David Hoelzer[4]; [1]Los Alamos National Laboratory; [2]PNNL; [3]UCSB; [4]ORNL

9:25 AM
Mechanical Properties of Irradiated T91 Alloy from the MEGAPIE Experiment: *Tarik Saleh*[1]; Stuart Maloy[1]; Yong Dai[2]; Tobias Romero[1]; [1]Los Alamos National Laboratory; [2]Paul Scherrer Institut

9:40 AM
Steel Corrosion Tests in Flowing Lead-bismuth Eutectic in LANL DELTA Loop: *Magda Caro*[1]; Keith Woloshun[1]; Floren Rubio[1]; Stuart A. Maloy[1]; Peter Hosemann[2]; [1]Los Alamos National Laboratory; [2]University of California, Berkeley

9:55 AM Break

10:15 AM
The Recovery of Irradiation Damage for Zircaloy-2 and Zircaloy-4 Following Low Dose Neutron Irradiation at Nominally 358°C: *Brian Cockeram*[1]; Keith Leonard[2]; TS Byun[2]; Lance Snead[2]; Jim Hollenbeck[1]; [1]Bechtel-Bettis; [2]Oak Ridge National Laboratory

10:30 AM
Similar and Dissimilar Friction Stir Welding of ODS and RAFM Steels: *Zhenzhen Yu*[1]; Zhili Feng[1]; David Hoelzer[1]; Lizhen Tan[1]; Mikhail Sokolov[1]; Ken Littrell[1]; [1]Oak Ridge National Laboratory

10:45 AM
Microstructure Evolution in Advanced Ferritic-martensitic Steels Following Friction Stir Welding: *Bradford Baker*[1]; Terry McNelley[1]; Luke Brewer[1]; [1]Naval Postgraduate School

11:00 AM
Aspects of Dynamic Strain Aging in HT-9 Steel: *Apu Sarkar*[1]; Stuart Maloy[2]; T.S. Byun[3]; K.L. Murty[1]; [1]North Carolina State University; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory

11:15 AM
Influence of Neutron Irradiation on the Segregation of Alloying Elements in Zirconium Alloys: *Elisabeth Francis*[1]; Sarah Haigh[1]; Michael Preuss[1]; [1]The University of Manchester

11:30 AM
PWSCC of Alloy 600 with Water Environment: *Young Suk Kim*[1]; Wan Young Maeng[1]; Sung Soo Kim[1]; [1]Korea Atomic Energy Research Institute

Materials for High-temperature Applications: Next Generation Superalloys and Beyond — Next Generation High-Temperature Materials

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Panos Tsakiropoulos, University of Sheffield; Xingbo Liu, West Virginia University; Paul Jablonski, DOE National Energy Technology Lab; Junpin Lin, University of Science and Technology Beijing

Tuesday AM
February 18, 2014
Room: 6D
Location: San Diego Convention Center

Session Chairs: Donna Ballard, U.S. Air Force; Jim Ciulik, M&M Engineering Associates

8:30 AM Invited
What Next in Gas Turbine Materials: *Jeffrey Hawk*[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

9:00 AM Invited
DOD Needs and Payoffs for Materials Beyond Ni-superalloys: *David Shifler*[1]; [1]Office of Naval Research

9:30 AM Invited
Very High-Temperature Nb-and Mo-based Silicides: *B. P. Bewlay*[1]; PR Subramanian[1]; [1]GE Global Research

10:00 AM Break

10:15 AM Invited
Coatings for Superalloy Components: *David Young*[1]; [1]University of New South Wales

10:45 AM Invited
Understanding the Effects of Rhenium in Ni-base Superalloys: *Zi-Kui Liu*[1]; ShunLi Shang[1]; Yi Wang[1]; Xuan Liu[1]; [1]The Pennsylvania State University

11:15 AM Invited
Structure and Mechanical Properties of a High Entropy Refractory Metal Alloy: *Michael Widom*[1]; [1]Carnegie Mellon University

11:45 AM Invited
Low Density Refractory High Entropy Alloys: *Oleg Senkov*[1]; Christopher Woodward[1]; Daniel Miracle[1]; Jaimie Tiley[1]; [1]Air Force Research Laboratory, Materials and manufacturing Directorate

Materials Processing Fundamentals — Metal Extraction

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: James Yurko, Materion Brush Beryllium and Composites; Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Northwestern University

Tuesday AM
February 18, 2014
Room: 11B
Location: San Diego Convention Center

Session Chair: Antoine Allanore, MIT

8:30 AM
Oxidative and Carbonative Precipitation of Iron from Manganese Leach Solutions: Enis Sevim[1]; *Selim Ertürk*[1]; Cuneyt ARSLAN[1]; [1]Istanbul Technical University

8:50 AM
Study on Microorganisms and Select a Suitable Bacterial Calture for Bioleaching of Low Grade Sulfide Copper Ore: *Hossein Etminan*[1]; Hekmat Razavizadeh[2]; [1]GolGohar Mining & Industrial Company; [2]IUST

9:10 AM
Upgrading Titanium Ore through Selective Chlorination Using Titanium Tetrachloride: *Jungshin Kang*[1]; Toru Okabe[1]; [1]The University of Tokyo

9:30 AM
A Sintering Ore Blending Optimization Model Based on 'Iron Increase and Silicon Reduction" Ore Dressing Processes: Chengsong Liu[1]; Jingshe Li[1]; Haiyan Tang[1]; Wei Liu[1]; *Linzhu Wang*[1]; [1]University of Science and Technology Beijing

9:50 AM Break

10:00 AM
Electrodeposition of Cobalt from Air and Water-stable Ionic Liquid 1-Butyl-3-Methylimidazolium Tetrafluoroborate: *Min Li*[1]; Zhaiwen Wang[1]; Ramana Reddy[1]; [1]The University of Alabama

10:20 AM
Effects of Ultrasound on the Al2O3 Extraction Rate during Acid Leaching Process of Coal Fly Ash: Kang Liu[1]; Jilai Xue[1]; *Wenbo Luo*[1]; [1]University of Science and Technology Beijing

10:40 AM
Fundamental Study on New Dissolution Process for Platinum Group Metals Using Molten Salt Electrolysis: *Katsuhiro Nose*[1]; Toru Okabe[1]; [1]Institute of Industrial Science, The University of Tokyo

11:00 AM
New Chlorination Technique for Recycling Titanium Metal Scraps by Using Reaction Mediator: *Yuki Hamanaka*[1]; Yu-ki Taninouchi[1]; Toru Okabe[1]; [1]University of Tokyo

11:20 AM
Separation of Nickel and Cobalt in Acidic Aqueous Solution by Selective Reduction of Metals.: *Sakae Shirayama*[1]; Tetsuya Uda[1]; [1]Kyoto University

Mechanical Behavior at the Nanoscale II — Size and Rate Effects

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Evan Ma, Johns Hopkins University; Daniel Gianola, University of Pennsylvania; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology

Tuesday AM
February 18, 2014
Room: 9
Location: San Diego Convention Center

Session Chairs: Ting Zhu, Georgia Institute of Technology; Gerhard Dehm, Max-Planck-Institut für Eisenforschung

8:30 AM Invited
Effects of External vs Internal Length Scales on Strength of Small Metallic Materials: *Alfonso Ngan*[1]; R. Gu[1]; X.X. Chen[1]; P.S.S. Leung[1]; [1]University of Hong Kong

9:00 AM Invited
From Idealized Bi-crystals towards Applied Polycrystals: Plastic Deformation in Small Dimensions: *Gerhard Dehm*[1]; Peter Imrich[2]; Alexander Wimmer[3]; Christoph Kirchlechner[1]; [1]Max-Planck-Institut für Eisenforschung; [2]Erich Schmid Institut fuer Materialwissenschaft, Oesterreichische Akademie der Wissenschaften; [3]Kompetenzzentrum Automobil- und Industrielektronik

9:30 AM
Nanoindentation Study of Iron Nanoparticles Produced by Solid State Dewetting: Oleg Kovalenko[1]; Julia Greer[2]; Seok-Woo Lee[2]; *Eugen Rabkin*[1]; [1]Technion; [2]California Institute of Technology

9:50 AM
Size Dependence of Strength and Plasticity in Nb25Mo25Ta25W25 Refractory High-entropy Alloy: *Yu Zou*[1]; Ralph Spolenak[1]; Soumyadipta Maiti[2]; Walter Steurer[2]; [1]Laboratory for Nanometallurgy, Department of Materials, ETH Zurich,; [2]Laboratory of Crystallography, Department of Materials, ETH Zurich

10:10 AM Break

10:30 AM Invited
Predicting the Rate of Dislocation Cross Slip: *Wei Cai*[1]; Jie Yin[1]; Keonwook Kang[2]; William Kuykendall[1]; [1]Stanford University; [2]Yonsei University

11:00 AM
Crystal Plasticity Model for BCC Iron Atomistically Informed by Kinetics of Correlated Kinkpair Nucleation on Screw Dislocations: Sankar Narayanan[1]; David McDowell[1]; *Ting Zhu*[1]; [1]Georgia Institute of Technology

11:20 AM
Mechanical Properties of Solid-state-dewetted Iron Nanoparticles at Cryogenic Temperatures: *Seok-Woo Lee*[1]; Oleg Kovalenko[2]; Eugen Rabkin[2]; Julia Greer[1]; [1]California Institute of Technology; [2]Technion-Israel Institute of Technology

11:40 AM
The Relation between Slip and Slip Traces in bcc Microcompression Experiments: *Helena Van Swygenhoven*[1]; Cecile Marichal[1]; Steven Van Petegem[1]; Camelia Borca[1]; [1]Paul Scherrer Institut

Multiscale Approaches to Hydrogen-assisted Degradation of Metals — Experimental Characterisation of H-assisted Damage

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Nicholas Winzer, Fraunhofer IWM; Matous Mrovec, Fraunhofer IWM; Brian Somerday, Sandia National Laboratories; Petros Sofronis, University of Illinois; David Bahr, Purdue University; Srinivasan Rajagopalan, ExxonMobil Research and Engineering Company

Tuesday AM
February 18, 2014
Room: 11A
Location: San Diego Convention Center

Session Chairs: David Bahr, Purdue University; Brian Somerday, Sandia National Laboratories

8:30 AM Invited
Embrittlement Measures in Fe-base Systems Appropriate to Multiscale Models: *William Gerberich*[1]; Eric Hintsala[1]; [1]University of Minnesota

9:10 AM
Slip Transmission and Mechanical Behavior of Ni-alloys in the Presence of Hydrogen: *Samantha Lawrence*[1]; Brian Somerday[2]; Neville Moody[2]; David Bahr[1]; [1]Purdue University; [2]Sandia National Laboratories

9:30 AM
Hydrogen-induced Strain Localization at Meso-scale in Austenitic Stainless Steels: *Yuriy Yagodzinskyy*[1]; Hannu Hänninen[1]; [1]Aalto University School of Engineering

9:50 AM
The Role of VC Precipitates in Hydrogen Assisted Cracking of Vanadium Modified 2γ4Cr1Mo Steel: *Kevin Nibur*[1]; Sylvain Pillot[2]; Brian Somerday[3]; Richard Gangloff[4]; [1]Hy-Peformance Materials Testing, LLC.; [2]Industeel, ArcelorMittal; [3]Sandia National Laboratory; [4]University of Virginia

10:10 AM Break

10:30 AM
Designing Steels Combining Ultra-strength and Hydrogen Resistance: *Pedro Rivera-Diaz-del-Castillo*[1]; [1]University of Cambrdige

11:10 AM
Embrittlement Characteristics of Electrochemically Hydrogenated 4340 Steel: *Mobbassar Sk*[1]; Ruel Overfelt[1]; Jeffrey Fergus[1]; [1]Auburn University

11:30 AM
Hydrogen Environment Assisted Cracking (HEAC) of Modern Ultra-high Strength Stainless Steel: *Greger Pioszak*[1]; Richard Gangloff[1]; [1]University of Virginia

Nanostructured Materials for Rechargeable Batteries and Supercapacitors II — Session III

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta and NINT NRC

Tuesday AM
February 18, 2014
Room: Ballroom F
Location: San Diego Marriott Marquis & Marina

Session Chairs: David Mitlin, University of Alberta; Husam AlShareef, King Abdullah University of Science and Technology

8:30 AM Invited
The LiFePO4 Story: Theory, Experiment and Characterization: Fredrick Omenya[1]; Natasha Chernova[1]; Shirley Meng[2]; Peter Khalifah[3]; Aziz Abdellahi[4]; Gerbrand Ceder[4]; *M. Whittingham*[1]; [1]SUNY at Binghamton; [2]UC San Diego; [3]Stony Brook University; [4]MIT

8:45 AM Invited
Electrode Material Design & Surface Passivation Strategies for Energy Storage Applications: *Husam Alshareef*[1]; [1]King Abdullah University for Science & Technology (KAUST)

9:00 AM Invited
High Power and Energy Density Secondary Batteries and Supercapacitors Based on Three-dimensionally Mesostructured Current Collectors: *Paul Braun*[1]; [1]University of Illinois at Urbana-Champaign

9:15 AM Invited
Improvement in Both Power and Energy Density of Carbon-based Supercapacitors: *Feng Li*[1]; Zhe Weng[1]; Dawei Wang[2]; Hui-Ming Cheng[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Res., CAS; [2]The University of Queensland

9:30 AM Invited
Carbon Nanosheet Frameworks Derived from Peat Moss as High Capacity Intercalation Sodium Ion Battery Anodes: *David Mitlin*[1]; [1]University of Alberta and NINT NRC

9:50 AM Invited
Nanostuctured Metal Hydrides as Efficient Anode Materials for Advanced Batteries: *Michel Latroche*[1]; Fermin Cuevas[1]; Junxian Zhang[1]; [1]CNRS

10:05 AM Break

10:20 AM Invited
The Role and Application of Quantum Capacitance in Nanostructured Energy Storage Devices: *Hidenori Yamada*[1]; Prabhakar Bandaru[1]; [1]UC San Diego

10:35 AM Invited
Improved Performance of Graphite/ $LiNi_{0.5}Mn1_{.5O4}$ Cells with Electrolyte Additives: *Brett Lucht*[1]; Mengqing Xu[1]; [1]University of Rhode Island

10:50 AM Invited
Nanophase Separated Versus Solid Solution Features of the Layered: Layered Composite Li_2MnO_3- $LiMO_2$ (M=Mn, Ni, Co) for Cathodes in Li-ion Batteries: *William West*[1]; [1]Jet Propulsion Laboratory

11:05 AM Invited
Silicon-based Electrodes for Li-ion Batteries: Spectroscopic Analysis for Improved Performance: *Christopher Hinkle*[1]; Amandeep Sra[1]; Joseph Rossi[1]; Roberto Longo[1]; KJ Cho[1]; [1]University of Texas at Dallas

11:20 AM Invited
Processing and Structure of Graphene Composites for Supercapacitor Applications: *Lu-Chang Qin*[1]; Jie Tang[2]; [1]University of North Carolina at Chapel Hill; [2]National Institute for Materials Science

11:35 AM Invited
Atom Probe Tomography Study on SiO Anode Materials before and after the First Li Insertion/Extraction Cycle: *Hossein Sepehri Amin*[1]; T. Ohkubo[1]; H. Yamamura[2]; T. Saito[2]; H. Iba[2]; K. Hono[1]; [1]National Institute for Materials Science (NIMS); [2]Battery Research Division, Higashifuji Technical Center, Toyota Motor Corporation

11:50 AM Invited
High Rate Performing Lithium-ion Batteries: *Palani Balaya*[1]; [1]National University of Singapore

Neutron and X-ray Studies of Advanced Materials VII: Challenges of the Future World — Advanced Structural Mapping

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH; Brent Fultz, California Institute of Technology; Peter Liaw, The University of Tennessee

Tuesday AM
February 18, 2014
Room: 10
Location: San Diego Convention Center

Session Chairs: Wolfgang Pantleon, Riso National Laboratory and DTU; Andrew Allen, NIST

8:30 AM Keynote
Advanced Synchrotron X-ray Studies of Recrystallization: *Dorte Jensen*[1]; Yubin Zhang[1]; [1]DTU

9:10 AM
In Situ Synchrotron Diffraction Characterization of Stressed and Highly-faulted, Nanocrystalline Ni(W) Thin Films; Effect of Tensile Loading and Thermal Cycling: *Silke Kurz*[1]; Andreas Leineweber[1]; Udo Welzel[1]; Eric Mittemeijer[2]; [1]Max Planck Institute for Intelligent Systems; [2]Max Planck Institute for Intelligent Systems (formerly for Metals Research) and Institute for Materials Science, University of Stuttgart

9:25 AM Invited
Long Range Internal Stresses in ECAP Aluminum Alloys: Michael Kassner[1]; Lyle Levine[2]; Thien Phan[1]; *Yvonne Lee*[1]; Terence Langdon[1]; Yi Huang[3]; [1]University of Southern California; [2]NIST; [3]University of Southampton

9:50 AM Invited
A Novel View on Fatigue Damage at the Micron Scale by In Situ X-ray µLaue Diffraction: *Christoph Kirchlechner*[1]; Christian Motz[2]; Peter Imrich[3]; Gerhard Dehm[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Universität des Saarlandes; [3]University of Leoben

10:15 AM Break

10:30 AM Invited
Hard X-ray Microscopy: Multiscale Structural Mapping: *Henning Poulsen*[1]; Hugh Simons[1]; Andrew King[2]; Wolfgang Ludwig[2]; Wolfgang Pantleon[1]; Frederik Stöhr[1]; Søren Schmidt[1]; Erik Lauridsen[1]; Irina Snigireva[2]; Anatoly Snigirev[2]; Carsten Detlefs[2]; [1]DTU; [2]ESRF

10:55 AM Invited
Measuring Strains *In Operando* in Alloy-based Anodes for Lithium Ion Batteries Using X-ray Diffraction: *David Dunand*[1]; Matthew Glazer[1]; Jiung Cho[2]; Jonathan Almer[3]; John Okasinski[3]; Paul Braun[2]; [1]Northwestern University; [2]University of Illinois at Urbana-Champaign; [3]Argonne National Laboratory

11:20 AM Invited
In Situ Characterization of Grade 92 Steel during Tensile Deformation Using Wide Angle and Small Angle X-ray Scattering: *Leyun Wang*[1]; Meimei Li[1]; Jonathan Almer[1]; [1]Argonne National Laboratory

11:45 AM
Internal Stresses in the AA7449 Aluminium Alloy Exhibiting Different Precipitation Microstructures Investigated by Neutron and X-ray Diffraction: *Patrick Schloth*[1]; Julia Repper[2]; Jean-Marie Drezet[1]; Helena Van Swygenhoven[2]; [1]EPFL; [2]Paul Scherrer Institut

Pb-free Solders and Emerging Interconnect and Packaging Materials — Issues in 3-D Packages

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Andre Lee, Michigan State University; Fay Hua, Intel Corporation; Tae-Kyu Lee, Cisco; John Elmer, Lawrence Livermore National Laboratory; Yan Li, Intel Corporation; Robert Kao, National Taiwan University; Fan-yi Ouyang, National Tsing Hua University; Chang-Woo Lee, Korea Institute of Industrial Technology; Won Sik Hong, Korea Electronics Technology Institute; Heugel Werner, Bosch Automovitve

Tuesday AM
February 18, 2014
Room: 5B
Location: San Diego Convention Center

Session Chairs: Fan-Yi Ouyang, National Tsing Hua University; Kwang-Lung Lin, National Cheng Kung University

8:30 AM
Role of Joint Scale and Processing on Fracture of Solder Microbumps in 3D Packages: *Zhe Chen*[1]; Zhe Huang[1]; Indranath Dutta[1]; [1]Washington State University

8:50 AM
Effect of Temperature on the Electromigration Failure Mode of Microbumps in 3D IC Packaging: *Li-Yun Chang*[1]; Chih Chen[1]; Nicholas Kao[2]; Eason Chen[2]; Daniel Lee[2]; Mike Ma[2]; [1]National Chiao Tung University; [2]Siliconware Precision Industries Co., Ltd.

9:10 AM
Evaluation of Reliability by Thermal Shock of 3D Stacked Chips with TSV Filled Sn and Micro-bump: *Young-Ki Ko*[1]; Yong-Ho Ko[1]; Hiroyuki Kokawa[2]; Yutaka S. Sato[2]; Chang-Woo Lee[1]; [1]Korea Institute of Industrial Technology; [2]Tohoku University

9:30 AM
T/C Reliability of Current Assisted Cu-Cu Direct Bonding on the Contact Resistance: *Sung Woo Ma*[1]; Chanho Shin[1]; Jae-Yong Park[1]; Jeong Hwan Lee[2]; Ki Bum Kim[2]; Minsuk Suh[2]; Namseog Kim[2]; Young-Ho Kim[1]; [1]Hanyang University; [2]SK Hynix Semi.

9:50 AM
Growth Mechanism of $(Cu,Ni)_3Sn$ in Space-confined Ni/Sn/Cu Diffusion Couples: *Wen-Lin Shih*[1]; C. Robert Kao[1]; [1]National Taiwan Universuty

10:10 AM Break

10:30 AM
Size Confinement Governed Solder Alloys Hardening and Eutectic Region Refinements in Cu/SnAgCu/Ni and Cu/SnAg/Ni Assembly Joints: *Cheng-Ying Ho*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

10:50 AM
Metallurgies Evaluation (Sn vs. SnCu0.7% vs. SnAg) for 3D Bumping and Stacking: *George Vakanas*[1]; Teng Wang[2]; Koji Tatsumi[3]; Erik Jan Marinissen[2]; Kenneth Rebibis[2]; Vladimir Cherman[2]; Kristof Croes[2]; Fay Hua[1]; Ingrid De Wolf[2]; Eric Beyne[2]; [1]Intel Corporation; [2]imec; [3]Mitsubishi Materials Corporation

11:10 AM
Intermetallic Compound Growth Behavior during Multiple Reflows of Ni/SnAg/Ni and Cu/SnAg/Ni Microbumps in Three-dimensional Integrated Circuits: *Yu-An Shen*[1]; Yuan-Wei Chang[1]; Chih Chen[1]; Nicholas Kao[2]; Eason Chen[2]; Daniel Lee Lee[2]; Mike Ma[2]; [1]National Chiao Tung University; [2]Siliconware Precision Industries Co., Ltd.

11:30 AM
Study of Interfacial Reactions between Cu Substrate and Lead-free Solders with Low Solder Volume for 3D IC Integration: *Ting-Li Yang*[1]; C. R. Kao[1]; [1]National Taiwan University

Phase Transformation and Microstructural Evolution — Carbon Redistribution in Steels II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, The Ohio State University; Ning Ma, ExxonMobile Research & Engineering; Tadashi Furuhara, Tohoku University; Frédéric Danoix, Université de Rouen; Mohamed Gouné, University of Bordeaux; Francisca Caballero, National Center for Metallurgical Research (CENIM-CSIC); Dhriti Bhattacharyya, Australian Nuclear Science & Technology Organization; Vijay Vasudevan, University of Cincinnati; Osman Anderoglu, Los Alamos National Laboratory; Stuart Maloy, Los Alamos National Laboratory; Chad Sinclair, University of British Columbia

Tuesday AM
February 18, 2014
Room: 31C
Location: San Diego Convention Center

Session Chairs: Frédéric Danoix, Université de Rouen; Chad Sinclair, University of British Columbia

8:30 AM Invited
First-principle Calculations of Carbon and Nitrogen Precipitation in Niobium-bearing Iron Alloys: *David Tingaud*[1]; Philippe Maugis[2]; Frederic Danoix; [1]University Paris; [2]Aix-Marseille University

9:00 AM Invited
Theoretical Description of the Interplay between Interstitial and Substitutional Ordering and Clustering in Ferritic and Austenitic Iron-based Alloys: *Marcel Sluiter*[1]; Satoshi Iikubo[2]; Hiroshi Ohtani[3]; [1]TU Delft; [2]Kyushu Institute of Technology; [3]Tohoku University

9:30 AM
Coupled Carbon Diffusion and Precipitation in a Dissimilar Steel Weld : Modelling and Characterization: *Fanny Mas*[1]; Yao Shan[2]; Catherine Tassin[1]; Ernst Kozeschnik[2]; François Roch[3]; Patrick Todeschini[4]; Yves Bréchet[1]; [1]SIMAP Laboratory; [2]Institute of Materials Science and Technology; [3]Areva NP; [4]EDF R&D

9:50 AM
Crystallisation and Phase Transformations in Sputtered Fe-C Amorphous Films: *Xavier Sauvage*[1]; Amélie Fillon[1]; Ben Lawrence[2]; Elisa Cantergiani[3]; Arnaud Weck[3]; Michel Perez[4]; Colin Scott[5]; Chad Sinclair[2]; [1]University of Rouen, CNRS; [2]Department of Materials Engineering - UBC; [3]Mechanical Engineering Department, University of Ottawa; [4]MATEIS - UMR CNRS 5510 - INSA Lyon; [5]AREVA

10:10 AM Break

10:25 AM
Redistribution of Carbon in Extraterrestrial Metal: Fe-Ni-C Alloys: *Joseph Goldstein*[1]; Gary Huss[2]; Edward Scott[2]; [1]University of Massachusetts, Amherst; [2]University of Hawaii

10:45 AM Invited
Static and Dynamical Aging Processes at Room Temperature in a Fe25Ni0.4C Virgin Martensite: Effect of C Redistribution at the Nanoscale: *Sébastien Allain*[1]; Frederic Danoix; M. Goune[2]; K. Hoummada[3]; D. Mangelinck[3]; [1]TMS; [2]Université de Bordeaux; [3]Aix-Marseille Université

11:15 AM Invited
Carbon Super-saturation and Tetragonal Bainitic Ferrite in Nanocrystalline Bainitic Steels: *Francisca Caballero*[1]; Michael Miller[2]; Hung-Wei Yen[3]; Jose Antonio Jimenez[1]; Carlos Garcia-Mateo[1]; Lucia Morales-Rivas[1]; Jer-Ren Yang[4]; [1]Spanish National Research Center for Metallurgy (CENIM-CSIC); [2]Oak Ridge National Laboratory (ORNL); [3]The University of Sydney; [4]National Taiwan University

11:45 AM
Carbon Redistribution during Low Temperature Tempering of Martensite: Microstructure and Mechanical Properties: *Chad Sinclair*[1]; Guillaume Badinier[2]; Xavier Sauvage[3]; Sebastien Allain[4]; Mohamed Goune[5]; [1]University of British Columbia; [2]APERAM Stainless Steel Research Centre; [3]University of Rouen; [4]Arcelormittal Maizieres Research SA; [5]Universite Bordeaux

12:05 PM
Effects of Carbon Addition on Deformation Behavior of High Mn Steels: *Soo Yeol Lee*[1]; Ki Hyuk Kwon[2]; Jae Suk Jeong[3]; Wanchuck Woo[4]; Nack J. Kim[2]; [1]Chungnam National University; [2]POSTECH; [3]Doosan Heavy Industries & Construction Co., Ltd.; [4]Korea Atomic Energy Research Institute

Progress Towards Rational Materials Design in the Three Decades Since the Invention of the Embedded Atom Method: An MPMD Symposium in Honor of Dr. Michael I Baskes — Advances in Atomistic Simulations - I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Srinivasan Srivilliputhur, University of North Texas; Amit Misra, Los Alamos National Laboratory; Neville Moody, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Mark Asta, University of California ; Alan Needleman, University of North Texas

Tuesday AM
February 18, 2014
Room: 30E
Location: San Diego Convention Center

Session Chairs: Neville Moody, Sandia National Laboratories; Blas Uberuaga, Los Alamos National Laboratory; Vasek Vitek, University of Pennsylvania

8:30 AM Keynote
Designing High-strength and Ductile Nanostructured Alloys with the Help of Computational Modeling: *Yuntian Zhu*[1]; [1]North Carolina State University

9:00 AM Invited
Atomic-scale Origins of Hydrogen Embrittlement in Fe and Ni: *W Curtin*[1]; Jun Song[2]; [1]EPFL; [2]McGill University

9:20 AM Invited
Improved Calculation of Vibrational Mode Lifetimes in Anharmonic Solids: *Murray Daw*[1]; [1]Clemson University

9:40 AM Invited
Simulations at Scale and Beyond: *David Srolovitz*[1]; Zhaoxuan Wu[2]; Emanuel Lazar[1]; YongWei Zhang[2]; [1]University of Pennsylvania; [2]Institute of High Performance Computing

10:00 AM Break

10:20 AM
Mesoscale Modeling of the Tensile Response of bcc Fe and Mo in the Athermal Regime: *Ronan Madec*[1]; Ladislas Kubin[2]; [1]CEA; [2]LEM (CNRS/ONERA)

10:40 AM Invited
Simulations of Dislocation Motion at Experimentally Realistic Stresses: *Tom Swinburne*[1]; Sergei Dudarev[2]; Mark Gilbert[2]; Steve Fitzgerald[2]; Adrian Sutton[1]; [1]Imperial College London; [2]EURATOM/CCFE Fusion Association

11:00 AM Invited
Atomic-scale Modeling of Dislocation Nucleation from FCC-BCC Interfaces: *Irene Beyerlein*[1]; Jian Wang[1]; Ruifeng Zhang[1]; [1]Los Alamos National Laboratory

11:20 AM Invited
Quantitative Simulation of Surface Segregation Phenomena in Metallic Alloys Using the Modified Embedded Atom Method: *Guofeng Wang*[1]; Zhiyao Duan[1]; Yinkai Lei[1]; [1]University of Pittsburgh

11:40 AM Invited
Connecting Interatomic Potentials with Grain Boundary Energetics and Deformation: *Diana Farkas*[1]; [1]Virgina Tech

Rare Metal Extraction & Processing Symposium — Calcium and Rare Earth Metallurgy

Sponsored by: Associação Brasileira de Metalurgia, Materiais e Mineração – ABM, Chinese Society for Metals, Metallurgy and Materials Society of CIM, Institute of Materials, Minerals and Mining, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Neale Neelameggham, Ind LLC; Shafiq Alam, Memorial University of Newfoundland; Harald Oosterhof, Umicore; Animesh Jha, University of Leeds; Shijie Wang, Rio Tinto, Kennecott Utah Copper Refinergy

Tuesday AM
February 18, 2014
Room: 16B
Location: San Diego Convention Center

Session Chairs: Neale R Neelameggham, IND LLC; Bing Li, East China University of Science and Technology

8:30 AM Introductory Comments

8:40 AM Invited
Calcium Reductants – A Historical Review: Neale Neelameggham[1]; *Robert Brown*[2]; Brian Davis[3]; [1]Ind LLC; [2]Magnesium Assistance Group; [3]Brian Davis Associates Consulting

9:00 AM
Research on the Electrochemical Behavior of CaO in CaCl2-CaF2 System in Preparation of Al-Ca Alloys by Fused Salt Electrolysis: *Li Jidong*[1]; Cao Wenliang[2]; Zhang Mingjie[2]; Wang Yiyong[1]; [1]Liaoning University of Science and Technology; [2]School of Materials and Metallurgy, Northeastern University

9:20 AM
Recovery of Rare Earth Metals (REMs) from Primary and Secondary Resources: A Review: *Vinay Kumar*[1]; Manis Kumar Jha[1]; Archana Kumari[1]; Rekha Panda[1]; J. Rajesh Kumar[2]; Jin Young Lee[2]; [1]CSIR-National Metallurgical Laboratory; [2]Korea Institute of Geoscience and Mineral Resources (KIGAM)

9:40 AM
Mutual Separation of Rare Earths Using Chemically Modified Chitosan Immobilized with Functional Groups of Chelating Agents: *Katsutoshi Inoue*[1]; Shafiq Alam[2]; [1]Saga University; [2]Memorial University

10:00 AM Break

10:20 AM
Electrochemistry for Nd Electrowinning from Fluoride-oxide Molten Salts: *Bing Li*[1]; [1]East China University of Science and Technology

10:40 AM
Recovery of Rare Earth Metals from Wasted Magnet: *Takashi Nagai*[1]; Tatsuki Uzawa[1]; [1]Chiba Institute of Technology

11:00 AM
Environment-friendly Recycling Process for Rare Earth Metals in End-of-life Electric Products: *Tomonori Saeki*[1]; Tomohiko Akahori[1]; Yu Miyamoto[1]; Masayuki Kyoi[1]; Masahide Okamoto[1]; Yuzo Hiroshige[1]; Takeshi Nemoto[1]; Toru Okabe[2]; [1]Hitachi Ltd.; [2]The University of Tokyo

11:20 AM
Assessment of Environmental Impact of Rare Earth Metals Recycling from Used Magnets: *Tomohiko Akahori*[1]; Yuzo Hiroshige[1]; Masaharu Motoshita[2]; Hiroki Hatayama[2]; Kiyotaka Tahara[2]; [1]Hitachi, Ltd.; [2]AIST

Ultrafine Grained Materials VIII — Young Scientist I: Deformation and Failure Mechanisms

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

Program Organizers: Suveen Mathaudhu; Yuri Estrin, Monash University; Zenji Horita, Kyushu University; Enrique Lavernia, University of California - Davis; Xiaozhou Liao, The University of Sydney; Lei Lu, Institute for Materials Research; Qiuming Wei, University of North Carolina - Charlotte; Gerhard Wilde, University of Muenster; Yuntian Zhu, North Carolina State University

Tuesday AM
February 18, 2014

Room: 6E
Location: San Diego Convention Center

Session Chairs: Gerhard Wilde, University of Muenster; Quiming Wei, University of North Carolina - Charlotte

8:30 AM
Strain Rate and Temperature Effects on Uniaxial Deformation and Fracture of Copper with Preferentially Oriented Nanoscale Twins: *Zesheng You*[1]; Lei Lu[1]; Ke Lu[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

8:45 AM
Oxide Particle vs. Carbon Doped Nickel: Two Strategies to Stabilize Nanocrystallites: *Oliver Renk*[1]; Anton Hohenwarter[2]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science; [2]University of Leoben

9:00 AM
Low Temperature Process Optimization for Ultra-fine Grained Mg-3Al-1Zn Alloy: *Ebubekir Dogan*[1]; Matthew Vaughan[1]; Ibrahim Karaman[1]; [1]Texas A&M University

9:15 AM
Deformation Behavior of ZK_{60} Magnesium Alloy Processed by High-pressure Torsion at Elevated Temperatures: *Seyed Alireza Torbati Sarraf*[1]; Terence Langdon[1]; [1]University of Southern California

9:30 AM
Effect of Strain Rate and Grain Size on the Deformation Mechanism of Ultrafine-grained Al Alloy Produced via FSP: *Mageshwari Komarasamy*[1]; Rajiv Mishra[1]; [1]University of North Texas

9:45 AM
In Situ Micro Compression Testing of Ultra Fine Grain, Ultra High Purity Copper: A Size Effect Study: *Cameron Howard*[1]; Chansun Shin[2]; Bill Choi[3]; Scott Parker[1]; Peter Hosemann[1]; David Frazer[1]; Amanda Lupinacci[1]; [1]UC Berkeley; [2]Myongji University; [3]LLNL

10:00 AM Break

10:15 AM
Influence of Processing Deformation Mode on UFG Al-Zn-Mg-Cu Alloy: *Kaka Ma*[1]; Tao Hu[1]; Troy Topping[1]; Ali Yousefiani[2]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California, Davis; [2]Boeing Research & Technology

10:30 AM
Powder-route Synthesis and Mechanical Testing of an Ultrafine Grained W Alloy: *Zachary Cordero*[1]; Emily Huskins[2]; Steven Livers[3]; Mansoo Park[1]; Brian Schuster[2]; Megan Frary[3]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology; [2]Army Research Laboratory; [3]Boise State University

10:45 AM
Yielding Behavior and Its Effect on Uniform Elongation in IF Steel: *Si Gao*[1]; Meichuan Chen[1]; Mohit Joshi[1]; Akinobu Shibata[1]; Nobuhiro Tsuji[1]; [1]Kyoto Univesity

11:00 AM
Effect of Sample Volume on Microstructure Evolution during Severe Plastic Deformation: *Saurabh Basu*[1]; M. Ravi Shankar[1]; [1]University of Pittsburgh

11:15 AM
Reinforcement Size Dependence of Failure Mechanisms in Boron Carbide/Aluminum Matrix Composites: *Hanry Yang*[1]; Troy Topping[1]; Lin Jiang[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis

11:30 AM
Deformation of Accumulative Roll Bonded Bulk Copper-Niobium Nanolaminates by Kink Band Formation: *Thomas Nizolek*[1]; Irene Beyerlein[2]; Nathan Mara[2]; Tresa Pollock[1]; [1]University of California Santa Barbara; [2]Los Alamos National Laboratory

11:45 AM
Nanoscale Deformation Behavior of Phase-reversion Induced Austenitic Stainless Steels: The Interplay between Grain Size from Nano-grain Regime to Coarse-grain Regime
: *Venkata Sai Challa*[1]; Pavan Challa Venkata Surya[1]; Devesh Misra[1]; Mahesh Somani[2]; Pentti Karjalainen[2]; [1]University of Louisiana at Lafayette; [2]The University of Oulu

2014 Functional Nanomaterials: Synthesis, Properties and Applications — Characterization and Properties II & Carbon Nanomaterials I

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

Program Organizers: Nitin Chopra, The University of Alabama; Terry Xu, The University of North Carolina at Charlotte; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas - Pan American; Ashwin Ramasubramaniam, University of Massachusetts Amherst; Jung-kun Lee, University of Pittsburgh; Ramki Kalyanaraman, The University of Tennessee, Knoxville; Stephen Turano, Georgia Tech Research Institute

Tuesday PM
February 18, 2014

Room: Ballroom D
Location: San Diego Marriott Marquis & Marina

Session Chairs: Nitin Chopra, The University of Alabama; Stephan Turano, Georgia Tech Research Institute; Jiyoung Kim, The University of Texas at Dallas

2:00 PM
Characterization of Cerium-based Nanomaterials for Photocatalytic Applications: *Carlos Castano*[1]; Matthew O'Keefe[1]; William Fahrenholtz[1]; [1]Missouri University of Science and Technology

2:15 PM
Effect of Dealloying Temperature on Pore/Strut Size and Resulting Properties of Copper Foams: *Seungjin Nam*[1]; Singon Kang[1]; Donghyun Bae[2]; Hyunjoo Choi[1]; [1]Kookmin University; [2]Yonsei University

2:30 PM
Preparation and Ultraviolet-visible Absorption Property of AAO/Ni Composite Membranes: Jiang Du[1]; *Zhengfu Zhang*[1]; Hongying Hou[1]; Jinhui Peng[1]; Yongbiao Yang[1]; [1]Kunming University of Science and Technology

2:45 PM Invited
Surface Plasmon Response in Bimetallic Nanoparticles: *Gerd Duscher*[1]; [1]UTK

3:15 PM
The Effect of Nanotwins on the Thermal Stability and Corrosion Resistance of Cu: *Yifu Zhao*[1]; Michael Kassner[1]; Andrea Hodge[1]; [1]University of Southern California

3:35 PM Break

3:55 PM
Fabrication and Characterization of Multilayer Nanoporous films: Lei Wang[1]; *T. John Balk*[1]; [1]University of Kentucky

4:15 PM Keynote
Graphene-like 2D-layered Materials for Nanoelectronics & Sensing Applications: *Anupama Kaul*[1]; [1]National Science Foundation & JPL, Caltech

4:55 PM Invited
Functional Carbon Nanomaterial Heterostructures: *Mark Hersam*[1]; [1]Northwestern University

5:25 PM
Metal-free Nitrogen Doped Microwave-exfoliated Graphene Nanosheets(N-MEG) as Effective Counter Electrode for Dye Sensitized Solar Cells: *Zhai Peng*[1]; Chang Ya-Huei[1]; Huang Yu-Ting[1]; Feng Shien-Ping[1]; [1]The University of Hong Kong

2014 TMS RF Mehl Medal Symposium on Frontiers in Nanostructured Materials and Their Applications — Nanometals I-Twinning and Interfacial Effects for Application

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Nuggehalli Ravindra, New Jersey Institute of Technology; Ramki Kalyanaraman, University of Tennessee; Haiyan Wang, Texas A&M University; Yuntian Zhu, North Carolina State University; Justin Schwartz, North Carolina State University; Amit Goyal, Oak Ridge National Laboratories

Tuesday PM
February 18, 2014
Room: Ballroom E
Location: San Diego Marriott Marquis & Marina

Session Chairs: Xiaozhou Liao, University of Sydney; G. Sundararajan, ARCI

2:00 PM Invited
Radiation Damage Tolerant Nanomaterials: *Amit Misra*[1]; [1]Los Alamos National Laboratory

2:20 PM Invited
Consequences of Neutron Irradiation on ECAP Steel: *Ahmad Alsabbagh*[1]; Ruslan Valiev[2]; K.L Murty[1]; [1]North Carolina State University; [2]Ufa State Aviation Technical University

2:40 PM Invited
Laser-accelerated thin foil impact experiments for studies of intermetallic reactions in Nanolayered Ni+Al foils: Sean Kelly[1]; *Naresh Thadhani*[1]; [1]Georgia Institute of Technology

3:00 PM
The Surface Energy of the Al-Cu-Fe Quasicrystal: *Jean-Marie Dubois*[1]; [1]Institut Jean Lamour

3:20 PM Break

3:40 PM Invited
Atomic-scale Understanding of Deformation Twins in Hexagonal-close-packed Metals: *Jian Wang*[1]; Carlos Tome[1]; Irene Beyerlein[1]; John Hirth[1]; [1]Los Alamos National Laboratory

4:00 PM Invited
Deformation Twinning and De-twinning in Nanostructured Materials: *Xiaozhou Liao*[1]; [1]The University of Sydney

4:20 PM Invited
Switchable Deformation Mechanism in Columnar-grained Nanotwinned Metals: Zesheng You[1]; Xiaoyan Li[2]; Ting Zhu[3]; Huajian Gao[2]; *Lei Lu*[1]; [1]Institute of Metal Research, CAS; [2]School of Engineering, Brown University; [3]Woodruff School of Mechanical Engineering, Georgia Institute and Technology

4:40 PM Invited
Deformation Twinning in Nano-scale Cu Layers: Rodney McCabe[1]; *Irene Beyerlein*[1]; John Carpenter[1]; Shijian Zheng[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

5:00 PM
Basic Criteria for Formation of Growth Twins in High Stacking Fault Energy Metals: *Xinghang Zhang*[1]; Kaiyuan Yu; Daniel Bufford; Yue Liu; Youxing Chen; Haiyan Wang; [1]Texas A&M University

5:20 PM
The Influence of Stacking Fault Energy on the Formation of Highly Nanotwinned Cu-Al Alloys: *Leonardo Velasco*[1]; Mikhail Polyakov[1]; Andrea Hodge[1]; [1]University of Southern California

5th International Symposium on High Temperature Metallurgical Processing — Roasting, Reduction and Smelting

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Mark Schlesinger, Missouri University of Science and Technology; Onuralp Yücel, ITU; Rafael Padilla, University of Concepcion; Phillip Mackey, P.J. Mackey Technology; Guifeng Zhou, Wuhan Iron and Steel

Tuesday PM
February 18, 2014
Room: 18
Location: San Diego Convention Center

Session Chairs: Mark Schlesinger, Missouri University of Science and Technology; Jianliang Zhang, University of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM Invited
Analysis on the Reasons Attaching Slag to the Lining for Pillar and Walking-ridge in the Hot Rolling's Heating Furnaces: *Guotao Xu*[1]; [1]Wuhan Iron and Steel Group Company

2:20 PM
A Study of Beneficiation of Siderite by Direct Reduction-magnetic Separation Process: *Deqing Zhu*[1]; Yanhong Luo[1]; Jian Pan[1]; [1]Central South University

2:35 PM
Development and Industrial Application of an Improved Lead Oxygen-enriched Flash Smelting Process: Chengyan Wang[1]; Wei Gao[1]; Weijiao Yang[1]; Fei Yin[1]; *Baozhong Ma*[1]; [1]Beijing General Research Institute of Mining and Metallurgy

2:50 PM
Effects of Reducer and Slag Concentrations in the Iron-carbon Nuggets Coalescence in Self Reducing Processes: *Alberto Eloy Nogueira*[1]; Adolfo Pillihuaman Zambrano[2]; Cyro Takano[1]; Marcelo Breda Mourão[1]; [1]Universidade de São Paulo; [2]Universidad Pontificia del Peru

3:05 PM
Industrial Experimental Study on Duplex Combined-blowing Converter Dephosphorization Process: *Yan Zhanhui*[1]; Xing Xiangdong[1]; Jianliang Zhang[1]; Changliang Zhao[1]; Pei Pei[1]; Jiating Rao[1]; [1]University of Science and Technology of Beijing

3:20 PM Break

3:30 PM
Roasting Characteristics of Oxidized Pellets of Vanadium-titanium Magnetite Concentrates: Xuling Chen[1]; Yunsong Huang[1]; Min Gan[1]; Xiaohui Fan[1]; Lishun Yuan[1]; Wei Lv[1]; [1]Central South University

3:45 PM
Thermodynamic Computation and Analysis for the Carbothermic Reduction of TiO_2: *Liangying Wen*[1]; Jiajia Tu[1]; Long Wang[1]; Guibao Qiu[1]; Chengguang Bai[1]; [1]Chongqing University

4:00 PM
Kinetic Analysis of the Smelting Reduction of V_2O_3 in Blast Furnace Slag by Dissolved Carbon in Liquid Iron: Xiao-Yi Zeng[1]; *Yu Wang*[1]; Jia-Rong Yan[1]; Hong-Yi Li[1]; Bing Xie[1]; [1]Chongqing University

4:15 PM
The Distribution of Boron between $CaO\text{-}SiO_2\text{-}MgO\text{-}A_{l2}O_3\text{-}TiO_2$ and Liquid Fe by Chemical Equilibrium Technique: *Shan Ren*[1]; Jianliang Zhang[1]; Xiaodong Ma[2]; Mao Chen[2]; Baojun Zhao[2]; [1]University of Science and Technology Beijing; [2]The University of Queensland

4:30 PM
Thermal Test of Cast Iron Cooling Stave Produced by Lost Foam Casting Process: *Fengguang Li*[1]; [1]University of Science and Technology Beijing

4:40 PM Invited
Study on Limonite Powder by Flash-magnetization Roasting: *Li Jialin*[1]; Chen Wen[1]; Liu Xiaoyin[1]; [1]Changsha Research Institute of Mining &Metallurgy Co.,Ltd

5:05 PM
Study on the Reduction Mechanism of Panzhihua (China) Ilmenite Activated by Ball Milling: *Lei Ying*[1]; Li Yu[1]; Peng Jinhui[2]; Zhang Libo[2]; [1]Anhui University of Technology; [2]Kunming University of Science and Technology

4:50 PM
Simulation on Calciothermic Reduction Process of Titanium Dioxide: *Baoqiang Xu*[1]; Jinyang Zhao[2]; Bin Yang[1]; Xiuming Chen[1]; Dongsheng Wang[1]; Lingxin Kong[1]; [1]National Engineering Laboratory for Vacuum Metallurgy, Key Laboratory of Nonferrous Metals Vacuum Metallurgy of Yunnan Province, Kunming University of Science and Technology; [2]Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology

A Lifetime of Experience with Titanium Alloys: An SMD Symposium in Honor of Jim Williams, Mike Loretto and Rod Boyer — Loretto Honorary Session II: Fatigue II & Advanced Fabrication

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: Adam Pilchak, Air Force Research Laboratory; James Larsen, Air Force Research Laboratory; David Dye, Imperial College London; Jay Tiley, Air Force Research Laboratory

Tuesday PM
February 18, 2014
Room: 1A
Location: San Diego Convention Center

Session Chairs: Hamish Fraser, The Ohio State University; Andy Woodfield, GE Aviation

2:00 PM Invited
30 Years' Experience in Titanium Alloys: *Andy Woodfield*[1]; [1]GE Aviation

2:30 PM Invited
Effect of Macrozones and Alloy Chemistry on Strain Heterogeneity in Ti Alloys: *Michael Preuss*[1]; David Lunt[1]; Arnas Fitzner[1]; Albert Smith[1]; Joao Quinta da Fonseca[1]; [1]University of Manchester

3:00 PM
Low Cycle and Dwell Sensitive Fatigue of Ordered Ti-6Al-4V: *Ananthi Sankaran*[1]; Trevor Lindley[1]; David Dye[1]; [1]Imperial College

3:20 PM Invited
On Ti Powder Processing for Structural Components: *Xinhua Wu*[1]; [1]Monash University

3:40 PM Break

4:00 PM
An Effective Method for Determining Single Crystal Material Parameters in Titanium Alloys: *Euan Wielewski*[1]; Donald Boyce[1]; Matthew Miller[1]; Paul Dawson[1]; [1]Cornell University

4:20 PM
In Situ Synthesis and Characterization of TiB_2 and Ti-Al-B Composites: *Muralidhran Ramachandran*[1]; Ramana Reddy[1]; [1]The University of Alabama

4:40 PM
Analysis of Microstructural Inhomogeneities of Ti-based Alloys Produced Via Laser-based Combinatorial Synthesis: Shichao Liu[1]; Sheng Li[1]; Nicholas Adkins[1]; *Moataz Attallah*[1]; [1]University of Birmingham

5:00 PM
Laser Assisted Cold Spray of Ti-6Al-4V: A Process Optimization Roadmap: *Aaron Birt*[1]; Victor Champagne[2]; Diran Apelian[1]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]Army Research Laboratory

5:20 PM
Synthesis and Behavior of Nano-structured TiNbTaZr Alloys via Mechanical Alloying and Spark Plasma Sintering: *Yitian Wang*[1]; Baolong Zheng[1]; Troy Topping[1]; Yizhang Zhou[1]; Ruslan Valiev[2]; Enrique Lavernia[1]; [1]University of California - Davis; [2]Ufa State Aviation Technical University

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Modeling — In-situ TEM and Materials Testing

Environmental Interactions and Programmatic Aspects

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Peter Hosemann, University of California Berkeley; Julie Tucker, Knolls Atomic Power Laboratory; James Cole, Idaho National Laboratory; Todd Allen, University of Wisconsin-Madison

Tuesday PM
February 18, 2014
Room: 33B
Location: San Diego Convention Center

Session Chair: Todd Allen, Idaho National Laboratory

2:00 PM
Use of In-situ TEM to Study the Response of Metallic Systems Under Ion-beam Irradiation: *Djamel Kaoumi*[1]; [1]The University of South Carolina

2:40 PM
Irradiation Damage Development in Zirconium Carbide: *Christopher Ulmer*[1]; Arthur Motta[1]; Mark Kirk[2]; [1]Pennsylvania State University; [2]Argonne National Laboratory

3:00 PM
In Situ SEM Characterization of Irradiated Stainless Steel: *Amanda Lupinacci*[1]; Zhijie Jiao[2]; Peter Chou[3]; Andrew Minor[1]; Peter Hosemann[1]; [1]UC Berkeley ; [2]University of Michigan; [3]EPRI

3:20 PM
Radiation-induced Microstructure in Metallic Nanopillars: *Eduardo Bringa*[1]; Emilio Figueroa[2]; Gonzalo Gutierrez[2]; Sergio Davis[2]; Alfredo Caro[3]; [1]CONICET- Universidad Nacional de Cuyo; [2]Universidad de Chile; [3]Los Alamos National Laboratory

3:40 PM Break

4:00 PM
Ion Irradiation Effects on Model FE-CR Alloys: *Estelle Meslin*[1]; Arunodaya Bhattacharya[2]; Jean Henry[1]; Brigitte Décamps[3]; Cristelle Pareige[3]; [1]CEA; [2]CEA/CNRS; [3]CNRS

4:20 PM
Evolution of the ATR NSUF in Supporting Nuclear Fuels and Materials R&D: *James Cole*[1]; Frances Marshall[1]; John Jackson[1]; Todd Allen[1]; [1]Idaho National Laboratory

4:40 PM
Corrosion and Hydrogen Pickup of Zircaloy-4 in Simulated PWR Environments with In-situ Proton Irradiation: *Peng Wang*[1]; Gary Was[1]; Zhijie Jiao[1]; [1]University of Michigan

5:00 PM
Corrosion of 316L Stainless Steel in Simulated PWR Conditions with In-situ Proton Irradiation: *Stephen Raiman*[1]; Peng Wang[1]; Gary Was[1]; [1]University of Michigan

Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms — Advanced Materials and HCP Metals

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Materials Characterization Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Marko Knezevic, University of New Hampshire; Irene Beyerlein, Los Alamos National Laboratory

Tuesday PM
February 18, 2014
Room: 8
Location: San Diego Convention Center

Session Chairs: Rodney McCabe, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire

2:00 PM Invited
Local Stress and Strain Measurement Methodologies for In Situ TEM Probing Experiments: *Andrew Minor*[1]; [1]UC Berkeley & LBL

2:30 PM
Counting Dislocations in Micro-crystals with Coherent X-rays: Ex-situ and In-situ Studies of the Plastic Deformation of InSb Micro-pillars: Vincent L.R. Jacques[1]; Geradina Carbone[2]; Rudy Ghisleni[3]; *Ludovic Thilly*[4]; [1]Laboratoire de Physique des Solides; [2]ESRF; [3]EMPA; [4]University of Poitiers

2:50 PM
In Situ HRTEM Observation on Discrete Dislocation Plasticity in 10 nm Nanowires: *Scott Mao*[1]; He Zheng[1]; C. Weinberger[2]; Jianyu Huang; [1]University of Pittsburgh; [2]Sandia National Laboratories

3:10 PM Invited
In Situ Deformation Transmission Electron Microscopy Investigation of the Mechanical Behavior of GaAs Nanowires: *Xiaozhou Liao*[1]; [1]The University of Sydney

3:40 PM Break

4:00 PM Invited
Development of Single-shot Polychromatic Micro X-ray Diffraction for In-situ Observation of Yielding in $MgAZ_{31}$: *Peter Lynch*[1]; Matthew Barnett[1]; [1]Deakin University

4:30 PM
Micromechanical Deformation Behaviour of Hydride-containing Micropillars in Zircaloy-4: *Hannah Weekes*[1]; David Dye[1]; TB Britton[1]; Finn Giuliani[1]; [1]Imperial College London

4:50 PM
Microstructural Characterization of Pure Rhenium under Compressive Loads: *Josh Kacher*[1]; J Morris[1]; Andrew Minor[1]; [1]University of California, Berkeley

5:10 PM
In Situ Characterization of Twin Nucleation Using 3D-XRD in Pure Ti: *Harsha Phukan*[1]; Leyun Wang[2]; Chen Zhang[1]; Thomas Bieler[1]; Armand Beaudoin[3]; Jun-Sang Park[2]; [1]Michigan State University; [2]Argonne National Laboaratory; [3]University of Illinois UrbanaChampaign

Advanced Composites for Aerospace, Marine, and Land Applications — Interface and Bonding of Composite Systems

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Michael Peretti, GE Aviation; Tirumalai Srivatsan, The University of Akron

Tuesday PM
February 18, 2014
Room: 6F
Location: San Diego Convention Center

Session Chairs: Tomoko Sano, US Army Research Laboratory; Brandon McWilliams, US Army Research Laboratory

2:00 PM Invited
Multi-scale Modeling of Continuous Ceramic Fiber Reinforced Aluminum Matrix Composites: *Brandon McWilliams*[1]; Chian-Fong Yen[1]; [1]US Army Research Laboratory

2:20 PM
Development of Percussion Diagnostics in Evaluating 'Kiss' Bonds between Composite Laminates: *Scott Poveromo*[1]; James Earthman[1]; [1]UC Irvine

2:40 PM
Enhanced Mechanical Performance of Woven Composite Laminates Using Plasma Treated Polymeric Fabrics: Timothy Walter[1]; *Andres Bujanda*[1]; Victor Rodriguez-Santiago[1]; Jacqueline Yim[1]; Jose Baeza[2]; Daphne Pappas[3]; [1]U.S. Army Research Laboratory; [2]NAVAIR; [3]EP Technologies LLC

3:00 PM
Adhesively Bonded Composite Joints: An Investigation of Contamination Effects on Durability: *Vishal Musaramthota*[1]; Dwayne McDaniel[2]; Tomas Pribanic[2]; Norman Munroe[1]; Xiangyang Zhou[3]; [1]Florida International University; [2]Applied Research Centre; [3]University of Miami

3:20 PM
New Hybrid Molding Processes for Good Adhesion and Increased Functions of Metal/Plastic Composite Parts: *Gabriel Schenke*[1]; Uwe Vroomen[1]; Andreas Bührig-Polaczek[1]; [1]RWTH Aachen

3:40 PM Break

4:00 PM
Forming Limit Diagram of Steel/Polymer/Steel Sandwich Systems for the Automotive Industry: *Mohamed Harhash*[1]; Heinz Palkowski[1]; [1]TU Clausthal

4:20 PM
Optimization of Process Parameter of Diffusing Bonding of Titanium with Titanium and Titanium with Copper: *Chandrappa Kasigavi*[1]; [1]Siddaganga Institute Of Technology

4:40 PM Invited
The Wettability of TiCx by Ti-Al Alloys at 1758 K: *Xuyang Liu*[1]; Xuewei Lv[1]; Chenguang Bai[1]; Chunxin Li[1]; [1]Chongqing University

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion II — Wide Bandgap Semiconductors 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; Michael McHenry, Carnegie Mellon University; Matthew Willard, Case Western Reserve University; Rachael Myers-Ward, NRL; Mike Lanagan, Penn State University; Clive Randall, Penn State University

Tuesday PM — Room: Cardiff
February 18, 2014 — Location: San Diego Marriott Marquis & Marina

Session Chair: Rachael Myers-Ward, Naval Research Laboratory

2:00 PM Invited
High Performance Wide Bandgap Power Electronics: *Ty McNutt*[1]; [1]APEI, Inc.

2:30 PM Invited
SiC Power Devices and Applications: *Bruce Odekirk*[1]; [1]Microsemi

3:00 PM Invited
Thermal Management Challenges in GaN Electronics: Characterization and Optimized Heat Extraction: *Martin Kuball*[1]; [1]University of Bristol

3:30 PM Break

3:50 PM Invited
Reliability of GaN HEMTs: Electrical and Radiation-induced Failure Mechanisms: *Travis Anderson*[1]; A. Koehler[1]; Karl Hobart; B. Weaver[1]; P. Specht[2]; M. Porter[3]; T. Weatherford[3]; F. Kub[1]; [1]Naval Research Laboratory; [2]University of California, Berkeley; [3]Naval Postgraduate School

4:20 PM Invited
Plasma Enhanced ALD of High-k Dielectrics on GaN and AlGaN: *Brianna Eller*[1]; Jialing Yang[1]; Robert Nemanich[1]; [1]Arizona State University

4:50 PM Invited
Dielectric Breakdown: Theory, Characterization and Its Relationship to Energy and Power Density: *Mike Lanagan*[1]; [1]Penn State University

Advanced Materials in Dental and Orthopedic Applications — Physical and Mechanical Properties of Orthopedic/Dental Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, Michigan Technological University; Terry Lowe, Colorado School of Mines; Hanson Fong, University of Washington; Mathew Mathew, Rush University Medical Center; Cortino Sukotjo, University of Illinois at Chicago

Tuesday PM — Room: 33A
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Tolou Shokuhfar, Michigan Tech; Terry Lowe, Manhattan Scientifics Inc. Company

2:00 PM Invited
Temporomandibular Joint Replacement - Past, Present and Future Material Considerations: *Louis Mercuri*[1]; [1]Rush Orthopedics

2:20 PM
Difference of Wear Behavior Between Ti-29Nb-13Ta-4.6Zr Alloy and Ti-6Al-4V ELI Alloy for Biomedical Applications: *Masaaki Nakai*[1]; Mitsuo Niinomi[1]; Junko Hieda[1]; Ken Cho[1]; Yoon-Seok Lee[1]; [1]Tohoku University

2:35 PM
Mechanical Performance of Different Nickel-titanium Archwires Used in Dentistry: *Daniel Fernandes*[1]; Carlos Elias[2]; Rafael Peres[2]; [1]University of California, San Diego; [2]Military Institute of Engineering

2:50 PM Invited
Novel Synthesis and Characterization of Advanced Materials for Prosthodontics and Orthopedics: *Christos Takoudis*[1]; [1]University of Illinois - Chicago

3:20 PM
Effects of Pre and Post-sintering Treatments on the Mechanical Behaviour of a Y-TZP Ceramic for Prosthodontics: Sheila Pestana Passos[1]; Paul Major[1]; Bernard Linke[1]; *John Nychka*[1]; [1]University of Alberta

3:35 PM Break

3:55 PM
Nanoscale Phase Decomposition and Mechanical Properties of Biomedical Co–Cr–Mo Alloys with Nitrogen Addition: *Kenta Yamanaka*[1]; Manami Mori[2]; Akihiko Chiba[1]; [1]Tohoku University; [2]NISSAN ARC, LTD.

4:10 PM
Scandium as Alloying Addition to Magnesium to Improve the Properties of Biodegradable Implant Materials: *Ida Berglund*[1]; Harpreet Brar[1]; Josephine Allen[1]; Michele Manuel[1]; [1]University of Florida

4:25 PM
Cross-comparison of Rate Dependent Strength of Biocompatible Ti Alloys: *Alan Jankowski*[1]; Zach Grubbs[1]; [1]Texas Tech University

4:40 PM
Mechanical Properties and Biological Evaluation of Ti-39Nb-6Zr Alloy: *Dong-Geun Lee*[1]; Ka-Ram Lim[1]; Yong-tai Lee[1]; [1]Korea Institute of Materials Science

4:55 PM
The Effect of Iron, Silicon and Oxygen on Mechanical Properties of Ti-Nb-Zr-Ta Biomedical Alloy: *Josef Stráský*[1]; Milos Janecek[1]; Petr Harcuba[1]; Michal Landa[2]; [1]Charles University; [2]Czech Academy of Sciences

Advances in Surface Engineering: Alloyed and Composite Coatings III — Electrochemical and Low Temperature Processing of Coatings

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Sandip Harimkar, Oklahoma State University; Jeff De Hosson, Univ of Groningen; Roger Narayan, University of North Carolina and North Carolina State University; Efstathios (Stathis) Meletis, University of Texas at Arlington; Virendra Singh, Schlumberger Rosharon Campus; Srinivasa Bakshi, Indian Institute of Technology-Madras; Mathieu Brochu, McGill University; Arvind Agarwal, Florida International University; Jian Luo, UC San Diego; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS; Choong-un Kim, University of Texas at Arlington; Amit Pandey, Rolls Royce LG Fuel Cell

Tuesday PM — Room: 1B
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Virendra Singh, Schlumberger Rosharon Campus; Sandip Harimkar, Oklahoma State University

2:00 PM Invited
Structure-property-performance Correlations in the Micro Arc Oxidation Coatings Deposited on 6061 T6 Al alloy: *G Sundararajan*[1]; L Ramakrishna[1]; [1]ARCI

2:20 PM
The Effects of P Content in Nanostructured Electrolytic Co-P Coatings: *Sriram Vijayan*[1]; John Carpenter[2]; Amit Datta[2]; Mark Aindow[1]; [1]University of Connecticut; [2]US Chrome Corporation

2:35 PM
Electrodeposition of Ni-Al-Cr Bond Coat and Its High Temperature Behavior on Gamma-TiAl: *Kai Tan*[1]; Viola Acoff[1]; [1]The University of Alabama

2:50 PM
Siliconizing of Fe by Electrochemical Reduction of Si from Molten Silicates: *Hideaki Sasaki*[1]; Masafumi Maeda[1]; [1]Institute of Industrial Science,

The University of Tokyo

3:05 PM
Al-Si-Fe Coatings on 6061 Aluminium Alloy Using Cold Metal Transfer Technique: Rajeev GP[1]; M Kamaraj[1]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras

3:20 PM
Microstructure-processing-microstructure Relationships in Cold Spray Deposited Stainless Steel Coatings: *Luke Brewer*[1]; Jonathan Schiel[1]; Sarath Menon[1]; [1]Naval Postgraduate School

3:35 PM
Effect of Temperature on Wear and Corrosion Properties of Electroless Nickel (Ni-P) Coatings on AISI 1040 steel: *Nanjunda Velu*[1]; Balaji V P[2]; Shanmugam Subramaniam[2]; [1]National Insitute of Technology, Karnataka Suratkal; [2]WABCO

3:50 PM Break

4:00 PM
Study on Corrosion Behavior of Plasma Electrolytic Oxidation (PEO) Coated Friction Stir Welded AA 2024 Weldments: *Jerome Savarimuthu*[1]; Kasimala Suneel[1]; Kumaresh Babu[1]; [1]NIT, Tiruchirappalli,

4:15 PM
Properties of Electrodeposited Ni-Bi Composite Coatings by an Ionic Co-discharge Deposition: *See Tay*[1]; Caizhen Yao[1]; Weiwei Chen[2]; Wei Gao[1]; [1]The University of Auckland; [2]Beijing Institute of Technology

4:30 PM
Effect of Voltage Pulse Duration on Surface Properties of Micro Arc Oxidized AZ91 Mg Alloy: Mert Altay[1]; Namik Gozuacik[1]; *Murat Baydogan*[1]; [1]Istanbul Technical University

4:45 PM
Effects of Electroplating Parameters on the Composition and Morphology of Ag-Cu Deposits: *Fulya Ulu*[1]; Ishak Karakaya[1]; Gökhan Demirci[2]; Mustafa Aras[1]; Metehan Erdogan[3]; [1]Middle East Technical University; [2]Aselsan Inc.; [3]Yildirim Beyazit University

5:00 PM
Study on Preparation of Al by Electrodeposition: *Hongmin Kan*[1]; Ning Zhang[1]; Xiaoyang Wang[1]; Haibo Long[1]; [1]Shenyang University

5:15 PM
Properties of Ceramic Reinforced Copper Matrix Composite Coatings Produced by Cold Gas Dynamic Spraying Technique: Onur Tazegul[1]; Gorkem Yumusak[1]; *Cagdas Calli*[1]; Onur Meydanoglu[1]; E. Sabri Kayali[1]; [1]Istanbul Technical University

5:30 PM
Comparision of Stellite Coatings on Valve Steel Material Prepared by Plasma Transferred Arc and Cold Metal Transfer Techniques: Rajeev GP[1]; Kamaraj M[1]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras

Algorithm Development in Computational Materials Science and Engineering — Towards Higher Length Scales: Mesoscale Modeling and Scale Bridging: Part II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Douglas Spearot, University of Arkansas; Adrian Sabau, Oak Ridge National Laboratory; Mark Tschopp, Army Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology

Tuesday PM
February 18, 2014
Room: 31B
Location: San Diego Convention Center

Session Chairs: Mohsen Asle Zaeem, Missouri University of Science and Technology; Dongsheng Li, Pacific Northwest National Laboratory

2:00 PM Invited
Mapping the Stochastic Response of Nanostructures: *Ellad Tadmor*[1]; Ryan Elliott[1]; Subrahmanyam Pattamatta[1]; [1]University of Minnesota

2:40 PM
About the Effect of the Simulation Temperature in the Monte Carlo Potts Model on Grain Growth: *Dana Zoellner*[1]; [1]Otto von Guericke University Magdeburg

3:00 PM
Adaptive Multiple Super Fast Simulated Annealing for Stochastic Microstructure Reconstruction: *Dongsheng Li*[1]; Guang Lin[1]; [1]Pacific Northwest National Laboratory

3:20 PM
An Innovative 3-D Stochastic Model for Prediction of Dendritic Microstructure of Solidifying Alloys: Daojie Zhang[1]; *Laurentiu Nastac*[1]; [1]The University of Alabama

3:40 PM Break

4:00 PM
Phase Field Crystal Model for FCC Metals Connected to MEAM Molecular Dynamics Simulations: Ebrahim Asadi[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

4:20 PM
A Controlled Stress Energy Minimization Method for Coarse-grained Atomistic Simulation: *Shuozhi Xu*[1]; Rui Che[2]; Liming Xiong[2]; David McDowell[1]; Youping Chen[2]; [1]Georgia Tech; [2]University of Florida

4:40 PM
A Multiscale Approach to Modeling Intergranular Fracture Process: *Benyamin Gholami Bazehhour*[1]; Ilaksh Adlakha[1]; Kiran Solanki[1]; Jay Oswald[1]; [1]Arizona State University

5:00 PM
Order Parameter Re-mapping Algorithm for 3D Phase Field Modeling of Grain Growth Coupled to Mechanics Using FEM: *Cody Permann*[1]; Michael Tonks[1]; [1]INL

Alumina and Bauxite — Cost Reduction/Alumina Recovery

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Ian Duncan, Hatch Ltd

Tuesday PM — Room: 15B
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Roberto Seno , Votorantim Metais/CBA

2:00 PM Introductory Comments

2:05 PM
A Review of Two Phase Flow Modeling and Its Applicability to the Bayer Process: Alessio Scarsella[1]; *Alessio Scarsella*[1]; Hans-Werner Schmidt[1]; [1]Outotec GmbH

2:30 PM
Pipeline Scaling Prevention and Removal Methods in Bayer Digestion Process: *Cao Wenzhong*[1]; Li Haining[1]; Tian Weiwei[1]; Zhong Hong[1]; [1]Nanchang University

2:55 PM
Using of Siliconate-type Polymers as Inhibitor of Scaling at Aluminate Liquors Heating and Evaporation: Vladimir Kazakov[1]; *Vadim Lipin*[2]; [1]St. Petersburg State Technologic University of Plant Polymers; [2]Saint Petersburg State Polytechnical University

3:20 PM Break Session

3:35 PM Introductory Comments

3:40 PM
Crystal Structure and Alumina Leaching Property of Na_2O Doped $C_{12}A_7$: *Bo Wang*[1]; Shufeng Zong[1]; Jianxin Zhang[1]; Huilan Sun[1]; Yubing Zhang[1]; Dongdong Liu[1]; Jiajia Liu[1]; [1]Hebei University of Science and Technology

4:00 PM
Decomposition property of γ-2CaO•SiO_2 during leaching process of calcium aluminate slag: *Sun Huilan*[1]; Bo Wang[1]; Jianxin Zhang[1]; Shufeng Zong[1]; [1]Hebei University of Science and Technology

4:20 PM
Effect of Calcium/Aluminium Ratio on Crystal Structure and Al_2O_3 Leaching Property of 12CaO•7Al_2O_3 by Sol-gel Method: *Bo Wang*[1]; Jianxin Zhang[2]; Shufeng Zong[2]; Huilan Sun[2]; [1]Northeastern University; [2]Hebei University of Science and Technology

4:40 PM
Multi-steps Carbonation Treatment of Calcified Slag of Red Mud: *Lv Guozhi*[1]; Zhang Ting'an[1]; Zhu Xiaofeng[1]; Guo Fangfang[1]; Pan Lu[1]; Liu Yan[1]; Zhao Qiuyue[1]; Li Yan[1]; Jiang Xiaoli[1]; He Jicheng[1]; [1]Northeastern University

Aluminum Alloys: Development, Characterization and Applications — Solutioning and Aging Behaviors

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Zhengdong (Steven) Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; Xiyu Wen, University of Kentucky

Tuesday PM — Room: 12
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Subodh Das, Phinix, LLC ,

2:00 PM
A Study of Precipitation Sequence and Formation Mechanism of High Temperature Second Phases in a Modified 6xxx Al Alloy: Gongwang Zhang[1]; Yi Han[2]; Hiromi Nagaumi[2]; Gang Sha[3]; Chad Parish[4]; Tongguang Zhai[1]; [1]University of Kentucky; [2]Suzhou Research Institute for Nonferrous Metals; [3]The University of Sydney; [4]Oak Ridge National Laboratory

2:20 PM
Precipitates in Long Term Aging Al 5083 Alloy: *Gaosong Yi*[1]; [1]University of Utah

2:40 PM
Effect of Modified Aging Treatments on the Tensile Properties, Quality Indices and Fatigue Life of Cast Components of Aluminum Alloy 354: *Dinesh Babu*[1]; Nagewara Rao Mukinutalapati[2]; [1]Lap-Ross Engineering Limited, Banavaram Post, Pulivalam Village, Vellore District, Tamilnadu, India; [2]VIT University, Vellore

3:00 PM
Effect of Mn and Cr Additions on the Precipitation Behavior of Dispersoids in Al-Mg-Si-Cu Alloy during Homogenization Annealing: *Shijie Guo*[1]; Yi Han[1]; Liang Chen[2]; Tongguang Zhai[2]; Hiromi Nagaumi[1]; [1]Suzhou Research Institute for Nonferrous Metals; [2]University of Kentucky

3:20 PM Break

3:35 PM
Effect of Vanadium Addition on the Structure of Aluminum (Al99,5) and 6xxx Aluminum Alloys: *Sonia Boczkal*[1]; Marzena Lech - Grega[1]; Jerzy Morgiel[2]; Krzysztof Piela[3]; [1]Institute of Non-Ferrous Metals in Gliwice; [2]Institute of Metallurgy and Materials Science of Polish Academy of Sciences; [3]AGH University of Science and Technology

3:55 PM
Aluminum Tailor-welded Blanks for High Volume Automotive Applications: *Yuri Hovanski*[1]; Piyush Upadhyay[1]; Siva Pilli[1]; Blair Carlson[2]; John Carsley[2]; Susan Hartfield-Wunsch[2]; Mark Eisenmenger[3]; [1]Pacific Northwest National Laboratory; [2]General Motors; [3]TWB Inc.

4:15 PM
High Temperature Creep Characterization of A_{380} Cast Aluminum Alloy: *Dimitry Sediako*[1]; Mike Walker[2]; Wojciech Kasprzak[3]; Frank Czerwinski[3]; [1]Atomic Energy of Canada Limited; [2]General Motors Corporation; [3]CanmetMATERIALS

4:35 PM
Role of Ni and Zr in Preserving the Strength of 354 Aluminum Alloy at High Temperature: G.H. Garza-Elizondo[1]; Saleh Ali M Alkahtani; A.M. Samuel[1]; *Fawzy Samuel*[1]; [1]UQAC

4:55 PM
A Study of the Artificial Ageing on the Low Temperature Creep of AlMgSi (AA6201) Wires: *Beata Smyrak*[1]; Tadeusz Knych[1]; Andrzej Mamala[1]; Kinga Korzen[1]; [1]AGH - University of Science and Technology

5:15 PM
Numerical Simulation and Experimental Characterization of Friction Stir Welding on Thick Aluminum Alloy AA_{2139}-T_8 Plates: *Jian Yu*[1]; Brandon McWilliams[1]; Chian-Fong Yen[1]; [1]US Army Research Laboratory

Aluminum Reduction Technology — Environment I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Margaret Hyland, University of Auckland

Tuesday PM — Room: 13
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Stephan Broek, Hatch Ltd

2:00 PM Introductory Comments

2:05 PM
Comparing Different Measurement Approaches to Characterize All PFC Emissions: *Simon Gaboury*[1]; Patrice Tremblay[1]; Anne Gosselin[1]; Jerry Marks[2]; [1]Rio Tinto Alcan; [2]J Marks & Associates LLC

2:30 PM
Anode Effect Phenomena during Conventional AEs, Low Voltage Propagating AEs & Non-propagating AEs: *David S. Wong*[1]; Alton Tabereaux[2]; Pascal Lavoie[1]; [1]The University of Auckland; [2]Consultant

2:55 PM
Monitoring of Continuous PFC Formation in Small to Moderate Size Aluminium Electrolysis Cells: *Henrik Åsheim*[1]; Thor Anders Aarhaug[2]; Alain Ferber[2]; Ole Kjos[2]; Geir Martin Haarberg[1]; [1]NTNU; [2]SINTEF

3:20 PM
At-line Analysis of Polycyclic Aromatic Hydrocarbons in Aluminium Primary Production: Ole Kjos[1]; *Thor Anders Aarhaug*[1]; Bernd Wittgens[1]; Anders Brunsvik[1]; [1]SINTEF

3:45 PM Break

4:00 PM
Raw Gas Particles and Depositions in Fume Treatment Facilities in Aluminum Smelting: *Heiko Gaertner*[1]; Arne Petter Ratvik[2]; Thor Anders Aarhaug[2]; [1]NTNU; [2]SINTEF

4:25 PM
The Nature of Particles and Fines in Potroom Dust: *David Wong*[1]; Nursiani Tjahyono[1]; Margaret Hyland[1]; [1]University of Auckland

4:50 PM
Predictive Tools in Evaluating Re-entrainment of Exhausted Particulate in Different Ventilator Configurations for Different Heat Process Applications: *Edmund Baltuch*[1]; [1]Air-Therm Inc.

5:15 PM
Economic and Environmental Alternative for the Destination of Spent Pot Lining from Primary Aluminium Production: *Bruna Meirelles*[1]; Henrique Santos[1]; [1]Votorantim Metais - CBA

Aluminum Reduction Technology — Fundamentals - Chemistry

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Margaret Hyland, University of Auckland

Tuesday PM
February 18, 2014
Room: 14A
Location: San Diego Convention Center

Session Chair: Gudrun Saevarsdottir, Reykjavik University

2:00 PM Introductory Comments

2:05 PM
Improving XRD Analysis for Complex Bath Chemistries – Investigations and Challenges Faced: *Nursiani Tjahyono*[1]; Tania Groutso[1]; David Wong[1]; Pascal Lavoie[1]; Mark P. Taylor[1]; [1]Light Metals Research Centre

2:30 PM
Al_2O_3-Na_3AlF_6 Man-made Ledge Composites for Aluminum Electrolysis Cells: *Xiaojun Lv*[1]; Chao Zhang[1]; Yanqing Lai[1]; Zhongliang Tian[1]; Ming Jia[1]; Jie Li[1]; [1]Central South University School of Metallurgy and Environment

2:55 PM
Structural Characterisation and Thermophysical Properties of the Side Ledge in the Hall-Héroult Cells: *Sandor Poncsak*[1]; Laszlo Kiss[1]; Rémi St-Pierre[1]; Sébastien Guérard[2]; Jean-François Bilodeau[2]; [1]Univeristy of Quebec at Chicoutimi; [2]Rio Tinto Alcan, CRDA

3:20 PM
The Melting Behaviour of Aluminium Smelter Crust: *Qinsong Zhang*[1]; Mark P Taylor[2]; John J.J. Chen[2]; [1]Shenyang Aluminium & Magnesium Engineering & Research Institute Co. Ltd; [2]Light Metals Research Centre,The University of Auckland

3:45 PM Break

4:00 PM
Key Physical Properties of Smelter Grade Alumina: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

4:25 PM
Modeling the Behavior of Alumina Agglomerate in the Hall-Héroult Process: *Véronique Dassylva-Raymond*[1]; Laszlo Kiss[1]; Sandor Poncsak[1]; Patrice Chartrand[2]; Jean-François Bilodeau[3]; [1]University of Quebec at Chicoutimi; [2]École Polytechnique de Montréal; [3]Rio-Tinto-Alcan

4:50 PM
Wetting Characteristics of Cryolite-based Melts on Spinels Substrate: Reiza Mukhlis[1]; *Muhammad Akbar Rhamdhani*[1]; Geoffrey Brooks[1]; Kathie McGregor[2]; [1]Swinburne University of Technology; [2]CSIRO Process Science and Engineering

Bulk Metallic Glasses XI — Fatigue and Other Properties

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; H. Choo, University of Tennessee; Y. Gao, University of Tennessee; Y. F. Shi, Rensselaer Polytechnic Institute

Tuesday PM
February 18, 2014
Room: 2
Location: San Diego Convention Center

Session Chairs: Gongyao Wang, University of Tennessee; Jamie Kruzic, Oregon State University

2:00 PM Invited
Unique Characteristics of the Fracture and Fatigue Behavior of Bulk Metallic Glasses: *Jamie Kruzic*[1]; Steven Naleway[1]; Bernd Gludovatz[2]; Robert Ritchie[2]; [1]Oregon State University; [2]Lawrence Berkeley National Laboratory

2:20 PM
Biocorrosion and Cytotoxicity Studies on $Cu_{60}Zr_{20}Ti_{20}$ Metallic Glass: *S. Vincent*[1]; A. Daiwile[2]; S. S. Devi[2]; B. Murty[3]; Jatin Bhatt[1]; [1]Visvesvaraya National Institute of Technology, Nagpur; [2]National Environmental Engineering Research Institute, Nagpur; [3]Indian Institute of Technology Madras

2:30 PM Invited
Formation of Oxide Layer with an Amorphous Structure in Metallic Glasses: Kang Cheol Kim[1]; Sung Hyun Park[1]; Min Young Na[1]; Ka Ram Lim[2]; Won Tae Kim[3]; *Do Hyang Kim*[1]; [1]Yonsei University; [2]Korea Institute of Materials Science; [3]Cheongju University

2:50 PM
Electrochemical Corrosion Behavior of Amorphous and Crystalline Zr-based Alloys in Simulated Body Fluid: *Ali Tabeshian*[1]; Dan Persson[2]; Ragnhild Aune[1]; Steven Savage[3]; [1]Norwegian University of Science and Technology; [2]Swerea KIMAB AB; [3]Swedish Defense Research Agency

3:00 PM Invited
Composition and Surface Tailoring of Zr-based Bulk Metallic Glasses: Implications for Bio-applications: *Wei He*[1]; Lu Huang[1]; Samuel Goddard[1]; Elizabeth Fozo[1]; Peter Liaw[1]; [1]The University of Tennessee

3:20 PM
Corrosion and Cytotoxicity of a Ni-free Zr-Al-Fe-Cu Bulk Metallic Glass: *Lu Huang*[1]; Wei Zhang[2]; Lance Garrett[3]; Samuel Goddard[1]; Wei Wu[1]; Peter Liaw[1]; Wei He[1]; [1]The University of Tennessee; [2]Dalian University of Technology; [3]South Dakota School of Mines and Technology

3:30 PM Break

3:50 PM Invited
Shear Band and Crack Microstructures of a Zr-based Bulk Metallic Glass in Fatigue Testing: *Pei-Ling Sun*[1]; Gongyao Wang[2]; Peter Liaw[2]; [1]Feng Chia University; [2]University of Tennessee

4:10 PM
Fatigue of Bulk Metallic Glasses and their Composites: *Gongyao Wang*[1]; Y. Yokoyama[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Collaborative Research and Development Center for Advanced Materials

4:20 PM Invited
Erosion Behavior of Bulk Metallic Glasses: *Sundeep Mukherjee*[1]; [1]University of North Texas

4:40 PM
Dealloying and Corrosion Behavior of a Pd-Based Metallic Glass: *Yehan Zhang*[1]; Simon Garrett[1]; Robert Conner[1]; [1]California State University, Northridge

4:50 PM Invited
Dynamic Hysteresis in Cyclic Deformation of Crystalline/Noncrystalline Solids: *Gong Li*[1]; R.P Liu[1]; Sibo Gao[1]; P.K. Liaw[1]; [1]University of Tennessee

5:10 PM
Bulk Metallic Glasses (BMG) and Conventional Surface Modified Biomaterials: A Comparative Tribocorrosion Study in Simulated Body Fluid: *Guohua Zhao*[1]; Cristian Torres[2]; Nuria Espallargas[3]; Ragnhild Aune[1]; [1]KTH Royal Institute of Technology; [2]Universidad Politecnica de Valencia; [3]Norwegian University of Science and Technology

5:20 PM Invited
Static and Dynamic Structure of Zr-based Bulk Metallic Glasses: Pei Zhang[1]; Li He[1]; Jinn Chu[2]; Yen-Chen Chen[2]; Chia-Lin Li[2]; Peter Liaw[3]; Matt Besser[4]; Matt Kramer[4]; *Paul Voyles*[1]; [1]University of Wisconsin, Madison; [2]National Taiwan University of Science and Technology; [3]University of Tennessee, Knoxville; [4]Ames Lab

Cast Shop for Aluminum Production — Grain Refinement/Solidification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Edward Williams, Alcoa

Tuesday PM — Room: 15A
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Dmitry Eskin, Brunel University

2:00 PM Introductory Comments

2:05 PM
Grain Refinement of Aluminium Alloys: Recent Developments in Predicting the As-Cast Grain Size of Alloys Refined by Al-Ti-B Master Alloys: Mark Easton[1]; Arvind Prasad[2]; *David StJohn*[2]; [1]RMIT University; [2]University of Queensland

2:30 PM
A Comparison of the Effects of Al-Ti-B Type Grain Refiners from Different Makers on Pure Aluminum: *Wei Dai*[1]; Xiaoming Wang[1]; Weitao Zhao[2]; Qingyou Han[1]; [1]Purdue University; [2]Sitong New Metal Limited Company

2:55 PM
Improved Grain Refinement of AA_{6060} Extrusion Billets: *John Courtenay*[1]; Isabell Klauke[2]; Rein Vainik[1]; Giuseppe Esposito[2]; Marcel Rosefort[2]; [1]MQP Limited; [2]Trimet Aluminium SE

3:20 PM
On the Performance of a Novel Grain Refiner in Hyper-eutectic Al-Si Cast Alloys: *Leandro Bolzoni*[1]; Magdalena Nowak[1]; Hari Babu Nadendla[1]; [1]Brunel University

3:45 PM Break

4:00 PM
Analysis of Boron Treatment for V Removal using AlB_2 and AlB_{12} based Master Alloys: Abdul Khaliq[1]; *Muhammad Akbar Rhamdhani*[1]; Geoffrey Brooks[1]; John Grandfield[2]; [1]Swinburne University of Technology; [2]Grandfield Technology Pty Ltd

4:25 PM
The Effect of Trace Levels of Ni and V on Properties of Four Common Aluminium Alloys: *John Grandfield*[1]; Lisa Sweet[2]; Aiden Beer[3]; Su-Ming Zhu[2]; Xiaobo Chen[2]; Mark Easton[2]; [1]Grandfield Technology Pty Ltd; [2]Monash University; [3]Deakin University

4:50 PM
Evaluation of Functional Properties of the Rapidly Solidified Cast AlSi30 Alloy as a Material for Transport Applications: *Boguslaw Augustyn*[1]; Marcin Szymanek[1]; Dawid Kapinos[1]; Marek Nowak[1]; Wojciech Pakiela[2]; [1]Institute of Non Ferrous Metals; [2]Silesian University of Technology

5:15 PM
The Near-rapid Solidification Behavior of AA_{1070} Aluminum Alloy: *Yulin Liu*[1]; Li Zhang[1]; Yuhua Zhao[1]; Jijie Wang[1]; Chunzhong Liu[1]; [1]Shenyang Aerospace University

Celebrating the Megascale: An EPD Symposium in Honor of David G.C.Robertson — Iron and Steel Production

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Phillip Mackey, P.J. Mackey Technology; Rodney Jones, Mintek; Eric Grimsey, Curtin University, W A School of Mines; Geoffrey Brooks, Swinburne University of Technology

Tuesday PM — Room: 16A
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Roderick Guthrie, McGill University; Gordon Irons, McMaster University

2:00 PM Introductory Comments

2:05 PM Invited
Sustainability in Ironmaking: The Rise of Direct Reduction: *Thomas Battle*[1]; [1]Midrex Technologies

2:25 PM Invited
Ferroalloy Induced Precipitates in Continuously Cast Microalloyed Steels: Syed Shah[1]; *Hani Henein*[1]; Douglas Ivey[1]; [1]Department of Chemical and Materials Engineering, University of Alberta

2:45 PM Invited
Kinetics of Reaction Important in Oxygen Steelmaking: *Kenneth Coley*[1]; [1]McMaster University

3:05 PM Invited
Current Status and Future Direction of Low-emission Integrated Steelmaking Process: *Sharif Jahanshahi*[1]; Alex Deev[1]; Nawshad Haque[1]; Liming Lu[1]; John Mathieson[1]; Terry Norgate[1]; Yuhua Pan[1]; Philip Ridgeway[2]; Harold Rogers[3]; Michael Somerville[1]; Dongsheng Xie[1]; Paul Zulli[3]; [1]CSIRO; [2]Arrium; [3]BlueScope Steel

3:25 PM Invited
Analysis of Steelmaking Reactions by Coupled Reaction Model: *Shinya Kitamura*[1]; [1]Tohoku University

3:45 PM Break

4:05 PM Invited
Cold Modelling of Splashing Phenomena in Oxygen Steelmaking: Shabnam Sabah[1]; *Geoffrey Brooks*[1]; [1]Swinburne University of Technology

4:25 PM
Lean Operations Strategy to Combat Uncertainties in Temperature at BOF Endpoint, Tapping, Deoxidation, Alloy Addition and Thermal History: Ishani Shukla[1]; G Rajesh[2]; *Ajay Shukla*[3]; Deepu Philip[1]; [1]Indian Institute of Technology, Kanpur; [2]Visakhapatnam Steel Plant; [3]Indian Institute of Technology, IIT Madras

4:45 PM Invited
Ladle Metallurgy Kinetics: Inclusion-inclusion Reactions: *P. Chris Pistorius*[1]; [1]Carnegie Mellon University

5:05 PM
Valorization of Electrical Arc Furnace Oxidizing Slag: *Joonho Lee*[1]; [1]Korea University

Characterization of Minerals, Metals and Materials 2014 — Characterization of Non Ferrous Metals

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

Tuesday PM
February 18, 2014
Room: 7A
Location: San Diego Convention Center

Session Chairs: Joseph McKeown, Lawrence Livermore National Laboratory; Daniel Coughlin, Los Alamos National Laboratory

2:00 PM
Processing and Mechanical Behavior of Unalloyed Plutonium: *Adam Farrow*[1]; Cameron Knapp[1]; Deniece Korzekwa[1]; Tarik Saleh[1]; Trevor Knapp[1]; [1]Los Alamos National Laboratory

2:20 PM
Evolution of Grain Boundary Character during FCC Metal Grain Growth: Justin Brons[1]; *Gregory Thompson*[1]; [1]University of Alabama

2:40 PM
Kinetically Modified Eutectic Growth during *In Situ* Rapid Solidification of Thin-film Al-Cu Alloys: *Joseph McKeown*[1]; Andreas Kulovits[2]; Kai Zweiacker[2]; Can Liu[2]; Bryan Reed[1]; Thomas LaGrange[1]; Jörg Wiezorek[2]; Geoffrey Campbell[1]; [1]Lawrence Livermore National Laboratory; [2]University of Pittsburgh

3:00 PM
Deformation Mechanisms and Precipitate Structure in Ni-Base Superalloy 718: *Donald McAllister*[1]; Duchao Lv[1]; Benjamin Peterson[2]; Michael Mills[1]; [1]The Ohio State University; [2]Honeywell Aerospace

3:20 PM
Effects of Composition and Thermal Gradients on Rapid Solidification Microstructures in Hypoeutectic Al-Cu Alloys: *Kai Zweiacker*[1]; Can Liu[1]; Andreas Kulovits[2]; Joseph McKeown[3]; Bryan Reed[3]; Thomas LaGrange[3]; Geoffrey Campbell[3]; Jorg Wiezorek[1]; [1]University of Pittsburgh; [2]Carnegie Mellon University; [3]Lawrence Livermore National Laboratory

3:40 PM Break

3:50 PM
Elastic and Anelastic Properties of Superalloys: Anomalies Due to Microstructure: *Sarah Driver*[1]; Mark Hardy[2]; Howard Stone[1]; Richard Harrison[1]; Michael Carpenter[1]; [1]University of Cambridge; [2]Rolls-Royce plc.

4:10 PM
Material Properties of Nickel Rich NiTiHf Shape Memory Alloys Subjected to Short Term Aging: *Daniel Coughlin*[1]; Xiang Chen[2]; Glen Bigelow[3]; Anita Garg[3]; Ronald Noebe[3]; Michael Mills[2]; [1]Los Alamos National Laboratory; [2]Ohio State University; [3]NASA Glenn Research Center

4:30 PM
Microstructure and Electrical Conductivity in Shape and Size Controlled Molybdenum Particle Thick Film: *Youngsoo Jung*[1]; Erica Stevens[1]; Bo Ding[1]; Sun-Dong Kim[2]; Sang-Kuk Woo[2]; Jung-Kun Lee[1]; [1]University of Pittsburgh; [2]Korea Institute of Energy Research

4:50 PM
Optical Constants of Silver Based Alloys in the UV Range: *Kanagasundar Appusamy*[1]; Sivaraman Guruswamy[1]; Steve Blair[1]; [1]University of Utah

5:10 PM
Measurement of the Activity of Cu in Cu-Ni Alloys by Double Knudsen Cell Mass Spectrometry: *Yoshifumi Kobashi*[1]; Hideaki Sasaki[1]; Masafumi Maeda[1]; [1]Institute of Industrial Science, the University of Tokyo

Computational Modeling and Simulation of Advanced Materials for Energy Applications — Continuum Modeling and Beyond

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Lan Li, Boise State University; Laura Bartolo, Kent State University; Cong Wang, Northwestern University; Chandler Becker, NIST

Tuesday PM
February 18, 2014
Room: Mission Hills
Location: San Diego Marriott Marquis & Marina

Session Chairs: Cong Wang, Northwestern University ; Lan Li, Boise State University

2:00 PM Invited
Application of Computational Thermodynamics in Solid Oxide Fuel Cell: Yu Zhong[1]; [1]Saint-Gobain High Performance Materials

2:30 PM
Mechanical Stability of Solid Oxide Fuel Cell (SOFC) Materials: A Microstructure-based Continuum Modeling Approach: Fadi Abdeljawad[1]; *Mikko Haataja*[1]; [1]Princeton University

2:50 PM
Phase Wettability and Morphological Evolution in Solid Oxide Fuel Cell Anodes: Ryan Davis[1]; Fadi Abdeljawad[1]; *Mikko Haataja*[1]; [1]Princeton University

3:10 PM
Modeling of Mechano-chemical Degradation of Polymer Membranes in an Operating PEFC: *Randhir Singh*[1]; Pang-Chieh Sui[1]; Ka Wong[2]; Erik Kjeang[2]; Ned Djilali[1]; [1]University of Victoria; [2]School of Mechatronic Systems Engineering

3:30 PM Break

3:50 PM
Determination and Optimization Best Condition for Bioleaching of Sulfide Low Grade Copper Ore by Using DOE(Design of Experimental) Method and Define a Mathematical Equation: *Hossein Etminan*[1]; Azadeh Razmi[2]; [1]GolGohar Mining & Industrial Company; [2]Amirkabir University of Technology

4:10 PM
Numerical Simulation for the Splashing Behavior in an Oxygen Converter Process: Zhijun Ji[1]; *Chenn Zhou*[2]; Bin Wu[2]; Guangwu Tang[2]; Shiqi Li[1]; [1]University of Science and Technology Beijing; [2]Purdue University Calumet

4:30 PM
Research on Prediction of the Stability of Partially Stabilized Zirconia Baeds on LM-BP Neural NetworK: *Li Dongbo*[1]; [1]Yunnan Copper Industry Co., LTD

4:50 PM
Effect of the Porosity on Compressive Properties of Porous Materials: *Yilong Liao*[1]; Guibao Qiu[1]; Jian Xiao[1]; Chenguang Bai[1]; [1]Chongqing University

5:10 PM
Modeling, Statistical Analyses and Simulations of Random Items and Behavior on Material Surfaces: *Katerina Helisova*[1]; [1]Czech Technical University in Prague, Faculty of Electrical Engineering

Computational Thermodynamics and Kinetics — First-principles Calculations

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Long Qing Chen, Penn State University; Guang Sheng, Scientific Forming Technologies Corporation; Jeffrey Hoyt, McMaster University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Tuesday PM
February 18, 2014
Room: 30D
Location: San Diego Convention Center

Session Chairs: Anton Van der Ven, University of Michigan; Dallas Trinkle, University of Illinois at Urbana-Champaign

2:00 PM
Impact of Local Magnetism on Stacking Fault Energies: A First Principles Investigation for fcc Iron: *Ivan Bleskov*[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

2:20 PM
First-principles Calculations of Diffusion Coefficients in Ferromagnetic and Paramagnetic BCC Fe: *Hong Ding*[1]; Vsevolod Razumovskiy[2]; Shenyan Huang[3]; Gautam Ghosh[4]; Peter Piaw[3]; Mark Asta[1]; [1]University of California, Berkeley; [2]Materials Center Leoben Forschung GmbH; [3]The University of Tennesee; [4]Northwestern University

2:40 PM
First-principles Calculations of Solute-grain Boundary Binding in Mg: *Liam Huber*[1]; Jörg Rottler[1]; Matthias Militzer[1]; [1]University of British Columbia

3:00 PM
First-principles Solution Strengthening Model for Iron: *Michael Fellinger*[1]; Louis Hector, Jr.[2]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign; [2]General Motors R&D Center

3:20 PM
Ab Initio Study of Gamma1-Al4Cu9: Jaeyoung Kwon[1]; Ludovic Thuinet[1]; Marie-Noëlle Avettand-Fènoël[1]; Alexandre Legris[1]; *Rémy Besson*[2]; [1]Unité Matériaux et Transformations - Université de Lille; [2]CNRS - Unité Matériaux et Transformations - Université de Lille

3:40 PM Break

3:55 PM
Ab Initio Modeling of the 1/2<111> Screw Dislocation 2D Energy Landscape and Consequences on the Schmid Law Deviation in BCC Transition Metals: *Lucile Dezerald*[1]; Lisa Ventelon[1]; David Rodney[2]; Francois Willaime[1]; [1]CEA; [2]Grenoble INP

4:15 PM
First-principles Study of Coherent Phase Equilibria in Ti-O: *David Olmsted*[1]; Maarten de Jong[1]; Paul Erhart[2]; Mark Asta[1]; [1]University of California, Berkeley; [2]Chalmers University of Technology

4:35 PM
Interface Segregation and Cohesive Energy for MoSi2-based Alloys: A First-principles Study: *Koretaka Yuge*[1]; Yuichiro Koizumi[2]; Koji Hagihara[3]; Takayoshi Nakano[4]; Kyosuke Kishida[1]; Haruyuki Inui[1]; [1]Department of Materials Science and Engineering, Graduate School of Engineering, Kyoto University; [2]Institute for Materials Research, Tohoku University; [3]Department of Adaptive Machine Systems, Graduate School of Engineering, Osaka University; [4]Division of Materials & Manufacturing Science, Graduate School of Engineering, Osaka University

4:55 PM
Ab Initio Study on Liquid Metal Embrittlement in the Fe/Zn System: Klaus-Dieter Bauer[1]; *Mira Todorova*[2]; Kurt Hingerl[1]; Joerg Neugebauer[2]; [1]Universitaet Linz; [2]Max-Planck-Institut fuer Eisenforschung GmbH

5:15 PM
Atomic Scale Modelling of Point Defects in Materials: Coupling Ab Initio and Elasticity Approaches: *Celine Varvenne*[1]; Bruneval Fabien[1]; Emmanuel Clouet[1]; [1]CEA Saclay

Data Analytics for Materials Science and Manufacturing — Inverse and Forward Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Jeff Simmons, Air Force Research Laboratory; Charles Bouman, Purdue University; Fariba Fahroo, Air Force Office of Scientific Research; Surya Kalidindi, Georgia Institute of Technology; Jeremy Knopp, Air Force Research Laboratory; Peter Voorhees, Northwestern University

Tuesday PM
February 18, 2014
Room: 32B
Location: San Diego Convention Center

Session Chairs: Charles Bouman, Purdue University; Youssef Marzouk, Massachusetts Institute of Technology

2:00 PM Invited
Forward Modeling of Electron Microscopy: *Marc De Graef*[1]; [1]Carnegie Mellon University

2:25 PM Invited
Dictionary-based Diffraction Microscopy for Materials: *Alfred Hero*[1]; [1]University of Michigan

2:50 PM Invited
Model-based Iterative Reconstruction for Multimodal Electron Tomography: *Lawrence Drummy*[1]; Singanallur Venkatakrishnan[2]; Marc DeGraef[3]; Jeff Simmons[1]; Charles Bouman[2]; [1]Air Force Research Laboratory; [2]Purdue Univeristy; [3]Carnegie Mellon University

3:15 PM Invited
Data Analytics for Residual Stress in Materials: *Michael Hill*[1]; [1]University of California, Davis

3:40 PM Break

4:00 PM Invited
Microstructure Feature Tracking Using the Forward Modeling Method: *S.F. Li*[1]; J. Lind[2]; J. Bernier[1]; C. Hefferan[3]; R. Suter[2]; A. Rollett[2]; M. Kumar[1]; [1]Lawrence Livermore National Laboratory; [2]Carnegie Mellon University; [3]RJLee Group, Inc

4:25 PM Invited
Physics-based Models for Information Processing with Applications to Materials Characterization: *Eric Miller*[1]; Shuchin Aeron[1]; Brian Tracey[1]; Matthew Miller[2]; [1]Tufts University; [2]Cornell University

4:50 PM
Modeling Direct and Inverse Problems in Ferritic Heat-exchanger Tubes: *Harold Sabbagh*[1]; John Aldrin[2]; Kim Murphy[3]; Elias Sabbagh; [1]Victor Technologies, LLC; [2]Computational Tools; [3]Victor Technologies, LLC

Deformation, Damage, and Fracture of Light Metals and Alloys III — Al-Mg and Other Alloys

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday PM
February 18, 2014
Room: 19
Location: San Diego Convention Center

Session Chair: Caroline Scheck, Naval Surface Warfare Center

2:00 PM
Effect of Thermal Treatment on the Mechanical Properties of Roll Bonded Al/Mg Laminated Sheets: *Kwang Seok Lee*[1]; Su Eun LEE[1]; Young-Seon LEE[1]; Yong-Nam KWON[1]; [1]Korea Institute of Materials Science

2:25 PM
Experimental Investigation of the Mg-Al-Ba System: *Zachary Bryan*[1]; Ryan Hooper[1]; Michele Manuel[1]; [1]University of Florida

2:50 PM
Fatigue Crack Growth Behavior and Thermal Remediation of Al-Mg Alloys after Long Time Low Temperature Exposures: *Mohsen Seifi*[1]; John Lewandowski[1]; [1]Case Western Reserve University

3:15 PM
The Impact of $A_{l_3}Zr$ Precipitates on Mechanical Properties Evolution in Al-Mn-Fe-Si Alloys: *Michaela Poková*[1]; Miroslav Cieslar[1]; [1]Charles University in Prague, Faculty of Mathematics and Physics

3:40 PM Break

3:55 PM
Microstructure and Mechanical Properties in Dissimilar Joint between Al alloy and Cu by Ultrasonic Welding: *Hiromichi Fujii*[1]; [1]Tohoku University

4:15 PM
Effect of Cryomilling on the Strengthening and deformation Mechanisms of an Al-Cu-Mg-Ag Alloy: *Lilia Kurmanaeva*[1]; Troy D. Topping[1]; Julie M. Schoenung[1]; Enrique J. Lavernia[1]; [1]University of California, Davis, USA

4:40 PM
Investigation of the Mn Additions on the Mechanical Response of HCP Mg-Li-Zn Alloys: *Ryan Hooper*[1]; Zachary Bryan[1]; Michele Manuel[1]; [1]University of Florida

Dynamic Behavior of Materials VI – An SMD Symposium in Honor of Professor Marc Meyers — High Strain Rate Effects on Shear Localization

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Naresh Thadhani, Georgia Institute of Technology; George Gray, Los Alamos National Laboratory

Tuesday PM
February 18, 2014
Room: 3
Location: San Diego Convention Center

Session Chairs: Ron Armstrong, University of Maryland; Paul Follansbee, St. Vincent College

2:00 PM Keynote
Shear Localization at High Strain Rates: *Alain Molinari*[1]; [1]Université Paul Verlaine-Metz

2:30 PM Invited
Shear Bands: The Interplay between Strain and Temperature Gradients: *Elias Aifantis*[1]; [1]Aristotle U. Thessaloniki, Greece

2:50 PM Invited
Dynamically Expanding Eshelby Inclusions: Self-similar Motion: *Xanthippi Markenscoff*[1]; Luqun NI[2]; [1]MAE 0411; [2]University of California, San Diego

3:10 PM
Investigation of the Impact-initiated Combustion of Aluminum Using Meso-scale Diagnostics: *Jennifer Breidenich*[1]; Gregory Kennedy[1]; Zhitao Kang[2]; Christopher Summers[1]; Naresh Thadhani[1]; [1]Georgia Institute of Technology; [2]Georgia Tech Research Institute

3:30 PM
Numerical Simulation of Instability and Failure in Metals under Dynamic Shear Loading: *Yuriy Bayandin*[1]; Oleg Naimark[1]; Natalia Savelieva[1]; [1]Institute of Continuous Media Mechanics, Ural Branch of Russian Academy of Sciences

3:50 PM Break

4:10 PM
Dynamic Deformation Behavior of Equal Channel Angular Extruded AZ31 Magnesium Alloy: *Eswara Prasad Korimilli*[1]; Kelvin Xie[1]; Brady Butler[1]; N. M. Krywopusk[1]; T.P. Wiehs[1]; Kevin J Hemker[1]; Kalit T Ramesh[1]; [1]Johns Hopkins University

4:30 PM
Modeling of Incipient Spall Damage Using Microstructurally Explicit 3D Finite Element Models: Kapil Krishnan[1]; Andrew Brown[1]; Leda Wayne[1]; *Pedro Peralta*[1]; Shengnian Luo[2]; Darrin Byler[3]; Robert Dickerson[3]; Kenneth McClellan[3]; Aaron Koskelo[3]; [1]Arizona State University; [2]Sichuan University; [3]Los Alamos National Laboratory

4:50 PM
Dynamic Strain Localization in F.C.C. Materials: A Perturbation Approach: *M. Arul Kumar*[1]; [1]Los Alamos National Laboratory

Electrode Technology for Aluminium Production — Bake Furnace Design and Operation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Andre Proulx, Rio Tinto Alcan

Tuesday PM
February 18, 2014
Room: 14B
Location: San Diego Convention Center

Session Chair: Jean-Claude Fischer, R&D Carbon Ltd.

2:00 PM Introductory Comments

2:05 PM
Improving Fuel Gas Injection in Anode Baking Furnace: Fabienne Virieux[1]; Nicolas FIOT[2]; *Pierre MAHIEU*[2]; [1]Fives Solios; [2]Solios Carbone

2:30 PM
Anode Baking Furnace Firing System Lean Engineering: Yann El Ghaoui[1]; *Philippe Contard*[1]; Christophe Bayard[1]; Yvan Foster[1]; François Ordronneau[1]; Peter Sulzberger[1]; Edgard Altmann[1]; Raphael Grange[1]; Jérémie Lhuissier[1]; Patrick Noraz[1]; [1]Rio Tinto Alcan

2:55 PM
Effect of Heating Rate on the Crack Formation during Baking in Carbon Anodes Used in Aluminum Industry: *Salah Amrani*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Gerry Blaney[2]; [1]1University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc

3:20 PM Break

3:30 PM
Structured Approach to Modernization of Fume Treatment Centers: *Erik Dupon*[1]; Edo Engel[1]; Rick Oliana[1]; Bas Admiraal[1]; Peter Klut[1]; [1]Danieli Corus

3:55 PM
Upgrade of an Existing Fume Treatment Plant at Aluar to Cope Higher Production in the New Open Type Anode Baking Furnace: *Esteban Cobo*[1]; Juan Artola[1]; Luis Beltramino[1]; Frank Heinke[2]; Detlef Maiwald[2]; Domenico Di Lisa[2]; [1]Aluar Aluminio Argentino; [2]Innovatherm Prof.-Dr. Leisenberg GmbH & Co KG

Energy Technologies and Carbon Dioxide Management — Novel Technologies and Life Cycle Assessment

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Education Committee, TMS: Energy Committee
Program Organizers: Cong Wang, Northwestern University; Jan de Bakker, BBA, Inc; Cynthia Belt, Consultant; Animesh Jha, University of Leeds; Neale Neelameggham, Ind LLC; Soobhankar Pati, MOxST Inc.; Leon Prentice, CSIRO

Tuesday PM
February 18, 2014
Room: Balboa
Location: San Diego Marriott Marquis & Marina

Session Chairs: Neale Neelameggham , Ind LLC; Jan De Bakker, BBA, Inc.

2:00 PM Keynote
Pure Oxygen Anodes™ for Low- or Zero-carbon Energy Efficient Metal Oxide Reduction: *Adam Powell*[1]; Matthew Earlam[1]; Salvador Barriga[1]; [1]Infinium, Inc.

2:30 PM Invited
Electrochemistry of Fe(III) in Molten Salt $CaCl_2$-KF and $CaCl_2$-CaF_2-KF: Li Li[1]; Xuan Liu[2]; *Shulan Wang*[1]; [1]Northeastern University; [2]Carnegie Mellon University

3:00 PM
Novel LiNO3–NaNO3–KNO3–NaNO2 Molten Salts for Solar Thermal Energy Storage Applications: *Tao Wang*[1]; Ramana Reddy[1]; [1]The University of Alabama

3:20 PM Break

3:40 PM Invited
Sustainable Materials Extraction: *Antoine Allanore*[1]; [1]Massachusetts Institute of Technology

4:10 PM
Life Cycle Assessment of Different Gold Extraction Process: Chao Li[1]; *Hongxu Li*[1]; Meng Wang[1]; Xie Yang[1]; Xiangxin Hao[1]; [1]University of Science and Technology

4:30 PM
Performance Evaluation, Technical and Environmental Aspects of Biomass Cookstoves: An Exergy Approach: *S Tyagi*[1]; A Pandey[1]; Kunwar Pal[1]; [1]SSS-National Institute of Renewable Energy

4:50 PM
Economical Desulfurization of Petroleum Coke: *Louis Herrington*[1]; [1]LEHCO

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Characterization and Modeling of Fatigue Crack Initiation and Growth

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday PM — Room: 7B
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Jacob Hochhalter, NASA LaRC; Antonios Kontsos, Drexel University

2:00 PM Break

2:05 PM Invited
3D Characterization and Modeling of Fatigue Cracks: *Anthony Rollett*[1]; Robert Suter[1]; [1]Carnegie Mellon University

2:25 PM Invited
Development of Techniques for Investigating Fatigue Behavior in the Very High Cycle Fatigue Regime: *J. Wayne Jones*[1]; Jason Geathers[1]; Chris Torbet[2]; Samantha Daly[1]; [1]University of Michigan; [2]University of California Santa Barbara

2:45 PM Invited
Fatigue Crack Initiation in Metal Matrix: *Guocai Chai*[1]; [1]Sandvik Materials Technology

3:05 PM
Predicting the Behavior of Small Fatigue Cracks: *Jamie Kruzic*[1]; [1]Oregon State University

3:25 PM
Load-Interaction Effects on the Stress Field around a Fatigue Crack Tip: *Soo Yeol Lee*[1]; E-Wen Huang[2]; Wanchuck Woo[3]; Kuan-Wei Lee[2]; [1]Chungnam National University; [2]National Central University; [3]Korea Atomic Energy Research Institute

3:45 PM Break

4:05 PM
Effect of Service Time on Fatigue Crack Propagation Behavior of Inconel 718 for J85 Engine Turbine Disc: *Daeho Jeong*[1]; Doohong Ahn[1]; Sangshik Kim[1]; [1]Gyeongsang National University

4:25 PM
Predictions of Microstructurally Driven Fatigue Crack Initiation and Scatter in Polycrystalline Materials: *Saikumar Reddy Yeratapally*[1]; Michael Sangid[1]; Michael Glavicic[2]; Robert Goetz[2]; [1]Purdue University; [2]Rolls Royce Corporation

4:45 PM
The Anisotropy of Fatigue Crack Nucleation in an AA7075 T651 Al Alloy Plates: *Yan Jin*[1]; Tongguang Zhai[1]; [1]University of Kentucky

5:05 PM Concluding Comments

Gamma TiAl Alloys 2014 — Session IV

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Titanium Committee
Program Organizers: Young-Won Kim, Gamteck, Inc.; Wilfried Smarsly, MTU Aero Engines GmbH; Junpin Lin, University of Science and Technology Beijing; Dennis Dimiduk, Air Force Research Laboratory; Fritz Appel, Helmholtz Zentrum Geesthacht

Tuesday PM — Room: 6B
February 18, 2014 — Location: San Diego Convention Center

Session Chairs: Harayuki Inui, Kyoto University; Sara Biamino, Politecnico di Torino

2:00 PM Invited
Fundamental and Application-oriented Research on Gamma Alloys: *Rui Yang*[1]; [1]Institute of Metal Research CAS

2:25 PM
Deformation of PST Crystals of $Ti_{46}A_{l8}Nb$ and $Ti_{46}Al_8Ta$: *Yina Guo*[1]; Ronghua Liu[2]; Hao Jin[2]; Rui Yang[2]; Aijun Huang[3]; Michael Loretto[4]; [1]University of Limerick; [2]Institute of Metal Research Chinese Academy of Sciences; [3]Shanghai Baosteel Group Corporation; [4]University of Birmingham

2:45 PM
Development of TiAl Alloys with Enhanced Room Temperature Ductility: A Fundamental Study Using In Situ TEM: *Seong-Woong Kim*[1]; Jae Keun Hong[1]; Young-Sang Na[1]; Jong-Taek Yeom[1]; Seung-Eon Kim[1]; [1]Korea Institute of Materials Science (KIMS)

3:05 PM
Tailoring Lamellar Microstructure through Heat Treatment Design of TiAl Alloys: *Chunyu Teng*[1]; Dongsheng Xu[1]; Yunzhi Wang[2]; Rui Yang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]Department of Materials Science and Engineering, The Ohio State University

3:25 PM
Thermal Stability of Lamellar Microstructure in Ti_2AlN/TiAl(4822) Composites: *Yiwen Liu*[1]; Rui Hu[1]; Tiebang Zhang[1]; Hongchao Kou[1]; Jinshan Li[1]; [1]State Key Laboratory of Solidification Processing, Northwestern Polytechnical University

3:45 PM Break

4:05 PM Invited
Anisotropy in Mechanical Properties and Directional Solidification of Lamellar TiAl: *Haruyuki Inui*[1]; Kyosuke Kishida[1]; [1]Kyoto University

4:30 PM
Fracture Toughness of the Constituent Phases and Interfaces of PST-TiAl Crystals as Measured by Microcantilever Tests: *Mathias Göken*[1]; Farasat Iqbal[1]; Karsten Durst[1]; [1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

4:50 PM
Deformation Induced Internal Stresses in Multiphase Titanium Aluminide Alloys: *Fritz Appel*[1]; Roland Hoppe[1]; [1]Helmholtz Zentrum Geesthacht

5:10 PM
Influence of Aluminum Content on the Columnar-to-equiaxed Transition in Ti-Al-X Gamma Titanium Aluminides: *Nicole Reilly*[1]; Julien Zollinger[1]; Dominique Daloz[1]; Céline Marcillaud[2]; [1]Institut Jean Lamour; [2]SNECMA (Safran Group)

High-temperature Gamma (f.c.c.) /Gamma-Prime (L12 structure) Co-Al-W Based Superalloys — Defects and Microstructural Evolution

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: David Seidman, Northwestern University; David Dunand, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center; Carelyn Campbell, National Institute of Standards and Technology; Ursula Kattner, National Institute of Standards and Technology; David Dye, Imperial College

Tuesday PM
February 18, 2014
Room: 5A
Location: San Diego Convention Center

Session Chairs: David Seidman, Northwestern University; Chantal Sudbrack, National Aeronautics and Space Administration

2:00 PM Invited
From Ni- to Co-based Superalloys: γ' Phase Stability and Superlattice Stacking Fault Energies: *Alessandro Mottura*[1]; Tresa Pollock[2]; [1]University of Birmingham; [2]University of California, Santa Barbara

2:30 PM Invited
APB Energetics of $Co_3(Al,W)$ $L1_2$ γ': *James Saal*[1]; Chris Wolverton[1]; [1]Northwestern University

3:00 PM
Physical Metallurgy and Creep Behaviour of Some Candidate Co-base Superalloys: *Matthias Knop*[1]; Vassili Vorontsov[1]; Mark Hardy[2]; David Dye[1]; [1]Imperial College London; [2]Rolls-Royce plc

3:20 PM Break

3:40 PM Invited
Coarsening Kinetics of γ' Precipitates in Cobalt-base Alloys: Subhashish Meher[1]; Soumya Nag[1]; Jamie Tiley[2]; *Rajarshi Banerjee*[1]; [1]University of North Texas; [2]Airforce Research Laboratory

4:10 PM
Microstructure and Mechanical Behavior of a High-temperature Co-Al-W-Ti-B Superalloy: *Daniel Sauza*[1]; Noam Eliaz[1]; Peter Bocchini[1]; David Dunand[1]; David Seidman[1]; [1]Northwestern University

4:30 PM Concluding Comments

Hume-Rothery Award Symposium: Thermodynamics and Kinetics of Engineering Materials — Iron-base Systems

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Hans Juergen Seifert, Karlsruhe Institute of Technology (KIT); Alan Luo, The Ohio State University; Peter Uggowitzer, ETH Zürich; Fan Zhang, CompuTherm, LLC

Tuesday PM
February 18, 2014
Room: 6C
Location: San Diego Convention Center

Session Chairs: John Morral, The Ohio State University; Sinn-wen Chen, National Tsing Hua University (Taiwan)

2:00 PM Invited
Application of the CALPHAD Method for Ferritic Boiler Steels: *André Schneider*[1]; [1]V&M Deutschland GmbH

2:20 PM Invited
Thermodynamic Properties of Al Cr Fe Alloys Experimental Investigation by Knudsen Effusion Mass Spectrometry: *Torsten Markus*[1]; [1]Forschungszentrum Juelich GmbH

2:40 PM
Phase Stability in Fe-rich Fe-Cr-Ni-Mo system: *Ying Yang*[1]; Lizhen Tan[1]; Jeremy Busby[1]; [1]Oak Ridge National Laboratory

3:00 PM
Interfacial Reaction between Steel Sheets and Zn Coating Layer: *SeungPill Jung*[1]; ByeongJoo Lee[1]; [1]POSTECH

3:20 PM Invited
Study of Mechanism and Real Time Simulation of Ammonia (NH3) Nitridation with a DFT Calculation and a KMC Simulation: Sang Chul Yeo[1]; *Hyuck Mo Lee*[1]; [1]KAIST

3:40 PM Break

4:00 PM
Anharmonic Phonon Entropy in Alpha-Fe at Elevated Temperatures: *Lisa Mauger*[1]; Matthew Lucas[1]; Jorge Munoz[1]; Sally Tracy[1]; Brent Fultz[1]; [1]California Institute of Technology

4:20 PM
Phase-field Model with Gibbs Energy Formulation Using the Sublattice Formalism: *Oleg Scchyglo*[1]; Lijun Zhang[2]; Ingo Steinbach[1]; [1]Ruhr-University; [2]Central South University

4:40 PM
Experimental Determination of Solid/Liquid Equilibria of Systems with Reactive Components: Example of the Ternary Fe-Ti-B System: *Annie Antoni-Zdziobek*[1]; Maya Gospodinova[1]; Fiqiri Hodaj[1]; Frédéric Bonnet[2]; [1]SIMaP / Grenoble INP; [2]Arcelor Mittal Research SA

ICME: Linking Microstructure to Structural Design Requirements — ICME: Linking Microstructure to Structural Design Requirements IV

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Rajiv Mishra, University of North Texas; David Furrer, Pratt & Whitney; Peter Collins, University of North Texas; Charles Ward, Air Force Research Laboratory; Craig McClung, Southwest Research Institute

Tuesday PM
February 18, 2014
Room: 31A
Location: San Diego Convention Center

Session Chair: Charles Ward, Air Force Research Laboratory

2:00 PM Invited
Sandia's Multiscale Program to Understand and Manage Material Variability in Structural Applications: *Brad Boyce*[1]; Corbett Battaile[1]; Joseph Bishop[1]; Arthur Brown[1]; Thomas Buchheit[1]; Jay Carroll[1]; Blythe Clark[1]; Lisa Deibler[1]; John Emery[1]; Richard Field[1]; James Foulk[1]; Lucas Hale[1]; Khalid Hattar[1]; Paul Kotula[1]; Hojun Lim[1]; Jonathan Madison[1]; Jeffrey Rodelas[1]; Donald Susan[1]; Christopher Weinberger[1]; Jonathan Zimmerman[1]; [1]; [1]Sandia National Laboratories

2:40 PM Invited
Development of High Temperature Steels for Advanced Ultrasupercritical Steam Turbines: Siwei Cao[1]; Changdong Wei[1]; *Ji-Cheng Zhao*[1]; [1]The Ohio State University

3:20 PM
Strategic Characterization of Two-phase Superalloy Microstructure for Development of Physics-based Multi-scale Modeling Platform: *Jessica Krogstad*[1]; David Eastman[1]; Luke Rettberg[2]; Tresa Pollock[2]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]University of California, Santa Barbara

3:40 PM Break

4:00 PM
Modeling the Influence of Microstructure on Residual Stress Relaxation of a Shot-peened Nickel-base Superalloy Exposed at Elevated Temperature: *Micheal Burba*[1]; Dennis Buchanan[2]; Michael Caton[3]; Christopher Szczepanski[3]; Reji John[3]; [1]University of Dayton; [2]University of Dayton Research Institute; [3]Air Force Research Laboratory

4:20 PM
Effect of Applied Stresses and Stress Gradientson Residual Stresses in Shot Peened Superalloys: *Dennis Buchanan*[1]; Reji John[2]; [1]UDRI; [2]AFRL

4:40 PM
Influence of Prestrain and Microstructure on the Creep Behavior of a Nickel-base Superalloy: *Micheal Burba*[1]; Dennis Buchanan[2]; Michael Caton[3]; Christopher Szczepanski[3]; Reji John[3]; [1]University of Dayton; [2]University of Dayton Research Institute; [3]Air Force Research Laboratory

Light-metal Matrix (Nano)-composites — Emerging Processes

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, European Space Agency; Dmitry Eskin, Brunel University

Tuesday PM
February 18, 2014
Room: 17B
Location: San Diego Convention Center

Session Chair: Manoj Gupta, National University of Singapore

2:00 PM Keynote
Solidification Nanoprocessing of Metallic Nanocomposites: From Nanoscience to Nanoproduction: *Xiaochun Li*[1]; [1]University of Wisconsin-Madison

2:30 PM
The Physical-mechanical Properties of Aluminum Nanocomposites Produced by High Energy Explosion Impact: Sergey Vorozhtsov[1]; *Alexander Vorozhtsov*[1]; Sergey Kulkov[1]; Vitaly Komarov[2]; [1]Tomsk State University; [2]Institute for Problems of Chemical and Energetic Technologies of the SB RAS

2:50 PM
Achieving Uniform Distribution and Dispersion of a High Percentage Nanoparticles in Mg18Sn Matrix by Solidification Processing: *Lianyi Chen*[1]; Jun-Yang Peng[1]; Jiaquan Xu[1]; Hongseok Choi[1]; Xiaochun Li[1]; [1]University of Wisconsin Madison

3:10 PM
Processing of Metal Matrix Composites Under External Fields and Their Application as Grain Refiner: *Edward Djan*[1]; Sreekumar Madam[1]; Nandendla Babu[1]; Javier Tamayo-Ariztondo[1]; Dmitry Eskin[1]; Zhomgyun Fan[1]; [1]BCAST

3:30 PM Break

3:50 PM Invited
Grain Refinement and Nanoparticles Dispersion Using Traveling Magnetic Field: Mariano Garrido Pacheco[1]; Yves Fautrelle[1]; Mustafa Megahed[2]; Laurent Davoust[1]; *Valdis Bojarevics*[3]; Koulis Pericleous[3]; Ole Koeser[4]; [1]SIMAP-EPM; [2]ESI; [3]University of Greenwich; [4]Centre of Innovation Manageom

4:10 PM
Effect of Nano-reinforcement on Properties of Cast Mg-Al Alloy AZ_{91}: *Mohamed Gamal Mahmoud*[1]; Iman El-Mahallawi[1]; Ragaie Mohamed Rashad[1]; [1]Cairo University, Faculty of Engineering

4:30 PM
Nanoparticles Distribution and Mechanical Properties of a Few Aluminum Alloys Matrix Nano-composites Treated with External Fields: *Javier Tamayo-Ariztondo*[1]; Sreekumar VadakkeMadam[1]; Edward Djan[1]; Zhongyun Fan[1]; Hari Babu Nadendla[1]; Dmitry Eskin[1]; [1]Brunel University

4:50 PM
Manufacturing of Nano-surface AA_{7075} Composites by Friction Stir Processing: Mohamed Ahmed[1]; Mohamed Refat[2]; *Iman El Mahallawi*[3]; [1]Suez Canal University; [2]British University in Egypt; [3]Cairo University

5:10 PM
Magnesium Metal Matrix Nanocomposites By Electromagnetic Acoustic Transduction: Hunter Henderson[1]; Zachary Bryan[1]; Orlando Rios[2]; Alexander Melin[2]; Gerard Ludtka[2]; Gail Mackiewicz-Ludtka[2]; *Michele Manuel*[1]; [1]University of Florida; [2]Oak Ridge National Laboratory

Magnesium Technology 2014 — Deformation II

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Martyn Alderman, Magnesium Elektron; Norbert Hort, Helmholtz-Zentrum Geesthacht; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Tuesday PM
February 18, 2014
Room: 17A
Location: San Diego Convention Center

Session Chairs: Kiran Solanki, Arizona State University; Warren Poole, University of British Columbia

2:00 PM
Dislocation Activity in $AZ_{31}B$ Magnesium Deformed at Moderately Elevated Temperatures via EBSD: *Timothy Ruggles*[1]; Ali Khosravani[1]; Fullwood David[1]; Michael Miles[1]; [1]BYU

2:20 PM
Deformation, Recrystallization and Grain Growth Behavior of Large-strain Hot Rolled Binary Mg-1Dy Alloy: *Indranil Basu*[1]; Talal AlSamman[1]; [1]RWTH Aachen

2:40 PM
Static Recrystallization and Grain Growth in a Magnesium AZ31B-H24 Alloy Sheet: *Aravindha Antoniswamy*[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]General Motors Corporation

3:00 PM
Deformation Behavior and Dynamic Recrystallization of Micro-alloyed Mg-Al-Ca Alloys during High Temperature Deformation: *Jing Su*[1]; Abu Syed Humaun Kabir[1]; In-Ho Jung[1]; Steve Yue[1]; [1]McGill

3:20 PM
Physically-based Model for Static Recrystallization in AZ_{31}: Paul Okrutny[1]; Shenglong Liang[1]; Lingyao Meng[1]; *Hatem Zurob*[1]; [1]McMaster University

3:40 PM Break

4:00 PM
The Role of Deformation Modes on Ductility and Dynamic Recrystallization Behavior of AZ31 Mg Alloy at Low Temperatures: *Ebubekir Dogan*[1]; Matthew Vaughan[1]; Ceylan Hayrettin[1]; Ibrahim Karaman[1]; Georges Ayoub[2]; [1]Texas A&M University; [2]Texas A&M University at Qatar

4:20 PM
Recrystallization Behavior of Binary Mg Alloys: *Victoria Miller*[1]; Jian-Feng Nie[2]; Tresa Pollock[1]; [1]University of California Santa Barbara; [2]Monash University

4:40 PM
Effect of Microstructure on Deformation and Fracture of Thixomolded and Thermomechanically Processed AZ_{61}: *Tracy Berman*[1]; William Donlon[1]; Raymond Decker[2]; Tresa Pollock[3]; J. Wayne Jones[1]; [1]University of Michigan; [2]nanoMAG, LLC.; [3]University of California Santa Barbara

5:00 PM
Microstructure Evolution and Mechanical Properties of Mg–14%Li–1%Al Alloy during the High-pressure Torsion: *Chenguang Tian*[1]; Huimin Lu[1]; Liyuan Zhao[1]; [1]Beihang University

Magnetic Materials for Energy Applications IV — Fundamentals of the Magnetocaloric Effect and Current Status of Magnetic Cooling Technology

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Magnetic Materials Committee
Program Organizers: Thomas G. Woodcock, IFW Dresden; Julia Lyubina, Evonik Industries AG; Matthew Willard, Case Western Reserve University

Tuesday PM — Room: Ballroom G
February 18, 2014 — Location: San Diego Marriott Marquis & Marina

Session Chairs: Julia Lyubina, Evonik Industries AG; Ekkes Brück, Delft University of Technology

2:00 PM Invited
Giant Magnetocaloric Effect: Is There Room for Improvement?: *Vitalij Pecharsky*[1]; Yaroslav Mudryk[2]; Durga Paudyal[2]; Karl Gschneidner[2]; [1]Iowa State University; [2]Ames Laboratory, Iowa State University

2:30 PM Invited
Overview of the Characteristic Features of the Magnetic Phase Transition with Regards to the Magnetocaloric Effect: the Hidden Relationship between Hysteresis and Latent Heat: *Kelly Morrison*[1]; [1]Loughborough University

3:00 PM Invited
Electronic and Magnetic Properties of Ni_2MnGa and RT_5 Alloys: *Ingo Opahle*[1]; [1]ICAMS, Ruhr-Universität Bochum

3:30 PM Break

3:45 PM
Combined Phase Field Method and Microgmagnetic Simulations of Magnetic Phase Transition in NiMnInCo Metamagnetic Alloys: *Houbing Huang*[1]; Xingqiao Ma[2]; Jianjun Wang[2]; Long-Qing Chen[1]; [1]Penn State University; [2]USTB

4:05 PM Invited
Commercialising Magnetic Refrigeration: *Neil Wilson*[1]; [1]Camfridge Ltd.

4:35 PM Invited
Magnetocaloric Refrigeration Concepts: Current State of the Art: *Kaspar Nielsen*[1]; [1]Technical University of Denmark

5:05 PM Invited
First-order Transition Magnetocaloric Materials in Rotary Magnetic Refrigerators: *Carl Zimm*[1]; Steven Jacobs[1]; [1]Astronautics Corporation of America

Materials and Fuels for the Current and Advanced Nuclear Reactors III — Structural Materials II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday PM — Room: 33C
February 18, 2014 — Location: San Diego Convention Center

Session Chair: Raul Rebak, GE Global Research

2:00 PM Invited
Insights into Atomic Scale Microstructures of Alloys under Corrosive Environments: *Emmanuelle Marquis*[1]; Yimeng Chen[1]; Yan Dong[1]; Kevin Fisher[1]; Arthur Motta[2]; Sebastien Teysseyre[3]; [1]University of Michigan; [2]Penn State University; [3]Idaho National Laboratory

2:25 PM
Characterization of Nanostructured Ferritic Alloy Atomized with Yttrium and a Controlling Oxygen Content: *Nicholas Cunningham*[1]; Yuan Wu[1]; G. Odette[1]; David Hoelzer[2]; Stuart Maloy[3]; [1]UC Santa Barbara; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

2:40 PM
High Resolution Transmission Microscopy Characterization of an Oxide Dispersion Strengthened Steel Ball-milled Powder: *Marie Loyer-Prost*[1]; Joel Ribis[1]; Jean-Sébastien Mérot[2]; Yann Lebouar[2]; Laurent Chaffron[1]; Fabrice Legendre[1]; [1]CEA Saclay; [2]ONERA

2:55 PM
Advanced Electron Microscopic Examination Aided in the Identification of Silver and Palladium in Irradiated TRISO Coated Particles: *Isabella van Rooyen*[1]; Thomas Lillo[1]; Yaqiao Wu[2]; [1]Idaho National Laboratory; [2]Boise State University,

3:10 PM
Study of Ordering Transformation in Ni-based Superalloy 690: *Talukder Alam*[1]; Iman Ghamarian[1]; Tanaporn Rojhiransakool[1]; Soumya Nag[1]; Rajarshi Banerjee[1]; [1]University of North Texas

3:25 PM Break

3:45 PM
Synchrotron Study on Loading Partitioning with Phase Development in an Austenitic 304 ODS: *Kun Mo*[1]; Zhangjian Zhou[2]; Yinbin Miao[1]; Hsiao-Ming Tung[3]; Jonathon Almer[4]; Meimei Li[4]; James Stubbins[1]; [1]University of Illinois; [2]University of Science and Technology Beijing; [3]Atomic Energy Council; [4]Argonne National Laboratory

4:00 PM
Characterization of Hot Deformation Behavior of Zr–1Nb Alloy: *Apu Sarkar*[1]; Jayanta Chakravartty[2]; [1]North Carolina State University; [2]Bhabha Atomic Research Centre

4:15 PM
Thermo-mechanical and Microstructural Characterization of Molybdenum-alloy/Zirconium Alloys/FeCrAlY Composite Tubing for Fuel Cladding of Light Water Reactors: *Cristian Cionea*[1]; D. Fraser[1]; A. Magyar[1]; J.L. Sabella[1]; M.T. Loff[1]; D. Moon[1]; M.J. Swabowski[1]; R. Meyer[1]; P. Chou[2]; Bo Cheng[2]; Young Kim[3]; P. Hosemann[1]; [1]University of California Berkeley; [2]Electrical Power Research Institute; [3]GE Global Research

4:30 PM
High Energy X-ray Diffraction Study of Deformation Behavior of Alloy HT9: *Carolyn Tomchik*[1]; Kun Mo[1]; Jonathan Almer[2]; Stuart Maloy[3]; James Stubbins[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Laboratory; [3]Los Alamos National Laboratory

4:45 PM
Development of Nanostructured Ferritic Alloys Containing Lanthana-based Nanoparticles via Spark Plasma Sintering: *Somayeh Pasebani*[1]; Indrajit Charit[1]; Kerry Allahar[2]; Yaqiao Wu[2]; Jatuporn Burns[2]; James Cole[2]; Darryl Butt[3]; [1]University of Idaho; [2]Center for Advanced Energy Studies; [3]Boise State University

5:00 PM
Effect of Ball Milling Temperature on the Ultra Fine Grained Microstructure of Oxide Dispersion Strengthened Steel: *Jeoung Han Kim*[1]; Chan Hee Park[1]; Seong Woong Kim[1]; Jong Taek Yeom[1]; Jae Keun Hong[1]; T.S. Byun[2]; Eun Joo Shin[3]; Bong Ho Lee[4]; [1]Korea Institute of Materials Science; [2]Oak Ridge National Laboratory; [3]Korea Atomic Energy Research Institute ; [4]National Center for Nanomaterials Technology at POSTECH

5:15 PM
Stable Storage of He in Nanometer-scale Interfacial Platelets: *Michael Demkowicz*[1]; Abishek Kashinath[1]; [1]Massachusetts Institute of Technology

Materials for High-temperature Applications: Next Generation Superalloys and Beyond — Nb- and Ni-Based Alloys

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Refractory Metals Committee
Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Panos Tsakiropoulos, University of Sheffield; Xingbo Liu, West Virginia University; Paul Jablonski, DOE National Energy Technology Lab; Junpin Lin, University of Science and Technology Beijing

Tuesday PM
February 18, 2014
Room: 6D
Location: San Diego Convention Center

Session Chairs: Panos Tsakiropoulos, University of Sheffield; S.K. Varma, University of Texas at El Paso

2:00 PM
Niobium Based Alloys: A Review of Breakthroughs: *Panayiotis Tsakiropoulos*[1]; [1]University of Sheffield

2:20 PM
Influence of Powder Metallurgical Processing Routes on Phase Formations in a Multi-Component NbSi-Alloy: *Christoph Seemüller*[1]; Martin Heilmaier[1]; Thomas Hartwig[2]; Marco Mulser[2]; Nicholas Adkins[3]; Michael Wickins[3]; [1]Karlsruhe Institute of Technology; [2]Fraunhofer Institute for Manufacturing Technology and Advanced Materials; [3]The University of Birmingham

2:40 PM
First Principle Calculations of Properties of Phases in Nb Silicide Based Alloys: *Ioannis Papadimitriou*[1]; Claire Utton[1]; Andrew Scott[2]; Panayiotis Tsakiropoulos[1]; [1]University of Sheffield; [2]University of Leeds

3:00 PM
Effect of Rhenium on Nb - Alloys with Additions of Al, B, W: *Ruth Sierra*[1]; Shailendra Varma[1]; [1]University of Texas at El Paso

3:20 PM
Effect of Solidification Processing on the Microstructure of Near Eutectic Nb-silicide Based Alloys with Refractory Metal Additions: *Conor McCaughey*[1]; Panayiotis Tsakiropoulos[1]; [1]University of Sheffield

3:40 PM Break

3:55 PM
Response of Nb-25Cr-15Mo-(20,15)Si-(10,15)B Alloys to Long Term Oxidation in Air from 700-1400°C: *Kathryn Thomas*[1]; Shailendra Varma[1]; [1]The University of Texas at El Paso

4:15 PM
A Study of the Effects of Hf and Sn Additions in the Microstructure of Nb Silicide Based Alloys: Eleftherios Zacharis[1]; *Panayiotis Tsakiropoulos*[1]; [1]University of Sheffield

4:35 PM
Development of Ni-Cr Based Alloys via Spark Plasma Sintering for High Temperature Applications: *Somayeh Pasebani*[1]; Aniket Dutt[2]; Indrajit Charit[1]; Rajiv Mishra[2]; [1]University of Idaho; [2]University of North Texas

4:55 PM
Influence of Cr Content on Diffusion Behavior of Te into Ni-Cr Alloys: *Li Zhijun*[1]; Han Fenfen[1]; Jiang Lii[1]; Yuan Guangzhou[1]; [1]Shanghai Institute of Applied Physics

Materials Processing Fundamentals — TWIP/ Steelmaking

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: James Yurko, Materion Brush Beryllium and Composites; Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Northwestern University

Tuesday PM
February 18, 2014
Room: 11B
Location: San Diego Convention Center

Session Chair: Lifeng Zhang, University of Science and Technology Beijing

2:00 PM
Formation of Non-metallic Inclusions in the Molten Steel in MgO Crucibles: *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

2:20 PM
Effect of Removal of Inclusion Particles on Hydrogen Permeability of Pt-Gd Film: *Ryo Inoue*[1]; Yoshihiro Oda[2]; Shun-Ichiro Tanaka[1]; [1]Tohoku University; [2]Toyota Industries Corporation

2:40 PM
Experimental Research of Continuous Temperature Measurement for Molten Metal Bath through Bottom-blowing Component: *Yong Ren*[1]; Shuai Niu[1]; Wencai Li[1]; Xin Hong[1]; [1]Shanghai University

3:00 PM
Novel Contactless Sensor for Measuring Surface Velocity of Melting Metal: *Dandan Schumacher*[1]; Christian Karcher; [1]Ilmenau University of Technology

3:20 PM Break

3:30 PM
AlN Formation in High-Al and High-Mn Alloyed Advanced High Strength Steels: *Jung-Mock Jang*[1]; Do-Hyeong Kim[1]; Min-Kyu Paek[1]; Jong-Jin Pak[1]; [1]Hanyang University

3:50 PM
Delayed Fracture Behavior Related with Intergranular Precipitation of Cementites in High-Mn TWinning Induced Plasticity (TWIP) Steels: *Junghoon Lee*[1]; Seokmin Hong[1]; Byeong-Joo Lee[1]; Hyung Seop Kim[1]; Sung-Kyu Kim[2]; Kwang-Guen Chin[2]; Young Won Chang[3]; Sunghak Lee[1]; [1]POSTECH; [2]POSCO; [3]GIFT

4:10 PM
Interfacial Reactions between Slag and Melt in the New World of High Manganese Steels: *Mohammad Peymandar*[1]; Sebastian Schmuck[1]; Petrico von Schweinichen[1]; Dieter Senk[1]; [1]Department of Ferrous Metallurgy, IEHK, RWTH Aachen

4:30 PM
The Influence of Silicon on the Partitioning of Carbon during Aging of High Manganese and Aluminum Steel: *laura Bartlett*[1]; David Van Aken[2]; Julia Medvedeva[2]; Dieter Isheim[3]; Nadejda Medvedeva[2]; Kai Song[4]; [1]Texas State University; [2]Missouri University of Science and Technology; [3]Northwestern University; [4]FEI Company

4:50 PM
Assessment of Hydrogen Solubility in the CaO-SiO2-FeOt Based Welding Flux System Containing NaF: *Sunghoon Chung*[1]; [1]Yonsei University, Seoul

Mechanical Behavior at the Nanoscale II — Multiscale Modeling

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Evan Ma, Johns Hopkins University; Daniel Gianola, University of Pennsylvania; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology

Tuesday PM
February 18, 2014
Room: 9
Location: San Diego Convention Center

Session Chairs: Christopher Weinberger, Drexel University; Helena Van Swygenhoven, Paul Scherrer Institut

2:00 PM Invited
Coupled Atomistics and Discrete Dislocations in 3d (CADD-3d): Approach, Progress, and Issues: *W Curtin*[1]; JF Molinari[1]; Ben Szajewski[1]; Till Junge[1]; Guillaume Anciaux[1]; [1]EPFL

2:30 PM Invited
Molecular Dynamics Modeling of Plastic Deformation and Fracture of Nano-crystalline Thin Films: G. P. Purja Pun[1]; E. H. Glaessgen[2]; *Y. Mishin*[1]; [1]George Mason University; [2]NASA Langley Research Center

3:00 PM
Avalanche Statistics of a Dipolar Mat in a Simplified Micro-structural Environment: *Peter Derlet*[1]; Robert Maass[2]; [1]Paul Scherrer Institut; [2]University of Göttingen

3:20 PM
Convoluted Thermal/Spatial Statistics of Nanoindentation Pop-in Tests as Plasticity Initiation in Small Stressed Volumes: *Yanfei Gao*[1]; Tianlei Li[1]; Hongbin Bei[2]; James Morris[2]; Easo George[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:40 PM Break

3:55 PM Invited
Insights into Confined Plasticity in Micropillars from Atomistic Simulations: *Christopher Weinberger*[1]; Garritt Tucker[1]; Zachary Aitken[2]; Julia Greer[2]; [1]Drexel University; [2]California Institute of Technology

4:25 PM Invited
From Defective Twin Boundaries to Angstrom-scaled Twins: Understanding the Plasticity and Fracture of Nanotwinned Metals: *Frederic Sansoz*[1]; [1]The University of Vermont

4:55 PM
A Comparative Study on the Plastic Response of Various Nanotwinned Metals: *Timothy Furnish*[1]; Andrea Hodge[1]; [1]University of Southern California

5:15 PM
Phase Transformation in Single Layer Molybdenum Disulphide (MoS_2) Under Tension via Molecular Dynamics Simulation: *Khanh Dang*[1]; Joseph Simpson[1]; Douglas Spearot[1]; [1]University of Arkansas

Mechanical Behavior Related to Interface Physics II — Interfacial Effects on Radiation Tolerance and Chemical Stability

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Nan Li, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Nathan Mara, Los Alamos National Laboratory; Tonya Stone, Mississippi State University

Tuesday PM
February 18, 2014
Room: 11A
Location: San Diego Convention Center

Session Chairs: Khalid Hattar, Sandia National Laboratories; Jian Wang, Los Alamos National Laboratory

2:00 PM Invited
Grain Boundary-defect Interactions Under Loading of Irradiated Nanocrystalline Films: *Mitra Taheri*[1]; [1]Drexel University

2:30 PM Invited
In Situ Atomic-scale Observation of Irradiation-induced Void Formation: Weizong Xu[1]; Yongfeng Zhang[2]; Paul Millet[2]; Carl Koch[1]; S.N. Mathaudhu[1]; *Yuntian Zhu*[1]; [1]North Carolina State University; [2]Idaho National Laboratory

3:00 PM
A Study of the Dynamical Behavior of Dislocations in Irradiated Nanocrystalline Iron by *In Situ* TEM Tensile Testing: *Greg Vetterick*[1]; Christopher Barr[1]; Jon Baldwin[2]; Pete Baldo[3]; Daniel Kiener[4]; Khalid Hattar[5]; Mark Kirk[3]; Amit Misra[2]; Mitra Taheri[1]; [1]Drexel University; [2]Los Alamos National Laboratory; [3]Argonne National Laboratory; [4]University of Leoben; [5]Sandia National Laboratories

3:20 PM Break

3:40 PM Invited
In Situ Ion Irradiation and Fatigue TEM Experiments of Nanocrystalline Metals: *Khalid Hattar*[1]; Claire Chisholm[2]; John Sharon[1]; Brad Boyce[1]; Andrew Minor[3]; [1]Sandia National Laboratories; [2]University of California, Berkeley ; [3]University of California, Berkeley

4:10 PM Invited
Towards Statistical and Comprehensive Three Dimensional Characterization of Planar Defects and Properties: *Pradeep Konda Gokuldoss*[1]; Dierk Raabe[1]; Sumantra Mandal[1]; Stefan Zaefferer[1]; [1]Max Planck Institute for Iron Research GmbH

4:40 PM Invited
Local Decomposition Induced by Dislocation Motions Inside Precipitates in an Al-alloy: *Xiu-Liang Ma*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

5:10 PM
Atomic Scale Understanding of 6.8 GPa Ultra-high Strength Pearlite: *Yujiao Li*[1]; Michael Herbig[1]; Pyuck-Pa Choi[1]; Christine Borchers[2]; Shoji Goto[3]; Dierk Raabe[1]; Reiner Kirchheim[2]; [1]Max-Planck Institute for Iron Research; [2]Georg-August-Universität Göttingen; [3]Akita University

Nanoparticulate Materials: Production, Consolidation and Characterization — Consolidation I: Field Assisted Sintering

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Brady Butler, U.S. Army Research Laboratory; Eugene Olevsky, San Diego State University

Tuesday PM
February 18, 2014
Room: Carlsbad
Location: San Diego Marriott Marquis & Marina

Session Chair: Eugene Olevsky, San Diego State University

2:00 PM Introductory Comments

2:10 PM Invited
Densification of Ductile Ceramic Nanoparticles by Spark Plasma Sintering: LiF, Y2O3 and YAG as Model Systems: *Rachman Chaim*[1]; Rachel Marder[1]; Claude Estournes[2]; Geoffroy Chevallier[2]; [1]Technion - Israel Institute of Technology; [2]Université de Toulouse; UPS, INP

2:40 PM Invited
A Comparative Study of Liquid Phase Sintering vs Spark-plasma Sintering of Si3N4/SiC Nanocomposites: *Leon Shaw*[1]; Jyothi Suri[2]; Yen-Shan Lin[3]; Eugene Olevsky[3]; [1]Illinois Institute of Technology; [2]Intel Corporation; [3]San Diego State University

3:10 PM
Flash Spark-plasma Sintering of Silicon Carbide: Further Developments: *Eugene Olevsky*[1]; Steven Rolfing[1]; Yen-Shan Lin[1]; Andrey Maximenko[1]; [1]San Diego State University

3:30 PM Break

3:50 PM
Improvements in the Spark Plasma Sintering of Magnesium Aluminate Spinel ($MgAl_2O_4$): *Gordon Alanko*[1]; Darryl Butt[1]; [1]Boise State University

4:10 PM
Spark Plasma Sintering of Zirconium Oxy-carbide: *Wei Li*[1]; Oleg Izhvanov[2]; Jonas Opperman[2]; Christina Back[2]; Eugene Olevsky[1]; [1]San Diego State University; [2]General Atomics

4:30 PM
Thermal Processes during the Electrical Pulse Consolidation of Powders: *Evgeny Grigoryev*[1]; Eugene Olevsky[2]; Elena Alexandrova[1]; Alexandra Ilyina[1]; Klementy Belyavin[3]; Oleg Kuznetchik[4]; Dmitry Minko[3]; [1]MEPHI; [2]SDSU, MEPhI; [3]BSTU; [4]IPM NANB

4:50 PM
Spark Plasma Sintering of Annular Zirconium Carbide Powder Pellets:Processing and Simulation: *Xialu Wei*[1]; Wei Li[1]; Eugene Olevsky[1]; Christina Back[2]; Oleg Izhvanov[2]; [1]San Diego State University; [2]General Atomics

5:10 PM
Fe–Ti Compositions Consolidated by Spark Plasma Sintering and High Voltage Consolidation Technique: *Evgeny Grigoryev*[1]; Eugene Olevsky[2]; Maria Yurlova[1]; Olga Sizonenko[3]; Ekaterina Krikun[1]; Alexander Novoselov[1]; Andrey Zaychenko[3]; Andrey Torpakov[3]; [1]MEPHI; [2]SDSU, MEPhI; [3]IIPT NANU

Nanostructured Materials for Rechargeable Batteries and Supercapacitors II — Session IV

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta and NINT NRC

Tuesday PM
February 18, 2014
Room: Ballroom F
Location: San Diego Marriott Marquis & Marina

Session Chairs: Leon Shaw, Illinois Institute of Technology; Xiaodong (Chris) Li, University of South Carolina

2:00 PM Invited
Improving Carbon Capacitance by Chemical/Electrochemical Attachment of Redox Molecules: *Thierry Brousse*[1]; Estelle Lebègue[2]; Annaïg Le Comte[3]; Alban Morel[1]; Olivier Crosnier[1]; Gregory Pognon[1]; Joël Gaubicher[1]; Richard Retoux[4]; Daniel Bélanger[3]; Charles Cougnon[2]; Martin Weissmann[1]; [1]IMN Univ Nantes/CNRS; [2]Moltech Anjou; [3]UQAM; [4]CRISMAT

2:15 PM Invited
Chemical Functionalization of Carbon for Application in Electrochemical Capacitors: *Daniel Bélanger*[1]; [1]Université du Québec à Montréal

2:30 PM Invited
Nanomaterials Design for Li-S Batteries: *Yi Cui*[1]; [1]Stanford University

2:50 PM Invited
Flexible Textile Energy Storage from Cotton T-Shirts: *Xiaodong Li*[1]; [1]University of Virginia

3:05 PM Invited
Finite-Element Modeling of the Electric Double-Layer and Its Application to the Prediction of Supercapacitor Charging Dynamics: *Vivek Shenoy*[1]; [1]University of Pennsylvania

3:20 PM Invited
Atomic-scale Surface Engineering for Advanced Li-ion Batteries: *Sehee Lee*[1]; [1]University of Colorado

3:35 PM Break

3:50 PM Invited
Atomic Layer Deposition for Synthesis of Anodes, Coatings on Electrodes and Solid-state Electrolytes Used in Li ion Batteries: Jian Liu[1]; Xifei Li[1]; Andrew Lushington[1]; Ruying Li[1]; *Andy Sun*[1]; [1]The University of Western Ontario

4:05 PM Invited
Utilization of Elemental Sulfur for High Capacity Polymeric Electrodes in Li-S Batteries: *Jeffrey Pyun*[1]; [1]University of Arizona

4:20 PM Invited
Crumpled Graphene Balls for Scalable Energy Applications: *Jiaxing Huang*[1]; [1]Northwestern University

4:35 PM Invited
How To Use Nanostructured Materials Effectively in Rechargeable Lithium/Sulfur Battery: *Sheng Zhang*[1]; [1]U.S. Army Research Laboratory

4:50 PM Invited
Porous Graphene-based Materials for Electrochemical Energy Storage: *George Zhao*[1]; [1]The University of Queensland

5:05 PM Invited
Investigation of Li-ion Capacitors' Cycle Performance: *Jim Zheng*[1]; Wanjun Cao[1]; [1]Florida State University

5:20 PM Invited
Studies of Cathodes and Anodes for a New Generation of Na-ion Batteries: *Leon Shaw*[1]; Monica Sawicki[1]; Jack Shamie[1]; [1]Illinois Institute of Technology

5:35 PM Invited
Structural Evolution of Li(2)Fe(1-y)Mn(y)SiO(4) (y = 0, 0.2, 0.5, 1) and LiFeTiO(4) Cathode Materials for Li-ion Batteries upon Electrochemical Cycling: *Sylvio Indris*[1]; [1]Karlruhe Institute of Technology

Neutron and X-ray Studies of Advanced Materials VII: Challenges of the Future World — Stressed Materials

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Gernot Kostorz, ETH; Brent Fultz, California Institute of Technology; Peter Liaw, The University of Tennessee

Tuesday PM
February 18, 2014
Room: 10
Location: San Diego Convention Center

Session Chairs: Mikhail Sokolov, ORNL; Leyun Wang, APS

2:00 PM Keynote
Slip Systems and Dislocation Densities from X-ray or Neutron Diffraction: *Tamás Ungár*[1]; [1]Eötvös University Budapest

2:40 PM Invited
Monitoring Precipitation in Severely Plastically Deformed Aluminum Alloys Using In Situ Small-angle X-ray Scattering: *Frederic De Geuser*[1]; Seungwon Lee[2]; Zenji Horita[2]; Alexis Deschamps[1]; [1]SIMAP - Grenoble INP - UJF - CNRS; [2]Kyushu University

3:05 PM Invited
New Method for Elastic Strain and Stress Determination Using Spherical Harmonics Starting from the Voigt Model: *Davor Balzar*[1]; Nicolae Popa[2]; Sven Vogel[3]; [1]University of Denver; [2]National Institute of Materials Physics; [3]Los Alamos National Laboratory

3:30 PM
Probing Deformation Mechanism of a New Class of Nanocomposite Materials by In Situ High Energy X-ray Diffraction: *Cun Yu*[1]; Lishan Cui[2]; Shijie Hao[2]; Daqiang Jiang[2]; Xiaobin Shi[2]; Zhenyang Liu[2]; Dennis Brown[1]; Yang Ren[3]; [1]NIU; [2]China University of Petroleum, Beijing; [3]Argonne National Laboratory

3:45 PM Break

4:00 PM Invited
Microbeam X-ray Measurements of the Full Elastic Strain Tensor from Individual Dislocation Cells in Copper-through-Si Vias: *Lyle Levine*[1]; Chukwudi Okoro[1]; Ruqing Xu[2]; [1]National Institute of Standards and Technology; [2]Argonne National Laboratory

4:25 PM Invited
X-ray Diffraction Analysis Proofing Surface Sensitive Metallographic Sample Preparation: *Karen Pantleon*[1]; [1]Technical University of Denmark

4:50 PM Invited
Real Instruments and Virtual Samples: Mesoscale Sampling by Neutron Diffraction in Polycrystalline Materials under Load: *Alexandru Stoica*[1]; [1]ORNL

5:15 PM
Neutron Diffraction Study and EPSC Modeling of Multi-pass Tig Weld: *Shiv Sharma*[1]; mark turski[2]; Mike Fitzpatrick[3]; Lyndon Edwards[4]; [1]Amity University Haryana; [2]Magnesium Elektron; [3]The Open University; [4]ANSTO

Pb-free Solders and Emerging Interconnect and Packaging Materials — Electromigration and Flexible Packages

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Andre Lee, Michigan State University; Fay Hua, Intel Corporation; Tae-Kyu Lee, Cisco; John Elmer, Lawrence Livermore National Laboratory; Yan Li, Intel Corporation; Robert Kao, National Taiwan University; Fan-yi Ouyang, National Tsing Hua University; Chang-Woo Lee, Korea Institute of Industrial Technology; Won Sik Hong, Korea Electronics Technology Institute; Heugel Werner, Bosch Automovitve

Tuesday PM
February 18, 2014
Room: 5B
Location: San Diego Convention Center

Session Chairs: Andre Lee, Michigan State University; Limin Ma, Beijing University of Technology

2:00 PM
Why Does an Electric Current Change the Stability of Solder?: *Shih-kang Lin*[1]; Chao-kuei Yeh[1]; Wei Xie[2]; Yu-chen Liu[1]; Masahiro Yoshimura[1]; [1]National Cheng Kung University; [2]University of Wisconsin – Madison

2:20 PM
Improved Electromigration Resistance of Pb-free Solders by Using Cu/Sn Composite Structure: *Shih-Hsun Lin*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

2:40 PM
Microstructure Refinement in Sn-Ag-Bi-In Solder by Adding SiC Nanoparticles to Reduce Electromigration under High Electric Current: *Youngseok Kim*[1]; Shijo Nagao[1]; Tohru Sugahara[1]; Katsuaki Suganuma[1]; Minoru Ueshima[2]; Hans-Juergen Albrecht[3]; Klaus Wilke[3]; Joerg Stogies[3]; [1]ISIR, Osaka University; [2]Senju Metal Industry Co. LTD; [3]Siemens AG, Corporate Technology

3:00 PM
Microstructure Evolution in Solder Bump Interconnects before and after Thermo-mechanical Cycling: *Tae-Kyu Lee*[1]; Jason Zhou[2]; Thomas R. Bieler[2]; [1]Cisco Systems; [2]Michigan State University

3:20 PM Break

3:40 PM
Flip Chip Process for Wearable Electronics Packaging: *Jung-Yeol Choi*[1]; Dae-Woong Park[1]; Kwang-Jae Shin[1]; Tae-Sung Oh[1]; [1]Hongik University

4:00 PM
Nanowire-based Pb-free Nanosolders for Next Generation Assembly and Interconnects: *Fan Gao*[1]; Qiyue Yin[2]; Zhiyong Gu[1]; Guangwen Zhou[2]; [1]University of Massachusetts Lowell; [2]State University of New York at Binghamton

4:20 PM
Evaluation on Property and Reliability of Micro-bump Joint between Si Chip and Flexible Substrate: *Yong-Ho Ko*[1]; Taek-Soo Kim[2]; Chang-Woo Lee[1]; [1]Micro-Joining Center, Korea Institute of Industrial Technology, Incheon, [2]KAIST

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XIII — Microelectronics Reliability I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, Forschungszentrum Juelich, Inst.; Yee-Wen Yen, National Chung Cheng University; Shien Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Tuesday PM
February 18, 2014
Room: 32A
Location: San Diego Convention Center

Session Chairs: Shien Ping Tony Feng, The University of Hong Kong; Jae-Ho Lee, Hongik University

2:00 PM Invited
Comparison of Electro and Electroless Nickel Iron Alloy Plating for the Diffusion Barrier of UBM: Ja-Kyung Koo[1]; Myung-Won Jung[1]; Sung Kang[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]IBM Watson Research Center

2:20 PM
TEM Studies of Solid Phase Epitaxial Growth of 3C-SiC Thin Film on Si (001): *Ramasis Goswami*[1]; Connie Li[1]; Glenn Jernigan[1]; C Hellberg[1]; Berry Jonker[1]; [1]Naval Research Laboratory

2:40 PM
Effect of Joint Thickness on Cu Consumption for Pb-free Solders under Current Stressing: *Chung-Hsun Tsai*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

3:00 PM
Effects of Bath Conditions on the Compositions and Physical Properties of Ni-Fe Alloy Electroplating: Ju-Hwan Kim[1]; TaiHong Yim[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Institute of Industrial Technology

3:20 PM
The Crystalinity of Tin under Current Stressing: *Yi-Han Liao*[1]; Kwang-Lung Lin[1]; Albert Wu[2]; [1]Department of Materials Science and Engineering, National Cheng Kung University,; [2] Department of Chemical and Materials Engineering, National Central University

3:40 PM Break

3:50 PM Invited
Temperature Dependent Mechanical Testing on the Formation of Cu/Sn Intermetallic Thin Films: F.-C. Hsu[1]; Fang-Jui Kuo[1]; Y.-C. Cheng[1]; *Ming-Tzer Lin*[1]; [1]National Chung Hsing University

4:10 PM
Enhanced Diffusional Processes in Wire Bonding: Panthea Sepehrband[1]; *Jamie Mac*[1]; [1]Santa Clara University

4:30 PM
Electroplating of <111>-Oriented Nickel Using <111>-Orientated Nano-twinned Copper: *Yi Cheng Chu*[1]; Chih Chen[1]; [1]Department of Materials Science & Engineering, National Chiao Tung University

4:50 PM
Periodic Layer Formation in the Au-12Ge/Ni Diffusion Couple: *Ming-yueh Tsai*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

5:10 PM
Formation of Porous Cu_3Sn Intermetallic Compounds during Current Stressing at High Temperatures in Low-bump-height Solder Joints: *Jie-An Lin*[1]; Chih Chen[1]; [1]National Chiao Tung University

Phase Transformation and Microstructural Evolution — Multi-scale Modeling of Phase Transformations in Steels

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Phase Transformations Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, The Ohio State University; Ning Ma, ExxonMobile Research & Engineering; Tadashi Furuhara, Tohoku University; Frédéric Danoix, Université de Rouen; Mohamed Gouné, University of Bordeaux; Francisca Caballero, National Center for Metallurgical Research (CENIM-CSIC); Dhriti Bhattacharyya, Australian Nuclear Science & Technology Organization; Vijay Vasudevan, University of Cincinnati; Osman Anderoglu, Los Alamos National Laboratory; Stuart Maloy, Los Alamos National Laboratory; Chad Sinclair, University of British Columbia

Tuesday PM
February 18, 2014
Room: 31C
Location: San Diego Convention Center

Session Chairs: Hemantha Yeddu, Los Alamos National Laboratory; Carlos Capdevila Montes, National Center for Metallurgical Research (CENIM-CSIC)

2:00 PM Invited
A Detailed Study of the Transformation Stasis Phenomenon During the Isothermal Bainite Transformation in Mn based Low Alloy Steels: *Sybrand Van Der Zwaag*[1]; Hao Chen; [1]Technical University Delft

2:30 PM Invited
Multi-scale Modeling of Phase Transformations in Steels: *Matthias Militzer*[1]; Hao Jin[1]; Morteza Toloui[1]; Benqiang Zhu[1]; [1]The University of British Columbia

3:00 PM
A Molecular Dynamics Study of the Migration of Symmetric Grain Boundaries in a-Fe: *Tegar Wicaksono*[1]; Chad Sinclair[1]; Matthias Militzer[1]; Jeffrey Hoyt[2]; H. Song[2]; [1]The University of British Columbia; [2]McMaster University

3:20 PM Break

3:35 PM Invited
Characterization and Microstructure-based Modeling of a Grain Boundary Engineered Steel: *Alexis Lewis*[1]; Amanda Levinson[2]; David Rowenhorst[1]; [1]Naval Research Laboratory; [2]National Research Council

4:05 PM
Virtual Cyclic Phase Transformation Dilatometer Experiments for Fe-Mn-C by Means of Phase Field Simulations: *Markus Apel*[1]; Gottfried Laschet[1]; Bernd Böttger[1]; [1]Access e. V.

4:25 PM Invited
Martensitic Transformations in Steels – A 3D Phase-field Study: *Hemantha Yeddu*[1]; Turab Lookman[1]; Avadh Saxena[1]; [1]Los Alamos National Laboratory

4:55 PM
Phase Field Modelling of Microstructure Evolution in Dual Phase Steels: *Benqiang Zhu*[1]; Matthias Militzer[1]; [1]University of British Columbia

5:15 PM
Phase Field Modeling of Widmanstätten Structures: *Maeva Cottura*[1]; Benoît Appolaire[1]; Yann Le Bouar[1]; Alphonse Finel[1]; [1]LEM - ONERA/CNRS

Progress Towards Rational Materials Design in the Three Decades Since the Invention of the Embedded Atom Method: An MPMD Symposium in Honor of Dr. Michael I Baskes — Advances in Atomistic Simulations - II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Srinivasan Srivilliputhur, University of North Texas; Amit Misra, Los Alamos National Laboratory; Neville Moody, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Mark Asta, University of California ; Alan Needleman, University of North Texas

Tuesday PM
February 18, 2014
Room: 30E
Location: San Diego Convention Center

Session Chairs: Mark Asta, University of California, Berkeley; Irene Beyerlein, Los Alamos National Laboratory; W. Curtin, Brown University

2:00 PM Invited
Origin of Unrealistic Blunting during Atomistic Simulation of Crack Propagation Based on MEAM Potentials: *Byeong-Joo Lee*[1]; [1]Pohang University of Science and Technology

2:20 PM Invited
On the Interaction of Radiation-induced Defects with Grain Boundaries in Cu: *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory

2:40 PM
Correlating Microstructure and Ductile Fracture Toughness: Shmulik Osovski[1]; Ankit Srivastava[1]; *Alan Needleman*[1]; James Williams[1]; [1]University of North Texas

3:00 PM Invited
Radiation-induced Super-quenching and Plasticity in Metallic Glasses: *Michael Demkowicz*[1]; Richard Baumer[1]; [1]Massachusetts Institute of Technology

3:20 PM Break

3:30 PM Invited
Hydrogen Interactions with Uranium: A Thermal Desorption Study: *Scott Lillard*[1]; [1]University of Akron

3:50 PM Invited
Large-scale EAM Simulation Studies of Shock-induced Plasticity and Phase Transformations in fcc and bcc Metals: *Timothy Germann*[1]; [1]Los Alamos National Laboratory

4:10 PM
Bonding of Metallic Nanoparticles: *Michael Chandross*[1]; Timothy Boyle[1]; Ping Lu[1]; [1]Sandia National Laboratories

4:30 PM
Plasticity and Phase Transition in Shocked Fe: *Eduardo Bringa*[1]; [1]CONICET - Universidad Nacional de Cuyo

4:50 PM Invited
Energetically-driven Approach for Evaluating Hydrogen Enhanced Localized Plasticity Versus Hydrogen Enhanced Decohesion Mechanisms in Iron: M. Bhatia[1]; I. Adlakha[1]; *Kiran Solanki*[1]; M. Tschopp[1]; [1]Arizona State University

5:10 PM Invited
Atomistic Modeling of Radiation Damage in bcc Uranium: *Chaitanya Deo*[1]; Benjamin Beeler[1]; Maria Okuniewski[2]; Michael Baskes[3]; [1]Georgia Institute of Technology; [2]Idaho National Laboratory; [3]University of California, San Diego

Rare Metal Extraction & Processing Symposium — Titanium, Lithium, Yttrium, and Zirconium

Sponsored by: Associação Brasileira de Metalurgia, Materiais e Mineração – ABM, Chinese Society for Metals, Metallurgy and Materials Society of CIM, Institute of Materials, Minerals and Mining, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizers: Neale Neelameggham, Ind LLC; Shafiq Alam, Memorial University of Newfoundland; Harald Oosterhof, Umicore; Animesh Jha, University of Leeds; Shijie Wang, Rio Tinto, Kennecott Utah Copper Refinergy

Tuesday PM
February 18, 2014
Room: 16B
Location: San Diego Convention Center

Session Chairs: M. Ashraf Imam, Naval Research Laboratory; Zak Fang, University of Utah

2:00 PM Introductory Comments

2:05 PM
A Clean Titanium Sponge Production Process and New Method for the Recycling of Magnesium and Chlorine: Niu Liping[1]; Zhou Aiping[1]; *Zhang Ting'an*[1]; Wang Wenbo[1]; Lv Guozhi[1]; Jiang Xiaoli[1]; [1]Northeastern University

2:25 PM
Chemical Characterization of Transition Metal (V, Zr, Nb) Impurities in Rutile: *Terence Makanyire*[1]; Animesh Jha[1]; [1]University of Leeds

2:45 PM
Pre-oxidation and Hydrogen Reduction of Panzhihua Ilmenite Concentrate: *Wei Xiao*[1]; Xionggang Lu[1]; Weizhong Ding[1]; Chonghe Li[1]; Xingli Zou[1]; [1]Shanghai University

3:05 PM
Thermodynamic Properties of Different Titanium Ions in Fused LiCl-KCl Eutectic: *Song Jianxun*[1]; Wang Qiuyu[1]; Zhu Xiaobo[1]; Hou Jungang[1]; Jiao Shuqiang[1]; Zhu Hongmin[1]; [1]University of Science and Technology Beijing

3:25 PM Break

3:45 PM
Silicon-thermic Reduction of Complex Lithium Aluminate under Vacuum: *Di Yuezhong*[1]; Pan Xijuan[1]; Peng Jianping[1]; Wang Yaowu[1]; Feng Naixiang[1]; [1]Northeastern University

4:05 PM
Extraction of Yttrium from Ferruginous Sandstone, Southwestern Sinai, Egypt: Omneya El Hussaini[1]; Hassan Salman[2]; *Mahmoud Mahmoud*[1]; [1]Nuclear Materials Authority; [2]South Valley University

4:25 PM
Sublimation Kinetics of Zirconium Tetrachloride (ZrCl4) for Producing Zr Sponge: *Jaehong Shin*[1]; Misun Choi[2]; Dongjoon Min[3]; Joohyun Park[1]; [1]Hanyang University; [2]Research Institute of Industrial Science and Technology (RIST); [3]Yonsei University

Solid-state Interfaces III: Toward an Atomistic-scale Understanding of Structure, Properties, and Behavior through Theory and Experiment — Oxides and Nanostructures I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Xiang-Yang Liu, Los Alamos National Laboratory; Blas Uberuaga, Los Alamos National Lab; Stephen Foiles, Sandia National Laboratories; Mitra Taheri, Drexel University; Rampi Ramprasad, University of Connecticut

Tuesday PM
February 18, 2014
Room: 4
Location: San Diego Convention Center

Session Chair: Blas Uberuaga, Los Alamos National Laboratory

2:00 PM Invited
Helium Storage in Oxides and at Oxide–iron Interfaces from First-principles: *Paul Erhart*[1]; [1]Chalmers University of Technology, Gothenburg, Sweden

2:40 PM
Atomic Scale Characterization of Ion Irradiated Heterogeneous Ceramic Oxide Interfaces: *Jeffery Aguiar*[1]; Pratik Dholabhai[1]; Miaofang Chi[2]; Yongqiang Wang[1]; Zhenxing Bi[1]; Quanxi Jia[1]; Engang Fu[1]; Amit Misra[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory; [2]Oak Ridge National Laboratory

3:00 PM
Characterizing Complex Metal-oxide Interfaces via Virtual Diffraction: *Shawn Coleman*[1]; Christopher Weinberger[2]; Douglas Spearot[1]; [1]University of Arkansas; [2]Drexel University

3:20 PM
Fabrication and Characterization of Oriented Fe-$Y_2Ti_2O_7$ Interfaces: Implications to the Development and Optimization of Nanostructured Ferritic Alloys: *Tiberiu Stan*[1]; Yuan Wu[1]; George R. Odette[1]; Peter Hosemann[2]; Richard Kurtz[3]; [1]University of California Santa Barbara; [2]University of California Berkeley; [3]Pacific Northwest National Laboratory

3:40 PM Break

3:50 PM
Atomic Modeling of Asymmetric Tilt Grain Boundaries in $SrTiO_3$: *Hak-Sung Lee*[1]; Teruyasu Mizoguchi[2]; Yuichi Ikuhara[2]; [1]Korea Institute of Materials Science; [2]The University of Tokyo

4:10 PM
Effects of GB Crystallography and Mobility on Microstructural Evolution of d-UO2+x during the Final Sintering Stage: *Karin Rudman*[1]; Harn Chyi Lim[1]; Robert McDonald[1]; Pedro Peralta[1]; Darrin Bayler[2]; Chris Stanek[2]; Kenneth McCellan[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

4:30 PM
Microstructurally Explicit Study of Transport Phenomena in Uranium Oxide: *Harn Chyi Lim*[1]; Karin Rudman[1]; Robert McDonald[1]; Pedro Peralta[1]; Patricia Dickerson[2]; Darrin Byler[2]; Kenneth McClellan[2]; [1]Arizona State University; [2]Los Alamos National Laboratory

4:50 PM
The Role of the Transition Metal Dopants in Hydrogen Pickup Kinetics at the Zirconium Oxide – Water Interface: A Density Functional Theory Study: *Mostafa Youssef*[1]; Bilge Yildiz[1]; [1]Massachusetts Institute of Technology

5:10 PM
Nucleation and Atomic Layer Reaction in Nickel Silicide for Defect-engineered Si Nanochannels: *Wei Tang*[1]; Tom Picraux[2]; Andriy Gusak[3]; King-Ning Tu[4]; Shadi Dayeh[5]; [1]University of California, Los Angeles; [2]Los Alamos National Lab; [3]Cherkasy National University; [4]University California, Los Angeles; [5]University of California, San Diego

Ultrafine Grained Materials VIII — Young Scientist II: Microstructural Evolution

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Suveen Mathaudhu; Yuri Estrin, Monash University; Zenji Horita, Kyushu University; Enrique Lavernia, University of California - Davis; Xiaozhou Liao, The University of Sydney; Lei Lu, Institute for Materials Research; Qiuming Wei, University of North Carolina - Charlotte; Gerhard Wilde, University of Muenster; Yuntian Zhu, North Carolina State University

Tuesday PM
February 18, 2014
Room: 6E
Location: San Diego Convention Center

Session Chairs: Terry Lowe, Colorado School of Mines; Yuntian Zhu, North Carolina State University

2:00 PM
Precipitation Phenomena in Gas Atomized and Cryomilled Al-Fe Alloys: *Brandon Saller*[1]; Troy Topping[1]; Kaka Ma[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]UC Davis

2:15 PM
Formation of Supersaturated Solid Solutions in Immiscible Systems by High-pressure Torsion: *Karoline Kormout*[1]; Andrea Bachmaier[2]; Bo Yang[1]; Jozef Keckes[3]; Reinhard Pippan[4]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; [2]Materials Science and Methods, Saarland University; [3]Department Materials Physics, University of Leoben; [4]Erich Schmid Institute of Materials Science

2:30 PM
Influence of Length Scale on Precipitation in Ultrafine-grained and Nanocrystalline Al-Zn-Mg-Cu Alloys (Al 7075): *Haiming Wen*[1]; Kaka Ma[1]; Dieter Isheim[2]; David Seidman[2]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Northwestern University

2:45 PM
Investigation of Abnormal Grain Growth Kinetics in Electrodeposited Nanostructured-nickel: *William Frazier*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

3:00 PM
Microstructural Evolution in Pure Titanium Processed by High-pressure Torsion: *Mahmood Shirooyeh*[1]; Jie Xu[2]; Terence Langdon[1]; [1]University of Southern California; [2]Harbin Institute of Technology

3:15 PM
Optimizing Strength and Ductility in Cu-Al Alloy with Fine and Homogeneous Recrystallized Structure by Simple Cold Rolling and Annealing: *Yanzhong Tian*[1]; Daisuke Terada[1]; Akinobu Shibata[1]; Nobuhiro Tsuji[1]; [1]Kyoto University

3:30 PM Break

3:45 PM
Precipitation Mechanisms Induced by Severe Plastic Deformation in Al-Cu Alloy: *Yana Nasedkina*[1]; Xavier Sauvage[1]; Maxim Murashkin[2]; Nariman Enikeev[2]; Ruslan Valiev[2]; [1]Universite de Rouen; [2]Ufa State Aviation Technical University

4:00 PM
Thermal Stability and Microstructural Evolution in Severe Plastically Deformed Fe and Fe-Zr: *Kate Dillione*[1]; Christopher Barr[2]; Mitra Taheri[2]; [1]Materials Engineering, Brown University; [2]Materials Science and Engineering, Drexel University

4:15 PM
Effect of Microstructure on Nitriding of Ultrafine-grained Titanium Processed by High-pressure Torsion: *Chuan Wang*[1]; Terence Langdon[1]; [1]University of Southern California

4:30 PM
Microstructure Stability of Ultra-fine Grained Commercial Magnesium Alloy Processed by Severe Plastic Deformation: *Jitka Stráská*[1]; Miloš Janecek[1]; [1]Charles University in Prague

4:45 PM
Nano-structuring of 316L Austenitic Steel by High-strain rate Severe Plastic Deformation Processing: *Jorg Wiezorek*[1]; Andreas Kulovits[2]; Yaakov Idell[1]; Giovanni Facco[1]; [1]University of Pittsburgh; [2]Carnegie Mellon University

5:00 PM
TEM and X-ray Analysis of Cu-alloys after High Pressure Torsion: *Daria Shangina*[1]; Jeno Gubicza[2]; Erzsebet Dodony[2]; Natalia Bochvar[1]; Natalia Tabachkova[3]; Sergey Dobatkin[1]; [1]A.A.Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences; [2]Eotvos Lorand University; [3]National University of Science and Technology "MISIS"

5:15 PM
The Effect of Combined SPD Processes on Mechanical Behavior and Microstructural Properties of an Aluminum Alloy: *Shima Sabbaghianrad*[1]; Terence Langdon[1]; [1]University of Southern California