TMS2016

145th Annual Meeting & Exhibition

FEBRUARY 14-18 DOWNTOWN NASHVILLE, TENNESSEE MUSIC CITY CENTER

Connecting the Global Minerals, Metals, and Materials Community.

PRELIMINARY TECHNICAL PROGRAM

This is the Preliminary Technical Program for TMS2016. All dates, times, and details are current as of December 29, 2015, however, changes may occur before the at-meeting program is finalized in early January. This preliminary file will not be updated. Please view the online session sheets (**www.tms.org/TMS2016/SessionSheets**) or download the mobile app for the most up-to-date information.

Oral sessions are listed alphabetically by the symposium name in groupings of session day and time. Poster sessions are listed after the Thursday PM sessions. To locate a specific presentation or presenter, use the search function of your PDF reader.

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — 2D Materials-based 3D Architectures

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Monday AM
February 15, 2016
Room: 211
Location: Music City Center

Session Chairs: Terry Xu, UNC Charlotte; Swastik Kar, Northeastern University

8:30 AM Invited
From 2D to 3D: Smart Materials and their Combinatorial Structures for Advanced Applications: *Swastik Kar*[1]; [1]Northeastern University

9:00 AM Invited
3-D Graphene Structures Synthesized by Catalyst-free Chemical Vapor Deposition: *Zhengwei Pan*[1]; Kaiyuan Li[1]; Xufan Li[1]; [1]University of Georgia

9:30 AM
Highly Uniform Synthesis of Large-Area, Few-Layer WSe_2: *Philip Campbell*[1]; Alexey Tarasov[1]; Corey Joiner[1]; Meng-Yen Tsai[1]; Georges Pavlidis[1]; Samuel Graham[1]; Jud Ready[1]; Eric Vogel[1]; [1]Georgia Institute of Technology

9:50 AM
Low Temperature Synthesis of Graphite on Ni Films Using Inductively Coupled Plasma Enhanced CVD: *Jaebeom Lee*[1]; Lanxia Cheng[1]; Antonio T.Lucero[1]; Kayoung Yun[2]; Hoseok Nam[2]; Jiyoung Kim[1]; [1]university of texas at dallas; [2]Kookmin university

10:10 AM Break

10:30 AM Invited
The Impact of Interfaces on the Integration of 2D Materials into Nanoelectronics: *Stephen McDonnell*[1]; Keren Freedy[1]; Angelica Azcatl[2]; Christopher Smyth[2]; Rafik Addou[2]; Christopher Hinkle[2]; Robert Wallace[2]; [1]University of Virginia; [2]University of Texas at Dallas

11:00 AM Invited
Plasmonic Hot Electron Induced Photocurrent Response at MoS2-Metal Junctions: *Yaqiong Xu*[1]; Tu Hong[1]; Bhim Chamlagain[2]; Shuren Hu[1]; Sharon Weiss[1]; Zhixian Zhou[2]; [1]Vanderbilt University; [2]Wayne State University

11:30 AM
Deposition and Characteristics of Al based Gate Dielectrics with Ozone Treatment for MoS2 Applications: *Lanxia Cheng*[1]; Jaebeom Lee[1]; Antonio Lucero[1]; Youngchul Byun[1]; Jiyoung Kim[1]; [1]UTD

11:50 AM
Anisotropic Photocurrent Response at Black Phosphorous-MoS2 p-n Heterojunctions: *Tianjiao Wang*[1]; Tu Hong[1]; Bhim Chamlagain[2]; Hsun-Jen Chuang[2]; Zhixian Zhou[2]; Ya-Qiong Xu[1]; [1]Vanderbilt University; [2]Wayne State University

7th International Symposium on High Temperature Metallurgical Processing — Energy Efficient Clean Metallurgical Technology

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Monday AM
February 15, 2016
Room: 105B
Location: Music City Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Yousef Mohassab, University of Utah

8:30 AM Introductory Comments

8:35 AM
Flash Reduction of Magnetite and Hematite Concentrates with Hydrogen in a Lab-Scale Reactor for a Novel Ironmaking Process: *Yousef Mohassab*[1]; Mohamed Elzohiery[2]; Hong Yong Sohn[2]; [1]University of Utah ; [2]University of Utah

8:55 AM
Investigation of Coal Tar Pitch Binder for the Production of Formed Coal Briquettes for COREX from High Volatile Coal Powder: *Yang Yong-bin*[1]; Wang Ya-xuan[1]; [1]Central South University

9:15 AM
Upgrading of Iron-rich Titanium Ores using a Molten Salt Process: *Farzin Fatollahi-Fard*[1]; Petrus Pistorius[1]; [1]Carnegie Mellon University

9:35 AM
Direct Electrolytic Production of Mo-Si-Ti-C Composites from their Oxides/Sulfide/Carbon Mixture Precursor in Molten Salt: *Xingli Zou*[1]; Xionggang Lu[1]; Qian Xu[1]; Hongwei Cheng[1]; Shuhua Geng[1]; Zhongfu Zhou[2]; [1]State Key Laboratory of Advanced Special Steel, Shanghai University, Shanghai 200072, P. R. China.; [2]Institute of Mathematics and Physics, Aberystwyth University, Aberystwyth SY23 3BZ, UK.

9:55 AM
Advanced Oxygen Lances for Safer Furnace Tapping Operations: *Peter Sylvén*[1]; Darwin Morales[2]; [1]Envicom AB; [2]Trefimet S.A.

10:15 AM Break

10:30 AM
Reduction Kinetics of Magnetite Concentrate Particles with H_2 + CO at 1200 to 1600 °C Relevant to a Novel Ironmaking Process: Mohamed Elzohiery[1]; *Yousef Mohassab*[2]; Jagannath Pal[1]; Shengqin Zhang[1]; Hong Yong Sohn[1]; [1]University of Utah; [2]University of Utah

10:50 AM
Solar-driven Carbothermal Zinc Recycling: *Nikolaos Tzouganatos*[1]; Christian Wieckert[1]; Aldo Steinfeld[2]; [1]Solar Technology Laboratory, Paul Scherrer Institute, 5232 Villigen PSI, Switzerland; [2]Department of Mechanical and Process Engineering, ETH Zurich, 8092 Zurich, Switzerland

11:10 AM
Preparing Silicide Layers on Metallic Substrates Using Molten Oxide Electrolysis: *Hideaki Sasaki*[1]; Masafumi Maeda[1]; [1]Institute of Industrial Science, The University of Tokyo

Additive Forming of Components - Tailoring Specific Material Properties in Low Volume Production — Overviews

Sponsored by:
Program Organizers: Judith Schneider, University of Alabama at Huntsville; Mark Stoudt, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory; Lee Semiatin, US Air Force Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology; Eric Lass, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.

Monday AM
February 15, 2016

Room: 205B
Location: Music City Center

Session Chairs: Mark Stoudt, NIST; Lee Semiatin, US Air Force Research Laboratory

8:30 AM Invited
A Roadmap for Developing the Next Generation of Additive Manufacturing Materials: *Todd Palmer*[1]; Greg Dillon[1]; Gary Messing[1]; Rich Martukanitz[1]; Tim Simpson[1]; Ross Brindle[2]; Greg Hildeman[2]; Jared Kosters[2]; [1]Penn State; [2]Nexight Group LLC

9:00 AM Invited
Challenges in Using AM Components in Industrial Applications: *John Lewandowski*[1]; [1]Case Western Reserve University

9:30 AM Invited
Additive Manufacturing of Metals: The Devil in the Details: *Lyle Levine*[1]; [1]National Institute of Standards and Technology

10:00 AM Break

10:20 AM Invited
New Alloy Systems for Direct Metal Powderbed Processes: Tim Horn[1]; *Ola Harrysson*[1]; Harvey West[1]; [1]North Caroline State University

10:50 AM Invited
Multimodal Correlated Datasets to Understand Location Specific Processing State for Additive Manufacturing: *Edwin Schwalbach*[1]; Michael Groeber; Ryan Dehoff; Vincent Paquit[2]; Norman Schehl[3]; William Porter[3]; Dennis Buchanan[3]; Reji John; [1]Air Force Research Laboratory; [2]Oak Ridge National Laboratory; [3]University of Dayton Research Institute

11:20 AM Invited
Prediction of Porosity Caused by Insufficient Melt Pool Overlap: *P. Chris Pistorius*[1]; Ming Tang[1]; [1]Carnegie Mellon University

11:50 AM Invited
Simulation and Modeling of the Metal Laser Powder Bed Fusion Process to Accelerate Certification: *Wayne King*[1]; [1]Lawrence Livermore National Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Connections between Processing and Microstructures I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Monday AM
February 15, 2016

Room: 205A
Location: Music City Center

Session Chairs: Tony Rollett, Carnegie Mellon Univ.; Joe McKeown, Lawrence Livermore National Lab

8:30 AM Invited
Measuring Porosity in Additively Manufactured Materials via Synchrotron–based 3D X-ray Microtomography: Suraj Rao[1]; Ross Cunningham[1]; Tugce Ozturk[1]; *Anthony Rollett*[1]; [1]Carnegie Mellon University

9:00 AM
Characterization of Internal Defects and Their Effect on Mechanical Properties of Stainless Steel 304L Components Fabricated through Laser-based Directed Energy Deposition: *Allison Beese*[1]; Zhuqing Wang[1]; Todd Palmer[1]; [1]Pennsylvania State University

9:20 AM
Microstructure Evolution, Tensile Properties, and Fatigue Crack Growth Mechanisms in Ti-6Al-4V Alloys Fabricated by Electron Beam Melting: *Haize Galarraga*[1]; Diana Lados[2]; Ryan Dehoff[3]; Michael Kirka[3]; [1]Worcester Polytechnic Institute ; [2]Worcester Polytechnic Institute; [3]Oak Ridge National Laboratory

9:40 AM
XRM: Tomography and 3D Grain Mapping for Additive Manufacturing Qualification: *Leah Lavery*[1]; Arno Merkle[1]; William Harris[1]; Christian Holzner[1]; [1]Carl Zeiss X-ray Microscopy, Inc.

10:00 AM Break

10:20 AM Invited
Microstructure Evolution during Laser-Induced Rapid Alloy Solidification: *Joseph McKeown*[1]; Jean-Luc Fattebert[1]; Aurelien Perron[1]; John Roehling[1]; Patrice Turchi[1]; [1]Lawrence Livermore National Laboratory

10:50 AM
Stress State and Strain Rate Dependence of an Electron Beam Additive Manufactured Ti6Al4V: *Omar Rodriguez*[1]; Paul Allison[1]; Wilburn Whittington[2]; David Francis[2]; Oscar Rivera[1]; Kevin Chou[1]; Xibing Gong[1]; Todd Butler[1]; Jedediah Burroughs[3]; [1]The University of Alabama; [2]Mississippi State University; [3]US Army ERDC

11:10 AM
Structure / Property (Constitutive and Dynamic Strength / Damage) Characterization of Additively Manufactured 316L SS: *George Gray*[1]; Veronica Livescu[1]; Carl Trujillo[1]; John Carpenter[1]; Thomas Lienert[1]; Saryu Fensin[1]; [1]Los Alamos National Laboratory

11:30 AM
Understanding the Relationships Between Solidification Microstructure and Mechanical Properties of Additively Manufactured Ti-6Al-4V: *Ross Cunningham*[1]; Sneha Narra[1]; Jack Beuth[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Monday AM
February 15, 2016

Room: 103B
Location: Music City Center

Session Chairs: Brad Boyce, Sandia National Laboratories; Michael Mills, The Ohio State University

8:30 AM Invited
Revealing Deformation Mechanisms in Superalloys Using STEM-Based Imaging and Spectroscopy: *Michael Mills*[1]; Tim Smith[1]; Yunzhi Wang[1]; Stephen Niezgoda[1]; [1]The Ohio State University

9:00 AM
Application of a Spectral Method Framework to Interrogate the Influences of Experimental Uncertainty on Crystal Plasticity: *Philip Eisenlohr*[1]; Pratheek Shanthraj[2]; Martin Diehl[2]; Chen Zhang[1]; Thomas Bieler[1]; Franz Roters[2]; Ruqing Xu[3]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung GmbH; [3]Argonne National Laboratory

9:20 AM
Investigation of Microstructural Stability of CuNb Composites under High-pressure Torsion (HPT): *Samikshya Subedi*[1]; Irene Beyerlein[2]; Elvan Ekiz[3]; Pascal Bellon[3]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Los Alamos National Laboratory; [3]University of Illinois at Urbana-Champaign

9:40 AM
Multiscale Modeling of IN718 Superalloy Based on Micropillar Compression and Computational Homogenization: *Jon Molina-Aldareguia*[1]; Bin Gan[1]; Aitor Cruzado[1]; Marcos Jiménez[1]; Javier Llorca[1]; Javier Segurado[1]; [1]IMDEA Materials Institute

10:00 AM Break

10:20 AM Invited
Quantifying Grain-Scale Deformation for Direct Comparison to Crystal Plasticity Predictions: *Brad Boyce*[1]; Hojun Lim[1]; Jay Carroll[1]; Thomas Buchheit[1]; Corbett Battaile[1]; [1]Sandia National Labs

10:50 AM Invited
Using Synchrotron Radiation to Characterize Deformation: *Anthony Rollett*[1]; Robert Suter[1]; [1]Carnegie Mellon University

11:20 AM
Probing Grain Boundary Mechanics in alpha-titanium Using Nanoindentation and Boundary-sensitive Crystal Plasticity Modeling: *Yang Su*[1]; Claudio Zambaldi[2]; David Mercier[2]; Philip Eisenlohr[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung

11:40 AM
Strength Distribution in a Spalled Material and Its Dependence on Local Microstructure: *Shraddha Vachhani*[1]; Carl Trujillo[1]; Ellen Cerreta[1]; George Thompson III[1]; [1]Los Alamos National Laboratory

12:00 PM
Automated Correlative Tomography of an Aluminum 7075 Alloy Spanning Length Scales and Modalities: *Arno Merkle*[1]; Nikhilesh Chawla[2]; Sudhanshu Singh[2]; [1]Carl Zeiss X-ray Microscopy; [2]Arizona State University

12:20 PM
Mechanical properties and Characterization of Microstructural Gradients with Various Gamma Prime Distributions in Low Solvus High Refractory (LSHR) Nickel Base Superalloy: *Samuel Kuhr*[1]; John Sosa[1]; Hamish Fraser[1]; [1]The Ohio State University

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Soft Magnetic Materials I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Monday AM — Room: 209C
February 15, 2016 — Location: Music City Center

Session Chairs: Raju Ramanujan, NTU; Francis Johnson, GE Global Research

8:30 AM Introductory Comments

8:40 AM Invited
Magnetic Anisotropy in Nanocomposites – What More Do We Know, What Questions Remain?: *Michael McHenry*[1]; [1]Carnegie Mellon University

9:10 AM Invited
Nucleation Mediated Nanostructures in Soft Magnetic Fe-Si-B Based Alloys (Invited): Tushar Borkar[1]; Talukder Alam[1]; Sameehan Joshi[1]; Shravana Katakam[1]; Xi Chen[2]; Narendra Dahotre[1]; Raju Ramanujan[2]; *Rajarshi Banerjee*[1]; [1]University of North Texas; [2]Nanyang Technological University

9:40 AM
Advanced Magnetic Materials for High Power Density, High Efficiency Electrical Systems: *Francis Johnson*[1]; [1]GE Global Research

10:00 AM Break

10:20 AM
Application of Soft Magnetic Nanocomposites in Power Electronics: *Alex Leary*[1]; Michael McHenry[1]; [1]Carnegie Mellon University

10:40 AM
Atomic Scale Characterization of Soft Magnetic Fe-Si-B Based Amorphous Alloys with Strong Creep Induced Anisotropy: *Pradeep Konda Gokuldoss*[1]; [1]Max Planck Institute for Iron Research GmbH

11:00 AM
Design of Nano-crystalline Soft Magnetic Alloys: Electronic Structure: *Jihoon Park*[1]; Yang-Ki Hong[1]; Woncheol Lee[1]; Seok Bae[2]; Seong-Gon Kim[3]; Chul-Jin Choi[4]; [1]The University of Alabama; [2]LG Innotek; [3]Mississippi State University; [4]Korea Institute of Materials Science

11:20 AM
Cation Disorder in Nanoparticle and Thin Film Ferrite Systems: *Vincent Harris*[1]; [1]Northeastern University

Advanced Materials in Dental and Orthopedic Applications — Session I

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Ana Ribeiro, National Institute of Metrology Quality and Technology; Reginald Hamilton, The Pennsylvania State University

Monday AM — Room: 206A
February 15, 2016 — Location: Music City Center

Session Chairs: Tolou Shokuhfar, Michigan Technological University; Cimara Ferreira, University of Tennessee ; Grant Crawford, South Dakota School of Mines & Technology

8:30 AM Keynote
The Growing Orthopedic Infection Problem: Can Anything Stop It ?: *Thomas Webster*[1]; [1]Northeastern University

9:05 AM Invited
Surface Treatments and Dental Implant Infections: *Cimara Ferreira*[1]; [1]UTHSC College of Dentistry

9:30 AM
Room Temperature Aging of Ti-Nb based Beta Alloys: *Song Cai*[1]; J Schaffer[1]; Y Ren[2]; [1]Fort Wayne Metals Research Products Corp.; [2]Argonne National Laboratory

9:50 AM
Examining the Effects of Three Biologically Compatible Solvents on the Behavior of Chitosan Bonded to Titanium: *Holly Martin*[1]; Kathryn Shields[1]; Snjezana Balaz[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Physics and Astronomy, Youngstown State University

10:10 AM Break

10:25 AM
Mechanically Strong TiO2 Nanotubes for Hip Implants: *Sweetu Patel*[1]; Giovanni Solitro[2]; Cortino Sukotjo[2]; Christos Takoudis[2]; Mathew Mathew[3]; Farid Amirouche[2]; Tolou Shokuhfar[2]; [1]Michigan Technological University; [2]University of Illinois at Chicago; [3]Rush University Medical Center

10:45 AM Invited
In-Vivo Performance and Characterization of Nanostructured Orthopedic Surfaces: *Craig Friedrich*[1]; Erin Baker[2]; Sachin Bhosle[1]; [1]Michigan Technological University; [2]Beaumont Health System

11:10 AM
Beta-type Titanium Alloys for Use as Rods in Spinal Fixation Devices: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Huihong Liu[1]; Kengo Narita[1]; [1]Tohoku University

11:30 AM
Processing, Microstructure Characterization and Biological Response of Cold Sprayed Biocomposite Coatings: *Eden Bhatta*[1]; Grant Crawford[1]; Joana Villanueva[2]; [1]South Dakota School of Mines and Technology; [2]Humboldt State Univeristy

11:50 AM
Surface Amorphization of NiTi Alloy Induced by Ultrasonic Nanocrystal Surface Modification for Biomedical Applications: Xiaoning Hou[1]; Ruixia Zhang[1]; Yalin Dong[1]; *Chang Ye*[1]; [1]University of Akron

Alloys and Compounds for Thermoelectric and Solar Cell Applications IV — Session I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, CRISMAT laboratory; Stephane Gorsse, ICMCB-CNRS; Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University; CW Nan, Tsinghua University; G. Jeffrey Snyder, Northwestern University; Hsin-jay Wu, National Sun Yat-Sen University

Monday AM
February 15, 2016

Room: 103C
Location: Music City Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Stéphane Gorsse, Bordeaux INP

8:30 AM Introductory Comments

8:35 AM Invited
Thermoelectric Properties of Higher Copper Chalcogenides
: *Holger Kleinke*[1]; [1]University of Waterloo

8:55 AM Invited
Copper (oxy)chalcogenides, New Promising Thermoelectric Materials: *David Berardan*[1]; Celine Barreteau[1]; Jing Li[2]; Zhao Lidong[1]; Lin Pan[1]; Sunanda Mitra[1]; Nita Dragoe[1]; [1]Univ. Paris Sud; [2]Harbin Institute of Technology

9:15 AM Invited
Recent Adavnces in Complex Sulphide Materials: *Emmanuel Guilmeau*[1]; Cédric Bourgès[1]; Tristan Barbier[1]; Pierric Lemoine[1]; Oleg Lebedev[1]; Ramzy Daou[1]; Vincent Hardy[1]; [1]CRISMAT Lab.

9:35 AM Invited
Thermoelectric Properties of Cu2-dX-based (X=S, Se, and Te) Materials: *Xun Shi*[1]; [1]Shanghai Institute of Ceramics

9:55 AM Break

10:15 AM Invited
Nanointerface Engineering of Electronic Transport in Bulk Nanostructured in Half-Heulser Alloys: *Pierre Ferdinand Poudeu Poudeu*[1]; [1]University of Michigan

10:35 AM Invited
Towards High Figure of Merit zT>1 for p-type FeNbSb Half-Heusler Thermoelectric Materials: *Tiejun Zhu*[1]; Xinbing Zhao[1]; [1]Zhejiang University

10:55 AM
Half-Heusler Microstructure Investigations and Ring-shaped Thermo-elements Elaboration: *Christelle Navone*[1]; Gilles Gaillard[1]; Guillaume Bernard-Granger[1]; Alizee Visconti[1]; [1]Commissariat à l'Energie Atomique et aux Energies Alternatives

11:15 AM
Phase Diagrams of Chalcogenide Sn-Sb-Se Ternary System: *Jui-shen Chang*[1]; Sinn-wen Chen[1]; [1]National TsingHua University

Biological Materials Science Symposium — Biological Materials and Bioinspiration I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Monday AM
February 15, 2016

Room: 207A
Location: Music City Center

Session Chairs: Francois Barthelat, McGill University; Paul Allison, University of Alabama

8:30 AM Introductory Comments

8:35 AM Invited
Structural Design Elements in Biological Materials: Application to Bioinspiration: *Marc Meyers*[1]; Steve Naleway[1]; Joanna McKittrick[1]; Michael Porter[2]; [1]UCSD; [2]Clemson U

9:15 AM
Flexible Dermal Armor in Arapaima, Coelacanth, and Alligator Gar: *Vincent Sherman*[1]; Haocheng Quan[1]; Wen Yang[2]; Robert Ritchie[3]; Marc Meyers[1]; [1]University of California, San Diego; [2]ETH Zurich; [3]Lawrence Berkeley National Laboratory

9:35 AM
A Comparison of the Microstructure of Teleost Fish Scales: *Sandra Murcia*[1]; Ellen Lavoie[1]; Alex Ossa[2]; Dwayne Arola[1]; [1]University of Washington; [2]Universidad Eafit

9:55 AM
Bio-inspired Flexible Armors with 3D Printed Tailored Architectures: Roberto Martini[1]; David Van Zyl[1]; *Francois Barthelat*[1]; [1]McGill University

10:15 AM Break

10:35 AM
On the Exceptional Deformability and Toughness of Snake Eggshells: Yin Chang[1]; *Po-Yu Chen*[1]; [1]National Tsing Hua University

10:55 AM
Why the Seahorse Tail is Square: *Michael Porter*[1]; Dominique Adriaens[2]; Ross Hatton[3]; Marc Meyers[4]; Joanna McKittrick[4]; [1]Clemson University; [2]Ghent University; [3]Oregon State University; [4]University of California, San Diego

11:35 AM
Paddlefish Rostrum as a Structure for Bioinspiration: Analysis and Modeling of the Stress State and Strain Rate Dependence Behavior of Cartilage: *Jeremiah Deang*[1]; Mark Horstemeyer[1]; Lakiesha Williams[1]; Ed Perkins[2]; Paul Allison[3]; Guillermo Riveros[2]; [1]Mississippi State University; [2]US Army Engineer Research & Development Center; [3]University of Alabama

11:15 AM
Lightweight Biological Composites: The Relationship between the Structure and Function of the Feather Vane and Inspired Designs: *Tarah Sullivan*[1]; Steven Herrera[2]; David Kisailus[2]; Vlado Lubarda[1]; Marc Meyers[1]; [1]University of California, San Diego; [2]University of California, Riverside

Bulk Metallic Glasses XIII — Alloy Development and Application I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Monday AM
February 15, 2016
Room: 101E
Location: Music City Center

Session Chairs: William Johnson, Caltech; Peter Liaw, The University of Tennessee

8:30 AM Keynote
Towards a Commercial Metallic Glass Technology: *William Johnson*[1]; Marios Demetriou[1]; [1]California Institute of Technology

9:00 AM Invited
A Research on Micro/Nano Imprinting of Metallic Glasses: *Ke-Fu Yao*[1]; Xue Liu[1]; Jia-Lun Gu[1]; [1]Tsinghua University

9:25 AM Invited
Using Femtosecond Pulsed Laser Irradiation to Magnetically Pattern the Surface of Non-Ferromagnetic Amorphous Steel: *Maria D Baró*[1]; H. Y. Zhang[1]; Y.P. Feng[1]; D. Nieto[2]; G.M. O'Connor[3]; E. García-Lecina[4]; C. McDaniel[3]; J. Díaz-Marcos[5]; M. T. Flores-Arias[2]; E. Pellicer[1]; J. Sort[1]; [1]Universitat Autònoma de Barcelona; [2]University of Santiago de Compostela; [3]National University of Ireland; [4]IK4-CIDETEC; [5]Universitat de Barcelona

9:45 AM Invited
Densification of a Cu-Zr-Al Metallic Glass Powder by Spark Plasma Sintering: *Sandrine Cardinal*[1]; Jean-Marc Pelletier[1]; Guillaume Bonnefont[1]; Jichao Qiao[2]; Guoqiang Xie[3]; [1]INSA-Lyon; [2]Northwestern Polytechnical University; [3]Tohoku University

10:10 AM Break

10:25 AM Invited
Design and Implementation of BMG and BMG Composites in NASA Robotics Applications: *Douglas Hofmann*[1]; Scott Roberts[1]; [1]NASA JPL/Caltech

10:45 AM Invited
Synthesis of Nanoporous Structure by Dealloying of Al-based Amorphous Alloys: Kang Chul Kim[1]; Woo Chul Kim[1]; Kyung Ho Kong[1]; Cham Il Kim[1]; Won Tae Kim[2]; *Do Hyang Kim*[1]; [1]Yonsei University; [2]Cheongju University

11:05 AM
Synthesis of Bulk Amorphous Co-C Alloys: *Hesham Elmkharram*[1]; A. Aning[1]; [1]Virginia Tech

11:25 AM Invited
Temperature-dependent Average Nearest-neighbor Distance in Metallic Melts: *Jianzhong Jiang*[1]; X.D. Wang[1]; Q. Yu[1]; Q.P. Cao[1]; D.X. Zhang[1]; [1]Zhejiang University

Bulk Processing of Nanostructured Powders and Nanopowders by Consolidation — Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Deliang Zhang, Shanghai Jiao Tong University; Bowen Li, Michigan Technological University; Stephen Mashl, Michigan Technological University

Monday AM
February 15, 2016
Room: 210
Location: Music City Center

Session Chairs: Deliang Zhang, Shanghai Jiao Tong University; Katsuyoshi Kondoh, Osaka University

8:30 AM Introductory Comments

8:35 AM Keynote
Nano-duplex Alloys: a Family of Stable Nanocrystalline Materials Amenable to Rapid Sintering: *Christopher Schuh*[1]; [1]MIT

9:15 AM Invited
Bulk Processing of Nanostructured Powders for Functional Materials with Hierarchical Structure Inspired by Natural Species: *Di Zhang*[1]; Wang Zhang[1]; Jiajun Gu[1]; Shenmin Zhu[1]; Huilan Su[1]; Qinglei Liu[1]; [1]Shanghai Jiao Tong University

9:45 AM Invited
Fracturing Mechanism of Carbon Nanotubes Reinforced Aluminum Matrix Composites: *Katsuyoshi Kondoh*[1]; Biao Chen[1]; Lei Jia[1]; Junko Imai[1]; Hisashi Imai[1]; [1]Osaka University

10:15 AM Break

10:35 AM Invited
The Key Issues in Fabrication of Ultrafine Structured Metallic Materials and Metal Matrix Nanocomposites by Thermomechanical Consolidation of Nanostructured Powders: *Deliang Zhang*[1]; Dengshan Zhou[1]; Jiamiao Liang[1]; Xun Yao[1]; Yifeng Zheng[1]; [1]Shanghai Jiao Tong University

11:05 AM Invited
Modified Strain Rate Regime in Consolidated Ultrafine Copper Powders with Silver Micro-alloying: *Yannick Champion*[1]; Julie Bourgon[1]; Xavier Sauvage[1]; [1]CNRS

11:35 AM
Microstructures and Mechanical Properties of Ultrafine Grained Al-7Si-0.3Mg Alloy Produced by Thermomechanical Consolidation of a Milled Powder: *Jiamiao Liang*[1]; C. Kong[2]; Md Zakaria Quadir[2]; Yifeng Zheng[1]; X. Yao[1]; Paul Munroe[2]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University; [2]University of New South Wales

11:55 AM
Spark Plasma Sintering of Nanostructured AA5083 Powder with Varying Cryomilling Duration: *Frank Kellogg*[1]; Benjamin Boesl[2]; Clara Hofmeister[3]; Anit Giri[4]; Yongho Sohn[3]; Kyu Cho[5]; Brandon McWilliams[5]; [1]Bowhead Science and Technology; [2]Florida International University; [3]University of Central Florida; [4]TKC Global ; [5]US Army Research Laboratory

CFD Modeling and Simulation in Materials Processing — Iron And Steelmaking (Tundish, Casting, Converter, Blast Furnace)

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, University of Illinois at Urbana-Champaign; Miaoyong Zhu, Northeastern University; Andreas Ludwig, Montanuniversitaet Leoben, Dep. Metallurgy; Adrian Sabau, Oak Ridge National Laboratory; Koulis Pericleous, University of Greenwich; Hervé Combeau, Institut Jean Lamour

Monday AM
February 15, 2016
Room: 207D
Location: Music City Center

Session Chair: Lifeng Zhang, Beijing University of Science and Technology

8:30 AM Invited
On the Importance of Modeling 3D Shrinkage Cavities for the Prediction of Macrosegregation in Steel Ingots: *Andreas Ludwig*[1]; Menghuai Wu[1]; Abdellah Kharicha[1]; [1]University of Leoben, Dep. Metallurgy

8:55 AM
Computational Fluid Dynamic Simulations of a Laboratory Flash Reactor Relevant to a Novel Flash Ironmaking Process: Yousef Mohassab[1]; Deqiu Fan[2]; *Hong Yong Sohn*[2]; [1]University of Utah ; [2]University of Utah

9:15 AM
Fluid Flow and Inclusion Motion in A Five-strand Continous Casting Tundish: Abulikemu Yasen[1]; Dongteng Pan[1]; *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

9:35 AM
Liquid Steel Flow and Interactions with Nonmetallic Phases in the Continuous Casting Tundish Using CFD & Physical Modeling: *Christopher Eastman*[1]; Peter Glaws[1]; Dongbu Cao[1]; [1]TimkenSteel Corporation

9:55 AM Break

10:15 AM
Simulation of Heat Transfer in Slab Continuous Casting Mold and New Formation Mechanism of Shell Hot Spots: *Zhao-zhen Cai*[1]; Miao-yong Zhu[1]; [1]Northeastern university

10:35 AM
Computational Investigation of Splashing Behaviors in Steelmaking Converter: *Qiang Li*[1]; Mingming Li[1]; Zongshu Zou[1]; [1]Northeastern University

10:55 AM
Simulation of Air Entrainment in High Pressure Die Casting Applications: *Juergen Jakumeit*[1]; Julian Gänz[2]; Herfried Behnken[1]; [1]Access e.V.; [2]CD-adapco

11:15 AM
Numerical Simulation of the Multiphase Flow in the Single-Tundish System
: *Shupei Liu*[1]; Bo Wang[1]; Zhiliang Yang[1]; Shuai Feng[1]; Kongfang Feng[1]; Jinyin Xie[1]; Jieyu Zhang[1]; [1]Shanghai University

11:35 AM
CFD Analysis of Blast Furnace Operating Condition Impacts on Operational Efficiency: Tyamo Okosun[1]; Armin Silaen[1]; Guangwu Tang[1]; *Bin Wu*[1]; Chenn Zhou[1]; [1]Purdue University Calumet

11:55 AM
Numerical and Experimental Investigation of Vertical Twin Roll Strip Casting Process: *Yuvaraj Patil*[1]; Sudipto Ghosh[1]; Ajayakumar Shukla[1]; [1]Indian Institute of Technology

Characterization of Minerals, Metals, and Materials — Method Development

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Monday AM
February 15, 2016
Room: 103A
Location: Music City Center

Session Chairs: Andrew Brown, UNSW Australia; Carl Cady, Los Alamos National Laboratory

8:30 AM
Effect of Poisson's Ratio on Stress/Strain Concentration at Circular Holes in Elastic Plates Subjected to Biaxial Loading- Three Dimensional Finite Element Analysis: *Amr Abd Elfattah*[1]; Hossam El-Din Sallam[1]; [1]Jazan University

8:50 AM
On the Use of Higher Order Moment Invariants in the Classification of Microstructural Shapes: *Ryan Harrison*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

9:10 AM
The Spacing Transform: Application and Validation: *William Monroe*[1]; Charles Monroe[1]; Robin Foley[1]; [1]UAB

9:30 AM
DigiM Porosimetry: A Web Based Image to Simulation Portal for Material Characterization: *Shawn Zhang*[1]; Cheney Zhang[2]; [1]DigiM Solution LLC; [2]McCall Middle School

9:50 AM
Measuring Fracture Toughness Using Digital Image Correlation: *Carl Cady*[1]; Cheng Liu[1]; Manuel Lovato[1]; [1]Los Alamos National Laboratory

10:10 AM Break

10:25 AM
Nondestructive Materials Characterization in 3D by Laboratory Diffraction Contrast Tomography: *Christian Holzner*[1]; Arno Merkle[1]; Leah Lavery[1]; Erik Lauridsen[2]; Peter Resichig[2]; Michael Feser[1]; [1]Carl Zeiss X-ray Microscopy, Inc.; [2]Xnovo Technology ApS

10:45 AM
Speckle Measurements in Deformation Experiments and Dilatometry: *Alexander Makitka*[1]; [1]Linseis

11:05 AM
A Unified Dictionary Approach for the Indexing of Electron Diffraction Modalities: *Saransh Singh*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

11:25 AM
Facile Measurements of Single-crystal Elastic Constant Tensor Properties from Polycrystalline Samples: *Xinpeng Du*[1]; Ji-Cheng Zhao[1]; [1]Ohio State University

11:45 AM
Methodology for Determining Spall Damage Mode Preference in Shocked FCC Polycrystalline Metals from 3-D X-Ray Tomography Data: *Andrew Brown*[1]; Quan Pham[2]; Pedro Peralta[2]; Brian Patterson[3]; Juan P. Escobedo-Diaz[1]; Sheng-Nian Luo[4]; Darcie Dennis-Koller[3]; Ellen Cerreta[3]; Darrin Byler[3]; Aaron Koskelo[3]; Xianghui Xiao[5]; [1]UNSW Australia; [2]Arizona State University; [3]Los Alamos National Laboratory; [4]The Peac Institute of Multiscale Sciences; [5]Argonne National Laboratory

Characterization of Minerals, Metals, and Materials — Non-Ferrous

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Monday AM
February 15, 2016
Room: 102B
Location: Music City Center

Session Chairs: Arnab Baksi, Lamar University; Evgeniya Skripnyak, National Research Tomsk State University

8:30 AM
Verification of the Predicted Martensitic Transformation in a Au-Cu-Zn Alloy: *Michael Chapman*[1]; Marc DeGraef[1]; [1]Carnegie Mellon University

8:50 AM
Low Cyclic Fatigue of Light Alloys with a Bimodal Grain Size Distribution: *Evgeniya Skripnyak*[1]; Nataliya Skripnyak[1]; Vladimir Skripnyak[1]; Vladimir Skripnyak[1]; [1]National Research Tomsk State University

9:10 AM
High Accuracy Technique to Measure the Electrical Conductivity of Highly Conductive Molten Salts: *Thomas Villalon*[1]; Shizhao Su[1]; Uday Pal[1]; [1]Boston University

9:30 AM
Effect of Microstructural Anisotropy on the Dynamic Mechanical Behaviour of Rolled Ti-6Al-4V: Andrea Lock[1]; Andrew Brown[1]; Gareth Appleby-Thomas[2]; Md. Z. Quadir[1]; Paul Hazell[1]; *Juan P. Escobedo-Diaz*[1]; [1]UNSW Australia; [2]Cranfield University

9:50 AM
Microstructure Evolution during Thermal Aging of Inconel 718: Rajakumar Devarapalli[1]; Jonathan Cormier[1]; *Mustapha Jouiad*[1]; [1]Masdar Institute

10:10 AM Break

10:25 AM
Microstructure Characterization of Nickel Alloy 718 with Automated Optical Image Processing: *Thomas Ivanoff*[1]; Trevor Watt[1]; Eric Taleff[1]; [1]Univer-

sity of Texas at Austin

10:45 AM
An Empirical Equation to Predict the Porosity of Titanium Foams: *Xiao Jian*[1]; Cui Hao[1]; Qiu Guibao[1]; Yang Yang[1]; [1]chongqing university

11:05 AM
Microstructure of Metal Injection Molded MIM418 Using Master Alloy Technique: Lin Zhang[1]; Xiaowei Chen[1]; Chi Chen[1]; *Xuanhui Qu*[1]; [1]University of Science and Technology Beijing

Computational Materials Engineering for Nuclear Reactor Applications — Understanding Nuclear Fuel Behavior

Sponsored by:
Program Organizers: Michael Tonks, Idaho National Laboratory; Julie Tucker, Oregon State University; Mark Tschopp, Army Research Laboratory; Richard Williamson, Idaho National Laboratory

Monday AM
February 15, 2016
Room: 101D
Location: Music City Center

Funding support provided by: The symposium will be co-sponsored by the ICME committee

Session Chair: To Be Announced

8:30 AM Invited
Development of the NEAMS Fuels Product Line: *Steven Hayes*[1]; [1]Idaho National Laboratory

9:10 AM
Computational Materials Engineering for Reactor Applications Using the Open-Source MOOSE Framework: *Michael Tonks*[1]; Daniel Schwen[2]; [1]Pennsylvania State University; [2]Idaho National Laboratory

9:30 AM
Cluster Dynamics Modeling of Extended Defects in Irradiated UO_2 with Off-stoichiometry Considerations: Sarah Khalil[1]; Todd Allen[2]; *Anter El-Azab*[3]; [1]UW - Madison; [2]Idaho National Lab; [3]Purdue University

9:50 AM Break

10:10 AM
3D Phase Field Simulation of Grain Growth in Porous UO2: *Karim Ahmed*[1]; Yongfeng Zhang[1]; Todd Allen[1]; Michael Tonks[1]; Anter El-Azab[2]; [1]Idaho National Laboratory; [2]Purdue University

10:30 AM Invited
Multi-scale Simulation of Fission Gas Diffusion in UO_2 Nuclear Fuel: *David Andersson*[1]; [1]Los Alamos National Laboratory

11:10 AM
Thermodynamic Modeling of Complex Oxide Phases in U-M-O Systems where M = Ce, Nd, Pr, La, Y, Gd, and Th: *Jacob McMurray*[1]; Dongwon Shin[1]; Stewart Voit[2]; Robbie Brese[1]; Ben Slone[1]; Suengmin Lee[3]; Theodore Besmann[4]; [1]Oak Ridge National Laboratory; [2]Los Alamos National Laboratory; [3]Pacific Northwest National Laboratory; [4]University of South Carolina

11:30 AM
One Dimensional Migration and Gas Bubble Superlattice Formation in UMo Metal Fuels--a Phase-field Model: *Shenyang Hu*[1]; Douglas Burkes[1]; Curt Lavender[1]; David Senor[1]; Zhijie Xu[1]; [1]Pacific Northwest National Laboratory

11:50 AM
PCI Analysis of a Commercial PWR using Bison-CASL Fuel Performance Code: *Nathan Capps*[1]; Wenfeng Lui[2]; Joe Rashid[2]; Brian Wirth[1]; [1]University of Tennessee; [2]Anatech

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Bridging Timescales

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Monday AM
February 15, 2016
Room: 209A
Location: Music City Center

Session Chairs: Normand Mousseau, Université de Montréal; Danny Perez, Los Alamos National Laboratory

8:30 AM
Characterization and Quantification of Crack Tip Plasticity in Crystalline Materials at Experimentally Achievable Strain Rate: *Subhendu Chakraborty*[1]; Jiaxi Zhang[1]; Somanth Ghosh[1]; [1]Johns Hopkins University

8:50 AM
Accelerating Ring-Polymer Molecular Dynamics Simulation: A Parallel-Replica Dynamics Approach: *Chun-Yaung Lu*[1]; Danny Perez[2]; Arthur Voter[2]; [1]Stanford University; [2]Los Alamos National Laboratory

9:10 AM
Development of Accelerated Reactive Molecular Dynamics Framework for Chemically Reactive Systems: *Srujan Rokkam*[1]; Tapan Desai[1]; John Lawson[2]; Peter Cross[3]; Richard Burnes[4]; [1]Advanced Cooling Technologies, Inc.; [2]NASA Ames Research Center; [3]Naval Air Warfare Center ; [4]Naval Air Warfare Center

9:30 AM Invited
From Nanosecond to Second: Following Long-time Off-lattice Atomistic Dynamics with the Kinetic Activation-relaxation Technique: *Normand Mousseau*[1]; [1]Université de Montréal

10:00 AM Break

10:20 AM
Further Development of the Local Hyperdynamics Method for Accelerated Molecular Dynamics: *Dipanjan Ray*[1]; Danny Perez[1]; Arthur Voter[1]; [1]Los Alamos National Laboratory

10:40 AM Invited
Increasing the Power of Accelerated Molecular Dynamics Methods: *Arthur Voter*[1]; [1]Los Alamos National Laboratory

11:10 AM
Atomistic Modeling of Radiation Damage over Long Timescales: *Laurent K Beland*[1]; Yuri N Osetsky[1]; German D. Samolyuk[1]; Roger E Stoller[1]; [1]Oak Ridge National Laboratory

11:30 AM
Using Speculative Parallelization to Enhance Temperature Accelerated Dynamics Simulations: *Richard Zamora*[1]; Danny Perez[1]; Arthur Voter[1]; [1]Los Alamos National Laboratory

11:50 AM
Multiscale Diffusion Method for Simulations of Long-Time Defect Evolution with Application to Dislocation Climb: *Kristopher Baker*[1]; William Curtin[1]; [1]EPFL

12:10 PM
Sublattice Parallel Replica Dynamics: *Enrique Martinez Saez*[1]; Blas Uberuaga[1]; Arthur Voter[1]; [1]LANL

Computational Methods for Uncertainty Quantification, Model Validation, and Stochastic Predictions — Uncertainty Quantification and Accuracy of DFT Calculations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Mark Tschopp, Army Research Laboratory; Li Ma, NIST

Monday AM
February 15, 2016

Room: 207C
Location: Music City Center

Session Chair: Thomas Allison, NIST

8:30 AM Invited
Effect of K-point Convergence on Derived Properties for Pure Crystals: *Thomas Allison*[1]; [1]NIST

9:10 AM
Searching Transition States under Model-Form Uncertainty in Density Functional Theory Simulation: Lijuan He[1]; *Yan Wang*[1]; [1]Georgia Institute of Technology

9:30 AM Invited
Assessing the Accuracy of DFT Formation Energies: *Chris Wolverton*[1]; [1]Northwestern University

10:10 AM Break

10:30 AM Invited
Quality Control: Has Your DFT Code Been Δ-approved?: *Kurt Lejaeghere*[1]; Veronique Van Speybroeck[1]; Ward Poelmans[1]; Stefaan Cottenier[1]; [1]Ghent University

11:10 AM
Density-Functional Theory Energy Density Method: Extracting Information and Identifying Finite-size Errors: Bora Lee[1]; Min Yu[2]; *Dallas Trinkle*[1]; [1]University of Illinois, Urbana-Champaign; [2]Univ. Wisconsin

Computational Thermodynamics and Kinetics — Defect Thermodynamics and Diffusion I

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Monday AM
February 15, 2016

Room: 208B
Location: Music City Center

Session Chairs: Wei Chen, Lawrence Berkelely National Laboratory; Bilge Yildiz, Massachusetts Institute of Technology

8:30 AM Invited
Doping on the Valley of Hydrogen Solubility: A Route to Design Hydrogen Resistant Zirconium Alloys: Mostafa Youssef[1]; Ming Yang[1]; *Bilge Yildiz*[1]; [1]Massachusetts Institute of Technology

9:00 AM
Investigation of the Ionic Conductivity of c-ZrO2 by Applying the CALPHAD Approach: *Mohammad Asadikiya*[1]; Yu Zhong[1]; [1]MME Department of Florida International University

9:20 AM
Identification of Bulk Oxide Defects in an Electrochemical Environment: Defect Stability Phase Diagrams: *Mira Todorova*[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

9:40 AM
Impact of Varying Oxygen Stoichiometry on Electrochromic Behavior in WO_3: *Wennie Wang*[1]; Anderson Janotti[1]; Chris Van de Walle[1]; [1]University of California, Santa Barbara

10:00 AM Break

10:20 AM Invited
Intrinsic Point Defect in Intermetallics: From Computation to Data Mining: *Wei Chen*[1]; Hong Ding[1]; Bharat Medasani[1]; Maciej Haranczyk[1]; Kristin Persson[1]; Mark Asta[2]; [1]Lawrence Berkeley National Laboratory; [2]UC Berkeley

10:50 AM
First Principles Calculations of Lattice Parameters and Elastic Constants of Fe Phases Containing Solutes: *Michael Fellinger*[1]; Louis Hector Jr.[2]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign; [2]General Motors R&D Center

11:10 AM
Exploration into the Kinetics of Ultra-light Magnesium Alloys: Philipp Alieninov[1]; Ian Parker[1]; *Michele Manuel*[1]; [1]University of Florida

11:30 AM
Develop a Diffusivity Database for Mg Alloys Using Diffusion Multiples and Liquid-Solid Diffusion Couples: *Wei Zhong*[1]; Wei-Hua Sun[1]; Alan. A Luo[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

11:50 AM
Light Element Diffusion in Mg Using First Principles Calculations: Anisotropy and Elastodiffusion: *Ravi Agarwal*[1]; Dallas Trinkle[1]; [1]University of Illinois, Urbana-Champaign

Driving Discovery: Integration of Multi-Modal Imaging and Data Analysis — Session I

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Charudatta Phatak, Argonne National Laboratory; Doga Gursoy, Argonne National Laboratory; Emine Gulsoy, Northwestern university; Yang Jiao, Arizona State University

Monday AM
February 15, 2016

Room: 102A
Location: Music City Center

Session Chair: Emine Gulsoy, Northwestern university

8:30 AM Keynote
Integrated Imaging: The Sum is Greater than the Parts: *Amanda Petford-Long*[1]; [1]Argonne National Laboratory

9:00 AM
Digital Representation of Materials Grain Structure from Four-Dimensional X-ray Microtomography Data: *Ashwin Shahani*[1]; Xianghui Xiao[2]; Peter Voorhees[1]; [1]Northwestern University; [2]Argonne National Laboratory

9:20 AM
In Situ Synchrotron Quantification of Evolving Solidification Microstructures in Ni and Co Based Alloys: *Mohammed Azeem*[1]; Peter Lee[1]; Peter Rockett[2]; Loic Courtois[1]; Shyamprasad Karagadde[3]; Fenglin Yi[1]; Rahman Khandaker[4]; David Dye[4]; Robert Atwood[5]; [1]Manchester University; [2]Oxford University; [3]IIT Bombay; [4]Imperial College, London; [5]Diamond Light Source

9:40 AM
3D and 4D Characterization of Failure Mechanisms in Commercial Li-Ion Batteries: *Jeff Gelb*[1]; Paul Shearing[2]; Donal Finnegan[2]; Dan Brett[2]; [1]San Jose State University; [2]University College London

10:00 AM Break

10:20 AM Invited
Multi-scale, Multi-Model Analysis of Deformation Behavior in Metallic Materials by X-ray Microtomography, FIB, and EBSD: James Mertens[1]; Antony Kirubanandham[1]; Sudhanshu Singh[1]; Arno Merkle[2]; Xianghui Xiao[3]; Yang Jiao[1]; *Nikhilesh Chawla*[1]; [1]Arizona State University; [2]Carl Zeiss; [3]Advanced Photon Source, Argonne National Laboratory

10:50 AM
Integrated Multimodal Imaging of Cathodes for Lithium Ion Battery: *Charudatta Phatak*[1]; Doga Gursoy[1]; Emine Gulsoy[1]; Lynn Trahey[1]; Vincent

De Andrade[1]; [1]Argonne National Laboratory

11:10 AM Invited
Correlation of Multi-modal Chemical Imaging with Computational Simulations for Energy Materials: *Arun Devaraj*[1]; Robert Colby[1]; Craig Szymanski[1]; Jie Bao[1]; Zhijie Xu[1]; Vijay Murugesan[1]; Tolek Tyliszczak[2]; Suntharampillai Thevuthasan[3]; [1]Pacific Northwest National Lab; [2]Lawrence Berkeley National Laboratory; [3]Qatar Environment and Energy Research Institute

11:40 AM Invited
Multi-Modality Imaging at the Hard X-ray Nanoprobe Beamline at the NSLS-II: *Yong Chu*[1]; Hanfei Yan[1]; Xiaojing Huang[1]; Li Li[1]; Ken Lauer[1]; Sebastian Kalbfleisch[1]; Wen Hu[1]; Mingyuan Ge[1]; Evgeny Nazaretski[1]; [1]Brookhaven National Laboratory

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Tin Whisker; Intermetallic Compound I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Monday AM
February 15, 2016

Room: 201A
Location: Music City Center

Session Chairs: Christopher Gourlay, Imperial College London; Babak Arfaei, Binghamton University

8:30 AM Invited
Modeling the Growth of Whiskers under Thermally-induced Strain: *Eric Chason*[1]; Fei Pei[1]; [1]Div of Engineering

8:55 AM
Mitigation of Sn Whisker Growth by Dopant Addition: *Indranath Dutta*[1]; Babak Talebanpour[1]; Sherin Bhassyvasantha[2]; Lutz Meinshausen[1]; Soumik Banerjee[1]; Bhaskar Majumdar[2]; [1]Washington State University; [2]New Mexico Tech

9:15 AM
Synchrotron Radiation X-ray Measurement on Residual Stress in Sn Films and Kinetic Analysis of Sn Whiskers Growth: *Hao Chen*[1]; Hsin Yi Lee[2]; Ching Shun Ku[2]; Albert T. Wu[1]; [1]National Central University; [2]National Synchrotron Radiation Research Center

9:35 AM Invited
In Situ FIB/SEM Tensile Testing of Tin (Sn) Whiskers: *Renuka Vallabhaneni*[1]; Ehsan Izadi[1]; Carl Mayer[1]; Sudhanshu Singh[1]; C. Shashank Kaira[1]; Jagannathan Rajagopalan[1]; Nikhilesh Chawla[1]; [1]Arizona State University

10:00 AM Break

10:20 AM
Effect of Crystal Orientation and Microstructure on the Nucleation and Growth of Tin (Sn) hillocks by In Situ Nanoindentation and Electron Backscattered Diffraction (EBSD): *Irene Lujan-Regalado*[1]; Antony Kirubanandham[1]; Carl Mayer[1]; Sudhanshu Singh[1]; Jason Williams[1]; Nikhilesh Chawla[1]; [1]Arizona State University

10:40 AM
Nucleation Rates of \946-Sn, Cu_6Sn_5, and Cu_xAl_y in Aluminum-Modified Lead-Free Solder Alloys
: *Kathlene Reeve*[1]; Carol Handwerker[1]; Iver Anderson[2]; [1]Purdue University; [2]Ames Laboratory

11:00 AM
Influence of Surface Finish on the Formation of Intermetallic Compounds during Reflow Soldering: In-situ Real-time Observations: *M. A. A. Mohd Salleh*[1]; C. M. Gourlay[2]; H. Yasuda[3]; A. Sugiyama[4]; T. Nagira[5]; S. D. McDonald[1]; K. Nogita[1]; [1]School of Mechanical and Mining Engineering, Univeristy of Queensland; [2]Imperial College; [3]Kyoto University; [4]Osaka Sangyo University; [5]Osaka University

11:20 AM
Influence of the Substrate on the Nucleation of Tin in Solder Reactions: *Christopher Gourlay*[1]; Sergey Belyakov[1]; Zhaolong Ma[1]; Jingwei Xian[1]; [1]Imperial College London

Energy Technologies and Carbon Dioxide Management — Session I

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Li Li, Cornell University ; Donna Guillen, Idaho National Laboratory; Neale Neelameggham, Ind LLC; Lei Zhang, University of Alaska Fairbanks ; Jingxi Zhu, Carnegie Mellon University; Nawshad Haque, CSIRO; Dirk Verhulst, Consultant, Extractive Metallurgy; Soumendra Basu, Boston University; Tao Wang, Nucor Steel; Xuan Liu, Carnegie Mellon University

Monday AM
February 15, 2016

Room: 104D
Location: Music City Center

Session Chairs: Neale Neelameggham, Ind LLC; Nawshad Haque, CSIRO; Jingxi Zhu, Carnegie Mellon University

8:30 AM
CO2 Reduction in Metallurgical and Gasification Industries Using Slag Byproduct: *Jinichiro Nakano*[1]; James Bennett[1]; Anna Nakano[1]; [1]US Department of Energy National Energy Technology Laboratory

8:50 AM
CO2 Reduction in the Cement Industry by Chemical Synthesis Processes: *Juan Restrepo*[1]; Oscar Restrepo[1]; Jorge Tobón[1]; [1]Universidad Nacional de Colombia

9:10 AM Invited
Study on Molten Salt CO2 Capture and Electrochemical Transformation (MSCC-ET): *Dihua Wang*[1]; [1]Wuhan University

9:50 AM
Research on Greenhouse Gas Emission of Solid Dust Recovery Using Rotary Hearth Furnace Process in China: *Hong-Qiang Liu*[1]; Jian-Xun Fu[1]; Si-Yu Liu[1]; [1]State Key Laboratory of Advanced Special Steels, Shanghai University, Shanghai, China, 200072

10:10 AM Break

10:30 AM Invited
Effect of Cations on Carbon Dioxide Sorption in Manganese Dioxide Octahedral Molecular Sieves: *Izaak Williamson*[1]; Winnie Wong-Ng[2]; Lan Li[1]; [1]Boise State University; [2]National Institute of Standards and Technology

11:10 AM
Thermodynamic Analysis of Hydrogen Production from Cog-Steam Reforming Process Using Blast Furnace Slag as Heat Carrier: *Wenjun Duan*[1]; Qingbo Yu[2]; Junxiang Liu[2]; Qin Qin[2]; [1]Northeastern University ; [2]Northeastern University

11:30 AM
CO2 Gasification of Catalysts-loaded Petroleum Coke at Different Grinding Medium: *Zhengjie Chen*[1]; Wenhui Ma[1]; Kuixian Wei[1]; Jijun Wu[1]; [1]Kunming University of Science and Technology

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Identification of Fatigue Precursors and Their Effect on Local/Global Plasticity and Fracture

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Monday AM
February 15, 2016
Room: 213
Location: Music City Center

Session Chair: Antonios Kontsos, Drexel University

8:30 AM Keynote
Advances in Modeling of Fatigue Thresholds: *Huseyin Sehitoglu*[1]; Piyas Chowdhury[1]; Sertan Alkan[1]; [1]University of Illinois

9:10 AM Invited
Quantifying Dislocation Microstructure and Point Defect Evolutions during Cyclic Loading: Ahmed Hussein[1]; *Jaafar El-Awady*[1]; [1]Johns Hopkins University

9:30 AM
In-situ Laue Micro-Diffraction during Cyclic Plastic Deformation of Copper under Shear: Ainara Irastorza-Landa[1]; Steven Van Petegem[1]; Antoine Guitton[1]; Alex Bollhalder[1]; Daniel Grolimund[1]; *Helena Van Swygenhoven*[1]; [1]Paul Scherrer Institut

9:50 AM
Statistical Analysis of Elastic Stress Field at Surface of Ti6Al4V Polycrystals Predicted by Finite Elements Simulations: *Loic Signor*[1]; Van Truong Dang[1]; Patrick Villechaise[1]; Samuel Hemery[1]; [1]Pprime Institute (CNRS - ISAE/ENSMA - Poitiers University)

10:10 AM Break

10:30 AM Invited
Multidisciplinary Approach for Capturing Fatigue Damage Precursor Effects in Metallic Structures under Dynamic Loading: *Ed Habtour*[1]; Daniel Cole[1]; Brian Wisner[2]; Antonios Kontsos[2]; [1]Army Research Laboratory; [2]Drexel University

10:50 AM Invited
Detecting the Precursor to Fatigue Crack Initiation in Nanocrystalline Ni-Fe Using Synchrotron Diffraction: *Brad Boyce*[1]; Timothy Furnish[1]; [1]Sandia National Labs

11:10 AM
Microstructure-Sensitive Investigation of Aluminum 2024 Fatigue Damage Precursors using Acoustic Emission (Note: This presentation will also appear in the poster session.): *Brian Wisner*[1]; Antonios Kontsos[1]; [1]Drexel University

11:30 AM
Investigation of Nonmetallic Inclusion-driven Failures: *Diwakar Naragani*[1]; Michael Sangid[1]; Paul Shade[2]; Jay Schuren[2]; Hemant Sharma[3]; Jun-Sang Park[3]; Peter Kenesei[3]; Joel Bernier[4]; Todd Turner[2]; [1]Purdue University; [2]Air Force Research Laboratory; [3]Argonne National Laboratory; [4]Lawrence Livermore National Laboratory

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Keynote/Nucleation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Monday AM
February 15, 2016
Room: 105A
Location: Music City Center

Session Chairs: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Alain Karma, Northeastern University

8:30 AM Introductory Comments

8:45 AM Keynote
Nonequilibrium Physics in Materials Research: *James Langer*[1]; [1]University of California, Santa Barbara

9:20 AM Keynote
Bridging Multiple Length Scales in Solidification Modeling: What Can We Do, and What's Worth Doing?: *Robert Sekerka*[1]; [1]Carnegie Mellon University

9:55 AM Break

10:15 AM Invited
A Criterion for Wavelength Selection in Pattern Forming Systems: *Jeffrey Hoyt*[1]; Ken Elder[2]; [1]McMaster University; [2]Oakland University

10:40 AM Invited
Influence of Icosahedral Ordering in the Liquid on Nucleation of a Solid: Atomistic Simulation Investigations: Jun Ding[1]; *Mark Asta*[2]; Jeffrey Hoyt[3]; [1]Lawrence Berkeley National Laboratory; [2]University of California, Berkeley; [3]McMaster University

11:05 AM Invited
Solute Precipitate Nucleation: Advances in Theory and Simulation Methods: *Baron Peters*[1]; [1]University of California, Santa Barbara

11:30 AM Invited
Structural and Compositional Templating for Heterogeneous Nucleation: *Zhongyun Fan*[1]; [1]Brunel University

High-Temperature Systems for Energy Conversion and Storage — Ceramic Reliability I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Monday AM
February 15, 2016
Room: 104E
Location: Music City Center

Session Chairs: Amit Pandey, RRLGFCS; Amit Shyam, ORNL

8:30 AM Introductory Comments

8:35 AM Keynote
Thermal Spray as an Additive and Layered Manufacturing Technology for Applications in Energy Systems: *Sanjay Sampath*[1]; [1]Stony Brook University

9:10 AM
Composition and Temperature Dependence of Fracture Behavior of Diffusion Aluminide Bond Coats: *Nagamani Jaya Balila*[1]; Md Zafir Alam[2]; Sanjit Bhowmick[3]; Dipak K Das[4]; Samir Kamat[4]; S. A. Syed Asif[5]; Vikram Jayaram[5]; [1]MPIE GmbH; [2]Johns Hopkins University; [3]Hysitron Inc.; [4]DMRL; [5]IISc

9:30 AM Invited
Synchrotron-Based X-ray Imaging of Energy Conversion and Storage Materials: *Wilson Chiu*[1]; [1]University of Connecticut

9:55 AM Break

10:15 AM
Ultraviolet Digital Image Correlation (UV-DIC) for Measuring Full-Field Strains at Extreme Temperatures: *Ryan Berke*[1]; [1]Utah State University

10:35 AM Invited
Hidden Information in Standard Characterization of Ceramics: *James Zimmermann*[1]; [1]Corning

11:00 AM
Thermomechanical Properties of Bilayer La2Zr2O7 Thermal Barrier Coatings: Xingye Guo[1]; Zhe Lu[2]; Yeon-Gil Jung[2]; Li Li[3]; James Knapp[3]; *Jing Zhang*[1]; [1]Indiana University - Purdue University Indianapolis; [2]Changwon National University; [3]Praxair Surface Technologies Inc.

11:20 AM
Evaluation of Delamination Life for Thermal Barrier Coating with Various Bond Coats: *Taehyung Kim*[1]; Jongkee Ahn[1]; Dongick Shin[1]; Kitae Kim[1]; Yeon-Gil Jung[2]; Donghoon Kim[3]; [1]Hanwha Techwin; [2]Changwon National University; [3]Agency for Defense Development

Hume-Rothery Award Symposium: Thermodynamics of Materials — Phonon and Mechanisms I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Monday AM
February 15, 2016

Room: 107A
Location: Music City Center

Session Chairs: Ursula Kattner, National Institute of Standards and Technology; Mark Asta, University of California, Berkeley

8:30 AM Introductory Comments Michael E. Manley

8:40 AM Keynote
The Origin of Entropy in Materials: *Brent Fultz*[1]; [1]California Institute of Technology

9:20 AM Invited
Vibrational Entropy and Chemical Configurations: Experimental Quantification and Their Correlation: *Matthew Lucas*[1]; [1]California Institute of Technology, Oak Ridge National Laboratory, and Air Force Research Laboratory

9:50 AM
X-ray and Neutron Scattering Studies of Lattice Vibrations and Thermodynamic Phase Stability in Vanadium Dioxide: *John Budai*[1]; Jiawang Hong[1]; Olivier Delaire[1]; Michael Manley[1]; Chen Li[1]; Jonathan Tischler[2]; Ayman Said[2]; Bogdan Leu[2]; Douglas Abernathy[1]; Eliot Specht[1]; Lynn Boatner[1]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory

10:10 AM Break

10:30 AM Invited
Harnessing Materials Properties and Data for Accelerated Design: *Kristin Persson*[1]; [1]UC Berkeley

11:00 AM Invited
Thermodynamics and Thermal Transport Near Lattice Instabilities: *Olivier Delaire*[1]; [1]Oak Ridge National Laboratory

11:30 AM Invited
Electronic Transitions upon Compression: From Changes of the Fermi Surface Topology to Crossings of Core Levels: *Igor Abrikosov*[1]; Marcus Ekholm[1]; Qingguo Feng[1]; Leonid Pourovskii[2]; Mikhail Katsnelson[3]; John Wills[4]; Alexey Tal[5]; Natalia Dubrovinskaia[6]; Leonid Dubrovinsky[6]; [1]Linköping University; [2]Ecole Polytechnique; [3]Radboud University; [4]Los Alamos Natl Lab; [5]NUST 'MISIS'; [6]University of Bayreuth

ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics, and Computational Tools — Applications

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Dongwon Shin, Oak Ridge National Laboratory; Jiadong Gong, QuesTek Innovations; Shengyen Li, National Institute of Standards and Technology; Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory

Monday AM
February 15, 2016

Room: 207B
Location: Music City Center

Session Chairs: Jiadong Gong, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

8:30 AM Keynote
Genomic Data Infrastructure for Computational Materials Design: *Greg Olson*[1]; [1]Northwestern University & QuesTek Innovations

9:10 AM
An ICME Approach to the Investigation of the Relationship between Processing Parameters and Microstructure Development in an Extruded ZE20 Magnesium Alloy: *Joy Forsmark*[1]; Mei Li[1]; Raj Mishra[2]; Plumeri John[3]; Richard Michie[3]; Ahmad Chamanfar[3]; Wojciech Misiolek[3]; Zachary McClelland[4]; Andrew Oppedal[4]; Mark Horstemeyer[4]; Stephen Horstemeyer[4]; Xianfeng Ma[5]; John Allison[5]; Scott Sutton[6]; Alan Luo[6]; Eric Nyberg[7]; Nes Abdulrahman[8]; [1]Ford Motor Company; [2]General Motors; [3]Lehigh University; [4]Mississippi State University; [5]University of Michigan; [6]Ohio State University; [7]Pacific Northwest National Labs; [8]Mag Specialties Inc

9:40 AM Keynote
An ICME Approach to Generation Three Advanced High Strength Steel Development: *Louis Hector Jr*[1]; [1]General Motors

10:20 AM Break

10:40 AM
An Integrated Model for Prediction of Yield Stress in Al-7Si-Mg Cast Alloys: *Chen Rui*[1]; Xu Qingyan[1]; Liu Baicheng[1]; [1]Tsinghua University

11:00 AM
Web Based Nano-materials Design Platform for Li Ion Battery: Min-Ho Lee[1]; Sang-Soo Han[1]; *Kwang-Ryeol Lee*[1]; [1]KIST

11:20 AM
Explicit and Reduced Geometrical Representations for Design of Knitted Functional Fabrics: *Daniel Christe*[1]; Dani Liu[1]; Chenyang Mo[1]; Krzysztof Mazur[1]; Aditi Ramadurgakar[2]; Shane Esola[1]; Genevieve Dion[3]; David Breen[4]; Antonios Kontsos[1]; [1]Department of Mechanical Engineering & Mechanics, Drexel University; [2]Department of Materials Science & Engineering, Drexel University; [3]Westphal College of Media Arts & Design, Drexel University; [4]College of Computing and Informatics, Drexel University

Light Metals Keynote — Pushing Boundaries -- Innovative Thinking in Light Metals Production

*Sponsored by:*No Sponsors Found!
Program Organizer: TMS2016 Administration

Monday AM
February 15, 2016

Room: 202A
Location: Music City Center

Session Chair: Margaret Hyland, University of Auckland

8:30 AM Introductory Comments

8:40 AM Keynote
Dr Martin Iffert, CEO Trimet Aluminium SE: *TMS2016 Administration*[1]; [1]TMS

9:20 AM Keynote
Dr Stephane Delalande, Deputy Scientific Director, PSA Peugeot Citroën: *TMS2016 Administration*[1]; [1]TMS

10:00 AM Concluding Comments

Magnesium Technology 2016 — Keynote Session

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Monday AM
February 15, 2016
Room: 204
Location: Music City Center

Session Chairs: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University

8:30 AM Introductory Comments

8:40 AM Keynote
Challenges for Implementation of Magnesium into More Applications: *Karl Kainer*[1]; [1]Helmholtz-Zentrum Geesthacht

9:20 AM Keynote
Development of Magnesium Alloys for High Speed Trains in China: *Eric Nyberg*[1]; Jian Peng[2]; Neale Neelameggham[3]; [1]Pacific Northwest National Laboratory; [2]Chongqing University; [3]Ind LLC

9:55 AM Break

10:15 AM Keynote
Korea's R&D Activities Towards the Application of Wrought Mg Alloys: *Nack J. Kim*[1]; [1]POSTECH

10:50 AM Keynote
Fascinating LPSO-structured Mg Alloys: *Eiji Abe*[1]; [1]University of Tokyo

11:25 AM Keynote
Developments in High Magnesium-content Bulk Metallic Glasses and Future Possibilities: *Kevin Laws*[1]; Karl Shamlaye[1]; Jörg Löffler[2]; Michael Ferry[1]; [1]University of New South Wales; [2]ETH Zurich

Material Design Approaches and Experiences IV — Material Design Tools and Models

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Monday AM
February 15, 2016
Room: 208A
Location: Music City Center

Session Chairs: Ji-Cheng Zhao, Ohio State University; Akane Suzuki, GE Global Research

8:30 AM Invited
A Quantitative Description of Hierarchical Microstructure for Materials Engineering Design: *Dennis Dimiduk*[1]; Sean Donegan[1]; Michael Groeber[2]; Adam Pilchak[2]; Shesh Srivatsa[3]; [1]BlueQuartz Software, LLC; [2]Air Force Research Laboratory; [3]Srivatsa Consulting, LLC

9:00 AM Invited
Decision Support Strategies in Design of Hierarchical Alloy Systems: *David McDowell*[1]; [1]Georgia Institute of Technology

9:30 AM
A Novel Computational Tool Linking Microstructure and Properties for Thermomechanical Processes: *Pengyang Zhao*[1]; Thaddeus Song En Low[1]; Yunzhi Wang[1]; Stephen Niezgoda[1]; [1]The Ohio State University

9:50 AM Break

10:10 AM Invited
High Temperature Statistical Mechanics to Enable Alloy Design: *Anton Van der Ven*[1]; John Thomas[1]; Brian Puchala[2]; Anirudh Raju Natarajan[1]; John Goiri[1]; [1]University of California Santa Barbara; [2]University of Michigan

10:40 AM Invited
Further Developments of CALPHAD Based Tools for Alloy Design: *Paul Mason*[1]; Kaisheng Wu[1]; Chao Jiang[1]; Qing Chen[2]; Johan Bratberg[2]; Anders Engstrom[2]; [1]Thermo-Calc Software Inc.; [2]Thermo-Calc Software AB

11:10 AM Invited
Integrated Computational Materials Engineering for Precipitation Modeling of Multi-Component Alloys: *Weisheng Cao*[1]; Fan Zhang[1]; Shuanglin Chen[1]; Chuan Zhang[1]; Jun Zhu[1]; [1]CompuTherm

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Fuels I

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday AM
February 15, 2016
Room: 101A
Location: Music City Center

Session Chair: Ramprashad Prabhakaran, Pacific Northwest National Laboratory

8:30 AM
Recent Results of Microstructural Characterization of U-10Mo Monolithic Fuel Plates Irradiated in the Advanced Test Reactor: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Jian Gan[1]; Brandon Miller[1]; Adam Robinson[1]; [1]Idaho National Laboratory

8:50 AM
Characterization via Transmission Electron Microscopy of the Diffusional Interactions between U-10Mo and AA6061 Alloys at 600°C: *Emmanuel Perez*[1]; Dennis Keiser[1]; Yong-ho Sohn[2]; [1]Idaho National Laboratory; [2]University of Central Florida

9:10 AM
Chemical Dependence of the Amorphization Behavior of the UMo-Al Interaction Layer in Dispersion Fuels: *Laura Jamison*[1]; Bei Ye[1]; Sumit Bhattacharya[2]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Northwestern University

9:30 AM
The Effect of Grain Size on the Homogenization Kinetics and Eutectoid Decomposition in U-10 wt% Mo Alloys: *Vineet Joshi*[1]; Curt Lavender[1]; Zhijie Xu[1]; Dean Paxton[1]; Douglas Burkes[1]; [1]Pacific Northwest National Laboratory

9:50 AM
Swift Heavy Ion Irradiation Induced Interactions in the UMo/X/Al Trilayer System: Hsin-Yin Chiang[1]; *Winfried Petry*[1]; S.-H. Park[2]; M. Mayer[3]; K. Schmid[3]; M. Balden[3]; U. Boesenberg[4]; R. Jungwirth[1]; G. Falkenberg[4]; Tobias Zweifel[1]; [1]Technische Universität München / FRM II; [2]Ludwig-Maximilians-Universität München; [3]Max-Planck-Institut für Plasmaphysik; [4]Deutsches Elektronen-Synchrotron

10:10 AM Break

10:30 AM
Microstructure-based Finite Element Analysis of the Effect of Homogenization on the U-10Mo/Zr Interface: *Ayoub Soulami*[1]; Zhijie Xu[1]; Vineet Joshi[1]; Colleen McInnis[1]; Curt Lavender[1]; Doug Burkes[1]; [1]Pacific Northwest National Laboratories

10:50 AM
Miniature Bulge Test for Measuring HIPed Aluminum/Aluminum and Aluminum/Uranium Interfacial Fracture Toughness: *Manuel Lovato*[1]; Cheng Liu[1]; Kester Clarke[1]; David Alexander[1]; Wiliam Blumenthal[1]; [1]Los Alamos National Laboratory

11:10 AM
Recrystallization and Texture Development in Rolled U-10 wt% Mo Alloys: *Vineet Joshi*[1]; Curt Lavender[1]; Ayoub Soulami[1]; David Field[2]; Doug Burkes[1]; [1]Pacific Northwest National Laboratory; [2]Washington State University

11:30 AM
The Thermal Properties of Fresh and Spent U-Mo Fuels: An Overview: *Winfried Petry*[1]; Tanja Huber[1]; Harald Breitkreutz[1]; Christian Reiter[1]; Stefan Elgeti[2]; Douglas Burkes[3]; Amanda Casella[3]; Andrew Casella[3]; Frances Smith[3]; Daniel Wachs[4]; [1]Technische Universität München / FRM II; [2]Max-Plank-Institute for Plasmaphysics; [3]Pacific Northwest National Laboratory; [4]Idaho National Laboratory

11:50 AM
Corrosion Studies on U-10Mo Fuel for Research Reactor Applications: *Ramprashad Prabhakaran*[1]; Levi Gardner[2]; Vineet Joshi[1]; Curt Lavender[1]; Douglas Burkes[1]; [1]Pacific Northwest National Laboratory; [2]Utah State Univ

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

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday AM
February 15, 2016
Room: 101B
Location: Music City Center

Session Chair: Raul Rebak, GE Global Research

8:30 AM
Atomic-level Characterization of the Metal-oxide Interface of a Zircaloy-4 Cladding from Commercial LWR Irradiated Fuel: *Philip Edmondson*[1]; Chad Parish[1]; Tyler Gerczak[1]; Keith Leonard[1]; Arthur Motta[2]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory; [2]Penn State University

8:50 AM
Synchrotron Characterization of Oxidation in Nuclear Claddings for LWR Applications: Simerjeet Gill[1]; *Mohamed Elbakhshwan*[1]; Raul Rebak[2]; Lynne Ecker[1]; [1]Brookhaven National Lab; [2]GE Global Research, Schenectady

9:10 AM
Transitions in Creep Mechanisms of HANA 4 – Applications to Dimensional Change Predictions during Dry Storage: Boopathy Kombaiah[1]; *Korukonda Linga Murty*[1]; [1]North Carolina State University

9:30 AM
Atom Probe Examinations of Zircaloy Irradiated at Nominally 358C: *Brian Cockeram*[1]; Phil Edmondson[2]; Keith Leonard[2]; Jim Hollenbeck[1]; [1]Bechtel-Bettis; [2]Oak Ridge National Laboratory

9:50 AM
Al-Ti-Cr Coating on Zr Alloys for Enhancing Accident Tolerance of Fuel Claddings: *Jeong-Yong Park*[1]; Il-Hyun Kim[1]; Hyun-Gil Kim[1]; Yang-Il Jung[1]; Dong-Jun Park[1]; Jung-Hwan Park[1]; Yang-Hyun Koo[1]; [1]Korea Atomic Energy Research Institute

10:10 AM Break

10:30 AM
Irradiation Memory Effects in Zirconium Alloy Corrosion: *Jason Gruber*[1]; [1]Bechtel Marine Propulsion Corporation

10:50 AM
Synthesis and Characterization of Magnetron Sputtered Cr2AlC Coatings to Improve Oxidation Resistance of Zirconium Alloys: *Maulik Patel*[1]; Yueying Wu[1]; Devin Roberts[1]; Philip Rack[1]; Jonna Partezana[1]; Robert Comstock[1]; Kurt Sickafus[1]; [1]University of Tennessee

11:10 AM
Comparison of Zirconium Oxidation Behavior under Oxygen-rich Gaseous and High Humidity Environments via In-situ TEM: *Wayne Harlow*[1]; Mitra Taheri[1]; [1]Drexel University

11:30 AM
Study of Microstructural Evaluation and Thermal Creep Behavior of Heat-Treated Zr-Excel Pressure Tube Materials: *Kazi Ahmmed*[1]; Levente Balogh[1]; Yasir Idrees[1]; David Kerr[1]; Mark Daymond[1]; [1]Queens University

Mechanical Behavior at the Nanoscale III — In-situ Characterization of Nanoscale Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Monday AM
February 15, 2016
Room: 214
Location: Music City Center

Session Chair: Jonathan Zimmerman, Sandia National Laboatories

8:30 AM Invited
In Situ TEM Characterization on Deformation of FeCoNiMnCr High Entropy Alloy: *Qian Yu*[1]; ZiJiao Zhang[2]; Jiangwei Wang[3]; Scott X. Mao[3]; Robert O. Ritchie[4]; [1]University of Michigan, Ann Arbor; [2]Zhejiang University; [3]University of Pittsburgh; [4]UC Berkeley

9:10 AM
Anisotropy in Nanolamellar Pearlitic Steels Investigated at the Micron Scale: *Marlene Kapp*[1]; Anton Hohenwarter[2]; Stefan Wurster[2]; Bo Yang[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science; [2]Montanuniversität Leoben

9:30 AM
In Situ Study of Oxygen's Influence on Deformation Twinning in Alpha-Titanium: *Rachel Traylor*[1]; Josh Kacher[2]; Max Poschmann[2]; Mark Asta[2]; Daryl Chrzan[2]; Andrew Minor[2]; [1]Other; [2]University of California Berkeley

9:50 AM
Growth and Stress-induced Transformation of Zinc Blende AlN Layers in Al-AlN-TiN Multilayers: Nan Li[1]; Satyesh Yadav[1]; Shuai Shao[1]; *Jian Wang*[2]; Xiang-Yang Liu[1]; Amit Misra[3]; [1]Los Alamos National Laboratory; [2]University of Nebraska-Lincoln; [3]University of Michigan

10:10 AM Break

10:30 AM
In Situ Nanomechanics: *Ting Zhu*[1]; [1]Georgia Institute of Technology

10:50 AM
Correlating In and Ex Situ Nanomechanical Measurements: *Douglas Stauffer*[1]; Eric Hintsala[2]; William Gerberich[2]; S.A. Syed Asif[1]; [1]Hysitron, Inc.; [2]Chemical Engineering & Materials Science, University of Minnesota

11:10 AM
Enhancing Ductility of Metal-Metal (BCC-HCP) and Metal-Ceramic Multilayered Nanocomposites: *Siddhartha Pathak*[1]; William Mook[2]; Youxing Chen[1]; Nan Li[1]; Jon Baldwin[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory; [2]Sandia National Laboratory

11:30 AM
In Situ Atomic-scale Observation of Twinning Dominated Deformation in Nanoscale BCC Bi-crystals: *Scott Mao*[1]; Jiangwei Wang[1]; Zhi Zeng[2]; Christopher Weinberger[3]; Ze Zhang[4]; Ting Zhu[2]; [1]University of Pittsburgh; [2]Georgia Institute of Technology; [3]Sandia National Laboratories; [4]Zhejiang University

Metal and Polymer Matrix Composites II — Polymer Matrix Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Monday AM
February 15, 2016

Room: 110A
Location: Music City Center

Session Chair: To Be Announced

8:30 AM Invited
Effect of Spatial Distribution of Borosilicate Particles in Polypropylene Matrix Composites Using X-Ray Microtomography: Somya Singh[1]; James Mertens[1]; C. Shashank Kaira[1]; Hechao Li[1]; Sudhanshu Singh[1]; Yang Jiao[1]; *Nikhilesh Chawla*[1]; [1]Arizona State University

8:50 AM Invited
Multifunctional Polymer Matrix Nanocomposites toward Microwave Absorption: Qingliang He[1]; Jiang Guo[1]; Xingru Yan[1]; *Zhanhu Guo*[1]; [1]University of Tennessee

9:10 AM
Development of a Composite Material Filament for Lightweight 3D Printed Components: Steven Zeltmann[1]; *Nikhil Gupta*[1]; Mrityunjay Doddamani[2]; [1]New York University; [2]National Institute of Technology, Karnataka

9:30 AM
Degradation Study of High Melt Strength Polypropylene/Clay Nanocomposites in Environmental and Accelerated Conditions: Luiz Komatsu[1]; Washington Oliani[1]; Ademar Lugao[1]; Duclerc Parra[1]; *Vijaya Rangari*[1]; [1]Nuclear and Energy Research Institute

9:50 AM
The Role of Titania Surface on the Degradation Behavior of LLDPE Composites: *Hamilton Viana*[1]; Patrícia Poveda[2]; Leonardo Silva[2]; [1]College of Engineering - University Center of Santo Andre; [2]IPEN - University of Sao Paulo

10:10 AM Break

10:30 AM Invited
Alternative Materials for Printed Circuit Board (PCB) Based on High Performance Poly(ether-ether-ketone) Matrix Composites: *Rajendra Goyal*[1]; [1]College of Engineering, Pune (CoEP)

10:50 AM Invited
Polymer to Ceramic Transformation of Polysilazane Wrapped Nanotubes and their Applications in Energy-Based Devices: *Gurpreet Singh*[1]; [1]Kansas State University

11:10 AM
Laser Pulse Heating of Carbon Nanotube Composites: *Stephen Bartolucci*[1]; Michael Miller[1]; Karen Supan[2]; Jeffrey Warrender[1]; [1]ARDEC-Benet Laboratories; [2]Norwich University

11:30 AM
Nanotube Sheet - Graphite Hybrid Nanocomposite for Damage Detection: Jiukun Li[1]; *Sirish Namilae*[1]; [1]ERAU

11:50 AM
Progressive Damage and Failure Analysis of Composite Structures for Wind Turbine Blades and Airplane Fuselase Using Multiscale Synergistic Damage Mechanics Approach: *Chandra Veer Singh*[1]; John Montesano[1]; [1]University of Toronto

Nanostructured Materials for Nuclear Applications — Session I

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Monday AM
February 15, 2016

Room: 101C
Location: Music City Center

Session Chairs: Cheng Sun, Los Alamos National Laboratoary; Khalid Hattar, Sandia National Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
An Overview of Some Major Recent Advances in Nanostructured Ferritic Alloys for Nuclear Energy Service: *G. Robert Odette*[1]; [1]University of California Santa Barbara

9:05 AM Invited
Point Defect-fluxes to Interfaces during Irradiation: *Shen Dillon*[1]; Shimin Mao[1]; [1]University of Illinois at Urbana-Champaign

9:35 AM
Microstructural Investigation of Irradiation Effects in Nanoscale Stable Precipitation-Strengthened Steels: *Clarissa Yablinsky*[1]; Osman Anderoglu[1]; Semyon Vaynman[2]; Yip-Wah Chung[2]; Morris Fine[2]; Kristin Tippey[3]; John Speer[3]; Kip Findley[3]; Omer Dogan[4]; Paul Jablonski[4]; Stuart Maloy[1]; Amy Clarke[1]; Kester Clarke[1]; [1]Los Alamos National Laboratory; [2]Northwestern University; [3]Colorado School of Mines; [4]National Energy Technology Laboratory

9:55 AM
Determination of Kr-Ion Irradiation-damage Tolerance of Ultra-Fine Grain 316L SS Alloys Processed by Novel SPD Methods: *Mauricio Gordillo*[1]; Jörg Wiezorek[1]; [1]University of Pittsburgh

10:15 AM Break

10:35 AM Invited
Radiation Stability of High Dose Irradiated Nanostructured Alloys and the Development of Novel Alloy Concepts: *Peter Hosemann*[1]; Nathan Bailey[1]; Manuel Abad[1]; David Frazer[1]; Rachel Connick[1]; Joanna Szornel[1]; Scott Parker[1]; Daniel Kiener[2]; Mychailo Toloczko[3]; [1]University of California Berkeley; [2]Montanuniversität Leoben; [3]Pacific Northwest National Laboratory

11:05 AM
Probing Nanoscale Damage Gradients in Irradiated Materials with Spherical Nanoindentation: *Nathan Mara*[1]; Siddhartha Pathak[1]; Yongqiang Wang[1]; Russ Doerner[2]; Surya Kalidindi[3]; [1]Los Alamos National Laboratory; [2]University of California, San Diego; [3]Georgia Institute of Technology

11:25 AM
On the Nano-Oxide Phase in MA957 and FCDR NFA-1: *Yuan Wu*[1]; Stephan Kraemer[1]; soupitak Pal[1]; George Odette[1]; Nathan Bailey[2]; Peter Hosemann[2]; James Ciston[3]; [1]UCSB; [2]UCB; [3]LBL

11:45 AM
First Principles Study on Helium Bubble Formation at the Y-Ti-N/C Enriched Nano-precipitates in 14YWT: *Yingye Gan*[1]; Huijuan Zhao[1]; Di Yun[2]; David Hoelzer[3]; [1]Clemson University; [2]Argonne National Laboratory; [3]Oak Ridge National Laboratory

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XV — Electromigration & Electric Current Effects

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Shien Ping Feng, The University of Hong Kong; Clemens Schmetterer, Fraunhofer Institute

Monday AM
February 15, 2016
Room: 109
Location: Music City Center

Session Chairs: Ming-Tzer Lin, National Chung Hsing University; Iku Ohnuma, National Institute for Materials Science (NIMS)

8:30 AM Invited
Development of High Strength and High Electrical Conductivity of Cu-Ni-Al Alloys: *Kiyohito Ishida*[1]; Takashi Miyamoto[1]; Ikuo Ohnuma[1]; Toshihiro Omori[1]; Ryousuke Kainuma[1]; [1]Tohoku university

9:00 AM Invited
Material Issues in Memristive Devices: *Jianhua Yang*[1]; [1]University of Massachusetts, Amherst

9:30 AM
The Kinetic Analysis of Co-Sn Binary System: *Chieh-Fu Chen*[1]; Mu-Tao Chen[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

9:50 AM Break

10:10 AM
Morphological Stability of Interfaces under Electromigration Condition: Insights from Phase-field Study: *Arnab Mukherjee*[1]; Kumar Ankit[2]; Britta Nestler[2]; [1]Karlsruhe University of Applied Sciences; [2]Karlsruhe Institute of Technology

10:30 AM
Stress and Currents Density Effects on Copper-Tin Intermetallic Compound Formation: Yue-Lin Lee[1]; Jhou-Cheng Wu[1]; S.-F. Lin[1]; *Ming-Tzer Lin*[1]; [1]National Chung Hsing University

10:50 AM
A New Insight on the Electromigration Effect: Strain-induced Atomic Migration under Current Stressing: *Yu-chen Liu*[1]; Yong-si Yu[1]; Shang-Jui Chiu[2]; Yen-Ting Liu[2]; Hsin-Yi Lee[2]; Shih-kang Lin[1]; [1]National Cheng Kung University; [2]National Synchrotron Radiation Research Center

11:10 AM
Effects of Electromigration on the p-Bi2Te3/Sn Interfacial Reactions: *Chih Fan Lin*[1]; Hsing-Ting Chan[1]; Yee-Wen Yen[2]; Chih-Ming Chen[1]; [1]National Chung Hsing University; [2]National Taiwan University of Science and Technology

11:30 AM
Failure Mechanism of Cu_6Sn_5 Microbumps under Current Stressing: *Yi Cheng Chu*[1]; Chih Chen[1]; Chau-Jie Zhan[2]; Yu-wei Huang[2]; [1]Department of Materials Science & Engineering, National Chiao Tung University; [2]Assembly and Reliability Department/EOL/ITRI

Phase Transformations and Microstructural Evolution — Phase Transformations - Fundamentals - Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Monday AM
February 15, 2016
Room: 107B
Location: Music City Center

Session Chair: Stephen Niezgoda, The Ohio State University

8:30 AM
γ' in Co-Al-W: Why Won't It Just Go Away?: *Eric Lass*[1]; [1]National Institute of Standards and Technology

9:00 AM
Study of Phase Precipitation in Binary Systems using Diffusion Multiples and Simulations: *Qiaofu Zhang*[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

9:20 AM
Study of Phase Transformation, Recovery and Recrystallization in Ti-5Al-5V-5Mo-3Cr Alloy and Their Effects on Dilatometric Response: *Mainak Sen*[1]; Swati Suman[1]; Amit Bhattacharjee[2]; Sujoy Kar[1]; [1]Indian Institute Of Technology; [2]Defence Metallurgical Research Laboratory, Hyderabad.

9:40 AM
The Effect of Excess Energy in the Simulation of Dendritic Growth Using the Phase Field Model Coupled with a CALPHAD Database: *Kerboub Abdelhak*[1]; Belbacha El Djemai[1]; [1]university hadj-lakhdar Batna

10:00 AM Break

10:20 AM
Supersaturation and Decay: The Life of Vacancies during Precipitation: *Alexis Deschamps*[1]; De Geuser Frederic[1]; [1]Grenoble Institute of Technology

11:00 AM
The Stability of the Moving Boundary in Spherical and Planar Geometries and its Relation to Nucleation and Growth: *Rahul Basu*[1]; [1]SAIT , VTU

11:20 AM
Modification of Phase Evolution Pathways in Nanocrystalline Metallic Thin Films: Megan Emigh[1]; Pralav Shetty[1]; *Jessica Krogstad*[1]; [1]University of Illinois, Urbana-Champaign

11:40 AM
Symmetry Breaking and Pathway Degeneracy during Structural Phase Transformations: *Yipeng Gao*[1]; Suliman Dregia[1]; Yunzhi Wang[1]; [1]The Ohio State University

Phase Transformations and Microstructural Evolution — Phase Transformations in Fe-Alloys - Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Monday AM
February 15, 2016
Room: 108
Location: Music City Center

Session Chair: Sudarsanam Babu, University of Tennessee, Knoxville

8:30 AM
Combined Atom Probe Tomography and Electron Microscopy Investigation of Intermediate Carbides Precipitation from Supersaturated Virgin Fe-Ni-C Martensites: *Frederic Danoix*[1]; Sophie Cazottes[2]; Mohamed Goune[3]; Helena ZAPOLSKY[1]; Sebastien Allain[4]; Philippe Maugis[5]; [1]CNRS - Université de Rouen; [2]MATEIS INSA Lyon; [3]ICMCB Bordeaux; [4]IJL Université de Lorraine; [5]Aix-Marseille Université IM2NP

9:00 AM
Ballistic Martensite: *Nicholas Wengrenovich*[1]; Greg Olson[1]; [1]Northwestern University

9:20 AM
Boron Segregation and its Effects in Boron Containing Steels: *Kara Luitjohan*[1]; David Johnson[1]; Volkan Ortalan[1]; [1]Purdue University

9:40 AM
Carbide Evolution during Quenching and Partitioning of Steel Studied by Mössbauer Spectroscopy: *Dean Pierce*[1]; Dan Coughlin[2]; Amy Clarke[2]; Don Williamson[3]; Jonathan Poplawsky[4]; Kester Clarke[2]; John Speer[1]; David Matlock[1]; Emmanuel De Moor[1]; [1]Advanced Steel Processing and Products Research Center, Colorado School of Mines; [2]Materials Science and Technology Division, Los Alamos National Laboratory; [3]Department of Physics, Colorado School of Mines; [4]Materials Science and Technology Division, Oak Ridge National Laboratory

10:00 AM
Atomistic Modeling of Interfaces of Cementite and Ferrite: *Matthew Guziewski*[1]; Christopher Weinberger[1]; [1]Drexel University

10:20 AM Break

10:40 AM
Correlation of Microstructure to Creep Properties of Fe-30Cr-3Al Alloys Strengthened by Laves Phase: *Benjamin Shassere*[1]; Yukinori Yamamoto[2]; Sudarsanam Babu[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

11:00 AM
Effect of Two-step Isothermal Transformation of Bainite on Microstructures and Tensile Properties of TRIP Assisted Steels: *Chang-Hoon Lee*[1]; Kyeong-Won Kim[1]; Jun-Yun Kang[1]; Tae-Ho Lee[1]; [1]Korea Institute of Materials Science

11:20 AM
Phase Transformation and Age Hardening Behavior of Microalloyed Austenitic Fe-30Mn-9Al-0.9C Light-weight Steels: *Joonoh Moon*[1]; Seong-Jun Park[1]; Chang-Hoon Lee[1]; Tae-Ho Lee[1]; [1]Korea Institute of Materials Science

11:40 AM
High Temperature Spheroidization of Cementite in a 2C-4Cr Ultrahigh Carbon Steel.: *Matthew Hecht*[1]; Yoosuf Picard[1]; Bryan Webler[1]; [1]Carnegie Mellon University

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Interaction of Alloying Elements with Stationary and Migrating Interfaces

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Monday AM
February 15, 2016
Room: 110B
Location: Music City Center

Session Chairs: Matthias Militzer, University of British Columbia; Annika Borgenstam, KTH, Royal Institute of Technology

8:30 AM Invited
Towards a Unified Analysis of Migrating Austenite/Ferrite Interfaces in Steels: *John Agren*[1]; [1]Royal Institute of Technology

9:00 AM Invited
New Insights into Alloying Elements Interaction with Migrating α-ferrite/ γ-austenite Interface in Fe-C-Mn System: *Goune Mohamed*[1]; Fréderic Danoix[2]; Xavier Sauvage[2]; Didier Huin[3]; [1]ICMCB-Bordeaux1; [2]Université of Rouen; [3]ArcelorMittal

9:30 AM
Solute Drag in a 40 Years Perspective: *Bo Sundman*[1]; [1]CEA Saclay

9:50 AM
On the Question of Solute Atom Trajectories during Dynamic Segregation: *Glenn Hibbard*[1]; [1]University of Toronto

10:10 AM Break

10:30 AM Invited
The Effect of C and N on the Cyclic Partial Phase Transformation Behaviour in an Mn Containing Steel: *Sybrand van der Zwaag*[1]; Hussein Farahani; Hatem Zurob; [1]Technical University Delft

11:00 AM
Grain Boundary Segregation in Phase Separating Nanocrystalline Alloys: The Role of Competing Processes on Microstructure Evolution: *Fadi Abdeljawad*[1]; Stephen Foiles[1]; Blythe Clark[1]; [1]Sandia National Laboratories

11:20 AM
Solute Interactions at the Ferrite-Austenite Interphase Boundary: Brian Langelier[1]; Hugo Van Landeghem[1]; *Hatem Zurob*[1]; [1]McMaster University

11:40 AM Panel Discussion

Rare Metal Extraction & Processing Symposium — Rare Earth Elements / Base & Rare Metals I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Shafiq Alam, University of Saskatchewan; Hojong Kim, Penn State University; Neale Neelameggham, Ind LLC; Takanari Ouchi, MIT; Harald Oosterhof, Umicore

Monday AM
February 15, 2016
Room: 106A
Location: Music City Center

Session Chairs: Harald Oosterhof, Umicore; Takanari Ouchi, Massachusetts Institute of Technology

8:30 AM Keynote
The Search Minerals Direct Extraction Process for Rare Earth Element Recovery: *David Dreisinger*[1]; Niels Verbaan[2]; Mike Johnson[2]; [1]Univ of B.C.; [2]SGS Minerals Services

9:05 AM
Hydrometallurgical Extraction of Rare Earth Elements and Phosphorous from Low Grade Mine Tailings: *Sebastiaan Peelman*[1]; [1]Delft University of Technology

9:30 AM
Fluorination Behavior of Uranium and Zirconium Mixture for Fuel Debris Treatment: *Nobuaki Sato*[1]; Akira Kirishima[1]; Tetsuo Fukasawa[2]; [1]IMRAM; [2]Hitachi-GE Nuclear Energy

9:55 AM Invited
Hydrometallurgical Recovery of Rare Earth Metals from Spent FCC Catalysts: *Marco Wenzel*[1]; K. Schnaars[1]; N. Kelly[1]; K. Gloe[1]; Jan Weigand[1]; S. Robles M[2]; K. Kretschmer[2]; Phuc Nguyen Le[3]; Dang Thanh Tung[3]; Nguyen Huu Luong[3]; Tran Vinh Loc[3]; Dang Van Sy[4]; [1]TU Dresden; [2]Delta Engineering & Chemistry GmbH; [3]Vietnam Petroleum Institute; [4]LILAMA EME

10:20 AM Break

10:40 AM
Direct Solvent Extraction of Nickel from Sulfuric Acid Leach Solutions of Low Grade and Complicated Nickel Resources Using a Novel Extractant of HBL110: *Li Zeng*[1]; Guiqing Zhang[1]; Liansheng Xiao[1]; Zuoying Cao[1]; [1]Central South University

11:05 AM
Preparation and Analysis of Nd2O3 Doped Apatite Concentrate for Pyrometallurgical Recovery of Rare Earth Element: *Tianming Sun*[1]; Mark William Kennedy[2]; Kai Tang[3]; Gabriella Tranell[4]; Ragnhild E. Aune[4]; [1]KTH; [2]Proval Partners SA; [3]SINTEF Materials and Chemistry; [4]Norwegian University of Science and Technology (NTNU)

Recent Advancement on Stretchable and Wearable Electronics — Session I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, ORNL; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Jiahua Zhu, The University of Akron; Nuggehalli Ravindra, New Jersey Institute of Technology; Catherine Dubourdieu, CNRS - INL; Madan Dubey, US Army Research Lab

Monday AM
February 15, 2016

Room: 205C
Location: Music City Center

Session Chairs: Pooran Joshi, ORNL; Nuggehalli Ravindra, New Jersey Institute of Technology; Madan Dubey, US Army Research Lab

8:30 AM
3D Printing Liquid Metals at Room Temperature for Fabrication of Functional, Stretchable, and Soft Electronics: *Dishit Parekh*[1]; Collin Ladd[1]; Michael Dickey[1]; [1]North Carolina State University

8:50 AM Invited
Inkjet Printed Metal Oxide Thin Film Transistors

: *Chih-hung Chang*[1]; [1]Oregon State University

9:15 AM Invited
Laser Writing and Photonic Reduction of High Performance Supercapacitors on Flexible Substrates: *Anming Hu*[1]; [1]University of Tennessee

9:40 AM Invited
Low-Cost Inkjet Process for Printing Embedded Electronics: Christopher Schmitt[1]; *Wenchao Zhou*[1]; [1]University of Arkansas

10:05 AM Break

10:25 AM Invited
New Paradigms for Enabling Printing of Flexible Optoelectronics through Engineered Metal-organic Inks and Direct Writing: *Konstantinos (Kostas) Sierros*[1]; [1]West Virginia University

10:50 AM Invited
Ultrasonic Spray Printing for High-performance Flexible Organic Field-effect Transistors and Hybrid Perovskite Solar Cells: *Kai Xiao*[1]; Sanjib Das[2]; Ming Shao[1]; Bin Yang[1]; Jong Keum[1]; Ilia Ivanov[1]; Gong Gu[2]; Tolga Aytug[1]; Pooran Joshi[1]; Christopher Rouleau[1]; David Geohegan[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

11:15 AM Invited
Wireless Gas Sensing with NFC-enabled Mobile Device: Tuo Ji[1]; Yichuan Zhao[1]; Forrest Sheng Bao[1]; *Jiahua Zhu*[1]; [1]The University of Akron

11:40 AM
Mechanical Stability of Printed Metallizations on Polymer Substrates: *Oleksandr Glushko*[1]; Megan Cordill[2]; Andreas Klug[3]; Emil List-Kratochvil[4]; [1]Erich Schmid Institute; [2]Erich Schmid Institute ; [3]NanoTecCenter Weiz ; [4]NanoTecCenter Weiz

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Biomedical and Energy Applications

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Nancy Michael, University of Texas at Arlington; Adele Carradò, IPCMS; Heinz Palkowski, TU Clausthal; Nuggehalli Ravindra, New Jersey Institute of Technology; Chintalapalle Ramana, Univ of Texas at El Paso

Monday AM
February 15, 2016

Room: 206B
Location: Music City Center

Session Chairs: Adele Carrado, IPCMS; Nuggehalli Ravindra, NJIT; Ramana Chintalapalle, Univ of Texas at El Paso

8:30 AM
Iron Oxide Nanoparticles - Biomedical Applications: *Natali Gendelberg*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

8:50 AM
Thin Films and Coatings for Absorptive Removal of Antimicrobials, Antibiotics, and Other Pharmaceuticals: *David Cocke*[1]; Andrew Gomes[1]; Saiful Islam[1]; Gary Beall[2]; [1]Lamar University; [2]Texas State University

9:10 AM
Surface Functionalization of Titanium Surfaces to Design Innovative Hybrid and Biocompatible Materials: *Melania Reggente*[1]; Irene Bonafede[2]; Geneviève Pourroy[1]; Patrick Masson[1]; Marco Rossi[2]; Heinz Palkowski[3]; Adele Carradò[1]; [1]Université de Strasbourg; [2]Sapienza University of Rome; [3]Clausthal University of Technology

9:30 AM
Surface Functionalization of Titanium Substrates for Improving Osteointegration: Quang Van Le[1]; Mathilde Giraudel[2]; Geneviève Pourroy[1]; Caroline Fischer[3]; Koenig Géraldine[3]; Leandro Jacomine[4]; Jacques Faerber[5]; Fabienne Perrin-Schmitt[3]; *Adele Carradò*[1]; [1]Université de Strasbourg - CNRS IPCMS; [2]Université de Strasbourg - CNRS ICS ; [3]Université de Strasbourg, Faculté de Médecine; [4]Université de Strasbourg - CNRS ICS; [5]Université de Strasbourg

9:50 AM Break

10:10 AM
Effect of Post-Heat Treatment on the Electrochemical Performance of Sandwich Structured Cu/Sn/Cu Electrode: *Burcin Bilici*[1]; Deniz Polat[1]; Ozgul Keles[1]; [1]ITU

10:30 AM
Improving Electrochemical Performance of LiNi0.5Mn1.5O4 by MnO2 Top Coat: *Ceren Yagsi*[1]; Deniz Polat[1]; Ozgul Keles[1]; [1]ITU

10:50 AM
Role of Membrane Properties on Charge Transport across Conjugated Oligoelectrolyte Modified Phospholipid Bilayers: *Justin Jahnke*[1]; Guillermo Bazan[2]; James Sumner[1]; [1]US Army Research Laboratory; [2]UC Santa Barbara

11:10 AM
Magnetic Field Assisted Assembly: *B. S. Mani*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

11:30 AM
Magnetic Field Assisted Assembly Machine: *Yan Liu*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

11:50 AM
Modelling Optical Properties of Black Silicon: *Sita Rajyalaxmi Marthi*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Refractory Metals 2016 — Processing & Characterization of Refractory Metals: Bulk & Coatings

*Sponsored by:*TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Gary Rozak, HC Starck; Eric Taleff, Univ. Texas; Ivi Smid, Penn State

Monday AM
February 15, 2016

Room: 106B
Location: Music City Center

Session Chairs: Eric Taleff, University of Texas at Austin; Brian Cockeram, Bechtel Marine Propulsion Corp

8:30 AM Introductory Comments Refractory Metals Overview, Applications & Direction

8:50 AM
The Initiation and Propagation of Dynamic Abnormal Grain Growth in Refractory Metals: *Philip Noell*[1]; Eric Taleff[1]; [1]University of Texas at Austin, Dept of Mechanical Engrg

9:10 AM
Introduction of Precisely Controlled Microstructural Defects into SRF Cavity Nb Sheet and Their Impact on Local Superconducting Properties: *Mingmin Wang*[1]; Di Kang[1]; Zuhawn Sung[2]; Peter Lee[2]; Anatolii Polyanskii[2]; Christopher Compton[1]; Thomas Bieler[1]; [1]Michigan State University; [2]Florida State University

9:30 AM
Effect of Silicon on Texture of Niobium: Abhishek Bhattacharyya[1]; *Marc Abouaf*[2]; [1]H.C. Starck, Inc.; [2]H. C. Starck Inc.

9:50 AM
Manufacturing of Bulk Ultrafine Grain Tungsten from Nanocrystalline Tungsten Powder and Its Potential Application for Nuclear and Fusion Reactors: *Chai Ren*[1]; Z. Zak Fang[1]; Huan Zhang[1]; Dean Buchenauer[2]; Robert Kolasinski[2]; [1]University of Utah; [2]Sandia National Lab

10:10 AM Break

10:25 AM
Micro-Mechanical Characterization of Micro-Architectured Refractory Metal Coatings: Quan Jiao[1]; *Jaafar El-Awady*[1]; [1]Johns Hopkins University

10:45 AM
Micromechanical Testing of Multi Compositional Tungsten Thin Film Alloys: *Vladica Nikolic*[1]; Stefan Wurster[2]; Alan Savan[3]; Alfred Ludwig[3]; Reinhard Pippan[1]; [1]Erich Schmid Institute for Materials Science, Austrian Academy of Sciences; [2]Department of Materials Physics, Montanuniversität Leoben; [3]Institute for Materials, Ruhr-Universität Bochum

11:05 AM
Thermo-mechanical Behavior of FG Tungsten/EUROFER Coating System under In-service Conditions: D. Qu[1]; M. Wirtz[2]; J. Linke[2]; R. Vaßen[2]; *Jarir Aktaa*[1]; [1]Karlsruhe Institute of Technology; [2]Forschungszentrum Jülich GmbH

11:25 AM
Etched Surface of CVTD Single Crystal Tungsten Coating after Serving under High Temperature: *Hongtao Huang*[1]; Yongfeng Wei[1]; Jianpin Zheng[1]; Chengwen Tan[2]; [1]China Institute of Atomic Energy; [2]Beijing Institute of Technology

11:45 AM
Influences of Rare Earth on Microstructures and Mechanical Properties of Functionally Graded Cemented Carbides: *Xiaofeng Li*[1]; Yong Liu[1]; [1]Central South University

REWAS 2016 — Enabling & Understanding Sustainability - Ferrous & Non-ferrous Metals Processing

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Monday AM
February 15, 2016

Room: 104B
Location: Music City Center

Session Chair: To Be Announced

8:30 AM
Recycling of Poly-Metallic Residues from Metal Industry – Current Status and Future Developments: *Juergen Antrekowitsch*[1]; [1]University of Leoben

8:55 AM
Bauxite Residue for Phosphorus Removal from Waste Water: *Gamini Mendis*[1]; Amanda Brock[1]; Kai Gao[1]; Indrajeet Chaubey[1]; Ron Turco[1]; John Howarter[1]; [1]Purdue University

9:20 AM
Modeling the Electromagnetic Processing of Recycled Silicon Dust
: *Georgi Djambazov*[1]; Koulis Pericleous[1]; Valdis Bojarevics[1]; Michele Forzan[2]; Fabrizio Dughiero[2]; [1]University of Greenwich; [2]University of Padua

9:45 AM
Potential Contribution to the Supply of Silver by the Recycling of Industrial Residues from Zn, Pb and Cu Plants: *Stefan Steinlechner*[1]; [1]University of Leoben

10:10 AM Break

10:30 AM
Thermodynamic Analysis of Zinc Status in the Upstream EAF Offgas Cleaning Systems Associated with In-process Separation of Zinc from EAF Dust: *Naiyang Ma*[1]; [1]ArcelorMittal

10:55 AM
Evaluation of Reactor REOV-01 with Ti Electrode for Electrochemical Recovery of Ag from Industrial Wastes: *Pedro Ramirez Ortega*[1]; Victor Reyes Cruz[1]; Maria Veloz Rodríguez[1]; Diana Arenas Islas[1]; laura García Hernández[1]; Mizraim Flores Guerrero[1]; Luis García Lechuga[1]; [1]Universidad Tecnológica de Tulancingo

11:20 AM Invited
Zero Waste Valorization Schemes for Non-ferrous and Ferrous Slags: Some Industrial Case Studies: *Bart Blanpain*[1]; [1]KU Leuven

11:45 AM
Mini Mill Solutions in the Recycling of Electric Arc Furnace Dust – the 2sDR Process: *Gernot Rösler*[1]; Christoph Pichler[1]; Stefan Steinlechner[1]; Juergen Antrekowitsch[1]; [1]Montanuniversitaet Leoben

REWAS 2016 — Understanding & Enabling Sustainability - (Rechargeable) Batteries

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Monday AM
February 15, 2016

Room: 104C
Location: Music City Center

Session Chair: To Be Announced

8:30 AM
Roadmap for the Lifecycle of Advanced Battery Chemistries: *Timothy Ellis*[1]; [1]RSR Anode Group and RSR Technologies

8:55 AM
Portland Cement with Battery Waste Contents: *Henry A. Colorado*[1]; [1]Universidad de Antioquia

9:20 AM
Automotive Lithium-ion Battery Recycling:A Thermodynamic Evaluation : Reza Beheshti[1]; *Ragnhild Aune*[2]; [1]KTH; [2]NTNU

9:45 AM
Life Cycle Analysis Summary for Automotive Lithium-ion Battery Production and Recycling: Jennifer Dunn[1]; Linda Gaines[1]; *Jarod Kelly*[1]; Kevin Gallagher[1]; [1]Argonne National Laboratory

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Steelmaking/Ferrous Applications I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Monday AM
February 15, 2016
Room: 106C
Location: Music City Center

Session Chairs: Arthur Pelton, Ecole Polytechnique; Youn-Bae Kang, Postech

8:30 AM Keynote
The Application of FactSage to Steelmaking Operations: Predictions and Actual Results: *Eugene Pretorius*[1]; [1]Nucor Steel

9:10 AM
Thermodynamic and Experimental Investigations of High Temperature Refractory Corrosion by Molten Slags: *Christoph Wagner*[1]; Christine Wenzl[1]; Dean Gregurek[1]; Daniel Kreuzer[1]; Stefan Luidold[2]; Holger Schnideritsch[2]; [1]RHI AG; [2]University of Leoben

9:30 AM
Design Principles for Fluorine-free Mold Fluxes Based on Thermodynamic Calculations: *Jungwook Cho*[1]; [1]Pohang University of Science and Technology

9:50 AM
Perspectives of FactSage® for Application in Continuous Casting Mold Flux Developments: *Il Sohn*[1]; [1]Yonsei University

10:10 AM Break

10:30 AM
A Kinetic Ladle Furnace Process Simulation Model: Marie-Aline Van Ende[1]; *In-Ho Jung*[1]; [1]McGill University

10:50 AM
Applications of Computational Thermodynamics to Predict the Refractory-slag-metal Reaction Equilibria at High Temperatures: *Joohyun Park*[1]; [1]Hanyang University

11:10 AM
Rapid Dissolution of Quicklime into Molten Slag by Internally Formed Gas: *Nobuhiro Maruoka*[1]; Hiroshi Nogami[1]; [1]Tohoku University

11:30 AM
A Dynamic Flux Dissolution Model for Oxygen Steelmaking: *Ameya Kadrolkar*[1]; Nils Andersson[1]; Neslihan Dogan[1]; [1]McMaster University

Transforming the Diversity Landscape — Significance and Impact

*Sponsored by:*TMS: Education Committee
Program Organizers: Natalie Larson, University of California, Santa Barbara; Wennie Wang, University of California, Santa Barbara; David Hwang, University of California, Santa Barbara

Monday AM
February 15, 2016
Room: 104A
Location: Music City Center

Session Chairs: Natalie Larson, University of California, Santa Barbara; Wennie Wang, University of California, Santa Barbara; David Hwang, University of California, Santa Barbara

8:30 AM Invited
Diversity Beyond the Numbers: Fostering and Sustaining Diversity in the Minerals, Metals, and Materials Professions: *Elizabeth Holm*[1]; [1]Carnegie Mellon University

9:10 AM Invited
Diversity Leads to Innovation: *Cammy Abernathy*[1]; [1]University of Florida

9:30 AM Invited
Understanding and Addressing the Patterns of Bias in STEM Environments: *Kristen Constant*[1]; [1]Iowa State University

10:10 AM Break

10:30 AM
Securing the Future of American Public Research Universities by Increasing the Number of Under-reprsented Minorities in STEM: *Aeriel Murphy*[1]; [1]University of Michigan

10:50 AM
The Impact of Coaching, Mentoring, and Sponsorship on Diversity: *Kathleen Chou*[1]; [1]The Boeing Company

Ultrafine Grained Materials IX — Grain Boundary Phenomena

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Monday AM
February 15, 2016
Room: 209B
Location: Music City Center

Session Chairs: Timothy Rupert, University of California, Irvine; Suveen Mathaudhu, University of California, Riverside

8:30 AM Invited
Grain Boundaries in Severely Deformed Metallic Materials: *Gerhard Wilde*[1]; [1]University of Muenster

9:00 AM Invited
In-situ Observations of Mechanical Instability and Deformation Mechanisms in Nanocrystalline Thin Films: *Kevin Hemker*[1]; Paul Rottmann[1]; Suman Dasgupta[1]; [1]Johns Hopkins University

9:30 AM
Nanocrystalline Grain Boundary Network Evolution: *Ying Chen*[1]; [1]Rensselaer Polytechnic Institute

9:50 AM
A Simple Mechanical Model for Grain Boundary Sliding that Accounts for the Effect of Size Distribution of Grains on the Yield Strength at Quasistatic and Dynamical Loading: *Elijah Borodin*[1]; Alexander Mayer[1]; [1]Chelyabinsk State University

10:10 AM Break

10:30 AM Invited
Stress-assisted Grain Growth in Nanocrystalline Metals Inhibited by Grain Boundary Segregation: Yang Zhang[1]; Garritt Tucker[2]; *Jason Trelewicz*[1]; [1]Stony Brook University; [2]Drexel University

11:00 AM Invited
Dynamic Behavior and Microstructural Evolution of Nanocrystalline and Ultrafine Grained Cu-Ta Alloys: S Turnage[1]; M. Rajagopalan[1]; K Darling[2]; *Kiran Solanki*[1]; [1]Arizona State University; [2]ARL

11:30 AM
Mechanisms of Grain Boundary Diffusion in Severely Deformed Materials: *Sergii Divinsky*[1]; Gerhard Wilde[1]; [1]University of Münster

11:50 AM
Grain Boundary Motion, Solute Drag and Precipitation in Al Alloys Processed by SPD: *Xavier Sauvage*[1]; Yana Nasedkina[1]; Elena Bobruk[2]; Maxim Murashkin[2]; Nariman Enikeev[2]; Ruslan Valiev[2]; [1]University of Rouen, CNRS; [2]IPAM-USATU

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Unique Techniques to Create 3D Architectures I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Monday PM
February 15, 2016
Room: 211
Location: Music City Center

Session Chairs: Jiyoung Kim, UT Dallas; Johnson Samuel, Rensselaer Polytechnic Institute

2:00 PM Invited
Invited Talk: A Hybrid 3D Printing Technique for Laminated Polymer Nanocomposite Architectures: *Johnson Samuel*[1]; [1]Rensselaer Polytechnic Institute

2:30 PM Invited
Scaled-Up Microscale and Nanoscale 3-D Electrochemical Printing of Solid Metal Structures: *Minfeng Yu*[1]; [1]Georgia Institute of Technology

3:00 PM
3D Pick and Place Sintering Nanoprinter: *Max Carlson*[1]; Ka-Yen Yau[1]; Robert Simpson[2]; Michael Short[1]; [1]Massachusetts Institute of Technology; [2]Singapore University of Technology and Design

3:20 PM
Nano-manufacturing Process Using Electro-fountain Pen Nanolithography: *Ben Luce*[1]; Indranath Dutta[1]; [1]Washington State University

3:40 PM Break

4:00 PM Invited
High Throughput Reactive Printing Compatible Approaches for In-situ Manufacturing of Nanomaterials: *Ghassan Jabbour*[1]; Hyung Choi[1]; Tianlei Zhou[1]; [1]University of Nevada Reno

4:20 PM Invited
Invited Talk: Inorganic Infiltration in Polymer Templates via Atomic Layer Deposition: Pathway for Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures: *Chang-Yong Nam*[1]; [1]Brookhaven National Laboratory

4:50 PM
3-Dimensional Nanostructures in Bulk Monolithic Solids by Enhanced High Pressure Sintering: *James Wollmershauser*[1]; Boris Feigelson[1]; Kedar Manandhar[2]; [1]Naval Research Laboratory; [2]ASEE Postdoctoral Fellowship Program

5:10 PM
Electron Beam Induced Deposition: A Direct Write Method for Nanoscale 3-Dimensional Architectures: *Brett Lewis*[1]; Robert Winkler[2]; Jason Fowlkes[3]; Michael Stanford[1]; Harald Plank[2]; Philip Rack[1]; [1]University of Tennessee; [2]Graz University of Technology; [3]Oak Ridge National Laboratory

5:30 PM
Nanostructuring Vanadium Dioxide for 3D Silicon Photonics Devices: *Robert Marvel*[1]; Thomas Campbell[2]; Richard Haglund[1]; [1]Vanderbilt Univerity; [2]Murray State University

7th International Symposium on High Temperature Metallurgical Processing — Extraction and Recovery of Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Monday PM
February 15, 2016
Room: 105B
Location: Music City Center

Session Chairs: Dean Gregurek, RHI AG; Ender Keskinkilic, Atilim University

2:00 PM Introductory Comments

2:05 PM
Active Oxidation and Fume Formation from Liquid SiMn: *Ida Kero*[1]; Gabriella Tranell[2]; Dmitry Slizovskiy[2]; [1]SINTEF; [2]Norwegian University of Science and Technology

2:25 PM
Research on Enrichment of MFe and RO Phase from Converter Steel Slag by Super Gravity: *Chong Li*[1]; Jintao Gao[1]; Zhancheng Guo[1]; [1]University of science and technology Beijing

2:45 PM
Volatilization of Rhenium from Molybdenite Concentrate by Oxidative Roasting: *Guanghui Li*[1]; Rong Sun[1]; Zhiwei Peng[1]; Linfeng Zhou[1]; Yuanbo Zhang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

3:05 PM
Kinetic Investigation of the Electric Furnace Copper Slag Treatment: *Stephan Steinacker*[1]; Juergen Antrekowitsch[1]; [1]Montanuniversitaet Leoben

3:25 PM
The Extraction of Zinc from Willemite by Calcified-roasting and Ammonia-leaching Process Based on Phase Reconstruction: Wei Chen[1]; Yufeng Guo[1]; Feng Chen[1]; *Tao Jiang*[1]; Xudong Liu[1]; [1]Central South University

3:45 PM Break

4:00 PM
An Investigation on Antimony Production by Using Niederschlag Process: *Sedef Basag*[1]; Ahmet Turan[2]; Onuralp Yucel[1]; [1]Istanbul Technical University; [2]Yalova University

4:20 PM
Oxygen-rich Side Blow Bath Smelting Technology – History and New Developments in China: *Lin Chen*[1]; Wei Chen[1]; Hui Xiao[1]; Tianzu Yang[1]; Weifeng Liu[1]; Duchao Zhang[1]; [1]Central South University

4:40 PM
Carbon Refractories in an Oxidizing Process? Copper Smelting in an Outotec® Ausmelt TSL Furnace with a UCAR® Chill-Kote™ Refractory System: Jacob Wood[1]; Stefanie Creedy[1]; *Peter Duncanson*[2]; [1]Outotec Pty Ltd.; [2]GrafTech International

5:00 PM
Enrichment of Gold in Low Grade Copper Matte from Arsenical Refractory Gold Concentrate via Matte Smelting Method: *Zhang Duchao*[1]; Xiao

Qingkai[1]; Yang Tianzu[1]; Liu Weifeng[1]; Chen Lin[1]; [1]Central South University

Additive Forming of Components - Tailoring Specific Material Properties in Low Volume Production — Additive Manufacturing of Ni-Based Alloys

Sponsored by:
Program Organizers: Judith Schneider, University of Alabama at Huntsville; Mark Stoudt, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory; Lee Semiatin, US Air Force Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology; Eric Lass, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.

Monday PM
February 15, 2016
Room: 205B
Location: Music City Center

Session Chairs: Judy Schneider, University of Alabama at Huntsville; Sundarsanam Babu, University of Tennessee

2:00 PM Invited
ICME Approach to the Materials Challenges in Additive Manufacturing of Components: *Jiadong Gong*[1]; David Snyder[1]; Greg Olson[1]; Jason Sebastian[1]; [1]QuesTek Innovations

2:30 PM Invited
Powder-bed Fabrication of the High-temperature Ni-base Superalloy LSHR: *Chantal Sudbrack*[1]; Michael Kirka[2]; Ryan Dehoff[2]; Robert Carter[1]; S. Lee Semiatin[3]; Timothy Gabb[1]; [1]NASA Glenn Research Center; [2]Oak Ridge National Laboratory; [3]Air Force Research Laboratory

2:50 PM
Microstructural Evolution of Inconel 625 Manufactured through Direct Metal Laser Sintering Technique of Additive Manufacturing: *Yaakov Idell*[1]; Lyle Levine[1]; Sudah Cheruvadhur[1]; Eric Lass[1]; Mark Stoudt[1]; Carelyn Campbell[1]; Li Ma[1]; [1]National Institute of Standards and Technology

3:10 PM
Microstructural Characterization and Process Mapping in Beam-Based Additive Manufacturing of Inconel 625: *Luke Sheridan*[1]; Nathan Klingbeil[1]; Colt Montgomery[2]; Jack Beuth[2]; [1]Wright State University; [2]Carnegie Mellon University

3:30 PM Break

3:50 PM Invited
Rationalization of Advanced Site-specific Microstructure Control within Additive Manufactured Components: *Michael Kirka*[1]; Ryan Dehoff[1]; Michael Goin[1]; Michael Pearce[1]; Hassina Bilheux[1]; Louis Santodonato[1]; Suresh Babu[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee-Knoxville

4:20 PM
Residual Stress Determination of Additively Manufactured Inconel 718 Specimens: *Thomas Watkins*[1]; Ryan DeHoff[1]; Philip Maziasz[1]; James Neumann[2]; Vinod Nangia[2]; [1]ORNL; [2]Honeywell Aerospace

4:40 PM
Direct Writing of Nickel Super Alloy(N5) Single Crystal: Yichen Wang[1]; Jeongyong Choi[1]; *Jyoti Mazumder*[1]; [1]University of Michigan

5:00 PM
Controlling Microstructure of IN738LC Superalloy during Selective Laser Melting (SLM) Process: *Hossein Meidani*[1]; Thomas Etter[1]; Fabian Geiger[1]; Roman Engeli[1]; [1]GE Switzerland

5:20 PM
Effect of Heat Treatment on the Microstructure, Texture and Elastic Anisotropy of a Nickel-based Superalloy Processed by Direct Laser Deposition
: *Rocio Munoz Moreno*[1]; Divya Vadegadde Duggappa[1]; Sarah Driver[1]; Trevor Illston[2]; Scarlett Baker[3]; Howard J. Stone[1]; [1]University of Cambridge; [2]Materials Solutions ; [3]Materials Solutions

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Connections between Processing and Microstructures II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Monday PM
February 15, 2016
Room: 205A
Location: Music City Center

Session Chairs: Josh Sugar, Sandia National Laboratory; Ryan Dehoff, Oak Ridge National Lab

2:00 PM
Characterization and Detection of Pores in Direct Laser Deposited Ti-6Al-4V via Neutron Radiography and Real-Time Thermographic Inspection: *W. Young*[1]; Garrett Marshall[1]; Scott Thompson[1]; Nima Shamsaei[1]; Steven Daniewicz[1]; [1]Mississippi State University

2:20 PM Invited
Building Design and Optimization Tools for Additive and Near-net Shape Processes: *Josh Sugar*[1]; Arthur Brown[1]; Lauren Beghini[1]; Samuel Subia[2]; Daryl Dagel[2]; David Keicher[2]; Kyle Allen[1]; Thomas Reynolds[1]; Dorian Balch[1]; Chris San Marchi[1]; [1]Sandia National Labs, Livermore, CA; [2]Sandia National Labs, Albuquerque, NM

2:50 PM
Qualification Methodology for AlSi10Mg Spaceflight: *Bryan McEnerney*[1]; R. Dillon[1]; John Borgonia[1]; Andrew Shapiro-Scharlotta[1]; [1]Jet Propulsion Laboratory

3:10 PM
Spatial Control of Solidification Microstructure in the Electron Beam Melting of Ti-6Al-4V: Sneha Narra[1]; Ross Cunningham[1]; Daniel Christiansen[1]; *Jack Beuth*[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

3:30 PM Break

3:50 PM Invited
Automated In-situ Defect Detection and Geometry Validation on the ARCAM Q10 System: *Ryan Dehoff*[1]; Vincent Paquit[1]; Michael Kirka[1]; Edwin Schwalbach[2]; Michael Groeber[2]; Michael Goin[1]; Michael Pearce[1]; [1]Oak Ridge National Laboratory; [2]Wright-Patterson AFRL

4:20 PM
Microstructural Characterization of Additively Manufactured Metals: *Terry Holesinger*[1]; Pallas Papin[1]; Thomas Lienert[1]; John Carpenter[1]; [1]Los Alamos National Laboratory

4:40 PM
Microstructural Analysis of IN 625 and MAR-M 247 Components Fabricated Using Powder Bed Additive Manufacturing: *Yi Li*[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

5:00 PM
Anisotropy in Mechanical Properties of Ti-6Al-4V: A Comparison between Mill-annealed and Additively Manufactured Alloys: *Rupalee Mulay*[1]; Jeffrey Florando[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

5:20 PM
Oxide, Porosity and Fatigue Performance of AlSi10Mg Parts Produced by Selective Laser Melting: *Ming Tang*[1]; Petrus Pistorius[1]; [1]Carnegie Mellon University

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Monday PM
February 15, 2016

Room: 103B
Location: Music City Center

Session Chairs: Nan Li, Los Alamos National Laboratory; Roumen Petrov, Ghent University

2:00 PM Invited
Structural Analysis of In-field Loaded Railway Steel: *Roumen Petrov*[1]; Jun Wu[2]; Loic Malet[3]; Stephan Godeth[3]; Jilt Sietsma[2]; [1]Ghent University; [2]Delft University of Technology; [3]Universite Libre de Bruxelles

2:30 PM Invited
Physical Analysis of High Resolution Single Grain and Subgrain Diffraction Profiles: *Ulrich Lienert*[1]; Wolfgang Pantleon[2]; Gábor Ribárik[3]; Tamás Ungár[3]; [1]Deutsches Elektronen-Synchrotron; [2]Technical University of Denmark; [3]Eötvös University Budapest

3:00 PM
Multiaxial Strain Path Changes in Grain Boundary Dominated Materials: In-situ Observations during XRD and SEM: Antoine Guitton[1]; Alex Bollhalder[1]; *Steven Van Petegem*[1]; Daniel Grolimund[1]; Antonio Cervellino[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut

3:20 PM Break

3:40 PM Invited
Designing High Fracture Toughness Nanocomposites via In Situ TEM Approach: *Nan Li*[1]; Satyesh Yadav[1]; Xiang-Yang Liu[1]; Richard Hoagland[1]; Nathan Mara[1]; Amit Misra[2]; Jian Wang[1]; [1]Los Alamos National Laboratory; [2]University of Michigan, Ann Arbor

4:10 PM
Tracking Subgrains during Strain Path Changes by High Resolution Reciprocal Space Mapping: Christian Wejdemann[1]; Henning Friis Poulsen[1]; Ulrich Lienert[2]; *Wolfgang Pantleon*[1]; [1]Technical University of Denmark; [2]DESY Photon Science

4:30 PM
Post Processing Effects on EBSD based Dislocation Density Measurements: *Stuart Wright*[1]; David Field[2]; Matthew Nowell[1]; [1]EDAX; [2]Washington State University

4:50 PM
Dark Field X-Ray Microscopy for Studies of Very Low Angle Boundaries: *Sonja Ahl*[1]; Hugh Simons[1]; Anders Jakobsen[1]; Frederik Stöhr[1]; Yubin Zhang[1]; Wolfgang Pantleon[1]; Dorte Juul Jensen[1]; Henning Poulsen[1]; [1]Technical University of Denmark

5:10 PM
Quantifying the Local and Global Misorientation Distributions as a Function of Crystallographic Orientation and Level of Plastic Strain in Polycrystalline Materials by Utilizing EBSD Mapping: *Vahid Khademi*[1]; Thomas Bieler[1]; Carl Boehlert[1]; [1]Michigan State University

5:30 PM
Plasticity Mechanisms in Hafnium Nitride at Room and Elevated Temperature: *Katherine Vinson*[1]; Xiao-Xiang Yu[1]; Christopher Weinberger[2]; Gregory Thompson[1]; [1]The University of Alabama; [2]Drexel University

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Thin Films, Processing, Characterization

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Monday PM
February 15, 2016

Room: 209C
Location: Music City Center

Session Chairs: Manfred Wuttig, University of Maryland; Jun Ding, National University of Singapore

2:00 PM Invited
Often Overlooked Aspects of the Symmetry of Magnetic Materials: *David Laughlin*[1]; [1]ALCOA Professor of Physical Metallurgy: Carnegie Mellon University

2:30 PM Invited
Current Trends in Giant Magnetoimpedance Materials Research: *M.H. Phan*[1]; [1]University of South Florida

3:00 PM Invited
Magnetic Field Mapping at the Nanoscale in the Transmission Electron Microscope: *Rafal Dunin-Borkowski*[1]; Jan Caron[1]; Jörn Ungermann[1]; [1]Forschungszentrum Jülich

3:30 PM Break

3:50 PM Invited
Magnetic Materials and Minerals in Planetary Exploration: *Marina Diaz Michelena*[1]; [1]INTA

4:20 PM Invited
Artificial Magnetic Lattices and Their Applications: *Mitsuteru Inoue*[1]; [1]Toyohashi University of Technology

4:50 PM
Processing and Characterization of Magnetic Materials for Magnetic Refrigeration, High Frequency Power Conversion, and High Temperature Electrical Machine Applications: *Matthew Lucas*[1]; [1]Air Force Research Laboratory

5:10 PM
Preparation and Characterization Fe-Pt and Fe-Pt-M (M=B, SI) Microwires: Valentina Zhukova[1]; Ahmed Talaat[1]; Juan del Val[1]; Mihail Ipatov[1]; *Arcady Zhukov*[2]; [1]Basque Country University, UPV/EHU, San Sebastian, Spain; [2]Basque Country University and Ikerbasque

Advanced Materials in Dental and Orthopedic Applications — Session II

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Ana Ribeiro, National Institute of Metrology Quality and Technology; Reginald Hamilton, The Pennsylvania State University

Monday PM
February 15, 2016

Room: 206A
Location: Music City Center

Session Chairs: Paulo Lisboa-Filho, School of Sciences, UNESP - Universidade Estadual Paulista; Luis Rocha, Universidade Estadual Paulista

2:00 PM Invited
Dental and Orthopaedic Implants with Surface TiO2 Nanotubes for Enhanced Osseo-Integration: *Sungho Jin*[1]; Dan Justin[1]; Garrett Smith[2]; Gary Johnston[2]; [1]Nanovation Partners; [2]Nasseo, Inc.

2:25 PM Invited
Vanadium Interactions in Biological Systems: *Paulo Lisboa-Filho*[1]; Bruna Costa[1]; [1]UNESP - Sao Paulo State University

2:50 PM Invited
Overview of Degradation Phenomena in Dentistry and Orthopedics: *Luis Rocha*[1]; Fernando Oliveira[2]; Sofia Oliveira[2]; Maria Runa[2]; Mathew Mathew[3]; Tolou Shokhufar[4]; Ana Ribeiro[5]; [1]UNESP, Univ. Estadual Paulista, Faculdade de Ciências; [2]MEMS-Uminho, Center MicroElectroMechanical Systems, Universidade do Minho; [3]Rush University Medical Center; [4]University of Illinois at Chicago; [5]National Institute of Metrology Quality and Technology

3:15 PM Invited
Interfacial Properties of Cellulose Nanocrystals for Biomedical Applications: *Reza Shahbazian-Yassar*[1]; [1]Michigan Technological University

3:40 PM Break

3:55 PM
Polymeric Coating for Optimization of Drug Release from Drug-Loaded Surfaces: *Azhang Hamlekhan*[1]; Sweetu Patel[1]; Tolou Shokuhfar[2]; [1]Michigan Tech; [2]University of Illinois at Chicago

4:15 PM Invited
Titanium Oxide Nano-bio Interactions: Repercussions in Health Effects : *Ana Ribeiro*[1]; Sara Gemini-Piperni[1]; Wanderson Souza[1]; Renata Travassos[1]; Leandro Lemgruber[2]; Renata Carvalho[1]; André Rossi[3]; Tolou Shokhufar[4]; Luis Rocha[5]; Jacques Werckmann[1]; José Granjeiro[1]; [1]INMETRO; [2]Welcome Trust Centre for Molecular Parasitology, University of Glasgow; [3]Centro Brasileiro de Pesquisas Física; [4]UIC; [5]UNESP-BAURU

4:40 PM Invited
Development of Novel Beta Ti-Mo-Zr Alloys for Orthopedic Applications: Raul Araújo[1]; Pedro Kuroda[1]; Mariana Lourenço[1]; Gabriela Suarez[1]; Diego Correa[1]; Fabio Vicente[1]; *Carlos Grandini*[1]; [1]UNESP - Univ. Estadual Paulista

5:05 PM
One-step Anodic Deposition of HA with Ag Nanoparticles on Titanium for Anti-bacterial and Bioactive Implant: *Gye-Won Kim*[1]; Ki-Ryong Shin[1]; Yeon-Sung Kim[1]; Young-Gun Ko[2]; Dong-Hyuk Shin[1]; [1]Hanyang University; [2]Yeungnam University

5:25 PM
Diagnostics and Dental Materials for Crack Mitigation in Natural Teeth: Cherilyn Sheets[1]; *James Earthman*[2]; [1]Newport Coast Oral-Facial Institute; [2]University of California, Irvine

Alloys and Compounds for Thermoelectric and Solar Cell Applications IV — Session II

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, CRISMAT laboratory; Stephane Gorsse, ICMCB-CNRS; Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University; CW Nan, Tsinghua University; G. Jeffrey Snyder, Northwestern University; Hsin-jay Wu, National Sun Yat-Sen University

Monday PM — Room: 103C
February 15, 2016 — Location: Music City Center

Session Chairs: Lan Li, Boise State University; Franck Gascoin, Ensicaen University of Caen

2:00 PM Invited
Structural Studies and High Performance on Mg2Si-based Ternary and Quaternary Materials for Thermoelectric Power Generation: *Theodora Kyratsi*[1]; [1]University of Cyprus

2:20 PM Invited
Synthesis of Higher Manganese Silicide via Low Energy Ball Milling and Reactive Sintering: *Franck Gascoin*[1]; [1]CRISMAT laboratory

2:40 PM Invited
Exploring the Role of Disorder in Discovering New Materials: Entropy Stabilized Oxides: *Stefano Curtarolo*[1]; Jon-Paul Maria[2]; [1]Duke University; [2]North Carolina State University

3:00 PM Invited
Perspectives for High Temperature Thermoelectrics: *Takao Mori*[1]; [1]National Institute for Materials Science (NIMS)

3:20 PM Invited
Microstructure, Texture and Incommensurability of Higher Manganese Silicide: *Stephane Gorsse*[1]; Solange Vivès[1]; [1]ICMCB-CNRS

3:40 PM Break

4:00 PM Invited
First-Principles Investigation on Improving Thermoelectric Materials: *Lan Li*[1]; Izaak Williamson[1]; [1]Boise State University

4:20 PM Invited
Modeling the Properties of Thermoelectric Materials via First Principles Simulations: *Philippe Jund*[1]; Kinga Niedziolka[1]; Patrick Hermet[1]; Jean-Claude Tédenac[1]; [1]Montpellier University

4:40 PM Invited
Nanostructuring Silicon Base Materials and Its Impacts on the Thermoelectric Properties: *Teruyuki Ikeda*[1]; [1]Ibaraki University

5:00 PM Invited
Crystal Chemistry, Phase Diagrams, and Thermoelectric Properties of the Ca-M-Co-O (M=Sr, Zn, La, Nd, and Sm) Systems: *Winnie Wong-Ng*[1]; William Laws[1]; Guangyao Liu[2]; Qing Huang[1]; Yonggao Yan[3]; Joshua Martin[1]; James Kaduk[4]; [1]NIST; [2]China University of Geosciences; [3]Wuhan University of Technology; [4]Illinois Institute of Technology

5:20 PM
The Ga and In Coupling Effects in the Doping of the CoSb3 Compound: *Po-Han Lin*[1]; Sinn-wen Chen[1]; Ssu-ming Tseng[1]; Yinglu Tang[2]; G. Jeffrey Snyder[3]; [1]National Tsing Hua University; [2]Materials Science, California Institute of Technology; [3]Northwestern University

Alumina & Bauxite — Bauxite and Alternative Raw Materials

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Paul McGlade, GHD

Monday PM — Room: 203A
February 15, 2016 — Location: Music City Center

Session Chair: Natasha Haggard, Al Taweelah Alumina

2:00 PM Introductory Comments

2:05 PM
An Improved Lime Sinter Process to Produce Al2O3 from Low-grade Al-containing Resources: Yongpan Tian[1]; Xiaolin Pan[1]; *Haiyan Yu*[1]; Yuejiao Han[1]; Ganfeng Tu[1]; Shiwen Bi[1]; [1]Northeastern University

2:30 PM
Investigation of Flotation Behaviors of Refractory High Silica Bauxite: *Guihong Han*[1]; Lulu Liu[1]; Yanfang Huang[1]; Shuzhen Yang[1]; Dianyuan Dang[1]; [1]Zhengzhou University

2:55 PM
Study on Effective Extraction of Al and Fe from High-iron Bauxite through "Calcification-carbonization" Method: Zhang Weiguang[1]; *Zhang Ting'an*[1]; Lv Guozhi[1]; Zhang Xuhua[1]; Zhu Xiaofeng[1]; Wang Yanxiu[1]; Wang Long[1]; [1]Northeastern University

3:20 PM Break

3:40 PM
Ways to Improve of Aluminium Content Raw Material Treatment by Sintering Method: *Vadim Lipin*[1]; Vladimir Kazakov[1]; [1]Saint Petersburg State Polytechnical University

4:05 PM
Extraction of Aluminium by Autoclave Hydrochloric Acid Leaching of Boehmite-kaolinite Bauxite: *Dmitry Valeev*[1]; Vyacheslav Pak[1]; Alexandra

Mikhailova[1]; Margarita Gol'Dberg[1]; Mark Zheleznyi[2]; Irina Dorofievich[2]; Yuri Lainer[1]; Valerii Bychinskii[3]; Konstantin Chudnenko[3]; [1]Baikov Institute of Metallurgy and Materials Science, Russian Academy of Science; [2]National University of Science and Technology MISIS; [3]Vinogradov Institute of Geochemistry, Siberian Branch, Russian Academy of Sciences

4:30 PM
FT-IR, XPS and Density Functional Theory Study of Adsorption Mechanism of Sodium Formate onto Goethite or Hematite: *Meng Wang*[1]; Huiping Hu[1]; Qiyuan Chen[1]; [1]Central South University

Aluminum Alloys, Processing and Characterization — Alloy Development and Applications

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Monday PM
February 15, 2016

Room: 201B
Location: Music City Center

Session Chair: Zhengdong (Steven) Long, Kaiser Aluminum

2:00 PM Introductory Comments

2:05 PM
Characterization of Near-Net Shape Castable Rare Earth Modified Aluminum Alloy for High Temperature Application: Zachary Sims[1]; *Orlando Rios*[1]; [1]Oak Ridge National Laboratory

2:30 PM
Effect of Magnesium on Fe-rich Intermetallic Compounds in Al-Fe-Mn Alloys: *Yipeng Zhou*[1]; Zhongping Que[1]; Yun Wang[1]; Zhongyun Fan[1]; [1]Brunel Centre for Advanced Solidification Technology

2:55 PM
On the Effects of Alloying Element Range on the Mechanical Properties of Recycled Aluminium Alloy EN AB-46000: *Izudin Dugic*[1]; Felix Henriksson[1]; Conrad Strebel[1]; Ozkan Kosmaz[1]; Salem Seifeddine[1]; [1]Linnaeus University

3:20 PM Break

3:35 PM
Phase and Thermal Stability Analysis of Al-Fe-V-Si-Y Alloys After Solidification at Intermediate Cooling Rates: *Ryan Marshall*[1]; Robert Field[1]; Krish Krishnamurthy[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]Honeywell

4:00 PM
Microstructure and Phase Evolution in A201 Alloys with Additions of Si: *Suzan Abd El Majid*[1]; Menachem Bamberger[1]; Alexander Katsman[1]; [1]technion

4:25 PM
High Temperature Creep Evolution in Al-Si Alloys Developed for Automotive Powertrain Applications - a Neutron In-situ Study on hkl-plane Creep Response: *Dimitry Sediako*[1]; Wojciech Kasprzak[2]; Frank Czerwinski[2]; Ahmed Nabawy[1]; Amir R. Farkoosh[3]; [1]Canadian Nuclear Laboratories; [2]CanmetMATERIALS; [3]McGill University

Aluminum Reduction Technology — Cell Technology & Design

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Monday PM
February 15, 2016

Room: 202C
Location: Music City Center

Session Chair: Martin Segatz, Hydro Aluminium

2:00 PM Introductory Comments

2:05 PM
Conception of a "Dream Cell" in Aluminium Electrolysis: *Peter Polyakov*[1]; Andrey Kluchantsev[2]; Andrey Yasinsky[1]; Yury Popov[3]; [1]Siberian Federal University; [2]LLC ETC RUSAL; [3]Light Metals Ltd

2:30 PM
The Impact of the Cavity on the Top Heat Losses in Aluminum Electrolysis Cells: *Francois Allard*[1]; Martin Désilets[1]; Marc LeBreux[1]; Alexandre Blais[2]; [1]Université de Sherbrooke; [2]Rio Tinto Aluminium

2:55 PM
Rio Tinto AP44 Cell Technology Development at Alma Smelter: *Pascal Thibeault*[1]; Louis Guimond[1]; Herve Mezin[1]; [1]RioTinto Alcan

3:20 PM Break

3:35 PM
Hydro's Cell Technology Path towards Specific Energy Consumption below 12 kWh/kg: *Martin Segatz*[1]; Jorund Hop[1]; Pierre Reny[1]; Håvard Gikling[1]; [1]Hydro Aluminium

4:00 PM
The Successful Implementation of DUBAL DX+ Technology at EMAL: *Michel Reverdy*[1]; Sajid Hussain[1]; Qassim Galadari[1]; Jean-Luc Faudou[1]; Abdalla Al Zarouni[1]; Nadia Ahli[1]; Ibrahim Al Ali[1]; Shaikha Al Shehhi[1]; Bijan Malladeb[1]; Muna Abdulla[1]; Vinod Nair[1]; [1]Emirates Global Aluminium (EGA)

Biological Materials Science Symposium — Biomaterials I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Monday PM
February 15, 2016

Room: 207A
Location: Music City Center

Session Chairs: Kalpana Katti, North Dakota State University; Rajendra Kasinath, DePuy Synthes

2:00 PM Invited
Biomimetic Hard-to-Soft Interfaces: Guiding Osteogenesis to Infection Free Implants: *Candan Tamerler*[1]; [1]University of Kansas

2:40 PM
Biomimetic Remineralization Strategies towards Novel Dental Health Care: *Mehmet Sarikaya*[1]; Hanson Fong[1]; Candan Tamerler[2]; Sami Dogan[1]; [1]University of Washington; [2]University of Kansas

3:00 PM
Chemotherapeutic-Induced Surface Degradation of Subcutaneous Venous Access Ports - A Preliminary Comparative *In-Vitro* and *In-Vivo* Study: *Maren Kirknes Fossum*[1]; Charlotta Tegnestedt[2]; Kristina Dahlberg[3]; Emma Strömberg[4]; Javier Sanchez[5]; Håkan Wallén[5]; Annelie Liljegren[5]; Claes Frostell[5]; Gunilla Björling[2]; Ragnhild E. Aune[1]; [1]Norwegian University of Science and Technology (NTNU); [2]The Swedish Red Cross University College; [3]Stockholm South General Hospital; [4]KTH-Royal Institute of Technology; [5]Karolinska Institutet

3:20 PM Break

3:40 PM
Electrochemical Properties of Microarc Oxidation Coating on Biocompatible Magnesium Alloy: *Jing Zhang*[1]; Jiayang Liu[1]; Zhe Lu[2]; Yeon-Gil Jung[2]; Chengyun Ning[3]; [1]Indiana University - Purdue University Indianapolis; [2]Changwon National University; [3]South China University of Technology

4:00 PM
Biochemical Characterisation of *Rhizophora mangle* L. Leaf: Prospect as a Natural-Green Inhibitor of Steel-Rebar Corrosion in Marine/Saline Service-Environment: *Joshua Okeniyi*[1]; Olubanke Ogunlana[1]; Elizabeth Okeniyi[1]; Taiwo Owoeye[1]; Oluseyi Ogunlana[2]; [1]Covenant University, Ota, Nigeria; [2]Crawford University, Igbesa, Nigeria

Bulk Metallic Glasses XIII — Alloy Development and Application II

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Monday PM
February 15, 2016
Room: 101E
Location: Music City Center

Session Chairs: Frans Spaepen, Harvard University; Eun Soo Park, Seoul National University

2:00 PM Keynote
Production of Amorphous Materials by Supersonic Spray Drying: Esther Amstad[1]; David Weitz[1]; *Frans Spaepen*[1]; [1]Harvard School of Engrg & Appl Sciences

2:30 PM
Dissolution of Low Solubility Elements during Arc Melting: *Scott Roberts*[1]; Douglas Hofmann[1]; [1]JPL

2:50 PM Invited
Consolidation of Blended Powders by Severe Plastic Deformation to Form Amorphous Metal Matrix Composites: *Suveen Mathaudhu*[1]; K. Theodore Hartwig[2]; Ibrahim Karaman[2]; [1]University of California Riverside; [2]Texas A&M University

3:15 PM Invited
Variations in Glass Transition during Vitrification: Chae Woo Ryu[1]; *Eun Soo Park*[1]; Geun Woo Lee[2]; Andreas Meyer[3]; [1]Seoul National University; [2]Korea Research Institute of Standards and Science; [3]Deutsches Zentrum für Luft- und Raumfahrt (DLR)

3:35 PM Break

3:50 PM
A Novel Technique for Thermoplastically Forming Functional BMG Parts with Complex 3D Geometries and Multi-scale Features: *Phil Meagher*[1]; David Jarvis[2]; Wayne Voice[2]; David Browne[1]; [1]University College Dublin; [2]European Space Agency

4:10 PM
Bulk Metallic Glasses Composites Produced via Severe Plastic Deformation: *Lisa Kraemer*[1]; Verena Maier[1]; Karoline Kormout[1]; Daria Setman[2]; Yannick Champion[3]; Reinhard Pippan[1]; [1]Erich Schmid-Institute of Materials Sciences, Austrian Academy of Sciences; [2]Physics of Nanostructured Materials, Faculty of Physics, University of Vienna; [3]Institut de Chimie et des Matériaux Paris-Est, Université Paris-Est Créteil

4:30 PM
Porous Bulk Metallic Glasses for Application as Biomedical Materials: *Guoqiang Xie*[1]; Fengxiang Qin[1]; Ichiro Seki[1]; Wei Wang[2]; [1]Tohoku University; [2]Tokyo Medical and Dental University

4:50 PM
Glass-forming Ability and Mechanical Properties of a Zr52.8Cu29.1Ni7.3Al9.8Y1 Bulk Metallic Glass Prepared by Hereditary Process: *Shuaidan Lu*[1]; [1]Northeastern University

5:10 PM
High Density Ni-based Metallic Glasses Formed by Spark Plasma Sintering: *Henry Neilson*[1]; Alex Petersen[2]; Joseph Poon[2]; Gary Shiflet[2]; John Lewandowski[1]; [1]Case Western Reserve University; [2]University of Virginia

Bulk Processing of Nanostructured Powders and Nanopowders by Consolidation — Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Deliang Zhang, Shanghai Jiao Tong University; Bowen Li, Michigan Technological University; Stephen Mashl, Michigan Technological University

Monday PM
February 15, 2016
Room: 210
Location: Music City Center

Session Chairs: Zhiqiang Li, Shanghai Jiao Tong University; Jürgen Eckert, IFW Dresden

2:00 PM Keynote
Bulk Processing of Nanostructured Advanced Materials: *J. Eckert*[1]; R.N. Shahid[1]; P. Wang[1]; K. G. Prashanth[1]; M. Stoica[1]; S. Scudino[1]; Deliang Zhang[2]; [1]IFW Dresden; [2]Shanghai Jiao Tong University

2:40 PM Invited
Bulk Nanostructured Al Synthesized by Consolidation of Al Nanopowders: *Yaojun Lin*[1]; Xuejian Liu[2]; Bocong Xu[2]; [1]Wuhan University of Technology; [2]Yanshan University

3:10 PM Invited
Bulk Nano Materials with Exceptional Properties Developed by High Energy Ball Milling and Spark Plasma Sintering
: *Srinivasa Murty Budaraju*[1]; [1]IIT Madras

3:40 PM Break

4:00 PM Invited
Bio-mimetic Design and Fabrication of Nano-Carbon Reinforced Bulk Aluminum Composites by Flake Powder Metallurgy: *Zhiqiang Li*[1]; Zhanqiu Tan[1]; Genlian Fan[1]; Di Zhang[1]; [1]Shanghai jiao Tong Univeristy

4:30 PM
Processing of Steel-magnesium Composites by Compaction of Mg Powders through Severe Plastic Deformation: *Xavier Sauvage*[1]; Julien Nguyen[1]; Olivier Bouaziz[2]; [1]University of Rouen, CNRS; [2]LEM3 - University of Loraine

4:50 PM
Dynamic Cu Grain Growth of Mechanically Milled Nanostructured Cu-5vol.%Al2O3 Powder Particles during Hot Extrusion: *Dengshan Zhou*[1]; Deliang Zhang[1]; Paul Munroe[2]; Charlie Kong[2]; Wei Zeng[1]; [1]Shanghai Jiao Tong University; [2]University of New South Wales

5:10 PM
Shock Wave Consolidation of Hierarchical Copper Powders Consisting of Nano/Ultrafine Particles and Micro Agglomerates, and the Mechanical Properties of Synthesized Bulk: *Dong-Hyun Ahn*[1]; Wooyeol Kim[1]; Lee Ju Park[2]; Hyoung Seop Kim[1]; [1]POSTECH; [2]Agency for Defense Development (ADD)

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — Direct Chill Casting

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Monday PM
February 15, 2016
Room: 202A
Location: Music City Center

Session Chair: Matthew Krane, Purdue University

2:00 PM Introductory Comments

2:05 PM Keynote
35 Years of Contributions to Cast Shop Research and Development – Honoring Prof. Dr. Wolfgang Schneider: *Gerd-Ulrich Gruen*[1]; [1]Hydro Aluminium Rolled Products GmbH

2:25 PM
Effect of Liquid Metal Distribution on the Flow Field and Macrosegregation during Direct Chill Casting of Aluminum Alloy 7050: *John Coleman*[1];

Kyle Fezi[1]; Matthew Krane[1]; [1]Purdue University

2:50 PM
Aluminum Billets D.C. Casting: Level-pour vs. Fall-pour: A Techno-historical Approach: *Plácido García Pérez*[1]; [1]Personal

3:15 PM
Hot Tearing in DC Casting Ingot of 7XXX Aluminum Alloys: *Nobuhito Sakaguchi*[1]; [1]UACJ Corporation

3:40 PM Break

3:55 PM
Initial Development of Micro-Shrinkage Crack During Early Stages of Direct Chill Casting of Al-4.5%Cu Alloy
: *Mostafa El-Bealy*[1]; [1]Clausthal University of Technology

4:20 PM
Successful Implementation of a New Rolling Slab Casting Technology, AFM, within Hydro: *Arild Hakonsen*[1]; Terje Iveland[2]; Magne Boge[2]; Stian Rørvik[2]; [1]Hycast AS; [2]Hydro Aluminium

4:45 PM
Uncertainty Propagation in Numerical Modeling of Direct Chill Casting: *Kyle Fezi*[1]; Matthew Krane[1]; [1]Purdue University

5:10 PM
The Study Conditions Occurrence of Hot Tearing in the Billets Alloy EN AW6060 Produced with the Process of Direct Chill Casting: Ivica Buljeta[1]; *Ana Beroš*[1]; Zdenka Brodarac[2]; [1]Faculty of Metallurgy and Materials Science; [2]University of Zagreb, Faculty of Metallurgy

CFD Modeling and Simulation in Materials Processing — Microstructure Evolution

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, University of Illinois at Urbana-Champaign; Miaoyong Zhu, Northeastern University; Andreas Ludwig, Montanuniversitaet Leoben, Dep. Metallurgy; Adrian Sabau, Oak Ridge National Laboratory; Koulis Pericleous, University of Greenwich; Hervé Combeau, Institut Jean Lamour

Monday PM
February 15, 2016
Room: 207D
Location: Music City Center

Session Chairs: Hervé Combeau, École des Mines Nancy; Miaoyong Zhu, The Northeastern University

2:00 PM Invited
Microporosity Prediction in Aluminium DC Casting: Laurent Heyvaert[1]; *Hervé Combeau*[1]; Miha Založnik[1]; Philippe Jarry[2]; Emmanuel Waz[2]; [1]Institut Jean Lamour; [2]C-TEC, Constellium Technology Center

2:25 PM
Simulation of Structure Evolution of 2-D Liquid Metal Using a Lattice Boltzmann Front Tracking Method: *Zhuokun Cao*[1]; Yang Yu[1]; Hongjie Luo[1]; Cong Wang[1]; [1]Northeastern University, China

2:45 PM
Modeling the Multicomponent Columnar-to-Equiaxed Transition of Alloy 625: *Kyle Fezi*[1]; Matthew Krane[1]; [1]Purdue University

3:05 PM
Validation of a Model for the Columnar to Equiaxed Transition with Melt Convection: *Mahdi Torabi Rad*[1]; Christoph Beckermann[1]; [1]University of Iowa

3:25 PM
Performance Optimization and Evaluation of a 3D CA-FVM Model for Dendritic Growth of Fe-C Alloy: *Weiling Wang*[1]; Sen Luo[1]; Miaoyong Zhu[1]; [1]Northeastern University

3:45 PM Break

4:05 PM
Multiscale Modeling of the Solidification Structure Evolution of Continuously Cast Steel Blooms and Slabs: *Laurentiu Nastac*[1]; Pilvi Oksman[2]; Mikko Kärkkäinen[2]; Seppo Louhenkilpi[2]; [1]The University of Alabama; [2]Aalto University

4:25 PM
Simulation of Flows and Instabilities during Crystal Growth via the Traveling Heater Method: Jeff Peterson[1]; *Jeffrey Derby*[1]; [1]University of Minnesota

4:45 PM
Prediction of Microstructure Evolution of Hot Forged AISI 4140 Steel by Numerical Simulation: Tiago Colombo[1]; *Alberto Brito*[1]; Lirio Schaeffer[1]; [1]Universidade Federal of Rio Grande do Sul

5:05 PM
Numerical Simulation of Dendritic growth of Fe-C Binary Alloy with Natural Convection: *Sen Luo*[1]; Weiling Wang[1]; Miaoyong Zhu[1]; [1]Northeastern University

5:25 PM
Localized Strengthening of Al-based Alloys by Automatized Optimization OF Laser Heat Treatment: *Andreas Ludwig*[1]; Tobias Holzmann[1]; [1]University of Leoben, Dep. Metallurgy

5:45 PM
Understanding Freeze Casting Solidification Process: *Santiago Gil-Duran*[1]; Edgar Alexander Ossa Henao[1]; [1]Universidad EAFIT

Characterization of Minerals, Metals, and Materials — Minerals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Monday PM
February 15, 2016
Room: 102B
Location: Music City Center

Session Chairs: Bowen Li, Michigan Technological University; Zhiwei Peng, Central South University

2:00 PM
Characterization of Magnesite from Tsakasimptah Nigeria for Glass Making: *Zainab Aliyu*[1]; Adele Garkida[1]; Edwin Ali[1]; Muhammad Dauda[1]; [1]Ahmadu Bello University

2:20 PM
High Temperature Thermal Analysis and Calorimetry Applied to the Characterization and Thermodynamic Studies of Feldspars and Feldspathoids: *Kristina Lilova*[1]; Link Brown[1]; [1]Setaram Inc.

2:40 PM
Study On Coal Minerals Phase Transformations under Different Coking Conditions: *Qiu Shuxing*[1]; Zhang Shengfu[1]; Zhang Pengqi[1]; Qiu Guibao[1]; Zhang Qingyun[1]; [1]Chongqing University

3:00 PM
Electrical Effect and Influence Factors of Tourmaline: *Qi Lu*[1]; Bowen Li[2]; Feng Bai[1]; [1]China University of Geosciences; [2]Michigan Technological University

3:20 PM Break

3:35 PM
Wettability of Pyrolytic Graphite by Molten Blast Furnace Slag Bearing TiO2: *Yanhui Liu*[1]; Xuewei Lv[1]; Chenguang Bai[1]; Baohua Li[1]; [1]School of Materials Science and Engineering,Chongqing University

3:55 PM
Dielectric Properties and Microwave Heating Characteristics of Nickel-copper Ore: *Liu Chenhui*[1]; Jinhui Peng[2]; TianCheng Liu[2]; Junming Guo[2]; [1]Yunnan Minzu University; [2]Yunnan Minzu University

4:15 PM
Evaluation of White Bentonite Modified by Acid Attack: *Christiano Gianesi Bastos Andrade*[1]; Danilo Marin Fermino[1]; Marcos Fernandes Gonzales[1]; Francisco Rolando Valenzuela Diaz[1]; [1]University of Sao Paulo

Characterization of Minerals, Metals, and Materials — Processing and Corrosion

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Monday PM
February 15, 2016
Room: 103A
Location: Music City Center

Session Chairs: Jian Li, CanmetMATERIALS; Prathmesh Joshi, Visvesvaraya National Institute of Technology (V.N.I.T.)

2:00 PM
Characterization of Iron Oxide Scale Formed in Naphthenic Acid Corrosion: *Peng Jin*[1]; Winston Robbins[1]; Gheorghe Bota[1]; Srdjan Nesic[1]; [1]Institute for Corrosion and Multiphase Technology (ICMT), Ohio University

2:20 PM
Transport of Chloride Ions through Modulated Concrete Microstructures: *Batric Pesic*[1]; [1]University of Idaho

2:40 PM
Effect of Cold Work on the Corrosion Resistance of an Austenitic Stainless Steel: *Jian Li*[1]; Pei Liu[1]; [1]CanmetMATERIALS

3:00 PM
Microstructural Evolution of Single Ni2TiAl or Hierarchical NiAl/Ni2TiAl Precipitates in Fe-Ni-Al-Cr-Ti Ferritic Alloys during Thermal Treatment: *Gian Song*[1]; Yanfei Gao[1]; Zhiqian Sun[1]; Jonathan Poplawsky[2]; Peter Liaw[1]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

3:20 PM
The Chemical Composition and Micro-mechanical Properties of Cooling γ' Precipitates in a Polycrystalline Nickel Alloy: *Muzi Li*[1]; Fionn Dunne[1]; Barbara Shollock[1]; [1]Imperial College London

3:40 PM Break

3:55 PM
Ferronickel Preparation from Nickeliferous Laterite by Rotary Kiln-electric Furnace Process: *Guanghui Li*[1]; Hao Jia[1]; Jun Luo[1]; Zhiwei Peng[1]; Yuanbo Zhang[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

4:15 PM
Characterization of Copper-Manganese-Aluminum-Magnesium Mixed Oxyhydroxide and Oxide Catalysts for Redox Reactions: *Arnab Baksi*[1]; David Cocke[1]; Andrew Gomes[1]; John Gossage[1]; Mark Riggs[2]; Gary Beall[2]; Hylton McWhinney[3]; [1]Lamar University; [2]Texas State University; [3]Prairie View A&M University

4:35 PM
Pyrolysis of Active Fraction of Humic Substances-based Binder for Iron Ore Pelletizing: *Guihong Han*[1]; Duo Zhang[1]; Yanfang Huang[1]; Longjie Xing[1]; Lulu Liu[1]; Wencui Chai[1]; Tao Jiang[2]; [1]Zhengzhou University; [2]Central South University

4:55 PM
Determination of Processing-Microstructure-Relationships in SPD-Processed 316L SS using Nano-Scale Resolution Automated Crystal Orientation Mapping in the TEM: *Mauricio Gordillo*[1]; Jörg Wiezorek[1]; [1]University of Pittsburgh

5:15 PM
Stamping Versus Wire Electrical Discharge Machining (WEDM) of HIPERCO® 50 Alloy Laminates – A Comparative Study of Their Magnetic Properties and Cut-edge Characteristics: *Tanjore Jayaraman*[1]; [1]Carpenter Technology Corporation

Computational Materials Engineering for Nuclear Reactor Applications — Zirconium Cladding Behavior

Sponsored by:
Program Organizers: Michael Tonks, Idaho National Laboratory; Julie Tucker, Oregon State University; Mark Tschopp, Army Research Laboratory; Richard Williamson, Idaho National Laboratory

Monday PM
February 15, 2016
Room: 101D
Location: Music City Center

Funding support provided by: The symposium will be co-sponsored by the ICME committee

Session Chair: To Be Announced

2:00 PM Invited
An Overview of the Fuel, Materials and Chemistry Focus Area within the CASL Energy Innovation Hub: *Chris Stanek*[1]; [1]Los Alamos National Laboratory

2:40 PM
Computer Modeling of Hydrogen and Oxygen Transport during Zirconium Corrosion: *Xian-Ming Bai*[1]; Yongfeng Zhang[1]; Michael Tonks[1]; [1]Idaho National Laboratory

3:00 PM
Molecular Dynamics Simulations on Homogeneous Hydride Nucleation in Alpha-Zr: *Yongfeng Zhang*[1]; Xianming Bai[1]; Jianguo Yu[1]; Michael Tonks[1]; [1]Idaho National Lab

3:20 PM Break

3:40 PM
Stochastic Modeling of the Corrosion of Zirconium and its Alloys: Theory and Application to Autoclave Corrosion: *William Howland*[1]; [1]Bechtel Marine Propulsion Company

4:00 PM Invited
Coupled Micro/Meso/Macro Modeling of the Crud Source Term in Light Water Reactors: Penghui Cao[1]; *Michael Short*[1]; Derek Gaston[1]; Daniel Wells[2]; [1]MIT; [2]Electric Power Research Institute (EPRI)

4:40 PM
Coupled PWR Oxidation Modeling with the HOGNOSE Code: *Andrew Dykhuis*[1]; Michael Short[1]; [1]Massachusetts Institute of Technology

5:00 PM
Multiscale Modeling of the Coherency Loss of Hydrides in \945Zr: Marc-Antoine Louchez[1]; Guy Oum[1]; *Ludovic Thuinet*[1]; Rémy Besson[1]; Alexandre Legris[1]; [1]Université de Lille

5:20 PM
Validation of BISON Calculation of Hydrogen Distribution by Comparison to Experiment: *Evrard Lacroix*[1]; Arthur Motta[1]; [1]Pennsylvania State University

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Scale-Bridging Methods for Plasticity

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Monday PM
February 15, 2016
Room: 209A
Location: Music City Center

Session Chairs: Carlos Tome, Los Alamos National Laboratory; Maryam Ghazisaeidi, Ohio State University

2:00 PM
A Quantized Crystal Plasticity Model for Nanocrystalline Metals: Connecting Atomistic Simulations and Physical Experiments: *Lin Li*[1]; Paul Christodoulou[2]; Peter Anderson[2]; [1]University of Alabama; [2]The Ohio State University

2:20 PM
A Systematic Framework for Predicting Twinning in Hexagonal Close-packed Materials: *Dingyi Sun*[1]; Mauricio Ponga[1]; Kaushik Bhattacharya[1]; Michael Ortiz[1]; [1]California Institute of Technology

2:40 PM Invited
Atomistic Modeling at Experimental Strain Rates and Time Scales: *Harold Park*[1]; [1]Boston University

3:10 PM
Coarse-grained Models for Reducing Complexity in the Description of Crystal Plasticity: *Roman Groger*[1]; [1]Academy of Sciences of the Czech Republic

3:30 PM Break

3:50 PM
Decohesion Relationships for Hydrogen Induced Grain Boundary Embrittlement in Nickel extracted from Molecular Dynamics Simulations: Wesley Barrows[1]; Remi Dingreville[2]; *Douglas Spearot*[3]; [1]University of Arkansas; [2]Sandia National Laboratories; [3]University of Florida

4:10 PM Invited
Improved Twinning Simulation by Linking Meso-scale Full-field FFT Approach with Macro-scale Effective Medium VPSC Model: *Carlos Tome*[1]; M. Arul Kumar[1]; Irene Beyerlein[1]; Rodney McCabe[1]; [1]Los Alamos National Lab

4:40 PM
Peierls Potential and Kink Pair Mechanism in High Pressure MgSiO3 Perovskite: *Philippe Carrez*[1]; Antoine Kraych[1]; Pierre Hirel[1]; Patrick Cordier[1]; [1]Lab. UMET CNRS-UMR8207

5:00 PM
The Strength and Deformation Behavior of Nickel Based Superalloy Microcrystals through Discrete Dislocation Dynamics Simulations: *Ahmed Hussein*[1]; Satish Rao[2]; Triplicane Parthasarathy[3]; Jaafar Elawady[1]; Michael Uchic[4]; [1]Johns Hopkins University; [2]EPFL; [3]UES Inc.; [4]WPAFB

5:20 PM
Evaluation of Strain Localizations on AA-7050 Using CP-FFT and EBSD: *Andrea Nicolas*[1]; Alberto Mello[1]; Michael Sangid[1]; [1]Purdue University

Computational Methods for Uncertainty Quantification, Model Validation, and Stochastic Predictions — Empirical Interatomic Potentials: Development and Validation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Mark Tschopp, Army Research Laboratory; Li Ma, NIST

Monday PM
February 15, 2016
Room: 207C
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Invited
Advancements in Methods for Materials Discovery and Validation: *Susan Sinnott*[1]; [1]Penn State University

2:30 PM
Atomistic Study of Carbon Nanotubes: Effect of Cut-off Distance: *S. Thamaraikannan*[1]; S.C. Pradhan[1]; [1]Department of Aerospace Engineering, Indian Institute of Technology Kharagpur

2:50 PM Invited
Database Optimization for Empirical Interatomic Potentials: Pinchao Zhang[1]; *Dallas Trinkle*[1]; [1]University of Illinois, Urbana-Champaign

3:20 PM
Elasticity Size Effects in ZnO Nanowires and Subjective Definitions of Cross-sectional Area: An Overlooked Source of Uncertainty: *Zachary Trautt*[1]; Lawrence Friedman[1]; Chandler Becker[1]; Robert Cook[1]; [1]National Institute of Standards and Technology

3:40 PM Break

4:00 PM Invited
Development of the ReaxFF Force Field for Complex Materials and Interfaces: *Adri van Duin*[1]; Weiwei Zhang[1]; Yun-Kyung Shin[1]; Sungwook Hong[1]; Jejoon Yeon[1]; Metin Aktulga[2]; [1]Penn State; [2]Michigan State University

4:30 PM
Quantifying Model-Form Uncertainty in Molecular Dynamics Simulation: *Anh Tran*[1]; Yan Wang[1]; [1]Georgia Institute of Technology

4:50 PM Invited
Using Correlations between Materials Properties in Potential Development Procedure for Metals: *Mikhail Mendelev*[1]; [1]Ames Laboratory

5:20 PM
MEAM Potential for Boron Suboxide (B6O): *Mehul Bhatia*[1]; Kiran Solanki[1]; Mark Tschopp[2]; [1]Arizona State University; [2]U.S. Army Research Laboratory,

Computational Thermodynamics and Kinetics — Defect Thermodynamics and Diffusion II

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Monday PM
February 15, 2016
Room: 208B
Location: Music City Center

Session Chairs: Nicole Benedek, Cornell University; Henry Wu, University of Wisconsin - Madison

2:00 PM Invited
Engineering High and Constant Cation Diffusivity in Oxides through Percolation Theory: *Gerbrand Ceder*[1]; Jinhyk Lee[2]; Alex Urban[2]; [1]UC Berkeley; [2]MIT

2:30 PM
Cation Diffusion Path in Ionic Structures -- A Pathfinder Algorithm to Precondition NEB Calculations and a Fast Approximate Barrier Calculation Method: *Ziqin Rong*[1]; Daniil Kitchaev[1]; Pieremanuele Canepa[1]; Gerbrand Ceder[1]; [1]MIT

2:50 PM
Fast Li-ion Transport Kinetics in LiBH4-based Solid-state Electrolytes: *Zhenpeng Yao*[1]; Kyle Michel[1]; Yongsheng Zhang[1]; Christopher Wolverton[1]; [1]Northwestern University

3:10 PM
The Role of Grain Boundaries for Lithium Diffusion in Graphite: *Christopher Shumeyko*[1]; Edmund Webb[1]; Garritt Tucker[2]; [1]Lehigh University; [2]Drexel University

3:30 PM Break

3:50 PM Invited
Enhancement of Ionic Transport in Complex Oxides through Soft Lattice Modes and Epitaxial Strain: *Nicole Benedek*[1]; [1]Cornell University

4:20 PM
High-Throughput ab-initio Solute Diffusion Database with the MAterials Simulation Toolkit (MAST): *Henry Wu*[1]; Tam Mayeshiba[1]; Haotian Wu[1]; Liam Witteman[1]; Ben Anderson[1]; Dane Morgan[1]; [1]University of Wisconsin-Madison

4:40 PM
Kinetics Investigation of Titanium-Based Multicomponent Systems Using Liquid-Solid Diffusion Couples
: *Zhi Liang*[1]; Changdong Wei[1]; Alan Luo[1]; Ji-Cheng Zhao[1]; James Williams[1]; Anil Sachdev[2]; [1]The Ohio State University; [2]General Motors

5:00 PM
Molecular Dynamics Study of Unexpected, Anisotropic Diffusion through Nickel-based Alloys and Oxides: *Penghui Cao*[1]; Michael Short[1]; Daniel Wells[2]; [1]Massachusetts Institute of Technology; [2]Electric Power Research Institute

5:20 PM
Effect of Solute Atoms on Dislocation Motion in Mg: An Electronic Structure Perspective: Tomohito Tsuru[1]; *Daryl Chrzan*[2]; [1]Japan Atomic Energy Agency; [2]University of California Berkeley

5:40 PM
Numerical Analysis Evaluation of Solutions to the Diffusion Equation for Binary Interdiffusion Situations: *Irina Belova*[1]; Tanvir Ahmed[1]; [1]University of Newcastle

Driving Discovery: Integration of Multi-Modal Imaging and Data Analysis — Session II

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Charudatta Phatak, Argonne National Laboratory; Doga Gursoy, Argonne National Laboratory; Emine Gulsoy, Northwestern university; Yang Jiao, Arizona State University

Monday PM
February 15, 2016
Room: 102A
Location: Music City Center

Session Chair: Charudatta Phatak, Argonne National Laboratory

2:00 PM Invited
Neutrons, Materials and Data Challenges: *Thomas Proffen*[1]; [1]Oak Ridge National Laboratory

2:30 PM
Methodology for Reconstruction of Samples Analyzed with Simultaneous Neutron and X-Ray Imaging: *Jacob LaManna*[1]; Daniel Hussey[1]; Eli Baltic[1]; David Jacobson[1]; [1]National Institute of Standards and Technology

2:50 PM Invited
Real Time Analysis, Interpretation and Experimental Steering for Electron Microscopy: *Kerstin Kleese van Dam*[1]; [1]Pacific Northwest National Laboratory

3:20 PM Break

3:40 PM Invited
Bingham Mixture Model for Efficient Microtexture Estimation from Discrete Orientation Data: *Stephen Niezgoda*[1]; Eric Magnuson[1]; [1]The Ohio State University

4:10 PM
Modeling Multi-modal Images of Photocatalysis on Cu_2O: Liang Li[1]; Yimin Wu[1]; Yuzi Liu[1]; Jeffrey Guest[1]; Tijana Rajh[1]; Ian McNulty[1]; Zhonghou Cai[1]; *Maria Chan*[1]; [1]Argonne National Laboratory

4:30 PM Invited
Recognizing Patterns from Experimental Data: *Daniela Ushizima*[1]; [1]Lawrence Berkeley National Laboratory

5:00 PM
Structure Quantification, Property Prediction and 4D Reconstruction Using Limited X-ray Tomography Data: *Hechao Li*[1]; Somya Singh[1]; C. Kaira[1]; James Mertens[1]; Nikhilesh Chawla[1]; Yang Jiao[1]; [1]Arizona State University

5:20 PM
Error Analysis of Near-field High Energy Diffraction Microscopy
: *David Menasche*[1]; Paul Shade; Robert Suter[1]; [1]Carnegie Mellon University

Electrode Technology — Electrode Materials and Characterization

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Angelique Adams, Alcoa Inc

Monday PM
February 15, 2016
Room: 202B
Location: Music City Center

Session Chair: Marvin Lubin, Rain CII Carbon

2:00 PM Introductory Comments

2:10 PM
Characterization of Carbon Anode Materials by Image Analysis: *Xianai Huang*[1]; Duygu Kocaefe[1]; Dipankar Bhattacharyay[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

2:35 PM
Electrochemical Reactivity and Wetting Properties of Anodes Made from Anisotropic and Isotropic Cokes: *Camilla Sommerseth*[1]; Rebecca Thorne[2]; Arne Ratvik[3]; Espen Sandnes[1]; Stein Rørvik[3]; Lorentz Lossius[4]; Hogne Linga[4]; Ann Svensson[1]; [1]Norwegian University of Science and Technology, NTNU; [2]Norsk institutt for luftforskning; [3]SINTEF Materials and Chemistry; [4]Hydro Aluminium AS

3:00 PM
Study of the Wetting of Coke by Different Pitches: *Ying Lu*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Dipankar Bhattacharyay[1]; Xian-Ai Huang[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

3:25 PM
Quantification of Sodium Present in Dry Aggregates and Anodes: *Julie Bureau*[1]; Duygu Kocaefe[1]; Dipankar Bhattacharyay[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

3:50 PM Break

4:05 PM
Interfacial Boundary between Carbon Anodes and Molten Salt Electrolyte: *Wojciech Gebarowski*[1]; Camilla Sommerseth[1]; Arne Petter Ratvik[2]; Stein Rørvik[2]; Espen Sandnes[1]; Lorentz Petter Lossius[3]; Hogne Linga[3]; Ann Mari Svensson[1]; [1]NTNU - Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry; [3]Hydro Aluminium AS

4:30 PM
Measurement of the Electric Current Distribution in an Anode: *Marc-Alain Andoh*[1]; Duygu Kocaefe[1]; Dipankar Bhattacharyay[1]; Yasar Kocaefe[1]; Daniel Marceau[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — New Bonding Approaches

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Monday PM
February 15, 2016
Room: 201A
Location: Music City Center

Session Chairs: Yan Li, Intel; John Elmer, Lawrence Livermore National Laboratory

2:00 PM Invited
WBG Die-attach Ceramic Substrate for Severe Thermal Cycling: *Katsuaki Suganuma*[1]; Hao Zhang[1]; Shijo Nagao[1]; Tohru Sugahara[1]; Minoru Ueshima[2]; Yoichi Furukawa[3]; Kazuhiko Minami[3]; Hans Albrecht[4]; Klaus Wilke[4]; Yoshinori Shirakawa[4]; Seigo Kurosaka[5]; Masanobu Tsujimoto[5]; Masayuki Kiso[5]; [1]Osaka University; [2]Senju Metal; [3]Showa Denko; [4]Siemens; [5]C. Uyemura

2:25 PM
Die-attach Structure Using SiC Particle Added Ag Paste for Ultra High Thermal Stability Usage: *Hao Zhang*[1]; Shijo Nagao[1]; Tohru Sugahara[1]; Emi Yokoi[1]; Katsuaki Suganuma[1]; [1]The Institute of Scientific and Industrial Research (ISIR) Osaka University

2:45 PM
Reliability of Die Attach Using Ag Nanoporous Sheet for High Temperature Electronics: *Min-Su Kim*[1]; Hiroshi Nishikawa[1]; [1]Osaka University

3:05 PM
On the Evolution of the Nanoporous Microstructure of Sintered Ag during Ageing: Wei Mao[1]; James Carr[2]; Loic Signor[1]; Carole Nadot-Martin[1]; Azdine Nait-Ali[1]; Pascal Gadaud[1]; Marc Legros[3]; *Xavier Milhet*[1]; [1]Pprime Institute UPR CNRS 3346; [2]The Manchester University; [3]CEMES - CNRS

3:25 PM Break

3:45 PM
Electrical Conductivity of Porous Silver Made by Annealing Silver Nanoparticles for Short Periods: *Zuruzi Abu Samah*[1]; Kim Siow[2]; [1]Institut Teknologi Brunei; [2]Universiti Kebangsaan Malaysia

4:05 PM
Development of Interconnection Technology for Double Side Power IC Module: *Zixuan Zhu*[1]; C.C. Li[1]; L. L. Liao[2]; M. J. Dai[2]; C. K. Liu[2]; C. Robert Kao[1]; [1]Department of Materials Science and Engineering, National Taiwan University; [2]Electronic and Optoelectronics Research Laboratories, Industrial Technology Research Institute

4:25 PM
Identifying Alternative Formulations for Transient Liquid Phase Bonding: *John Holaday*[1]; Carol Handwerker[1]; [1]Purdue University

4:45 PM
Wafer Level Au-Sn TLP Bonding from Eutectic Composition: Serkan Yilmaz[1]; Eyup Can Demir[1]; Oguzhan Temel[1]; Tayfun Akin[1]; *Eren Kalay*[1]; [1]METU

Energy Technologies and Carbon Dioxide Management — Session II

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Li Li, Cornell University ; Donna Guillen, Idaho National Laboratory; Neale Neelameggham, Ind LLC; Lei Zhang, University of Alaska Fairbanks ; Jingxi Zhu, Carnegie Mellon University; Nawshad Haque, CSIRO; Dirk Verhulst, Consultant, Extractive Metallurgy; Soumendra Basu, Boston University; Tao Wang, Nucor Steel; Xuan Liu, Carnegie Mellon University

Monday PM
February 15, 2016
Room: 104D
Location: Music City Center

Session Chairs: Cong Wang, Northeastern University; Zuotai Zhang, Peking University; Xuan Liu, Carnegie Mellon University

2:00 PM Invited
Heat Recovery from High Temperature Slags: Chemical Methods: *Zuotai Zhang*[1]; Yongqi Sun[1]; [1]Peking University

2:30 PM Invited
Development of Fluorine-Free Mold Flux Based on CaO-SiO2-B2O3 Slag System: Lejun Zhou[1]; *Wanlin Wang*[1]; [1]Central South University

3:00 PM
Corrosion Fatigue of X46Cr13 in CCS Environment: Anja Pfennig[1]; *Marcus Wolf*[2]; Thomas Böllinghaus[2]; [1]HTW Berlin; [2]BAM Federal Institute of Materials Research and Testing

3:20 PM
Power Generation by Organic Rankine Cycle from Low Temperature Waste Heat of Metallurgical Industry: Xu Zhang[1]; *Hao Bai*[1]; Ning Li[1]; Xin Zhang[2]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing; [2]China International Engineering Consulting Corporation

3:40 PM Break

4:00 PM
Preparation of TI-AL-V Alloys by Aluminothermic Reaction: *Zhijiang Gao*[1]; Huimin Lu[1]; [1]Beihang University

4:20 PM Invited
Utilization of Copper Smelter Slags by Direct Reduction: Baojing Zhang[1]; Dapeng Zhao[1]; Xiaodong Zou[1]; *Cong Wang*[1]; [1]Northeastern University

4:50 PM
Long Term Prediction of Linz-Donawitz Converter Gas (LDG) in Steel Making Process: Xiancong Zhao[1]; *Hao Bai*[1]; Qi Shi[1]; Yang Wang[1]; Zhancheng Guo[1]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing

5:10 PM
Coke Modification Using Hydrothermal Oxidation Treatment: *Quanqiang Ma*[1]; Huiqing Tang[1]; Huanyu Zhang[1]; [1]University of Science and Technology Beijing,

5:30 PM
Optimization and Management of Byproduct Gas Distribution in Steel Mills under Time-of-use (TOU) Electricity Price: Xiancong Zhao[1]; *Hao Bai*[1]; Qi Shi[1]; Zhancheng Guo[1]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — 3-D Effects of Microstructure on Fatigue Damage

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Monday PM
February 15, 2016
Room: 213
Location: Music City Center

Session Chair: Tongguang (Tony) Zhai, University of Kentucky

2:00 PM Invited
Federation of European Materials Societies (FEMS) International Scholar Presentation: Finite Element Simulations of Short Fatigue Crack Propagation in Three Dimensional Microstructures Obtained by X-ray Tomography: *Henry Proudhon*[1]; Jia Li[1]; Erembert Nizery[1]; Jean-Yves Buffiere[2]; Wolfgang Ludwig[2]; Samuel Forest[1]; [1]MINES ParisTech; [2]INSA Lyon

2:20 PM Invited
A 3-D Understanding of the Anisotropy in Fatigue Crack Nucleation in an AA7075 T651 Al Alloy Plate: Yan Jin[1]; Lin Yang[1]; Pei Cai[1]; Jiagang Xu[1]; Wei Sun[1]; Donovan Leonard[2]; Fuqian Yang[1]; Yang-Tse Cheng[1]; *Tongguang Zhai*[1]; [1]University of Kentucky; [2]Oak Ridge National Laboratory

2:40 PM Invited
How to Quantify the Grain Boundary Resistance against Slip Transfer Experimentally by Combination of Geometric and Stress Approach Using Stage-I-fatigue Cracks: *Michael Marx*[1]; Florian Schaefer[1]; Alain Knorr[1]; Christian Motz[1]; [1]Saarland University

3:00 PM
3D Characterization of the Propagation of Physically Small Fatigue Cracks in Forged High Strength Steels: Pablo Lorenzino[1]; Catherine Verdu[1]; *Jean-Yves Buffiere*[1]; [1]Universite de Lyon INSA LYON

3:20 PM
Quantitative Effects of Texture and Grain Size on Short Fatigue Crack Growth in High Strength Al Alloys by a 3D Microstructural-based Model: *Pei Cai*[1]; Tongguang Zhai[1]; Yan Jin[1]; Wei Wen[2]; [1]University of Kentucky; [2]Novelis Global Research and Technology Center

3:40 PM Break

4:00 PM Invited
Understanding of Fatigue Crack Formation in Ni Superalloy with Inclusions Using HR-EBSD and HR-DIC: *Jun Jiang*[1]; Jie Yang[2]; Tiantian Zhang[3]; Yu Wang[4]; Fionn Dunne[3]; Ben Britton[3]; [1]Imperial College London ; [2]Beijing Institute of Aeronautical Materials ; [3]Imperial College London; [4]Beijing Institute of Aeronautical Materials

4:20 PM Invited
TEM Studies of the Evolution of Dislocation Configurations under Cyclic Loading in Al Alloys
: *Ramasis Goswami*[1]; Chandra Pande[1]; [1]Naval Research Laboratory

4:40 PM
Fatigue in Titanium: Dislocation Mechanisms, Initiation, Hydrogen and Alpha2: *David Dye*[1]; Trevor Lindley[1]; Tamara Chapman[1]; Anna Radecka[1]; Edward Saunders[2]; Paul Bagot[3]; Adrian Walker[2]; Thomas Martin[3]; David Rugg[2]; [1]Imperial College; [2]Rolls-Royce; [3]Oxford University

5:00 PM
Dislocation Patterns under Cyclic Loading in Multiple Slip: *Shengxu Xia*[1]; Anter El-Azab[1]; [1]Purdue University

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Microstructure I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Monday PM
February 15, 2016
Room: 105A
Location: Music City Center

Session Chairs: Ingo Steinbach, Ruhr-University Bochum; Jeffrey Hoyt, McMaster University

2:00 PM Invited
Phase-field Crystal Modeling of Crystal Nucleation Including Homogeneous and Heterogeneous Processes, and Growth Front Nucleation: *Laszlo Granasy*[1]; Frigyes Podmaniczky[1]; Gyula Tóth[1]; [1]Wigner Research Centre for Physics

2:25 PM Invited
Multiscale Modeling of Columnar to Equiaxed Transition: *Alain Karma*[1]; Pierre-Antoine Geslin[1]; [1]Northeastern University

2:50 PM Invited
Dendrite Orientation Transitions in Al-Zn Alloys: *Jon Dantzig*[1]; [1]Univ of Illinois

3:15 PM Invited
Phase-field Simulations of Dendritic Sidebranching in Three Dimensions: *Mathis Plapp*[1]; Alain Karma[2]; [1]CNRS/Ecole Polytechnique; [2]Northeastern University

3:40 PM Break

4:00 PM Invited
Evolution of the Specific Solid-liquid Interface Area in Directional Solidification: *Christoph Beckermann*[1]; Hieram Neumann-Heyme[2]; Kerstin Eckert[2]; [1]University of Iowa; [2]Technical University Dresden

4:25 PM Invited
Study of Solidification Phenomena Using Phase Field Crystal Models: Bernadine Jugdutt[1]; Nana Ofori-Opoku[1]; Harith Humadi[2]; Jeffrey Hoyt[2]; *Nikolas Provatas*[1]; [1]McGill University; [2]McMaster University

4:50 PM
Multi-scale Experiments and Modeling of Metal Alloy Solidification Dynamics: *Amy Clarke*[1]; Damien Tourret[1]; Seth Imhoff[1]; John Gibbs[1]; Younggil Song[2]; Alain Karma[2]; Kamel Fezzaa[3]; Paul Gibbs[1]; Daniel Coughlin[1]; John Roehling[4]; Joseph McKeown[4]; Jon Kevin Baldwin[1]; [1]Los Alamos National Laboratory; [2]Northeastern University; [3]Argonne National Laboratory; [4]Lawrence Livermore National Laboratory

High-Temperature Systems for Energy Conversion and Storage — Recent Advancements in Solid Oxide Fuel Cell Technology I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Monday PM
February 15, 2016

Room: 104E
Location: Music City Center

Session Chairs: Paul Ohodnicki, NETL; Kathy Lu, Virginia Tech

2:00 PM Introductory Comments

2:05 PM Keynote
Department of Energy Office of Fossil Energy's Solid Oxide Fuel Cells Program: *Shailesh Vora*[1]; [1]U.S. Department of Energy

2:40 PM
A Thermodynamics and Density Functional Theory Based Approach to Design Alloys with Passivating Oxide Layer for Silver-free SOFC Braze Application: *Tridip Das*[1]; Quan Zhou[1]; Jason Nicholas[1]; Thomas Bieler[1]; Yue Qi[1]; [1]Michigan State University

3:00 PM Invited
Perovskite-type Cathode Materials and Coatings for Solid Oxide Fuel Cells: *Kathy Lu*[1]; Kris Shen[1]; [1]Virginia Tech

3:25 PM Break

3:45 PM Invited
Solid Oxide Fuel Cell - Energy Storage Hybrid Devices: *Shriram Ramanathan*[1]; [1]Harvard Univ

4:10 PM Invited
Three-Dimensional Reconstruction of Solid Oxide Fuel Cell Electrodes: *Mark De Guire*[1]; Harshil Parikh[1]; Naima Hilli[1]; Arthur Heuer[1]; [1]Case Western Reserve University

4:35 PM
High Temperature Electroceramic Oxide Based Nanomaterial Research and Development for Solid Oxide Fuel Cell and Embedded Sensing Applications: *Paul Ohodnicki*[1]; Kirk Gerdes[1]; Shiwoo Lee[1]; Harry Abernathy[1]; Yueling Fan[1]; Yuhua Duan[1]; Michael Buric[1]; Zsolt Poole[1]; [1]National Energy Technology Laboratory

4:55 PM
Spark Plasma Sintering of Ceramic Composites for Solid Oxide Fuel Cell and Hydrogen Separation Applications: *Kyle Brinkman*[1]; Siwei Wang[1]; Yufei Liu[1]; Jian He[1]; Fanglin Chen[2]; [1]Clemson University; [2]University of South Carolina

Hume-Rothery Award Symposium: Thermodynamics of Materials — Structure

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Monday PM
February 15, 2016

Room: 107A
Location: Music City Center

Session Chairs: Beatriz Roldan Cuenya, Ruhr University Bochum; Raphael Hermann, Oak Ridge National Laboratory

2:00 PM Invited
Charting the Elastic Properties of Crystalline Inorganic Compounds: Maarten de Jong[1]; Wei Chen[2]; Tom Angsten[1]; Anthony Gamst[3]; Randy Notestine[3]; Gerbrand Ceder[2]; Kristin Persson[2]; *Mark Asta*[1]; [1]University of California, Berkeley; [2]Lawrence Berkeley National Laboratory; [3]University of California, San Diego

2:30 PM Invited
Elasticity of Metallic Glasses, Crystals, and Glass Forming Liquids: *William Johnson*[1]; [1]California Institute of Technology

3:00 PM Invited
Thermodynamic Properties and Vibrational Dynamics of Pt and Fe Nanoparticles: Size, Shape, Support, and Adsorbate Effects: *Beatriz Roldan Cuenya*[1]; [1]Department of Physics, Ruhr University Bochum

3:30 PM Break

3:50 PM Invited
High-throughput Computational Search for Strengthening Precipitates in Alloys: *Chris Wolverton*[1]; [1]Northwestern University

4:20 PM
First-principles Modelling of Grain Boundary Phase in Nd-Fe-B Permanent Magnet: *Ying Chen*[1]; Arkapol Saengdeejing[1]; Masashi Matsuura[1]; Satoshi Satoshi Sugimoto[1]; [1]Tohoku University

4:40 PM Invited
Hydrides and Hydrogen Pipe Diffusion in Palladium: First Principles, Kinetic Monte Carlo, and Neutron Scattering: *Dallas Trinkle*[1]; Emily Schiavone[1]; Brent Heuser[1]; [1]University of Illinois, Urbana-Champaign

5:10 PM
Ab-initio Modeling of Quasielastic Neutron Scattering of Hydrogen Pipe Diffusion in Palladium: *Emily Schiavone*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics, and Computational Tools — Tool Integration

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Dongwon Shin, Oak Ridge National Laboratory; Jiadong Gong, QuesTek Innovations; Shengyen Li, National Institute of Standards and Technology; Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory

Monday PM
February 15, 2016

Room: 207B
Location: Music City Center

Session Chairs: Sheng Yen Li, NIST; Mark Tschopp, U.S. Army Research Laboratory

2:00 PM Keynote
PRISMS: An Integrated Predictive Multi-Scale Capability for the Materials Community: *John Allison*[1]; Larry Aagesen[1]; Samantha Daly[1]; Krishna Garikipati[1]; Vikram Gavini[1]; Margaret Hedstrom[1]; H. Jagadish[1]; J. Wayne Jones[1]; Emmanuelle Marquis[1]; Amit Misra[1]; Brian Puchala[1]; Shiva Rudraraju[1]; Veera Sundararaghavan[1]; Sravya Tamma[1]; Glenn Tarcea[1]; Katsuyo Thornton[1]; Anton Van der Ven[2]; [1]University of Michigan; [2]University of California-Santa Barbara

2:40 PM
MIDAS: A Workflow Tool for Improving Materials Strength Modeling: *Jeffrey Florando*[1]; Nathan Barton[1]; Kevin Durrenberger[1]; Peter Norquist[1]; [1]Lawrence Livermore National Laboratory

3:00 PM Invited
Towards an ICME Methodology: Current Activities in Europe: *Georg Schmitz*[1]; [1]Access e.V. at the RWTH Aachen

3:30 PM Break

3:50 PM Invited
The Materials Data Facility - Data Services to Advance Materials Science Research: I. Foster[1]; R. Ananthakrishnan[2]; *Ben Blaiszik*[2]; K. Chard[2]; J. Pruyne[2]; J. Towns[3]; S. Tuecke[1]; [1]University of Chicago; Argonne National Laboratory; [2]University of Chicago; [3]University of Illinois at Urbana-Champaign (UIUC)

4:20 PM Invited
Materials Data Management and Chaining of Multiprocess Modeling under the Framework of ICME: *Jianzheng Guo*[1]; Alain Jacot[2]; [1]ESI US R&D; [2]Calcom ESI SA

4:50 PM
Automated Convergence Checks with the Python Based Workbench Py-Iron: *Jan Janssen*[1]; Tilmann Hickel[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — Mechanical Characterization of Materials at Small Length Scales

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Monday PM
February 15, 2016

Room: 212
Location: Music City Center

Session Chairs: Sanjit Bhowmick, Hysitron, Inc.; Vikram Jayaram, Indian Institute of Science

2:00 PM Keynote
Indentation: Evolution and Application: *Brian Lawn*[1]; [1]National Institute of Standards and Technology

2:40 PM
Hardness Anisotropy of Single Crystal Calcite Indented with Three-sided Indenters: *Shefford Baker*[1]; Joseph Carloni[1]; Mathias Werner[1]; Miki Kunitake[1]; Lara Estroff[1]; Sanjit Bhowmick[2]; Ryan Major[3]; Ryan Stromberg[3]; Syed Asif[3]; Thomas Wyrobek[3]; [1]Cornell University; [2]Hysitron Inc.; [3]Hysitron, Inc.

3:00 PM
The Exponent 3/2 Instead of 2 on h for Conical/Pyramidal Indentation: Physical Foundation and Unprecedented Applications: *Gerd Kaupp*[1]; [1]University of Oldenburg

3:20 PM
New Methodology to Accurately Measure the Onset of Yield Point:: *Amit Pandey*[1]; *Robert Wheeler*[2]; Amit Shyam[1]; Thomas Stoughton[3]; [1]Oak Ridge National Laboratory; [2]MicroTesting Solutions LLC; [3]General Motors

3:40 PM Break

4:00 PM Invited
Layer Thickness Effects on the Strength and Deformation Mechanisms of Al/SiC Nanolaminates: *Jon Molina-Aldareguia*[1]; Lingwei Yang[1]; Carl Mayer[2]; Javier Llorca[1]; Nikhilesh Chawla[2]; [1]IMDEA Materials Institute; [2]Arizona State University

4:30 PM
Micro-scale Fracture Behavior of Co Based Metallic Glass Thin Films: *Nagamani Jaya Balila*[1]; Mathias Koehler[1]; Volker Schnabel[2]; Dierk Raabe[1]; Jochen Schneider[2]; Christoph Kirchlechner[1]; Gerhard Dehm[1]; [1]MPIE GmbH; [2]RWTH Aachen

4:50 PM
Ascertaining the Role of Microstructure on Fatigue Crack Initiation and Propagation in Rene-88 DT Ni-base Superalloy at Room Temperature: *Zafir Alam*[1]; David Eastman[1]; Thomas Straub[2]; Jessica Krogstad[3]; Chris Eberl[2]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]Fraunhofer Institute for Mechanics of Materials, Freiburg, Germany; [3]University of Illinois Urbana Champaign

5:10 PM
Unveiling 3D Deformations in Carbon Fiber Reinforced Polymer Composites by Coupled micro X-Ray Computed Topography and Volumetric Digital Image Correlation: Brendan Croom[1]; Wei-Ming Wang[2]; Jingjing Li[2]; *Xiaodong Li*[1]; [1]University of Virginia; [2]University of Hawaii at Manoa

Magnesium Technology 2016 — Keynote Session Part II and Primary Production and Recycling

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Monday PM
February 15, 2016

Room: 204
Location: Music City Center

Session Chairs: Neale R Neelameggham, IND LLC; Dmytro Orlov, Lund University; Kiran Solanki, Arizona State University

2:00 PM Keynote
A Perspective: Potential Growth in the Global Magnesium Industry – Where is our Research Leading Us?: *Martyn Alderman*[1]; [1]Magnesium Elektron

2:40 PM
Study on Mechanism of Magnesia Production by Reversion Reaction Process in Vacuum: *Yang Tian*[1]; [1]Kunming University of Science and Technology

3:00 PM
Thermodynamic Description of Reactions between Mg and CaO: *Rainer Schmid-Fetzer*[1]; Artem Kozlov[1]; Björn Wiese[2]; Chamini Mendis[2]; Domonkos Tolnai[2]; Karl Kainer[2]; Norbert Hort[2]; [1]Clausthal University of Technology; [2]Helmholtz-Zentrum Geesthacht

3:20 PM Break

3:40 PM
Atomic-level Mechanisms of Magnesium Oxidation: Sandra Gardonio[1]; Mattia Fanetti[1]; *Dmytro Orlov*[2]; [1]University of Nova Gorica; [2]Lund University

4:00 PM Poster Pitches

Material Design Approaches and Experiences IV — Superalloys

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Monday PM
February 15, 2016

Room: 208A
Location: Music City Center

Session Chairs: David Dye, Imperial College; Sammy Tin, Illinois Institute of Technology

2:00 PM Invited
Precipitate Phase Stability in High Nb Containing Ni-base Superalloys: *Sammy Tin*[1]; [1]Illinois Institute of Technology

2:30 PM Invited
Progress in Polycrystalline Co/Ni Superalloys: *David Dye*[1]; Matthias Knop[1]; T. Lindley[1]; Vassili Vorontsov[1]; Farah Ismail[1]; B. Shollock[1]; Mark Hardy[2]; [1]Imperial College London; [2]Rolls-Royce plc

3:00 PM
Stability of Carbides in Advanced Polycrystalline Ni-base Superalloys: *Stoichko Antonov*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

3:20 PM Break

3:40 PM Invited
Development of γ' Strengthened Co-Base Superalloys - Phase Stability and Applications: *Kiyohito Ishida*[1]; [1]Tohoku university

4:10 PM
Alloying Effects on Oxidation Mechanisms in Polycrystalline Co-Ni-Al-W-Ta Base Superalloys: *Farah Ismail*[1]; Barbara Shollock[2]; Trevor Lindley[1]; David Dye[1]; Mark Hardy[3]; [1]Imperial College London; [2]WMG, University of Warwick; [3]Rolls-Royce plc

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Fuels II

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday PM
February 15, 2016
Room: 101A
Location: Music City Center

Session Chair: Jon Carmack, Idaho National Laboratory

2:00 PM
Characterization of High Burnup Structure in LWR Irradiated Urania: *Kurt Terrani*[1]; Philip Edmondsson[1]; Chad Parish[1]; Tyler Gerczak[1]; Charles Baldwin[1]; Keith Leonard[1]; [1]Oak Ridge National Laboratory

2:20 PM
Migration of Lanthanides in U-Zr Alloy Fuel under a Thermal Gradient: *Yeon Soo Kim*[1]; T. Wiencek[1]; E. O'Hare[1]; J. Fortner[1]; J.S. Cheon[2]; B.O. Lee[2]; [1]Argonne National Laboratory; [2]KAERI

2:40 PM
TEM Investigation of Phases Formed in Ternary U-Pu-Zr Systems: *Assel Aitkaliyeva*[1]; James Madden[1]; Cynthia Papesch[1]; [1]Idaho National Laboratory

3:00 PM
3D Microstructural Characterization of UO2+x Using High-energy X-rays: *Reeju Pokharel*[1]; Donald Brown[1]; [1]Los Alamos National Laboratory

3:20 PM
Modeling Solute Segregation during Solidification of U-Mo Alloys: *Matthew Steiner*[1]; Elena Garlea[2]; Sean Agnew[1]; [1]University of Virginia; [2]Y-12 National Security Complex

3:40 PM Break

4:00 PM
High Resolution Electron Microscopy Examination of Fission Product Precipitates in Triso Coated Particles: *Isabella van Rooyen*[1]; Terry Holesinger[2]; Haiming Wen[1]; [1]Idaho National Laboratory; [2]Los Alamos National Laboratory

4:20 PM
Correlation of Fission Product Transport to Grain Boundary Character in Neutron Irradiated Tristructural Isotropic Coated Nuclear Fuel Particles: *Haiming Wen*[1]; Isabella van Rooyen[1]; [1]Idaho National Laboratory

4:40 PM
Microstructure Characterization of TRISO Fuels by Atom Probe Tomography: *Y. Wu*[1]; I van Rooyen[2]; H Wen[2]; J Burns[1]; J Madden[2]; [1]Boise State University; [2]Idaho National Laboratory

5:00 PM
Comprehensive EBSD Analysis of the SiC Layer from AGR-1 and AGR-2 Constituent TRISO Fuel Batches: *Tyler Gerczak*[1]; John Hunn[1]; [1]Oak Ridge National Laboratory

5:20 PM
Advanced Fuels by Field Assisted Sintering Technology – Fuel Properties Characterization and Accident Tolerance: *Jie Lian*[1]; Tiankai Yao[1]; [1]Rensselaer Polytechnic Institute

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Structural Materials II

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Monday PM
February 15, 2016
Room: 101B
Location: Music City Center

Session Chair: Clarissa Yablinsky, Los Alamos National Laboratory

2:00 PM
Grain Orientation Factor and Stress Corrosion Crack Initiation in Neutron-irradiated Austenitic Stainless Steels: *Maxim Gussev*[1]; Kevin Field[1]; Jeremy Busby[1]; Kale Stephenson[2]; Gary Was[2]; [1]Oak Ridge National Laboratory; [2]University of Michigan

2:20 PM
Effect of Irradiation on Primary Water Stress Corrosion Cracking Behavior of Alloy 718 Subjected to Different Heat Treatments: *Mi Wang*[1]; Silva Chinthaka[2]; Miao Song[1]; Gary Was[1]; [1]University of Michigan; [2]Oak Ridge National Laboratory

2:40 PM
Irradiation-induced Microstructure of Precipitate Hardened Nickel Based Alloy: *Miao Song*[1]; Mi Wang[1]; David Woodley[1]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan

3:00 PM
In-pile Creep of High Purity SiC and Selected FeCrAl Alloys: *Yutai Katoh*[1]; Kurt Terrani[1]; Yukinori Yamamoto[1]; Lance Snead[1]; Torill Karlsen[2]; [1]Oak Ridge National Laboratory; [2]Halden Reactor Project

3:20 PM
A TEM Study of the Effect of Neutron Irradiation on the Microstructure of Fe-Cr Alloys: *Dhriti Bhattacharyya*[1]; Yuan Wu[2]; Joel Davis[1]; Robert Harrison[1]; Emmanuelle Marquis[3]; Takuya Yamamoto[2]; Peter Wells[2]; Mukesh Bachhav[3]; G. Robert Odette[2]; [1]ANSTO; [2]University of California, Santa Barbara; [3]University of Michigan

3:40 PM Break

4:00 PM
Thermal Desorption Spectroscopy of High Fluence Irradiated Ultrafine and Nanocrystalline Tungsten: Helium Trapping and Desorption Correlated with Morphology: *Osman El-Atwani*[1]; Chase Taylor[2]; James Frishkoff[1]; Mitra Taheri[1]; [1]Drexel Unviersity; [2]Idaho National Laboratory

4:20 PM
Precipitation in 316 Stainless Steels under Irradiation in Light Water Reactors Condition: *Mahmood Mamivand*[1]; Ying Yang[2]; Dane Morgan[1]; [1]University of Wisconsin-Madison; [2]Oak Ridge National Laboratory

4:40 PM
Phase-Specific Nanoindentation of Wear-Resistant Alloys for Nuclear Power Plant Applications: *Peter Anderson*[1]; Marc Doran[1]; Ryan Smith[1]; David Gandy[2]; Suresh Babu[3]; [1]The Ohio State University; [2]Electric Power Research Institute; [3]University of Tennessee

5:00 PM
Design of Radiation Tolerant Materials via Interface Engineering: *Weizhong Han*[1]; [1]CAMP-Nano, State Key Laboratory for Mechanical Behavior of Materials,Xi'an Jiaotong University

Mechanical Behavior at the Nanoscale III — Mechanical Behaviors and Defect Dynamics of Nanostructured Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Monday PM
February 15, 2016
Room: 214
Location: Music City Center

Session Chair: Ting Zhu, Georgia Institute of Technology

2:00 PM Invited
Nanodomains in Nickel Enable Simultaneous High Strength and Ductility: "Self-Precipitation Hardening" without Second-Phase Precipitates: *Evan Ma*[1]; [1]Johns Hopkins University

2:40 PM
Deformation Mechanisms and Instabilities in Metallic Multilayer on the Nanoscale: *Stefan Sandfeld*[1]; Danial Pourjafar[1]; Ruth Schwaiger[2]; [1]University of Erlangen (FAU); [2]Karlsruhe Institute of Technology (KIT)

3:00 PM
The Origins of High Hardening and Low Ductility in Magnesium: Zhaoxuan Wu[1]; *William Curtin*[2]; [1]Institute of High Performance Computing, A*STAR; [2]Ecole Polytechnique Federale de Lausanne

3:20 PM
Transition of Deformation Modes in Hollow Cu-Zr Metallic Glass Nanolattices: *Seok-Woo Lee*[1]; Mehdi Zadeh[2]; David Chen[3]; Yong-Wei Zhang[2]; Julia Greer[3]; [1]University of Connecticut; [2]Institute of High Performance Computing, A*STAR; [3]California Institute of Technology

3:40 PM Break

4:00 PM Invited
Microstructural Stability under Wear of Binary Nanocrystalline Alloys with Improved Thermal Stability: *Blythe Clark*[1]; Nicolas Argibay[1]; Brad Boyce[1]; Timothy Furnish[1]; Michael Dugger[1]; Michael Chandross[1]; Christopher Schuh[2]; [1]Sandia National Laboratories; [2]Massachusetts Institute of Technology

4:40 PM
Investigation of Creep in Nanocrystalline CuTa: *B. Hornbuckle*[1]; Mansa Rajagopalan[2]; Scott Turnage[2]; Anthony Roberts[1]; Kiran Solanki[2]; Laszlo Kecskes[1]; Kris Darling[1]; [1]U.S. Army Research Laboratory; [2]Arizona State University

5:00 PM
Mechanical Scaling Behavior of Nanopopous Gold Based on 3D Structural Analysis and Indentation-based Testing: Kaixiong Hu[1]; Markus Ziehmer[1]; Ke Wang[2]; *Erica Lilleodden*[1]; [1]Helmholtz-Zentrum Geesthacht; [2]Hamburg University of Technology

Metal and Polymer Matrix Composites II — Metal Matrix Nanocomposites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Monday PM
February 15, 2016
Room: 110A
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Keynote
Effect of Defects on the Intrinsic Strength and Stiffness of Graphene: *Nikhil Koratkar*[1]; [1]Rensselaer Polytechnic Institute

2:40 PM Invited
Super-strong Light Metals by Populous Dispersed Nano-elements: *Xiaochun Li*[1]; [1]University of California

3:00 PM Invited
Toughening of Aluminum Matrix Nanocomposites via Spatial Arrays of B_4C Spherical Nanoparticles: *Lin Jiang*[1]; Hanry Yang[1]; Joshua Yee[1]; Xuan Mo[1]; Dalong Zhang[1]; Troy Topping[2]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis; [2]California State University, Sacramento

3:20 PM Invited
Progresses in Light Metal Multiscale Composites by Cryogenic Nanostructuring: *Kyu Cho*[1]; [1]US Army Research Laboratory

3:40 PM Break

4:00 PM Invited
Processing and Properties of Amorphous Alloy Matrix Nanocomposites: *Sandip Harimkar*[1]; [1]Oklahoma State University

4:20 PM Invited
Self-Lubricating Aluminum Matrix Nanocomposites Reinforced by Graphene Nanoplatelets: *Meysam Tabandeh-Khorshid*[1]; Emad Omrani[1]; Pradeep Menezes[2]; Pradeep Rohatgi[1]; [1]University of Wisconsin Milwaukee; [2]University of Nevada Reno

4:40 PM Invited
Mechanical Properties of Amorphous Metallic Alloys at High Strain Rate: *Dung Luong*[1]; [1]New York University

5:00 PM
Nanoparticle Assisted Processing for Immiscible Alloys: *Chezheng Cao*[1]; Lianyi Chen[1]; Jiaquan Xu[1]; Weiqing Liu[2]; Xiaochun Li[1]; [1]University of California, Los Angeles; [2]Harbin Institute of Technology

5:20 PM
Effect of Nano-particle Addition on Grain Structure Evolution of Friction Stir Processed Al 6061 during Post-weld Annealing: *Junfeng Guo*[1]; Bing Yang Lee[1]; Zhenglin Du[2]; Guijun Bi[1]; Ming Jen Tan[2]; Jun Wei[1]; [1]Singapore Institute of Manufacturing Technology (SIMTech); [2]Nanyang Technological University

Nanostructured Materials for Nuclear Applications — Session II

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Monday PM
February 15, 2016
Room: 101C
Location: Music City Center

Session Chairs: Osman Anderoglu, Los Alamos National Laboratory; Mikhail Sokolov, Oak Ridge National Laboratory

2:00 PM Invited
The History and Recent Progress in Development of the Advanced ODS 14YWT Ferritic Alloy for Radiation Tolerance: *David Hoelzer*[1]; Kevin Field[1]; Kinga Unocic[1]; Thak Sang Byun[2]; Jeoung Han Kim[3]; Stuart Maloy[4]; [1]Oak Ridge National Laboratory; [2]Pacific Northwest National Laboratory; [3]Hanbat National Laboratory; [4]Los Alamos National Laboratory

2:30 PM
Deformation Mechanisms of ODS Nanostructured Ferritic Steels: *Mercedes Hernández-Mayoral*[1]; Elvira Oñorbe[1]; Marta Serrano[1]; [1]CIEMAT

2:50 PM
Nanoscale Strengthening Mechanisms: Comparison of Different Obstacles in Fe: *Yury Osetsky*[1]; Roger Stoller[1]; [1]ORNL

3:10 PM
Microstructure and Strengthening Mechanism of Austenitic ODS Steels for High-Temperature Nuclear Applications: *Yinbin Miao*[1]; Kun Mo[2]; Zhangjian Zhou[3]; Xiang Liu[1]; Kuan-Che Lan[1]; Guangming Zhang[3]; Jun-Sang

Park[2]; Jonathan Almer[2]; James Stubbins[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Laboratory; [3]University of Science and Technology Beijing

3:30 PM Break

3:50 PM Invited
Processing and Properties of Nanostructured Fe-Cr Alloys: *Thak Sang Byun*[1]; David Hoelzer[2]; Hee Joon Jung[1]; Jeoung Han Kim[3]; Stuart Maloy[4]; [1]Pacific Northwest National Laboratory; [2]Oak Ridge National Laboratory; [3]Hanbat National University; [4]Los Alamos National Laboratory

4:20 PM
The Mechanical Properties of a PM2000 Oxide-Dispersion-Strengthened Alloy Tested by High Temperature Nanoindentation Testing: *Ude Hangen*[1]; Asta Richter[2]; Chun-Liang Cheng[3]; Doug Stauffer[1]; [1]Hysitron, INC.; [2]University of Applied Sciences Wildau; [3]National Dong-Hwa University

4:40 PM
Irradiation Induced Changes to Nano-particles in F/M ODS: *Tianyi Chen*[1]; Jonathan Gigax[1]; Eda Aydogan[1]; Di Chen[1]; Xuemei Wang[1]; Shigeharu Ukai[2]; Frank garner[3]; Lin Shao[1]; [1]Texas A&M University; [2]Hokkaido University; [3]Radiation Effects Consulting

5:00 PM
The Roles of Oxide Interfaces and Grain Boundaries in Helium Management in Nano-structured Ferritic Alloys: A First Principles Study: *Yong Jiang*[1]; Litong Yang[1]; Jian Xu[1]; G. Odette[2]; Yuan Wu[2]; Takuya Yamamoto[2]; Zhangjian Zhou[3]; Zheng Lu[4]; [1]Central South University; [2]University of California, Santa Barbara; [3]University of Science and Technology, Beijing; [4]Northeastern University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XV — Thermoelectric, Solar-cell, Fuel-cell & Battery Materials

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Shien Ping Feng, The University of Hong Kong; Clemens Schmetterer, Fraunhofer Institute

Monday PM
February 15, 2016
Room: 109
Location: Music City Center

Session Chairs: Shih-kang Lin, National Cheng Kung University; Chih-Ming Chen, National Chung Hsing University

2:00 PM Invited
Interfacial Reactions in the Ni/Ag-Sb and Ni/Ag-Ge Couples: *Sinn-wen Chen*[1]; Ling-chieh Chen[1]; Jen-chieh Wang[1]; Po-han Lin[1]; [1]National Tsing Hua University

2:20 PM
Thermal Stabilities and Properties of $AgBiS_2$ and $AgBi_3S_5$: a Review and Experimental Study: *Fiseha Tesfaye*[1]; Daniel Lindberg[1]; [1]Åbo Akademi University

2:40 PM
Interfacial Reactions between Tin and Ni-coated Bi2Te3: *Yu-Chen Tseng*[1]; Chih-Ming Chen[1]; [1]National Chung Hsing University

3:00 PM
Phase Equilibria of Ag–Ga–Te Thermoelectric Materials: *Yen-Te Cho*[1]; Hsin-jay Wu[1]; [1]Department of materials and Optoelectronic Science, National Sun Yat-Sen University

3:20 PM
Phase Equilibria of Thermoelectric Ag-Bi-Se System: *Cheng Hao-Yen*[1]; [1]National Sun Yat-Sen University

3:40 PM Break

4:00 PM
A Significant Improvement in the Electrocatalytic Stability of N-doped Graphene Nanosheets used as a Counter Electrode for Iodide/triiodide based Dye-sensitized solar cells and [Co(bpy)3]3+/2+ based Porphyrin-sensitized Solar Cells: *Zhai Peng*[1]; Feng Shien-Ping[1]; [1]The University of Hong Kong

4:20 PM
Formula Optimization of Titanium Dioxide Paste for Dye-sensitized Solar Cells: *Chih Chung Wu*[1]; Ting Chien Liu[1]; Chih Ming Chen[1]; [1]National Chung Hsing University

4:40 PM
Ab Initio Mechanistic Study on the Charging/Discharging Behaviors of the Layered-layered Lithium-rich Composite Cathode for Lithium-ion Batteries: *Yu-cheng Chuang*[1]; Ping-chun Tsai[1]; Shih-kang Lin[1]; [1]Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

5:00 PM
Investigation on the Phase Stability of Perovskite in La-Sr-Cr-Fe-O System and Its Long-term Operation: *Hooman Sabarou*[1]; Shadi Darvish[1]; Yu Zhong[1]; [1]Florida International University

Phase Transformations and Microstructural Evolution — Phase Transformations - Fundamentals - Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Monday PM
February 15, 2016
Room: 107B
Location: Music City Center

Session Chair: Yunzhi Wang, The Ohio State University

2:00 PM
Homogenization Behavior in the Au-Zn-Al and Al-Ag Systems: *Seth Imhoff*[1]; Amy Clarke[1]; Adam Farrow[1]; John Gibbs[1]; Joel Montalvo[1]; Damien Tourret[1]; George Havrilla[1]; Velma Lopez[1]; [1]Los Alamos National Laboratory

2:30 PM
Epsilon to Tau Phase Transformation in MnAl Alloy Systems: Ayse Genc[1]; Ozgun Acar[1]; *Eren Kalay*[1]; [1]METU

2:50 PM
Phase Field Modelling of Emulsion Formation: *Gyula Toth*[1]; Bjorn Kvamme[1]; [1]University of Bergen

3:10 PM
The Large Scale Synthesis of Aligned Plate Nanostructures: *Yang Zhou*[1]; Philip Nash[1]; [1]Illinois Institute of Technology

3:30 PM Break

3:50 PM
Powder Processing of Ultra Ultra High Carbon Steels: *Ibrahim Khalfallah*[1]; Alex Aning[1]; [1]Virginia Tech

4:10 PM
Production of Corrosion Resistance Steel: *Arnab Chatterjee*[1]; [1]NIT DURGAPUR

4:30 PM
Insights Into the Microstructure and Nucleation of the Zeta Phase in Transition Metal Carbides and Nitrides: *Hang Yu*[1]; Thompson Gregory[2]; Christopher Weinberger[1]; [1]Drexel University; [2]The University of Alabama

Phase Transformations and Microstructural Evolution — Phase Transformations in Fe-Alloys - Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Monday PM
February 15, 2016
Room: 108
Location: Music City Center

Session Chair: Amy Clarke, LANL

2:00 PM
Characterization of Transition Carbide Formation in Steels Processed by Quenching and Tempering or Quenching and Partitioning: *Daniel Coughlin*[1]; Amy Clarke[1]; Dean Pierce[2]; Jonathan Poplawsky[3]; Omer Dogan[4]; Paul Jablonski[4]; Kathy Powers[3]; Virginia Judge[1]; John Speer[2]; Emmanuel De Moor[2]; Kester Clarke[1]; [1]Los Alamos National Laboratory; [2]ASPPRC Colorado School of Mines; [3]Oak Ridge National Laboratory; [4]National Energy Technology Laboratory

2:30 PM
Simulated Welding Heat Affected Zone of a SAF2507 Super-duplex Stainless Steel by Gleeble Simulator: *Lilia Olaya-Luengas*[1]; Juan A. Pozo-Morejón[2]; Ivani S. de Bott[1]; [1]PUC-Rio; [2]Universidad Central "Marta Abreu" de Las Villas

2:50 PM
Microstructural Evolution and Embrittlement of Thermally Aged Cast Duplex Stainless Steels: *Sarah Mburu*[1]; R. Kolli[1]; Samuel Schwarm[1]; Daniel Perea[2]; Jia Liu[2]; Arielle Eaton[2]; Sreeramamurthy Ankem[1]; [1]University of Maryland; [2]Pacific Northwest National Laboratory

3:10 PM
Role of Alloying Elements on Thermal Stability of Duplex Stainless Steel: *David Garfinkel*[1]; Jonathan Poplawsky[2]; Wei Guo[2]; George Young[3]; Julie Tucker[1]; [1]Oregon State University; [2]Oak Ridge National Laboratory; [3]Knolls Atomic Power Laboratory

3:30 PM Break

3:50 PM
The Study of Lead Segregation Behavior of the Heterogeneous Nucleation in Steel: *Lu Xiong*[1]; Hongpo Wang[1]; [1]Chongqing University

4:10 PM
The Microstructure of As-Quenched 12Mn Steel: *John Morris*[1]; Christopher Kinney[1]; Liang Qi[2]; Ken Pytlewski[1]; Armen Khachaturyan[1]; Nack Kim[3]; [1]University of California Berkeley; [2]Univ. of Michigan; [3]POSTECH

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Bainite Transformation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Monday PM
February 15, 2016
Room: 110B
Location: Music City Center

Session Chairs: John Ågren, KTH, Royal Institute of Technology; Hatem Zurob, McMaster University

2:00 PM Invited
Carbon Enrichment in Austenite during Ferrite and Bainite Transformations in Fe-Mn-C Based Alloys: *Goro Miyamoto*[1]; Tadashi Furuhara[1]; [1]Tohoku University

2:30 PM
Incomplete Bainite Transformation in Fe-0.4C-3Si Alloy: *Huidong Wu*[1]; Goro Miyamoto[1]; Zhigang Yang[2]; Chi Zhang[2]; Tadashi Furuhara[1]; [1]Tohoku University; [2]Tsinghua University

2:50 PM
Particularities of Kinetics of Austenite Decomposition above and below Martensite-Start Temperature in the Carbide Free Low Alloyed Steel: *Igor Yakubtsov*[1]; Gary Purdy[2]; [1]Integrity Testing Laboratory Inc; [2]McMaster University

3:10 PM
On the Feathery Structure of Bainite: *Jiaqing Yin*[1]; Annika Borgenstam[1]; Mats Hillert[1]; [1]KTH Royal Institute of Technology

3:30 PM Break

3:50 PM Invited
Analysis of Mo Effect on the Kinetics of Ferrite and Bainitic Ferrite Formation: Jianing Zhu[1]; Zhigang Yang[1]; Chi Zhang[1]; Congyu Zhang[1]; *Hao Chen*[1]; [1]Tsinghua University

4:20 PM
Modelling the Condition of Upper and Lower Bainite Formation: *Ze nan Yang*[1]; Wei Xu[2]; Zhi gang Yang[1]; Chi Zhang[1]; Hao Chen[1]; Sybrand van der Zwaag[2]; [1]School of Materials Science and Engineering, Tsinghua University; [2]Faculty of Aerospace Engineering, TU Delft

4:40 PM
Effect of Boron on the Bainitic Transformation Kinetics after Ausforming Process: *Mingxin Huang*[1]; Binbin He[1]; Wei Xu[2]; [1]The University of Hong Kong; [2]Northeastern University

5:10 PM Panel Discussion

Rare Metal Extraction & Processing Symposium — Rare Earth Elements / Base & Rare Metals II

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Shafiq Alam, University of Saskatchewan; Hojong Kim, Penn State University; Neale Neelameggham, Ind LLC; Takanari Ouchi, MIT; Harald Oosterhof, Umicore

Monday PM
February 15, 2016
Room: 106A
Location: Music City Center

Session Chairs: Shafiq Alam, University of Saskatchewan; Hojong Kim, The Pennsylvania State University

2:00 PM Keynote
Recovery of Yttrium and Neodymium from Copper Pregnant Leach Solutions by Solvent Extraction: Rebecca Copp[1]; *Brent Hiskey*[1]; [1]University of

Arizona

2:35 PM
Calcined Nanocrystaline Layered Double Hydroxides for the Removal of Arsenate and Arsenite: Eman Wahbah[1]; *Yousef Mohassab*[2]; Manoranjan Misra[1]; Monalisa Panda[1]; [1]University of Utah; [2]University of Utah

3:00 PM
Experimental Study on Valuable Metals Dissolution from Copper Slag: *Ying Sun*[1]; Jing Zhang[1]; Yanze Wang[1]; Qiuju Li[1]; [1]Shanghai University

3:25 PM
Adsorption of Platinum and Palladium from Hydrochloric Acid Media by Hydrothermally Treated Garlic Waste Gel: Bo Liang[1]; Kai Huang[1]; Hongmin Zhu[1]; *Shafiq Alam*[1]; [1]University of Science and Technology Beijing

3:50 PM Break

4:10 PM
Pressure Oxidation Leaching of Gold-antimony Alloy: *Dou Aichun*[1]; [1]Jiangsu University, China

Recent Advancement on Stretchable and Wearable Electronics — Session II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, ORNL; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Jiahua Zhu, The University of Akron; Nuggehalli Ravindra, New Jersey Institute of Technology; Catherine Dubourdieu, CNRS - INL; Madan Dubey, US Army Research Lab

Monday PM
February 15, 2016

Room: 205C
Location: Music City Center

Session Chairs: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Kai Xiao, Oak Ridge National Laboratory; Wenchao Zhou, University of Arkansas

2:00 PM Keynote
A New Architecture for Flexible Large-area Electronic Systems: *Sigurd Wagner*[1]; Warren Rieutort-Louis[1]; Josue Sanz-Robinson[1]; Tiffany Moy[1]; Liechao Huang[1]; Yingzhe Hu[1]; Yasmin Afsar[1]; James Sturm[1]; Naveen Verma[1]; [1]Princeton University

2:30 PM Invited
Materials Integration for Flexible Electronics: Cu-interconnects, Supercapacitors: *Tolga Aytug*[1]; Pooran Joshi[1]; Matthew Rager[1]; [1]Oak Ridge National Laboratory

2:55 PM Invited
Post Processing and In Situ Processing for Low Thermal Budget Integration of Electronic Materials on Flexible Substrates: *Joo Hyon Noh*[1]; Pushpa Pudasaini[1]; Pooran Joshi[2]; Philip Rack[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:20 PM Invited
RF Devices based on 2D Materials for Flexible and Wearable Electronics: Matthew Chin[1]; Alex Mazzoni[1]; Pankaj Shah[1]; Robert Burke[1]; *Madan Dubey*[1]; Barbara Nichols[1]; [1]U.S. Army Research Laboratory

3:45 PM Break

4:10 PM Invited
Self-sensing Ionic Polymer-metal Composite Soft Robotic Actuator Integrated with Gallium-indium Alloy: Sarah Trabia[1]; Viljar Palmre[2]; *Kwang Kim*[1]; [1]University of Nevada, Las Vegas; [2]University of Nevada, Las Vegas; University of Texas, Houston Medical School

4:30 PM
DFT Approach to Electronic and Optical Properties of Foldable and Stretchable Graphene: Yan Chu[1]; Yan Liu[1]; *Nuggehalli Ravindra*[1]; [1]New Jersey Institute of Technology

4:50 PM
Flexible Copper Clad Laminate prepared by Roll-to-Roll Additive Manufacturing: *Bing An*[1]; Xinlin Xie[2]; Mingzhi Gao[2]; [1]Huazhong U. of Sci. & Tech.; [2]Zhuhai Richview Electronics Ltd.

5:10 PM
Silver Nanowire Networks for Flexible Electromagnetic Interface Shields: Ece Alpugan[1]; Sahin Coskun[1]; Arcan Dericioglu[1]; *Husnu Unalan*[1]; [1]Middle East Technical University

5:30 PM
Wearable Energy Storage Devices from Cotton T-shirts: Zan Gao[1]; Ningning Song[1]; Yunya Zhang[1]; *Xiaodong Li*[1]; [1]University of Virginia

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Thin Films and Coatings II
Corrosion and Wear Applications

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Nancy Michael, University of Texas at Arlington; Adele Carradò, IPCMS; Heinz Palkowski, TU Clausthal; Nuggehalli Ravindra, New Jersey Institute of Technology; Chintalapalle Ramana, Univ of Texas at El Paso

Monday PM
February 15, 2016

Room: 206B
Location: Music City Center

Session Chairs: Heinz Palkowski, Clausthal Univ of Technology/Institute of Metallurgy; Nancy Michael, Univ of Texas at Arlington

2:00 PM
Residual Stress Characterization of Thermal Spray Coatings: *Andrew Robertson*[1]; Jean-Baptiste Giouse[1]; Ken White[1]; [1]University of Houston

2:20 PM
Grain Boundary Segregation Effects on Post-Coalescence Thin Film Growth: *Tyler Kaub*[1]; Gregory Thompson[1]; [1]University of Alabama

2:40 PM
Influence of Interfacial Structure on the Phase Stability and Growth Stress in Cu/Nb Multilayered Films: *Qianying Guo*[1]; Li Wan[1]; Richard Martens[1]; Gregory Thompson[1]; [1]The University of Alabama

3:00 PM
Optimizing Coating Growth by Gas Jet Assisted Physical Vapor Deposition Using Through-process Simulations: *Theron Rodgers*[1]; Hengbei Zhao[2]; Haydn Wadley[2]; [1]Sandia National Laboratories; [2]University of Virginia

3:20 PM Break

3:40 PM
Comparing Two Steel Surface Treatments on the Bonding of Chitosan and the Resulting Corrosion Protection: *Holly Martin*[1]; Stephen Cornich[1]; Jacob Millerleile[1]; Snjezana Balaz[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Physics and Astronomy, Youngstown State University

4:00 PM
On the Boronizing Response of NiCrMo Alloys in Use for Wear and Corrosive Service: *Manuel Marya*[1]; Virendra Singh[1]; [1]Schlumberger Technology Corporation

4:20 PM
The Investigation on the Intermetallic Layer of Hot-dipping Al-10Si Alloy with 22MnB5 and DC51 Substrate: *Weidong Hu*[1]; Wende Dan[1]; Wangjun Peng[1]; Guangxin Wu[1]; Qing Du[1]; Jieyu Zhang[1]; [1]Shanghai University

4:40 PM
The Wetting Behavior of Fe-Si and Fe-Mn Alloy with Al-10%Si Coating: *Wende Dan*[1]; Guangxin Wu[1]; Bo Zhang[2]; Qing Du[1]; Weidong Hu[1]; Jieyu Zhang[1]; Wangjun Peng[1]; [1]Shanghai University; [2]Guiyang Institute of Industry Technology

5:00 PM
Thermally-Assisted Interfacial Diffusion in High Phosphorous Nickel Plating on a 4140 Low-alloy Steel: *Virendra Singh*[1]; Manuel Marya[1]; Tatiana Ayers[1]; [1]Schlumberger

5:20 PM Invited
Harvesting Light from Crystalline-Silicon via Processing Of Stressed Interface with Sol-Gel Based Silica: *Sufian Abedrabbo*[1]; Anthony Fiory[2]; Nuggehalli Ravindra[2]; [1]The Petroleum Institute; University of Jordan; [2]New Jersey Institute of Technology

Refractory Metals 2016 — Deformation of Refractory Metals And Processing & Properties of Refractory Metal Compounds

*Sponsored by:*TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Gary Rozak, HC Starck; Eric Taleff, Univ. Texas; Ivi Smid, Penn State

Monday PM
February 15, 2016
Room: 106B
Location: Music City Center

Session Chairs: Ivi Smid, Pennsylvania State University; Kevin Jaansalu, Royal Military College of Canads

2:00 PM
On Plasticity of Polycrystalline Rhenium at Room Temperature: *Peter Panfilov*[1]; Yuri Gornostyrev[2]; Vitalii Pilyugin[3]; Alexander Yermakov[1]; [1]Ural Federal University; [2]Institute of Quantum Materials Science; [3]Institute of Metalphysics of the Ural Branch of the RAS

2:20 PM
Thermally Activated Deformation Processes in Body-Centered Cubic Cr – How Microstructure Influences Strain-Rate Sensitivity: *Verena Maier*[1]; Anton Hohenwarter[2]; Reinhard Pippan[1]; Daniel Kiener[2]; [1]Austrian Academy of Science; [2]Montanuniversität Leoben

2:40 PM
Mechanical Properties of Cold-rolled Tungsten at Different Strain Rates: *Qiuming Wei*[1]; Laszlo Kecskes[2]; [1]University of North Carolina at Charlotte; [2]US-ARL

3:00 PM
Fracture of Severely Plastically Deformed Niobium and Tantalum: *Anton Hohenwarter*[1]; [1]Department of Materials Physics, Montanuniversität Leoben, Austria

3:20 PM
Stress Accommodation in Plastic Zone Ahead Crack Tip in Iridium: *Peter Panfilov*[1]; Mikhail Gutkin[2]; Elijah Borodin[1]; Elena Lyapunova[1]; [1]Ural Federal University; [2]Institute of Problems of Mechanical Engineering of the RAS

3:40 PM Break

3:55 PM
High Temperature Properties of Directionally Solidified Nb-rich Nb-Si-Cr Eutectics: *Florian Gang*[1]; Martin Heilmaier[1]; [1]Karlsruhe Institute of Technology

4:15 PM
Improving the Performance of Nb-Silicide Based Refractory Alloys through a Novel Cold Crucible Directional Solidification: *Hongsheng Ding*[1]; Kun He[1]; Shiqiu Liu[1]; Yongwang Kang[1]; Jingjie Guo[1]; [1]Harbin Institute of Technology

4:35 PM
Microstructure and Properties of a Ternary Eutectic Mo-Si-B Alloy: *Georg Hasemann*[1]; Florian Gang[2]; Martin Palm[3]; Iurii Bogomol[4]; Manja Krüger[1]; [1]Otto-von-Guericke University Magdeburg; [2]Karlsruhe Institute of Technology; [3]Max-Planck-Institut für Eisenforschung GmbH; [4]National Technical University of Ukraine "KPI"

4:55 PM
Size Effect of Intermetallic Compounds on Fracture Toughness of Mo-Si-B Alloys: *Jong Min Byun*[1]; Su-Ryong Bang[1]; Myung-Jin Suk[2]; Sung-Tag Oh[3]; Young Do Kim[1]; [1]Hanyang University; [2]Kangwon National University; [3]Seoul National University of Science and Technology

5:15 PM
Reactive Spark Plasma Sintering of Tungsten Borides Using Elemental Tungsten and Boron Powders: *Govind Choudhary*[1]; Ravi Kumar[1]; [1]Indian Institute of Technology (IIT),Madras

REWAS 2016 — Enabling & Understanding Sustainability - Building Materials & Slag Valorization

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Monday PM
February 15, 2016
Room: 104C
Location: Music City Center

Session Chair: To Be Announced

2:00 PM
Inorganic Polymers from Metallurgical Slags: High Performance Materials that Offer a Sustainable Alternative: *Yiannis Pontikes*[1]; Silviana Onisei[1]; Remus Ion Iacobescu[1]; Lubica Kriskova[1]; Bart Blanpain[1]; [1]KU Leuven

2:25 PM
Valorization of Bauxite Residue in a Technologically Realistic, Financially Viable Process: Are We Getting There?: *Yiannis Pontikes*[1]; Efthymios Balomenos[2]; Peter Tom Jones[1]; Koen Binnemans[1]; [1]KU Leuven; [2]NTUA

2:50 PM
Energy Generation from Waste Slags: Beyond Heat Recovery: *Jinichiro Nakano*[1]; James Bennett[1]; Anna Nakano[1]; [1]US Department of Energy National Energy Technology Laboratory

3:15 PM
Production of Lightweight Aggregate and Ceramic Balls by Utilizing Gold Tailing, Red Mud and Limestone: *Hyunsik Park*[1]; Soo-kyung Kim[1]; Doyun Shin[1]; Jeong-soo Sohn[1]; [1]Korea Institute of Geoscience and Mineral Resources

3:40 PM Break

4:00 PM
Accounting for Variation in Life Cycle Inventories: The Case of US Portland Cement Production in the U.S.: Xin Xu[1]; Jeremy Gregory[1]; *Randolph Kirchain*[1]; [1]Massachusetts Institute of Technology

4:25 PM
Kinetics of Dephosphorization from the Steelmaking Slag by Leaching with C6H8O7-NaOH-HCl Solution: *Yong Qiao*[1]; Jiang Diao[1]; Xuan Liu[1]; Xiaosa Li[1]; Tao Zhang[1]; Bing Xie[1]; [1]Chongqing University

4:50 PM
Treatment of Molten Steel Slag for Cement Application: *Joao Ferreira Neto*[1]; Catia Fredericci[1]; Joao Oswaldo Garcia Faria[1]; Fabiano Chotoli[1]; Tiago Ramos Ribeiro[1]; Antonio Malynowskyj[1]; Andre Luiz Nunis da Silva[1]; Valdecir Angelo Quarcioni[1]; Andre Alexandrino Lotto[1]; [1]Institute for Technological Research - IPT

5:15 PM
Incorporation of Sewage Sludge into Heavy Clay Ceramic Body: *Carlos Maurício Vieira*[1]; Isabela Areias[1]; [1]State University of the North Fluminense

REWAS 2016 — Enabling & Understanding Sustainability - Rare Earth Element Applications

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Monday PM
February 15, 2016

Room: 104B
Location: Music City Center

Session Chair: To Be Announced

2:00 PM
Life Cycle Assessment of Rare Earth Production from Monazite: *Nawshad Haque*[1]; Callum Browning[1]; Stephen Northey[2]; Warren Bruckard[1]; Mark Cooksey[1]; [1]CSIRO; [2]Monash University

2:25 PM
Rare Earth Metals Recycling from Spent CFLs and Permanent Magnets: *Brajendra Mishra*[1]; Patrick Eduafo[2]; Caleb Stanton[2]; [1]Worcester Polytechnic Institute; [2]Colorado School of Mines

2:50 PM
Recovery of Rare Earth Elements from the Ferrous Fraction of Electronic Waste: *Lars Klemet Jakobsson*[1]; Mark Kennedy[1]; Gabriella Tranell[1]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology

3:15 PM
Fundamental Study of the Rare Earths Recycling Through the Pyrotetallurgical Route - Phase Relations and Crystallization Behavior of the CaO-SiO2-Nd2O3 System: *Thu Hoai Le*[1]; Annelies Malfliet[1]; Bart Blanpain[1]; Muxing Guo[1]; [1]KU Leuven

3:40 PM Break

4:00 PM
Mitigating Supply Risk of Critical and Strategic Materials: The Role of Trade Policies: *Vasken Xhaxhollari*[1]; Michele Bustamante[1]; Gabrielle Gaustad[1]; [1]Rochester Institute of Technology

4:25 PM
Sustainable Processing of Phosphogypsum Waste Stream for the Recovery of Valuable Rare Earth Elements: Mugdha Walawalkar[1]; *Gisele Azimi*[1]; Connie Nichol[2]; [1]University of Toronto; [2]Agrium Inc.

4:50 PM
Life Cycle Analysis for Solvent Extraction of Rare Earth Elements from Aqueous Solutions: *Ehsan Vahidi*[1]; Fu Zhao[2]; [1]Division of Environmental and Ecological Engineering, Purdue University; [2]School of Mechanical Engineering, Purdue University

5:15 PM
Characteristics of Light Rare Earths from Korean Coal Power Plants Ash: *Ahn Whan*[1]; Thenepalli Thriveni[1]; [1]Korea Institute of Geosciences and Mineral Resources(KIGAM)

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Software/Programing

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Monday PM
February 15, 2016

Room: 106C
Location: Music City Center

Session Chairs: David Robertson, Missouri Univ. S&T; Gunnar Eriksson, GTT Technologies

2:00 PM Keynote
FactSage – Past, Present and Future: *Christopher Bale*[1]; [1]Ecole Polytechnoque

2:40 PM
Combining Thermodynamics, Education, and Software—a Neglected but Productive Combination: *Art Morris*[1]; [1]Thermart Software

3:00 PM
CALPHAD, Materials Design, and Materials Genome®: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

3:20 PM
Simulation of the Precipitation Kinetics of Aluminum Alloys and Magnesium Alloys: Fan Zhang[1]; *Weisheng Cao*[1]; Chuan Zhang[1]; Shuanglin Chen[1]; Jun Zhu[1]; Rainer Schmid-Fetzer[2]; [1]CompuTherm; [2]Clausthal University of Technology, Institute of Metallurgy

3:40 PM Break

4:00 PM
Paraequilibrium Phase Diagrams: *Arthur Pelton*[1]; Pertti Koukkari[2]; Risto Pajarre[2]; Gunnar Eriksson[3]; [1]Ecole Polytechnique; [2]VTT Technical Research Centre of Finland; [3]GTT-Technologies

4:20 PM
PolySection Projection Phase Diagrams with Applications to Heat Treating: *John Morral*[1]; [1]The Ohio State University

4:40 PM
Calculation of Property Contour Diagrams: *Shuanglin Chen*[1]; Weisheng Cao[1]; Fan Zhang[1]; Chuan Zhang[1]; Jun Zhu[1]; [1]CompuTherm, LLC

5:00 PM
Identifying Optimal Conditions for Alloys and Process Design Using the Mesh Adaptive Direct Search Algorithm: Aimen Gheribi[1]; *Jean-Phillipe Harvey*[2]; Patrice Chartand[1]; Eve Belisle[1]; Chris Bale[1]; Arthur Pelton[1]; [1]Ecole Polytechnique de Montreal; [2]McGill University

Transforming the Diversity Landscape — Taking Action

*Sponsored by:*TMS: Education Committee
Program Organizers: Natalie Larson, University of California, Santa Barbara; Wennie Wang, University of California, Santa Barbara; David Hwang, University of California, Santa Barbara

Monday PM
February 15, 2016

Room: 104A
Location: Music City Center

Session Chairs: Natalie Larson, University of California, Santa Barbara; Wennie Wang, University of California, Santa Barbara; David Hwang, University of California, Santa Barbara

2:00 PM
PEERs: Educating and Empowering Student Change Agents in the University of Washington's College of Engineering: *Alexis Nelson*[1]; [1]University

of Washington

2:20 PM
JSU ADVANCE: Bias Awareness Strategies to Affect University Policies: *Thomas Hudson*[1]; Loretta Moore[1]; Janice Lassiter-Mangana[1]; [1]Jackson State University

2:40 PM Invited
How to do Diversity at the PhD Level in STEM: Lessons and Tools from the Fisk-Vanderbilt Bridge Program: *Keivan Stassun*[1]; [1]Vanderbilt University

3:20 PM Break

3:40 PM
Panel of Past TMS Presidents: Transforming the Diversity Landscape: Dan Thoma; Robert Shull[1]; Brajendra Mishra[2]; J. Wayne Jones[3]; *Tresa Pollock*[4]; Diran Apelian[5]; [1]National Institute of Standards and Technology; [2]Colorado School of Mines; [3]University of Michigan; [4]University of California, Santa Barbara; [5]Worcester Polytechnic Institute

Ultrafine Grained Materials IX — Dislocation and Twinning Mechanisms

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Monday PM
February 15, 2016

Room: 209B
Location: Music City Center

Session Chairs: Hans Roven, Norwegian University of Science and Technology (NTNU); Qizhen Li, Washington State University

2:00 PM Invited
Synthesis of UFG Nanotwinned Alloys: *Andrea Hodge*[1]; [1]University of Southern California

2:30 PM Invited
Grain-Size Dependent Mechanical Behavior of Nanocrystalline Metals: *Marc Meyers*[1]; Eric Hahn[1]; Eduardo Bringa[1]; Yzhe Tang[1]; [1]UCSD

3:00 PM
Deformation Mechanism of a Strong and Ductile Nanotwinned Steel: *Mingxin Huang*[1]; Peng Zhou[1]; [1]The University of Hong Kong

3:20 PM
Phase-field Simulations of Microstructure Evolution under Elastic-plastic Deformation in Nanostructured Materials: *Shenyang Hu*[1]; Yulan Li[1]; Suveen Mathaudhu[2]; [1]Pacific Northwest National Laboratory; [2]University of California, Riverside

3:40 PM Break

4:00 PM Invited
Understanding Effects of Dislocation Emissions and Crystallographic Textures on Grain-size Dependent Behavior of Nanocrystalline Metals: *Caizhi Zhou*[1]; Rui Yuan[1]; Irene Beyerlein[2]; [1]Missouri University of Science and Technology; [2]Los Alamos National Laboratory

4:30 PM
Effects of Stacking Fault Energy on Dislocation Nucleation and Plastic Deformation Mechanisms in fcc Metals: *Valery Borovikov*[1]; Mikhail Mendelev[1]; Alexander King[1]; [1]The Ames Laboratory

4:50 PM
Developing Atomistically-Informed Interface Dislocation Dynamics (AIDD) Simulator: *Jian Wang*[1]; Shuai Shao[2]; Irene Beyerlein[2]; Amit Misra[3]; [1]University of Nebraska-Lincoln; [2]Los Alamos National Laboratory; [3]University of Michigan

5:10 PM
Nanodomains in Nickel Enable Simultaneous High Strength and Ductility: *Evan Ma*[1]; X.L. Wu[2]; [1]Johns Hopkins University; [2]Inst of Mechanics

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Fundamental and Unique Techniques to Create 3D Architectures II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Tuesday AM
February 16, 2016

Room: 211
Location: Music City Center

Session Chairs: Nitin Chorpa, The University of Alabama; Jinwoo Hwang, The Ohio State University

8:30 AM Invited
Effect of Rapid Thermal Annealing vs. Ta Thickness on Anisotropy of Perpendicular Magnetic Tunnel Junctions: *Subhadra Gupta*[1]; Billy Clark[1]; [1]University of Alabama

9:00 AM Invited
Three-Dimensional Imaging of Point Defects in Functional Materials Using Quantitative STEM: *Jinwoo Hwang*[1]; [1]The Ohio State University

9:30 AM Invited
Invited: Contact Thermal Resistance between Individual Nanostructures: *Deyu Li*[1]; [1]Vanderbilt University

10:00 AM
Size-Dependence in Thermo-Mechanical Characterization of Multifunctional Nanocomposite Materials: *V. U. Unnikrishnan*[1]; [1]The University of Alabama

10:20 AM Break

10:40 AM
Synthesizing Self-assembled 3D Materials Using Biomaterial Scaffolds: *Venkatanarayana prasad Sandireddy*[1]; Michael Z Hu[2]; Soydan Ozcan[2]; Ramki Kalyanaraman[1]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Laboratory

11:00 AM
Synthesis of 3D Optical Metamaterials through Directional Solidification of Eutectics: *Kaitlin Tyler*[1]; Julia Kohanek[1]; Jinwoo Kim[1]; Paul Braun[1]; [1]University of Illinois Urbana Champaign

11:20 AM
Fabrication of Tubular Structures with Optimized Nanoporous Sandwich Walls: *Theresa Juarez*[1]; Andrea Hodge[1]; [1]University of Southern California

11:40 AM
Self-Assembled Ultra High Strength, Ultra Stiff Mechanical Metamaterials Based on Inverse Opals: Jefferson do Rosário[1]; *Erica Lilleodden*[2]; Martin Waleczek[3]; Roman Kubrin[1]; Alexander Petrov[1]; Pavel Dyachenko[1]; Julian Sabisch[2]; Kornelius Nielsch[3]; Norbert Huber[2]; Manfred Eich[1]; Gerold Schneider[1]; [1]Hamburg University of Technology; [2]Helmholtz-Zentrum Geesthacht; [3]University of Hamburg

12:00 PM
Flip-Chip GaN LEDs Using Photoelectrochemical Liftoff: *David Hwang*[1]; Benjamin Yonkee[1]; Burhan Saifaddin[1]; Steven DenBaars[1]; [1]University of California, Santa Barbara

7th International Symposium on High Temperature Metallurgical Processing — Alloys and Materials Preparation

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Tuesday AM
February 16, 2016

Room: 105B
Location: Music City Center

Session Chairs: P. Chris Pistorius, Carnegie Mellon University; Merete Tangstad, NTNU

8:30 AM Introductory Comments

8:35 AM
Zinc and Refractories – A Nasty Relation: *Dean Gregurek*[1]; Christine Wenzl[1]; Alfred Spanring[1]; Stefanie Redik[1]; [1]RHI AG

8:55 AM
Preliminary Study on Preparation of Al-Sc Master Alloy in Na3AlF6-K3AlF6-AlF3 Melt: *Zhongliang Tian*[1]; Yanqing Lai[1]; Kai Zhang[1]; Xun Hu[1]; Hongliang Zhang[1]; Jie Li[1]; [1]School of Metallurgy and Environment, Central South Unviersity

9:15 AM
Effect of the Reductants on the Production of Iron Based Alloys from Mill Scale by Metallothermic Process: *Mehmet Bugdayci*[1]; Ahmet Turan[2]; Murat Alkan[3]; Onuralp Yucel[1]; [1]Istanbul Technical University; [2]Yalova University; [3]Mineral Reseach& Exploration General Directorate

9:35 AM
Production of FeMn Alloys with Heat Treated Mn-nodules: *Merete Tangstad*[1]; Eli Ringdalen[2]; Edmundo Manilla[3]; Daniel Davila[3]; [1]NTNU; [2]SINTEF; [3]Autlan

9:55 AM
Experimental Study on Iron-based Alloy as Cladding Layer—Improving High Temperature Oxidation Resistance of Furnace Alloy: *Yanze Wang*[1]; Chen Chen[1]; Xin Hong[1]; [1]Shanghai University

10:15 AM Break

10:30 AM
Production of ZrB2-B4C Composite Materials VIA SHS Process: *Kagan Benzesik*[1]; Mehmet Bugdayci[1]; Ahmet Turan[2]; Onuralp Yucel[1]; [1]Istanbul Technical University; [2]Yalova University

10:50 AM
Thermodynamic Analysis and Experiments on Vacuum Separation of Sn-Sb Alloy: *Junjie Xu*[1]; Lingxin Kong[1]; Bin Yang[1]; Yifu Li[2]; Tao Qu[1]; Yongnian Dai[2]; Kunhua Wu[3]; Anxiang Wang[2]; [1]National Engineering Laboratory for Vacuum Metallurgy, China; [2]National Engineering Laboratory for Vacuum Metallurgy, China; [3]National Engineering Laboratory for Vacuum Metallurgy, China

11:10 AM
Simulation of Solidification Microstructure of 30Cr2Ni4MoV Steel Ingot under Different Intensities of Mechanical Oscillation Condition: *ShuangYu Du*[1]; JieYu Zhang[1]; Bo Wang[1]; SenYang Qian[1]; Jian Zhao[1]; [1]Shanghai University

11:30 AM
Preparation and Microstructure of Al-Sc-Zr Alloys Using Electrolysis Method in Cryolite Based Molten Salt: *Zengjie Wang*[1]; Xuemei Xiang[2]; Yi Qian[2]; Jilai Xue[2]; [1]College of Materials Science and Engineering, Beijing University of Technology; [2]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

11:50 AM
Experimental Study on Effect of Microstructures of Nb-V-Ti Microalloy Slabs on Direct Charging Cracks: *Bang Lun Wang*[1]; Feng Lian Wang[1]; [1]Anhui Polytechnic University

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

*Sponsored by:*TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Tuesday AM
February 16, 2016

Room: 101B
Location: Music City Center

Session Chair: James Cole, Idaho National Laboratory

8:30 AM Invited
Accelerated Irradiation for Emulation of Radiation Damage in Reactor: *Gary Was*[1]; Arthur Motta[2]; Brian Wirth[3]; [1]University of Michigan; [2]Pennsylvania State University; [3]University of Tennessee

9:00 AM
Self-ion Irradiation Induced Dispersoid Instabilities and Dispersiod-defect Interactions in ODS Alloys: *Tianyi Chen*[1]; Jonathan Gigax[1]; Hyosim Kim[1]; Chao-Chen Wei[1]; Di Chen[1]; Frank Garner[2]; Lin Shao[1]; [1]Texas A&M University; [2]Radiation Effects Consulting

9:20 AM
Microstructural and Nanomechanical Characteristics of an Ion-Irradiated Lanthana-Bearing Nanostructured Ferritic Steel: Somayeh Pasebani[1]; Ankan Guria[1]; Jatuporn Burns[2]; Yaqiao Wu[2]; *Indrajit Charit*[1]; Darryl Butt[2]; James Cole[3]; Lin Shao[4]; Lloyd Price[4]; [1]University of Idaho; [2]Boise State University; [3]Idaho National Laboratory; [4]Texas A&M University

9:40 AM
Oxidation of FeCrAl Alloys in Simulated PWR Environments during In-situ Proton Irradiation: *Peng Wang*[1]; Gary S. Was[1]; [1]University of Michigan

10:00 AM Break

10:20 AM Invited
Ion Irradiation of Thin Foils: Mechanisms, Modeling, and Prediction of Neutron Damage: *Marquis Kirk*[1]; Meimei Li[1]; [1]Argonne National Laboratory

10:50 AM
Ion Irradiation Damage in Ferritic/Martensitic Steel T91: *Xiang Liu*[1]; Yinbin Miao[2]; David Krumwiede[3]; Peter Hosemann[3]; Meimei Li[2]; Marquis Kirk[2]; James Stubbins[1]; [1]University of Illinois at Urbana Champaign; [2]Argonne National Laboratory; [3]University of California, Berkeley

11:10 AM
Suppression of Void Nucleation during Self-ion Irradiation by Interaction of Injected Interstitial Effect and Ion Beam Rastering: *Frank Garner*[1]; Jonathan Gigax[2]; Tianyi Chen[2]; Eda Aydogan[2]; Di Chen[2]; Lin Shao[2]; [1]Radiation Effects Consulting; [2]Texas A&M University

11:30 AM
Utilizing Sandia's In-situ Ion Irradiation TEM to Elucidate Governing Mechanisms in Complex Environments: Brittany Muntifering[1]; Sarah Blair[1]; Cajer Gong[1]; Aaron Dunn[1]; Remi Dingreville[1]; Janmin Qu[2]; *Khalid Hattar*[1]; [1]Sandia National Laboratories; [2]Northwestern University

11:50 AM
Ion Irradiation Induced Defect Evolution in Ni and Ni-Based FCC Binary Alloys: *Ke Jin*[1]; Hongbin Bei[1]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory

Additive Forming of Components - Tailoring Specific Material Properties in Low Volume Production — Additive Manufacturing of Ti-Based Alloys

Sponsored by:
Program Organizers: Judith Schneider, University of Alabama at Huntsville; Mark Stoudt, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory; Lee Semiatin, US Air Force Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology; Eric Lass, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.

Tuesday AM
February 16, 2016
Room: 205B
Location: Music City Center

Session Chairs: John Lewandowski, Case Western Reserve University; Edwin Schwalbach, AFRL

8:30 AM Invited
Tailoring Titanium Alloy Compositions for Optimum Additive Manufacturing: Brian Welk[1]; *Hamish Fraser*[1]; [1]The Ohio State University

9:00 AM
Microstructure and Mechanical Properties of a Complex Industrial Component: a Case Study of Electron Beam Melting Additive Manufactured Ti-6Al-4V Impeller: Pan Wang[1]; Xipeng Tan[2]; *Mui Ling Sharon Nai*[3]; Shu Beng Tor[2]; Jun Wei[3]; [1]Singapore Institute of Manufacturing Technology (SIMTech) ; [2]Nanyang Technological University; [3]Singapore Institute of Manufacturing Technology (SIMTech)

9:20 AM
Anisotropic Mechanical Properties in a Big-sized Ti-6Al-4V Plate Fabricated by Electron Beam Melting: *Pan Wang*[1]; Mui Ling Sharon Nai[2]; Xipeng Tan[3]; Wai Jack Sin[2]; Shu Beng Tor[3]; Jun Wei[2]; [1]Singapore Institute of Manufacturing Technology (SIMTech) ; [2]Singapore Institute of Manufacturing Technology (SIMTech); [3]Singapore Centre for 3D Printing, School of Mechanical & Aerospace Engineering, Nanyang Technological University

9:40 AM
Mechanical Anisotropy at High Temperature in Additively Manufactured Ti6Al4V: *Leila Ladani*[1]; Jafar Razmi[2]; [1]University of Connecticut ; [2]University of Connecticut

10:00 AM Break

10:20 AM
Microstructure Evolution, Tensile and Dynamic Properties, and Computational Modeling in Ti-6Al-4V and Inconel 718 Alloys Manufactured by Laser Engineered Net Shaping: *Yuwei Zhai*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

10:40 AM
Optimization of the Mechanical Properties of the Ti-6Al-4V Alloy Fabricated By Additive Manufacturing Using Thermochemical Processes: *GUNEY MERT BILGIN*[1]; Arcan Dericioglu[1]; Ziya Esen[2]; Seniz Reyhan Kushan Akin[2]; [1]Middle East Technical University; [2]Çankaya University

11:00 AM
Effects of Microstructure on the Mechanical Properties of Direct Laser Deposited Ti-6Al-4V: *Brian Torries*[1]; Amanda Sterling[1]; Nima Shamsaei[1]; Linkan Bian[1]; Scott Thompson[1]; [1]Mississippi State University

11:20 AM
Fracture, Fatigue and Microstructural Informatics of EBM Ti-6Al-4V: *Mohsen Seifi*[1]; Ayman Salem[2]; Daniel Satko[2]; Tim Horn[3]; Ola Harrysson[3]; Jack Beuth[4]; John Lewandowski[1]; [1]Case Western Reserve University; [2]Materials Resources LLC; [3]North Carolina State University; [4]Carnegie Mellon University

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Qualification of Novel Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Tuesday AM
February 16, 2016
Room: 205A
Location: Music City Center

Session Chairs: Ryan Wicker, University of Texas - El Paso; Frank Liou, Missouri University of Science & Tech

8:30 AM Invited
Improved Part Production Using Layerwise Monitoring and Control in Metallic Powder Bed Fusion Additive Manufacturing Processes: *Ryan Wicker*[1]; Jorge Mireles[1]; [1]The University of Texas at El Paso

9:00 AM
Selective Laser Melting of TiB2/H13 Steel Bulk Nanocomposites: Influence of Nanoscale Reinforcement: *Bandar AlMangour*[1]; Dariusz Grzesiak[2]; Jenn-Ming Yang[1]; [1]UCLA; [2]West Pomeranian University of Technology

9:20 AM
Superelasticity Improvement on SLM Fabricated NiTi Parts: *Soheil Saedi*[1]; Ali Turabi[1]; Mohsen Taheri Andani[2]; Narges Shayesteh Moghaddam[2]; Mohammad Elahinia[2]; Haluk Karaca[1]; [1]university of kentucky; [2]University of Toledo

9:40 AM
Mechanical and Corrosion Properties of CoCrFeNiTi-based High-entropy Alloy Additive Manufactured Using Selective Electron Beam Melting: *Tadashi Fujieda*[1]; Hiroshi Shiratori[2]; Kosuke Kuwabara[1]; Mamoru Hirota[1]; Takahiko Kato[1]; Kenta Yamanaka[2]; Yuichiro Koizumi[2]; Akihiko Chiba[2]; [1]Hitachi, Ltd.; [2]Tohoku University

10:00 AM Break

10:20 AM Invited
Model-Based Qualification for Directed Energy Deposition Processes: *Frank Liou*[1]; [1]Missouri University of Science and Technology

10:50 AM
Direct Energy Deposition Additive Manufacturing of Magnetic Shape-Memory Alloys: Jakub Toman[1]; Yuval Krimer[1]; Peter Mullner[2]; *Markus Chmielus*[1]; [1]University of Pittsburgh; [2]Boise State University

11:10 AM
Matrix Grain Refinement in Functionally Graded Ti-6Al-4V/TiB Composite Fabricated by LENS Additive Manufacture: *Denver Seely*[1]; Hongjoo Rhee[1]; Mark Horstemeyer[1]; [1]Mississippi State University/Center for Advanced Vehicular Systems

11:30 AM
Microstructure and High Temperature Tensile Deformation Behavior of Ni-1.6%Si Metal Manufactured by Laser Metal Deposition: *Kee-Ahn Lee*[1]; Chul-O Kim[1]; Soon-Hong Park[2]; Ji-Hoon Yu[3]; [1]Andong National University; [2]RIST; [3]Korea Institute of Materials Science

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session III

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Tuesday AM
February 16, 2016
Room: 103B
Location: Music City Center

Session Chairs: Peter Hosemann, University of California Berkeley; María Teresa Pérez Prado, IMDEA Materials Institute

8:30 AM Invited
Characterization of Dislocation and Twinning Activity by EBSD-assisted Trace Analysis: Application to Unravel Grain Size Effects on the Plasticity of Pure Mg Polycrystals: Carmen Cepeda-Jiménez[1]; Jon M. Molina-Aldareguia[1]; *María Teresa Pérez Prado*[1]; [1]IMDEA Materials Institute

9:00 AM
Investigation of the Temperature Dependence of Mechanical Deformation in a-uranium: *Christopher Calhoun*[1]; Elena Garlea[2]; Thomas Sisneros[3]; Ke An[4]; Sean Agnew[1]; [1]University of Virginia; [2]Y-12 National Security Complex; [3]Los Alamos National Laboratory; [4]Oak Ridge National Laboratory

9:20 AM
Using FFT Simulations to Understand EBSD Twinning Characterization: *M. Arul Kumar*[1]; Irene Beyerlein[1]; Rodney McCabe[1]; Carlos Tome[1]; [1]Los Alamos National Lab

9:40 AM
The Effect of Texture on Multi-scale Strain Patterns in Magnesium AZ31 Investigated by In Situ Microscopic Image Correlation: *Cahit Aydiner*[1]; Enver Kapan[1]; Sevinc Ucar[1]; Nima Shafaghi[1]; [1]Bogazici University

10:00 AM Break

10:20 AM Invited
In Situ Deformation Study of Nanotwinned and Single Crystal Cu Implanted with He Using a Novel Implantation Method: *Peter Hosemann*[1]; Zhangjie Wang[2]; Frances Allen[3]; Ian Winter[1]; Daryl Chrzan[1]; Zhiwei Shan[2]; [1]University of California Berkeley; [2]Xi'an Jiaotong University; [3]Lawrence Berkeley National Laboratory

10:50 AM
Quantification of Twinning for Sub-Grid Mesoscale Modeling: *Veronica Livescu*[1]; Curt Bronkhorst[1]; Irene Beyerlein[1]; Hashem Mourad[1]; Manuel Lovato[1]; Olivia Dippo[1]; [1]Los Alamos National Laboratory

11:10 AM
Quantitative Analysis of Local Stress Concentration in Nanotwinned Metal during Plastic Deformation: *Kui Du*[1]; Ning Lu[1]; Lei Lu[1]; Hengqiang Ye[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

11:30 AM
High-resolution Plastic Strain Mapping during Tensile Deformation of a Magnesium Alloy: *Alberto Orozco-Caballero*[1]; David Lunt[1]; João Quinta da Fonseca[1]; [1]The University of Manchester

11:50 AM
Unique Deformation Mechanisms in Mg-Y from In Situ Mechanical Test: *Leyun Wang*[1]; Julian Sabisch[2]; Erica Lilleodden[1]; [1]Helmholtz-Zentrum Geesthacht; [2]University of California, Berkeley

12:10 PM
Tensile Deformation of CP Titanium Using In-situ EBSD Analysis and Crystal Plasticity Simulations: *Joo-Hee Kang*[1]; Ji Hoon Kim[2]; Chang-Seok Oh[1]; [1]Korea Institute of Materials Science; [2]Pusan National University

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Soft and Bio Magnetic Materials

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday AM
February 16, 2016
Room: 209C
Location: Music City Center

Session Chairs: Paul Ohodnicki, National Energy Technology Laboratory (NETL) Carnegie Mellon Universisty; E.H. Brück, Delft University of Technology

8:30 AM Invited
Unusual Magneto-Elasticity of Fe-(Co), Ga, (Al, Ge, Si) Alloys: *Manfred Wuttig*[1]; [1]University of Maryland

9:00 AM Invited
Synthesis of Fe3O4 Nanostructures and Their Potential Applications: *Jun Ding*[1]; [1]National Univeristy of Singapore

9:30 AM
Tunable Control of Magnetic Nanofluids: *Raju Ramanujan*[1]; Z Wang[1]; A Ray[1]; V Verma[1]; R Wu[1]; Z Wang[1]; [1]Nanyang Technological University

9:50 AM Break

10:10 AM
The Role of Alloying Elements on the Magnetostriction of Fe: *Nicholas Jones*[1]; Gabriela Petculescu[2]; Marilyn Wun-Fogle[1]; James Restorff[1]; Arthur Clark[3]; Kristl Hathaway[4]; Deborah Schlagel[5]; Thomas Lograsso[5]; [1]Naval Surface Warfare Center, Carderock Division; [2]University of Lousiana at Lafayette; [3]Clark Associates; [4]Spectrum Technology Group, Inc.; [5]Ames Laboratory

10:30 AM
Textures of Non-oriented Electrical Steels Processed by Skew Rolling: *Youliang He*[1]; Erik Hilinski[2]; [1]Natural Resources Canada; [2]Tempel Steel

10:50 AM
First Order Reversal Curve (FORC) Analysis of Iron-Nickel Zinc Ferrite Nanocomposites: *Anit Giri*[1]; S. Lund[2]; C. Dennis[2]; [1]TKC Global/US Army Research Laboratory; [2]National Institute of Standards and Technology

11:10 AM
FeCo Alloy Mesochains by Co-precipitation: *Dustin Clifford*[1]; Carlos Castano[1]; Amos Lu[1]; Everett Carpenter[1]; [1]Virginia Commonwealth University

11:30 AM
Magnetic and Structural Correlation of Ferrite-coated Ferrous Powder Soft Magnetic Composites: *Katie Jo Sunday*[1]; Francis Hanejko[2]; Mitra Taheri[1]; [1]Drexel University; [2]GKN Hoeganaes

Advanced Materials in Dental and Orthopedic Applications — Session III

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Ana Ribeiro, National Institute of Metrology Quality and Technology; Reginald Hamilton, The Pennsylvania State University

Tuesday AM
February 16, 2016
Room: 206A
Location: Music City Center

Session Chairs: Holly J. Martin, Youngstown State University; Ana Ribeiro, Instituto Nacional de Metrologia, Qualidade e Tecnologia - INMETRO

8:30 AM
The Improvement in Fatigue, Biocompatibility and Corrosion Resistance of Low Modulus Beta Titanium Alloy using UNSM & LSP: *Rohit Jagtap*[1];

Vijay Vasudevan[1]; Abhishek Telang[1]; S. Mannava[1]; [1]University of Cincinnati

8:50 AM
Thermal Stability and Structural Characteristics of Metastable Beta-type Ti-Nb Alloys for Implant Applications: *Mariana Calin*[1]; Matthias Bönisch[1]; Arne Helth[1]; Stefan Pilz[1]; Annett Gebert[1]; Werner Skrotzki[2]; Lars Giebeler[1]; Jürgen Eckert[1]; [1]IFW Dresden; [2]TU Dresden

9:10 AM
Novel Approach for Manufacturing Technological Based Characterization of Residual Strength Behavior of Ceramic for Dental Applications: Berend Denkena[1]; Thilo Grove[1]; Lukas Gottwik[2]; Britta Hering[1]; Meinhard Kuntz[2]; *Andi Wippermann*[1]; [1]Leibniz Universität Hannover; [2]CeramTec GmbH

9:30 AM Invited
Titania Nanotube Arrays as Interfaces for Neural Prostheses: Jonathan Sorkin[1]; Stephen Hughes[1]; Paulo Soares[2]; *Ketul Popat*[1]; [1]Colorado State University; [2]Pontifícia Universidade Católica do Paraná

9:55 AM Break

10:10 AM
Structural Characteristics and Mechanical Behavior of Selective Laser Sintered Porous Ti-6Mo Alloy for Biomedical Applications: *Fangxia Xie*[1]; Xueming He[1]; Jinghu Yu[1]; Yanming Lv[1]; Meiping Wu[1]; [1]Jiangnan University

10:30 AM
Effect of MMT Nanoparticle Clay on Flexural Properties of Polymer Based BisGMA/TEGDMA Resin: *Duclerc Parra*[1]; Luiza Campos[2]; Letícia Boaro[3]; Henrique Ferreira[1]; Ademar Lugão[1]; Vijaya Rangari[4]; [1]IPEN (Institute of Nuclear and Energy Research, University of São Paulo); [2]IPEN (Institute of Nuclear and Energy Research, University of São Paulo) ; [3]University of Santo Amaro; [4]Tuskegee University

10:50 AM
Tensile Mean Strain Effects on the Fatigue Behavior of Superelastic Nitinol: *Benjamin Rutherford*[1]; M.J. Mahtabi[1]; Nima Shamsaei[1]; [1]Mississippi State University

11:10 AM
Bioactivity and Mechanical Stability of Ti6Al4V Implant Superplastically Embedded with Hydroxyapatite (HA) in Rats: *Hidayah Mohd Khalid*[1]; [1]University of Malaya

11:30 AM
Improving the Compatibility of a Veneering Ceramic System Using a New Graded Interlayer Composition: *Sheila Passos*[1]; Bernard Linke[1]; Paul Major[1]; John Nychka[1]; [1]University of Alberta

Alloys and Compounds for Thermoelectric and Solar Cell Applications IV — Session III

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, CRISMAT laboratory; Stephane Gorsse, ICMCB-CNRS; Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University; CW Nan, Tsinghua University; G. Jeffrey Snyder, Northwestern University; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday AM
February 16, 2016
Room: 103C
Location: Music City Center

Session Chairs: Albert Wu, National Central University; Teruyuki Ikeda, Ibaraki University

8:30 AM Invited
Multicomponent Silicides for Thermoelectrics. Why Thermodynamic of Materials is Required? *Jean Claude Tedenac*[1]; Philippe Jund[2]; Alexandre Berche[3]; [1]ICG; [2]University of Montpellier; [3]Institut Charles Gerhardt

8:50 AM Invited
Strategies and Approaches for Cost-effective Thermoelectricity: From Materials to Devices: *Lidong Chen*[1]; Xun Shi[1]; [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences

9:10 AM Invited
Enhancement of Thermoelectric Performance Calcium Cobaltite through Cation Grain Boundary Segregation: *Xueyan Song*[1]; Cullen Boyle[1]; Paulo Carvillo[1]; Yun Chen[1]; Ever Barbero[1]; Dustin McIntyre[2]; Paul Barnes[3]; [1]West Virginia University; [2]National Energy Technology Laboratory; [3]Army Research Laboratory

9:30 AM Invited
Strategies for Improving the Thermoelectric Performance in Fe2VAl-type Heusler Compounds
: *Ernst Bauer*[1]; Igor Kanpp[1]; Ronja Kamelreiter[1]; Karina Bulgakova[1]; Florain Mussnig[1]; Kunnummel[1]; Peter Rogl[2]; Peter Prenninger[3]; [1]Vienna University of Technology; [2]University of Vienna; [3]AVL Graz

9:50 AM Invited
Tetrahedrites: A Way for Sustainable Thermoelectrics?: *Antonio Pereira Goncalves*[1]; Elsa Branco Lopes[1]; Judith Monnier[2]; Eric Alleno[2]; Claude Godart[2]; Jean-Baptiste Vaney[3]; Bertrand Lenoir[3]; [1]Instituto Superior Técnico; [2]Institut de Chimie et des Matériaux de Paris Est (ICMPE), UMR 7182 CNRS, CMTR; [3]Université de Lorraine

10:10 AM Break

10:30 AM Invited
Ni/(Bi0.25Sb0.75)2Te3 and Ni/Bi2(Se0.1Te0.9) Interfacial Reactions: *Sinn-wen Chen*[1]; Ting-ruei Yang[1]; Haw-wen Hsiao[1]; Hsu-shen Chu[2]; Jenn-dong Huang[2]; [1]National Tsing Hua University; [2]Industrial Technology Research Institute

10:50 AM Invited
Development of High-performance n-type $Bi_2(TeSe)_3$ Thermoelectric Alloys by Powder Metallurgical Process: *Jing-Feng Li*[1]; Yu Pan[1]; [1]Tsinghua University

11:10 AM Invited
Development of Large Scale Production of p-type Bi2Te3 Alloys with High Performance via Powder Metallurgy Approach: *Soon-Jik Hong*[1]; Chulhee Lee[1]; [1]Kongju National University and Institute for Rare Metals

11:30 AM Invited
Effect of Excess Magnesium on Mg2Sn Based Thermoelectric Materials: *Matthew Barnett*[1]; Rameshkumar Varma[1]; Sitarama Kada[1]; [1]Deakin University

11:50 AM
Synthesis and Grain Growth Rates of Ti-Ni-Sn Based Thermoelectric Alloys: *Jacob Young*[1]; Haoxing Yang[1]; Ramana Reddy[1]; [1]The University of Alabama

Alumina & Bauxite — Digestion

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Paul McGlade, GHD

Tuesday AM
February 16, 2016
Room: 203A
Location: Music City Center

Session Chair: Benny Raahauge, FLSmidth

8:30 AM Introductory Comments

8:35 AM
Effect of Different Silica Mineral Compositions on the Digestion Results in Bayer Process: *minghui Luo*[1]; cao wenzhong[1]; Zhang Liping[1]; [1]Nanchang University

9:00 AM
Effect of Lime Addition during Digestion on Stability of Digested Liquor of Diasporic Bauxite: Tao Jiang[1]; *Xiao-lin Pan*[1]; Haiyan Yu[1]; Xianlin Hou[1]; Ganfeng Tu[1]; Yu Lu[1]; Ren Zhang[1]; [1]Northeastern University

9:25 AM
Influence Factors of Stirring Speed of Self-stirring Tubular Reactor Used in Bauxite Digestion Process: Zhang Zimu[1]; Zhao Qiuyue[1]; Zhang Dianhua[1]; *Zhang Ting'an*[1]; Liu Yan[1]; Lv Guozhi[1]; [1]Northeastern University

9:50 AM Break

10:05 AM
Leaching Kinetics for Recovering Alumina from Waste Tricalcium Aluminate Generated after Filtration of Bayer's Liquor: *Balakrushna Padhi*[1]; [1]National Aluminium Company Limited

10:30 AM
Industrial Implementation Characteristics of Aluminates Liquor Low-temperature Desilication Technology: *Vadim Lipin*[1]; [1]Saint Petersburg State Polytechnical University

10:55 AM
Study on the Influence of Chemical Additives during the Digestion of Bauxite: *Cao Wenzhong*[1]; Li Kai[1]; Tian Weiwei[1]; Zhong Hong[2]; [1]Nanchang University; [2]Central South University

Aluminum Alloys, Processing and Characterization — Corrosion Resistance

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Tuesday AM
February 16, 2016

Room: 201B
Location: Music City Center

Session Chair: William Golumbfskie, US Naval Surface Warfare Center

8:30 AM Introductory Comments

8:35 AM Invited
Investigation of Thick Plate Marine Grade Aluminum Alloys: *William Golumbfskie*[1]; Jennifer Gaies[1]; Daniel Stiles[1]; Richard Link[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]United States Naval Academy

9:00 AM
Influencing Intergranular Corrosion via Surface Treatment: *Marcel Rosefort*[1]; Christiane Matthies[1]; Vivian Poll[1]; Hubert Koch[1]; [1]TRIMET ALUMINIUM SE

9:25 AM
Sensitization Effects on Environmentally Assisted Cracking of Al-Mg Alloys: *Mohsen Seifi*[1]; Henry Holroyd[1]; John Lewandowski[1]; [1]Case Western Reserve University

9:50 AM Break

10:05 AM
Sensitization Effects on the Fatigue Crack Growth Behavior of Al-Mg Alloys: *Mohsen Seifi*[1]; Hao Jiang[1]; Bo Li[1]; John Lewandowski[1]; [1]Case Western Reserve University

10:30 AM
Mechanical Characterization and Corrosion Testing of X608 Aluminum Alloy: Ramprashad Prabhakaran[1]; Jung-Pyung Choi[1]; Elizabeth Stephens[1]; David Catalini[1]; Curt Lavender[1]; *Aashish Rohatgi*[1]; [1]Pacific Northwest National Laboratory

10:55 AM
Simultaneous Improvement of Mechanical and Corrosion Properties of Aluminum Alloys: Javier Esquivel[1]; *Rajeev Gupta*[1]; [1]The University of Akron

11:20 AM
Observation of Mg Segregation in Aluminum Magnesium Alloys during Cyclic In-situ TEM Heating Experiments: *Daniel Scotto D'Antuono*[1]; Jennifer Gaies[2]; William Golumbfskie[2]; Mitra Taheri[3]; [1]Drexel University ; [2]Naval Surface Warfare Center, Carderock Division; [3]Drexel University

Aluminum Reduction Technology — Environment I

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Tuesday AM
February 16, 2016

Room: 202C
Location: Music City Center

Session Chair: Bernard Cloutier, Fives Solios

8:30 AM Introductory Comments

8:35 AM
Design, Start-up and Performance of Four Gas Treatment Centers for the Ma'aden Smelter: Jean Baptiste Robin[1]; Bernard Cloutier[1]; Maied Majrashi[2]; Rahul K. Pandey[2]; Bandar M. Al-Zahrani[2]; Ahmed Y. Al-Taher[2]; Fabienne Virieux[1]; *Jeremy Neveu*[1]; [1]Fives Solios; [2]Maaden Aluminium

9:00 AM
Management and Performance of the Largest Gas Treatment Centre at EMAL Potline during Major Shutdown of Main Exhaust Fans: *Khawla AlMarzooqi*[1]; Shaikha Al shehhi[1]; Vijayakumar Pillai[1]; Sunny John Mathew[1]; Padmaraj Gunjal[1]; Bharat Gadilkar[1]; [1]EGA

9:25 AM
Compact GTC Design: Reducing Footprint and Overall Steel Weight: *Peter Klut*[1]; Travis Turco[1]; Wouter Ewalts[1]; Erik Dupon[1]; Edo Engel[1]; [1]Danieli Corus

9:50 AM
Technology for Removal of Sulphur Compounds from Gases Generated during Aluminum Production: *Victor Buzunov*[1]; Viktor Mann[2]; Stanislav Belousov[1]; John Johnson[1]; Vyacheslav Anikin[1]; Yury Bogdanov[1]; Aleksey Zherdev[1]; Sergey Pavlov[1]; [1]RUSAL "Engeneering and Technological Center"; [2]Global Management B.V.

10:15 AM Break

10:30 AM
Sustainable Practices in Spent Potlining - an Industrial Ecology Approach: *Phil Black*[1]; Bernie Cooper[1]; [1]Regain Materials

10:55 AM
The LCL&L Process: A Sustainable Solution for the Treatment and Recycling of Spent Potlining: *Laurent Birry*[1]; Simon Leclerc[1]; Stephane Poirier[1]; [1]Rio Tinto Alcan

11:15 AM
Development, Proof of Concept and Industrial Pilote of the New CHAC Scrubbing Technology : An Innovative Efficient Way to Scrub Sulfur Dioxide: *Jean-Nicolas Maltais*[1]; Cyril Gaudreault[1]; Jonathan Bernier[1]; Simon Leclerc[1]; Josette Ross[1]; [1]Rio Tinto Alcan

11:40 AM
Aluminerie de Bécancour Conditioning Tower Replacement: *Peter Klut*[1]; Travis Turco[1]; Erik Dupon[1]; Edo Engel[1]; [1]Danieli Corus BV

Bio Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Fundamentals

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Tuesday AM
February 16, 2016
Room: 206B
Location: Music City Center

Session Chair: Candan Tamerler, UNIVERSITY OF Kansas

8:30 AM Introductory Comments Candan Tamerler, University of Kansas

8:40 AM Invited
Interrogating Bio-Nano Interactions and Enhancing Materials Properties: *Rajesh Naik*[1]; [1]Air Force Research Laboratory

9:20 AM Invited
Recluse Spider's Silk Nanoribbons — a Quasi-2D Protein Material with Outstanding Mechanical and Adhesive Properties: *Hannes Schniepp*[1]; [1]The College of William & Mary

9:50 AM Invited
Bacterial Surface Display for Discovery and Study of Peptide-Directed Material Interfaces
: *Dimitra Stratis-Cullum*[1]; Bryn Adams[1]; Margaret Hurley[1]; Justin Jahnke[2]; Deborah Sarkes[1]; Hong Dong[3]; [1]US Army Research Laboratory; [2]ORAU Postdoctoral Fellow/US Army Research Laboratory; [3]GTS Technical Services, LLC

10:20 AM Break

10:40 AM Invited
Precision Assembly of Biologically Functional Abiotic/Biotic Materials: *Carlo Montemagno*[1]; [1]University of Alberta

11:20 AM Invited
Designer Self-assembling Peptides for Programming the Bio-material Interface: *Larry Unsworth*[1]; Kyle Koss[1]; [1]University of Alberta/National Institute for Nanotechnology

11:50 AM
Thermodynamic Characterization of Self-Assembled Peptides on Graphite: *Shohei Tsuchiya*[1]; Morio Isoda[1]; Mehmet Sarikaya[2]; Yuhei Hayamizu[1]; [1]Tokyo Institute of Technology; [2]University of Washington

Biological Materials Science Symposium — Biological Materials and Bioinspiration II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Tuesday AM
February 16, 2016
Room: 207A
Location: Music City Center

Session Chairs: Paul Allison, University of Alabama; Francois Barthelat, McGill University

8:30 AM
Influence of Interface on the Fracture of Bio-inspired Laminated Composites: Tao Qu[1]; Chandra Prakash[1]; *Vikas Tomar*[1]; [1]Purdue University

8:50 AM
Bioinspired Composites through Clathrates and Hydrates in Freeze Casting: *Steven Naleway*[1]; Christopher Yu[1]; Rachel Hsiong[1]; Arijit Sengupta[2]; Peter Iovine[2]; John Hildebrand[1]; Marc Meyers[1]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]University of San Diego

9:10 AM
3D Printing of Tough Double Network Hydrogel: Junhua Wei[1]; *Jingjing Qiu*[1]; Jilong Wang[1]; Siheng Su[1]; [1]Texas Tech University

9:30 AM
Nature's Multiscale Design Strategies and Smart Manufacturing of Engineering Materials: *Xiaodong Li*[1]; [1]University of Virginia

9:50 AM Break

10:10 AM
Architectured Materials in Engineering and in Nature: *Francois Barthelat*[1]; [1]McGill University

10:30 AM Invited
Damage-tolerance in Bio-inspired Hybrid Ceramics Containing a Polymeric or Metallic Compliant Phase: Bernd Gludovatz[1]; Valentina Naglieri[1]; Hao Bai[1]; Xu Deng[1]; Ryan Wilkerson[2]; Amy Wat[2]; Antoni Tomsia[1]; *Robert Ritchie*[2]; [1]Lawrence Berkeley National Laboratory; [2]University of California Berkeley

11:10 AM
Bio-inspired Phase Transforming Materials for Energy Dissipation: *David Restrepo*[1]; Nilesh Mankame[2]; Pablo Zavattieri[1]; [1]Purdue University; [2]Smart Materials and Structures, General Motors Global Research & Development

Bladesmithing Symposium 2016 — Session I

*Sponsored by:*No Sponsors Found!
Program Organizers: Bharat Jasthi, South Dakota School of Mines and Technology; Roxana Ruxanda, Emerson Climate Technologies; Garry Warren, University of Alabama; Michael West, South Dakota School of Mines and Technology

Tuesday AM
February 16, 2016
Room: 104A
Location: Music City Center

Session Chair: Garry Warren, University of Alabama

8:30 AM Introductory Comments

8:35 AM Keynote
Connections: Superplasticity, Damascus Steels, Laminates, the Giza Pyramid, and Carbon Dating: *Jeffrey Wadsworth*[1]; [1]Batelle Memorial Institute

9:15 AM
A Study on the Reproduction of Genuine Damascus Steel Blades: *Samuel Wagstaff*[1]; [1]Massachusetts Institute of Technology

9:35 AM
Characterization and Thermomechanical Processing of a Modified Skinner Knife with Modern Pattern Welded Steel: *Rachel Guarriello*[1]; [1]University of Florida

9:55 AM
Simulated Meteoric Blade: *Cameron Crowell*[1]; [1]Virginia Tech

10:15 AM Break

10:30 AM
Making the First Sword: *David Sapiro*[1]; [1]Carnegie Mellon University

10:50 AM
From Ore to More: Bloom to Blade: *Tom Boundy*[1]; Hunter Sceats[1]; [1]Colorado School of Mines

11:10 AM
Metal/Metal Oxide Assisted Forge Welding: *William Story*[1]; [1]University of Alabama

11:30 AM
Heat Treatment Optimization and Fabrication of a 440C Knife: *Jacob Gill*[1]; Caleb Myrhe[1]; Ralph Bush[1]; [1]USAFA

11:50 AM
Characterization of the Microstructure and Mechanical Properties of AEB-L Stainless Steel through Different Heat Treatments: *Sam Karcher*[1]; [1]Washington State University

Bulk Metallic Glasses XIII — Structures and Characterization

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Tuesday AM
February 16, 2016
Room: 102B
Location: Music City Center

Session Chairs: Jan Schroers, Yale University; Judy Cha, Yale University

8:30 AM Invited
Direct Investigation of Crystallization of Metallic Glass Nanostructures Using In Situ TEM: Sung Woo Sohn[1]; Yeonwoong Jung[1]; Yujun Xie[1]; Chinedum Osuji[1]; Jan Schroers[1]; *Judy Cha*[1]; [1]Yale University

8:55 AM Invited
Evidence of Phase Transition in a Supercooled Metallic Liquid: Si Lan[1]; Matthew Blodgett[2]; Ken Kelton[2]; *Xun-Li Wang*[1]; [1]City University of Hong Kong; [2]Washington University at St. Louis

9:15 AM
Free-volume Dependent Atomic Dynamics in Beta Relaxation Pronounced La-based Metallic Glasses: Jianzhong Jiang[1]; *Xiaodong Wang*[1]; B Ruta[2]; L.H Xiong[1]; D.W Zhang[1]; Y Chushkin[2]; H.W Sheng[3]; H.B Lou[1]; Q.P Cao[1]; [1]Zhejiang University; [2]ESRF; [3]George Mason University

9:35 AM Invited
Atomic-scale Characterization of Shear Bands in Metallic Glasses: Tracer Diffusion, Free Volume and Nanocrystal Development: *Gerhard Wilde*[1]; [1]University of Muenster

9:55 AM Break

10:10 AM
Assessing the Critical Casting Thickness via High-speed Thermography: *Fabian Haag*[1]; Jörg Löffler[1]; [1]ETH Zurich

10:30 AM Invited
In Situ Investigation of the Mechanical Behavior of Micronanoscaled Metallic Glasses: Lin Tian[1]; *Zhiwei Shan*[1]; [1]Xi'an Jiaotong University

10:50 AM Invited
Evolution of Atomic Distribution during Devitrification of Bulk Metallic Glasses: Sanghita Mridha[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

11:10 AM Invited
Microstructure Evolution of a Bulk-metallic-glass Matrix Composite Subjected to Different Deformations: *E-Wen Huang*[1]; Junwei Qiao[2]; Wen-Jay Lee[3]; [1]National Chiao Tung University; [2]Taiyuan University of Technology; [3]National Center for High-Performance Computing

11:30 AM
Nanoscale Size Effects in Crystallization of Metallic Glass Nanorods: *Sungwoo Sohn*[1]; Yeonwoong Jung[1]; Yujun Xie[1]; Chinedum Osuji[1]; Jan Schroers[1]; Judy Cha[1]; [1]Yale University

11:50 AM
Microstructural Investigation of CuZr-based Metallic Glass upon Sub-Tg Annealing: *Baran Sarac*[1]; Mihai Stoica[1]; Jürgen Eckert[1]; [1]IFW Dresden

Bulk Metallic Glasses XIII — Structures and Mechanical Properties I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Tuesday AM
February 16, 2016
Room: 101E
Location: Music City Center

Session Chairs: Takeshi Egami, The University of Tennessee; Eric Homer, Brigham Young University

8:30 AM Keynote
Absence of Microscopic Elasticity in BMG and Its Implications: *Takeshi Egami*[1]; Yang Tong[2]; Wojciech Dmowski[1]; [1]University of Tennessee; [2]City University of Hong Kong

9:00 AM Invited
Tuning Order in Disorder: *Evan Ma*[1]; [1]Johns Hopkins University

9:25 AM Invited
Heterogeneity and Structural Relaxation during Elastic Deformation in Zr-based BMG: *Wojciech Dmowski*[1]; Yang Tong[1]; Yoshihiko Yokoyama[2]; Takeshi Egami[3]; [1]University of Tennessee; [2]Tohoku University; [3]ORNL

9:45 AM Invited
Structural Heterogeneity Induced Plasticity in Metallic Glasses: *Yanfei Gao*[1]; Hongbin Bei[2]; [1]Univ of Tennessee; [2]Oak Ridge National Laboratory

10:05 AM Break

10:20 AM Invited
Structural Features and Strain Analysis of Plastically Deformed Bulk Metallic Glasses: *Jurgen Eckert*[1]; [1]IFW Dresden

10:40 AM Invited
Effect of Nanocrystallization on Stress Relaxation in Bulk Metallic Glasses: *Alexandru Stoica*[1]; Dong Ma[1]; [1]ORNL

11:00 AM Invited
Elucidating the Mechanisms of Rate Dependent Deformation: Matthew Harris[1]; *Eric Homer*[1]; [1]Brigham Young University

11:20 AM
Characteristics of Stress Relaxation Kinetics of La-based Bulk Metallic Glass: Evidence of Experiments and Simulations: *Jichao Qiao*[1]; Yun-Jiang Wang[2]; Jean-Marc Pelletier[3]; Y. Yao[1]; [1]Northwestern Polytechnical University; [2]Stake Key Laboratory of Nonlinear Mechanics (LNM), Institute of Mechanics, Chinese Academy of Sciences,; [3]INSA de Lyon

11:40 AM
Compositional Dependence of Martensitic Transformation in Secondary Phase of BMG Matrix Composites: *Wook Ha Ryu*[1]; Hyun Seok Oh[1]; Eun Soo Park[1]; [1]Seoul National University, Dept of Materials Science & Engrg

Bulk Processing of Nanostructured Powders and Nanopowders by Consolidation — Session III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Deliang Zhang, Shanghai Jiao Tong University; Bowen Li, Michigan Technological University; Stephen Mashl, Michigan Technological University

Tuesday AM
February 16, 2016
Room: 210
Location: Music City Center

Session Chairs: Donghyun Bae, Yonsei University; Yong Liu, Central South University

8:30 AM Keynote
Tri-modal Composites: A Review: *Julie Schoenung*[1]; [1]University of California, Davis

9:10 AM Invited
High Strength Mg-Alloys via Powder Metallurgy: Current Results and Future Opportunities: *Suveen Mathaudhu*[1]; [1]University of California Riverside

9:40 AM Invited
Nanocrystalline Ti-Mg Alloys Prepared by Mechanical Alloying and Spark Plasma Sintering: *Yong Liu*[1]; Bin Liu[1]; Hong Wu[1]; Huiping Tang[2]; [1]Central South University; [2]Northwestern Institute of Nonferrous Metals

10:10 AM Break

10:30 AM Invited
Mechanical Properties of Nano-carbon Reinforced Al-based Composites: *Donghyun Bae*[1]; Seeun Shin[1]; [1]Yonsei university

11:00 AM Invited
Effect of Dispersion of Multiwalled Carbon Nanotubes on the Mechanical Properties of Titanium Metal Matrix Composites: *Khurram Munir*[1]; Yuncang Li[1]; Yifeng Zheng[2]; Deliang Zhang[2]; Cuie Wen[1]; [1]RMIT University; [2]Shanghai Jiao Tong University

11:30 AM
Precipitation Behavior of UFG Al6063-5vol%SiC Nanocomposites: *Xun Yao*[1]; Yifeng Zheng[1]; Wei Zeng[1]; Jiamiao Liang[1]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University

11:50 AM
Spark Plasma Sintering (SPS) vs. Hot Isostatic Pressing (HIP) of Nanostructured Aluminum Alloy Powders: *Indranil Roy*[1]; Gregoire Jacob[1]; Rashmi Bhavsar[1]; [1]Schlumberger

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — Alloying and Grain Refinement

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Tuesday AM
February 16, 2016
Room: 202A
Location: Music City Center

Session Chair: Pierre Bouchard, STAS INC

8:30 AM Introductory Comments

8:35 AM
Grain Refinement of Self-hardening Aluminum Alloys: *Mario Rosso*[1]; [1]POLITECNICO di Torino

9:00 AM
Modification of Eutectic Si and Refinement of Eutectic Grain in Al-Si-Mg Based Alloys by CrB2 and Sr Addition: Jiehua Li[1]; *Peter Schumacher*[1]; [1]University of Leoben

9:25 AM
Effect of High Intensity Ultrasonic Treatment on the Microstructure, Corrosion and Mechanical Behaviour of AC7A Aluminium Alloy: *Ahmed Abd El Aziz*[1]; Waleed Khalifa[2]; Mohamed Ashraf El-Hady El-Hady[1]; [1]German University in Cairo; [2]Cairo University, Faculty of Engineering

9:50 AM Break

10:05 AM
Mechanism of Zirconium Poisoning Effect on TiB2 Inoculation in Aluminium Alloys: *Yun Wang*[1]; Li Zhou[1]; Zhongyun Fan[1]; [1]Brunel University

10:30 AM
Study of Manganese Dissolution in Aluminum Melts: *Ghadir Razaz*[1]; Torbjörn Carlberg[1]; [1]Mid Sweden University

10:55 AM
Ultrasonic Grain Refining of Continuous Cast Aluminum: Microstructure and Properties: *Michael Powell*[1]; Kiran Manchiraju[1]; Qingyou Han[2]; [1]Southwire Company; [2]Purdue University

CFD Modeling and Simulation in Materials Processing — Casting with External Field Interaction

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, University of Illinois at Urbana-Champaign; Miaoyong Zhu, Northeastern University; Andreas Ludwig, Montanuniversitaet Leoben, Dep. Metallurgy; Adrian Sabau, Oak Ridge National Laboratory; Koulis Pericleous, University of Greenwich; Hervé Combeau, Institut Jean Lamour

Tuesday AM
February 16, 2016
Room: 207D
Location: Music City Center

Session Chair: Koulis Pericleous, University of Greenwich

8:30 AM Invited
A High-Order Acoustic Cavitation Model for the Treatment of a Moving Liquid Metal Volume: Gerard Lebon[1]; Iakovos Tzanakis[2]; *Koulis Pericleous*[1]; Dmitry Eskin[2]; [1]University of Greenwich; [2]Brunel University

8:55 AM
MHD Flow Model for Liquid Metal Batteries: *Valdis Bojarevics*[1]; Andrejs Tucs[1]; Koulis Pericleous[1]; [1]University of Greenwich

9:15 AM
Numerical Simulation of Fluid Flow and Surface Fluctuation in Continuous Casting Mold with Vertical Electromagnetic Brake: *Engang Wang*[1]; Zhuang Li[1]; Fei Li[1]; Lin Xu[1]; [1]Northeastern University, China

9:35 AM
Robust and Efficient Numerical Methods for the CFD Simulation of Additive Manufacturing and Controlled Melting and Solidification Processes: *Brian Weston*[1]; [1]University of California, Davis

9:55 AM Invited
Progress on Numerical Modeling of the Dispersion of Ceramic Nanoparticles during Ultrasonic Processing and Solidification of Al-based Nanocomposites: Daojie Zhang[1]; *Laurentiu Nastac*[1]; [1]The University of Alabama

10:20 AM Break

10:40 AM
Modeling of Macrosegregation Induced by Magnetohydrodynamic Thermosolutal Convection in Electroslag Remelting Ingot: Baokuan Li[1]; *Qiang Wang*[1]; [1]Northeastern University of China

11:00 AM
Effects of Velocity-Based Packing Criteria on Models of Alloy Solidification with Free Floating Solid: *Alex Plotkowski*[1]; Matthew Krane[1]; [1]Purdue University

11:20 AM
Large Eddy Simulations of the Effects of Double-Ruler Electromagnetic Braking and Nozzle Submergence Depth on Molten Steel Flow in a Commercial Continuous Casting Mold: *Kai Jin*[1]; Surya Vanka[1]; Brian Thomas[1]; Xiaoming Ruan[2]; [1]University of Illinois at Urbana Champaign; [2]Baosteel

11:40 AM
Modelling Unsteady Mould Filling of Single Crystal Turbine Blade Castings: *Vanessa Indrizzi*[1]; Duncan Putman[2]; Nils Warnken[1]; [1]University of Birmingham; [2]Rolls Royce plc.

Characterization of Minerals, Metals, and Materials — Ferrous

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Tuesday AM
February 16, 2016
Room: 103A
Location: Music City Center

Session Chairs: Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D

8:30 AM
Discussion on Coking Wastewater Treatment and Control Measures in Iron and Steel Enterprises: *Lei Zhang*[1]; [1]Wuhan iron and steel company

8:50 AM
Effect of MgO and Basicity on Microstructure and Metallurgical Properties of Iron Ore Sinter: *Mingming Zhang*[1]; Marcelo Andrade[1]; [1]ArcelorMittal Global R&D

9:10 AM
Grain Boundary Plane Dependence of Sensitization in Austenitic Stainless Steel: *Matthew Hartshorne*[1]; Mitra Taheri[1]; [1]Drexel University

9:30 AM
Material Characterization of Power Plant Steel in the Virgin and Artificially-aged Conditions: *Magdy El Rayes*[1]; Ehab El-Danaf[1]; [1]King Saud University

9:50 AM
Mechanical Characterization of Historic Steel Rods: Paolo Matteis[1]; Giorgio Scavino[1]; *Donato Firrao*[1]; [1]Politecnico di Torino - DISAT

10:10 AM Break

10:25 AM
Site-specific Studies on the Interfacial Structures of Galvanized Dual Phase Steels: *Imran Aslam*[1]; Bin Li[2]; Rich Martens[3]; Johnny Goodwin[3]; Hongjoo Rhee[1]; Mark Horstemeyer[1]; Frank Goodwin[4]; [1]Mississippi State University; [2]University of Nevada, Reno; [3]The University of Alabama; [4]International Zinc Association

10:45 AM
Microstructure and Hardness Properties of Tool Steel Friction Cladding on Mild Steel Substrate: *Venkateswarlu Devuri*[1]; Nageswararao Palukuri[1]; Manas Mahapatra[1]; [1]IIT Roorkee

11:05 AM
Metallurgy and Creep Behavior of Type 310S Stainless Steel at High Temperature in Different Atmospheres and Loading Conditions: *Coralie Parrens*[1]; Benoit Malard[1]; Jean-Luc Dupain[2]; Dominique Poquillon[1]; [1]CIRIMAT; [2]MESSIER-BUGATTI-DOWTY

11:25 AM
Characterization of Humic Acid Modified Bentonite Binder for Iron Ore Pelletization: Yang Sun[1]; Bin Xu[1]; *Yuanbo Zhang*[1]; Bingbing Liu[1]; Youlian Zhou[1]; Zijian Su[1]; [1]Central South University

11:45 AM
Optimization of Material Properties of High Strength Multiphase Steels via Microstructure and Phase Transformation Adjustment: *Annette Baeumer*[1]; Eva Zimmermann[1]; [1]ThyssenKrupp Steel Europe

Computational Materials Engineering for Nuclear Reactor Applications — Reactor Pressure Vessel

Sponsored by:
Program Organizers: Michael Tonks, Idaho National Laboratory; Julie Tucker, Oregon State University; Mark Tschopp, Army Research Laboratory; Richard Williamson, Idaho National Laboratory

Tuesday AM
February 16, 2016
Room: 101D
Location: Music City Center

Funding support provided by: The symposium will be co-sponsored by the ICME committee

Session Chair: To Be Announced

8:30 AM
Predicting the Radiation Dependent Flow Stress and Cleavage Failure in RPV steels using Crystal Plasticity: *Pritam Chakraborty*[1]; Yongfeng Zhang[1]; S. Bulent Biner[1]; [1]Idaho National Laboratory

8:50 AM
Structural Integrity Analysis of Reactor Pressure Vessel with Lamellar Flaws in Grizzly: *Marie Backman*[1]; Benjamin Spencer[2]; Robert Dodds[1]; Brian Wirth[1]; [1]University of Tennessee; [2]Idaho National Laboratory

9:10 AM
Coupling Radiation Damage from Binary Collision Monte Carlo to Phase Field Microstructure Evolution: *Daniel Schwen*[1]; Yongfeng Zhang[1]; [1]Idaho National Laboratory

9:30 AM Invited
First Principles Neural Networks and Diffusion in Nuclear Structural Materials: *Par Olsson*[1]; Luca Messina[1]; Christophe Domain[2]; Nicolas Castin[3]; Giulio Imbalzano[1]; [1]KTH Royal Institute of Technology; [2]EDF R&D; [3]SCK CEN

10:10 AM Break

10:30 AM
Enhanced Helium Clustering Process in Iron: *Zuya Huang*[1]; Brian Wirth[1]; Xunxiang Hu[2]; Mary Cusentino[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

10:50 AM
Cluster Dynamics Modeling of Damage Evolution in Iron Chrome Alloys: *Aaron Kohnert*[1]; Brian Wirth[1]; [1]University of Tennessee

11:10 AM
Microstructure-explicit Rate Theory Modeling of Point Defect Transport during Irradiation Damage: *Jesse Carter*[1]; Jared Tannenbaum[1]; Richard Smith[1]; [1]Bettis Atomic Power Laboratory

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Bridging Physics

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Tuesday AM
February 16, 2016
Room: 209A
Location: Music City Center

Session Chairs: Gang Lu, California State University Northridge; Dallas Trinkle, University of Illinois at Urbana-Champaign

8:30 AM Invited
Large-scale Real-space Electronic Structure Calculations: *Vikram Gavini*[1]; Phani Motamarri[1]; [1]University of Michigan

9:00 AM
Density-functional Embedding Theory: An Effective Way to Perform Multi-scale Quantum Mechanics Simulations of Materials: *Chen Huang*[1];

Emily Carter[2]; Michele Pavone[3]; [1]Florida State University; [2]Princeton University; [3]University of Naples Federico II

9:20 AM Invited
Multiscale Quantum/Atomistic Coupling Using Constrained Density Functional Theory: Xu Zhang[1]; W. A. Curtin[2]; *Gang Lu*[1]; [1]California State University Northridge; [2]Ecole Polytechnique Federale de Lausanne

9:50 AM
Understanding Hydrophobicity Trends in Mixed F/H Terminated C(111) Surfaces through DFT and Classical Point-Charge Force Fields: Leonhard Mayrhofer[1]; Gianpietro Moras[1]; N Mulakuri[1]; Michael Moseler[1]; Paul Stevens[2]; *Srinivasan Rajagopalan*[2]; [1]Fraunhofer IWM; [2]ExxonMobil Research and Engineering Company

10:10 AM Break

10:30 AM
Quantum Dynamics of Atomic Motion in Beryllium: *Rodrigo Freitas*[1]; Mark Asta[2]; Vasily Bulatov[3]; [1]University of California, Berkeley and Lawrence Livermore National Laboratory; [2]University of California, Berkeley; [3]Lawrence Livermore National Laboratory

10:50 AM
Embedding a Microstructure Model in a Macro-scale Solidification Model: *John Gibbs*[1]; Seth Imhoff[1]; Damien Tourret[1]; Neil Carlson[1]; Amy Clarke[1]; [1]Los Alamos National Laboratory

11:10 AM
Generating Reactive Force Fields: From Universal but Challenging to Special but Simple: *Bernd Hartke*[1]; [1]Institute for Physical Chemistry, Christian-Albrechts-University

Computational Methods for Uncertainty Quantification, Model Validation, and Stochastic Predictions — Uncertainties and Validation from Atoms to Aircrafts (Joint Session with theICME Infrastructure Development for Accelerated Materials Design symposium)

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Mark Tschopp, Army Research Laboratory; Li Ma, NIST

Tuesday AM
February 16, 2016
Room: 207C
Location: Music City Center

Session Chairs: Carelyn Campbell, NIST; Francesca Tavazza, NIST

8:30 AM Invited
Density Functional Theory and Prediction of Energy Storage Materials Properties: *Kristin Persson*[1]; [1]UC Berkeley

9:10 AM Invited
Multiscale Modeling of with Quantified Uncertainties and Cloud Computing: Towards Computational Materials Design: *Alejandro Strachan*[1]; [1]Purdue University

9:50 AM Question and Answer Period

10:00 AM Break

10:20 AM Invited
Materials and Data Development for Airframes: *Ryan Glamm*[1]; Andrew Baker[1]; Erik Sapper[1]; James Cotton[1]; [1]Boeing Research and Technology

11:00 AM Invited
Citrination: Open Infrastructure for Ingesting, Storing, and Mining Materials Data: *Bryce Meredig*[1]; [1]Citrine Informatics

Computational Thermodynamics and Kinetics — Phase Field

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Tuesday AM
February 16, 2016
Room: 208B
Location: Music City Center

Session Chairs: Long Qing Chen, Penn State University; Katsuyo Thornton, University of Michigan

8:30 AM Invited
General Method for Incorporating CALPHAD Free Energies of Mixing into Phase Field Models: Application to the a-Zirconium/d-Hydride System: Andrea Jokisaari[1]; *Katsuyo Thornton*[1]; [1]University of Michigan

9:00 AM Invited
A Verified Phase Field Method for Phase Transformations in Ni-Al-Cr alloys
: S. Poulsen[1]; *Peter Voorhees*[1]; [1]Northwestern University

9:30 AM
A Phase-field Study of Cascading Widmanstätten-ferrite Plates: *Avisor Bhattacharya*[1]; Kumar Ankit[2]; Britta Nestler[2]; [1]Institute of Materials and Processes, Karlsruhe University of Applied Sciences; [2]Institute of Applied Materials, Karlsruhe Institute of Technology (KIT)

9:50 AM
Phase Field Modeling of Oxide Growth: *Quentin Sherman*[1]; Peter Voorhees[1]; [1]Northwestern University

10:10 AM Break

10:30 AM Invited
Linear and Nonlinear Responses of Microstructures and Microstructure Evolution under Highly Nonequilibrium Conditions: *Long Qing Chen*[1]; [1]Penn State University

11:00 AM
A Phase-Field Model for Simulating Microstructure Development during Physical Vapor Deposition of Isotropic Multiphase Polycrystalline Thin Film Systems: *James Stewart*[1]; Douglas Spearot[1]; [1]The University of Arkansas

11:20 AM
Phase Field Simulation for the Cementite Shape's Effect on the Cementite Spheroidization: *Kohtake Takahiko*[1]; Hideaki Sawada[1]; Kazuto Kawakami[1]; [1]Nippon Steel & Sumitomo Metal Corporation

Electrode Technology — Joint Session with Aluminum Reduction

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Angelique Adams, Alcoa Inc

Tuesday AM
February 16, 2016
Room: 202B
Location: Music City Center

Session Chair: Mark Dorreen, Light Metals Research Centre, The University of Auckland

8:30 AM Introductory Comments

8:40 AM
Cathode Wear in Electrowinning of Aluminum Investigated by a Laboratory Test Cell: *Zhaohui Wang*[1]; Saeid Nobakhtghalati[2]; Asbjørn Solheim[1]; Kati Tschöpe[3]; Arne Petter Ratvik[1]; Tor Grande[2]; Anne Støre[1]; [1]SINTEF Materials and Chemistry; [2]Norwegian University of Science and Technology; [3]Hydro Aluminium AS

9:05 AM
Copper Bars for the Hall-Héroult Process: *René von Kaenel*[1]; Louis Bugnion[1]; Jacques Antille[1]; Laure von Kaenel[1]; [1]KAN-NAK SA

9:30 AM
Porous Carbon Anodes for the Supply of Methane during Electrowinning of Aluminium: *Babak Khalaghi*[1]; Geir Martin Haarberg[1]; [1]Norwegian University of Science and Technology (NTNU)

9:55 AM
Uneven Cathode Wear in Aluminium Reduction Cells: *Tao Li*[1]; Stein Tore Johansen[2]; Asbjørn Solheim[2]; [1]Norwegian University of Science and Technology, SINTEF Materials and Chemistry; [2]SINTEF Materials and Chemistry

10:20 AM Break

10:35 AM
Creep Behavior and Change of Porous Structure of Graphite Cathode Material in NaF-AlF3-Al2O3 Melt under External Pressure: *Qiwei Tan*[1]; Jilai Xue[1]; Jing Sun[1]; Jun Zhu[1]; [1]University of Science and Technology Beijing

11:00 AM
Modeling Gravity Wave in 3D with OpenFoam in an Aluminum Reduction Cell with Regular and Irregular Cathode Surfaces: *Marc Dupuis*[1]; Michaël Pagé[2]; [1]GéniSim Inc; [2]Simu-K inc.

11:25 AM
Effect of Cathode Collector Copper Inserts on the Hall-Héroult Cell MHD Stability: *Valdis Bojarevics*[1]; [1]University of Greenwich

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Mechanical Behaviors; Composite Materials for Packaging

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Tuesday AM
February 16, 2016
Room: 201A
Location: Music City Center

Session Chairs: Nogita Kazuhiro, The University of Queensland; Sergey Belyakov, Imperial College London

8:30 AM Invited
FCBGA Mechanical Shock Performance Enhancement at Elevated Temperature Using Edgebond Material: *Tae-Kyu Lee*[1]; [1]Cisco Systems

8:55 AM
Failure Morphology of Lead-free Sn-3.0Ag-0.5Cu Solder Joint under Low-G Drop Impact: *Jian Gu*[1]; Yongping Lei[1]; Jian Lin[1]; Hanguang Fu[1]; Zhongwei Wu[1]; [1]Beijing University of Technology

9:15 AM
Microstructural Improvements of SAC Alloys with Bi Additions during Accelerated Thermal Cycling: *Eva Kosiba*[1]; Polina Snugovsky[1]; John McMahon[1]; Doug Perovic[2]; [1]Celestica; [2]University of Toronto

9:35 AM
Effects of Composition and Assembly Processes on the Microstructure and Reliability of Various Lead Free Solder Alloys: *Babak Arfaei*[1]; Francis Mutuku[2]; Eric Cotts[2]; [1]Universal Instruments Co.; [2]Binghamton University

9:55 AM Break

10:15 AM
High Temperature Tensile Creep Behavior in Eutectic AuSn Solder: *Rupalee Mulay*[1]; John Elmer[1]; [1]Lawrence Livermore National Laboratory

10:35 AM
Properties of a Cu-Ni / Sn-Alloy Powder Composite for Use as a High Temperature Lead-Free Solder: *Stephanie Choquette*[1]; Iver Anderson[1]; [1]Ames Lab

10:55 AM
Fabrication and Electrical Characterization of Hybrid CNT/Copper Composite Material: *Ibrahim Awad*[1]; Leila Ladani[1]; [1]University of Connecticut

Energy Technologies and Carbon Dioxide Management — Session III

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Li Li, Cornell University ; Donna Guillen, Idaho National Laboratory; Neale Neelameggham, Ind LLC; Lei Zhang, University of Alaska Fairbanks ; Jingxi Zhu, Carnegie Mellon University; Nawshad Haque, CSIRO; Dirk Verhulst, Consultant, Extractive Metallurgy; Soumendra Basu, Boston University; Tao Wang, Nucor Steel; Xuan Liu, Carnegie Mellon University

Tuesday AM
February 16, 2016
Room: 104D
Location: Music City Center

Session Chairs: Li Li, Cornell University ; Lei Zhang, University of Alaska Fairbanks; Ziqi Sun , Queensland University of Technology

8:30 AM Invited
Chemical Design of High-performance Metal Oxide Photoelectrodes for Solar Energy Conversion: *Ziqi Sun*[1]; [1]Queensland University of Technology

9:10 AM Keynote
Polar Surface Domains in Non-polar Materials: Bismuth Vanadate and Strontium Titanate: *Gregory Rohrer*[1]; [1]Carnegie Mellon University

10:10 AM Break

10:30 AM
Surface Segregation in SOFC Cathode Materials: *Soumendra Basu*[1]; Yang Yu[1]; Jacob Davis[1]; Deniz Cetin[1]; Heng Luo[1]; Karl Ludwig[1]; Uday Pal[1]; Xi Lin[1]; Srikanth Gopalan[1]; [1]Boston University

10:50 AM Invited
Nanostructured and Nanocomposite Material Enabled Optical Sensors for Chemical Sensing in CO2 Sequestration and Other Geological Harsh Environment Applications: *Paul Ohodnicki*[1]; Thomas Brown[1]; Congjun Wang[1]; [1]National Energy Technology Laboratory

11:30 AM
Preparation and Characterization of Stearic Acid/SiO2 Nano-encapsulated Phase Change Materials via Sol-gel Method: Huanmei Yuan[1]; *Hao Bai*[1]; Yuanyuan Wang[1]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing

11:50 AM
P Doped Highly Promoted Nanoconfined MgH_2 Desorption Thermodynamic Properties, Released Hydrogen at Room Temperature: *Daliang He*[1]; Chengzhang Wu[1]; Yulong Wang[1]; Weizhong Ding[1]; [1]Shanghai University

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

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Tuesday AM
February 16, 2016
Room: 213
Location: Music City Center

Session Chair: Antonios Kontsos, Drexel University

8:30 AM Keynote
Multi-Scale Crystal Plasticity FE Models for Predicting Fatigue in Polycrystalline Metals and Alloys: *Somnath Ghosh*[1]; Deniz Ozturk[1]; Ahmad Shaba[1]; [1]Johns Hopkins University

9:10 AM Invited
Ni Base Microstructure Modeling and Its Applications in Fatigue: *Shakhrukh Ismonov*[1]; Adrian Loghin[1]; [1]GE GRC

9:30 AM
Evaluation of Fatigue Crack Initiation Mechanism and Its Driving Forces in a Polycrystalline Nickel-base Superalloy Using Experiments and Computations (Note: This presentation will also appear in the poster session.): *Saikumar Reddy Yeratapally*[1]; Michael Sangid[2]; Geoffrey Bomarito[3]; Jacob Hochhalter[3]; [1]National Institute of Aerospace; [2]Purdue University; [3]National Aeronautics and Space Administration

9:50 AM
Multiaxial Thermo-Mechanical Loading at High Temperature on a Ni-based Single Crystal Superalloy: *Jean-Briac le Graverend*[1]; Vincent Bonnand[2]; Jonathan Cormier[3]; Didier Pacou[2]; Jose Mendez[3]; [1]Texas A&M University; [2]ONERA; [3]Institut P'/ISAE-ENSMA

10:10 AM Break

10:30 AM Invited
Using Ultrasonic Fatigue to Investigate Crack Initiation and Short Crack Growth in the Very High Cycle Fatigue (VHCF) Regime
: *J. Wayne Jones*[1]; John Allison[1]; [1]University of Michigan

10:50 AM Invited
From Strain Localization to Fatigue Damage: Critical Experimental Data to Assess the Effect of the Microstructure: *J.C. Stinville*[1]; M.P. Echlin[1]; W.C. Lenthe[1]; T.M. Pollock[1]; [1]University of California Santa Barbara

11:10 AM Invited
Design of Cold-Spray 6061 Aluminum Alloys for Fatigue Crack Growth Resistance in Structural Components, Coatings, and Repairs: Anastasios Gavras[1]; *Diana A. Lados*[2]; Victor Champagne[3]; [1]Riley Power Inc.; [2]Worcester Polytechnic Institute; [3]US Army Research Laboratory

11:30 AM
Rapid Evaluation of Titanium Microstructures for Fatigue Resistance through Computationally Efficient Localization Approaches: *Noah Paulson*[1]; Matthew Priddy[1]; Surya Kalidindi[1]; David McDowell[1]; [1]Georgia Institute of Technology

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Microstructure II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Tuesday AM
February 16, 2016
Room: 105A
Location: Music City Center

Session Chairs: Christoph Beckermann, University of Iowa; Bernard Billia, CNRS

8:30 AM Invited
Divorced Eutectic Solidification of Mg-Al Alloys: *Ingo Steinbach*[1]; Alexander Monas[1]; Se-Jong Kim[2]; Chang Dong Yim[2]; Joo-Hee Kang[2]; [1]Ruhr-University; [2]KIMS

8:55 AM Invited
Complex Dynamics of Multiphase Solidification Front Patterns in Ternary Eutectic Alloys: *Silvere Akamatsu*[1]; Sabine Bottin-Rousseau[2]; Gabriel Faivre[3]; [1]CNRS - UPMC; [2]INSP; [3]UPMC

9:20 AM
Dynamics of Locked Eutectics in Thin Samples and Phase Orientation Relationships: *Sabine Bottin-Rousseau*[1]; Gabriel Faivre[1]; Silvère Akamatsu[1]; [1]INSP

9:40 AM Invited
Solidification in 4D: A.V. Shahani[1]; John Gibbs[2]; A. Mohan[3]; B. Gulsoy[1]; C. Bouman[3]; M. DeGraef[4]; *Peter Voorhees*[1]; [1]Northwestern University; [2]Los Alamos National Laboratory; [3]Purdue University; [4]Carnegie Mellon University

10:05 AM Break

10:25 AM Invited
In Situ Characterization by Synchrotron X-ray Radiography of the Growth Dynamics of Equiaxed Grains in Al-10wt.%Cu Alloys: *Guillaume Reinhart*[1]; Aboul-Aziz Bogno[2]; Henri Nguyen-Thi[1]; Jose Baruchel[3]; Bernard Billia[1]; [1]IM2NP - Aix-Marseille Univ; [2]University of Alberta; [3]ESRF

10:50 AM Invited
In-situ X-ray Observations Showing the Impact of Natural and Forced Convection on Dendritic Solidification: *Sven Eckert*[1]; Natalia Shevchenko[1]; O. Roshchupkina[1]; O. Sokolova[2]; [1]Helmholtz-Zentrum Dresden-Rossendorf; [2]Perm National Research Polytechnic University

11:15 AM Invited
Massive-like Transformation during and after Solidification in Fe-based Alloys: *Hideyuki Yasuda*[1]; Tomohiro Nishimura[1]; Tomoya Nagira[2]; Kohei Morishita[1]; Masato Yoshiya[2]; [1]Kyoto University; [2]Osaka University

High-Temperature Systems for Energy Conversion and Storage — Recent Advancements in Solid Oxide Fuel Cell Technology II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Tuesday AM
February 16, 2016
Room: 104E
Location: Music City Center

Session Chairs: Vikram Jayaram,, IISc; Prabhakar Singh, University of Connecticut

8:30 AM Invited
Thick Zirconia Coatings by Electrolytic Anodisation: Subodh Patel[1]; *Vikram Jayaram*[1]; Dipankar Banerjee[1]; [1]Indian Institute of Science

8:55 AM Invited
Chromium Poisoning in High Temperature (600-1000C) Electrochemical Systems: *Prabhakar Singh*[1]; Chiying Liang[1]; Boxun Hu[1]; Manoj Mahapatra[1]; Byung Jun[1]; [1]University of Connecticut

9:20 AM Invited
Electrical Contact and Contact Materials for Solid Oxide Fuel Cell Stacking: *Jiahong Zhu*[1]; [1]Tennessee Technological University

9:45 AM Invited
Advanced Interconnect Coating Process for Planar SOFC Stacks: *Jung Pyung Choi*[1]; Jeff Stevenson[1]; Matt Chou[1]; [1]Pacific Northwest National Laboratory

10:10 AM Break

10:30 AM Invited
An Improvement of SOFC Durability by the Mass Transport Analysis at the Interfaces: *Teruhisa Horita*[1]; [1]AIST

10:55 AM
CeO2 Modified Spinel Coating on Ferritic Alloys for SOFC Interconnect Application: *Tingke Fang*[1]; Jiahong Zhu[1]; [1]Tennessee Tech University

11:15 AM Invited
High Performance Molybdenum Dioxide (MoO_2)-Based Anode for Gasolin-Fueled SOFCs: Beyong Wan Kwon[1]; *Su Ha*[2]; [1]Korea Institute of Science and Technology; [2]Washington State University

11:35 AM Invited
Synthesis and Characterization of Mixed-Cation Rare-Earth Orthophosphates: *Corinne Packard*[1]; [1]Colorado School of Mines

High Entropy Alloys IV — Alloy Development and Applications I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Tuesday AM
February 16, 2016
Room: 102A
Location: Music City Center

Session Chairs: Peter Liaw, The University of Tennessee; Michael Gao, National Energy Technology Laboratory

8:30 AM Keynote
Physical Metallurgy of High-entropy Alloys: *Jien-Wei Yeh*[1]; [1]National Tsing Hua University

9:00 AM Invited
Refractory High Entropy Alloy with Excellent Cold Workability: *Oleg Senkov*[1]; S. Lee Semiatin[1]; [1]Air Force Research Laboratory

9:25 AM
Deviation from High-Entropy Configurations in the Al1.3CoCrCuFeNi Alloy: *Louis Santodonato*[1]; Yang Zhang[2]; Mikhail Feygenson[1]; Chad Parish[1]; Michael Gao[3]; Richard Weber[4]; Joerg Neuefeind[1]; Zhi Tang[5]; Peter Liaw[6]; [1]Oak Ridge National Laboratory; [2]University of Illinois at Urbana-Champaign; [3]National Energy Technology Laboratory; [4]Materials Development, Inc.; [5]Virginia Tech; [6]The University of Tennessee

9:45 AM Invited
Thermodynamics of High Entropy Alloys: *Dan Miracle*[1]; Oleg Senkov[1]; [1]AF Research Laboratory

10:10 AM Break

10:25 AM Invited
Design of Single-Phase High-Entropy Alloys: *Michael Gao*[1]; David Alman[1]; Jeff Hawk[1]; [1]National Energy Technology Lab

10:45 AM Invited
On the Fracture Toughness of fcc Medium- and High-entropy Alloys at Ambient to Cryogenic Temperatures: Bernd Gludovatz[1]; Keli Thurston[2]; A. Hohenwarter[3]; Dhiraj Catoor[4]; Hongbin Bei[4]; Easo George[5]; *Robert Ritchie*[2]; [1]Lawrence Berkeley National Laboratory; [2]University of California Berkeley; [3]Montanuniversität Leoben ; [4]Oak Ridge National Laboratory; [5]Ruhr University

11:10 AM
A Bragg-Williams Model of Ordering in High-entropy Alloys: *Louis Santodonato*[1]; Peter Liaw[2]; [1]ORNL and UT; [2]The University of Tennessee

11:30 AM Invited
Design of Mo-based High Entropy Alloys: *Ganesh Balasubramanian*[1]; [1]Iowa State University

11:50 AM
Design of High Entropy Alloys of Single Phase Solid Solutions: *Yifan Ye*[1]; Yong Yang[1]; [1]City University of Hong Kong

Hume-Rothery Award Symposium: Thermodynamics of Materials — Phonon and Mechanisms II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Tuesday AM
February 16, 2016
Room: 107A
Location: Music City Center

Session Chairs: Dallas Trinkle, Univerity of Illinois, Urbana-Champaign; Michael Manley, Oak Ridge National laboratory

8:30 AM Invited
Experimental Studies of Mode-resolved Thermal Phonon Transport Properties: *Austin Minnich*[1]; [1]Caltech

9:00 AM Invited
Phonon Density of States and Dispersion Relations: Thermodynamics & Elasticity from Inelastic X-Ray Scattering: *Esen Alp*[1]; [1]Argonne National Laboratory

9:30 AM Invited
Phonon Dynamics and Vibrational Entropy of bcc Fe at Elevated Temperatures: *Lisa Mauger*[1]; Matthew Lucas[1]; Jorge Munoz[1]; Sally Tracy[1]; Brent Fultz[1]; [1]California Institute of Technology

10:00 AM Break

10:30 AM Invited
Phonons and Bonding in Information Storage Phase Change Materials: *Raphael Hermann*[1]; [1]Oak Ridge National Laboratory

11:00 AM Invited
The Topology of Fast Li-ion Conductors: *Gerbrand Ceder*[1]; [1]UC Berkeley

11:30 AM Invited
Electromechanical Coupling of Ferroelectric Relaxors Enhanced by Polar-nanoregion Vibrations: *Michael Manley*[1]; [1]Oak Ridge National Laboratory

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In-Situ Characterization of Mechanical Properties of Materials I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Tuesday AM
February 16, 2016
Room: 212
Location: Music City Center

Session Chairs: Vikas Tomar, Purdue University; Weizhong Han, Xi'an Jiaotong University

8:30 AM Invited
In Situ Raman Spectroscopy-based Imaging of the Spatial Distribution of Phases Induced during Instrumented Indentation of Silicon: *Robert Cook*[1]; Yvonne Gerbig[1]; Chris Michaels[1]; [1]National Institute of Standards and Technology

9:00 AM
Deformation Induced Structural Changes in Solid and Liquid Lubricant Films Studied by In Situ Raman Tribometry: *Praveena Manimunda*[1]; Richard Chromik[1]; Seong Kim[2]; Ala Al-Azizi[2]; Sanjay Biswas[3]; Vikram Jayaram[3]; [1]McGill University; [2]Pennsylvania State University; [3]Indian Institute of science

9:20 AM
Characterization of High Temperature Crack Tip Plasticity and Size Effect in Alloy 617 Using Nanomechanical Raman Spectroscopy and High Temperature Indentation: *Yang Zhang*[1]; Vikas Tomar[1]; [1]Purdue University

9:40 AM Invited
Investigation of Pressure-Induced Phase Transformation in Rare-Earth Orthophosphates by In-Situ Raman Spectroscopy: *Corinne Packard*[1]; [1]Colorado School of Mines

10:10 AM Break

10:30 AM
In Situ Micro-mechanical Testing – Case Studies in Crystal Rotation and Radiation Damage Effects: *Dhriti Bhattacharyya*[1]; Mihail Ionescu[1]; Ashley Reichardt[2]; Peter Hosemann[2]; Michael Saleh[1]; Robert Wheeler[3]; Paul Munroe[4]; Lyndon Edwards[1]; [1]ANSTO; [2]University of California, Berkeley; [3]Microtesting Solutions Inc.; [4]UNSW

10:50 AM
TEM In Situ Mechanical Testing of Irradiated Oxide Dispersion Strengthened Alloys: *Janelle Wharry*[1]; Yaqiao Wu[1]; Matthew Swenson[1]; Masego Lepule[1]; Kayla Yano[1]; [1]Boise State University

11:10 AM
In Situ Irradiation Induced Creep Measurements on Micropillar Specimens at Elevated Temperatures: *Sezer Özerinç*[1]; Robert Averback[1]; William King[1]; [1]University of Illinois at Urbana-Champaign

11:30 AM
In Situ Study of Defect Migration Kinetics and Self-Healing of Twin Boundaries in Heavy Ion Irradiated Nanotwinned Metals: *Jin Li*[1]; Kaiyuan Yu[2]; Youxing Chen[1]; Miao Song[1]; Haiyan Wang[1]; Mark Kirk[3]; Meimei Li[3]; Xinghang Zhang[1]; [1]Texas A&M University; [2]China University of Petroleum-Beijing; [3]Argonne National Laboratory

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Structure-Property Relations

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Tuesday AM
February 16, 2016
Room: 108
Location: Music City Center

Session Chair: Stephen Foiles, Sandia National Laboratories

8:30 AM
A Three-dimensional Polyhedral Structural Unit Model for Grain Boundaries in FCC Metallic Systems: Arash Banadaki[1]; *Srikanth Patala*[1]; [1]North Carolina State University

8:50 AM
Building, Optimizing and Characterizing Grain Boundaries in Atomistic Simulations: *Shawn Coleman*[1]; Mark Tschopp[1]; Jennifer Synowczynski-Dunn[1]; [1]U.S. Army Research Laboratory

9:10 AM
High-throughput Grain Boundary Property Calculations: Barriers and Solutions: *Jonathan Humberson*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

9:30 AM
Experimental Observations and Modeling of Interfacial Defects at an Asymmetric S=5 Grain Boundary in Fe: *Douglas Medlin*[1]; K. Hattar[1]; J. Zimmerman[1]; F. Abdeljawad[1]; S. Foiles[1]; [1]Sandia National Labs

9:50 AM
A General and Predictive Model of Anisotropic Grain Boundary Energy and Morphology for Polycrystal-level Simulations: *Brandon Runnels*[1]; Irene Beyerlein[2]; Sergio Conti[3]; Michael Ortiz[4]; [1]University of Colorado; [2]Los Alamos National Laboratory; [3]Universidät Bonn; [4]California Institute of Technology

10:10 AM Break

10:30 AM Invited
Modeling Thermodynamics, Kinetics and Defects in Solidification Phenomena Using Phase Field Crystal Methods: *Nikolas Provatas*[1]; Gabriel Kocher[1]; Matthew Seymour[1]; Kate Elder[1]; Nana Ofori-Opoku[1]; Vahid Fallah[2]; Babak Raeisinia[3]; Shahrzad Esmaeili[2]; [1]McGill University; [2]University of Waterloo; [3]Novelis Global Research & Technology Center

11:10 AM
Grain Boundary Damage Resistance and Accommodation using Atomistic Simulations: *Garritt Tucker*[1]; Daniel Foley[1]; [1]Drexel University

11:30 AM
Dynamic Observation of Step Nucleation and Propagation at Grain Boundaries: *Matthew Bowers*[1]; Colin Ophus[1]; Abhay Gautam[1]; Frédéric Lançon[2]; Ulrich Dahmen[1]; [1]NCEM, Molecular Foundry, Lawrence Berkeley National Lab; [2]Laboratoire de Simulation Atomistique (L_Sim),SP2M,INAC,-CEA

11:50 AM
On the Interaction of Solutes with Grain Boundaries: *Remi Dingreville*[1]; Ste´phane Berbenni[2]; [1]Sandia National Laboratories; [2]Universite´ de Lorraine

Magnesium Technology 2016 — Alloy Development, Diffusion and Joining

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Tuesday AM
February 16, 2016
Room: 204
Location: Music City Center

Session Chairs: Sean Agnew, University of Virginia; Miroslav Sahul, Slovak University of Technology Bratislava

8:30 AM
Development of Mg-Al-Sn-Si Alloys Using a CALPHAD Approach: *Andrew Klarner*[1]; Weihua Sun[1]; Janet Meier[1]; Alan Luo[1]; [1]The Ohio State University

8:50 AM
First-principles Study of Solutes Addition on the Ideal Shear Strength of Pure Magnesium: *Pulkit Garg*[1]; Mehul Bhatia[1]; Kiran Solanki[1]; [1]SEMTE

9:10 AM
Lattice Ordering and Microstructure of Ultra-high Strength Mg-Ca-Zn Alloys: *Alok Singh*[1]; Althaf Dudekula[1]; Naoko Ikeo[2]; Hidetoshi Somekawa[1]; Toshiji Mukai[2]; [1]National Institute for Materials Science; [2]Kobe University

9:30 AM
Pre-Straining Effect on Precipitation Behavior of AZ31B: *Panthea Sepehrband*[1]; Matthew Lee[1]; Aaron Burns[1]; [1]Santa Clara University

9:50 AM Break

10:10 AM
The Effect of Ageing on the Compressive Deformation of Mg-Sn-Zn-Na Alloy: *Ehsan Bahrami motlagh*[1]; Alireza Ghaderi[1]; Sitarama Raju Kada[1]; Peter Lynch[1]; Matthew Barnett[1]; [1]Institute for Frontier Materials, Deakin University, 75 Pigdons Road, Waurn Ponds, VIC 3216

10:30 AM
First-principles Study of Diffusion Coefficients of Alloy Elements in Dilute Mg Alloys: *Bi-Cheng Zhou*[1]; ShunLi Shang[1]; Yi Wang[1]; Zi-Kui Liu[1]; [1]The Pennsylvania State University, University Park

10:50 AM
Study of ZE 10 Magnesium Alloy Welded Joints Produced with Disk Laser: *Miroslav Sahul*[1]; Martin Sahul[1]; [1]Slovak University of Technology Bratislava, Faculty of Materials Science and Technology in Trnava

11:10 AM
Similar and Dissimilar Ultrasonic Spot Welding of a Rare-earth Containing Zek100 Magnesium Alloy: *Andrew Macwan*[1]; Daolun Chen[1]; [1]Ryeron University

11:30 AM
Effect of Filler Wires on Cracking along Edges of Magnesium Welds: Tao Yuan[1]; Xiao Chai[2]; *Sindo Kou*[3]; [1]Tianjin University; [2]Novelis Global Research & Technology Center; [3]University of Wisconsin-Madison

Material Design Approaches and Experiences IV — Light Metals

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Tuesday AM
February 16, 2016
Room: 208A
Location: Music City Center

Session Chairs: Mei Li, Ford Motor Company; Alan Luo, Ohio State University

8:30 AM Invited
Development of Advanced Cast Aluminum Alloys for Automotive Engine Applications: *Mei Li*[1]; [1]Ford Motor Company

9:00 AM Invited
ICME Design and Implementation of Recycled Cast Aluminum Alloys for Marine and Other Demanding Applications: *Kevin Anderson*[1]; Raymond Donahue[1]; Vince Rudinger[2]; [1]Brunswick Corporation; [2]University of Wisconsin - Madison

9:30 AM
Computational Thermodynamic Facilitate Solution Heat Treatment Design for Aluminum and Magnesium Alloys: *Song-Mao Liang*[1]; Di Wu[2]; Rainer Schmid-Fetzer[1]; [1]Clausthal University of Technology; [2]The Group of Magnesium Alloys and Their Applications, Institute of Metal Research, Chinese Academy of Sciences

9:50 AM Break

10:10 AM Invited
Alloy Design and Development: From Classical Thermodynamics to CALPHAD and ICME Approaches: *Alan Luo*[1]; [1]The Ohio State University

10:40 AM
Combinatorial Approach for Precipitation Strengthening Alloy Design: *Alexis Deschamps*[1]; De Geuser Frederic[1]; [1]Grenoble Institute of Technology

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Fuels III

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Tuesday AM
February 16, 2016
Room: 101A
Location: Music City Center

Session Chair: Dennis Keiser, Idaho National Laboratory

8:30 AM Invited
Advanced Nuclear Fuels and Materials Development and Philosophy of the DOE Advanced Fuels Campaign: *J. Carmack*[1]; [1]Idaho National Laboratory

8:50 AM
Microstructural Investigation of TREAT Graphite Fuel Blocks: *Terry Holesinger*[1]; Erik Luther[1]; Isabella van Rooyen[2]; Pallas Papin[1]; Amber Telles[2]; Scott Niedzialek[3]; Alvin Short[3]; Clay Richardson[3]; [1]Los Alamos National Laboratory; [2]Idaho National Laboratory; [3]BWX Technologies, Inc.

9:10 AM
Fabrication of Mock Up LEU Fuel Elements for the TREAT Reactor: *Erik Luther*[1]; Isabella van Rooyen[2]; Lou Valenti[2]; Matthew Dvornak[1]; Anthony Crawford[2]; Ben Coryell[2]; [1]LANL; [2]Idaho National Laboratory

9:30 AM
Additive Manufacturing of Uranium-6 Wt. Pct. Niobium: *Amanda Wu*[1]; Gilbert Gallegos[1]; Matthew Wraith[1]; Stephen Burke[1]; Donald Brown[2]; [1]Lawrence Livermore National Laboratory; [2]Los Alamos National Laboratory

9:50 AM
Development of a Multi-component (Al, Am, Fe, Ga, Ni, Pu, and U) CALPHAD Database for Complex Actinide-based Systems: *Aurelien Perron*[1]; Patrice Turchi[1]; Alexander Landa[1]; Benoit Oudot[2]; Brice Ravat[2]; Francois Delaunay[2]; [1]Lawrence Livermore National Laboratory; [2]CEA-Centre de Valduc

10:10 AM Break

10:30 AM Invited
Fuel and Materials Development, Testing and Qualification for the Traveling Wave Reactor: *Kevan Weaver*[1]; [1]TerraPower

10:50 AM
TRISO Coating Development for Uranium Nitride Kernels: *Brian Jolly*[1]; Terrence Lindemer[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory

11:10 AM
BISON Fuel Performance Code Examination of Coating/Clad Interfaces for Accident Tolerant Fuels Irradiation Testing: *Kristine Barrett*[1]; Kelly Ellis[1]; Christopher Glass[2]; [1]Idaho National Laboratory; [2]ENERCON Federal Services, Inc.

11:30 AM
Thermal Conductivity of High Plutonium Content MOX Fuels: *Dragos Staicu*[1]; Somers Joe[1]; Wiss Thierry[1]; Konings Rudy, J.M.[1]; [1]European Commission, Joint Research Centre, Institute for Transuranium Elements

11:50 AM
TEM Study of Damaged Archive and Irradiated SUPERFACT Fuels: *Thierry Wiss*[1]; Oliver Dieste[1]; Ondrej Benes[1]; Jean-Yves Colle[1]; Dragos Staicu[1]; Detlef Wegen[1]; Rudy Konings[1]; Vincenzo Rondinella[1]; Damien Prieur[1]; Joseph Somers[1]; [1]EuropeanCommission - JRC -ITU

Materials Processing Fundamentals — Casting and Solidification Processes

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Laura Bartlett, Texas State University; Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

Tuesday AM
February 16, 2016
Room: 106B
Location: Music City Center

Session Chairs: Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

8:30 AM
Analysis of Second-Phase Particle Migration in Cadmium Zinc Telluride via Temperature Gradient Zone Melting
: Kerry Wang[1]; *Jeffrey Derby*[1]; [1]University of Minnesota

8:50 AM
Influence of Scale Formation on Copper Enrichment Behaviour in Continuously Cast Slab: *Cuihuan Huang*[1]; [1]Northeastern University

9:10 AM
Influence of Thermoelectric Magnetic Effect on the Structure Formation of Near-eutectic Alloys during Magnetic Field Assisted Directional Solidification: *Jiang Wang*[1]; Yves Fautrelle[2]; Xi Li[1]; Yunbo Zhong[1]; Zhongming Ren[1]; [1]Shanghai University & State Key Laboratory of Advanced Special Steel; [2]SIMAP/EPM, Grenoble Institute of Technology

9:30 AM
Multi-phase Field Modeling of Rapid Solidification in Thermal Spray Coating Deposition: *Tatu Pinomaa*[1]; Sebastian Gurevich[2]; Anssi Laukkanen[1]; Nikolas Provatas[2]; [1]VTT Technical Research Centre of Finland; [2]McGill University

9:50 AM Break

10:10 AM
Physical Simulation of Critical Blowing Rate of Entrainment of 80t Ladle: *Rui Wang*[1]; Yanping Bao[2]; Yihong Li[3]; Aichun Zhao[3]; Yafeng Ji[3]; Xiao Hu[3]; Qinxue Huang[3]; Jiansheng Li[3]; [1]State key laboratory of Advanced Metallurgy,University of Science and Technology Beijing; [2]University of science and technology of Beijing; [3]School of Materials Science and Engineering, Taiyuan University of Science and Technology

10:30 AM
Liquid Metal Modelling of Flow Phenomena in the Continuous Casting Process of Steel: *Klaus Timmel*[1]; Bernd Willers[1]; Thomas Wondrak[1]; Michael Röder[1]; Natalia Shevchenko[1]; Gunter Gerbeth[1]; Sven Eckert[1]; [1]Helmholtz-Zentrum Dresden-Rossendorf

Mechanical Behavior at the Nanoscale III — Fatigue, Fracture and Dynamic Deformation of Nanomaterials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Tuesday AM
February 16, 2016
Room: 214
Location: Music City Center

Session Chair: Harold Park, Boston University

8:30 AM Invited
Spalling Microscale, Single-crystal Films of High-quality, High-value Semiconductors: *Corinne Packard*[1]; [1]Colorado School of Mines

9:10 AM
Microstructural Changes in Cu-based Multilayers under Cyclic Sliding Contact: Zhao-Ping Luo[1]; Guang-Ping Zhang[2]; *Ruth Schwaiger*[1]; [1]Karlsruhe Institute of Technology (KIT); [2]Shenyang National Laboratory for Materials Science

9:30 AM
Ductile Crack Growth in Face-Centered Cubic Metal Nanosheets: *Wade Lanning*[1]; James Collins[1]; Christopher Muhlstein[1]; [1]Georgia Institute of Technology

9:50 AM Break

10:10 AM
Fatigue-induced Abnormal Grain Growth and Notch Effects in Nanocrystalline Metals: *Timothy Furnish*[1]; Brad Boyce[1]; [1]Sandia National Laboratories

10:30 AM
Review: Fracture Strength of Micro- and Nano-scale Silicon Components: *Robert Cook*[1]; Frank DelRio[1]; Brad Boyce[2]; [1]National Institute of Standards and Technology; [2]Sandia National Laboratories

10:50 AM
Accurate Characterization of Interstitial Sites and Prediction of Adsorption Energetics of Hydrogen Trapping at Grain Boundaries in FCC Transition Metals: Space Tessellation Algorithm and Mechanics Model: Xiao Zhou[1]; Daniel Marchand[1]; *Jun Song*[1]; Ting Zhu[1]; [1]McGill University

11:10 AM
ReaxFF Molecular Dynamic Research on Tribochemistry of Si/SiO2 Surface and Role of Water Molecules to Surface Wear Damage: *Jejoon Yeon*[1]; Seong Kim[1]; Adri van Duin[1]; [1]Pennstate University

11:30 AM
Stress and Strain Controlled Fatigue Properties of Cu with Highly Oriented Nanoscale Twins: Q.S. Pan[1]; *Lei Lu*[1]; [1]Institute of Metal Research, CAS

Metal and Polymer Matrix Composites II — Nanocomposites

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Tuesday AM
February 16, 2016
Room: 110A
Location: Music City Center

Session Chair: To Be Announced

8:30 AM
Molten Salt Assisted Incorporation of High Volume Fraction Nanoparticles during Solidification Nanoprocessing of Light Metal Matrix Nanocomposites: *Weiqing Liu*[1]; Jiaquan Xu[1]; Lianyi Chen[1]; Chezheng Cao[1]; Xiaochun Li[1]; [1]University of California, Los Angeles

8:50 AM
Mechanical Properties of Mechanically Alloyed Nano-Scale Reinforced Al-SiC Metal Matrix Composites: *David Tricker*[1]; Andrew Tarrant[1]; Don Hashiguchi[1]; [1]Materion

9:10 AM
Enhanced Ductility with Significant Increase in Strength of As-Cast CNTs/AZ91D Nanocomposites: *Wenzhen Li*[1]; Rongyu Feng[1]; Lin Zhu[1]; [1]Tsinghua University

9:30 AM
Interfacial Bonding Effect on the Strength of Nanocomposites: *Seeun Shin*[1]; Seungwon Kang[1]; Jeheon Jeon[1]; Donghyun Bae[1]; [1]Yonsei University

9:50 AM
Pulsed Electrodeposited Ni-W-SiC Nano Composite Coatings as an Alternative for Hard Chrome Coatings: *G Sundararajan*[1]; Nitin Wasekar[2]; [1]International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), Hyderabad, India and Dept. of Metallurgical & Materials Engg., Indian Institute of Technology Madras, Chennai, India; [2]International Advanced Research Centre for Powder Metallurgy & New Materials

10:10 AM Break

10:30 AM
Two Step Ultrasonic Casting— A Novel Method for Achieving Uniform Distribution of Nano-Dispersoids in Bulk Nanocomposite: *VISHWANATHA HIRE MATH*[1]; Jayakumar Eravelly[1]; Cheruvu Siva Kumar[1]; Sudipto Ghosh[1]; [1]IIT Kharagpur

10:50 AM
The Synthesis and Processing Self-Healing Structural Al/Mg Lamellar Composite Materials: *Yasser Ahmed*[1]; Bakr Rabeeh[1]; [1]German University in Cairo

11:10 AM
Silver Nanowire/ Polylactide Nanocomposite Conducting Films: Doga Doganay[1]; Sahin Coskun[1]; Cevdet Kaynak[1]; *Husnu Unalan*[1]; [1]Middle East Technical University

11:30 AM
Filler Surface Nature, Bead, Solution Viscosity and Fibre Diameter of Electrospun Particle-reinforced Poly Lactide: *Samson Adeosun*[1]; Emmanuel Akpan[2]; Oluwashina Gbenebor[1]; Peter Akpan[1]; Samuel Olaleye[1]; [1]University of Lagos; [2]Ambrose Alli University

Nanostructured Materials for Nuclear Applications — Session III

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Tuesday AM
February 16, 2016
Room: 101C
Location: Music City Center

Session Chairs: David Hoelzer, Oak Ridge National Laboratory; Clarissa Yablinsky, Los Alamos National Laboratory

8:30 AM Invited
Irradiation Tolerant Amorphous Silicon Oxycarbide and Crystalline Fe Nanocomposites: *Michael Nastasi*[1]; [1]University of Nebraska-Lincoln

9:00 AM
Microstructural Stability of Various ODS Alloys under High Dose Ion Irradiation: *Frank Garner*[1]; Julia Kupriiyanova[2]; Alexander Kalchenko[2]; Oleg Borodin[2]; Victor Voyevodin[2]; Mychailo Toloczko[3]; [1]Radiation Effects Consulting; [2]Kharkov Institute of Physics and Technology; [3]Pacific Northwest National Laboratory

9:30 AM
Experiments on Controlled Helium Release through Nanocomposite Interface Design: *Yongqiang Wang*[1]; Nan Li[1]; Kevin Baldwin[1]; Di Chen[1]; Dina Yuyev[2]; Michael Demkowicz[2]; [1]Los Alamos National Laboratory; [2]Massachusetts Institute of Technology

9:50 AM
Microstructure and Mechanical Properties of High Dose Self-ion Irradiated Nanostructured Ferritic Alloys: *Eda Aydogan*[1]; O. Anderoglu[1]; S.A. Maloy[1]; L. Shao[2]; J. Gigax[2]; L. Price[2]; D. Chen[2]; X. Wang[2]; G. Odette[3]; D.T. Hoelzer[4]; J.J. Lewandowski[5]; I.E. Anderson[6]; J.R. Rieken[6]; [1]Los Alamos National Laboratory; [2]Texas A&M University; [3]University of California, Santa Barbara; [4]Oak Ridge National Laboratory; [5]Case Western Reserve University; [6]Ames Laboratory

10:10 AM Break

10:30 AM Invited
Radiation Response of Nanolayered, Nanoporous and Nanotwinned Metals: *Xinghang Zhang*[1]; Jin Li[1]; Kaiyuan Yu[2]; Youxing Chen[3]; Mark Kirk[4]; Cheng Sun[3]; Meimei Li[4]; Haiyan Wang[1]; [1]Texas A&M University; [2]China Petroleum University,; [3]Los Alamos National Laboratory; [4]Argonne National Laboratory

11:00 AM
In-situ Transmission Electron Microscopy/Irradiation Studies on Nanocrystalline Iron: Defect Density, Denuded Zone Formation and Grain Boundary Structure: *Osman El-Atwani*[1]; Asher Leff[1]; James Nathaniel[1]; J.Kevin Baldwin[2]; Brittany Muntifering[3]; Khalid Hattar[3]; Mitra Taheri[1]; [1]Drexel Unviersity; [2]Los Alamos National Laboratory; [3]Sandia National Laboratories

11:20 AM
Characterization of Nuclear Materials Using Combined TEM and Atom Probe Tomography: *Peter Wells*[1]; Stephan Kraemer[1]; Yuan Wu[1]; Soupitak Pal[1]; Takuya Yamamoto[1]; G. Odette[1]; [1]UC Santa Barbara

11:40 AM
Understanding the Nanoscale Disordering and Morphological Uncertainties in Radiation Induced Ion Tracks of Gd2TiZrO7 by an Analytical Electron Microscopic Perspective: *Ritesh Sachan*[1]; Matthew Chisholm[1]; Yanwen Zhang[1]; William Weber[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XV — Pb-free Soldering & Direct Bonding

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Shien Ping Feng, The University of Hong Kong; Clemens Schmetterer, Fraunhofer Institute

Tuesday AM
February 16, 2016
Room: 109
Location: Music City Center

Session Chairs: Shijo Nagao, Osaka University; Chao-hong Wang, National Chung Cheng University

8:30 AM Invited
Creep-induced Voiding in Sn phase of Pb-free Solder Joint: *Choong-Un Kim*[1]; Minyoung Kim[1]; [1]University of Texas at Arlington

9:00 AM Invited
Analysis for Formation of Kirkendall Voids during Solid-state Annealing in the Cu/Sn System: *Minho O*[1]; Masanori Kajihara[1]; [1]Tokyo Institute of Technology

9:30 AM
Strong Inhibition of IMC Growth at the Sn/Co System by Minor Ga Addition: *Chao-hong Wang*[1]; Kuan-ting Li[1]; [1]National Chung Cheng University

9:50 AM Break

10:10 AM Invited
Rapid Formation and Phase Transformation of Intermetallic Compounds Interconnection under Stress Current at Ambient Temperature: *Yanhong Tian*[1]; Baolei Liu[1]; [1]Harbin Institute of Technology

10:40 AM Invited
Low-temperature Pressure-less Silver-to-silver Direct Bonding at Ambient Condition: Part I-Experimental Study: *Shijo Nagao*[1]; Chulmin Oh[1]; Shih-kang Lin[2]; Hao Zhang[1]; Emi Yokoi[1]; Takeshi Ishibashi[1]; Katsuaki Suganuma[1]; [1]The Institute of Scientific and Industrial Research (ISIR) Osaka University; [2]Department of Materials Science and Engineering, National Cheng Kung University

11:00 AM
Low-temperature Pressure-less Silver-to-silver Direct Bonding at Ambient Condition: Part II-Mechanistic Study: *Shih-kang Lin*[1]; Shijo Nagao[2]; Chulmin Oh[2]; Hao Zhang[2]; Yu-chen Liu[1]; Shih-guei Lin[1]; Katsuaki Suganuma[2]; [1]National Cheng Kung University; [2]Osaka University

11:20 AM
Low Temperature Au to Au Direct Bonding by Highly <110>-oriented Au Films: *Jia-Ming Li*[1]; Chih Chen[1]; [1]Department of Materials Science and Engineering, National Chiao Tung University

11:40 AM
Low Temperature Copper to Copper Direct Bonding with Different Thickness of (111) Nanotwinned Cu: *Chih Han Tseng*[1]; Chih Chen[1]; [1]National Chiao Tung University

Phase Transformations and Microstructural Evolution — Phase Transformations - Correlation to Properties and Thermal Stability

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Tuesday AM
February 16, 2016
Room: 107B
Location: Music City Center

Session Chair: Eric Lass, NIST

8:30 AM
Processing and Characterization of High-Temperature Resistant Aluminum Alloys Microalloyed with Sc, Er and Zr: *Dinc Erdeniz*[1]; Wahaz Nasim[2]; Jahanzaib Malik[2]; Sung-Il Baik[1]; Bilal Mansoor[3]; Georges Ayoub[4]; Ibrahim Karaman[2]; David Seidman[1]; David Dunand[1]; [1]Northwestern University; [2]Texas A&M University; [3]Texas A&M University at Qatar; [4]American University of Beirut

9:00 AM
Nanoscale Precipitation-Strengthened Al-Er-Sc-Zr-(V,Nb,Ta) Alloys: *Keith Knipling*[1]; [1]Naval Research Laboratory

9:20 AM
Mechanisms Underlying Residual Stress Generation During the Oxidation of Silicon Carbide: *Ramanathan Krishnamurthy*[1]; Pavel Mogilevsky[1]; Craig Przybyla[1]; Triplicane Parthasarathy[1]; Randall Hay[1]; [1]AirForce Research Laboratory

9:40 AM
Nano-sized Precipitate Stability and Its Controlling Factors in a NiAl-strengthened Ferritic Alloy: *Zhiqian Sun*[1]; Gian Song[1]; Jan Ilavsky[2]; Gautam Ghosh[3]; Peter Liaw[1]; [1]The University of Tennessee; [2]Argonne National Laboratory; [3]Northwestern University

10:00 AM Break

10:20 AM
Corrosion Effects on Mechanical Properties of Sensitized AA5083-H116: *Robert Mills*[1]; Brian Lattimer[1]; Scott Case[1]; [1]Virginia Tech

10:40 AM
Roles of Initial Microstructure and External Stress on the Thermal Stability of TiAl Base Intermetallics: *Jieren Yang*[1]; Xuyang Wang[1]; Bei Cao[1]; Hongchao Kou[1]; Jinshan Li[1]; [1]Northwestern Polytechnical University

11:00 AM
The Effect of Initial Microstructure on the Mechanical Properties of Bi-lamellar Ti-6Al-4V: *Yan Chong*[1]; Nobuhiro Tsuji[1]; [1]Kyoto University

11:20 AM
The Effects of Micro-alloying on the High-Temperature Stability of Strengthening Precipitates in Cast Aluminum: *Patrick Shower*[1]; [1]Oak Ridge National Laboratory

11:40 AM
Titanium Based Metal-matrix Composites via In-situ Nitridation: Microstructure and Tribological Properties: *Tushar Borkar*[1]; Thomas Scharf[1]; Rajarshi Banerjee[1]; [1]University of North Texas

12:00 PM
Effects of Microstructure on the Selective Internal Oxidation of Multi-Phase Alloys: *Stephen Kachur*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Phase Transformations in Advanced High Strength Steels

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Tuesday AM
February 16, 2016
Room: 110B
Location: Music City Center

Session Chairs: Sybrand van der Zwaag, TU Delft; Mohamed Gouné, Université de Bordeaux

8:30 AM Invited
In-situ Observation of Austenite Growth in Very Low Carbon Fe-Ni and Mn Alloys: *Masato Enomoto*[1]; Xianliang Wan[2]; [1]Ibaraki University; [2]Wuhan University of Science and Technology

9:00 AM
On the Roles of Dislocations in Austenite Reversion from Martensite: *Jiayi Yan*[1]; Annika Borgenstam[1]; John Ågren[1]; [1]KTH Royal Institute of Technology

9:20 AM
Reversion of Austenite from Martensitic Fe-2Mn-1.5Si-0.3C Alloy during Continuous Heating Process: *Xianguang Zhang*[1]; Goro Miyamoto[1]; Tadashi Furuhara[1]; [1]Institute for Materials Research, Tohoku University

9:40 AM
Austenite Reversion during Intercritical Annealing in a Medium-Mn Steel: Simulations and Experiments: *Fei Huyan*[1]; Jiayi Yan[1]; John Ågren[1]; Annika Borgenstam[1]; [1]KTH Royal Institute of Technology

10:00 AM Break

10:20 AM Invited
Reversed Austenite Transformation in Medium Manganese Steels: *Zhi-Gang Yang*[1]; Chuan Zhao[1]; Chi Zhang[1]; Hao Chen[1]; [1]Tsinghua University

10:50 AM
In Situ Investigations of Partitioning Mechanisms in Q&P Steels by Synchrotron Diffraction Experiments: *Sébastien Allain*[1]; Guillaume Geandier[1]; Jean-Christophe Hell[2]; Michel Soler[2]; Mohamed Goune[3]; Frédéric Danoix[4]; [1]Institut Jean Lamour; [2]Arcelormittal Maizières Research SA; [3]ICMCB; [4]GPM

11:10 AM
Quenching and Partitioning of a Ductile Cast Iron: *Arthur Nishikawa*[1]; André Melado[1]; Anderson Ariza[1]; André Tschiptschin[1]; Hélio Goldenstein[1]; [1]University of São Paulo

11:30 AM
Tempering Behaviour of a Quenched Microalloyed Pipeline Steel: *Lucas Nishikawa*[1]; Paulo Ogata[1]; Arthur Nishikawa[1]; Mario Ramirez[1]; Hélio Goldenstein[1]; [1]University of São Paulo

11:50 AM
Grain Boundary Segregation of Nb in Fe-30%Mn Austenite Steels: *Madhumanti Bhattacharyya*[1]; Hatem Zurob[1]; [1]McMaster University

Powder Metallurgy of Light Metals — Light Metal Powder Synthesis and Titanium Aluminide

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Zhigang Fang, University of Utah ; Qian Ma, RMIT University

Tuesday AM
February 16, 2016
Room: 205C
Location: Music City Center

Session Chairs: Zhigang Fang, University of Utah; Iver Anderson, Ames Laboratory

8:30 AM Invited
Tuning of Close-coupled Gas Atomization for Generating Light Metal Powder for Additive Manufacturing: *Iver Anderson*[1]; David Byrd[1]; Ross Anderson[1]; Emma White[1]; [1]Ames Laboratory

9:00 AM
An Energy Efficient Thermochemical Process for Production of Ti Metal Powder: *Ying Zhang*[1]; Zhigang Zak Fang[1]; Yang Xia[1]; Pei Sun[1]; Zhe Huang[1]; Hyrum Lefler[1]; Tuoyang Zhang[1]; Michael Free[1]; [1]University of Utah

9:20 AM
Characteristics of Titanium Powders by Gas Atomization and PREP: *Gang Chen*[1]; P. Tan[2]; S. Zhao[2]; J. Wang[2]; Weiwei He[2]; H. P. Tang[2]; [1]Northwest Institute for Nonferrous Metals Research; [2]Northwest Institute for Nonferrous Metal Research

9:40 AM
Verification of a Predictive Strength Model for Gas-Atomized Aluminum Powder: *Baillie McNally*[1]; Danielle Cote[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

10:00 AM
Production of Titanium Hydride Powder by Leaching of Aluminum and Silicon Impurities from Reduced Upgraded Titania Slag for Low Cost Titanium Production: *Syamantak Roy*[1]; Jaehun Cho[1]; Nathan Hamilton[1]; Amarchand Sathyapalan[1]; Michael Free[1]; Zhigang Fang[1]; [1]University of Utah

10:20 AM Break

10:40 AM
Synthesis and Densification of Large-sized TiAl Alloy Samples by Spark Plasma Sintering: *Yongjun Su*[1]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University

11:00 AM
Development of an Efficient TiAl Alloy and Densification of Near-net Shape Blades by Spark Plasma Sintering: *Thomas Voisin*[1]; Jean-Philippe Monchoux[1]; Lise Durand[1]; Nikhil Karnatak[2]; Marc Thomas[3]; Alain Couret[1]; [1]CEMES/CNRS; [2]Mecachrome; [3]ONERA-The French Aerospace Lab

11:20 AM
Mechanical Properties and Microstructure of PM Ti-Si_3N_4 Discontinuous Fibre Composite: *Troy Dougherty*[1]; Ying Xu[1]; Ainaa Hanizan[1]; [1]Nuenz Limited

11:40 AM
A Porous TiAl Intermetallic Compound with Double Pore Structures Fabricated by Powder Metallurgy Using Carbamide as a Space Holder: *Hui Wang*[1]; Xiongjun Liu[1]; Yuan Wu[1]; Zhaoping Lu[1]; [1]University of Science and Technology Beijing

Rare Metal Extraction & Processing Symposium — Platinum Group Metals / Mo, Ti, V & W

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Shafiq Alam, University of Saskatchewan; Hojong Kim, Penn State University; Neale Neelameggham, Ind LLC; Takanari Ouchi, MIT; Harald Oosterhof, Umicore

Tuesday AM
February 16, 2016
Room: 106A
Location: Music City Center

Session Chairs: Neale Neelameggham, Ind LLC; Hojong Kim, The Pennsylvania State University

8:30 AM Keynote
Adsorptive Recovery of Palladium and Platinum from Acidic Chloride Media Using Chemically Modified Persimmon Tannnin: Manju Gurung[1]; Birendra Adhikari[1]; Katsutoshi Inoue[1]; Hidetaka Kawakita[1]; Keisuke Ohto[1]; *Shafiq Alam*[2]; [1]Saga University; [2]University of Saskatchewan

9:05 AM
Investigation of Iron Removal from Reduced Upgraded Titania Slag Using Mild Acids: *Jaehun Cho*[1]; Syamantak Roy[1]; Amarchand Sathyapalan[1]; Michael Free[1]; Zhigang Fang[1]; [1]University of Utah

9:30 AM
Production of Tungsten by Pulse Current Reduction of $CaWO_4$: *Furkan Özdemir*[1]; Metehan Erdogan[2]; Ishak Karakaya[1]; Mustafa Elmadagli[3]; [1]Middle East Technical University; [2]Yildirim Beyazit University; [3]Roketsan

9:55 AM Break

10:15 AM
Stripping of Fe^{3+} from P204 by Oxalic Acid: Changjun Jiang[1]; Shengfan Zhou[1]; Mingyu Wang[1]; Xuewen Wang[1]; [1]Central South University

10:40 AM
Recovery and Purification of In3+ from Zinc Hydrometallurgical Process in a T-junction Microchannel: *Chuanhua Li*[1]; Feng Jiang[1]; Shaohua Ju[1]; Jinhui Peng[1]; Libo Zhang[1]; [1]Faculty of Metallurgical and Energy Engineering

REWAS 2016 — Plenary Session: Materials Matter: Deriving Value from Resource Recovery at Multiple Materials Scales

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Tuesday AM
February 16, 2016
Room: 104B
Location: Music City Center

Session Chair: To Be Announced

8:35 AM Introductory Comments

8:40 AM Invited
Gold Evolving Role in the Circular Economy: *Trevor Keel*[1]; [1]Consultant to the World Gold Council

9:05 AM Invited
Automotive Recycling Innovations in Aluminum: *Sil Colalancia*[1]; [1]Novelis

9:30 AM Invited
2016 EPD Distinguished Lecture: Digitalizing the Circular Economy -System-Integrated-Material-Production: *Markus Reuter*[1]; [1]Helmholtz-Zentrum Dresden-Rossendorf

10:00 AM Panel Discussion

10:15 AM Break

10:30 AM Invited
Industrial Symbiosis and Materials Management: Physical Resource Sharing Among Proximate Firms: *Marian Chertow*[1]; [1]Yale School of Forestry & Environmental Studies

10:55 AM Invited
Water at the Heart of the Circular Economy: *Edwin Piñero*[1]; [1]Veolia North America

11:20 AM Invited
Environmental Impacts of Additive Manufacturing: *William Flanagan*[1]; [1]General Electric Company

11:45 AM Panel Discussion

12:00 PM Concluding Comments

Shape Casting: 6th International Symposium — Engineering High Quality Castings I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Glenn Byczynski, Nemak Canada; Mark Jolly, Cranfield University

Tuesday AM
February 16, 2016
Room: 203B
Location: Music City Center

Funding support provided by: Nemak (possibly)

Session Chair: Murat Tiryakioglu, University of North Florida

8:30 AM Introductory Comments Welcome by the Symposium Organizers

8:35 AM
Bifilms and Hot Tearing of Al-Si Alloys: Muhammet Uludag[1]; Remzi Cetin[2]; *Derya Dispinar*[3]; [1]Selcuk University; [2]Halic University; [3]Istanbul University

9:00 AM
Crack Susceptibility of Binary Aluminum Alloys: Analytical Equations: Jiangwei Liu[1]; *Sindo Kou*[1]; [1]University of Wisconsin-Madison

9:25 AM
The Unidirectional Solidification of Ti-46Al-8Nb Alloy with BaZrO3 Coated Al2O3 Mould
: *Wei Chao*[1]; Mingyang Li[1]; Guangyao Chen[1]; Hongbin Wang[1]; Chonghe Li[1]; Xionggang Lu[1]; [1]Shanghai University

9:45 AM
Analytical Model of Filling Fine Features and Sharp Corners in Investment Casting of CMSX-4: *Logan Kroneman*[1]; Matthew Krane[1]; Kevin Trumble[1]; [1]Purdue University

10:10 AM Break

10:30 AM
Real-time Radiography and Modeling of Porosity Formation in an A356 Aluminum Alloy Wedge Casting: *Vahid Khalajzadeh*[1]; Christoph Beckermann[1]; David Goettsch[2]; [1]University of Iowa; [2]GM

10:55 AM
Modeling of Distortion of a Steel Bracket Sand Casting: *Daniel Galles*[1]; Christoph Beckermann[1]; [1]University of Iowa

11:20 AM
SiC Particle Reinforced Al Matrix Composite by SIMA: *Emirhan Aydin*[1]; Caglar Yuksel[2]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

11:40 AM
Evolution of Primary Fe-rich Compounds in Secondary Al-Si-Cu Alloys: Alberto Fabrizi[1]; Stefano Capuzzi[1]; *Giulio Timelli*[1]; [1]University of Padua

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Steelmaking/Ferrous Applications II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Tuesday AM
February 16, 2016
Room: 106C
Location: Music City Center

Session Chairs: In-Ho Jung, McGill University; Joohyun Park, Hanyang University

8:30 AM Keynote
Coupled Thermodynamic and Kinetic Fundamental Simulations of Industrial Metallurgical Processes and Reactors: L.T.I. Jonsson[1]; M Ersson[1]; N.Å.I. Andersson[1]; L. Höglund[1]; A. Tilliander[1]; S. Du[1]; *Par Jonsson*[2]; [1]KTH; [2]KTH Royal Institute of Technology

9:10 AM
Dynamic Coupling of Thermodynamics and Kinetics for Steel/Slag Reactions: *Nils Andersson*[1]; Mikael Ersson[1]; Anders Tilliander[1]; Pär Jönsson[1]; [1]KTH Royal Institute of Technology

9:30 AM
Kinetic Model of the Reaction between Slag and Matte to Extract Mn from Steelmaking Slag: *Shinya Kitamura*[1]; Sun-joong Kim[1]; Junpei Suzuki[1]; [1]Tohoku University

9:50 AM
Coke Crystallite Thermodynamics Applied to Sulfur Control and Energy Balance in a Blast Furnace: *Philippe Ouzilleau*[1]; Patrice Chartrand[1]; [1]CRCT-Ecole Polytechnique de Montreal

10:10 AM Break

10:30 AM
Simulation of Ferro-alloy Smelting in DC Arc Furnaces Using Pyrosim and FactSage: *Rodney Jones*[1]; Markus Erwee[1]; [1]Mintek

10:50 AM
Modeling Steel-slag-inclusion Reactions: *P. Chris Pistorius*[1]; [1]Carnegie Mellon University

11:10 AM
Effect of Slag Properties and Alloy Quality on Inclusions in Tire Cord Steels: Changbo Guo[1]; Haitao Ling[1]; *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

11:30 AM
Application of Phase Diagram Software for Calculation of Physicochemical Properties in High-Temperature Processes: *Youn-Bae Kang*[1]; [1]Pohang University of Science and Technology

11:50 AM
The Importance of Thermodynamics for Business Intelligence Tools: *Sander Arnout*[1]; Els Nagels[1]; [1]InsPyro

Ultrafine Grained Materials IX — Gradient and Layered Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Tuesday AM
February 16, 2016
Room: 209B
Location: Music City Center

Session Chairs: Yuntian Zhu, North Carolina State University; Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences

8:30 AM Invited
Structures and Strength of Gradient Nanostructures: Niels Hansen[1]; *Xiaodan Zhang*[1]; Xiaoxu Huang[1]; [1]Technical University of Denmark

9:00 AM
Gradient Structures: Perspectives and Properties and Problems: Xiaolei Wu[1]; *Yuntian Zhu*[2]; [1]Chinese Academy of Sciences; [2]North Carolina State University

9:20 AM
Mechanical Behavior of Ultrafine-grain Gradient Structures Produced via Ambient and Cryogenic Surface Mechanical Attrition Treatment: *Heather Murdoch*[1]; Kristopher Darling[1]; A.J. Roberts[1]; Laszlo Kecskes[1]; [1]Army Research Lab

9:40 AM
Extraordinary Strain Hardening by Gradient Structure: *Xiaolei Wu*[1]; Yuntian Zhu[2]; [1]Institute of Mechanics, Chinese Academy of Sciences; [2]North Carolina State University

10:00 AM Break

10:20 AM Invited
Slip Transmission in fcc/fcc Bilayers Using Phase Field Dislocation Dynamics (PFDD): *Abigail Hunter*[1]; Yifei Zeng[2]; Irene Beyerlein[1]; Marisol Koslowski[2]; [1]Los Alamos National Laboratory; [2]Purdue University

10:50 AM
Strain Hardening and Mechanical Behavior of Gradient Structured AZ31: *Lifeng Liu*[1]; Xiaolei Wu[1]; Fuping Yuan[1]; [1]Institute of mechanics, Chinese academy of sciences

11:10 AM
Influence of Length Scale on Mechanical Properties of Multilayered Nanocrystalline Ni-Fe at Elevated Temperature: *Jochen Fiebig*[1]; Lilia Kurmanaeva[1]; Jie Jian[2]; Haiyan Wang[2]; John McCrea[3]; Enrique Lavernia[1]; Amiya Mukherjee[1]; [1]University of California, Davis; [2]Texas A & M University; [3]Integran Technologies Inc.

11:30 AM
Nitriding of Nanocrystalline Metals Generated by Ultrasonic Nanocrystal Surface Modification: Jingyi Zhao[1]; Zhencheng Ren[1]; Guoxiang Wang[1]; Yalin Dong[1]; *Chang Ye*[1]; [1]University of Akron

11:50 AM
Extreme Strengthening in Gradient Structured Aluminum Alloy: *Jordan Moering*[1]; Xiaolong Ma[1]; Yuntian Zhu; Suveen Mathaudhu[2]; [1]North Carolina State University; [2]University of California Riverside

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Nanostructures for Environmental and Energy Applications

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Tuesday PM
February 16, 2016
Room: 211
Location: Music City Center

Session Chairs: Jung-Kun Lee, Univesity of Pittsburgh; Simona Hunyadi Murph, Savannah River National Laboratory

2:00 PM Invited
Reversible CO2 Capture from an Amidine Functionalized Polymer Thin Film: *Brad Lokitz*[1]; Balaka Barkakaty[1]; James Browning[1]; [1]Oak Ridge National Laboratory

2:30 PM
Optimizing the Water Treatment Performance of Three-Dimensional Graphene Oxide-Based Hydrogels: *Thomas Duster*[1]; Keshav Swarup[1]; Lauren Greenlee[1]; [1]National Institute of Standards and Technology

2:50 PM
Synergistic Effects of Graphene Quantum Dot Sensitization and Nitrogen Doping of Ordered Nanoporous TiO2 Thin Films for Water Splitting Photocatalysis: *Syed Islam*[1]; Allen Reed[1]; Doo-Young Kim[1]; Stephen Rankin[1]; [1]University of Kentucky

3:10 PM
Reduced Graphene Oxide/TiO2 Nanocomposite Based Electron Transport Layer for Perovskite Solar Cells: *Gill Sang Han*[1]; Fangda Yu[1]; Jung-Kun Lee[1]; [1]University of Pittsburgh

3:30 PM
Energy Conversion and Storage Applications of Mesoporous Titania Thin Films with Controlled Pore Orientation: *Suraj Nagpure*[1]; Syed Islam[1]; Stephen Rankin[1]; [1]University of Kentucky

3:50 PM Break

4:10 PM
Hybrid Nanostructures and Nanoarchitectures: Fundamentals and Applications: *Simona Hunyadi Murph*[1]; [1]Savannah River National Laboratory

4:30 PM
Fabrication of Three Dimensional Carbon Nanotube - Nickel Nanofoam Heterostructures for Energy Storage Applications: *Mengya Li*[1]; Rachel Carter[1]; Cary Pint[1]; [1]Vanderbilt University

4:50 PM
Multifunctional Self-cleaning Nanofiber Membranes for Water Filtration: *Salman Arshad*[1]; Sobia Dilpazir[1]; Mohammad Usman[1]; [1]Lahore University of Management Sciences

5:10 PM
Synthesis and Characterization of Titaniumdioxide Polymer Nanocomposites and Gas Sensing Applications: *Poonam Jain*[1]; Shashi Janeoo[1]; Raman Chadha[1]; Mamta Sharma[1]; Gurinder Singh[1]; S.K. Tripathi[1]; J.K. Goswamy[1]; [1]University Institute of Engineering and Technology

5:30 PM
Synthesis, Characterization and Sensing Properties of Palladium- Doped Tin Dioxide Nanocomposites
: *Raman Chadha*[1]; Shashi Janeoo[1]; Poonam Jain[1]; Mamta Sharma[1]; Gurinder Singh[1]; S.K. Tripathi[1]; J.K. Goswamy[1]; [1]University Institute of Engineering and Technology. Panjab University .Chandigarh

7th International Symposium on High Temperature Metallurgical Processing — Fundamental Research of Metallurgical Process

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Tuesday PM
February 16, 2016

Room: 105B
Location: Music City Center

Session Chairs: Gerardo Alvear, Glencore Technology; Lifeng Zhang, University of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM
Reduction Kinetics of Hematite Concentrate Particles by CO+H_2 Mixture Relevant to a Novel Flash Ironmaking Process: *Yousef Mohassab*[1]; Feng Chen[2]; Mohamed Elzohiery[2]; Amr Abdelghany[2]; Shengqin Zhang[2]; Hong Yong Sohn[2]; [1]University of Utah ; [2]University of Utah

2:25 PM
SO3 Formation in Copper Smelting Process: Thermodynamic Consideration: Mao Chen[1]; Zhixiang Cui[2]; Leonel Contreras[3]; Chuanbing Wei[2]; *Baojun Zhao*[1]; [1]The University of Queensland; [2]Dongying Fangyuan Nonferrous Metals Co., Ltd; [3]National Copper Corporation of Chile

2:45 PM
Effect of Oxidation on Wetting Behavior between Silicon and Silicaon Carbide: Yaqiong Li[1]; *Lifeng Zhang*[1]; Zineb Benouahmane[1]; [1]University of Science and Technology Beijing

3:05 PM
Evaporation Kinetics of Tramp Elements in Liquid Steel: Sung-Hoon Jung[1]; *Youn-Bae Kang*[1]; [1]Pohang University of Science and Technology

3:25 PM
Heat Losses to Furnace Coolers as a Function of Process Intensity: *Mark Kennedy*[1]; Allan MacRae[2]; Harald Haaland[3]; [1]Proval Partners SA; [2]MacRae Technologies Inc; [3]Elkem

3:45 PM Break

4:00 PM
Viscosity of Partially Crystallized BOF Slag: *Zhuangzhuang Liu*[1]; Bart Blanpain[1]; Muxing Guo[1]; [1]KU Leuven

4:20 PM
Origin and Evolution of Non-metallic Inclusions for Al-killed Steel during EAF-LF-VD-CC Process
: *Haiyan Tang*[1]; [1]University of Science and Technology Beijing

4:40 PM
The Dynamic Dissolution of Coke with Slag in Melting and Dropping Zone: *Yingli Liu*[1]; Qingguo Xue[1]; Wentao Guo[1]; Haibin Zuo[1]; Xuefeng She[1]; Jingsong Wang[1]; [1]USTB

5:00 PM
Heat Transfer Property of Gas Jet Cooling in Confined Nozzle: Yang Jin[1]; Wu Chengbo[1]; *Zhang Jiangbin*[1]; [1]Chongqing University

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling — Ion Beam Irradiation and Comparisons between Neutron and Ion Irradiation

*Sponsored by:*TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Tuesday PM
February 16, 2016

Room: 101B
Location: Music City Center

Session Chair: Elaine West, Knolls Atomic Power Laboratory

2:00 PM Invited
On a Precipitation Damage Meter to Quantify Dose Rate and Damaging Particle Effects on Ion and Neutron Irradiated RPV Steels: *Takuya Yamamoto*[1]; Peter Wells[1]; Yuan Wu[1]; Nathan Almirall[1]; G. Robert Odette[1]; Hideo Watanabe[2]; Kenta Murakami[3]; Takeshi Toyama[4]; Yasuyoshi Nagai[4]; [1]Univ. of California Santa Barbara; [2]Kyushu University; [3]Univ. of Tokyo; [4]Tohoku University

2:30 PM
Comparison of Neutron, Proton, and Self-ion Irradiation of Fe-9%Cr ODS at 3 dpa, 500°C: *Matthew Swenson*[1]; Janelle Wharry[1]; [1]Boise State University

2:50 PM
Effect of Helium Implantation Mode on Void Formation in Ion-Irradiated T91 Steel: *Stephen Taller*[1]; Zhijie Jiao[1]; Elizabeth Getto[1]; Anthony Monterrosa[1]; Gary Was[1]; [1]University of Michigan

3:10 PM
Influence of Microstructural Features on Void Evolution in Self-Ion Irradiated HT9 at Very High Dose: *Elizabeth Getto*[1]; Zhijie Jiao[1]; Kai Sun[1]; Anthony Monterrosa[1]; Gary Was[1]; [1]University of Michigan

3:30 PM Break

3:50 PM
The Effect of Pre-implanted Helium on Void Incubation and Growth in Ferritic-Martensitic Steels: *Anthony Monterrosa*[1]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan

4:10 PM
Direct Observation of Radiation Response in Ni and Ni-base Concentrated Solid-solution Alloys
: *Chenyang Lu*[1]; Ke Jin[2]; Laurent Béland[2]; Taini Yang[1]; Feifei Zhang[1]; Yanwen Zhang[2]; Honbin Bei[2]; Roger Stoller[2]; Lumin Wang[1]; [1]University of Michigan; [2]Oak Ridge National Laboratory

4:30 PM
Effects of Electronic Energy Loss on Damage Evolution in Ion-irradiated Ceramics: *William Weber*[1]; Eva Zarkadoula[2]; Ritesh Sachan[2]; Haizhou Xue[1]; Ke Jin[2]; Yanwen Zhang[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

4:50 PM
Atom Probe Tomography Investigations of Reactor Pressure Vessel Steels Using High Dose Charged Particle Irradiations: *Nathan Almirall*[1]; Peter Wells[1]; Takuya Yamamoto[1]; G. Robert Odette[1]; Keith Wilford[1]; Ian Edmonds[2]; Sosuke Kondo[3]; Akihiko Kimura[3]; [1]University of California Santa Barbara; [2]Rolls-Royce; [3]Kyoto University

5:10 PM
Evaluation of Developed Microstructure of Cubic SiC Post Ion Irradiation: *Walid Mohamed*[1]; Laura Jamison[1]; Sumit Bhattacharya[1]; Kun Mo[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory

Additive Forming of Components - Tailoring Specific Material Properties in Low Volume Production — Additive Manufacturing of Graded Alloys, Steels, and Other Materials

Sponsored by:
Program Organizers: Judith Schneider, University of Alabama at Huntsville; Mark Stoudt, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory; Lee Semiatin, US Air Force Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology; Eric Lass, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.

Tuesday PM
February 16, 2016
Room: 205B
Location: Music City Center

Session Chairs: Mohsen Asle Zaeem, MST; Eric Lass, NIST

2:00 PM
Correlating Microstructure with Processing in Gradient Alloys Fabricated through Laser Deposition: *Douglas Hofmann*[1]; Scott Roberts[1]; Clincy Cheung[2]; Peter Dillon[1]; Bryan McEnerney[1]; John-Paul Borgonia[1]; [1]NASA JPL/Caltech; [2]Cal Poly San Luis Obisbo

2:20 PM
Fabrication and Property Development for a Functionally Graded Austenitic to Maraging Stainless Steel Component: *R. Dillon*[1]; John Borgonia[1]; Peter Hosemann[1]; Andrew Shapiro-Scharlotta[1]; Bryan McEnerney[1]; [1]Jet Propulsion Laboratory

2:40 PM
Precipitation Reactions Occurring during Laser Additive Manufacturing of Alloys: *Eric Jaegle*[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung

3:00 PM
Evaluation of Phase Transformation Kinetics in 17-4 Stainless Steel Manufactured by Direct Metal Laser Sintering: Sudha Cheruvathur[1]; *Mark Stoudt*[2]; Eric Lass[2]; Maureen Williams[2]; Yaakov Idell[2]; [1]Indira Gandhi Centre for Atomic Research, Kalpakkam, tamilnadu, India; [2]National Institute of standards and Technology

3:20 PM
Characterization of Microstructure and Mechanical Properties of Direct Metal Laser Sintered 15-5 PH1 Stainless Steel Powders and Components: *Jing Zhang*[1]; Yi Zhang[1]; Xingye Guo[1]; Weng Hoh Lee[1]; Bin Hu[2]; Zhe Lu[3]; Yeon-Gil Jung[3]; Je-Hyun Lee[3]; [1]Indiana University - Purdue University Indianapolis; [2]Dartmouth College; [3]Changwon National University

3:40 PM Break

4:00 PM
Irradiation Effects on Additively-Manufactured Stainless Steel and Nickel Base Alloys: *C. Joseph Long*[1]; Peng Xu[1]; William Cleary[1]; Joon-Hyung Choi[1]; Paula Freyer[1]; [1]Westinghouse Electric Company

4:20 PM
Customisation of Metal Powders for Additive Manufacturing Applications: the Tekna Process: *Jean-Francois Carrier*[1]; [1]Tekna Plasma Systems

4:40 PM
Reliability-Based Methods for Rapid Certification of Metal Additive Manufactured Parts: *Sanjeev Kulkarni*[1]; Robert Tryon[1]; Animesh Dey[1]; [1]VEXTEC

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Strategies for Qualification in AM I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Tuesday PM
February 16, 2016
Room: 205A
Location: Music City Center

Session Chairs: Mathieu Brochu, McGill University; Tarasankar DebRoy, Pennsylvania State University

2:00 PM Invited
Heat Transfer, Fluid Flow and Solidification in Additive Manufacturing: *Tarasankar DebRoy*[1]; [1]The Pennsylvania State University

2:30 PM
Empirical Approach to Understanding the Fatigue Behavior of Metals Made Using Additive Manufacturing: *David Witkin*[1]; Thomas Albright[1]; Dhruv Patel[1]; [1]The Aerospace Corporation

2:50 PM
Microstructural and Mechanical Characterization of □-Titanium Aluminide Manufactured by Electron Beam Melting: *Mohsen Seifi*[1]; Ayman Salem[2]; Daniel Satko[2]; Ulf Ackelid[3]; John Lewandowski[1]; [1]Case Western Reserve University; [2]Materials Resources LLC; [3]Arcam AB

3:10 PM
Microstructure Evolution of Martensitic Stainless Steel in Laser Hot Wire Cladding with Multiple Heating Passes: *Shaopeng Wei*[1]; Gang Wang[1]; Zhenguo Nie[1]; Zilin Huang[2]; Yiming Rong[1]; [1]Tsinghua University; [2]Beijing Jiaotong University

3:30 PM Break

3:50 PM Invited
Difference in Microstructure and Properties of Al Alloy Parts Processed by Selective Laser Melting and Powder Deposition Processes: *Mathieu Brochu*[1]; Ryan Chou[1]; Jason Milligan[1]; Javier Arreguin-Zavala[1]; Yuan Tian[1]; [1]McGill University

4:20 PM
Joining of Metallic Structures Using Powder Bed Fusion Additive Manufacturing Technology: *Jorge Mireles*[1]; [1]The University of Texas at El Paso

4:40 PM
Linking Fatigue Life Scatter to Microstructure Variability in DMLS: *Todd Book*[1]; Michael Sangid[1]; [1]Purdue University

5:00 PM
Study of Internal Fatigue Crack Growth from an Additive Manufacturing Initiated Flaw: *William Musinski*[1]; Edwin Schwalbach[1]; Adam Pilchak[1]; [1]US Air Force Research Lab

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session IV

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Tuesday PM
February 16, 2016
Room: 103B
Location: Music City Center

Session Chairs: Gerhard Dehm, Max-Planck-Institut für Eisenforschung; Qian Yu, University of Michigan, Ann Arbor

2:00 PM Invited
In Situ TEM Characterization on Size-related Dislocation Behavior in Mg and Phase Transformation in Ti: *Qian Yu*[1]; [1]University of Michigan, Ann Arbor

2:30 PM
Characterization of Atomistic Structures by Simulated Kikuchi Diffraction: Adam Herron[1]; *Eric Homer*[1]; Shawn Coleman[2]; Douglas Spearot[3]; [1]Brigham Young University; [2]US Army Research Laboratory; [3]University of Arkansas

2:50 PM
Secondary Deformation Density of a TWIP-TRIP Steel Strained at High Rates: *Jake Benzing*[1]; Whitney Poling[2]; Dean Pierce[2]; Kip Findley[2]; James Wittig[1]; [1]Vanderbilt University; [2]Colorado School of Mines

3:10 PM
Interrupted Quasi-static and Dynamic Tensile Experiments of Fully Annealed 301 Stainless Steel: *Oscar Rivera*[1]; Zackery McClelland[2]; Paola Rivera[3]; Wilburn Whittington[4]; David Francis[4]; Robert Moser[2]; Paul Allison[1]; [1]The University of Alabama; [2]US Army Corps of Engineers, Engineer Research and Development Center; [3]University of Puerto Rico Mayaguez; [4]Mississippi State University

3:30 PM Break

3:50 PM Invited
Unexpected Stress Induced Martensite Formation in Ultra-strong Pearlitic Steel: Soundes Djaziri[1]; Yujiao Li[1]; Shoji Goto[2]; Dierk Raabe[1]; *Gerhard Dehm*[1]; [1]Max-Planck-Institut für Eisenforschung; [2]Akita University

4:20 PM
In-situ Investigation of Rate Dependent Material Properties under Non-ambient Conditions: Challenges, Limitations & Insights: Reinhard Fritz[1]; Alexander Leitner[2]; Verena Maier[3]; *Daniel Kiener*[1]; [1]Montanuniversität Leoben; [2]Materials Center Leoben; [3]Austrian Academy of Sciences

4:40 PM
A Study of Local Rate Sensitivity in Dual-phase Ti Alloys by Micropillar Compression and CPFE Modelling: *Tea-Sung Jun*[1]; Zhen Zhang[1]; Fionn Dunne[1]; Ben Britton[1]; [1]Imperial College London

5:00 PM
Grain Boundary Engineering of a Low Stacking Fault Energy Ni-base Superalloy: *Joshua McCarley*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

5:20 PM
Evolution of Void Shape Anisotropy in Deformed bcc Steels: *Gregory Gerstein*[1]; Florian Nürnberger[1]; Hans Jürgen Maier[1]; [1]Leibniz Universität Hannover

5:40 PM
Neutron Diffraction Residual Stress Measurements in Al-Cu Cold Spray Deposited Coatings: *Luke Brewer*[1]; Lindsay Kolbus[2]; E. Payzant[2]; Jeremy Leazer[3]; Benjamin Bouffard[4]; [1]Other; [2]Oak Ridge National Laboratory; [3]Naval Postgraduate School; [4]Naval Surface Warfare Center Carderock Division

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Soft Magnetic Materials II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday PM
February 16, 2016
Room: 209C
Location: Music City Center

Session Chairs: Matthew Willard, Department of Materials Science and Engineering; M H Phan, University of South Florida

2:00 PM Invited
Recent Studies on Half Metallic Ferromagnets Belonging to the Heusler Family: *KG Suresh*[1]; [1]IIT Bombay

2:30 PM
Advanced Soft Magnetic Material Enabled Devices and Components for Emerging Energy Applications: *Paul Ohodnicki*[1]; Subhashish Bhattacharya[2]; Alex Leary[3]; Vladimir Keylin[3]; Michael McHenry[3]; [1]National Energy Technology Laboratory; [2]North Carolina State University; [3]Carnegie Mellon University

2:50 PM
Nanocomposite Soft Magnetic Alloys: Two Decades of Progress: *Matthew Willard*[1]; Maria Daniil[1]; [1]Case Western Reserve University

3:10 PM
High Silicon Iron Alloy Strips by Single-step Shear Deformation: *Andrew Kustas*[1]; Srinivasan Chandrasekar[1]; Kevin Trumble[1]; [1]Purdue University

3:30 PM Break

3:50 PM
Low Cost Soft Magnets for High Temperature Sensing Applications: *Michael Kurniawan*[1]; Vladimir Keylin[1]; Ashis Panda[2]; Rajat Roy[2]; David Greve[1]; Paul Ohodnicki[3]; Michael McHenry[1]; [1]Carnegie Mellon University; [2]CSIR-National Metallurgical Laboratory; [3]NETL

4:10 PM
Magnetic Nanoparticle-based Solder Composites for Electronic Packaging Applications: *Siyang Xu*[1]; Ashfaque Habib[1]; Michael McHenry[1]; [1]Carnegie Mellon University

4:30 PM
Magnetic Properties of Size-controlled Ni Nanoparticles Modified with Tri-n-octylphosphine: *Kenichi Yatsugi*[1]; Toshitaka Ishizaki[1]; Kunio Akedo[1]; [1]Toyota Central R&D Labs.,Inc.

4:50 PM
Soft-Phase Engineering and Hard-Phase Engineering in Exchange-Coupled Nanocomposite Magnets: *J.Ping Liu*[1]; [1]University of Texas-Arlington

5:10 PM
Novel Applications of Magnetic Nano-composites in Semiconductor Packaging: *Raja Swaminathan*[1]; [1]Intel Corporation

Alloys and Compounds for Thermoelectric and Solar Cell Applications IV — Session IV

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, CRISMAT laboratory; Stephane Gorsse, ICMCB-CNRS; Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University; CW Nan, Tsinghua University; G. Jeffrey Snyder, Northwestern University; Hsin-jay Wu, National Sun Yat-Sen University

Tuesday PM
February 16, 2016

Room: 103C
Location: Music City Center

Session Chairs: Lan Li, Boise State University; Sinn-wen Chen, National Tsing Hua University

2:00 PM Invited
Study of Diffusion Barrier for the Interfacial Reactions in Thermoelectric Materials under Current Stressing: *Albert T. Wu*[1]; Li-Chen Lo[1]; Po-Yin Chien[1]; [1]National Central University

2:20 PM Invited
Thermoelectric Mg- and Mn-Silicides: Challenges and Opportunities for Industrial Applications: *Vicente Pacheco*[1]; [1]Fraunhofer Institute IFAM

2:40 PM
Interfacial Reactions of PbTe and $Pb_{0.6}Sn_{0.4}Te$ Thermoelectric Materials with Ag and Cu Foils Using Rapid Hot-Pressing Method and SLID Technique: *Cheng-Chieh Li*[1]; F. Drymiotis[2]; L. L. Liao[3]; H. T. Hung[4]; C. K. Liu[3]; C. Robert Kao[4]; G. Jeffrey Snyder[1]; [1]Northwestern University; [2]California Institute of Technology; [3]Industrial Technology Research Institute; [4]National Taiwan University

3:00 PM
Interfacial Reactions at the Joints in the CoSb3-based Thermoelectric Devices: *Alan Chu*[1]; Sinn-wen Chen[1]; David Wong[1]; [1]Department of Chemical Engineering, National Tsing Hua University

3:20 PM Invited
Qualification and Opportunities of Direct Casting as an Industrialized and Scalable Manufacturing Method for Silicon Based Semi Conductor Materials: *Maarten Heijer*[1]; [1]RGS Development B.V.

3:40 PM Break

4:00 PM
Iron Oxide Based Amorphous Semiconductor Thin Films with Extraordinary Optical Transmission and Electrical Conductivity: Abhinav Malasi[1]; Humaira Taz[1]; Annette Farah[1]; Benjamin Lawrie[2]; Raphael Pooser[2]; Arthur Baddorf[2]; Gerd Duscher[1]; *Ramki Kalyanaraman*[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

4:20 PM
Kinetics of Boron Removal from Metallurgical Grade Silicon Using High Basic Calcium Silicate Slag Refining: *Jijun Wu*[1]; Min Xu[1]; Wenhui Ma[1]; Kuixian Wei[1]; Bin Yang[1]; Yongnian Dai[1]; [1]Kunming University of Science and Technology

4:40 PM
Surface Passivation by AlOx in c-Si Solar Cells: *Haider Ali*[1]; Kristopher Davis[1]; Winston Schoenfeld[1]; [1]UNIVERSITY OF CENTRAL FLORIDA

5:00 PM
Investigation of Thin Film Deposition inside Hollow Polymer Cylinders for Solar Energy Harvesting Fabric: *Mikayla Ehrsam*[1]; Humaira Taz[1]; Abhinav Malasi[1]; Ramki Kalyanaraman[1]; Connor Carr[1]; [1]University of Tennessee Knoxville

5:20 PM Concluding Comments

Alumina & Bauxite — Precipitation and Innovation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Paul McGlade, GHD

Tuesday PM
February 16, 2016

Room: 203A
Location: Music City Center

Session Chair: Shannon Parks, Alcoa

2:00 PM Introductory Comments

2:05 PM
Going FAR (Floating Alumina Refinery): *Bradley Hogan*[1]; [1]WorleyParsons

2:30 PM
Sustaining Capital of Alumina Refinery Projects – Important but Unloved: *Peter-Hans ter Weer*[1]; [1]TWS Services and Advice

2:55 PM
Alkalinity Precipitation Measurement on Carbonation of Bauxite Residue: *Luis Venancio*[1]; José Antonio Souza[2]; Emanuel Macedo[2]; Fernando Botelho[2]; [1]Federal University of Maranhao ; [2]Federal University of Pará

3:20 PM Break

3:35 PM
Extraction of Alumina from the Magnetic Separation Tailings Derived from Reductive Roasting of Red Mud: *Guanghui Li*[1]; Bona Deng[1]; Jinghua Zeng[1]; Zhuoxuan Li[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

4:00 PM
Reaction Behavior and Conversion of Anatase in Alumina Production Process with Calcification-carbonization Method: Wang Yanxiu[1]; *Zhang Ting'an*[1]; Lv Guozhi[1]; Zhu Xiaofeng[1]; Zhang Weiguang[1]; [1]Northeastern University

4:25 PM
Research on Activated Alumina Obtained by Spray Pyrolysis Method: Wang Long[1]; *Zhang Ting'an*[1]; Lv Guozhi[1]; Aichun Zhao[2]; Ma Sida[1]; Weiguang Zhang[1]; [1]Northeastern University; [2]School of Material Science and Engineering, Taiyuan University of Science and Technology

Aluminum Alloys, Processing and Characterization — Plasticity Behavior

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Tuesday PM
February 16, 2016

Room: 201B
Location: Music City Center

Session Chair: Xiyu Wen, University of Kentucky

2:00 PM Introductory Comments

2:05 PM Invited
On Microstructures, Textures and Electric Resistivity of Hot Band Annealing of Continuous Casting AA5754 Alloy: *Xiyu Wen*[1]; Jingwu Zhang[2]; Shridas Ningileri[3]; [1]University of Kentucky; [2]Yanshan University; [3]Secat Inc.

2:30 PM
New Methodology to Determine Stable Texture Components under Different Strain Paths in fcc Metals: Usman Ali[1]; Abhijit Brahme[1]; Raja Mishra[2]; *Kaan Inal*[1]; [1]University of Waterloo; [2]General Motors Research and Development Center

2:55 PM
Recrystallization in Al-Mg Alloys after Hot Compression: *Ryann Rupp*[1]; Andrew Weldon[1]; Trevor Watt[1]; Raul Perez-Bustamante[1]; Ken Takata[2]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]Nippon Steel and Sumitomo Metal Corp.

3:20 PM Break

3:35 PM
Large Strain Cyclic Simple Shear Behavior of Aluminum Extrusions: An Experimental and Numerical Study: *Kaan Inal*[1]; Waqas Muhammad[1]; Abhijit Brahme[1]; Jidong Kang[2]; Raja Mishra[3]; [1]University of Waterloo; [2]Canmet-MATERIALS; [3]General Motors Research and Development Center

4:00 PM
Quasi and Dynamic Compression of ECAP Processed AA 6082: *Ehab El-Danaf*[1]; Muneer Baig[1]; [1]King Saud University

4:25 PM
Study on Hot Sizing and Creep-ageing Behavior of Al-Cu-Mn Cast Alloy: *Wenguang Wang*[1]; Gang Wang[1]; Peng Du[1]; Guannan Guo[2]; Yiming Rong[2]; [1]Institute of Manufacturing Engineering, Tsinghua University; [2]Department of Manufacturing Engineering, Worcester Polytechnic Institute

4:50 PM
Producing Nanostructured Aluminum Alloys for Advanced Electrotechnical Application Using Severe Plastic Deformation: *Ruslan Valiev*[1]; Maxim Murashkin[1]; Georgy Raab[1]; Aleksandr Krokhin[2]; [1]Ufa State Aviation Technical University; [2]UC Rusal

Aluminum Reduction Technology — Smelter Operation & Energy Management

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Tuesday PM
February 16, 2016
Room: 202C
Location: Music City Center

Session Chair: Till Reek, TRIMET Aluminium SE

2:00 PM
Enhancing Production Performance by Optimization All Resources at PT INALUM (Persero): Muhammad Syafri Sunardi[1]; *Sahala Sijabat*[1]; Ivan Ermisyam[1]; [1]PT. Indonesia Asahan Aluminium (INALUM)

2:25 PM
A Novel Method for Processing Sodium Reduction Skimming Station Residue: *Shane Polle*[1]; Shaikha Al Shehhi[1]; Halim Khan[1]; Yousuf Abdulkhaliq[1]; Bharat Gadilkar[1]; Deepu Ramchandran[1]; [1]Emirates Global Aluminium, Al Taweela

2:50 PM
The 'Virtual Battery' – Operating an Aluminium Smelter with Flexible Energy Input: *Roman Düssel*[1]; Till Reek[1]; Pretesh Patel[2]; Nicholas Depree[2]; [1]TRIMET Aluminium SE; [2]LMRC Auckland

3:15 PM Break

3:30 PM
Understanding the Basic Requirements of the Anode Set Modifier: *Hershall Cotten*[1]; [1]RTW-Refractory, Inc.

3:55 PM
Reduction Operating Experience on Power Shading at Maaden: *Abdulaziz Al Taisan*[1]; [1]Ma'aden Aluminium

4:20 PM
Effect of Carbon Dust on the Electrical Resistivity of Cryolite Bath: *Louis Bugnion*[1]; Jean-Claude Fischer[1]; [1]R&D Carbon Ltd.

Bio Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Fundamentals II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Tuesday PM
February 16, 2016
Room: 206B
Location: Music City Center

Session Chair: Yuhei Hayamizu, Tokyo Institute of Technology

2:00 PM Invited
Mechanism of Specific Recognition of Pt Nanocrystals by Peptides and of their Formation from Seed Crystals: Hadi Ramezani-Dakhel; Yu Huang[1]; *Hendrik Heinz*[2]; [1]University of California-Los Angeles; [2]University of Akron

2:30 PM Invited
Computational Models of Peptide-Surface Interactions Drawn from Bacterial Display Studies: Up Close and Personal: *Margaret Hurley*[1]; Dimitra Stratis-Cullum[1]; Bryn Adams[1]; Justin Jahnke[1]; Deborah Sarkes[1]; Hong Dong[1]; [1]US Army Research Laboratory

3:00 PM Invited
Design Rules for Molecularly Interfacing Biology and Engineered Solids towards Biomimetic Devices: *Mehmet Sarikaya*[1]; [1]University of Washington

3:40 PM Break

4:00 PM Invited
Molecular-level Understanding of Peptide Adsorption at Fluid/Solid Interfaces through Molecular Simulation and Its Exploitation in Practise: *Mark Biggs*[1]; [1]Loughborough University

4:30 PM Invited
Novel Gyratory Methods for Forming Smart Biointerfaces: *Mohan Edirisinghe*[1]; [1]University College London

Biological Materials Science Symposium — Biomaterials II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Tuesday PM
February 16, 2016
Room: 207A
Location: Music City Center

Session Chairs: Rajendra Kasinath, DePuy Synthes; Kalpana Katti, North Dakota State University

2:00 PM Invited
Synthesis of Multifunctional Scaffolds from Natural Materials by Freeze Casting Technique: *Po-Yu Chen*[1]; Haw-Kai Chang[1]; Pang-Hsuan Lee[1]; Wen-Kaung Liu[1]; Hsin-Jui Wang[1]; Chih-Hsiang Chang[2]; Chin-Chih Tai[2]; Tzer-Shen Lin[2]; [1]National Tsing Hua University; [2]Industrial Technology Research Institute

2:40 PM
Fabrication of Polymer/Bio-based Hydroxyapatite Composite Electrospunn Fibers for Scaffold Applications: *Vijay Rangari*[1]; Vitus Apalangya[2]; Shaik Jeelani[1]; Tiimob Boniface[1]; Samuel Temesgen[1]; [1]Tuskegee University; [2]Allen University

3:00 PM
Nanoclay Scaffold Testbed for Growing 3D Cancer Tumoroids: *Kalpana Katti*[1]; MD Shahajahan Molla[1]; Dinesh Katti[1]; [1]North Dakota State University

3:20 PM Break

3:40 PM
The Effect on Head and Neck Cancer Cell Induced by N2/He Micro-plasma Exposure: *Chih-Ying Wu*[1]; Jiunn-Der Liao[1]; [1]Department of Materials Science and Engineering, National Cheng Kung University

4:00 PM
Atomistic-based Continuum Model of Spontaneous Self-assembly and Dynamics of Double Helix Polymers: *Helena Zapolsky*[1]; Mykola Lavrskyi[1]; Armen Khachaturyan[1]; [1]University of Rouen

Bladesmithing Symposium 2016 — Session II

*Sponsored by:*No Sponsors Found!
Program Organizers: Bharat Jasthi, South Dakota School of Mines and Technology; Roxana Ruxanda, Emerson Climate Technologies; Garry Warren, University of Alabama; Michael West, South Dakota School of Mines and Technology

Tuesday PM
February 16, 2016
Room: 104A
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM
A New Decorative Steel: Cryo-quenched Fe-Ni-Cr Alloy Single Crystals: *Lynn Boatner*[1]; [1]Oak Ridge National Laboratory

2:25 PM
Going Berserk: The Making of a Viking Sword: *David Sapiro*[1]; [1]Carnegie Mellon University

2:45 PM
The Creation of the Sword "Berkelium" through Authentic Saxon Sword Manufacturing Techniques: *Hi Vo*[1]; David Frazer[1]; Nathan Bailey[1]; Rachel Traylor[1]; Rachel Connick[1]; William Connick[1]; Jeff Bickel[1]; James Austin[1]; Peter Hosemann[1]; [1]University of California, Berkeley

3:05 PM
Material Design, Processing, and Characterization of Hand-Forged 5160 Spring Steel Sword: *Ziyin Huang*[1]; Christine Palmer[1]; David Freiberg[1]; William McDonnell[1]; Travis Weiss[1]; Caelyn Palmer[1]; Mitra Taheri[1]; Richard Knight[1]; [1]Drexel University

3:25 PM
Pattern Welded Steel Using Commercially Available Steel: *Michelle Hoffmann*[1]; [1]Colorado School of Mines

3:45 PM Break

4:00 PM
Accumulative Roll Bonding: *Mary Hawgood*[1]; [1]Illinois Institute of Technology

4:20 PM
South Dakota School of Mines and Technology Bladesmithing Team: *Luke Shearer*[1]; [1]South Dakota School of Mines and Technology

4:40 PM
University of Alberta Bladesmithing Group: *Ivan Au*[1]; Neil Anderson[1]; [1]University of Alberta

5:00 PM
Optimization of Mechanical and Chemical Properties of Knife Blade Alloys: Lucas Teeter[1]; *Cody Fast*; [1]Oregon State University

5:20 PM
University of North Texas Bladesmithing Submission: *Brandon Ohl*[1]; [1]University of North Texas

Bulk Metallic Glasses XIII — Structures and Mechanical Properties II

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Tuesday PM
February 16, 2016
Room: 101E
Location: Music City Center

Session Chairs: Lindsay Greer, University of Cambridge; Do Hyang Kim, Yonsei University

2:00 PM Keynote
Manipulating the Glassy State in Metals: *A. Greer*[1]; [1]University of Cambridge

2:30 PM
Elastic Heterogeneity in Compositionally-Varied Bulk Metallic Glasses and Their Composites: *Kelly Kranjc*[1]; Peter Tsai[1]; Emmanuelle Marquis[2]; Wolfgang Windl[3]; Katharine Flores[1]; [1]Washington University; [2]University of Michigan; [3]Ohio State University

2:50 PM Invited
Designed Heterogeneities Improve the Fracture Reliability of a Zr-based Bulk Metallic Glass: *Jamie Kruzic*[1]; Bosong Li[1]; Hamed Shakur Shahabi[2]; Sergio Scudino[2]; Jürgen Eckert[2]; [1]Oregon State University; [2]IFW Dresden

3:15 PM Invited
Shear-Band Stress Fields and Cavitation in Metallic Glasses: *Robert Maass*[1]; [1]University of Illinois at Urbana-Champaign

3:35 PM Break

3:50 PM Invited
Effect of Composition on Mechanical Rejuvenation by HPT Deformation in Zr-Cu-Al-Ni Metallic Glass: *Koichi Tsuchiya*[1]; Jiang Qiang[2]; Seiichiro II[1]; Shinji Kohara[1]; Koji Ohara[3]; Osami Sakata[1]; Karin Dahmen[4]; Peter Liaw[5]; [1]NIMS; [2]University of Tsukuba; [3]JASRI; [4]University of Illinois at Urabana-Champaign; [5]Univesity of Tennessee, Knoxville

4:10 PM
Effect of Microstructure on Mechanical Properties of Cu-Zr-Ti BMG Composites: Byoung Jin Kim[1]; *Won Tae Kim*[2]; Do Hyang Kim[1]; [1]Yonsei university; [2]Cheongju University

4:30 PM
Mechanical Properties of Micro-sized Metallic Glass Spheres: *Feng Jiang*[1]; Xiang Zhou[1]; Ke Tang[1]; Jun Sun[1]; [1]Xi'an Jiaotong University

4:50 PM
Formation, Structure and Dynamics of Plastic Zr-based Bulk Metallic Glasses: *Xidong Hui*[1]; Tuo Wang[1]; Yandong Wang[1]; Lina Hu[2]; [1]University of Science and Technology Beijing; [2]Shandong University

Bulk Processing of Nanostructured Powders and Nanopowders by Consolidation — Session IV

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Deliang Zhang, Shanghai Jiao Tong University; Bowen Li, Michigan Technological University; Stephen Mashl, Michigan Technological University

Tuesday PM
February 16, 2016
Room: 210
Location: Music City Center

Session Chairs: Dengshan Zhou, Shanghai JIao Tong University; Yongho Sohn, Central Florida University

2:00 PM Invited
Progress Towards Development of Nanostructured Magnesium Alloys and Composites: Understanding of Magnesium Strengthening by Solid Solutioning and Grain Size Reduction: *Kyu Cho*[1]; Anit Giri[1]; Franklyn Kellogg[1];

Clara Hofmeister[2]; Catherine Kammerer[2]; Le Zhou[2]; Esin Geller[2]; Abhishek Mehta[2]; Yongho Sohn[2]; [1]US Army Research Laboratory; [2]University of Central Florida

2:30 PM Invited
Spark Plasma Sintering of Nano-Crystalline High Surface Systems: *Eugene Olevsky*[1]; [1]San Diego State University

3:00 PM
Atomistic Simulation of Sintering of Nanopowders in Direct Metal Laser Sintering Process: *Yi Zhang*[1]; Jing Zhang[1]; [1]Indiana University-Purdue University Indianapolis

3:20 PM
Achieving Good Mechanical Properties and High Thermal Stability with Ultrafine Grained Cu-5at%Zr Alloy Synthesized by High Energy Mechanical Milling and Spark Plasma Sintering: *Wei Zeng*[1]; Dengshan Zhou[1]; Deliang Zhang[1]; [1]Shanghai Jiaotong University

3:40 PM Break

4:00 PM
The Influence of Heat Treatment Temperatue on the Bulk Cu-Al/B4C Prepared by Spark Plasma Sintering: *Jingchun Liu*[1]; Xinjia Liu[2]; Genfu Yuan[2]; [1]Jiangnan university; [2]Jiangnan University

4:20 PM
Fabrication of Titanium with a Novel Duplex Microstructure and High Strength: *Yifeng Zheng*[1]; Xun Yao[1]; Yongjun Su[1]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University

4:40 PM
Structural and Magnetic Properties of MnBi Extrudates: *Xiujuan Jiang*[1]; Mike Dahl[1]; Wei Xie[1]; Matthew Kramer[2]; Jun Cui[3]; [1]Pacific Northwest National Lab; [2]Ames National Laboratory; [3]Iowa State University

5:00 PM
Spark Plasma Heat Treated Coarse- and Nano-powder ZrB2-SiC and HfB2-SiC Composites: *Naidu Seetala*[1]; Marquavious Webb[1]; Lawrence Matson[2]; HeeDong Lee[3]; Carmen Carney[2]; Thomas Key[3]; [1]Gramblimg State University; [2]Wright-Patterson Air Force Base; [3]UES, Inc.

5:20 PM
Nanocrystalline Alumina Processing for High Pressure Sintering: *Dana Kazerooni*[1]; Boris Feigelson[1]; James Wollmershauser[1]; Edward Gorzkowski[1]; [1]Naval Research Laboratory

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — Furnaces and Energy Efficiency

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Tuesday PM
February 16, 2016
Room: 202A
Location: Music City Center

Session Chairs: Cynthia Belt, Consultant; Mark Jolly, Cranfield University

2:00 PM Introductory Comments

2:05 PM
Aluminum Casting Furnace Energy Efficiency : Recent Improvements in RTA Casthouses: *Vincent Goutiere*[1]; Martin Fortier[1]; [1]Rio Tinto Alcan

2:30 PM
Case Study on Round-Top Fire Rates: *Cynthia Belt*[1]; [1]Consultant

2:55 PM
Increasing Holding Furnace Capacity from 30 to be 40 Tons Molten Aluminium through Modification of Lining Design: Muhammad Syafri Sunardi[1]; IVAN ERMISYAM[1]; *Sahala Sijabat*[1]; [1]PT. Indonesia Asahan Aluminium (INALUM)

3:20 PM
Furnace Modelling for Efficient Combustion Gas Circulation: *Ayoola Brimmo*[1]; Mohamed Hassan[1]; [1]Masdar Institute of Science and Technology

3:45 PM Break

4:00 PM
Furnace Pressure Control Technology for Fuel Efficiency: *Robert Voyer*[1]; Francis Caron[2]; [1]Hatch; [2]Alcoa

4:25 PM
Calculated Aluminum Oxidation Rates during Rotary Furnace Melting through Flue Gas Analysis - Part Two: *Stewart Jepson*[1]; Hwanho Kim[1]; [1]Air Liquide

4:50 PM
On the Cast House Exergy Management: Mohamed Hassan[1]; *Ayoola Brimmo*[1]; [1]Masdar Institute of Science and Technology

CFD Modeling and Simulation in Materials Processing — Smelting, Degassing, Ladle Processing, Mechanical Mixing, and Ingot Casting

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, University of Illinois at Urbana-Champaign; Miaoyong Zhu, Northeastern University; Andreas Ludwig, Montanuniversitaet Leoben, Dep. Metallurgy; Adrian Sabau, Oak Ridge National Laboratory; Koulis Pericleous, University of Greenwich; Hervé Combeau, Institut Jean Lamour

Tuesday PM
February 16, 2016
Room: 207D
Location: Music City Center

Session Chair: Adrian Sabau, Oak Ridge National Lab

2:00 PM
CFD Modeling of a Ladle with Top Stirring Lance: Haibo Ma[1]; Xia Chen[1]; Hoyong Hwang[2]; Megan Pratt[3]; Russel Mulligan[3]; *Bin Wu*[1]; Guangwu Tang[1]; Chenn Zhou[1]; [1]Purdue University Calumet; [2]ArcelorMittal Global R&D; [3]ArcelorMittal Burns Harbor

2:20 PM
Numerical Simulation of Fluid Flow in RH Degasser: *Gujun Chen*[1]; Shengping He[1]; [1]Chongqing University

2:40 PM
Numerical Simulation on Multiphase Flow in the Two Side-blown Oxygen-enriched Copper Smelting Furnace: Liu Guanting[1]; Liu Yan[1]; Li Xiaolong[1]; *Zhang Ting'an*[1]; Jiang Xiaoli[1]; [1]Northeastern University

3:00 PM
3D CFD Modeling of the LMF System: *Laurentiu Nastac*[1]; Daojie Zhang[2]; Qing Cao[2]; April Pitts[3]; Robert Williams[4]; [1]The University of Alabama; [2]The Universtiy of Alabama; [3]The Universtiy of Alabama, Nucor Tuscaloosa; [4]Nucor Tuscaloosa

3:20 PM Break

3:40 PM
Application of CFD to Multi-phase Mixing in the Metals and Mining Industries: *Duane Baker*[1]; [1]Hatch Associates

4:00 PM
Review of Air Entrainment Study in Steel Casting: *Jun Ge*[1]; Charles Monroe[1]; [1]UAB

4:20 PM
Numerical Study and Experimental Validation of Multiple Pouring Processes in a 438 Ton Steel Ingot: *Duan Zhenhu*[1]; Shen Houfa[1]; Kang Jinwu[1]; Liu Baicheng[1]; [1]Tsinghua University; Beijing 100084, Chin

5:00 PM
Numerical Simulation of Effect of Different Electrodes on Magnetic Force and Flow Field of Pure Aluminum Melt: *Qixin Wang*[1]; Xiang Wang[1]; Zhishuai Xu[1]; Ning Pei[1]; Yongyong Gong[1]; Qijie Zhai[1]; [1]Shanghai University

4:40 PM
3D CFD Multicomponent Model for Cold Spray Additive Manufacturing of Titanium Particles: *Muhammad Faizan-Ur-Rab*[1]; Saden Zahiri[2]; Syed Masood[1]; M. Jahedi[2]; R. Nagarajah[1]; [1]Swinburne University of Technology; [2]CSIRO Manufacturing Flagship

Characterization of Minerals, Metals, and Materials — Clays & Ceramics

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Tuesday PM
February 16, 2016
Room: 103A
Location: Music City Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Maria Silva-Valenzuela, Federal University of ABC

2:00 PM
Formulation of Ceramic Body to Produce Roofing Tiles Using Winkler Diagram: *Lucas Amaral*[1]; Carlos Mauricio Vieira[1]; Sérgio Monteiro[1]; [1]State University of the North Fluminense Darcy Ribeiro

2:20 PM
FTIR Spectroscopy of Some Brazilian Clays: *Maria das Graças Silva-Valenzuela*[1]; Wang Shu Hui[2]; Francisco Valenzuela Díaz[2]; [1]Federal University of ABC; [2]University of São Paulo

2:40 PM
In-situ High Temperature X-ray Computed Micro-tomography of Ceramic Matrix Composite Processing: *Natalie Larson*[1]; Alastair MacDowell[2]; Dilworth Parkinson[2]; Carlos Levi[1]; Frank Zok[1]; [1]University of California, Santa Barbara; [2]Lawrence Berkeley National Lab

3:00 PM
Large Volume 3D Reconstruction of Metal and Ceramic Microstructures by Xe-ion Plasma FIB: *Madeleine Kelly*[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

3:20 PM
Mechanical Properties of Zirconium Diboride Ultra-high Temperature Ceramics in Wide Range of Strain Rates: Evgeniya Skripnyak[1]; *Vladimir Skripnyak*[1]; Vladimir Skripnyak[1]; Anatolii Bragov[1]; Andrei Lomunov[1]; Irina Vaganova[1]; [1]National Research Tomsk State University

3:40 PM Break

3:55 PM
Preparation and Characterization of Microcapsules from PBSL/VMF2 Nanocomposite: *Maria das Graças Silva-Valenzuela*[1]; Guilherme Fabozzi[2]; Felipe Cebukin[2]; Helio Wiebeck[2]; Francisco Valenzuela Díaz[2]; Wang Shu Hui[2]; [1]Federal University of ABC; [2]University of São Paulo

4:15 PM
Thermal Properties of Polypropylene Nanocomposites with Organoclay and Discarded Bond Paper: *Danilo Fermino*[1]; Christiano Bastos Andrade[1]; Duclerc Parra[2]; Ademar Lugão[3]; Francisco Valenzuela Diaz[1]; [1]USP; [2] IPEN/CNEN ; [3]IPEN/CNEN

4:35 PM
Incorporation of Waste Ceramic Blocks in Structural Ceramics: *Orley Oliveira*[1]; Christiano Gianesi Bastos Andrade[1]; Antonio Hortencio Munhoz Junior[2]; Maria das Graças Silva Valenzuela[3]; Francisco Valenzuela[1]; [1]USP; [2]Universidade Mackenzie; [3]Universidade Federal do ABC

4:55 PM
Solidification of Dredged Sludge by Hydraulic Ash-slag Cementitious Materials: *Shu-Jing Zhu*[1]; Jiann-Yang Hwang[2]; [1]WISCO R&D Center; [2]Michigan Technological University

5:15 PM
Synthesis and Characteristics of Anorthite Ceramics from Steelmaking Slag: Bowen Li[1]; *Mingsheng He*[2]; Jiann-Yang Hwang[1]; [1]Wuhan Iron & Steel Company Group/Michigan Technological University; [2]Wuhan Iron & Steel Company Group

Computational Materials Engineering for Nuclear Reactor Applications — Accident Tolerant Fuel Concepts

Sponsored by:
Program Organizers: Michael Tonks, Idaho National Laboratory; Julie Tucker, Oregon State University; Mark Tschopp, Army Research Laboratory; Richard Williamson, Idaho National Laboratory

Tuesday PM
February 16, 2016
Room: 101D
Location: Music City Center

Funding support provided by: The symposium will be co-sponsored by the ICME committee

Session Chair: To Be Announced

2:00 PM Invited
Development and Application of Accident Tolerant Fuel Models: *Jason Hales*[1]; [1]Idaho National Laboratory

2:40 PM
Analysis of the Candidate Alternative Fuel Cladding FeCrAl during LWR Operation Using the BISON-CASL Fuel Performance Code: *R. Sweet*[1]; N. George[1]; K. Terrani[2]; B. Wirth[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:00 PM
Thermo-Mechanical Analysis of SiC/SiC Composite Cladding for LWR Application.: *Gyanender Singh*[1]; Kurt Terrani[1]; Yutai Katoh[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM
Role of Stoichiometry on Ordering in Ni-Cr Alloys: *Fei Teng*[1]; Julie Tucker[2]; [1]Oregon State University ; [2]Oregon State University

4:00 PM Invited
Long-Term Defect Evolution in Iron-based Alloys from SEAKMC Simulations: *Haixuan Xu*[1]; [1]University of Tennessee

4:40 PM
Optimization of Self-interstitial Clusters in 3C-SiC Using Generic Algorithm: *Hyunseok Ko*[1]; Amy Kaczmarowski[1]; Izabela Szlufarska[1]; Dane Morgan[1]; [1]University of Wisconsin - Madison

5:00 PM
Phase-field modeling of ODS particle behavior in the metallic system.: *Kunok Chang*[1]; Junhyun Kwon[1]; [1]Korea Atomic Energy Research Institute

5:20 PM
Silicon and Vacancy Diffusion near an Edge Dislocation in Nickel under Irradiation: *Zebo Li*[1]; Thomas Garnier[2]; Venkateswara Manga[3]; Maylise Nastar[4]; Pascal Bellon[1]; Robert Averback[1]; Dallas Trinkle[1]; [1]University of Illinois, Urbana-Champaign; [2]Robatel Industries; [3]Univ. Arizona; [4]CEA, DEN, Service de Recherches de Métallurgie Physique

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Mesoscale Methods

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Tuesday PM
February 16, 2016
Room: 209A
Location: Music City Center

Session Chairs: Ken Elder, Oakland University; Danny Perez, Los Alamos National Laboratory

2:00 PM
A Multi-scale Approach to Shearing of Ordered Intermetallic Phase in Multi-phase Alloys: Bridging Ab Initio Calculation and Phase Field Simulation: *Duchao Lv*[1]; Pengyang Zhao[1]; Donald McAllister[1]; Michael Mills[1]; Yunzhi Wang[1]; [1]OSU MSE

2:20 PM
Quasiparticle Approach to Diffusional Atomic Scale Self-Assembly of Complex Structures: *Helena Zapolsky*[1]; Mykola Lavrskyi[1]; Armen Khachaturyan[2]; [1]University of Rouen; [2]University of California, Berkeley

2:40 PM Invited
Defects in Phase-Field Crystal Models: Comparison to Molecular Dynamics: David Montiel[1]; Jason Luce[1]; Bradley Hodge[2]; Philip Goins[2]; Elizabeth Holm[2]; *Katsuyo Thornton*[1]; [1]University of Michigan; [2]Carnegie Mellon University

3:10 PM
Parameterization of the Structural Phase Field Crystal Model for the Simulation of Grain Boundary Structures and Energies: *Jason Luce*[1]; Katsuyo Thornton[1]; [1]University of Michigan

3:30 PM Break

3:50 PM Invited
Recent Advances and Ongoing Challenges in Phase Field Crystal Modeling: *Ken Elder*[1]; Alain Karma[2]; Zhi-Feng Huang[3]; Nik Provatas[4]; [1]Oakland University; [2]Northeastern University; [3]Wayne State University; [4]McGill University

4:20 PM
Modeling Solidification, Grain Growth, and Phase Transformation by A Modified Two-Mode Phase-Field Crystal Model: *Arezoo Emdadi*[1]; Ebrahim Asadi[2]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology; [2]University of Memphis

4:40 PM
Towards Real-time Multi Scale Modeling: *Günter Gottstein*[1]; Markus Kuehbach[1]; Luis Barrales-Mora[1]; [1]RWTH Aachen University

Computational Methods for Uncertainty Quantification, Model Validation, and Stochastic Predictions — Uncertainties in Phase-field, Large Scale and Continuum Modeling

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Mark Tschopp, Army Research Laboratory; Li Ma, NIST

Tuesday PM
February 16, 2016
Room: 207C
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Invited
Evaluation of Phase-Field Models Through Stochastic Quantification of Microstructure and Data Analytics: *Yuksel Yabansu*[1]; Philipp Steinmetz[2]; Johannes Hötzer[2]; Marcus Jainta[2]; Britta Nestler[2]; Surya Kalidindi[1]; [1]Georgia Institute of Technology; [2]Karlsruhe Institute of Technology

2:30 PM
Bayesian Calibration of a Physical Model for Plastic Flow Behavior of TRIP Steels: *Pejman Honarmandi*[1]; Raymundo Arroyave[1]; [1]Texas A&M University

2:50 PM
Data Analysis in Mesoscale Model of Ductile Damage: *Cristina Garcia-Cardona*[1]; Marian Anghel[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

3:10 PM Invited
Uncertainty Quantification Algorithms for Large-scale Systems: *Dongbin Xiu*[1]; [1]University of Utah

3:40 PM Break

4:00 PM
Exploring the Effects of Micro-texture on Engineering-scale Performance: *John Emery*[1]; Richard Field[1]; Jay Carroll[1]; Joseph Bishop[1]; [1]Sandia National Laboratories

4:20 PM
Uncertainty Quantification and Propagation for Validation of a Microstructure Sensitive Model for Prediction of Fatigue Crack Initiation: *Saikumar Reddy Yeratapally*[1]; Alberto Mello[1]; Michael Sangid[1]; Mark Hardy[2]; Michael Glavicic[3]; [1]Purdue University; [2]Rolls-Royce plc; [3]Rolls-Royce Corporation

4:40 PM
Uncertainty Propagation in a Computational Fatigue Model of an Airframe Structure: *Animesh Dey*[1]; Robert Tryon[1]; Jeremy Holmes[1]; Robert McDaniels[1]; [1]VEXTEC

5:00 PM
Understanding the Effect of Experimental Uncertainty on the Multistage Fatigue Model: *Justin Hughes*[1]; William Williams[1]; Mark Horstemeyer[1]; [1]Mississippi State University

Computational Thermodynamics and Kinetics — Precipitation and Solidification

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Tuesday PM
February 16, 2016
Room: 208B
Location: Music City Center

Session Chairs: Xiang-Yang (Ben) Liu, Los Alamos National Laboratory; Brian Wirth, University of Tennessee

2:00 PM Invited
Modeling Precipitate Evolution in Irradiated Structural Materials: *Brian Wirth*[1]; [1]University of Tennessee

2:30 PM
Simulation of Precipitation Sequence and Mechanical Properties of Al-Mg-Si Casing Alloy with Cu Additions: *Chang-Seok Oh*[1]; Hak Sung Lee[1]; [1]Korea Institute of Materials Science

2:50 PM
Modeling Precipitation in Mg-RE Alloys Using First-principles Calculations: *Anirudh Raju Natarajan*[1]; Ellen Sitzmann[2]; Brian Puchala[2]; Emmanuelle Marquis[2]; Anton Van der Ven[1]; [1]University of California; [2]University of Michigan

3:10 PM
Nb Precipitation in ZrNb Alloys: *Maeva Cottura*[1]; Emmanuel Clouet[1]; [1]CEA Saclay

3:30 PM Break

3:50 PM
Solidification in Metals: Insights from Nano-scale Predictive Computational Models: *Ebrahim Asadi*[1]; [1]Missouri University of Science and Technology

4:10 PM
First-principles Study of Interfacial Stability and Solute Partitioning in Al-alloy Precipitates: *Kyoungdoc Kim*[1]; Chris Wolverton[1]; [1]Northwestern University

4:30 PM
Property Prediction of Rapidly Solidified Al Alloys by Computational Thermodynamic & Kinetic Modeling: *Danielle Cote*[1]; Baillie McNally[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

4:50 PM
Homogeneous Nucleation and Inner Structure Evolution in Nucleus Fe from Classic Molecular Dynamics Simulation: *Jie Luo*[1]; Junjiang Xiao[1]; Yongquan Wu[1]; [1]shanghai university

5:10 PM
Anisotropy of Crystal-melt Interface of BCC-Fe and FCC-Fe from Molecular Dynamics Simulation: *Linlin Lu*[1]; Yewei Jiang[1]; Yongquan Wu[1]; Junjiang Xiao[1]; [1]Shanghai University

5:30 PM
Effect of Solvent and van der Waals Interactions on the Morphology and Assembly of Lead Sulfide Nanocrystals: *Joshua Gabriel*[1]; Kiran Mathew[2]; Richard Hennig[1]; [1] Department of Materials Science and Engineering, University of Florida, Gainesville FL 32611-6400 USA; [2]Department of Materials Science and Engineering, Cornell University, Ithaca New York 14853 USA

Electrode Technology — Electrode Baking and Assembly

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Angelique Adams, Alcoa Inc

Tuesday PM
February 16, 2016

Room: 202B
Location: Music City Center

Session Chair: Kim Hammill, Alcoa

2:00 PM Introductory Comments

2:10 PM
Anode Baking Furnace Fluewall Design Evolution: A Return of Experience of Latest Baffleless Technology Implementation: *Yann El Ghaoui*[1]; François Morales[1]; Sandra Besson[1]; Yannick Drouet[1]; Alan Tomsett[1]; [1]Rio Tinto Alcan

2:35 PM
Effect of Heating Rate during Baking on the Properties of Carbon Anodes Used in Aluminum Industry: *Yasmine Chamam*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Dipankar Bhattacharyay[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

3:00 PM
Empirical Modeling of the Baking Furnace to Predict Baked Anode Properties: Amélie Dufour[1]; *Carl Duchesne*[1]; Jayson Tessier[2]; [1]Laval University; [2]Alcoa Global Primary Metals

3:25 PM
In Situ Investigation of the Behavior of Anode Assemblies: *Simon-Olivier Tremblay*[1]; Daniel Marceau[1]; Duygu Kocaefe[1]; Charles-Luc Lagacé[2]; François Laflamme[2]; Guy Ladouceur[2]; [1]University Research Centre on Aluminium (CURAL) - Aluminium Research Centre (REGAL) - University of Québec at Chicoutimi; [2]Aluminerie Alouette Inc.

3:50 PM Break

4:05 PM
Low Resistance Anode Assembly Using Steel Stubhole Conductors across the Cast Iron to Carbon Interface: *Will Berends*[1]; [1]Hatch

4:30 PM
Upgrade of the Firing and Control System at Egyptalum for Dual Fuel Firing
: Detlef Maiwald[1]; *Domenico Di Lisa*[1]; Amir Tharwat Henry[2]; Mario Mnikoleiski[1]; [1]Innovatherm; [2]Egyptalum

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Nanosolder; Bi-containing Solder

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Tuesday PM
February 16, 2016

Room: 201A
Location: Music City Center

Session Chairs: Andre Lee, Michigan State University; Fu Guo, Beijing University of Technology

2:00 PM
Effects of Nanosized Ceramic Additions on Microstructure and Mechanical Properties of Sn3.0Ag0.5Cu Composite Solder: Yuriy Plevachuk[1]; Peter Švec Sr.[2]; Peter Švec[2]; Dusan Janickovic[2]; *Andriy Yakymovych*[3]; Herbert Ipser[3]; Pavel Šebo[2]; [1]Ivan Franko National University of Lviv; [2]Slovak Academy of Sciences; [3]University of Vienna

2:20 PM
Ultrasonic Powder Consolidation of Sn/In Nanoparticles and Their Application for Low Temperature Cu-Cu Soldering: *Yang Shu*[1]; Somayeh Gheybi Hashemabad[2]; Teiichi Ando[2]; Zhiyong Gu[1]; [1]University of Massachusetts Lowell; [2]Northeastern University

2:40 PM
Nanoparticle-Reinforced Lead-free Solder Pastes for Electronics Assembly and Packaging: *Evan Wernicki*[1]; Fan Gao[1]; Zhiyong Gu[1]; [1]University of Massachusetts Lowell

3:00 PM Invited
Sn-Ag-Cu Nanosolders: Reliability of the Solder Joints: Ali Roshanghias[1]; Andriy Yakymovych[1]; Golta Khatibi[2]; *Herbert Ipser*[1]; [1]University of Vienna; [2]Vienna University of Technology

3:25 PM Break

3:45 PM
Electromigration and Thermomigration in Eutectic SnBi Solder Joints: Fu Guo[1]; Limin Ma[1]; Qian Liu[1]; *Yong Zuo*[1]; Jing Han[1]; [1]Beijing University of Technology

4:05 PM
Effects of Bi on Microstructure Formation and Properties of Sn-Cu-Bi Based Solders: *Sergey Belyakov*[1]; Arif Salleh[2]; Takatoshi Nishimura[3]; Keith Sweatman[3]; Kazuhiro Nogita[2]; Christopher Gourlay[1]; [1]Imperial College London; [2]University of Queensland; [3]Nihon Superior Co., Ltd.

4:25 PM
Effect of Ag, Ni and Bi Additions on Melting and Solderability of Lead-Free Solders: *Amir Hossein Nobari*[1]; Mehran Maalekian[2]; Karl Seelig[2]; Mihriban Pekguleryuz[3]; [1]AIM ; [2]AIM; [3]McGill University

4:45 PM
The High Temperature Performance of BiAgX® As a Lead-Free Drop-In Solder: *HongWen Zhang*[1]; Ning-Cheng Lee[1]; [1]Indium Corporation

Energy Technologies and Carbon Dioxide Management — Session IV

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Li Li, Cornell University ; Donna Guillen, Idaho National Laboratory; Neale Neelameggham, Ind LLC; Lei Zhang, University of Alaska Fairbanks ; Jingxi Zhu, Carnegie Mellon University; Nawshad Haque, CSIRO; Dirk Verhulst, Consultant, Extractive Metallurgy; Soumendra Basu, Boston University; Tao Wang, Nucor Steel; Xuan Liu, Carnegie Mellon University

Tuesday PM
February 16, 2016
Room: 104D
Location: Music City Center

Session Chairs: Donna Guillen, Idaho National Laboratory; Soumendra Basu, Boston University; Dirk Verhulst, Consultant, Extractive Metallurgy; Tao Wang, Nucor Steel

2:00 PM Invited
Solid Oxide Membrane-Based Technologies for Energy and Environmental Sustainability: *Uday Pal*[1]; [1]Boston University

2:40 PM
Reduction of GHG Emissions through the Conversion of Dairy Waste to Value-Added Materials and Products: Caryn Wendt[1]; *Donna Guillen*[2]; Chaston Ellis[3]; [1]Idaho State University; [2]Idaho National Laboratory; [3]BYU-Idaho

3:00 PM
Production of High-purity Si by Electrolysis in Molten CaCl2: *Xiao Yang*[1]; Kouji Yasuda[1]; Toshiyuki Nohira[1]; Rika Hagiwara[1]; Takayuki Homma[2]; [1]Kyoto University; [2]Waseda University

3:20 PM Break

3:40 PM
Study on Preparing Ti6Al4V Alloys from V-Ti Bearing Beach Placers: *Zhijiang Gao*[1]; Huimin Lu[1]; Zegao Sun[1]; [1]Beihang University

4:00 PM
Techno-Economic Analysis and Potentials of Biomass Gasification Technology in Nigeria: Sunday Ojolo[1]; *Gbeminiyi Sobamowo*[1]; [1]University of Lagos

4:20 PM
Novel Thin Strip Casting Process and Its Energy Consumption: *Tao Wang*[1]; Rama Mahapatra[2]; Wal Blejde[2]; [1]Nucor Steel; [2]Castrip LLC

4:40 PM
Particles Flow Behavior around Tubes in Moving Bed: *Junxiang Liu*[1]; Qingbo Yu[2]; Wenjun Duan[2]; Zongliang Zuo[2]; Qin Qin[2]; [1]Northeastern University ; [2]Northeastern University

5:00 PM
Wettability and Interfacial Reactions for Ag-Cu/ BaCo0.7Fe0.2Nb0.1O3-d under Different Oxygen Conditions: *Yu Chenchen*[1]; Zhang Lili[1]; Guo Wei[1]; Zhang Yuwen[1]; [1]Shanghai University

5:20 PM
Optimizing the Ex Situ Carbonation of Ophiolitic Rocks via Ball Milling: *Ioannis Rigopoulos*[1]; Michalis Vasiliades[1]; Ioannis Ioannou[1]; Angelos Efstathiou[1]; Theodora Kyratsi[1]; [1]University of Cyprus

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Characterization and Modeling of Fatigue Crack Initiation and Growth

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Tuesday PM
February 16, 2016
Room: 213
Location: Music City Center

Session Chair: Ashley Spear, The University of Utah

2:00 PM Keynote
Reexamining Opportunities in Retirement for Cause for Turbine Rotor Superalloys: *James Larsen*[1]; Sushant Jha[2]; Harry Millwater[3]; Charles Annis[4]; Reji John[1]; Dennis Buchanan[5]; William Porter[5]; Jay Jira[1]; Siamack Mazdiyasni[1]; Andrew Rosenberger[1]; Vikas Sinha[6]; Patrick Golden[1]; William Musinski[1]; [1]Air Force Research Laboatory; [2]Universal Technology Corp.; [3]University of Texas at San Antonio; [4]Statistical Engineering; [5]University of Dayton Research Institute; [6]UES, Inc.

2:40 PM Invited
High Energy X-ray Studies of Fatigue and Fracture: *Robert Suter*[1]; [1]Carnegie Mellon University

3:00 PM Invited
Studies of Short Fatigue Cracks: *Anthony Rollett*[1]; [1]Carnegie Mellon University

3:20 PM
Influence of Slip System Hardening on the Development of Heterogeneous Intragrain Deformation during Cyclic Loading with Correlation to Diffraction Peak Broadening: *Robert Carson*[1]; Paul Dawson[1]; [1]Cornell University

3:40 PM Break

4:00 PM Invited
Design for Fatigue Crack Growth Resistance in Structural Light Metal Alloys: Recent Developments and Steps Forward: *Diana A. Lados*[1]; Anthony Spangenberger[1]; [1]Worcester Polytechnic Institute

4:20 PM Invited
Relationship between Galvanic Corrosion and Local Plastic Deformation during Fatigue of Al Alloys: *Alberto Mello*[1]; Andrea Nicolas[1]; Michael Sangid[1]; [1]Purdue University

4:40 PM
Fatigue Crack Growth Characterization Using an Integrated Full Field Deformation and Cyclic Plasticity Method: *Konstantinos Baxevanakis*[1]; Jefferson Cuadra[1]; Adrian Loghin[2]; Antonios Kontsos[1]; [1]Department of Mechanical Engineering & Mechanics, Drexel University, Philadelphia, PA; [2]Lifing Lab, Structural Materials Lab, General Electric – GRC, Niskayuna, NY

5:00 PM
Crystal Plasticity Finite Element Modelling of Fatigue Crack Nucleation from Non-metallic Inclusions in PM Nickel Based Superalloy: *Tiantian Zhang*[1]; Jun Jiang[1]; Barbara Shollock[2]; Ben Britton[1]; Fionn Dunne[1]; [1]Imperial College; [2]University of Warwick

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Rapid Transformation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Tuesday PM — Room: 105A
February 16, 2016 — Location: Music City Center

Session Chair: William Boettinger, NIST

2:00 PM Invited
Dendrite Growth Kinetics in Undercooled Melts of Intermetallic Compounds: *Dieter Herlach*[1]; [1]Deutsches Zentrum für Luft- und Raumfahrt

2:25 PM Invited
Microstructure and Phase Transitions under Large Undercooling Conditions: *Rohit Trivedi*[1]; Nan Wang[2]; [1]Iowa State University; [2]Northwestern Polytechnical University

2:50 PM Invited
Competitive Solidification Pathways and Glass Formation in Pd-Si-Cu Alloys: *Ralph Napolitano*[1]; Yang Huo[1]; [1]Iowa State University

3:15 PM Invited
Fast Crystal Growth in Glass-forming Liquids: *A. Greer*[1]; [1]University of Cambridge

3:40 PM Break

High-Temperature Systems for Energy Conversion and Storage — Ceramic Reliability II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee

Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Tuesday PM — Room: 104E
February 16, 2016 — Location: Music City Center

Session Chairs: Joseph Gladden, University of Mississippi; Jeffrey Fergus, Auburn University

2:00 PM Invited
High Temperature Resonant Ultrasound Spectroscopy Methodologies Applied to Relaxor Ferroelectrics: *Joseph Gladden*[1]; Sumudu Tennakoon[1]; [1]University of Mississippi

2:25 PM
Novel Approaches to Improve Cathode Contact Strength by Mechanical Interlocking and Sintering Aid for Solid Oxide Fuel Cells: *Yeong-Shyung Chou*[1]; Jeff Bonnett[1]; Jeffry Stevenson[1]; [1]Pacific Northwest National Lab

2:45 PM
Scalable and Hierarchical Nanostructure Ensembles for High Temperature Energy and Environmental Applications: *Pu-Xian Gao*[1]; [1]University of Connecticut

3:05 PM
Solid Composite Electrolytes for Lithium-ion Batteries with Enhanced Safety and Cycle Performance at High Temperature: *Jinfang Zhang*[1]; Cheng Ma[1]; Weifeng Wei[1]; [1]Central South University

3:25 PM Break

3:45 PM
CMAS Resistance of Gadolinium and Samarium Zirconates for Use as Environmental Barrier Coatings: *Jeffrey Fergus*[1]; Honglong Wang[1]; Xingxing Zhang[1]; [1]Auburn University

4:05 PM
Combinatorial Development of Metal Hydrides for Thermal Coupling of Solid Oxide Fuel Cells: *Dogancan Sari*[1]; Fatih Piskin[1]; Volodymyr Yartys[2]; Yener Kuru[1]; Eren Kalay[1]; Tayfur Ozturk[1]; [1]METU; [2]Institute for Energy Technology Instituttveien

High Entropy Alloys IV — Alloy Development and Applications II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Tuesday PM — Room: 102A
February 16, 2016 — Location: Music City Center

Session Chairs: Suveen Nigel Mathaudhu, University of California, Riverside; Eun Soo Park, Seoul National University

2:00 PM Invited
Nanostructured Magnetic High Entropy Alloys: Christian Roach[1]; Trevor Clark[1]; *Suveen Mathaudhu*[1]; [1]University of California Riverside

2:20 PM Invited
Structure Factors of FCC High Entropy Alloys Governing Mechanical-physical Uniqueness: Hyun Seok Oh[1]; *Eun Soo Park*[1]; Cem Tasan[2]; Dierk Raabe[2]; [1]Seoul National University; [2]Max-Planck Institut für Eisenforschung GmbH

2:40 PM
Theory of Strengthening in FCC High Entropy Alloys: Céline Varvenne[1]; Aitor Luque[1]; *William A. Curtin*[1]; [1]Swiss Institute of Technology (EPFL)

3:00 PM Invited
The Origin of Alloy Compositions: *Chuang Dong*[1]; [1]Dalian University of Technology

3:20 PM Break

3:35 PM Invited
Elastic to Plastic Transition in a High Entropy Alloy Investigated Using a Nanoindentation Method: *T.G. Nieh*[1]; Dong Wu[1]; [1]University of Tennessee

3:55 PM
Exploration of High Entropy Alloys for Sustainable Energy Storages: *Jingke Mo*[1]; Yunzhu Shi[2]; Peter Liaw[2]; Feng-Yuan Zhang[1]; [1]UT Space Institute, The University of Tennessee, Knoxville; [2]The University of Tennessee, Knoxville

4:15 PM
Structure Evolution during Cooling of Al0.1CrCuFeMnNi High-entropy Alloy: *Haoyan Diao*[1]; Chuan Zhang[2]; Louis Santodonato[3]; Mikhail Feygenson[3]; Joerg Neuefeind[3]; Xie Xie[4]; Fan Zhang[2]; Peter Liaw[4]; [1]The University of Tennessee ; [2]CompuTherm, LLC; [3]Oak Ridge National Laboratory; [4]The University of Tennessee

4:35 PM
Friction Stir Processed High Entropy Alloys for Biomedical Application: Karthik Alagarsamy[1]; *Aleksandra Fortier*[1]; Nilesh Kumar[1]; Rajiv Mishra[1]; [1]University of North Texas

4:55 PM
On the Optimization of the γ-γ' Morphology in Al8Co17Cr17Cu8Fe17Ni33 Based Compositionally Complex Alloys: *Anna Manzoni*[1]; Haneen Daoud[2]; Rainer Völkl[2]; Uwe Glatzel[2]; Nelia Wanderka[1]; [1]Helmholtz-Zentrum Berlin für Materialien und Energie GmbH; [2]University Bayreuth

5:15 PM
New Approaches in the Design of High Strength HEAs: *Isaac Toda-Caraballo*[1]; Pedro Rivera-Díaz-del-Castillo[1]; [1]University of Cambridge

High Entropy Alloys IV — Thermal and Other Properties

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Tuesday PM
February 16, 2016
Room: 102B
Location: Music City Center

Session Chairs: Paul Jablonski, National Energy Technology Laboratory; Jeffrey Hawk, National Energy Technology Laboratory

2:00 PM Invited
High Entropy Alloy Solid Solutions: Are they Entropy Stabilized?: *Srinivasa Murty Budaraju*[1]; [1]IIT Madras

2:20 PM
Phase Composition and Solid Solution Strengthening Effect in TiZrNbHf and TiZrNbMoV High Entropy Alloys: *Xidong Hui*[1]; Yidong Wu[1]; Yandong Wang[1]; [1]University of Science and Technology Beijing

2:40 PM
Phase Decomposition of a Single-phase Nanocrystalline CoCrFeMnNi High-entropy Alloy: *Benjamin Schuh*[1]; Francisca Mendez-Martin[2]; Bernhard Völker[1]; Easo P. George[3]; Helmut Clemens[2]; Reinhard Pippan[4]; Anton Hohenwarter[1]; [1]Department of Materials Physics, Montanuniversität Leoben; [2]Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben; [3]Institute for Materials, Ruhr University; [4]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

3:00 PM
Controlling Phase Selection in High Entropy Systems: *Matthew Kramer*[1]; Bryce Thoeny[1]; Pratik Ray[1]; Yi-ying Ye[1]; Prashant Singh[1]; Linlin Wang[1]; Duane Johnson[1]; [1]Ames Laboratory, US-DOE

3:20 PM Break

3:35 PM Invited
Enhanced Entropy Nickel Superalloys: Processing and Properties: *Joseph Licavoli*[1]; Paul Jablonski[1]; John Sears[1]; Jeffrey Hawk[1]; [1]Department of Energy

3:55 PM
The Structure and Mechanical Behavior of High-Entropy FeNiMnAlTi Alloys: *Zhangwei Wang*[1]; Ian Baker[1]; [1]Dartmouth College

4:15 PM
Development of High Strength Austenitic HEA Steels of CoCrFeMnNi Family: *Anna Fraczkiewicz*[1]; Michal Mroz[1]; Matthieu Lenci[1]; [1]MINES St-Etienne

4:35 PM Invited
Phase Selection in Systematically Alloyed CoCrFeNiX High-entropy Alloys: *Ming-Hung Tsai*[1]; An-Chen Fan[1]; Heng-An Wang[1]; Pei-Hua Tsai[1]; [1]National Chung Hsing University

Hume-Rothery Award Symposium: Thermodynamics of Materials — Conductivity

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Tuesday PM
February 16, 2016
Room: 107A
Location: Music City Center

Session Chairs: Jorge Munoz, The Datum Institute; Vidvuds Ozolins, University of California, Los Angeles

2:00 PM Invited
Ultrafast Dynamics of Excited Electrons in Materials: *Marco Bernardi*[1]; [1]Caltech

2:30 PM Invited
Activation Barriers for Polaron Hopping in Phospho-olivines: *Sally June Tracy*[1]; Lisa Mauger[1]; Jane Herriman[1]; Brent Fultz[1]; [1]Caltech

3:00 PM
Electronic Structure and Phonon Thermodynamics of Fe-Au Alloys: *Jorge Munoz*[1]; Matthew Lucas[2]; Lisa Mauger[3]; Brent Fultz[3]; [1]The Datum Institute; [2]Air Force Research Lab; [3]California Institute of Technology

3:20 PM Break

3:40 PM Invited
Orbitally-driven Giant Phonon Anharmonicity in SnSe: *Chen Li*[1]; Jiawang Hong[2]; Andrew May[2]; Dipanshu Bansal[2]; Songxue Chi[2]; Tao Hong[2]; Jie Ma[2]; Georg Ehlers[2]; Olivier Delaire[2]; [1]Carnegie Institute for Science; [2]Oak Ridge National Laboratory

4:10 PM
Phonon Anharmonicity in Silicon from 100 to 1500 K: *Dennis Kim*[1]; Olle Hellman[1]; Hillary Smith[1]; Jiao Lin[1]; Jennifer Niedziela[2]; Doug Abernathy[2]; Brent Fultz[1]; [1]Caltech; [2]ORNL

4:30 PM Invited
Vibrational Entropies of Liquids and Glasses: *Hillary Smith*[1]; Marios Demetriou[1]; Brent Fultz[1]; [1]California Institute of Technology

5:00 PM
A Thermodynamic Approach to Predicting Electronic Properties of Molten Systems: *Charles Rinzler*[1]; Antoine Allanore[1]; [1]MIT - Allanore Lab

ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics, and Computational Tools — Data and Informatics

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Dongwon Shin, Oak Ridge National Laboratory; Jiadong Gong, QuesTek Innovations; Shengyen Li, National Institute of Standards and Technology; Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory

Tuesday PM
February 16, 2016
Room: 207B
Location: Music City Center

Session Chairs: Ankit Agrawal , Northwestern University; Carelyn Campbell, NIST

2:00 PM Invited
Experiences with ICME Information Infrastructures for Applying Materials Models in Sequence to Give Accurate Macroscopic Property Prediction: *Will Marsden*[1]; David Cebon[1]; Steven Arnold[2]; Brett Bednarcyk[3]; Nic Austin[1]; Igor Terentjev[1]; [1]Granta; [2]NASA Glenn Research Center ; [3]NASA Glenn Research Center

2:40 PM
Development of Common Materials Classification Terminology to Enhance Discoverability, Exchange, and Reuse of Data: *Chandler Becker*[1];

Robert Hanisch[1]; Laura Bartolo[2]; James Warren[1]; [1]NIST; [2]Kent State University

3:00 PM Invited
Materials Data Curation System: *Alden Dima*[1]; [1]National Institute of Standards and Technology

3:40 PM Break

4:00 PM
Data Structures and Algorithms for Thermodynamic and Related Data in the Open Calphad Software System: *Bo Sundman*[1]; Ursula Kattner[2]; Mauro Palumbo[3]; Suzana Fries[3]; [1]CEA Saclay; [2]NIST; [3]Ruhr University Bochum

4:20 PM Invited
Towards Better Efficiency and Accuracy: Data Mining for Prediction and Optimization in Materials System Design: *Ankit Agrawal*[1]; Alok Choudhary[1]; [1]Northwestern University

5:00 PM
Assessing the State of Manufacturing Process Data and its Potential as a Shared Resource for ICME: *Scott Henry*[1]; Larry Berardinis[2]; David Furrer[3]; [1]ASM International; [2]ASM International, CMD Network; [3]Pratt & Whitney

5:20 PM
Data Curation and Exchange the Easy Way: Modular Data Models and Automated Capture: *Zachary Trautt*[1]; Sara Barron[1]; Lucas Hale[1]; Francesca Tavazza[1]; [1]National Institute of Standards and Technology

5:40 PM
Magpie: A Materials-Agnostic Platform for Informatics and Exploration: *Logan Ward*[1]; Chris Wolverton[1]; [1]Northwestern University

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In-Situ Characterization of Mechanical Properties of Materials II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Tuesday PM
February 16, 2016
Room: 212
Location: Music City Center

Session Chairs: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Benjamin Morrow, Los Alamos National Laboratory

2:00 PM Invited
Measurement of Stress for Dislocation Nucleation & Motion through In Situ Indentation: Nan Li[1]; Jian Wang[2]; *Amit Misra*[3]; [1]Los Alamos National Lab; [2]University of Nebraska; [3]University of Michigan

2:30 PM
Towards Nanoscale In-situ Fatigue and Fracture Experiments in the TEM: Peter Imrich[1]; *Daniel Kiener*[1]; [1]Montanuniversität Leoben

2:50 PM
Oxygen Induced Softening of Deep-submicron Cu Nanopillars: *Zhangjie Wang*[1]; Penghan Lu[1]; Degang Xie[1]; Zhiwei Shan[1]; [1]Center for Advancing Materials Performance from the Nanoscale (CAMP-Nano) & Hysitron Applied Research Center in China (HARCC), State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University

3:10 PM
Onset of Slip Activity in Ti6Al4V Single Colonies: Role of Alpha/Beta Interfaces: *Samuel Hemery*[1]; Loïc Signor[1]; Patrick Villechaise[1]; [1]Institut Pprime

3:30 PM Break

3:50 PM Invited
In Situ TEM Dislocation Characterization and Strain Mapping of Al 5754: *Josh Kacher*[1]; Christoph Gammer[2]; Raja Mishra[3]; Andrew Minor[2]; [1]Georgia Institute of Technology; [2]Lawrence Berkeley National Laboratory; [3]General Motors Research and Development

4:20 PM
Electromechanical Properties of Individual BiFeO3 Nanowires: *Ihor Radchenko*[1]; Arief Budiman[1]; Wu Ping[1]; [1]Singapore University of Technology and Design

4:40 PM
Exploring the Mechanical Behavior and Microstructure Evolution of Twin-twin Junctions in Mg by In Situ Compression: *Yue Liu*[1]; Nan Li[1]; Jian Wang[2]; Rodney Mccabe[1]; Yanyao Jiang[3]; Carlos Tomé[1]; [1]Los Alamos National Lab; [2]University of Nebraska-Lincoln; [3]University of Nevada-Reno

5:00 PM
Deformation Mechanisms in Micro-Scale Specimens of Polycrystalline Ti-6242: *Vikas Sinha*[1]; Sushant Jha[2]; Robert Wheeler[1]; Adam Pilchak[3]; Reji John[3]; James Larsen[3]; [1]Air Force Research Laboratory; UES, Inc.; [2]Air Force Research Laboratory; Universal Technology Corporation; [3]Air Force Research Laboratory

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Mechanics and Thermodynamics

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Tuesday PM
February 16, 2016
Room: 108
Location: Music City Center

Session Chair: Mitra Taheri, Drexel University

2:00 PM Invited
Interface-driven Plasticity in Two-phase Composites: *Irene Beyerlein*[1]; [1]Los Alamos National Laboratory

2:40 PM
Equilibrium Fluctuations of Grain Boundary Properties in Alloy Systems: *J. Hickman*[1]; Y. Mishin[1]; [1]George Mason University

3:00 PM
Assessing the Effect of Hydrogen on Slip Transmission across Grain Boundaries in a-Fe: *Ilaksh Adlakha*[1]; Kiran Solanki[1]; [1]Arizona State University

3:20 PM
Utilizing TEM-based Techniques to Map Strain Fields near Interfaces in Metals and Ceramics: *Paul Rottmann*[1]; Kevin Hemker[1]; Kelvin Xie[1]; [1]Johns Hopkins University

3:40 PM Break

4:00 PM
The Effect of Interfaces and Hierarchical Structure on the Deformation Behavior of Metallic Nanolaminates: *Daniel Foley*[1]; Garritt Tucker[1]; [1]Drexel University

4:20 PM
Structural Modifications Due to Interface Chemistry at Metal-nitride Interfaces: Satyesh Yadav[1]; Shuai Shao[1]; Jian Wang[1]; *Xiang-Yang Liu*[1]; [1]Los Alamos National Lab

4:40 PM
Structure, Bonding and Adhesive Strength of Interfaces between fcc Fe and Mixed Transition Metal Carbides and Nitrides M_1M_2[C,N] and the Role of Misfit Dislocations: *Oleg Kontsevoi*[1]; Arthur Freeman[1]; Gregory Olson[1]; [1]Northwestern University

5:00 PM
Effect of Beta Stabilizers on Stacking Faults Energies in α-Titanium: *Riyadh Salloom*[1]; Srinivasan Srivilliputhur[1]; [1]University of North Texas

Magnesium Technology 2016 — Magnesium-Rare Earth Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Tuesday PM — Room: 204
February 16, 2016 — Location: Music City Center

Session Chairs: Mark Easton, RMIT University; Francesco D'Elia, Magnesium Innovation Centre

2:00 PM
Hot Tearing of Magnesium-Rare Earth Based Alloys: *Mark Easton*[1]; Serge Gavras[2]; Mark Gibson[3]; Suming Zhu[1]; Jian-Feng Nie[2]; Trevor Abbott[4]; [1]RMIT University; [2]Monash University; [3]CSIRO; [4]Magontec

2:20 PM
Hot Tearing Susceptibility of Mg-5Nd-xZn Alloys: *Francesco D'Elia*[1]; Domonkos Tolnai[1]; Chamini Mendis[1]; Norbert Hort[1]; [1]Magnesium Innovation Centre

2:40 PM
Effects of Homogenization on Structure Property Relations of an Indirect Extruded ZE20 Mg Alloy: *Zackery McClelland*[1]; Bin Li[2]; Stephen Horstemeyer[3]; Mark Horstemeyer[3]; Andrew Oppedal[3]; [1]U.S. Army Engineer Research and Development Center; [2]Department of Chemical and Materials Engineering, University of Nevada, Reno; [3]Center for Advanced Vehicular Systems Mississippi State University

3:00 PM
Age-hardening of Dual Phase Mg-Sc Alloy at 573 K: *Yukiko Ogawa*[1]; Daisuke Ando[1]; Yuji Sutou[1]; Junichi Koike[1]; [1]Department of Materials Science, Graduate School of Engineering, Tohoku University

3:20 PM Break

3:40 PM
The Structure of ß" and ß' in an Aged Mg-Nd Alloy: *Ellen Solomon*[1]; Emmanuelle Marquis[1]; [1]University of Michigan

Material Design Approaches and Experiences IV — Steels I

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Tuesday PM — Room: 208A
February 16, 2016 — Location: Music City Center

Session Chairs: Michael Fahrmann, Haynes International; Nack Kim, POSTECH

2:00 PM Invited
Design of High Strength Lightweight Steels with High Work Hardening Rate: Sang-Heon Kim[1]; Han Soo Kim[1]; *Nack J. Kim*[1]; [1]POSTECH

2:30 PM Invited
Effect of Annealing Temperature on Microstructural Modification and Tensile Properties in Lean Fe-Mn-Al-C Lightweight Steels: *Seok Su Sohn*[1]; Jai-Hyun Kwak[2]; Sunghak Lee[1]; [1]Pohang University of Science and Technology; [2]Pohang Iron and Steel Company (POSCO)

3:00 PM
Evolution Law of Grain Size of High Alloy Gear Steel in Hot Deformation: *Haiyan Tang*[1]; [1]University of Science and Technology Beijing

3:20 PM Break

3:40 PM
1-GPa-grade Ultra-high-strength (Ferrite + Austenite) Duplex Lightweight Steels Achieved by Fine Dislocation Substructures (Taylor Lattices) : *Min Chul Jo*[1]; Seok Su Sohn[1]; Jai-Hyun Kwak[2]; Nack J. Kim[1]; Sunghak Lee[1]; [1]Pohang University of Science and Technology; [2]Pohang Iron and Steel Company (POSCO)

4:00 PM Invited
Designing Nano-engineered Steels, Atom by Atom: Francisca Caballero[1]; John Poplawsky[2]; Hung-Wei Yen[3]; *Rosalia Rementeria*[1]; Lucia Morales-Rivas[1]; Jer-Ren Yang[3]; Carlos Garcia-Mateo[1]; [1]Spanish National Research Center for Metallurgy (CENIM-CSIC); [2]Oak Ridge National Laboratory (ORNL); [3]National Taiwan University

4:30 PM
Design of Wear Resistant Boron-modified Supermartensitic Stainless Steel by Spray Forming Process: Guilherme Zepon[1]; Ricardo Nogueira[2]; Claudio Kiminami[3]; Walter José Botta[3]; *Claudemiro Bolfarini*[3]; [1]Post-Graduation Program of Materials Science and Engineering (PPG-CEM/UFSCar); [2]Univ. Grenoble Alpes, LEPMI/ CNRS, LEPMI; [3]Department of Materials Engineering (DEMa-UFSCar)

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Fuels IV

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Tuesday PM — Room: 101A
February 16, 2016 — Location: Music City Center

Session Chairs: Yongho Sohn, University of Central Florida; Kevan Weaver, TerraPower

2:00 PM
Microstructural Development and Phase Transformations in Hot Isostatic Pressed Monolithic U-Mo Fuel Plates in AA6061 Cladding with Zr Diffusion Barrier: *Youngjoo Park*[1]; Nicholas Eriksson[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

2:20 PM
Mechanical Properties of Materials and Phases Relevant to Monolithic U-Mo Fuel System: *Ryan Newell*[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

2:40 PM
Interdiffusion and Reaction between Al vs. X (X = Zr, Mo, U) Diffusion Couples: *Abhishek Mehta*[1]; Youngjoo Park[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

3:00 PM
Synchrotron Characterization of Fission Products in the SiC Containment Layer in High Burnup TRISO Fuel Particles: *Rachel Seibert*[1]; Jeff Terry[1]; Kurt Terrani[2]; Daniel Velazquez[1]; Phil Edmondson[2]; Chad Parish[2]; Fred Montgomery[2]; Charles Baldwin[2]; Keith Leonard[2]; [1]Illinois Institute of Technology; [2]Oak Ridge National Laboratory

3:20 PM
Thermal Expansion of a 3-phase Ceramic Composite: An In-situ High Temperature X-ray Diffraction Study: *Kevin Mathew*[1]; Kenta Ohtaki[2]; Martha Mecartney[2]; Maulik Patel[1]; [1]The University of Tennessee, Knoxville; [2]University of California, Irvine

3:40 PM Break

4:00 PM
Fabrication and Qualification of Small Scale Irradiation Experiments in Support of the Accident Tolerant Fuels Program: *Connor Woolum*[1]; Kip Archibald[1]; Glenn Moore[1]; Steven Galbraith[1]; [1]Idaho National Laboratory

4:20 PM
Fabrication of Graphite Composite Fuel with Controlled Thermal Transport Properties: *Erik Luther*[1]; DV Rao[1]; Igor Usov[1]; Amber Telles[1]; Miles Beaux[1]; Douglas Vodnik[1]; Kevin Hubbard[1]; Pallas Papin[1]; Brian Patterson[1]; Andrew Nelson[1]; David Hurley[2]; [1]LANL; [2]INL

4:40 PM
Mechanical Testing of UO2 Fuel at Elevated Temperatures: *David Frazer*[1]; Bowen Gong[2]; Benjamin Shaffer[2]; Harn Lim[2]; Pedro Peralta[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Arizona State University

5:00 PM
Thermomechanical Modeling of Triso Fuel Particles Silicon Carbide Matrix: *Daniel Schappel*[1]; Kurt Terrani[1]; Brian Wirth[1]; [1]University of Tennessee

5:20 PM
CRUD Mitigation And Growth: *Ittinop Dumnernchanvanit*[1]; [1]MIT

Materials Processing Fundamentals — Non-Ferrous Extractive Metallurgy

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Laura Bartlett, Texas State University; Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

Tuesday PM
February 16, 2016
Room: 106B
Location: Music City Center

Session Chairs: Antoine Allanore, Massachusetts Institute of Technology; Guillaume Lambotte, UMass

2:00 PM
Feasibility Demonstration and Process Modeling of Titanium Electrowinning Enabled by Specialized Diaphragms: *Dai Shen*[1]; Mirko Antloga[1]; Craig Virnelson[1]; Mark De Guire[1]; Uziel Landau[1]; Rohan Akolkar[1]; [1]Case Western Reserve University

2:20 PM
Experiment and Modeling of Aluminum Production by Solid Oxide Membrane Based Electrolysis Process: *Shizhao Su*[1]; Xiaofei Guan[2]; Uday Pal[1]; [1]Boston University; [2]Harvard University

2:40 PM
A Novel Method to Measure the Solubility and Diffusion Behavior of Ceramic in Molten Salt: *Shizhao Su*[1]; Thomas Villalon[1]; Uday Pal[1]; [1]Boston University

3:00 PM
The Cu-Ni-S System and Its Significance in Metallurgical Processes: *Fiseha Tesfaye*[1]; Daniel Lindberg[1]; Pekka Taskinen[2]; [1]Åbo Akademi University; [2]Aalto University School of Chemical Technology

3:20 PM Break

3:40 PM
Three-dimensional Isothermal Predominance Diagrams for the Cu-As-S-O System: *Stanley Howard*[1]; Sadegh. Safarzadeh[1]; [1]SDSM&T

4:00 PM
In-situ Gas Monitoring by Laser Induced Fluorescence Spectroscopy: *Thor Anders Aarhaug*[1]; Alain Ferber[1]; Pål Tetlie[1]; Halvor Dalaker[1]; [1]SINTEF

Mechanical Behavior at the Nanoscale III — Multilayer Thin Films, Nanolaminates and Nanoporous Foams

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Tuesday PM
February 16, 2016
Room: 214
Location: Music City Center

Session Chairs: Eric Chason, Brown University; Nicolas Briot, University of Kentucky

2:00 PM
Mechanistic Coupling of Dislocation and Shear Transformation Zone Plasticity in Crystalline-Amorphous Nanolaminates: Bin Cheng[1]; *Jason Trelewicz*[1]; [1]Stony Brook University

2:20 PM
Anisotropy, Size, and Aspect Ratio Effects in Micropillar Compression of Al-SiC Nanolaminate Composites: *Carl Mayer*[1]; Yang Lingwei[2]; Sudhanshu Singh[1]; Yu-Lin Shen[3]; Jon Molina-Aldareguia[2]; Javier LLorca[2]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]IMDEA Materials Institute, Madrid, Spain; [3]University of New Mexico

2:40 PM
Residual Stress in Thin Films: Effect of Growth Rate and Grain Size: *Eric Chason*[1]; Alison Engwall[1]; Zhaoxia Rao[1]; [1]Div of Engineering

3:00 PM
Microstructure and Thermo-Mechanical Properties of Porous Nano-Crystalline Silver Layers: Saba Zabihzadeh[1]; *Steven Van Petegem*[1]; Joel Cugnoni[2]; Ana Diaz[1]; Antonio Cervellino[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]École Polytechnique Fédéral de Lausanne

3:20 PM
Plastic Deformation in Metal/Ceramic Multilayer Nanolaminates: NbC/Nb and TiN/Ti Case Studies: *Iman Salehinia*[1]; Wei Yang[2]; Shuai Shao[3]; Georges Ayoub[4]; Jian Wang[5]; Hussein Zbib[6]; [1]Northern Illinois University; [2]Texas A&M University at Qatar; [3]Los Alamos National Lab; [4]American University of Beirut; [5]University of Nebraska-Lincoln; [6]Washington State University

3:40 PM Break

4:00 PM
Mechanical Behaviors of Cu-based Metallic Multilayers with Crystalline/Amorphous Layer Interfaces: *Zhe Fan*[1]; Sichuang Xue[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University

4:20 PM
Mechanical Behavior of Nanoporous Gold and Silicon: *Nicolas Briot*[1]; Tyler Vanover[1]; John Balk[1]; [1]University of Kentucky

4:40 PM
Ultimate Solution for Ultra-thin Film Systems (2nm or below): *Anqi Qiu*[1]; [1]Hysitron, Inc

5:00 PM
Measurement of Plasticity in Confined Metal Thin Films: Yang Mu[1]; John Hutchinson[2]; *Wen Meng*[1]; [1]Louisiana State University; [2]Harvard University

Metal and Polymer Matrix Composites II — Mg, Al Matrix Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Tuesday PM
February 16, 2016
Room: 110A
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Keynote
Emerging Environment Friendly Magnesium Based Composite Technology for Present and Future Generations: *Manoj Gupta*[1]; [1]National University of Singapore

2:40 PM
Evaluation of Intermetallic Reaction Layer Formation within Steel Encapsulated Metal Matrix Composites: *Sean Fudger*[1]; Eric Klier[1]; Prashant Karandikar[2]; Chaoying Ni[3]; [1]U.S. Army Research Laboratory; [2]M Cubed Technologies Inc.; [3]University of Delaware

3:00 PM
Ultralight Metal Based Composite Materials: Design Principles and Multifunctionality: *Nikhil Gupta*[1]; [1]New York University

3:20 PM
Development of Melt Conditioned Twin Roll Casting (MC-TRC) Process for Continuous Casting of Thin Gauge SiC Particle Reinforced Magnesium Matrix Composites Strip: *Xinliang Yang*[1]; Sanjeev Das[1]; Jayesh Patel[1]; Ian Stone[1]; Zhongyun Fan[1]; [1]BCAST

3:40 PM Break

4:00 PM Invited
Development of a High-strength, Precipitation-strengthened Matrix for Non-quenchable Aluminum Metal Matrix Composites: Nhon Vo[1]; Jim Sorensen[2]; David Seidman[3]; *David Dunand*[3]; [1]NanoAl LLC; [2]CPS Technologies; [3]Northwestern University

4:20 PM Invited
Characterization of Damage Evolution in SiC Particle Reinforced Al Matrix Composites by X-ray Tomography and Extended Finite Element Modeling: Peter Hruby[1]; Sudhanshu Singh[1]; Rui Yuan[1]; Jason Williams[1]; Jay Oswald[1]; Xianghui Xiao[2]; *Nikhilesh Chawla*[1]; [1]Arizona State University; [2]Advanced Photon Source, Argonne National Laboratory

4:40 PM
Engineered Functional Metal Matrix Composite; Lamellar Structure or Shape Memory Alloy in a Hybrid Self-Healing Composite Materials: *Bakr Rabeeh*[1]; Yasser Ahmed[1]; [1]German University in Cairo, GUC

5:00 PM
Effect of Load and Grit Size on High Stress Abrasive Wear of Al-Mg-Si hybrid Composites: *Kaushik N Ch*[1]; Narasimha Rao R[1]; [1]NIT Warangal

5:20 PM
Effect of Mushy State Rolling on Microstructure, Micro Hardness and Microtexture in Al-4.5Cu-5TiB$_2$ In-situ Composite: *Monalisa Mandal*[1]; Rahul Mitra[1]; [1]Indian Institute of Technology, Kharagpur

Nanostructured Materials for Nuclear Applications — Session IV

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Tuesday PM
February 16, 2016
Room: 101C
Location: Music City Center

Session Chairs: Michael Demkowicz, Massachusetts Institute of Technology; Shen Dillon, University of Illinois at Urbana-Champaign

2:00 PM Invited
Non-random Walk Diffusion Enhances the Sink Strength of Semicoherent Interfaces: Aurélien Vattré[1]; *Thomas Jourdan*[2]; Hepeng Ding[3]; Cosmin Marinica[2]; Michael Demkowicz[3]; [1]CEA, DAM; [2]CEA, DEN; [3]MIT

2:30 PM
Irradiation-induced Nanoprecipitation on Exhaustible Sinks: *Pascal Bellon*[1]; Robert Averback[1]; Dallas Trinkle[1]; Thomas Schuler[1]; [1]University of Illinois

2:50 PM
Phase-field Modeling of Helium Precipitates at Solid-state Interfaces: *Dina Yuryev*[1]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology

3:10 PM
Spatially Resolved Simulation of Damage Accumulation in Nanocrystalline Metals: *Aaron Dunn*[1]; Rémi Dingreville[2]; Enrique Martínez-Saez[3]; Laurent Capolungo[1]; [1]Georgia Institute of Technology; [2]Sandia National Laboratories; [3]Los Alamos National Laboratory

3:30 PM Break

3:50 PM Invited
Accelerated Simulations of Nanosize He-V Clusters to Experimentally Relevant Time Scale: *Fei Gao*[1]; Ning Gao[2]; Li Yang[3]; [1]University of Michigan; [2]Institute of Modern Physics; [3]University of Electronic Science and Technology of China

4:20 PM
Modeling Evolution of Gas Bubbles on Grain Boundaries of Nano-crystalline Materials under Irradiation: *Stanislav Golubov*[1]; Alexander Barashev[1]; Roger Stoller[1]; [1]ORNL

4:40 PM
Mitigation of He Embrittlement and Swelling in Nickel by Dispersed SiC Nanoparticles: *Hefei Huang*[1]; Zhijun Li[1]; Jianqiang Wang[1]; Ping Huai[1]; [1]Shanghai Institute of Applied Physics, Chinese Academy of Sciences

5:00 PM
Point Defect Evolution in FCC Ni, NiFe and NiCr Alloys from Atomistic Simulations and Irradiation Experiments: *Dilpuneet Aidhy*[1]; Chenyang Lu[2]; Ke Jin[1]; Hongbin Be[1]; Yanwen Zhang[1]; Lumin Wang[1]; William Weber[3]; [1]Oak Ridge National Lab; [2]University of Michigan; [3]University of Tennessee

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XV — Optoelectronics & Pb-free Solders

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Shien Ping Feng, The University of Hong Kong; Clemens Schmetterer, Fraunhofer Institute

Tuesday PM
February 16, 2016
Room: 109
Location: Music City Center

Session Chairs: Shih-kang Lin, National Cheng Kung University; Yee-wen Yen, National Taiwan University of Science and Technology

2:00 PM Invited
Kinetics of Low-temperature Copper-Germanide Formation for Applications on Flexible Substrates: *Terry Alford*[1]; [1]Arizona State University

2:30 PM Invited
Contact-Resistance Reduction for Cu(Ti)/Conductive-Oxide-Film Junctions: *Kazuhiro Ito*[1]; Kazuyuki Kohama[1]; Takayuki Sano[1]; Atsushi Nishibata[1]; Toshihide Nabatame[2]; Akihiko Ohi[2]; [1]Joining and Welding Research Institute, Osaka University; [2]National Institute for Materials Science

3:00 PM
An Experimental and Computational Approach to Properties of Mg-2TiO4: Mn+4 Red Emitting Phosphor: *Chieh-Szu Huang*[1]; Yi-Da Ho[1]; Cheng-Liang Huang[1]; Shih-kang Lin[2]; [1]Department of Electrical Engineering, National Cheng Kung University, Taiwan; [2]Department of Materials Science and Engineering, National Cheng Kung University, Taiwan

3:20 PM
Using Sn-Bi Solder as the LED Die-attach Material by Controlling the Sn-Bi Composition and the Roughness of the Substrate: *Yue Kai Tang*[1]; Chengyi Liu[1]; [1]National Central University

3:40 PM Break

4:00 PM Invited
Probing Phase Transformations at the Nanoscales – Synchrotron X-ray Microdiffraction for Advanced Applications in Microelectronics, Phase-Change Memory and Solar PV Devices: *Arief Budiman*[1]; Ihor Radchenko[1]; Nobumichi Tamura[2]; [1]Singapore University of Technology and Design; [2]Advanced Light Source (ALS)

4:30 PM
Calorimetric Investigation of the Liquid Sn-3.8Ag-0.7Cu Alloy with Minor Co Additions: *Andriy Yakymovych*[1]; George Kaptay[2]; Ali Roshanghias[1]; Hans Flandorfer[1]; Herbert Ipser[1]; [1]University of Vienna; [2]University of Miskolc

4:50 PM
Dissolution Behavior of Ni Substrate and Ni3Sn4 Phase in Molten Lead-free Solders
: *Yen Wei Chang*[1]; Meng Han Guo[1]; Yee Wen Yen[1]; [1]National Taiwan University of Science and Technology

5:10 PM
Phase Equilibria of the Sn-Fe-Ni Ternary System at 270oC: *Tzu Ting Huang*[1]; Jia Ying Dai[2]; Yee Wen Yen[2]; Hung Lun Liu[2]; Shih Wei Lin[2]; [1]National Taiwan University of Science andTechnology; [2]National Taiwan University of Science andTechnology

Phase Transformations and Microstructural Evolution — Phase Transformations in Ni-Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Tuesday PM
February 16, 2016
Room: 107B
Location: Music City Center

Session Chair: Gregory Thompson, U. Alabama Tuscaloosa

2:00 PM
Addendum to Correlations between Elastic Inhomogeneities and Amalgamation of γ' Precipitate Microstructures in Nickel-Base Alloys: *Alan Ardell*[1]; [1]University of California

2:30 PM
Ordering Transformation and Its Kinetics in Stoichiometric Ni-Cr-Mo Alloys: *Jung Singh*[1]; Amit Verma[1]; Nelia Wanderka[2]; Jayanta Chakravartty[1]; [1]Bhabha Atomic Research Centre; [2]Helmholtz-Zentrum Berlin

2:50 PM
Formation of Precipitate Free Zones in the Vicinity of Second Phase Particles in Nickel Based Alloy 725: *Miao Song*[1]; Jianfeng Wen[2]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan; [2]East China University of Science and Technology

3:10 PM
Some Steps towards Modelling of Dislocation Assisted Rafting: A Coupled 2D Phase Field -- Continuum Dislocation Dynamics Approach: *Ronghai Wu*[1]; Stefan Sandfeld[1]; [1]University of Erlangen-Nuremberg

3:30 PM Break

3:50 PM
Inverse Coarsening of Gamma-prime Precipitates in Ni-base Superalloys: *Subhashish Meher*[1]; Laura Carroll[1]; Tresa Pollock[2]; Mark Carroll[1]; [1]Idaho National Laboratory; [2]University of California Santa Barbara

4:20 PM
The Effect of Composition upon the Precipitation of the Sigma Phase in a Model Nickel-base Superalloy: *Paul Mignanelli*[1]; Nicholas Jones[1]; Howard Stone[1]; [1]University of Cambridge

4:40 PM
Phase Transformations and Structural Changes in Haynes 244, A New Ni Based Low CTE Alloy: *Jie Song*[1]; Robert Field[1]; Cody Miller[1]; Raj Banerjee[2]; Doug Konitzer[3]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]University of North Texas; [3]GE-Aviation

5:00 PM
Evolution of Nanoscale Clusters in \947´ Precipitates of a Ni-Al-Ti Model Alloy: *Florian Vogel*[1]; Nelia Wanderka[1]; Zoltan Balogh[2]; Patrick Stender[2]; Mohammed Ibrahim[2]; Guido Schmitz[2]; Tatiana Fedorova[3]; John Banhart[4]; Monica Kapoor[5]; Gregory Thompson[5]; [1]Helmholtz-Zentrum Berlin; [2]University of Stuttgart; [3]Technical University Braunschweig; [4]Technical University Berlin; [5]The University of Alabama

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Phase Transformations in Non-ferrous Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Tuesday PM
February 16, 2016
Room: 110B
Location: Music City Center

Session Chairs: Goro Miyamoto, Tohoku University; Joakim Odqvist, KTH, Royal Institute of Technology

2:00 PM Invited
Cellular Precipitation in Cu-3% Ti: *Richard Fonda*[1]; Gary Shiflet[2]; [1]Naval Research Laboratory; [2]University of Virginia

2:30 PM
Divergent Pearlite in a Fe-C-Mn-Al Quaternary System: *María Martín-Aranda*[1]; Rosalia Rementeria[1]; Robert E. Hackenberg[2]; Tsai S.P[3]; Esteban Urones-Garrote[4]; Jonathan Poplawsky[5]; J.R. Yang[3]; Carlos Capdevila[1]; [1]CENIM-CSIC; [2]Materials Science and Technology Division, Los Alamos National Laboratory; [3]National Taiwan University; [4]Centro Nacional de Microscopía Electrónica (CNME), Universidad Complutense de Madrid; [5]Oak Ridge National Laboratory

2:50 PM
Grain Boundary-discontinuous Precipitation Controlling Magnetic Anisotropy of Melt-spun Cu-10 at.% Co Alloy: *Guillermo Solorzano*[1]; Natasha Suguihiro[1]; [1]PUC-Rio

3:10 PM
Kinetics of Cellular Growth and Coarsening in Aged U-Nb Alloys: *Robert Hackenberg*[1]; Megan Emigh[2]; Pallas Papin[1]; Ann Kelly[1]; Robert Forsyth[1]; Tim Tucker[1]; Kester Clarke[1]; Anna Llobet[1]; Heather Volz[1]; Graham King[1]; Alice Smith[1]; [1]Los Alamos National Laboratory; [2]University of Illinois (Urbana-Champaign)

3:30 PM Break

3:50 PM Invited
Diffusional Phase Transformations in Multicomponent Single-Phase/Two-Phase Diffusion couples: *John Morral*[1]; [1]The Ohio State University

4:20 PM
Pt-Rh Failure through Distinct Phosphorus Diffusion Mechanisms: Anna Nakano[1]; James Bennett[1]; *Jinichiro Nakano*[1]; [1]US Department of Energy National Energy Technology Laboratory

4:40 PM
Shortening a CALPHAD Approach by Understanding Parameter Relationships: *Jinichiro Nakano*[1]; [1]US Department of Energy National Energy Technology Laboratory

Powder Metallurgy of Light Metals — PM Ti and PM Ti for Biomedical Applications

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Zhigang Fang, University of Utah ; Qian Ma, RMIT University

Tuesday PM
February 16, 2016
Room: 205C
Location: Music City Center

Session Chairs: Thomas Ebel, Helmholtz-Zentrum Geesthacht; Yong Liu, Central South University

2:00 PM Invited
Characterization of Titanium Powder and its Consolidation by Microwave Energy
: *Benjamin Rock*[1]; M. Imam[2]; R. Sadangi[3]; Tony Zahrah[4]; K Akhtar[5]; [1]U.S. Naval Research Laboratory; [2]George Washington University; [3]U.S Army ARDEC; [4]Matsys, Inc; [5]Cristal Metals, Inc

2:30 PM
Development of Low-cost Ti-6Al-4V Fasteners through Powder Metallurgy Method: *Bin Liu*[1]; Yong Liu[1]; Fanpei Zeng[2]; Jinzhong Lu[2]; Yuankui Cao[2]; [1]Central South University; [2]Fujian Longxi Bearing (Group) Corp., LTD.

2:50 PM
Fundamental Properties of PM Ti Materials with Nitrogen Solid-solution and TiN Particle Dispersion: *Katsuyoshi Kondoh*[1]; Takanori Mimoto[1]; Yasuhiro Yamabe[1]; Junko Umeda[1]; Hisashi Imai[1]; [1]Osaka University

3:10 PM Invited
MIM Processing of Titanium Alloys – Achievements, Setbacks and Current Research: *Thomas Ebel*[1]; [1]Helmholtz-Zentrum Geesthacht

3:40 PM Break

4:00 PM Invited
Development of Powder Metallurgical Ti- Ta-Mo Alloys with High Strength and Low Modulus: *Yong Liu*[1]; Shenghang Xu[1]; Hong Wu[1]; Huiping Tang[2]; [1]Central South University; [2]Northwestern Institute of Nonferrous Metals

4:30 PM Invited
Trace Carbon in Biomedical Beta-titanium Alloys by Powder Metallurgy Approaches: Dapeng Zhao[1]; Thomas Ebel[2]; *Ming Yan*[3]; Ma Qian[4]; [1]Hunan University; [2]Helmholtz-Zentrum Geesthacht; [3]South University of Science and Technology of China; [4]RMIT University

5:00 PM
Effect of Mo Particle Sizes on Microstructure and Mechanical Properties of Ti-Mo Alloy Prepared by Spark Plasma Sintering: *Hiroshi Izui*[1]; Norika Kasai[1]; Yoshiki Komiya[1]; [1]Nihon University

REWAS 2016 — Designing Materials and Systems for Sustainability

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Tuesday PM
February 16, 2016
Room: 104B
Location: Music City Center

Session Chair: To Be Announced

2:00 PM
Industrial Symbiosis among Small and Medium Scale Enterprises: Case of Muzaffarnagar, India: *Elsa Olivetti*[1]; [1]Massachusetts Institute of Technology

2:25 PM
Life Cycle Assessment of Metallurgical Proceses Based on Physical Flowsheet Models: Markus Reuter[1]; *Antti Roine*[1]; [1]Outotec Oyj

2:50 PM
Total Corrosion Effects of *Anthocleista djalonensis* and $Na_2Cr_2O_7$ on Steel-Rebar in H_2SO_4: Sustainable Corrosion-Protection Prospects in Microbial/Industrial Environment: *Joshua Okeniyi*[1]; Cleophas Loto[1]; Abimbola Popoola[2]; [1]Covenant University, Ota, Nigeria; [2]Tshwane University of Technology, Pretoria

3:15 PM
Materials Research to Enable Clean Energy: Leverage Points for Risk Reduction in Critical Byproduct Material Supply Chains: *Michele Bustamante*[1]; Gabrielle Gaustad[1]; [1]Golisano Institute for Sustainability, Rochester Institute of Technology

3:40 PM Break

4:00 PM
Heterogeneous Materials Design for Sustainable Nuclear Waste Storage using Life Prediction by Conformal Finite Element Analysis: *Fazle Rabbi*[1]; Kenneth Reifsnider[2]; Kyle Brinkman[3]; [1]University of South Carolina; [2]University of Texas at Arlington; [3]Clemson University

4:25 PM
Life-Cycle Costing Promotes Use of Corrosion-Resistant Alloys: *James Rakowski*[1]; John Grubb[1]; [1]ATI Allegheny Ludlum

4:50 PM
Healable Microstructure Design: A Novel Pathway towards Perpetual Alloys?: *Cem Tasan*[1]; Meimei Wang[1]; [1]Max-Planck Institute for Iron Research

5:15 PM
System of State Regulation of Sustainable Ore Processing and Production Waste Treatment in the Russian Arctic: *Vyacheslav Tsukerman*[1]; Ludmila Ivanova[1]; Vladimir Selin[1]; [1]Kola Science Centre

REWAS 2016 — Understanding & Enabling Sustainability - Light Metals Recycling & Waste Valorization

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Tuesday PM — Room: 104C
February 16, 2016 — Location: Music City Center

Session Chair: To Be Announced

2:00 PM
Electro Dynamic Sorting of Scrap Light Metals and Alloys: *Raj Rajamani*[1]; James Nagel[1]; Nakul Dholu[1]; [1]University of Utah

2:25 PM
Scrap Characterization to Optimize the Recycling Process: *Sean Kelly*[1]; Diran Apelian[1]; [1]Metal Processing Institute

2:50 PM
The Value of Integrated Production Planning for Two-Stage Aluminum Recycling Operations: *Jiyoun Chang*[1]; Elsa Olivetti[1]; Randolph Kirchain[1]; [1]MIT

3:15 PM
Solar Aluminum Recycling in a Directly Heated Rotary Kiln: *Martina Neises-von Puttkamer*[1]; Martin Roeb[1]; Stefania Tescari[1]; Lamark de Oliveira[1]; Stefan Breuer[1]; Christian Sattler[1]; [1]German Aerospace Center

3:40 PM Break

4:00 PM
Metal Recovery from Dross through Rotary Crushing and Separation Producing Products Instead of Waste: *David Roth*[1]; [1]GPS Global Solutions

4:25 PM
A Laboratory Study of Electrochemical Removal of Noble Elements from Secondary Aluminium: *Ole Kjos*[1]; Sverre Rolseth[1]; Henrik Gudbrandsen[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; Trond Bergstrøm[1]; [1]SINTEF

4:50 PM
Production of Magnesium and Aluminum-magnesium Alloys from Recycled Secondary Aluminum Scrap Melts: Adam Gesing[1]; *Subodh Das*[1]; Raouf Loutfy[2]; [1]Phinix,LLC; [2]MER Corporation

5:15 PM
Recovery of Aluminum from the Aluminum Smelter Baghouse Dust: *Brajendra Mishra*[1]; Myungwon Jung[1]; [1]Colorado School of Mines

Shape Casting: 6th International Symposium — Casting Performance and Innovation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Glenn Byczynski, Nemak Canada; Mark Jolly, Cranfield University

Tuesday PM — Room: 203B
February 16, 2016 — Location: Music City Center

Funding support provided by: Nemak (possibly)

Session Chair: Glenn Byczynski, Nemak USA/Canada

2:00 PM
Methods of Reducing Materials' Waste and Saving Energy in Investment Casting: *Hamid Ahmad Mehrabi*[1]; Mark Jolly[1]; Konstantinos Salonitis[1]; [1]Cranfield University

2:25 PM
Quality Assessment of A356 Ingots from Different Suppliers in Wheel Production: *Emre Koca*[1]; Caglar Yuksel[2]; Eray Erzi[3]; Derya Dispinar[3]; [1]Maxion Wheels; [2]Yildiz Technical University; [3]Istanbul University

2:50 PM
On the Relationship between Quality Index, Fatigue Life and Fracture Toughness Distributions in D357 and B201 Alloy Castings: *Hüseyin Özdes*[1]; Murat Tiryakioglu[1]; [1]University of North Florida

3:10 PM
On the Properties and Performance of Ablation Cast Components: *Murat Tiryakioglu*[1]; John Grassi[2]; [1]University of North Florida; [2]Alotech Limited LLC

3:35 PM Break

3:50 PM
The Reliability of Ductile Iron Casting Dependent on Runner System Design: An Example of Support Bracket of Brake Caliper: *Fu-Yuan Hsu*[1]; Kuo-Nien Wang[2]; Cheng-Lung Li[2]; [1]National United University; [2]CMW (TianJin) Industry Co., Ltd.

4:15 PM
Corrosion Resistance of Stainless Steels in Biodiesel: Alejandra Román[1]; Claudia Méndez[2]; *Alicia Ares*[1]; [1]Materials Institute of Misiones-IMAM (CONICET-UNaM); [2]Faculty of Sciences - National University of Misiones

4:40 PM
Characterization of Tensile Deformation in AZ91D Mg Alloy Castings: *Ogun Unal*[1]; Murat Tiryakioglu[1]; [1]University of North Florida

5:00 PM
On The Mean Stress Correction in Fatigue Life Assessment in Cast Aluminum Alloys: *Hüseyin Özdes*[1]; Murat Tiryakioglu[1]; [1]University of North Florida

5:20 PM
Effects of Sr on the Microstructure of Electromagnetically Stirred Semi Solid Hypoeutectic Al-Si Alloys: *Ghasem Eisaabadi*[1]; Ashkan Nouri[1]; Majid Zarezadeh Mehrizi[1]; Reza Beygi[1]; Maryam Ebrahimi[1]; [1]Arak University

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Non-Ferrous Applications I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Tuesday PM
February 16, 2016
Room: 106C
Location: Music City Center

Session Chairs: Phillip Mackey, P.J. Mackey Technology; Patrice Chartrand, Ecole Polytechnique

2:00 PM Keynote
Process Control in Pyrometallurgy – Coupled Reactions, Fluid Flow, and Kinetics: *David Robertson*[1]; Simon Lekakh[1]; [1]Missouri S&T

2:40 PM
From Process Modeling to Process Optimization with SimuSage: *Stephan Petersen*[1]; [1]GTT-Technologies

3:00 PM
Hybrid Prediction Model based Simulation Software for the Optimizations of Converter Blowing System: *Zhiguo Shi*[1]; Zhanmin Cao[1]; XingJian Song[1]; [1]Univ. of Sci&Tech. Beijing P.R.China

3:20 PM
Use of Thermodynamical Softwares for Development of Concepts for Innovative Metal Recovery Processes from Residues: *Guozhu Ye*[1]; [1]Swerea MEFOS

3:40 PM Break

4:00 PM
Integrated Experimental and Thermodynamic Modelling Studies on Complex Slag/Matte/Metal Systems in Support of Non-Ferrous Primary and Recycling Pyrometallurgical Operations: *Evgueni Jak*[1]; Taufiq Hidayat[1]; Denis Shishin[1]; Ata Fallah Mehrjardi[1]; Jeff Chen[1]; Sergei Decterov[2]; Peter Hayes[1]; [1]The University of Queensland; [2]École Polytechnique de Montréal

4:20 PM
Development of Thermodynamic Database for "Cu2O"-Containing Slag-Matte-Metal Systems for Applications in Copper Pyrometallurgical Processes: *Denis Shishin*[1]; Taufiq Hidayat[1]; Peter Hayes[1]; Sergei Decterov[2]; Evgueni Jak[1]; [1]The University of Queensland; [2]École Polytechnique de Montréal

4:40 PM
Exergy Analysis of Electronic Waste Processing through Secondary Copper Recycling: *Maryam Ghodrat*[1]; M Akbar Rhamdhani[1]; Geoffrey Brooks[1]; Markus Reuter[2]; [1]Swinburne University of Technology; [2]Outotec

5:00 PM
Isothermal Section of the Cu-O-Al_2O_3-SiO_2 System in Air at 1300 °C: *Niko Hellstén*[1]; Pekka Taskinen[1]; [1]Aalto University

Ultrafine Grained Materials IX — Young Scientist Competition

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Tuesday PM
February 16, 2016
Room: 209B
Location: Music City Center

Session Chairs: Megumi Kawasaki, Hanyang University; Irene Beyerlein, Los Alamos National Laboratory; Timothy Rupert, University of California, Irvine

2:00 PM
Effects of Length Scale on Creep Behavior of Bulk CuNb Nanolaminates: *Jaclyn Avallone*[1]; Tresa Pollock[1]; Thomas Nizolek[1]; Nathan Mara[2]; Irene Beyerlein[2]; [1]University of California Santa Barbara; [2]Los Alamos National Laboratory

2:20 PM
Enhancement on Mechanical Biocompability of Co-Cr-Mo Alloys by High-pressure Torsion and a Short-time Solution Treatment: *Murat Isik*[1]; Mitsuo Ninomi[1]; Huihong Liu[1]; Masaaki Nakai[1]; Ken Cho[2]; Zenji Horita[3]; Takayuki Narushima[1]; [1]Tohoku University; [2]Osaka University; [3]Kyushu University

2:40 PM
Fracture Toughness of a Duplex Steel Deformed by High Pressure Torsion: *Katharina Grundner*[1]; Anton Hohenwarter[2]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science; [2]Department of Materials Physics, Universitiy of Leoben

3:00 PM
Hardening by Annealing in Nanocrystalline Metals: *Oliver Renk*[1]; Anton Hohenwarter[2]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science; [2]Department of Materials Physics, Montanuniversität Leoben

3:20 PM
Microstructural Instabilities in Cyclically Loaded ufg Metals: *Marlene Kapp*[1]; Oliver Renk[1]; Martin Bärnthaler[1]; Bo Yang[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science

3:40 PM Break

4:00 PM
Multi-scale Investigation on Yield "Symmetry" and Reduced Strength Differential in an UFG Mg-Y Alloy: *Dalong Zhang*[1]; Lin Jiang[1]; Xin Wang[1]; Irene Beyerlein[2]; Julie Schoenung[1]; Mo Li[3]; Subhash Mahajan[1]; Enrique Lavernia[4]; [1]University of California-Davis; [2]Los Alamos National Laboratory; [3]Georgia Institute of Technology; [4]University of California-Davis, University of California-Irvine

4:20 PM
Process-mechanics-structure Framework for Surface Severe Plastic Deformation: *Saurabh Basu*[1]; Zhiyu Wang[1]; Christopher Saldana[1]; [1]Georgia Institute of Technology

4:40 PM
Revisiting Fatigue Crack Growth in Various Grain Size Regimes of Ni: *Thomas Leitner*[1]; Anton Hohenwarter[1]; Reinhard Pippan[2]; [1]Montanuniversität Leoben; [2]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

5:00 PM
The Formation of Growth Twins in Polycrystalline Al with High Stacking Fault Energy: *Sichuang Xue*[1]; Fan Zhe[1]; Youxing Chen[2]; Jin Li[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University; [2]Argonne National Laboratory

5:20 PM
Modeling Effects of Grain Boundary Sliding on Crystallographic Texture and Grain Shape Evolution Using Explicit Grain Structure Models: *Milan Ardeljan*[1]; Irene Beyerlein[2]; Marko Knezevic[1]; [1]University of New Hampshire; [2]Los Alamos National Laboratory

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Nanomaterials General I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Wednesday AM
February 17, 2016
Room: 211
Location: Music City Center

Session Chairs: Terry Xu, UNC Charlotte; Vinu Unnikrishnan, The University of Alabama

8:30 AM
Gas-phase Condensation of Core-Shell Nanoparticles: *Mark Koten*[1]; Pinaki Mukherjee[2]; Jeff Shield[1]; [1]University of Nebraska; [2]Rutgers University

8:50 AM
Morphological, Structural and Optical Characterization of Bottom up Growth of Ag-WO3 Core Shell Nano-cube Heterostructures: *Muhammad Imam*[1]; William Benton[1]; Nitin Chopra[1]; [1]The University of Alabama

9:10 AM
Titanium Dioxide Architects Made by Amorphous Building Blocks: *Mengkun Tian*[1]; Masoud Mahjouri-Samani[2]; Gyula Eres[2]; Davide B. Geohegan[2]; Gerd Duscher[1]; [1]University of Tennessee; [2]Oak Ridge National Lab

9:30 AM
Structural Study of Kinked B4C Nanowires: *Zhiguang Cui*[1]; SiangYee Chang[1]; Terry Xu[1]; [1]The University of North Carolina at Charlotte

9:50 AM
Characterization of Free-Standing NiTi Shape Memory Alloy Nanowires Fabricated by Nanoskiving: *Huilong Hou*[1]; Reginald Hamilton[1]; [1]The Pennsylvania State University

10:10 AM Break

10:30 AM
Shape Shifting Fullerene Self-Assemblies for Supercapacitor Applications: Deepak Sridhar[1]; *Selene Sandoval*[1]; Tony Gnanaprakasa[1]; Srini Raghavan[1]; Krishna Muralidharan[1]; [1]University of Arizona

10:50 AM
Ferroplasmons: Strong Plasmonic Resonances in Magnetic Nanoparticles: *Abhinav Malasi*[1]; Jingxuan Ge[1]; Annette Farah[1]; Hernando Garcia[2]; Gerd Duscher[3]; Ramki Kalyanaraman[1]; [1]University of Tennessee, Knoxville; [2]Southern Illinois University Edwardsville; [3]University of Tennessee Knoxville, Oakridge National Laboratory

11:10 AM
The Influence of Shape and Surface Chemistry on Solvated Nanodiamonds as Lubricant Additives: *Farshad Saberi-Movahed*[1]; Donald Brenner[1]; Olga Shenderova[2]; [1]North Carolina State University; [2]International Technology Center

11:30 AM
DFT Study of Au-Ti Bimetallic Nanoparticle on TiO2 Support as Highly Active CO Oxidation Catalysts: *Kihoon Bang*[1]; Kihyun Shin[1]; Myung Shin Ryu[1]; Soon Ho Kwon[1]; Hyuck Mo Lee[1]; [1]KAIST

7th International Symposium on High Temperature Metallurgical Processing — Direct Reduction and Smelting Reduction

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Wednesday AM
February 17, 2016
Room: 105B
Location: Music City Center

Session Chairs: Onuralp Yücel, ITU; Chenguang Bai, Chongqing University

8:30 AM Introductory Comments

8:35 AM
Experiment Research on Direct Reduction of Celestine by Rotary Hearth Furnace Process: Dongping Duan[1]; *Hongliang Han*[1]; Siming Chen[1]; E Zhou[1]; Li Zhong[1]; [1]Key Laboratory of Green Process and Engineering, Institute of process Engineering, Chinese Academy of Sciences, Beijing, 100190

8:55 AM
Influence of Slag Basicity on the Silicon within the Stainless Steel Master Alloy Prepared by Smelting Reduction of Fe-Ni-Cr Sinters: *Yanhui Liu*[1]; Xuewei Lv[1]; Pingsheng Lai[1]; Chenguang Bai[1]; [1]School of Materials Science and Engineering,Chongqing University

9:15 AM
Reduction Behavior of Chromic Oxide in Ti –bearing BF Slag: *Baohua Li*[1]; Lv Xuewei[1]; Chen Yun[1]; Liu Yanhui[1]; Li Shengping[1]; [1]Chongqong University

9:35 AM
Reinforcement of Self-reducing Pellets Elaborated with Cement with Cellulose Waste: *Alberto Eloy Nogueira*[1]; Cyro Takano[1]; Marcelo Mourão[1]; Adolfo Zambrano[1]; Litzy Catorceno[1]; [1]Universidade de São Paulo

9:55 AM
Smelting Reduction of Bottom Ash in Presence of Liquid Iron Bath for Recovery of Aluminium: *Arup Kumar Mandal*[1]; Om Prakash Sinha[1]; [1]Indian Institute of Technology, (BHU)

10:15 AM Break

10:30 AM
Effects of Mineral Oxides on the Precipitation Micro-morphology of Metallic Iron in the Reduction of Iron Oxides under CO Atmosphere: *Zhancheng Guo*[1]; Zhilong Zhao[1]; Huiqing Tang[1]; Jintao Gao[1]; Lin Lin[1]; [1]University of Science and Technology Beijing

10:50 AM
Influence of Operation Parameters on Mass Fraction of Sulfur in the Hot Metal in COREX Process: *Laixin Wang*[1]; Shengli Wu[1]; Minyin Kou[1]; Xinliang Liu[1]; Yujue Wang[1]; Weidong Zhuang[2]; [1]University of Science and Technology Beijing; [2]National Engineering Research Center for Rare Earth Materials, General Research Institute for Nonferrous Metals, Grirem Advanced Materials Co. Ltd

11:10 AM
Influence of Operation Parameters on Sticking Behavior of Pellet in COREX Shaft Furnace: *Xinliang Liu*[1]; Shengli Wu[1]; Zhe Wang[1]; Laixin Wang[1]; Mingyin Kou[1]; [1]University of Science and Technology Beijing

11:30 AM
Relationship between Coking Properties of Lump Coal and its Pulverization in COREX Process: *Qihang Liu*[1]; [1]Xi'an University of Architecture and Technology (XAUAT)

11:50 AM
Study on the Iron Resource Recovery in Nickel Slag by Melting Oxidation Roasting Process: *Shen Yingying*[1]; Min Chen[1]; Yong-bo Ma[2]; Guo-zhou Li[2]; [1]Northeastern University; [2]LanZhou University Of Technology

7th International Symposium on High Temperature Metallurgical Processing — Microwave Heating and Roasting of Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Wednesday AM
February 17, 2016

Room: 106A
Location: Music City Center

Session Chairs: Matthew Andriese, Michigan Technological University; Zhiwei Peng, Central South University

8:30 AM Introductory Comments

8:35 AM
Separation of Rhenium and Molybdenum from Molybdenite Concentrate by Microwave-Assisted Roasting: Tao Jiang[1]; Linfeng Zhou[1]; *Guanghui Li*[1]; Rong Sun[1]; Zhiwei Peng[1]; [1]School of Minerals Processing and Bioengineering, Central South University

8:55 AM
Microwave Reduction of Sulfide Minerals within Peridotite Rock: *Matthew Andriese*[1]; [1]Michigan Technological University

9:15 AM
Research on Microwave Roasting of ZnO and Application in Photocatalysis: *Qin Guo*[1]; Linqing Dai[1]; Shenghui Guo[1]; Libo Zhang[1]; Jinhui Peng[1]; [1]Kunming University of Science and Technology

9:35 AM
Microwave Heating of Waste Tires: *Yuzhe Zhang*[1]; Jiann-Yang Hwang[1]; Zhiwei Peng[1]; Matthew Andriese[1]; [1]Michigan Technological University

9:55 AM Break

10:15 AM
Utilization of Pine Nut Shell for Preparation of High Surface Area Activated Carbon by Microwave Heating and KOH Activation: *Liao Xuefeng*[1]; Peng Jinhui[1]; Xia Hongying[1]; Zang Libo[1]; Chen Guo[1]; Hu Tu[1]; [1]State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, China

10:35 AM
Study of SnO_2 Transparent Conductive Films were Produced by Ultrasonic Spray and Microwave Pyrolysis: *Jianbo Lan*[1]; Shenghui Guo[1]; Lihua Zhang[2]; Libo Zhang[3]; Jinhui Peng[1]; [1]State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; [2]State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; [3]State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology ; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology

10:55 AM
Numerical Modeling of Microwave Heating an Iron Oxide in the Muti-mode Furnace: *Liu Chenhui*[1]; TianCheng Liu[2]; Jinhui Peng[2]; Lijuan Jia[2]; [1] Yunnan Minzu University; [2]Yunnan Minzu University

11:15 AM
Microwave Melting of High Carbon Ferromanganese Fines: *Lei Li*[1]; Hongbo Zhu[1]; Linqing Dai[1]; [1]Kunming University of Science and Technology

11:35 AM
Composition Modification of ZnO Containing Fayalite Slag from Secondary Source Copper Smelting: *Huayue Shi*[1]; Liugang Chen[1]; Peter Tom Jones[1]; Bart Blanpain[1]; Muxing Guo[1]; [1]KU Leuven

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

*Sponsored by:*TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Wednesday AM
February 17, 2016

Room: 101B
Location: Music City Center

Session Chair: Yongfeng Zhang, Idaho National Lab

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

9:00 AM
Phase Field Modeling of Void Growth and Coarsening in Irradiated Materials: *Karim Ahmed*[1]; Srujan Rokkam[2]; Thomas Hochrainer[3]; Anter El-Azab[1]; [1]Purdue University; [2]Advanced Cooling Technologies, Inc.; [3]Bremen Institute of Mechanical Engineering, University Bremen

9:20 AM
Cluster Dynamics Modelling of Void Nucleation and Growth in Ferritic Steels: *Gerrit VanCoevering*[1]; Gary Was[1]; [1]University of Michigan

9:40 AM
Modeling Microstructural Evolution in Neutron Irradiated Tungsten during Isochronal Annealing Process: *Xunxiang Hu*[1]; Donghua Xu[2]; Brian Wirth[2]; Yutai Katoh[2]; [1]ORNL; [2]UT Knoxville

10:00 AM Break

10:20 AM Invited
Characterisation of Reactor Core Materials Performance Using Materials Test Reactors - A Canadian Perspective: *Malcolm Griffiths*[1]; [1]Canadian Nuclear Laboratories

10:50 AM
Change of Slip Anisotropy in Zr Alloys Due to Irradiation: *Yang Liu*[1]; Allan Harte[1]; Zhenbo Zhang[1]; Michael Preuss[1]; [1]University of Manchester

11:10 AM
The Effect of Temperature on Helium Bubble Lattice Formation in hcp Zircaloy-4 and fcc Copper: *Aidan Robinson*[1]; Philip Edmondson[1]; Sergio Lozano-Perez[1]; Graeme Greaves[2]; Jonathan Hinks[2]; Stephen Donnelly[2]; Chris Grovenor[1]; [1]Oxford University; [2]University of Huddersfield

11:30 AM
Evaluation of Radiation effects in FeMnNiCr High Entropy Alloy: *Congyi Li*[1]; Anantha Phani Kiran Kumar Nimishakavi[2]; Hongbin Bei[2]; Brian Wirth[3]; G. Malcolm Stocks[2]; Steve Zinkle[3]; [1]Bredesen Center; [2]Oak Ridge National Lab; [3]University of Tennessee

11:50 AM
Atomic Scale Characterisation of Radiation Damage in Superconducting Perovskites for Nuclear Applications: Stella Pedrazzini[1]; Mohsen Danaie[1]; Gregory Brittles[1]; Susannah Speller[1]; Neil Young[1]; Chris Grovenor[1]; *Philip Edmondson*[2]; Paul Bagot[1]; [1]University of Oxford; [2]Oak Ridge National Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Non-Metals and Feedstock Design

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Wednesday AM
February 17, 2016
Room: 205A
Location: Music City Center

Session Chairs: Sudarsanam Babu, University of Tennessee - Knoxville; Kenny Dalgarno, Newcastle University

8:30 AM Invited
Fatigue and QA testing of Polymer SLS and FFF Parts: Stephen Akande[1]; Javier Munguia[1]; *Kenneth Dalgarno*[1]; [1]Newcastle University

9:00 AM
Electromagnetic Thermal Management and Structure Control in High Throughput Large Area Additive Manufacturing: *William Carter*[1]; Orlando Rios[1]; Vlastimil Kunc[1]; Brian Post[1]; Randall Lind[1]; Lonnie Love[1]; [1]Oak Ridge National Laboratory

9:20 AM
Non-Invasive Evaluation of Big Area Additive Manufacturing (BAAM) Parts using Thermoplastic (ABS) Chopped Carbon Fiber Composites for Microstructure-Mechanical Property Relationship
: *Stephen Young*[1]; Dayakar Penumadu[1]; Chad Duty[2]; Vlastimil Kunc[3]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory ; [3]Oak Ridge National Laboratory

9:40 AM Invited
Innovative Process Controls and Qualification of Additively Manufactured Metallic Components with Tailored Microstructure and Properties: *Sudarsanam Babu*[1]; Ryan Dehoff[2]; Lonnie Love[2]; William Peter[2]; [1]The University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

10:10 AM Break

10:30 AM
Using Powder Cored Tubular Wire Technology to Enhance Electron Beam Freeform Fabricated Structures: *Devon Gonzales*[1]; Marcia Domack[2]; Robert Hafley[2]; Stephen Liu[1]; [1]Colorado School of Mines; [2]NASA Langley Research Center- Advanced Materials and Processing Branch

10:50 AM
Manufacturing Process Development to Produce Depleted Uranium Wire for EBAM Feedstock: *David Alexander*[1]; Kester Clarke[1]; Daniel Coughlin[1]; Jeffrey Scott[1]; [1]Los Alamos National Laboratory

11:10 AM
A Novel Low Cost Process for Making Spherical Ti Alloy Powders for Additive Manufacturing and Other Applications
: *Zhigang Fang*[1]; Pei Sun[1]; Yang Xia[1]; Ying Zhang[1]; [1]University of Utah

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session V

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Wednesday AM
February 17, 2016
Room: 103B
Location: Music City Center

Session Chairs: Joel Bernier, Lawrence Livermore National Laboratory; Samantha Daly, University of Michigan

8:30 AM Invited
High-temperature In-SEM Mapping of Early Damage Accumulation across Length Scales in CMCs: Jared Tracy[1]; Kathy Sevener[1]; *Samantha Daly*[1]; [1]University of Michigan

9:00 AM
In-situ 3-D Characterization and Direct Micromechanical Modelling for Identification of Microstructural Effects on Ductile Damage in 2-phase Polycrystals: *Ricardo Lebensohn*[1]; Reeju Pokharel[1]; Bjorn Clausen[1]; Chris Chen[1]; Timothy Ickes[1]; James Hunter[1]; Darren Dale[1]; [1]Los Alamos National Laboratory

9:20 AM
Experimental Micromechanics – Getting the Most out of High Resolution EBSD and DIC: Jun Jiang[1]; Fionn Dunne[1]; *T Ben Britton*[1]; [1]Department of Materials, Imperial College

9:40 AM Invited
Quantifying the Response of Polycrystalline Materials at the Mesoscale: Measurements, Modeling and Data Mining: *Joel Bernier*[1]; Paul Shade[2]; Todd Turner[2]; [1]Lawrence Livermore National Laboratory; [2]Air Force Research Laboratory

10:10 AM Break

10:30 AM
Hydrogen-Enhanced 'Free-Volume' Effects during Deformation of Ni Alloys: *Samantha Lawrence*[1]; Yuriy Yagodzinskyy[2]; Hannu Hänninen[2]; Esa Korhonen[2]; Filip Tuomisto[2]; Zachary Harris[3]; Brian Somerday[1]; [1]Sandia National Laboratories; [2]Aalto University; [3]University of Virginia

10:50 AM
Computational and Experimental Comparison of Mechanical Deformation and Microstructure Evolution of Additively Manufactured Materials: *Tugce Ozturk*[1]; Ross Cunningham[1]; Robert Suter[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

11:10 AM
Which Aggregate Complexity is Required in Full-field Polycrystalline Computations Depending on the Scale of Interest?: *Maxime Sauzay*[1]; J. Liu[1]; Loic Signor[2]; Th. Ghidossi[2]; Patrick Villechaise[2]; F. Rachdi[2]; [1]CEA; [2]Pprime Institut

11:30 AM
A Study of Grain-level Deformation and Residual Stresses in Ti-7Al under Combined Bending and Tension
: *Kamalika Chatterjee*[1]; Armand Beaudoin[1]; Ajey Venkataraman[2]; Michael Sangid[2]; Tim Garbaciak[1]; John Rotella[2]; Peter Kenesei[3]; Jun-Sang Park[3]; [1]University of Illinois at Urbana-Champaign; [2]Purdue University; [3]Argonne National Laboratory

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Magnetocaloric Materials

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday AM
February 17, 2016
Room: 209C
Location: Music City Center

Session Chairs: Robert Shull, National Institute of Standards and Technology; Rafal Dunin-Borkowski, Forschungszentrum Jülich

8:30 AM Invited
Magnetocaloric Effects in Ni-Mn-Al Type Alloys: *Robert Shull*[1]; Daniel Lepkowski[2]; Cindi Dennis[1]; Adam Creuziger[1]; Anit Giri[3]; [1]National Institute of Standards and Technology; [2]Louisiana State University; [3]TKC Global

9:00 AM Invited
Observation of 'Re-entrant Inverse-magnetocaloric Phenomenon' and Asymmetric Magnetoresistance Behavior in RFe5Al7 (R= Gd and Dy): Venkatesh Chandragiri[1]; Kartik Iyer Iyer[1]; *E.V. Sampathkumaran*[1]; [1]Tata Institute of Fundamental Research

9:30 AM Invited
Transition Metal Based Magnetocaloric Materials: *Ekkes Brück*[1]; [1]Delft University of Technology

10:00 AM Break

10:20 AM
Amorphous, Nanostructured and Composite Magnetocaloric Materials: Optimization of Properties via Materials Processing: *Victorino Franco*[1]; Luis Moreno-Ramírez[1]; Jhon Ipus[1]; Javier Blázquez[1]; Alejandro Conde[1]; [1]Sevilla University

10:40 AM
Caloric Effects in Ni-Mn-Sn Ribbons: Christian Omar Aguilar Ortiz[1]; Juan Pablo Camarillo[1]; Daniel Soto-Parra[1]; Pablo Álvarez-Alonso[2]; Elena Villa[3]; Daniel Salazar[4]; Horacio Flores-Zúñiga[1]; *José Manuel Barandiarán*[4]; Volodymyr Chernenko[5]; [1]División de Materiales Avanzados, IPICYT; [2]Departamento de Electricidad y Electrónica, Universidad del País Vasco (UPV/EHU); [3]CNR IENI; [4]BCMaterials; [5]Ikerbasque, Basque Foundation for Science

11:00 AM
Magnetocaloric Materials: From Advanced Characterization to Industrial Application: *Konstantin Skokov*[1]; Tino Gottschall[1]; Oliver Gutfleisch[1]; [1]Technische Universität Darmstadt

11:20 AM
A Study of Magnetocaloric Effect and Increased Working Temperature Range in a Heusler $Mn_{50}Ni_{37}In_{10}Co_3$ Unidirectional Crystal: *Jian Ren*[1]; Hongxing Zheng[1]; [1]Shanghai University

11:40 AM
Magnetic Field Induced Large Strain by Reversible Phase Transformation on Metamagnetic Shape Alloys: *Ali Turabi*[1]; Haluk Karaca[1]; Merivan Sasmaz[2]; Volodymyr Chernenko[2]; Yury Chumlyakov[3]; [1]University of Kentucky; [2]University of Basque Country (UPV/EHU); [3]Tomsk State University

Aluminum Alloys, Processing and Characterization — Solidification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Wednesday AM
February 17, 2016
Room: 201B
Location: Music City Center

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

8:30 AM Introductory Comments

8:35 AM Invited
Grain Refinement Mechanism of Aluminum by Al-Ti-B Master Alloys: *Xiaoming Wang*[1]; Qingyou Han[1]; [1]Purdue University

9:00 AM
Optimization of Electrical Conductivity and Strength by Grain Refinement in Al-Mg-Si Alloys: *Xavier Sauvage*[1]; Yana Nasedkina[1]; Nariman Enikeev[2]; Elena Bobruk[2]; Maxim Murashkin[2]; Ruslan Valiev[2]; [1]University of Rouen, CNRS; [2]IPAM-USATU

9:25 AM
Power Law Scaled Hardness of Mn Strengthened Al-Mn Solid Solutions: An Integrated Density Functional Theory and Electron Work Function Study: *William Yi Wang*[1]; Kristopher Darling[2]; Yi Wang[1]; Shunli Shang[1]; Laszlo Kecskes[2]; Xidong Hui[3]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]U.S. Army Research Laboratory; [3]University of Science and Technology Beijing

9:50 AM Break

10:05 AM
Universal Modifiers for Al-Si Casting Alloys: *Yang Lu*[1]; Andre Lee[1]; [1]Michigan State University

10:30 AM
Effect of the Shape of Solid Particles on the Distribution of Particles in JIS AC4CH (A356) Aluminum Alloy Semi-solid High Pressure Die Casting: *Yuichiro Murakami*[1]; Kenji Miwa[2]; Masayuki Kito[3]; Takashi Honda[3]; Shuji Tada[1]; [1]Advanced Industrial Science and Technology; [2]Aichi Science and Technology Foundation; [3]Aisan Industry Co., Ltd.

10:55 AM
A High Strength Aluminium Alloy for High Pressure Die Casting: *Shouxun Ji*[1]; Zhongyun Fan[1]; [1]Brunel University

Aluminum Reduction Technology — Fundamentals in Chemistry I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Wednesday AM
February 17, 2016
Room: 202C
Location: Music City Center

Session Chair: Arne Ratvik, SINTEF

8:30 AM
Characterization of Bubble Behavior in Aluminum Reduction Cells: *Xiaojun Lv*[1]; Yajing Shuang[1]; Jie Li[1]; Lingyun Hu[1]; Jianhua Liu[1]; Zhenming Xu[1]; Hongliang Zhang[1]; [1]Central South University

8:55 AM
Elimination of Lithium from Aluminium Electrolyte by Acid Leaching Method: *Hou Jianfeng*[1]; Wang Zhaowen[1]; Li Tuofu[1]; SHI Zhongning[1]; Hu Xianwei[1]; [1]Northeastern University

9:20 AM
Impact of the Heat Flux on the Solidification of a Cryolithe Based Bath: *Sandor Poncsak*[1]; László Kiss[1]; Csilla Kaszás[1]; Véronique Dassylva Raymond[1]; Sébastien Guérard[2]; Jean François Bilodeau[2]; [1]Univeristy of Quebec at Chicoutimi; [2]CRDA Rio Tinto Aluminium

9:45 AM
Investigation of Sodium Sulfate Additions into Cryolite-Alumina Melts: *Rauan Meirbekova*[1]; Geir Haarberg[2]; Thor Aarhaug[3]; Gudrun Saevarsdottir[1]; [1]Reykjavik University; [2]Norwegian University of Science and Technology; [3]SINTEF

10:10 AM Break

10:25 AM
Polyvalent Impurities and Current Efficiency in Aluminium Cells: A Model Concerning Electrochemical Short Circuiting: *Asbjorn Solheim*[1]; [1]SINTEF

10:50 AM
Sodium in Aluminum Metal of Operating Prebake Cells: Confirmation and New Findings: *Alton Tabereaux*[1]; Mike Barber[1]; [1]Consultant

11:15 AM
The Performance of Aluminium Electrolysis in a Low Temperature Electrolyte System: Peng Cui[1]; Asbjørn Solheim[2]; *Geir Martin Haarberg*[1]; [1]Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry

11:40 AM
The Role of Key Impurity Elements on the Performance of Aluminium Electrolysis - Current Efficiency and Metal Quality: *Jassim Al-Mejali*[1]; Geir Martin Haarberg[2]; [1]Qatar Aluminium Company (Qatalum); [2]NTNU

Bio Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Applications & Devices

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Wednesday AM
February 17, 2016
Room: 206B
Location: Music City Center

Session Chair: Hendrik Heinz, University of Colorado-Boulder

8:30 AM Invited
Biological Fabrication of Nanodevices by Protein Supramolecules: *Ichiro Yamashita*[1]; [1]Nara Institute of Science and Technology

9:10 AM Invited
Stimuli Responsive and Reconfigurable Nanoparticle Biointerfaces: *Marc Knecht*[1]; [1]University of Miami

9:40 AM Invited
Computational Strategies for Amyoloidogenic Proteins Interacting with Gold NPs: *Giorgia Brancolini*[1]; Stefano Corni[2]; [1]CNR-Nano S3; [2]CNR Istituto Nanoscienze

10:10 AM Break

10:30 AM
Engineered Interfaces for Dehydrogenase Based Self-Integrated Electrode System: *Brandon Tomas*[1]; Banu Taktak-Karaca[1]; Dwight Deay III[1]; Deniz Yucesoy[2]; Mark Richter[1]; Candan Tamerler[1]; [1]University of Kansas; [2]University of Washington

10:50 AM Invited
Engineering of Bio-Nano Interfaces on 2D Nanomaterials by Self-Assembled Peptides
: *Yuhei Hayamizu*[1]; [1]Tokyo Institute of Technology

11:20 AM
An Electrochemical Approach to Control Surface Behavior of Peptides Self-assembling on Graphite: *Takakazu Seki*[1]; Christopher So[2]; Tamon Page[2]; Yuhei Hayamizu[1]; Mehmet Sarikaya[2]; [1]Tokyo Institute of Technology; [2]University of Washington

Biological Materials Science Symposium — Mechanics of Hard Biological Materials

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Wednesday AM
February 17, 2016
Room: 207A
Location: Music City Center

Session Chairs: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University

8:30 AM
A Comparison of Tooth Enamel from Disparate Mammals: Yuta Ohtsuka[1]; Shaoyu Zhu[1]; *Dwayne Arola*[1]; [1]University of Washington

8:50 AM
Competition of Elastic-plastic Deformation and Fracture in Plastic Zone Ahead Crack Tip in Dentin and Tooth Enamel: *Peter Panfilov*[1]; Elijah Borodin[1]; Elena Lyapunova[1]; Anna Kabanova[1]; Dmitry Zaytsev[1]; Mikhail Gutkin[2]; [1]Ural Federal University; [2]Institute of Problems of Mechanical Engineering of the RAS

9:10 AM
On the Reduction in Crack Growth Resistance of Human Enamel with Age: Dongsheng Zhang[1]; Mobin Yahyazadehfar[2]; *Dwayne Arola*[2]; [1]Shanghai University; [2]University of Washington

9:30 AM
Analysis of Naturally-occurring and Biomimetic Rod Like Microstructures: Enrique Escobar de Obaldia[1]; Chanhue Jeong[1]; Steven Herrera[2]; Lessa Grunenfelder[2]; David Kisailus[2]; *Pablo Zavattieri*[1]; [1]Purdue University; [2]University of California, Riverside

9:50 AM
Micromechanical Damage Modeling of Biological Materials: *Mei Chandler*[1]; Ruth Cheng[1]; Paul Allison[2]; Rich Martens[3]; Mark Hopkins[1]; [1]U.S. Army Engineer Research and Development Center; [2]University of Alabama, Dept. of Mechanical Engineering, Tuscaloosa; [3]University of Alabama, Central Analytical Facility

10:10 AM Break

10:30 AM
Functional Design of Keratinous Materials: Pangolin Scales and the Feather Shaft: *Bin Wang*[1]; Marc Meyers[1]; [1]University of California, San Diego

10:50 AM
Mechanical Investigation of Naturally-Occurring and Biomimetic Bouligand Materials: Nobphadon Suksangpanya[1]; Nicolas Guarin-Zapata[1]; David Restrepo[1]; Nicholas Yaraghi[2]; Steven Herrera[2]; David Kisailus[2]; *Pablo Zavattieri*[1]; [1]Purdue University; [2]University of California, Riverside

11:10 AM
The Twisted Fibrous Structure and Mechanical Behavior of Coelacanth: *Haocheng Quan*[1]; Wen Yang[2]; Marc Meyers[1]; [1]UCSD; [2]ETH-Zurich

11:30 AM
Nanoindentation-based Mechanical Spectroscopy of Wood Cell Walls: *Joseph Jakes*[1]; [1]USDA Forest Products Laboratory

Bulk Metallic Glasses XIII — Mechanical and Other Properties I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Wednesday AM
February 17, 2016
Room: 102B
Location: Music City Center

Session Chairs: Marios Demetriou, Caltech; Katharine Flores, Washington University in St. Louis

8:30 AM Invited
FeCoSiBNbCu Bulk Metallic Glass with Compressive Deformability: *Mihai Stoica*[1]; Sergio Scudino[1]; Jozef Bednarcik[2]; Ivan Kaban[1]; Jürgen Eckert[1]; [1]IFW Dresden; [2]DESY Hamburg

8:50 AM Invited
Fracture and Fatigue of a Ni-based Glass: Bernd Gludovatz[1]; Edwin Chang[2]; J. Na[3]; Max Launey[3]; Marios Demetriou[4]; William Johnson[4]; *Robert Ritchie*[2]; [1]Lawrence Berkeley National Laboratory; [2]University of California Berkeley; [3]Glassimetal Technology Inc.; [4]Califronia Institute of Technology

9:10 AM
On the Structural Origin of Strength and Plasticity of Metallic Glasses: *Yuan Wu*[1]; Xiongjun Liu[1]; Hui Wang[1]; Zhaoping Lu[1]; Hongbin Bei[2]; Yanfei Gao[2]; Yanli Wang[2]; Easo. P. George[2]; [1]State Key Lab for Advanced Metals and Materials, USTB; [2]Oak Ridge National Lab.

9:30 AM Invited
Plastic Deformation Mechanisms in Bulk Metallic Glass Composites: Kelly Kranjc[1]; Michael Gibbons[2]; Allen Hunter[3]; Stephen Niezgoda[2]; Emmanuelle Marquis[3]; Wolfgang Windl[2]; *Katharine Flores*[1]; [1]Washington University; [2]The Ohio State University; [3]University of Michigan

9:50 AM Break

10:05 AM Invited
Thermodynamic Origin of Fracture Resistance in Metallic Glasses: *Marios Demetriou*[1]; Glenn Garrett[1]; Maximilien Launey[1]; William Johnson[1]; [1]Glassimetal Technology

10:25 AM Invited
Mechanical, Thermal and Kinetic Characterization of a Series of Zr-based Bulk Metallic Glasses as a Function of Co-concentration
: Rainer Wunderlich[1]; *Yue Dong*[1]; Hans-Jörg Fecht[1]; [1]Universität Ulm

10:45 AM
Tailoring the Magnetic Properties and Mechanical Behavior of Cobalt-Iron Metallic Glasses: Santanu Das[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

11:05 AM
Microstructure and Mechanical Properties of Ti-6Al-4V Alloy Joints Brazed with Zr-Ti-Cu-Ni Metallic Glass as Filler Metal: *Yun Ji So*[1]; Jin Kyu Lee[1]; [1]Kongju National University

11:25 AM
On the Chemistry-topology-stiffness Relationship of Co-based Metallic Glass Thin Films: A Combinatorial Approach: *Volker Schnabel*[1]; Mathias Köhler[2]; Simon Evertz[1]; Jana Michalikova[3]; Jozef Bednarcik[3]; Denis Music[1]; Dierk Raabe[2]; Jochen Schneider[1]; [1]RWTH Aachen; [2]MPIE; [3]DESY

Bulk Metallic Glasses XIII — Structures and Modeling

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Wednesday AM
February 17, 2016
Room: 101E
Location: Music City Center

Session Chairs: Yunfeng Shi, Rensselaer Polytechnic Institute; Robert Ritchie, Lawrence Berkeley National Laboratory

8:30 AM Invited
Intrinsic and Extrinsic Ductility of Amorphous Solids: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

8:50 AM
Determining Key Mechanical and Thermophysical Properties of Bulk Metallic Glasses from First Principles: Nicholas Hamilton[1]; Reza Mahjoub[1]; Kevin Laws[1]; *Mike Ferry*[1]; [1]School of Materials, UNSW Australia

9:10 AM
Mechanical and Structural Properties of Metallic Glasses in Simulation and Experiment: *Mathias Koehler*[1]; Volker Schnabel[2]; Nagamani Jaya Balila[1]; Christoph Kirchlechner[1]; Gerhard Dehm[1]; Dierk Raabe[1]; Jochen M. Schneider[2]; [1]Max Planck Institute for Iron Research; [2]RWTH Aachen University

9:30 AM
Mesoscopic Models for Amorphous and Crystalline Solids: *Francisco Perez-Reche*[1]; [1]University of Aberdeen

9:50 AM
Thermally Activated Plastic Events and Their Underlying Structural Signature in Metallic Glasses: *Jun Ding*[1]; Evan Ma[2]; Mark Asta[3]; Robert Ritchie[1]; [1]Lawrence Berkeley National Laboratory; [2]Johns Hopkins University; [3]University of California Berkeley

10:10 AM Break

10:25 AM
Structural Evolution of Liquid Eutectic GaIn Alloy using In Situ Synchrotron X-ray Diffraction and Ab Initio Molecular Dynamics Simulation: Jianzhong Jiang[1]; *Qing Yu*[1]; X.D. Wang[1]; Q.P. Cao[1]; D.X. Zhang[1]; [1]Zhejiang University

10:45 AM
Atomic Size Effect on Elastic Softening in Multicomponent Glasses Investigated by MD Simulation: *Zengquan Wang*[1]; Takuya Iwashita[1]; Wojciech Dmowski[1]; Takeshi Egami[2]; [1]University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

11:05 AM Invited
Investigation of Simulated Local Atomic Structure above and below the Melting Temperature of a Metallic Glass: *Cang Fan*[1]; C.T. Liu[2]; Jingfeng Zhao[1]; P.K. Liaw[3]; [1]Nanjing University of Science and Technology; [2]City University of Hong Kong; [3]University of Tennessee

11:25 AM
Kumar: Metallic Glass Janus Microstructures: *Golden Kumar*[1]; [1]Texas Tech University

11:45 AM
Five-fold Symmetry as Indicator of Dynamic Arrest in Metallic Glass-forming Liquids: *Maozhi Li*[1]; [1]Renmin University of China

Bulk Processing of Nanostructured Powders and Nanopowders by Consolidation — Session V

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Deliang Zhang, Shanghai Jiao Tong University; Bowen Li, Michigan Technological University; Stephen Mashl, Michigan Technological University

Wednesday AM
February 17, 2016
Room: 210
Location: Music City Center

Session Chairs: Mathieu Brochu, McGill University; Jiamiao Liang, Shanghai Jiao Tong University

8:30 AM Invited
The Effect of Er on Grain Growth in Cryomilled Al-Mg-Er Powders: *Mathieu Brochu*[1]; Bamidele Akinrinlola[1]; Raynald Gauvin[1]; Carl Blais[2]; [1]McGill University; [2]Laval University

9:00 AM
Surface Energetics Studies of Nanomaterials: *Kristina Lilova*[1]; Link Brown[1]; [1]Setaram Inc.

9:20 AM
Controllable Preparation of Nickel Nanoparticles by Arc Discharge Method: *Feng Liang*[1]; Yaochun Yao[1]; WenHui Ma[1]; Bin Yang[1]; Yongnian Dai[1]; Manabu Tanaka[2]; Takayuki Watanabe[2]; [1]Kunming University of Science and Technology; [2]Kyushu University

9:40 AM
Synthesis and Consolidation of Nanocrystalline Fe-10Cr-3Al Alloy Powder
: *Rajiv Kumar*[1]; Srinivasa Bakshi[2]; V. S. Raja[1]; Smrutiranjan Parida[1]; R. K. Singh Raman[3]; [1]Indian Institute of Technology Bombay; [2]Indian Institute of Technology Madras; [3]Monash University

10:00 AM
Synthesis of Porous Boron Nitride Nanosheets with High Pore Volume: *Huazhang Zhai*[1]; [1]Beijing Institute of Technology

10:20 AM Break

10:40 AM
Synthesis and Morphology Characterization of Nanocrystalline ZnO Powder Fabricated by a Green Low Temperature Route: *Katja Engelkemeier*[1]; Olexandr Grydin[1]; Mirko Schaper[1]; [1]Universität Paderborn

11:00 AM
Two-Stage Sintering of Nano-sized Yttria Stabilized Zirconia with Polymer Sphere Generated Porosity: *Edward Gorzkowski*[1]; Scooter Johnson[1]; James Wollmershauser[1]; Stephanie Wimmer[1]; [1]Naval Research Laboratory

11:20 AM
Synthesis of Quasi-Nano-sized Ni-Zn-X-Ferrites (Gd, Cu, Mg) by Using Combustion Synthesis and Improvement of Purity by Wet Process
: Man Kim[1]; *Yong Choi*[2]; Moon Sun Gu[2]; Youl Baik[2]; Bo Kyeong Kang[2]; Sang Sun Han[2]; Sun I. Hong[3]; Chung T. Kim[3]; [1]KIMS; [2]Dankook University; [3]Jungwha Nano Engineering LTD

11:40 AM
TiO2-CeO2Nano Crystalline Powders and Thin Films by an Aqueous Sol-Gel Process: Effect of Ce:Ti Molar Ratio on Microstructure and Physical Properties: *Mohsen Manjili*[1]; Morteza Shaker[2]; Mahan Hosseinzadeh[2]; [1]UWM; [2]Sharif University of Technology

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — Degassing and Solidification Defects

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Wednesday AM
February 17, 2016
Room: 202A
Location: Music City Center

Session Chair: Dave Gildemeister , Alcoa

8:30 AM Introductory Comments

8:35 AM
Design of Square Induction Coils for the Electromagnetic Priming of Ceramic Foam Filters: *Robert Fritzsch*[1]; Ragnhild Aune[1]; Mark Kennedy[1]; [1]Norwegian University of Science and Technology

9:00 AM
Assessment of Active Filters for High Quality Aluminium Cast Products: *Pierre Le Brun*[1]; Fabio Taina[1]; Claudia Voigt[2]; Eva Jackel[2]; Christos Aneziris[2]; [1]Constellium Technology Center; [2]Technische Universitat Bergakademie Freiberg

9:25 AM
Numerical Simulation of Degassing Phenomena in Continuous Casting Process under External Static Magnetic Field on Flow Pattern in Slab Mold: *Mouhamadou Diop*[1]; Mohamed Hassan[1]; [1]Masdar Institute of Science and Technology

9:50 AM Break

10:05 AM
The Problem of Cavities in Open Mold Conveyor Remelt Ingots: *John Grandfield*[1]; [1]Grandfield Technology Pty Ltd

10:30 AM
Theory and Practical Application of Ultrasonic Degassing.: *Dawid Smith*[1]; Kent Britt[1]; [1]JWAluminum

10:55 AM
TiB2 Particle Detection in Liquid Aluminum Via Laser-Induced Breakdown Spectroscopy: *Shaymus Hudson*[1]; Diran Apelian[1]; Joe Craparo[2]; Robert De Saro[2]; [1]Worcester Polytechnic Institute; [2]Energy Research Company

11:20 AM
Modification of Macrosegregation Patterns in Rolling Slab Ingots by Bulk Grain Migration: *Samuel Wagstaff*[1]; Antoine Allanore[1]; [1]Massachusetts Institute of Technology

Characterization of Minerals, Metals, and Materials — Composites

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Wednesday AM
February 17, 2016
Room: 103A
Location: Music City Center

Session Chairs: Juan Escobedo-Diaz, UNSW Australia; Jeongguk Kim, Korea Railroad Research Institute

8:30 AM
Tensile Strength Tests in Epoxy Composites with High Incorporation of Malva Fibers: Carolina Ribeiro[1]; Ygor de Moraes[1]; Jean Igor Margem[2]; *Frederico Muylaert*[1]; Sergio Monteiro[3]; Fernanda de Paula[1]; [1]State University of the Northern Rio de Janeiro; [2]ISECENSA; [3]IME

8:50 AM
Refractory's Cements and Composites Materials Based on Them in System BaO-AL2O3-SiO2
N.Iliukha, W.Timofeeva: *Ilyoukha Nickolai*[1]; Timofeeva Valentina[1]; [1]Academic Ceramic Center

9:10 AM
Photocatalytic H2 Production on Novel Heterostructure Composite CuCO3/TiO2 Photocatalyst: *Likun Li*[1]; Jim Hwang[1]; [1]a. Advanced Materials R&D center of WISCO

9:30 AM
Highly Electrically Conductive Polyolefin Nanocomposites Reinforced with a Low Concentration of Carbon Nanotubes
: *Xingru Yan*[1]; Zhanhu Guo[1]; Qingliang He[1]; Jiang Guo[1]; Xi Zhang[1]; [1]University of Tennessee

9:50 AM
Mechanical Characterization of Polymer Matrix Composites with Nondestructive Evaluation Techniques: *Jeongguk Kim*[1]; [1]Korea Railroad Research Institute

10:10 AM Break

10:25 AM
Characterization of Glassy and Partially Crystalline Cu-Zr-Al-Sm Metallic Glasses: *Fatih Sikan*[1]; Ilkay Kalay[2]; Eren Kalay[1]; [1]METU; [2]Cankaya University

10:45 AM
Microstructural Characteristics of Reaction-bonded B_4C/SiC Composite: *Tianshi Wang*[1]; Prashant Karandikar[2]; Chaoying Ni[1]; [1]University of Delaware; [2]M Cubed Technologies, Inc.

11:05 AM
Analysis of Methanol Sensitivity on SnO2-ZnO Nanocomposite: *Enobong Bassey*[1]; Philip Sallis[2]; Krishnamachar Prasad[2]; [1]Coventry University; [2]Auckland University of Technology

11:25 AM
Meltspun Lignin Carbon Fibers for Reinforced Polymeric Composite Applications: Stephen Young[1]; *Nathan Meek*[1]; Dayakar Penumadu[1]; [1]University of Tennessee, Knoxville

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — 2D Materials Discovery and Design

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Wednesday AM
February 17, 2016
Room: 207D
Location: Music City Center

Session Chair: Houlong Zhuang, Princeton University

8:30 AM Invited
High-Throughput Screening of Substrates for Synthesis and Functionalization of Two-Dimensional Materials: *Arunima Singh*[1]; Kiran Mathew[2]; Richard Hennig[3]; Albert Davydov[1]; Francesca Tavazza[1]; [1]National Institute of Standards and Technology; [2]Cornell University; [3]University of Florida

9:00 AM
Prediction of Entropy Stabilized Incommensurate Phases in the System MoS_2-MoTe_2: *Benjamin Burton*[1]; Arunima Singh[1]; [1]NIST

9:20 AM
ReaxFF Force Field Development and Simulations of Two Classes of 2-Dimensional Structures: MoS2 and MXenes: *Alireza Ostadhossein*[1]; Adri C.T. van Duin[1]; [1]Pennsylvania State University

9:40 AM Invited
Turbostratically Disordered Compounds as a Template for Computational Materials Discovery: *Sven Rudin*[1]; [1]Los Alamos National Lab

10:10 AM Break

10:25 AM
Stability of Combined Depositions of Graphene and Gallium Nitride on Silicon Carbide: Interfacial Energies and Phonons: *Yi Wang*[1]; Rafael Vila[1]; Yu-Chuan Lin[1]; Joshua Robinson[1]; Zakaria Al Balushi[1]; Joan Redwing[1]; Zi-Kui Liu[1]; Long-Qing Chen[1]; [1]the Pennsylvania State University

10:45 AM
Structure-mechanical Property Relationships for a Wide Range of 2D Materials: *Chandra Veer Singh*[1]; [1]University of Toronto

11:05 AM Invited
Computational Discovery of New 2D and 3D Topological Materials: *Arun Bansil*[1]; [1]Northeastern University

11:35 AM
Computational Discovery of Novel Single-Layer Group-IV Oxides with an Evolutionary Algorithm: Rohit Ramanathan[1]; *Benjamin Revard*[1]; Arunima Singh[2]; Richard Hennig[3]; [1]Cornell University; [2]National Institute of Standards and Technology; [3]University of Florida

11:55 AM
Computational Discovery of Novel Magnetic 2D Materials: *Richard Hennig*[1]; Ziyu Zhou[2]; Ran Duan[2]; Houlong Zhuang[3]; Arunima Singh[4]; Benjamin Revard[2]; [1]University of Florida; [2]Cornell University; [3]Princeton University; [4]NIST

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Novel Coupling Strategies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Wednesday AM
February 17, 2016
Room: 209A
Location: Music City Center

Session Chairs: Richard Hennig, University of Florida; Srujan Rokkam, Advanced Cooling Technologies, Inc.

8:30 AM
Computation of the Lattice Green Function of a Dislocation: *Anne Marie Tan*[1]; Dallas Trinkle[1]; [1]Univ. Illinois, Urbana-Champaign

8:50 AM
Concurrent Atomistic-continuum Simulations of Sequential Slip Transfer of Curved Dislocations across Grain Boundaries: *Shuozhi Xu*[1]; Liming Xiong[2]; Youping Chen[3]; David McDowell[1]; [1]Georgia Tech; [2]Iowa State University; [3]University of Florida

9:10 AM Invited
Coupling of Density-Functional Theory with Continuum Methods for Solid/Liquid Interfaces and Electrochemistry: *Richard Hennig*[1]; Kiran Mathew[2]; [1]University of Florida; [2]Cornell University

9:40 AM
Comprehensive Kinetic Characterization of Clusters from the Atomic Scale: *Thomas Schuler*[1]; Maylise Nastar[1]; [1]CEA/SRMP

10:00 AM Break

10:20 AM
Continuum Modeling of Coherent Reference States in Semicoherent Interfaces: *Niaz Abdolrahim*[1]; Michael Demkowicz[2]; [1]Department of Mechanical Engineering, University of Rochester, Rochester NY, 14604; [2]MIT Department of Materials Science and Engineering, Cambridge MA, 02139

10:40 AM
Scale-Bridging Modeling of Helium Segregation to Surfaces of Plasma-Exposed Tungsten: *Sophie Blondel*[1]; Dimitrios Maroudas[2]; Lin Hu[2]; Karl Hammond[3]; Brian Wirth[4]; [1]Oak Ridge National Laboratory; [2]University of Massachusetts; [3]University of Missouri; [4]University of Tennessee

11:00 AM
Multiscale Model for Interlayer Dislocations in Bilayer Material: *Shuyang Dai*[1]; Yang Xiang[2]; David Srolovitz[1]; [1]University of Pennsylvania; [2]Hong Kong University of Science and Technology

11:20 AM
Anharmonic Flexural Modes in Free-Standing Graphene: *Hengjia Wang*[1]; Murray Daw[1]; [1]Clemson University

Computational Thermodynamics and Kinetics — Phase Diagrams and Phase Stability

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Wednesday AM
February 17, 2016
Room: 208B
Location: Music City Center

Session Chairs: Blas Pedro Uberuaga, Los Alamos National Laboratory; Adri van Duin, Penn State University

8:30 AM Invited
Applications of the ReaxFF Force Field for Identifying Reactive Properties for Complex Materials and Interfaces: *Adri van Duin*[1]; Chowdhury Ashraf[1]; Abhishek Jain[1]; Alireza Ostadhossein[1]; Mahbub Islam[1]; Yuan Xuan[1]; Oleg Borodin[2]; [1]Penn State; [2]US Army Research Laboratory

9:00 AM
Understanding Thermodynamics and Kinetics at the Electrolyte-Electrode Interfaces in All-Solid-State Li-ion Batteries : Insight from First-Principles Computation: *Yifei Mo*[1]; [1]University of Maryland, College Park

9:20 AM
Computational Investigation of Enhanced Activity and Stability in Mo-doped Pt-Ni Octahedral Nanoparticles Using a Cluster Expansion: *Liang Cao*[1]; Tim Mueller[1]; [1]Johns Hopkins University

9:40 AM
Phase Stability of Nano-sized Yttria Stabilized Zirconia System: *Mohammad Asadikiya*[1]; Yu Zhong[1]; [1]MME Department of Florida International University

10:00 AM Break

10:20 AM Invited
A Generalized View of Amorphization Resistance in Complex Oxides: *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory

10:50 AM
Phase Stability and Kinetics in Ni-superalloys from First Principles: *John Goiri*[1]; Anton Van der Ven[1]; [1]UCSB

11:10 AM
Defect Formation in Aqueous Environment: Theoretical Assessment of Boron Incorporation in Nickel Ferrite under Conditions of an Operating Pressurized-water Nuclear Reactor (PWR): *Zsolt Rak*[1]; Donald Brenner[1]; [1]North Carolina State University

11:30 AM
Thermal Decomposition Kinetics of Manganese Carbonate in the Process of MnZn Ferrite Preparation: *Lin Wang*[1]; [1]University of Science and Technology Liaoning

11:50 AM
Solid-liquid Phase Transitions of FCC-Al and HCP-Mg Nanoparticles: *Yewei Jiang*[1]; Linlin Lv[1]; Yongquan Wu[1]; [1]Shanghai University

12:10 PM Invited
Predicting Novel Pressure-Stabilized Materials Using Evolutionary Algorithms: *Eva Zurek*[1]; [1]University at Buffalo, SUNY

Electrode Technology — Electrode Operations and Control

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Angelique Adams, Alcoa Inc

Wednesday AM
February 17, 2016
Room: 202B
Location: Music City Center

Session Chair: Duygu Kocaefe, University of Quebec at Chicoutimi

8:30 AM Introductory Comments

8:40 AM
MIREA: An On-line Quality Control Equipment Integration in an Operational Context: *Marc Gagnon*[1]; [1]Aluminerie Alouette

9:05 AM
Journey towards World-Class Operational Effectiveness at DUBAL (EGA Jebel Ali Operations) Paste Plant: Bienvenu Ndjom[1]; Muhammad Shafiq Malik[1]; Amer Abdul Rahman Al Marzouqi[1]; Mohamed Fazal Ismail[1]; Tapan Kumar Sahu[1]; *Saleh Ahmed Rabbaa*[1]; [1]Emirates Global Aluminium

9:30 AM
The Start up & the Operation Performance of the Twin Green Anode Plant at Ma'aden Aluminium Smelter in Saudi Arabia: *Christophe Bouche*[1]; Pasquale Calo[1]; Abdulrahman H. Al Shammari[2]; Nitin Yadav[2]; Michel Gendron[2]; Subah Al Shammari[2]; Fabienne Virieux[1]; [1]Fives Solios; [2]Maaden Aluminium

9:55 AM
Simulation-Based Decision Support in Cathode Relining Facility Scaling: Laszlo Tikasz[1]; Wesam Alghamdi[2]; *Jacques Caissy*[1]; Robert McCulloch[1]; [1]Bechtel Canada Co.; [2]MA'ADEN Aluminium Co.

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Electrochemical Behavior; Intermetallic Compound II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Wednesday AM
February 17, 2016
Room: 201A
Location: Music City Center

Session Chairs: John Elmer, Lawrence Livermore National Laboratory ; Yan Li, Intel

8:30 AM Invited
Influence of Corrosive Electrolyte on the Electrochemical Behavior of Cu(Pd)-Al IMCs: *Yuelin Wu*[1]; Andre Lee[1]; [1]Michigan State University

8:55 AM
Electrochemical Migration of Fine Pitch Ag Interconnects: *Chia-Hung Tsou*[1]; Heng-Tien Lin[2]; Fan-Yi Ouyang[1]; [1]Dept. of Engineering and System Science, National Tsing Hua University, Hsinchu, TAIWAN; [2]Industrial Technology Research Institute, Hsinchu, TAIWAN

9:15 AM
The Intermetallic Compound Formation for the Wire Bond between Al pad and Ag-xPd Alloy Wire: *Wei-hsiang Huang*[1]; Kwang-Lung Lin[1]; Yu-Wei Lin[2]; Yun-Kai Cheng[2]; [1]Department of Materials Science and Engineering, National Cheng Kung University; [2]Precision Packaging Materials Corp

9:35 AM
Fracture Reliability Concern of (Au,Ni)Sn4 Phase in 3D IC Microbumps Using ENIG Surface Finishing: *Yingxia Liu*[1]; Yi-Ting Chen[1]; Sam Gu[2]; Dong Wook Kim[2]; King-Ning Tu[1]; [1]UCLA; [2]Qualcomm

9:55 AM
Interfacial Sliding due to Stress, Electromigration and Thermal Gradient and Effect on Through-Silicon Via Structures: Hanry Yang[1]; Lutz Meinshausen[1]; *Indranath Dutta*[1]; Tae-Kyu Lee[2]; [1]Washington State University; [2]Cisco Systems

10:15 AM Break

10:35 AM
New Concept Solders/Interconnects for 3D Packaging: *Kazuhiro Nogita*[1]; Christopher Gourlay[2]; Mohd Arif Mohd Salleh[1]; Guang Zeng[1]; Yueqin Wu[1]; Stuart McDonald[1]; [1]The University of Queensland; [2]Imperial College London

10:55 AM
Effect of Kirkendall Void Formation in Cu3Sn on Mechanical Properties of IMCs-based Microbumps: *Yaodong Wang*[1]; King-Ning Tu[1]; [1]University of California at Los Angeles

11:15 AM
Mechanical Properties of Ni3Sn4 by Micropillar Compression and Nanoindentation: *Li-Jen Yu*[1]; J. J. Yu[1]; J. Y. Wu[1]; C. R. Kao[1]; [1]National Taiwan University

11:35 AM
Growth Kinetic of Ni3Sn4 Intermetallic Compounds in Pb-free Interconnect under a Temperature Gradient: *Yu - Fang Lin*[1]; Yi - Shan Yang[1]; Fan -Yi Ouyang[1]; [1]National Tsing Hua University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Microstructure-sensitive and Multiscale Modeling of Fatigue

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Wednesday AM
February 17, 2016
Room: 213
Location: Music City Center

Session Chair: Ashley Spear, The University of Utah

8:30 AM Keynote
Modeling 3D Microstructurally Small Crack Growth in 7075-T6 Al: Conor Hennessey[1]; Paul Kern[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

9:10 AM Invited
Probability of Life-Limiting Fatigue Failures in the Titanium Alloy Ti-6Al-2Sn-4Zr-2Mo: *Sushant Jha*[1]; Robert Brockman[2]; Vikas Sinha[3]; Adam Pilchak[4]; Reji John[4]; James Larsen[4]; [1]US Air Force Research Laboratory/Universal Technology Corporation; [2]University of Dayton Research Institute; [3]UES, Inc.; [4]US Air Force Research Laboratory

9:30 AM
Microstructural Small Flaw Fracture Mechanics for Improved Design Analysis: *Robert Tryon*[1]; Robert McDaniels[1]; Animesh Dey[1]; [1]VEXTEC

9:50 AM
Investigating Microstructural Features in Ti-6Al-4V Using CPFEM (Note: This presentation will also appear in the poster session.): *Kartik Kapoor*[1]; Michael Sangid[1]; [1]Purdue University

10:10 AM Break

10:30 AM Invited
Intergranular Strain Evolution near Fatigue Crack Tips in Polycrystalline Materials: *Yanfei Gao*[1]; Rozaliya Barabash[2]; Peter Liaw[1]; [1]Univ of Tennessee; [2]Oak Ridge National Laboratory

10:50 AM
Effect of Pore Voxel Size on Driving Forces for Fatigue Crack Initiation in a Single Crystal Ni-Base Superalloy: *William Musinski*[1]; Michael Groeber[1]; Michael Uchic[1]; [1]US Air Force Research Lab

11:10 AM
Simulation of Grain Boundary/Slip Band Interaction in Polycrystalline Metallic Materials: *Julien Genee*[1]; Patrick VILLECHAISE[1]; Loïc Signor[1]; [1]PPRIME Institute CNRS ENSMA

11:30 AM
A 3-D Model for Quantification of Fatigue Weaklink Strength in an A713 Cast Aluminum Alloy (Note: This presentation will also appear in the poster session.): *Lin Yang*[1]; Zhiqiang Xu[2]; Yan Jin[1]; Tongguang Zhai[1]; [1]University of Kentucky; [2]Yanshan University

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Processing/Interfaces

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Wednesday AM
February 17, 2016
Room: 105A
Location: Music City Center

Session Chairs: Zhongyun Fan, Brunel University; Dieter Herlach, Deutsches Zentrum für Luft- und Raumfahrt

8:30 AM Invited
Multiphysics and Multiscale Modeling and Simulation of Solidification Processes: *Hervé Combeau*[1]; Miha Založnik[1]; [1]Institut Jean Lamour

8:55 AM Invited
Simulation of Crystal Sedimentation and Viscoplastic Behavior of Sedimented Equiaxed Mushy Zones: *Andreas Ludwig*[1]; Alexander Vakhrushev[1]; Menghuai Wu[1]; Tobias Holzmann[1]; Abdellah Kharicha[1]; [1]Montanuniversitaet Leoben

9:20 AM Invited
Thermal-Fluid Model of Meniscus Behavior during Mold Oscillation in Steel Continuous Casting: Xiaolu Yan[1]; ASM Jonayat[1]; *Brian Thomas*[1]; [1]University of Illinois at Urbana-Champaign

9:45 AM Invited
Inverse Methods and Temperature Gradients – An Expedient Combination for the Determination of Thermophysical Properties: *Markus Rettenmayr*[1]; [1]Friedrich Schiller University Jena

10:10 AM Break

10:30 AM
Microstructure Evolution in Containerless Solidification: *Jonas Valloton*[1]; Abdoul-Aziz Bogno[1]; Dieter Herlach[2]; Hani Henein[1]; [1]University of Alberta; [2]Deutsches Zentrum für Luft- und Raumfahrt

10:50 AM
Single-Phase Filamentary Cellular Breakdown via Laser-Induced Solute Segregation: Austin Akey[1]; Daniel Recht[2]; James Williams[3]; *Michael Aziz*[2]; Tonio Buonassisi[1]; [1]Massachusetts Institute of Technology; [2]Harvard John A. Paulson School of Engineering and Applied Sciences; [3]The Australian National University

11:10 AM
Autogenous Interface Modulations: *Martin Glicksman*[1]; [1]Florida Institute of Technology

11:30 AM Invited
Spreading of Liquid Pb Droplets on an Al Surface Exhibiting Solid-liquid Interfacial Premelting: *Brian Laird*[1]; Yang Yang[2]; [1]University of Kansas; [2]East China Normal University

High-Temperature Systems for Energy Conversion and Storage — Systems for Energy Conversion and Storage I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Wednesday AM
February 17, 2016

Room: 104E
Location: Music City Center

Session Chairs: Ritesh Sachan, ORNL; Swathi Manivannan, University of Hyderabad

8:30 AM
Carbon Deposition Behavior on Chromium Oxides Heated Directly in Low S/C Environments: *Takuya Ito*[1]; Shinji Amaha[1]; Mitsutoshi Ueda[2]; [1]TOKYO GAS CO.,LTD.; [2]Tokyo Institute of Technology

8:50 AM
CH4 Reforming by CO2 and O2 Using Ni-M (M= Cu, Fe, Co, Mn, Zn, Cr) Bimetallic Aerogel Catalysts: Tianzu Yang[1]; Wei Chen[1]; *Lin Chen*[1]; Weifeng Liu[1]; Duchao Zhang[1]; [1]Central South University

9:10 AM
Effect of Additives on Densification and Thermal Conductivity of Barium Zinc Tantalate Ceramics: Swathi Manivannan[1]; P.Kumar Sharma[2]; Tanjore V. Jayaraman[3]; *Dibakar Das*[1]; [1]University of Hyderabad; [2]Institute for Plasma Research; [3]University of Michigan - Dearborn

9:30 AM
Electro-spraying and Combustion of Ethanol in a Micro-scale Combustor under Combined Electric Field: *Yunhua Gan*[1]; Yang Tong[1]; Xiaowen Chen[1]; [1]South China University of Technology

9:50 AM Invited
Strain Assisted Fast Ionic Conduction in Ion Irradiation Induced Nanofibers in Pyrochlore Structure Complex Oxide Matrix: *Ritesh Sachan*[1]; D. Aidhy[1]; Yanwen Zhang[1]; Matthew Chisholm[1]; William Weber[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

High Entropy Alloys IV — Structures and Mechanical Properties I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Wednesday AM
February 17, 2016

Room: 102A
Location: Music City Center

Session Chairs: Takeshi Egami, The University of Tennessee; Yong Zhang, University of Science and Technology Beijing

8:30 AM Invited
Electronic Effects in High-Entropy Alloys: *Takeshi Egami*[1]; Odbadrakh Khorgolkhuu[1]; George Stocks[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

8:55 AM
Stress-strain Response and Microstructure of High Entropy Alloy ($Fe_{20}Mn_{20}Ni_{20}Co_{20}Cr_{20}$) Deformed Micro-pillars: *Daniel Janda*[1]; Hyokyung Sung[1]; Alexander Kauffmann[2]; Martin Heilmaier[2]; Sharvan Kumar[1]; [1]Brown University; [2]Karlsruhe Institute of Technology

9:15 AM
Structure and Mechanical Properties of Fe40Mn28Ni32-xCrx Alloys with Different Cr Content: *Nikita Stepanov*[1]; Dmitry Shaysultanov[1]; Mikhail Tikhonovsky[2]; Gennady Salishchev[1]; [1]Belgorod State University; [2]National Science Center "Kharkov Institute of Physics and Technology" NAS of Ukraine

9:35 AM Invited
High Entropy Alloy Materials for Naval Applications: *Thanh Tran*[1]; [1]NSWC Carderock

9:55 AM Break

10:10 AM Invited
Tensile Properties of Refractory High-entropy HfNbTaTiZr Alloy: *Che-Wei Tsai*[1]; Chien-Chang Juan[1]; Jien-Wei Yeh[1]; [1]National Tsing Hua University

10:30 AM
Structure and Mechanical Properties of the AlNbTiVCrx (x = 0, 0.5, 1, 1.5) High Entropy Alloys: *Nikita Yurchenko*[1]; Nikita Stepanov[1]; Gennady Salishchev[1]; Mikhail Tikhonovsky[2]; [1]Belgorod National Research University, Laboratory of Bulk Nanostructured Materials; [2]National Science Center, Kharkov Institute of Physics and Technology

10:50 AM Invited
Influence of Cryogenic Prestraining on Tensile Properties of a High-entropy Alloy: G. Laplanche[1]; O. Horst[1]; A. Kostka[1]; G. Eggeler[1]; *E. P. George*[1]; [1]Ruhr University Bochum

11:15 AM Invited
Serration Behaviors and Structural Flow Units in High Entropy Alloys: *Yong Zhang*[1]; [1]University of Science and Technology Beijing

Hume-Rothery Award Symposium: Thermodynamics of Materials — Temperature Effects

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Wednesday AM
February 17, 2016

Room: 107A
Location: Music City Center

Session Chairs: Winfried Petry, Technische Universität München; Dane Morgan, University of Wisconsin-Madison

8:30 AM Invited
Mixed-space Approach to Phonons Involving Vibration-Induced Dipole-Dipole Interactions: Yi Wang[1]; Zikui Liu[1]; *Long Qing Chen*[1]; [1]Penn State University

9:00 AM Invited
Non-harmonic Modelling of Materials
: *Olle Hellman*[1]; [1]California Institute of Technology

9:30 AM
Ab Initio Molecular Dynamics Study of Speciation in AlCl3-ZnCl2-based Network Forming Liquids: *Venkateswara Rao Manga*[1]; Krishna Muralidharan[1]; Pierre Lucas[1]; Pierre Deymier[1]; [1]University of Arizona

9:50 AM
Reduced Elastic Anisotropy of Cementite at Moderate Temperatures from Nonharmonic Effects: *Jane Herriman*[1]; Lisa Mauger[1]; Olle Hellman[1]; Sally Tracy[1]; Matt Lucas[2]; Jorge Munoz[1]; John Horwath[2]; Jackie Li[3]; Brent Fultz[1]; [1]Caltech; [2]AFRL; [3]University of Michigan

10:10 AM Break

10:40 AM Invited
Inclusion of Phonon-Phonon and Magnon-Phonon Couplings in the Thermodynamic Description of Materials: An Ab Initio Approach: *Jörg Neugebauer*[1]; Albert Glensk[1]; Fritz Kormann[2]; Blazej Grabowski[1]; Tilmann Hickel[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Delft University of Technology

11:10 AM Invited
Temperature Dependent Phonon Anharmonicity in Elementary and Martensite Systems: *Winfried Petry*[1]; Michael Leitner[1]; Pascal Neibecker[1]; Jürgen Neuhaus[1]; [1]Heinz Maier-Leibnitz Zentrum (MLZ) - Technische Universität München

11:40 AM
Phonon-Induced Charge Transfer and Electron-Phonon Interaction in FeTi: *Fred (Chae-Reem) Yang*[1]; Jorge Muñoz[2]; Lisa Mauger[1]; Olle Hellman[1]; Matthew Lucas[3]; Brent Fultz[1]; [1]California Institute of Technology; [2]The Datum Institute; [3]Air Force Research Laboratory

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — Nano- and Micro-mechanical Characterization of Materials at Elevated Temperatures

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Wednesday AM
February 17, 2016
Room: 212
Location: Music City Center

Session Chairs: Vikram Jayaram, Indian Institute of Science; Vikas Tomar, Purdue University

8:30 AM Invited
Shape Memory Properties and Martensitic Transformation in Shape Memory Ceramics at the Micro- and Nanoscale: *Christopher Schuh*[1]; Zehui Du[2]; Chee-Lip Gan[2]; [1]MIT; [2]NTU Singapore

9:00 AM
Temperature and Dislocation Density Effects on Size Dependent Plasticity Mechanisms: *David Bahr*[1]; Michael Maughan[1]; [1]Purdue University

9:20 AM
In Situ Nanomechanical Properties of Diffusion Aluminide Bond Coating at Elevated Temperature: Sanjit Bhowmick[1]; *Douglas Stauffer*[1]; S.A. Syed Asif[1]; [1]Hysitron, Inc.

9:40 AM
Measurement of Localized Deformation in Superalloys with Heterogeneous Microstructures: *Connor Slone*[1]; Michael Mills[1]; [1]The Ohio State University

10:00 AM Break

10:20 AM Invited
In-situ Testing in the Electron Microscope at High and Low Temperatures: *Jeffrey Wheeler*[1]; [1]ETH Zurich

10:50 AM
In-situ Fracture Testing of Microscale Silicon at Elevated Temperatures: *Eric Hintsala*[1]; Sanjit Bhowmick[2]; William Gerberich[1]; Douglas Stauffer[2]; [1]University of Minnesota; [2]Hysitron, Inc.

11:10 AM
Benchmarking Multi-scale Models through Micro-mechanical Testing and Characterization of Ni-base Superalloys: *David Eastman*[1]; Zafir Alam[1]; Paul Shade[2]; Michael Uchic[2]; Will Lenthe[3]; Tresa Pollock[3]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]Air Force Research Lab; [3]University of California, Santa Barbara

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Microstructural Evolution I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Wednesday AM
February 17, 2016
Room: 108
Location: Music City Center

Session Chair: Begum Gulsoy, Northwestern University

8:30 AM Invited
Exploring the Causes and Effects of Fast Grain Boundary Motion: *Elizabeth Holm*[1]; Brian DeCost[1]; Jonathan Humberson[1]; Taichong Ma[1]; Philip Goins[1]; [1]Carnegie Mellon University

9:10 AM
Migration Mechanisms of Flat S3 Grain Boundaries: Jonathan Priedeman[1]; *Eric Homer*[1]; David Olmsted[2]; [1]Brigham Young University; [2]University of California, Berkeley

9:30 AM
Twin Boundary Energy as a Driving Force for Microstructural Instability in Thin Films: *Shefford Baker*[1]; Elizabeth Ellis[1]; [1]Cornell University

9:50 AM
Abnormal Grain Growth-The Role of Curvature in Pinned Microstructures: *Catherine Sahi*[1]; Steven Chiu[1]; David Graniero[1]; Robert DeHoff[1]; Burton Patterson[1]; [1]University of Florida

10:10 AM Break

10:30 AM Invited
Thermodynamic High-temperature Stability in Nano Metallic Multilayers: *Andrea Hodge*[1]; [1]University of Southern California

11:10 AM
Grain Growth and Segregation in Hf-Ti Nanometallic Multilayers: *Juan Riaño Zambrano*[1]; Mikhail Polyakov[1]; Andrea Hodge[1]; [1]University of Southern California

11:30 AM
Coarsening of a Two-Phase System with Asymmetric Bulk Mobilities: *William Andrews*[1]; Chal-Lan Park[1]; Peter Voorhees[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]Northwestern University

11:50 AM
Molecular Dynamics Simulation of B2-B33 Transformation in Ni-Zr Alloy: *Seth Wilson*[1]; Mikhail Mendelev[1]; [1]Ames Laboratory

Magnesium-based Biodegradable Implants — Materials and Processing / Surface Modification and Corrosion

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, European Space Agency; Martyn Alderman, Magnesium Elektron; Patrick Bowen, Michigan Technological University; Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund

Wednesday AM
February 17, 2016

Room: 206A
Location: Music City Center

Session Chairs: Petra Maier, Fachhochschule Stralsund ; Jaroslaw Drelich, Michigan Technological University

8:30 AM Introductory Comments Wim Sillekens

8:40 AM Invited
Fabrication, Testing and Performance of Rare Earth-containing Magnesium Biodegradable Metals: *Yufeng Zheng*[1]; [1]Peking University

9:10 AM
Manufacturing of Osteosynthesis Systems Made of Magnesium Alloy AZ91: Britta Hering[1]; *Andi Wippermann*[1]; Tobias Mörke[1]; Thilo Grove[1]; Berend Denkena[1]; [1]Leibniz University of Hannover

9:30 AM
Magnesium Powder Injection Molding (MIM) of Orthopedic Implants for Biomedical Applications: *Martin Wolff*[1]; Johannes Schaper[1]; Marc Suckert[1]; Michael Dahms[1]; Thomas Ebel[1]; Regine Willumeit-Römer[1]; Thomas Klassen[1]; [1]Helmholtz-Zentrum Geetshacht

9:50 AM Invited
Absorbable Filament Technologies: Wire-drawing to Enable Next-generation Medical Devices: *Adam Griebel*[1]; Jeremy Schaffer[1]; [1]Fort Wayne Metals

10:20 AM Break

10:40 AM Invited
Plasma Surface Modification of Magnesium-Based and Related Biomaterials: *Paul Chu*[1]; [1]City University of Hong Kong

11:10 AM
Degradation of MgF2-coated and Uncoated MgNd2 Specimens in Contact with Nasal Mucosa: *Rainer Eifler*[1]; Martin Durisin[2]; Christian Klose[1]; Thomas Lenarz[2]; Hans Jürgen Maier[1]; [1]Leibniz Universitaet Hannover; [2]Medical School of Hanover

11:30 AM
Influence of Precipitation Hardening in Mg-Y-Nd on Mechanical and Corrosion Properties: *Petra Maier*[1]; Raimund Peters[1]; Chamini Mendis[2]; Sören Müller[3]; Norbert Hort[2]; [1]University of Applied Sciences Stralsund; [2]Helmholtz-Zentrum Geesthacht; [3]Extrusion Research and Development Center TU Berlin

Magnesium Technology 2016 — LPSO Alloys and Composites

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Wednesday AM
February 17, 2016

Room: 204
Location: Music City Center

Session Chairs: Manoj Gupta, National University of Singapore; Hyunkyu Lim, Korea Institute of Technology KITECH

8:30 AM
Solid Solution Hardening in Mg-Gd-TM (TM=Ag, Zn and Zr) Alloys: An Integrated Density Functional Theory and Electron Work Function Study: *William Yi Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Hongyeun Kim[1]; Kristopher Darling[2]; Laszlo Kecskes[2]; Suveen Mathaudhu[3]; Xidong Hui[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]U.S. Army Research Laboratory; [3]University of California; [4]University of Science and Technology Beijing

8:50 AM
Microstructure and Mechanical Properties New Magnesium-Zinc-Gadolinium Alloys: *Sankaranarayanan Seetharaman*[1]; Sravya Tekumalla[1]; Bhavesh Lalwani[2]; Hardik Patel[2]; Quy Bau Nguyen[1]; Manoj Gupta[1]; [1]National University of Singapore, Singapore; [2]National Institute of Technology, Karnataka

9:10 AM
Effects of Alloying Elements on Microstructures and Mechanical Properties of Mg-Gd-Zn-Ca Alloys: *Hyunkyu Lim*[1]; Youngkyun Kim[1]; Bonghwan Kim[1]; Daeguen Kim[2]; Young-Ok Yoon[1]; Shae K. Kim[1]; [1]KITECH; [2]GI tech

9:30 AM
Creep of a Mg-Zn-Y Alloy at Elevated Temperatures: Weiwei Hu[1]; *Zhiqing Yang*[1]; Jianfang Liu[1]; Hengqiang Ye[1]; [1]Institute of Metal Research

9:50 AM Break

10:10 AM Invited
An Insight into Use of Hollow Fly Ash Particles on the Properties of Magnesium: Vyasaraj Manakari[1]; Gururaj Parande[1]; *Manoj Gupta*[1]; [1]National University of Singapore

10:30 AM
Role of SiC in Grain Refinement of Aluminum-free Mg-Zn Alloys: *Jian Gu*[1]; Yuanding Huang[1]; Karl Ulrich Kainer[1]; Norbert Hort[1]; [1]Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht, Max-Planck-Str. 1, D-21502 Geesthacht, Germany

10:50 AM
Hot Deformation and Processing Map in an Mg-Zn-Mn-Y Alloy: *Nabila Tahreen*[1]; Dingfei Zhang[2]; Fusheng Pan[2]; Xianquan Jiang[3]; Dongyang Li[4]; Daolun Chen[1]; [1]Ryerson University; [2]Chongqing University; [3]Southwest University; [4]University of Alberta

Magnesium Technology 2016 — Solidification and Casting

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Wednesday AM
February 17, 2016

Room: 205B
Location: Music City Center

Session Chairs: Nobert Hort, Helmholtz-Zentrum Geesthacht; Tracy Berman, University of Michigan

8:30 AM
In Situ Synchrotron Radiation Diffraction of the Solidification of Mg-Dy(-Zr) Alloys: *Domonkos Tolnai*[1]; Peter Staron[1]; Andreas Staeck[1]; Helmut Eckerlebe[1]; Norbert Schell[1]; Martin Müller[1]; Joachim Gröbner[2]; Norbert Hort[1]; [1]Helmholtz-Zentrum Geesthacht; [2]Institute of Metallurgy, Clausthal University of Technology

8:50 AM
As Solidified Microstructure Investigation of Mg15Y and MgxYyGd (x+y=15 wt.%) Ternary Alloys: *Gabor Szakacs*[1]; Chamini Mendis[1]; Norbert Hort[1]; Karl Kainer[1]; Norbert Schell[1]; Domonkos Tolnai[1]; Ivana Stuliková[2]; Marian Vlcek[2]; Frantisek Lukác[2]; Bohus Smola[2]; Rainer Fetzer[3]; [1]Helmholtz-Zentrum Geesthacht; [2]Charles University in Prague; [3]Clausthal University of Technology

9:10 AM
Development of the New High Shear Technology for Continuous Processing of Mg-alloys for Ingot Casting: *Jayesh Patel*[1]; Peter Lloyd[1]; Guosheng Peng[1]; Zhongyun Fan[1]; [1]BCAST

9:30 AM
Dendritic Morphology and Growth Orientation of Magnesium Alloys: 3-D Characterization by Synchrotron X-ray Tomography and Simulation by

Phase-field: *Manhong Yang*[1]; Shou-Mei Xiong[1]; Zhi-Peng Guo[1]; [1]Tsinghua University

9:50 AM Break

10:10 AM
Influence of Hot Isostatic Processing on the Microstructure and Tensile Behavior of HPDC AM50: *Erin Deda*[1]; John Allison[1]; [1]University of Michigan

10:30 AM
Microsegregation in High Pressure Die Cast AM70: *Tracy Berman*[1]; Erin Deda[1]; Jiashi Miao[1]; Mei Li[2]; John Allison[1]; [1]University of Michigan; [2]Ford Motor Company

10:50 AM
Predicting Solidification Properties of Magnesium by Molecular Dynamics Simulations: *Ebrahim Asadi*[1]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology

Material Behavior Characterization via Multi-Directional Deformation of Sheet Metal — Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: John Carsley, General Motors Research & Development; Daniel Coughlin, Los Alamos National Laboratory; Myoung-Gyu Lee, Korea University; Youngung Jeong, National Institute of Standards and Technology; Piyush Upadhyay, Pacific Northwest National Laboratory

Wednesday AM
February 17, 2016
Room: 104A
Location: Music City Center

Session Chairs: John Carsley, General Motors Co.; Daniel Coughlin, Los Alamos National Laboratory

8:30 AM Invited
A Novel In-situ Planar Biaxial Experiment: *Aaron Stebner*[1]; [1]Colorado School of Mines

9:00 AM Invited
Advanced Cruciform Testing at the NIST Center for Automotive Lightweighting: *Adam Creuziger*[1]; Mark Iadicola[1]; Tim Foecke[1]; Dilip Banerjee[1]; [1]National Institute of Standards and Technology

9:30 AM Invited
Biaxial Loading of Anisotropic Al-6022-T4 Sheets Using Cruciform Specimens: Nengxiu Deng[1]; Ian Gagnon[1]; Vojtech Kubec[1]; Brad Kinsey[1]; *Yannis Korkolis*[1]; [1]University of New Hampshire

10:00 AM Break

10:30 AM
Optimization of Biaxial Tensile Test Specimen Design: *Dilip Banerjee*[1]; Mark Iadicola[1]; Adam Creuziger[1]; Timothy Foecke[1]; [1]NIST

11:00 AM
Hardening Behavior of 316L SS Subject to Biaxial Strain Path Change: Multiscale Modeling for Guiding Experiments: *Manas Upadhyay*[1]; Tobias Panzner[1]; Steven Van Petegem[1]; Helena Van Swygenhoven[2]; [1]Paul Scherrer Institut; [2]Paul Scherrer Institute and École polytechnique fédérale de Lausanne

11:30 AM
On the Non-proportional Deformation of Sheet Steel Using In-situ Diffraction and Modelling Methods: *David Collins*[1]; Tomiwa Erinosho[2]; Fionn Dunne[3]; Richard Todd[1]; Angus Wilkinson[1]; [1]University of Oxford; [2]University of Bristol; [3]Imperial College London

Material Design Approaches and Experiences IV — TiAl, Ti Alloys and Functional Materials

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Wednesday AM
February 17, 2016
Room: 208A
Location: Music City Center

Session Chairs: Akane Suzuki, GE Global Research; Dongsheng Xu, Institute of Metal Research

8:30 AM Invited
TiAl Alloy Design : Principles, Processing, Properties, and Applications: *B. P. Bewlay*[1]; [1]GE Global Research

9:00 AM Invited
Application-specific R&D Pathway to Higher-Temperature Gamma (TiAl) Alloy Materials and Processes: *Young-Won Kim*[1]; Sang-Lan Kim[2]; [1]Gamteck, Inc.; [2]UES., Inc.

9:30 AM Invited
Alloy Design Concept for High Nb-TiAl Alloy for High Temperature Application: *Junpin Lin*[1]; Xiangjun Xu[2]; Yongfeng Liang[1]; Laiqi Zhang[1]; Guojian Hao[1]; [1]University of Science and Technology Beijing; [2]Zhongyuan University of Technology

10:00 AM Break

10:20 AM Invited
Multi-scale Simulation towards the Understanding of the Microstructure Evolution and Fracture Behavior in Titanium Alloys: *Dongsheng Xu*[1]; Jinhu Zhang[1]; Chunyu Teng[1]; Hao Wang[1]; Jianke Qiu[1]; Jiafeng Lei[1]; Rui Yang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

10:50 AM
Interface Materials Design of Nanoscale Multi-layered Composite Materials and Its Mechanical Properties: *Hashina Parveen Anwar Ali*[1]; Ihor Radchenko[1]; Arief Budiman[1]; Nan Li[2]; Nathan Mara[2]; Irene Beyerlein[2]; [1]Singapore University of Technology and Design; [2]Los Alamos National Laboratory

11:10 AM
Experimental Investigation of the Sm-rich Side in Sm-Zr System: *Tian Yin*[1]; Shuqiang Zhang[1]; Zhihong Zhang[2]; Jieyu Zhang[1]; [1]State Key Laboratory of Advanced Special Steel; [2]Baotou Research Institute of Rare Earths

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

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Wednesday AM
February 17, 2016
Room: 101A
Location: Music City Center

Session Chairs: Brian Cockeram, Bechtel-Bettis; Brad Baker, United States Naval Academy

8:30 AM
Oxidation Behavior of Accident-Tolerant FeCrAl Cladding Alloys: *Bruce Pint*[1]; Yukinori Yamamoto[1]; Kinga Unocic[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory

8:50 AM
Ferritic Steels Cladding for Accident Tolerant Fuel in Light Water Power Reactors: *Raul Rebak*[1]; Yang-Pi Lin[2]; Russell E. Stachowski[2]; Kurt A. Terrani[3]; [1]GE Global Research; [2]Global Nuclear Fuels; [3]Oak Ridge National Laboratory

9:10 AM
Nanostructured Vanadium Carbide Coating on the F/M Stainless Steel for Mitigating Fuel Cladding Chemical Interaction: Kookhyun Jeong[1]; *Yong Yang*[1]; [1]University of Florida

9:30 AM
Deposition of Compatibility Films on SiC for Environmental Barrier Coatings: *Caen Ang*[1]; Jim Kiggans[1]; Craig Kemery[2]; Jeffery Thomson[1]; Yutai Katoh[1]; Kurt Terrani[1]; [1]ORL; [2]NEO Industries

9:50 AM
Processbility Assessment of Accident-Tolerant FeCrAl Cladding Alloys: *Yukinori Yamamoto*[1]; Kevin Field[1]; Bruce Pint[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory

10:10 AM Break

10:30 AM
Down Selection of Clad Material for LEU Fuel Elements for the TREAT Reactor: *Isabella van Rooyen*[1]; Darryl Butt[2]; Randy Lloyd[1]; Jordan Vandegrift[2]; Patrick Price[2]; [1]Idaho National Laboratory; [2]Boise State University

10:50 AM
Effect of Cold Rolling on the Integrity and SCC Susceptibility of Twin Boundaries of Alloy 690: *Wenjun Kuang*[1]; Cody Miller[2]; Mike Kaufman[2]; Talukdar Aman[3]; Bharat Gwalani[3]; Rajarshi Banerjee[3]; Gary Was[1]; [1]UNIVERSITY OF MICHIGAN; [2]Colorado Schools of Mines; [3]University of North Texas

11:10 AM
Effect of Heat Treatment and Chemical Composition on the Precipitation Behavior in Commercialized Age Hardening Nickel Based Alloys: *Miao Song*[1]; Zhijie Jiao[1]; Mi Wang[1]; David Woodley[1]; Gary Was[1]; [1]University of Michigan

11:30 AM
Elevated Temperature Deformation Behaviour of an Alloy 693: *Jung Singh*[1]; Shabana Khan[1]; Amit Verma[1]; Jayanta Chakravartty[1]; [1]Bhabha Atomic Research Centre

Materials in Clean Power Systems IX: Durability of Materials — Materials for Supercritical CO2 Applications

*Sponsored by:*TMS Extraction and Processing Division, TMS Structural Materials Division, TMS Light Metals Division, TMS: Energy Committee, TMS: High Temperature Alloys Committee
Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Peter Hosemann, University of California Berkeley; Kinga Unocic, ORNL; Paul Jablonski, US Department of Energy; Joseph Licavoli, Department of Energy; Donna Guillen, Idaho National Laboratory

Wednesday AM
February 17, 2016
Room: 104D
Location: Music City Center

Session Chairs: Sebastien Dryepondt, ORNL; Donna Guillen, Idaho National Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Corrosion of Supercritical CO_2 Turbomachinary Components: *Voramon Dheeradhada*[1]; Azam Thatte[1]; [1]GE Global Research

9:05 AM
Corrosion of Energy System Materials in Supercritical Carbon Dioxide (sCO2): Lucas Teeter[1]; *Benjamin Adam*[1]; Marco Teeter[1]; Bjorn Westman[1]; Shannon Bragg-Sitton[2]; Julie Tucker[1]; [1]Oregon State University; [2]INL

9:25 AM
Effect of Temperature and Pressure on Supercritical CO_2 Compatibility of Structural Alloys: *Robert Brese*[1]; [1]Oak Ridge National Lab/University of Tennessee

9:45 AM Invited
Corrosion Behaviour of 9-12Cr Ferritic Steels and 18-25Cr Austenitic Steels in Supercritical CO2: *F. Rouillard*[1]; T. Furukawa[2]; B. Duprey[1]; [1]Universite Paris Saclay; [2]Japan Atomic Energy Agency

10:15 AM Break

10:35 AM Invited
Materials Issues for Supercritical CO_2 above 700°C: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

11:05 AM Invited
Corrosion of Nickel-base Alloys by Supercritical CO2: Rene Olivares[1]; Wes Stein[1]; Thuan Nguyen[2]; *David Young*[2]; [1]CSIRO; [2]University of New South Wales

11:35 AM
High-Temperature Corrosion of Diffusion Bonded Haynes 230 in Supercritical CO_2 Cycle Conditions: *Omer Dogan*[1]; Casey Carney[2]; Gordon Holcomb[1]; Lucas Teeter[3]; Julie Tucker[3]; [1]DOE National Energy Technology Laboratory; [2]AECOM; [3]Oregon State University

Materials Innovation — Keynote Session: Multidisciplinary Materials Design Optimization Under Uncertainty

*Sponsored by:*TMS: Materials Innovation Committee
Program Organizer: TMS2016 Administration

Wednesday AM
February 17, 2016
Room: 207B
Location: Music City Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Keynote
Generative Structural Design: *Rick Barto*[1]; [1]Lockheed Martin

9:05 AM Keynote
Model-Based Materials Definitions for Design and Structural Analysis: *David Furrer*[1]; [1]Pratt & Whitney

9:35 AM Keynote
Statistical Rigor Versus Statistical Confidence in the Optimal Design of Materials: *Michael McKerns*[1]; [1]California Institute of Technology

10:05 AM Keynote
A Set-Based Approach for Hierarchical Materials Design: *Carolyn Seepersad*[1]; [1]University of Texas at Austin

10:35 AM Concluding Comments

Materials Processing Fundamentals — Iron and Steelmaking - Thermodynamic, Reduction and Physical Metallurgy

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Laura Bartlett, Texas State University; Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

Wednesday AM
February 17, 2016
Room: 106B
Location: Music City Center

Session Chairs: Laura Bartlett, Texas State University; Lifeng Zhang, University of Science and Technology Beijing

8:30 AM
Reduction Kinetics of Magnetite Concentrate Particles with Hydrogen at 1150 – 1600°C Relevant to a Novel Flash Ironmaking Process: Mohamed Elzohiery[1]; *Yousef Mohassab*[2]; Amr Abdelghany[1]; Shengqin Zhang[1]; Feng Chen[1]; Hong Yong Sohn[1]; [1]University of Utah; [2]University of Utah

8:50 AM
Hydrogen Reduction Kinetics of Mechanically Activated Magnetite Concentrate: Juan Ruiz-Ornelas[1]; Noemi Ortiz-Lara[1]; *Yousef Mohassab*[2]; Ricar-

do Morales-Estrella[1]; Hong Yong Sohn[3]; [1]Universidad Michoacana de San Nicolás de Hidalgo; [2]University of Utah ; [3]University of Utah

9:10 AM
Thermodynamics of Rare Earth Elements in Nodular Cast Iron: *Kok Long Ng*[1]; Hideaki Sasaki[2]; Hisao Kimura[2]; Masafumi Maeda[2]; [1]University of Tokyo ; [2]University of Tokyo

9:30 AM
Influences of Thermomechanical Processing on the Microstructure and Mechanical Properties of a HSLA Steel: *Yu Zhao*[1]; Songsong Xu[1]; Hao Guo[1]; Yun Zou[1]; Jinhui Li[1]; Junpeng Li[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

9:50 AM Break

10:10 AM
Behaviors and Evolutions of MgO•Al2O3 in Non-oriented Silicon Steel during Calcium Treatment: *Yong Zhao*[1]; Yan-hui Sun[1]; [1]University of Science and Technology Beijing

Materials Research in Reduced Gravity — Material Science Research Rack (MSRR)

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Hani Henein, University of Alberta; Robert Hyers, Boston Electrometallurgical Corp.; Ivan Egry, DLR

Wednesday AM
February 17, 2016
Room: 104C
Location: Music City Center

Session Chairs: Robert Hyers, Boston Electrometallurgical Corp.; Louise Strutzenberg, NASA

8:30 AM
Analysis of Particle Engulfment Dynamics during Solidification: Yutao Tao[1]; *Jeffrey Derby*[1]; [1]University of Minnesota

9:00 AM
Analysis of a Rotating Magnetic Field on the THM growth of CZT in Microgravity: Zaoyang Li[1]; Jeff Peterson[1]; *Jeffrey Derby*[1]; [1]University of Minnesota

9:20 AM
Modeling of Gravitational Effects on Particle Settling and Shape Distortion During Liquid-Phase Sintering of Tungsten Heavy Alloys: *Eugene Olevsky*[1]; Jose Alvarado-Contreras[1]; Randall German[1]; [1]San Diego State University

9:40 AM
Directional Solidification of Metals and Alloys under Low Gravity - Cartridge Design and Processing Conditions of the Solidification and Quenching Furnace: Petra Neuhaus[1]; *Harald Lenski*[1]; [1]Airbus DS

10:00 AM Break

10:20 AM
Evaluation of the MICAST#2-12 Al-7wt%Si Sample Directionally Solidified Aboard the International Space Station: Surendra Tewari[1]; Masoud Ghods[1]; Samuel Angart[2]; Mark Lauer[2]; *Richard Grugel*[3]; David Poirier[2]; [1]Cleveland State University; [2]The University of Arizona; [3]Marshall Space Flight Center

10:50 AM
Coarsening of Dendrites in Solid-Liquid Mixtures: The Low Volume Fraction Limit.: *Thomas Cool*[1]; Peter Voorhees[1]; [1]Northwestern University

11:10 AM
Dynamics of Eutectic Solidification Patterns in Diffusive Conditions: *Silvere Akamatsu*[1]; Sabine Bottin-Rousseau[1]; [1]CNRS - UPMC

11:30 AM
Phase-field Modeling of Cellular and Dendritic Microstructure Formation during Directional Solidification of Binary Alloys under Diffusive Growth Conditions: Dynamical Selection of the Primary Spacing: *Younggil Song*[1]; Jean-Marc Debierre[2]; Damien Tourret[3]; Fatima Lisboa Mota[2]; Nathalie Bergeon[2]; Rohit Trivedi[4]; Rahma Guérin[2]; Bernard Billia[2]; Alain Karma[1]; [1]Northeastern University; [2]Aix-Marseille University and CNRS; [3]Los Alamos National Laboratory; [4]Iowa State University

11:50 AM
Dynamics of Microstructure Formation in 3D Directional Solidification of Transparent Model Alloys under Microgravity: Analysis of the Primary Spacing Evolution: *Jorge Pereda*[1]; Fatima Mota[1]; Nathalie Bergeon[1]; Younggil Song[2]; Damien Tourret[2]; Jean-Marc Debierre[1]; Rahma Guerin[1]; Alain Karma[2]; Rohit Trivedi[3]; Bernard Billia[1]; [1]IM2NP Aix Marseille Université, CNRS UMR 7334; [2]Northeastern University Boston; [3]Ames Laboratory, Iowa State University

12:10 PM
Effect of Thermal Drift on the Initial Transient Behavior in Directional Solidification of a Bulk Transparent Model Alloy: *Fatima Mota*[1]; Nathalie Bergeon[1]; Damien Tourret[2]; Alain Karma[2]; Rohit Trivedi[3]; Bernard Billia[1]; [1]IM2NP Aix Marseille Université, CNRS UMR 7334; [2]Northeastern University Boston; [3]Ames laboratory, Iowa State University

Mechanical Behavior at the Nanoscale III — Mechanical Behavior of Materials with Twins, Grains and Other Interfaces

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Wednesday AM
February 17, 2016
Room: 214
Location: Music City Center

Session Chair: Garritt Tucker, Drexel University

8:30 AM Invited
Nucleation and Evolution of Dynamic Damage at Bimetal Interfaces Using Molecular Dynamics: *Saryu Fensin*[1]; Ellen Cerreta[1]; George Gray[1]; [1]Los Alamos National Laboratory

9:10 AM
Dynamic Behavior of a Nanocrystalline Cu-Ta Alloy: *Scott Turnage*[1]; Kristopher Darling[2]; Mansa Rajagopalan[1]; Mark Tschopp[2]; Kiran Solanki[1]; [1]Arizona State University; [2]Army Research Laboratory

9:30 AM
A Fast Fourier Transform Based-approach for the Modeling and Simulation of Grain Boundary Defects: *Stephane Berbenni*[1]; Vincent Taupin[1]; Claude Fressengeas[1]; [1]CNRS, University of Lorraine

9:50 AM
Microstructural Evolution of Nanocrystalline Copper-tantalum Alloy: *Mansa Rajagopalan*[1]; Scott Turnage[1]; Kristopher Darling[2]; Mark Tschopp[2]; Kiran Solanki[1]; [1]Arizona State University; [2]Army Research Laboratory

10:10 AM Break

10:30 AM
Effect of Annealing on Grain Boundary Character and Attendant Tensile Behavior of Nanocrystalline Nickel Thin Films: *Suman Dasgupta*[1]; Nora Hassan[1]; Daniel Gianola[2]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]University of Pennsylvania

10:50 AM
A High Temperature In-situ Nanoindentation Study of Nanotwinned Silver Films: *Hakan Yavas*[1]; Matthew Besser[1]; Ryan Ott[1]; Huan Zhang[1]; Matthew Kramer[1]; Krishna Rajan[2]; Richard LeSar[2]; [1]The Ames Laboratory; [2]Iowa State University

11:10 AM
Spall of Tantalum Bicrystals and Nanocrystals: *Eric Hahn*[1]; Tim Germann[2]; Eduardo Bringa[3]; Marc Meyers[1]; Saryu Fensin[2]; [1]University of California San Deigo; [2]Los Alamos National Laboratory; [3]Universidad Nacional de Cuyo

11:30 AM
Atomic-scale Investigation on the Nucleation of Twinning-like Lattice Reorientation in Hexagonal Close-packed Metals: *Hao Wang*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Metal and Polymer Matrix Composites II — Iron Based Composites and Porous Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Wednesday AM
February 17, 2016
Room: 110A
Location: Music City Center

Session Chair: To Be Announced

8:30 AM Invited
A Novel Manufacturing Approach to Fabricate Near-Net Shape Femoral Head ZrO2-toughened-Al2O3: *Bikramjit Basu*[1]; Srimanta Barui[1]; [1]Indian Institute of Science

8:50 AM
The Corrosion of 30% Mo-ZrO2 Cerment about Molten Slag of CaO-MgO-Al2O3: *Xiaopeng Li*[1]; Ziming Wang[1]; Yang Yang[1]; Yanling Guo[1]; Wende Dan[1]; Jieyu Zhang[1]; [1]Shanghai University

9:10 AM
Matrix Tailoring by Mn Addition in In-situ Liquid Metallurgy Synthesized Fe-TiB2 High Modulus Steels: *Christian Baron*[1]; Hauke Springer[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

9:30 AM
Physical and Mechanical Properties of LoVAR: A New Lightweight Particle-reinforced Fe-36Ni Alloy: *David Tricker*[1]; Andrew Tarrant[1]; Timothy Stephenson[2]; [1]Materion; [2]NASA

9:50 AM
Reinforcing 440B Stainless Steels by In Situ Synthesized Niobium Carbides: *Wen Hao Kan*[1]; Jack Zi Jie Ye[1]; Yue Zhu[1]; Vijay Bhatia[1]; Kevin Dolman[2]; Xin Hu Tang[2]; Tim Lucey[2]; Gwénaëlle Proust[1]; Julie Cairney[1]; [1]The University of Sydney; [2]Weir Minerals Australia Ltd.

10:10 AM Break

10:30 AM Invited
Hollow Fly Ash Composite Foams – Thermal and Mechanical Properties: *Dinesh Pinisetty*[1]; Vasanth Shunmugasamy[2]; [1]California Maritime Academy, CSU; [2]Texas A&M University

10:50 AM Invited
Forming of Open Cell Aluminum Foams at High Temperatures: *Vasanth Chakravarthy Shunmugasamy*[1]; Bilal Mansoor[1]; [1]Texas A&M University at Qatar

11:10 AM
Influence of Gas Component on Foaming Behavior and Cell Structure of Aluminum Foams Produced under Reduced Pressure Foaming: *Zhuokun Cao*[1]; Yang Yu[1]; Hongjie Luo[1]; Cong Wang[1]; [1]Northeastern University, China

Nanostructured Materials for Nuclear Applications — Session V

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Wednesday AM
February 17, 2016
Room: 101C
Location: Music City Center

Session Chairs: Michael Demkowicz, Massachusetts Institute of Technology; Kaiyuan Yu, China University of Petroleum

8:30 AM Invited
Multiscale Modeling of Radiation Induced Segregation in Nanostructured Materials: *Blas Uberuaga*[1]; Samrat Choudhury[1]; Richard Zamora[1]; Enrique Martinez[1]; David Andersson[1]; Alfredo Caro[1]; Arthur Voter[1]; [1]Los Alamos National Laboratory

9:00 AM Invited
Mechanisms of Defect Interactions on Grain Boundaries of Pure Fe: *Lin Shao*[1]; Di Chen[1]; Tianyi Chen[1]; Jonathan Gigax[1]; [1]Texas A&M University

9:30 AM
Nanoprecipitation in Immiscible Alloy Systems: *John Beach*[1]; Xuan Zhang[2]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Laboratory

9:50 AM
Investigation of He Implanted Fe-Y2Ti2O7 Bilayers: Surrogate Interfaces to Further NFA Understanding: *Tiberiu Stan*[1]; Yuan Wu[1]; Stephan Kraemer[1]; George Odette[1]; [1]University of California Santa Barbara

10:10 AM Break

10:30 AM Invited
Spatial Scales for Designing Radiation-resistant Materials: *Steven Zinkle*[1]; Chad Parish[2]; Daniel Clark[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

11:00 AM Invited
Stabilization Mechanisms of Nanocrystalline Iron-Chromium Alloys with Hafnium Addition: Weizong Xu[1]; Lulu Li[1]; Mostafa Saber[1]; Carl Koch[1]; Ronald Scattergood[1]; *Yuntian Zhu*[1]; [1]North Carolina State University

11:30 AM
Radiation Response of Nanostructured Apatite as a Nuclear Waste Form: *Fengyuan Lu*[1]; [1]Louisiana State University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XV — Electrochemistry & UBM

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, National Institute for Materials Science (NIMS); Chih-Ming Chen, National Chung Hsing University; Yee-Wen Yen, National Taiwan Univ of Science & Tech; Shien Ping Feng, The University of Hong Kong; Clemens Schmetterer, Fraunhofer Institute

Wednesday AM
February 17, 2016
Room: 109
Location: Music City Center

Session Chairs: Jae-Ho Lee, Hongik University; Shien Ping Tony Feng, The University of Hong Kong

8:30 AM Invited
Tunable Surface Wettability and Adhesivity of Nitrogen-doped Graphene Foam: *Shien Ping Feng*[1]; Peng Zhai[1]; [1]The University of Hong Kong

9:00 AM
Effects of Electroplating Formula on the Void Formation at the Sn/Electroplated Cu Interface: *Tai-Yi Yu*[1]; Chih-Ming Chen[1]; [1]National Chung Hsing University

9:20 AM
The Development of Alumina Nanofluid-based Electrolyte for Thermogalvanic Cells: *Chang Liu*[1]; Shien Feng[1]; [1]The University of Hong Kong

9:40 AM
Comparison of Electrotroless and Electroplating of Nickel Iron Alloy for the Diffusion Barrier of UBM: Ja-Kyung Koo[1]; Sung Kang[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]IBM Watson Research Center

10:00 AM Break

10:20 AM
Effects of Electroless Copper Bath Compositions on the Adhesion of Cu/Substrates in PCB: Ju-Seok Kang[1]; Jinuk Lee[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Samsung Electro-Mechanics

10:40 AM
Electrochemical Evaluation of Copper Etchant to Reduce the Galvanic Etching in Cu/Au Coupled Pads: Jong-Chan Choi[1]; Young-Hwan Bae[1]; Jinuk Lee[2]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Samsung Electro-Mechanics

11:00 AM
Kinetic Study of Silver Electrocrystallization on Silane-grafted Flexible Indium-oxide Substrate: *Hau Nga Yu*[1]; Ya-Huei Chang[1]; Shien Ping Feng[1]; [1]The University of Hong Kong

11:20 AM
Effect of Cu Surface Microstructure on Surface Oxidation and Soldering Wettability: *Yi Chun Hsu*[1]; Cheng-Yi Liu[1]; [1]National Central University

Phase Transformations and Microstructural Evolution — Phase Transformations during Non-Equilibrium Processing - Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Wednesday AM
February 17, 2016
Room: 107B
Location: Music City Center

Session Chair: ANTONIO RAMIREZ, The Ohio State University

8:30 AM
Coupling CALPHAD to Phase-field Modeling:
A Pathway to the Prediction of Microstructures in Additive Manufacturing?: *Aurelien Perron*[1]; John Roehling[1]; Patrice Turchi[1]; Jean-Luc Fattebert[1]; Joseph McKeown[1]; [1]Lawrence Livermore National Laboratory

9:00 AM
Role of Cyclic Solid-Solid Phase Transformations in Microstructure Evolution during Thermal Gyrations during Additive Manufacturing: Ryan Dehoff[1]; *Niyanth Sridharan*[2]; Avinash Prabhu[2]; Naren Raghavan[2]; Michael Kirka[1]; Anil Chaudhary[3]; Sudarsanam Babu[2]; [1]ORNL; [2]The University of Tennessee, Knoxville; [3]Applied Optimization

9:20 AM
Solid-liquid Transformations during Powder-bed Additive Manufacturing: *Rainer Hebert*[1]; [1]University of Connecticut

9:40 AM
In-situ SEM Observation of Surface Diffusion and Intermetallic Compound Growth in Lead-free Solder Joints: *Yang Li*[1]; Choong Un Kim[1]; Minyoung Kim[1]; [1]University of Texas at Arlingotn

10:00 AM
Microstructure Evolution of Uranium-6wt.% Niobium During Deformation Processing: *Kester Clarke*[1]; Daniel Coughlin[1]; Jeffrey Scott[1]; David Alexander[1]; Rodney McCabe[1]; Robert Hackenberg[1]; Amy Clarke[1]; [1]Los Alamos National Laboratory

10:30 AM Break

10:50 AM
Effect of Friction Welding Parameters on Microstructural Development and Mechanical Properties in Dissimilar 304L to 1018 Steel: *Nathan Switzner*[1]; Zhenzhen Yu[1]; Michael Eff[2]; Thomas Lienert[3]; Stephen Liu[1]; [1]Colorado School of Mines; [2]Edison Welding Institute; [3]Los Alamos National Laboratory

11:10 AM
Effect of Time and Temperature on Microstructural Evolution for Improved Braze Joint Strength in Oil and Gas Drill Bits: *Gagan Saini*[1]; William Atkins[1]; [1]Halliburton Energy Services

11:30 AM
Microstructure evolution of undercooled Co-Sn alloy melts solidified in Strong Magnetic Field: *Jun Wang*[1]; Jinshan LI[1]; Eric Beaugnon[2]; [1]Northwestern Polytechinal University; [2]University Grenoble Alpes, CNRS-LNCMI

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Phase Transformations in Steels

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Wednesday AM
February 17, 2016
Room: 110B
Location: Music City Center

Session Chairs: Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University

8:30 AM Invited
Atomistic Simulations of the Interaction of Alloying Elements with Interfaces: *Matthias Militzer*[1]; [1]The University of British Columbia

9:00 AM Invited
An Integrated Model for Microstructure Development in the Heat Affected Zone of Linepipe Steels: *Warren Poole*[1]; Matthias Militzer[1]; Thomas Garcin[1]; [1]The University of British Columbia

9:30 AM
Atomistic Modeling and Experiments of Spinodal Decompostion in Fe-Ni-C Martensite: *Helena Zapolsky*[1]; Mykola Lavrskyi[1]; Frederic Danoix[2]; Sophie Cazotte[3]; Sergui Curelea[3]; Renaud Patte[1]; Armen Khachaturyan[2]; [1]University of Rouen; [2]Department Material Science & Engineering Rutgers University; [3]INSA de Lyon Laboratoire Mateis et Département SGM

9:50 AM
Molecular Dynamics Simulation of fcc/bcc Interface Migration in Pure Iron: *Zhipeng Sun*[1]; Fu-Zhi Dai[2]; Ben Xu[1]; Wen-Zheng Zhang[1]; [1]Tsinghua University; [2]Aerospace Research Institute of Materials and Processing Technology

10:10 AM Break

10:30 AM Invited
Formation of Widmanstätten Ferrite by the Dynamic Transformation of Austenite at Temperatures Well above the Ae3
: *John Jonas*[1]; [1]McGill University

11:00 AM Invited
Who Cares About Phase Transformations? A Tribute to Gary Purdy: *Yves Brechet*[1]; Christopher Hutchinson[2]; Hatem Zurob[3]; [1]INP Grenoble; [2]Monash University; [3]McMaster University

11:30 AM
Hidden Pathway and Defects Generation during Structural Phase Transformations: *Yipeng Gao*[1]; Yunzhi Wang[1]; [1]The Ohio State University

11:50 AM
Kinetics and Mechanism of Austenite Isothermal Transformation in Carbonitrided Low-alloy Steel: *Hugo Van Landeghem*[1]; Simon Catteau[1]; Julien Teixeira[1]; Jacky Dulcy[1]; Abdelkrim Redjaïmia[1]; Sabine Denis[1]; [1]Institut Jean Lamour

Powder Metallurgy of Light Metals — Powder Metallurgy Aluminum and Other Light Metals

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Zhigang Fang, University of Utah ; Qian Ma, RMIT University

Wednesday AM
February 17, 2016
Room: 205C
Location: Music City Center

Session Chairs: Qian Ma, Royal Melbourne Institute of Technology; James Paramore, University of Utah

8:30 AM Invited
Light Weight Automotive Trends Impact on Powder Metallurgy: *Ian Donaldson*[1]; [1]GKN Sinter Metals

9:00 AM
Enhanced Sintering Kinetics in AA5083 Powder Processed Using DC Electric Fields: *Brandon McWilliams*[1]; Jian Yu[1]; Steven Kilczewski[2]; [1]US Army Research Laboratory; [2]TKC Global

9:20 AM
Field Effects during Spark Plasma Sintering of AA5083 Powder: *Frank Kellogg*[1]; Brandon McWilliams[2]; Kyu Cho[2]; [1]Bowhead Science and Technology; [2]US Army Research Laboratory

9:40 AM
Microstructure Evolution and Mechanical Properties Investigation of Friction Stir Welded AlMg5-Al2O3 Nanocomposites: *N. Kishore Babu*[1]; Kaspar Kallip[1]; Marc Leparoux[1]; Khaled A. AlOgab[1]; G.M. Reddy[1]; Mahesh Kumar Talari[1]; [1]Empa (Swiss Federal Laboratories for Materials Science and Technology)

10:00 AM
Processing-Microstructure Relationships during Cold Spray Deposition of Aluminum-Copper Alloys: *Tian Liu*[1]; Luke Brewer[1]; Jeremy Leazer[2]; E.S.K. Menon[2]; B.D. Bouffard[3]; J.A. Christophersen[4]; F.A. Lancaster[4]; J.N. Wolk[3]; [1]University of Alabama; [2]Naval Postgraduate School; [3]Naval Surface Warfare Center; [4]Naval Air Systems Command

10:20 AM Break

10:40 AM
Titanium Foam for Cancellous Bone Implant Prepared by Space Holder Technique: *Xiao Jian*[1]; Cui Hao[1]; Qiu Guibao[1]; Yang Yang[1]; [1]Chongqing University

11:00 AM
Microstructural Evolution and Mechanical Responses of Solid Solution Strengthened Titanium Materials with Ubiquitous Light Elements: *Takanori Mimoto*[1]; Junko Umeda[2]; Katsuyoshi Kondoh[2]; [1]Osaka University; [2]JWRI, Osaka University

11:20 AM
Room Temperature Viability of NiMnCoSn as Magnetic Shape Memory Sensory Particle in an SPS Consolidated Al7075 Composite: *Nick Barta*[1]; Ibrahim Karaman[1]; Jacob Hochhalter[2]; John Newman[2]; [1]Texas A&M University; [2]NASA Langley Research Center

REWAS 2016 — Understanding & Enabling Sustainability - Education Research Innovation + Electronic Equipment

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Wednesday AM
February 17, 2016
Room: 104B
Location: Music City Center

Session Chair: To Be Announced

8:30 AM
Sustainability: Opportunities for Teaching Old Concepts via New Problems: *Gabrielle Gaustad*[1]; [1]Rochester Institute of Technology

8:55 AM
3d Printed ABS and Carbon Fiber Reinforced Polymer Specimens for Engineering Education: *Michael Golub*[1]; Jing Zhang[1]; [1]Indiana University Purdue University Indianapolis

9:20 AM
Improvement in Resource Productivity by Life Extension through Corrosion Control: An Educational Perspective: *Brajendra Mishra*[1]; [1]Worcester Polytechnic Institute

9:45 AM Break

10:05 AM
Waste Management of Printed Wiring Boards: A Life Cycle Assessment of the Metals Recycling Chain from Liberation through Refining: *Julie Schoenung*[1]; Mianqiang Xue[2]; Alissa Kendall[1]; Zhenming Xu[2]; [1]University of California, Davis; [2]Shanghai Jiao Tong University

10:30 AM
Utilizing Economic Value, Resource Availability, and Environmental Impact Metrics to Improve the WEEE and Battery Directives and Promote Alignment with the European Commission Circular Economy Strategy: *Patrick Ford*[1]; Eduardo Santos[2]; Paulo Ferrão[3]; Fernanda Margarido[3]; Krystyn Van Vliet[1]; Elsa Olivetti[1]; [1]MIT; [2]3 Drivers – Engenharia, Inovação e Ambiente, Lda; [3]Instituto Superior Técnico

10:55 AM
High Temperature Characterization and Techno-economics of E-waste Processing: Michael Somerville[1]; Paul Koltun[1]; *Kathie McGregor*[1]; [1]CSIRO

11:20 AM
Enabling Energy Efficient Electronics through Thermally Conductive Plastic Composites: Novel Surface Modification Techniques for Boron Nitride in Epoxy: *Alex Bruce*[1]; Holly Avins[1]; Inez Hua[1]; John Howarter[1]; [1]Purdue University

11:45 AM
Environmental and Economic Evaluation of Cathode Ray Tube (CRT) Funnel Glass Waste Management Options in the United States: *Julie Schoenung*[1]; Qingbo Xu[2]; Mengjing Yu[1]; Alissa Kendall[1]; Wenzhi He[2]; Guangming Li[2]; [1]University of California, Davis; [2]Tongji University

Shape Casting: 6th International Symposium — Engineering High Quality Castings II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Murat Tiryakioglu, University of North Florida; Glenn Byczynski, Nemak Canada; Mark Jolly, Cranfield University

Wednesday AM
February 17, 2016
Room: 203B
Location: Music City Center

Funding support provided by: Nemak (possibly)

Session Chair: Mark Jolly, Cranfield University

8:30 AM
Grain Refinement of Al-Si Hypoeutectic Alloys by Al3Ti1B Master Alloy and Ultrasonic Treatment: Gui Wang[1]; Eric Qiang Wang[1]; Arvind Prasad[1]; Matthew Dargusch[1]; *David StJohn*[1]; [1]University of Queensland

8:55 AM
Influence of Process Parameters on the Microstructure and Casting Defects of a LPDC Engine Block: *Giulio Timelli*[1]; Daniele Caliari[1]; [1]University of Padua

9:20 AM
Preliminary Investigation of the Grain Refinement Mechanism in Cu Alloys: *Andreas Cziegler*[1]; Peter Schumacher[1]; [1]Montanuniversitaet Leoben

9:45 AM
Solidification Analysis of Magnesium Alloys Using In-situ Neutron Diffraction: *Abdallah Elsayed*[1]; Dimitry Sediako[2]; Ravi Ravindran[3]; [1]Nemak Canada; [2]Canadian Neutron Beam Centre; [3]Ryerson University

10:10 AM Break

10:30 AM
Change in Si Morphology with Time and Temperature in Sr Modified A356: *Sadik Ipek*[1]; Caglar Yuksel[2]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

10:50 AM
Effects of Casting Conditions on End Product Defects in Direct Chill Casted Hot Rolling Ingots: *Arda Yorulmaz*[1]; Caglar Yuksel[2]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

11:10 AM
A Coupled Thermal-stress Model of A319 Alloy Chilled Sand Casting: *Farzaneh Farhang Mehr*[1]; Steve Cockcroft[1]; [1]UBC

11:30 AM
Effect of Duration on Ti Grain Refinement of A356 and Melt Quality: *Ozen Gursoy*[1]; Caglar Yuksel[2]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

Strip Casting of Light Metals — Strip Casting Process

Sponsored by:
Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht; Jan Bohlen, Helmholtz-Zentrum Geesthacht; Murat Dundar, Assan Aluminium

Wednesday AM
February 17, 2016
Room: 203A
Location: Music City Center

Session Chairs: Kai Karhausen, Hydro Aluminium Rolled Products; Jan Bohlen, Helmholtz-Zentrum Geesthacht

8:30 AM Introductory Comments

8:35 AM Keynote
Liquid Metal Feeding Technology for Twin-roll Casting of Magnesium and Aluminium: *Frederic Basson*[1]; [1]Novelis PAE

8:55 AM
Twin-roll Casting of Carbon Fiber-reinforced and Glass Fiber-reinforced Aluminum Strips: *Olexandr Grydin*[1]; Mykhailo Stolbchenko[1]; Mirko Schaper[1]; [1]Universität Paderborn

9:15 AM
Productivity Improvements in Industrial TRC by Heat Loss Analysis along the Process Chain: *Christian Schmidt*[1]; Kai Karhausen[1]; [1]Hydro Aluminium Rolled Products GmbH

9:35 AM
Development and Numerical Simulation of a Compound Belt Casting Process: *Stefan Heugenhauser*[1]; Erhard Kaschnitz[1]; Tim Mittler[2]; Manuel Pintore[2]; Peter Schumacher[3]; [1]Österreichisches Gießerei-Institut; [2]Technische Universität München; [3]Montanuniversität Leoben

9:55 AM Break

10:25 AM
Microstructure Investigations of Inverse Segregations in Twin-roll Cast AZ31 Strips: *Christina Krbetschek*[1]; Franz Berge[1]; Matthias Oswald[1]; Madlen Ullmann[1]; Rudolf Kawalla[1]; [1]Tu Bergakademie Freiberg

10:45 AM
Effect of Twin-Roll Casting Parameters on Mechanical and Microstructural Properties of AA5083-H321 Sheet: *Mehdi Soltan Ali Nezhad*[1]; Ali Hoseinifar[2]; Sina Salari[2]; [1] Ferdowsi University of Mashhad, Mashhad, Iran; [2]Ferdowsi University of Mashhad, Mashhad, Iran

11:05 AM Poster Previews

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Energy, Nuclear and Other Applications

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Wednesday AM
February 17, 2016
Room: 106C
Location: Music City Center

Session Chairs: Evgueni Jak, The University of Queensland; John Gisby, NPL

8:30 AM Keynote
Application of Thermochemical Modeling to Assessment/Evaluation of Nuclear Fuel Behavior: *Theodore Besmann*[1]; [1]University of South Carolina

9:10 AM
An Overview of Thermochemical Modelling of CANDU Fuel and Applications in the Nuclear Industry: Emily Corcoran[1]; *Matthew Kaye*[2]; Markus Piro[3]; [1]The Royal Military College of Canada; [2]University of Ontario Institute of Technology; [3]Canadian Nuclear Laboratories

9:30 AM
Development of Thermodynamic Databases in the System U-Zr-Ce-Cs-Fe-B-C-I-O-H for Application to Simulating Phase Equilibria in Severe Nuclear Accidents: Masanori Suzuki[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; Toshihiro Tanaka[1]; Masayoshi Uno[2]; Yukihiro Murakami[2]; Tatjana Jantzen[3]; *Stephan Petersen*[3]; Klaus Hack[3]; [1]Osaka University; [2]Univeristy of Fukui; [3]GTT-Technologies

9:50 AM
Application of Computational Thermodynamics to Understand the Venusian Atmosphere: *Nathan Jacobson*[1]; Gustavo Costa[1]; Michael Kulis[1]; Brandon Radoman-Shaw[2]; Ralph Harvey[2]; Dwight Myers[3]; [1]NASA Glenn Research Center; [2]Case Western Reserve University; [3]East Central University

10:10 AM Break

10:30 AM
Thermodynamic Models for Chemical Reactions Involving Cokes: *Patrice Chartrand*[1]; Philippe Ouzilleau[1]; Daniel Lindberg[2]; [1]Ecole Polytechnique; [2]Abo Akademi

10:50 AM
Thermodynamics of Portland Cement Clinker Formation: *Alexander Pisch*[1]; [1]Lafarge LCR

11:10 AM
Calculation of Portland Cement Clinker Phase Diagrams: *Daniel Jiménez*[1]; Oscar Restrepo Baena[1]; María Antonia Sainz Trigo[2]; Sara Serena Palomares[2]; [1]Universidad Nacional de Colombia; [2]Instituto de Cerámica y Vidrio (CSIC)

11:30 AM
Effect of Gas-slag Interactions during Plasma Gasification of Refuse Derived Fuel from Enhanced Landfill Mining: *Lieven Pandelaers*[1]; Pengcheng Yan[1]; Sander Arnout[2]; Lieven Machiels[1]; Bart Blanpain[1]; [1]KU Leuven; [2]InsPyro

11:50 AM
CALPHAD Modeling of Thermochemical Interactions of Thermal Barrier Coatings (TBCs) with Molten Calcium-Magnesium-Aluminum-Silicon Oxides (CMAS): Lina Kjellqvist[1]; Huahai Mao[1]; *Qing Chen*[1]; Johan Bratberg[1]; Anders Engström[1]; Nicholas Hatcher[2]; Weiwei Zhang[2]; Jason Sebastian[2]; [1]Thermo-Calc Software AB; [2]QuesTek Innovations LLC

Ultrafine Grained Materials IX — Equal Channel Angular Pressing/Extrusion Studies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Wednesday AM
February 17, 2016

Room: 207C
Location: Music City Center

Session Chairs: Roberto Figueiredo, Federal University of Minas Gerais; Edgar Garcia-Sanchez, Universidad Autonoma de Nuevo Leon - Facultad de Ingeniería Mecánica y Eléctrica

8:30 AM Invited
Synchrotron X-Ray Microbeam Diffraction Measurements of Full Elastic Strain and Stress Tensors in Commercial-Purity Aluminum Processed by Multiple Passes of Equal-Channel Angular Pressing: *Michael Kassner*[1]; Thien Phan[1]; Lyle Levine[2]; Terence Langdon[1]; [1]University of Southern California; [2]NIST

9:00 AM
Creating Bulk Ultrafine-grained Laminated Structures by Equal-Channel Angular Pressing: *Philipp Frint*[1]; Martin F.-X. Wagner[1]; [1]Technische Universität Chemnitz

9:20 AM
Introducing Superplastic Properties in a ZK10 Magnesium Alloy by ECAP: *Roberto Figueiredo*[1]; Terence Langdon[2]; [1]Federal University of Minas Gerais; [2]University of Southampton

9:40 AM
Microstructural Refinement, Rate Sensitivity and Structural Stability of Cu-X Solid Solutions after Severe Plastic Deformation: *Karsten Durst*[1]; Enrico Bruder[1]; [1]Technical University Darmstadt

10:00 AM Break

10:20 AM Invited
Examining the Paradox of Strength and Ductility in Ultrafine-grained Materials
: Praveen Kumar[1]; Megumi Kawasaki[2]; *Terence Langdon*[3]; [1]Indian Institute of Science; [2]Hanyang University; [3]University of Southern California

10:50 AM
Microstructure and Mechanical Behavior of Ultrafine-grained Al–Mg–Si–(Cu) Alloys Fabricated by Severe Plastic Deformation: *Hans Roven*[1]; Manping Liu[2]; Yingda Yu[1]; Pål Skaret[1]; [1]Norwegian University of Science and Technology; [2]Jiangsu University

11:10 AM
Comparative Study of the Wear Properties in Ultrafine-grained 5083 and 2024 Aluminum Alloys: M. G. Orozco -Sandoval[1]; M. A. L. Hernandez-Rodriguez[1]; R. Deaquino-Lara[2]; *E. Garcia-Sanchez*[1]; [1]Universidad Autónoma de Nuevo León -Facultad de Ingeniería Mecánica y Eléctrica; [2]Centro de Investigación y de Estudios Avanzados del IPN

11:30 AM
Relationship between Microstructural Parameters Measured by X-Ray, TEM and EBSD: *Alexander Zhilyaev*[1]; [1]Institute for Metals Superplasticity Problems, Russian Academy of Science

11:50 AM
Thermal Stability of Ultra-fine Grained Microstructure of Biomedical Ti-6Al-7Nb Alloy: *Josef Stráský*[1]; Kristina Vaclavova[1]; Petr Harcuba[1]; Pavel Zhanal[1]; Jakub Cizek[1]; Veronika Polyakova[1]; Irina Semenova[1]; Milos Janecek[1]; [1]Charles University

Ultrafine Grained Materials IX — Roll Processing Studies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Wednesday AM
February 17, 2016

Room: 209B
Location: Music City Center

Session Chairs: Sergey Dobatkin, A.A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences; Werner Skrotzki, Dresden University of Technology

8:30 AM Invited
Bulk Texture Evolution of Nanolamellar Zr–Nb Composites Processed via Accumulative Roll Bonding: *John Carpenter*[1]; Thomas Nizolek[2]; Rodney McCabe[1]; Marko Knezevic[3]; Shijian Zheng[4]; Benjamin Eftink[5]; Jeffrey Scott[1]; Sven Vogel[1]; Tresa Pollock[2]; Nathan Mara[1]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory; [2]University of California Santa Barbara; [3]University of New Hampshire; [4]Institute of Metal Research; [5]University of Illinois at Urbana-Champaign

9:00 AM
Effect of Shear Strain on the Evolution of Microstructure and Microtexture in Cu/Ta multilayer during Accumulative Roll-Bonding at High Temperature: *Tarang Mungole*[1]; Bilal Mansoor[2]; Georges Ayoub[3]; David Field[1]; [1]Washington State University; [2]Texas A and M University; [3]American University of Beirut

9:20 AM
Microstructure, Texture and Mechanical Properties of ARB Processed Aluminium Laminates: Viswanadh Gowtham Arigela[1]; Juliane Scharnweber[2]; Laura Lienshoeft[2]; Paul Chekhonin[2]; Rolf Schaarschuch[2]; Satish Kumar Kolli[1]; Nageswara Rao Palukuri[1]; Jayaganthan Rengaswamy[1]; *Werner Skrotzki*[2]; [1]Indian Institute of Technology Roorkee; [2]Dresden University of Technology

9:40 AM Invited
Mechanical Anisotropy and Kink Banding in Bulk Accumulative Roll Bonded Cu-Nb Nanolaminates: *Thomas Nizolek*[1]; Nathan Mara[2]; Irene Beyerlein[3]; Jaclyn Avallone[1]; Tresa Pollock[1]; [1]Materials Department, University of California Santa Barbara; [2]Institute for Materials Science and the Center for Integrated Nanotechnologies, Los Alamos National Laboratory; [3]Theoretical Division, Los Alamos National Laboratory

10:10 AM Break

10:30 AM
Mechanical Properties of Duplex Stainless Steels with Laminated Structure: Lin Xie[1]; Tianlin Huang[1]; *Guilin Wu*[1]; Xiaoxu Huang[1]; [1]Chongqing University

10:50 AM
Hall-Petch Relation in Ultrafine Grained Al-0.3Cu Alloy: *Tianlin Huang*[1]; Aneela Wakeel[1]; Zongqiang Feng[1]; Guilin Wu[1]; [1]Chongqing University

11:10 AM
Structure, Texture and Mechanical Properties of Ultrafine Grained Mg-Al-Zn-Mn Alloy after Radial-shift Rolling: *Sergey Dobatkin*[1]; Yuri Estrin[2]; Sergey Galkin[3]; Vladimir Serebryany[4]; Mathilde Diez[5]; Natalia Martynenko[6]; [1]A.A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russia; National University of Science and Technology "MISIS", Laboratory of Hybrid Nanostructured Materials, Moscow, Russia; [2]Monash University, Centre for Advanced Hybrid Materials, Department of Materials Engineering, Clayton, Australia; National University of Science and Technology "MISIS", Laboratory of Hybrid Nanostructured Materials, Moscow, Russia; [3]National University of Science and Technology "MISIS", Moscow, Russia; [4]A.A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russia; [5]Seoul National University, Department of Materials Science and Engineering, Seoul, Republic of Korea; [6] National University of Science and Technology "MISIS", Laboratory of Hybrid Nanostructured Materials, Moscow, Russia

11:30 AM
Effect of Cryorolling on the Precipitation Evolution and Properties of Al Alloys: *Nageswararao Palukuri*[1]; Jayaganthan R[1]; [1]IIT Roorkee

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Nanomaterials General II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

Wednesday PM
February 17, 2016
Room: 211
Location: Music City Center

Session Chair: Terry Xu, UNC Charlotte

2:00 PM
Effect of SPD Surface Treatments on Corrosion and Environmental Cracking Susceptibility of Oilfield Alloys: *Ting Chen*[1]; [1]SET Labs

2:20 PM
Preparation of MWCNT-supported Mo2C Nanocomposite Materials by Microwave Method for Applying in Direct Methanol Fuel Cells: *Jinlin Lu*[1]; Zhe Ning[1]; Zhuo Li[1]; Hua Song[1]; Lu Han[1]; [1]University of Science and Technology Liaoning

2:40 PM
Controlled Synthesis of TiC Nanoparticles using Solid Oxide Membrane Technology in Molten CaCl2: *Kai Zheng*[1]; Xingli Zou[1]; Xionggang Lu[1]; Qian Xu[1]; Hongwei Cheng[1]; [1]shanghai university

3:00 PM
Hydrothermal Growth of ZnO Nanorod Arrays via Microsphere Self-assembled Monolayer for Nanocapacitor Application: *Bo-Cheng Lin*[1]; Ching-Shun Ku[2]; Hsin-Yi Lee[2]; Albert T. Wu[1]; [1]National Central University Taiwan; [2]National Synchrotron Radiation Research Center

3:20 PM
A Facile Fabrication of Fe2O3/C Composite as Anode for Lithium Ion Batteries: *Mingru Su*[1]; Aichun Dou[1]; Yunjian Liu[1]; Fagen Peng[1]; [1]Jiangsu University

3:40 PM Break

4:00 PM
An Aluminum Based Amorphous/Nanocrystal Foil Composites Preparation: *Jitai Niu*[1]; Dongfeng Cheng[1]; [1]Henan Polytechnic University

4:20 PM
Synthesis and Hydrothermal Method with Enhanced Photocatalytic Performance Optimization of Bi2S3 Nanorods Prepared by a
: *Tarek Abdelhamid*[1]; Ahmed Helal[1]; Adel Ismaill[1]; Ibrahim Ibrahim[1]; Ahmed Harraza[1]; [1]Tabbin Institute for Metallurgical Studies

4:40 PM
Simple Green Synthesis of Amino Acid Functionalised CdTe/CdSe/ZnSe Core-multi Shell with Improved Cell Viability for Cellular Imaging
: Vuyelwa Ncapayi[1]; *Oluwafemi Oluwatobi*[1]; Sandile Songca[2]; Tetsuya Kodama[3]; [1]University of Johannesburg; [2]Walter Sisulu University; [3]Tohoku University

5:00 PM
Size Tunable Synthesis of HDA and TOPO Capped ZnSe Nanoparticles via a Facile Non-organometallic Method: *Oluwafemi Oluwatobi*[1]; Vuyelwa Ncapayi[1]; Sandile Songca[2]; [1]University of Johannesburg; [2]Walter Sisulu University

7th International Symposium on High Temperature Metallurgical Processing — Sintering and Pelletizing of Iron Ores

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Wednesday PM
February 17, 2016
Room: 105B
Location: Music City Center

Session Chairs: Liyuan Cai, Central South University; Deqing Zhu, Central South University

2:00 PM Introductory Comments

2:05 PM
Enhancing the Removal of Sodium and Potassium of Sinter by CO-Containing Flue Gas Circulation Sintering Process: *Guanghui Li*[1]; Chen Liu[1]; Ruijun Wang[1]; Zhengwei Yu[1]; Qian Li[1]; Zhao Jing[1]; Yuanbo Zhang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

2:25 PM
Chemical, Physical and Morphological Changes of Sintering Dust by Mechanical Activation: *Feng Chang*[1]; Shengli Wu[1]; Jianliang Zhang[1]; Mingyin Kou[1]; Hua Lu[1]; Laixin Wang[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

2:45 PM
Cohering Behavior of Scrap Powder in Kiln by a Novel Natural Stacking Method: *Yong-bin Yang*[1]; Yan Zhang[1]; jiang tao[1]; qian li[1]; bin xu[1]; [1]Central South University

3:05 PM
The Preheating and Roasting Properties of Fluorine-bearing Iron Concentrate Pellets and Main Influence Factors: Lu Yang[1]; Shuai Wang[1]; Ganghua Fu[1]; Yufeng Guo[1]; *Tao Jiang*[1]; [1]CENTRAL SOUTH UNIVERSITY

3:25 PM
Thermogravimetric Analysis of Coal Used in Rotary Kiln of Iron Ore Oxide Pellet: *Qiang Zhong*[1]; Yongbin Yang[2]; Qian Li[2]; Tao Jiang[2]; [1]Central South University ; [2]Central South University

3:45 PM Break

4:05 PM
Ringing Mechanism and Prevention of Ringing in Kiln: *Yong-bin Yang*[1]; Yan Zhang[1]; qian li[1]; bin xu[1]; Xiaoliang Liu[1]; [1]Central South University

4:25 PM
Performance Monitoring of Grate-kiln-cooler Process Based on Quality Prediction and Statistical Analysis: *Gui Yang*[1]; Xiao Fan[1]; Xiao Huang[1]; Xu Chen[1]; [1]School of Minerals Processing and Bioengineering, Central South University, Changsha, China

4:45 PM
Mechanisms of Strengthening the Reduction of Fine Hematite in High Silicon Coal-contianing Mini-pellets by Sodium Additives: *Zhucheng Huang*[1]; Liangming Wen[2]; Ronghai Zhong[2]; Tao Jiang[2]; [1]Central South University; [2]central south uniwersity

5:05 PM
Sintering Test Research of High Proportion Limonite: *Zhao Qiang*[1]; [1]Changsha Research Institute of Mining and Metallurgy

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling — Neutron Irradiation and Mechanical Properties

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Wednesday PM
February 17, 2016
Room: 101B
Location: Music City Center

Session Chair: Peter Hosemann, University of California, Berkeley

2:00 PM Invited
Microstructural Characterization of ATR Irradiated Cu/Nb Nanolayered Composites: *Osman Anderoglu*[1]; Jon Baldwin[1]; Amit Misra[2]; Michael Nastasi[3]; Stuart Maloy[1]; James Cole[4]; George Odette[5]; [1]Los Alamos National Laboratory; [2]University of Michigan; [3]University of Nebraska; [4]Idaho National Laboratory; [5]University of California

2:30 PM
Energy Dissipation and Defect Evolution in Concentrated Solid-solution Alloys: *Yanwen Zhang*[1]; G. Malcolm Stocks[1]; Ke Jin[1]; Hongbin Bei[1]; Chenyang Lu[1]; Lumin Wang[1]; Brian Sales[1]; Laurent Beland[1]; Roger Stoller[1]; William Weber[1]; [1]Oak Ridge National Laboratory

2:50 PM
Solute Redistribution Processes in Neutron-irradiated Model FeCrAl Alloys: *Samuel Briggs*[1]; Philip Edmondson[2]; Ken Littrell[2]; Yukinori Yamamoto[2]; Kumar Sridharan[1]; Kevin Field[2]; [1]University of Wisconsin-Madison; [2]Oak Ridge National Laboratory

3:10 PM
TEM Characterization of Neutron-irradiated Cast Austenitic Stainless Steel at 320°C to 0.08 dpa: *Wei-Ying Chen*[1]; Yiren Chen[1]; Xuan Zhang[1]; Chi Xu[2]; Mark Kirk[1]; Meimei Li[1]; [1]Argonne National Laboratory; [2]University of Florida

3:30 PM Break

3:50 PM
Thermal Aging and Low Dose Neutron Irradiation Effect on the Microstructural Stability of Delta Ferrite in a 308L Weld: Zhangbo Li[1]; *Yong Yang*[1]; Yiren Chen[2]; [1]University of Florida; [2]Argonne National Laboratory

4:10 PM
Structural Characterization of Nanoscale Intermetallic Precipitates in Highly Neutron Irradiated Reactor Pressure Vessel Steels: *David Sprouster*[1]; E Dooryhee[1]; S Ghose[1]; P Wells[2]; T Stan[2]; N Almirall[2]; G. Odette[2]; L Ecker[1]; [1]Brookhaven National Laboratory; [2]University of California, Santa Barbara

4:30 PM
Production of Microstructure to Mimic Key Effects of Neutron Irradiation Damage in Core Materials: Ram Bajaj[1]; Justin Cook[1]; Gene Lucadamo[1]; Jesse Carter[1]; *Clinique Brundidge*[1]; Richard Smith[1]; [1]Bettis Atomic Power Laboratory

4:50 PM
A Comparison of Methods for Measurement of Ion Irradiation Induced Hardening in Metallic Materials: *Dhriti Bhattacharyya*[1]; Mihail Ionescu[1]; Zain Zaidi[2]; Christopher Hurt[2]; Ashley Reichardt[3]; Peter Hosemann[3]; Robert Harrison[1]; John Daniels[2]; Lyndon Edwards[1]; [1]ANSTO; [2]UNSW; [3]University of California Berkeley

5:10 PM
Nanoindentation and In Situ Microcompression Testing in Various Dose Regimes of Proton-beam Irradiated 304 SS: *Ashley Reichardt*[1]; David Frazer[1]; Cameron Howard[1]; Amanda Lupinacci[1]; Peter Chou[1]; Peter Hosemann[1]; [1]University of California, Berkeley

Acta Materialia Symposium — Award Session

Program Organizer: Carolyn Hansson, University of Waterloo

Wednesday PM
February 17, 2016
Room: 103C
Location: Music City Center

Session Chair: Carolyn Hansson, University of Waterloo

3:15 PM Introductory Comments

3:20 PM Invited
2016 Acta Materialia Gold Medal Award: Sungho Jin: *Sungho Jin*[1]; [1]University of California San Diego

3:50 PM Question and Answer Period

4:00 PM Invited
Acta Materialia Inc. Hollomon Award for Materials and Society: Julie Schoenung: *Julie Schoenung*[1]; [1]University of California Davis

4:30 PM Question and Answer Period

4:40 PM Reception

Additive Forming of Components - Tailoring Specific Material Properties in Low Volume Production — Emerging Additive Manufacturing Technologies and Applications

Sponsored by:
Program Organizers: Judith Schneider, University of Alabama at Huntsville; Mark Stoudt, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory; Lee Semiatin, US Air Force Research Laboratory; Mohsen Asle Zaeem, Missouri University of Science and Technology; Eric Lass, National Institute of Standards and Technology; Paul Mason, Thermo-Calc Software Inc.

Wednesday PM
February 17, 2016
Room: 205B
Location: Music City Center

Session Chairs: Judy Schneider, University of Alabama in Huntsville; Tom Stockman, University of Alabama in Huntsville

2:00 PM Invited
Developing 3D Printed Heat Exchangers: Vinod Narayanan[1]; Samikshya Subedi[2]; Erfan Rasouli[3]; Eric Truong[3]; Colt Montgomery[2]; *Anthony Rollett*[2]; [1]UC Davis; [2]Carnegie Mellon University; [3]Oregon State University

2:30 PM
Microstructure and Mechanical Characterization of Hybrid Materials Fabricated Using Ultrasonic Additive Manufacturing: *Niyanth Sridharan*[1]; Maxim Gussev[2]; Kurt Terrani[3]; Mark Norfolk[4]; Sudarsanam Babu[1]; [1]University of Tennessee Knoxville; [2]Fusion Materials and Nuclear Structures Group, Oak Ridge National Lab; [3]Nuclear Fuels Materials Group, Oak Ridge National Laboratory; [4]Fabrisonic

2:50 PM
Additive Friction Stir Deposition of Functionally Gradient Al-Fe Composite: Nanci Hardwick[1]; *Kumar Kandasamy*[1]; Jianqing Su[1]; James Donnelly[1]; Dietrich Linde[1]; [1]Aeroprobe Corporation

3:10 PM
Lightweight, Strong and Ductile Hierarchical Architected Materials Fabricated from Additive Manufacturing: *Xiaoyu "Rayne" Zheng*[1]; [1]Virginia Tech/Lawrence Livermore National Lab

3:30 PM Break

3:50 PM Invited
Constitutive Modeling and Experimental Verification of Aqueous–based Freeform Extrusion Fabrication Processes: *Ming Leu*[1]; Mingyang Li[1]; Robert Landers[1]; [1]Missouri University of Science and Technology

4:20 PM
Flexible Heat Treatment of AM Material in a HIP: Anders Eklund[1]; *Magnus Ahlfors*[2]; [1]Quintus Technologies, LLC.; [2]Avure Technologies AB

4:40 PM
Additive Manufacturing from the Gaseous State: *Vicki Barbur*[1]; Michael Tims[1]; Juan Valencia[1]; Melissa Klingenberg[1]; [1]CTC

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Emerging Technologies

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Wednesday PM
February 17, 2016
Room: 205A
Location: Music City Center

Session Chairs: Lyle Levine, NIST; Michael Maguire, Sandia National Laboratory

2:00 PM Invited
Microstructure and Mechanical Property Relationships in Additively Manufactured 304L: *Michael Maguire*[1]; Jeffrey Rodelas[1]; Jay Carroll[1]; Dave Adams[1]; Benjamin Reedlunn[1]; Joseph Bishop[1]; Bo Song[1]; Jack Wise[1]; [1]Sandia National Laboratories

2:30 PM
Linkage between FEA Thermal Modeling of Laser Powder Bed Fusion and Microstructure Evolution Simulations: *Li Ma*[1]; Jeffrey Fong[1]; Brandon Lane[1]; Shawn Moylan[1]; Lyle Levine[1]; [1]NIST

2:50 PM
Powder Bed Layer Characteristics – The Overseen First Order Process Input: *Mustafa Megahed*[1]; Hans-Wilfried Mindt[1]; Nicholas Lavery[2]; Mark Holmes[2]; Stephen Brown[2]; [1]ESI Group; [2]Swansea University

3:10 PM Invited
Additive Manufacturing of Metals: Building Unreliable Microstructures 20 Microns at a Time: *Lyle Levine*[1]; [1]National Institute of Standards and Technology

3:40 PM Break

4:00 PM
Power Bed Fusion-based Additive Manufacturing in Turbine Engine Hot-section Alloys Through Scanning Laser Epitaxy: Amrita Basak[1]; Andriy Dotsenko[1]; Yunpei Yang[1]; Arpit Patel[1]; *Suman Das*[1]; [1]Georgia Institute of Technology

4:20 PM
In-Space Manufacturing Baseline Property Development: *Tom Stockman*[1]; Judith Schneider[1]; Quincy Bean[2]; Tracie Prater[2]; Nicki Werkheiser[2]; [1]Mississippi State University; [2]NASA

4:40 PM
Kinetic Monte-Carlo: A Tool for Examining Microstructural Evolution in Materials Processing: *Jonathan Madison*[1]; Theron Rodgers[1]; Veena Tikare[1]; [1]Sandia National Laboratories

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session VI

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Wednesday PM
February 17, 2016
Room: 103B
Location: Music City Center

Session Chairs: Fionn Dunne, Imperial College; Grethe Winther, Technical University of Denmark

2:00 PM Invited
Crystal Plasticity and HR-DIC Studies of Slip and Strain Localisation in Single and Polycrystal Ni Alloys under Cyclic Bending: Yongjun Guan[1]; Ben Britton[1]; Jun Jiang[1]; *Fionn Dunne*[1]; [1]Imperial College

2:30 PM Invited
Intragranular Orientation Spread Induced by Grain Interaction: *Grethe Winther*[1]; Jette Oddershede[1]; [1]Technical University of Denmark

3:00 PM
Quantitative Analysis of Dislocation Densities from Electron Backscatter Diffraction and Precession Electron Diffraction Data: *Asher Leff*[1]; Austin Nye[1]; Evan Kahl[1]; Greg Vetterick[1]; Mitra Taheri[1]; [1]Drexel University

3:20 PM
Using Conventional EBSD for Dislocation Structure Quantification: *David Field*[1]; [1]Washington State University

3:40 PM Break

4:00 PM Invited
Slip Localisation in Ti Alloys Studied by High-resolution Digital Image Correlation: *Michael Preuss*[1]; David Lunt[1]; Joao Quinta da Fonseca[1]; [1]University of Manchester

4:30 PM
Continuous Yielding Investigated by Concurrent Mapping of Microstructure, Micro-strain and Micro-stress Evolution: *Cem Tasan*[1]; Dingshun Yan[1]; Dierk Raabe[1]; [1]Max-Planck Institute for Iron Research

4:50 PM
Slip Band Development in Aluminium: Measurements and CPFEM Predictions: *Joao Fonseca*[1]; [1]The University of Manchester

5:10 PM
3D Analysis of Dislocations near Grain Boundary Using Nonlocal Plasticity Model: *Chen Zhang*[1]; Philip Eisenlohr[1]; Thomas Bieler[1]; Martin Crimp[1]; Carl Boehlert[1]; [1]Michigan State University

5:30 PM
Three Dimensional Orientation Characterization of Metals Tested in Tension: *Jonathan Ligda*[1]; Nick Lorenzo[1]; Emily Huskins[2]; Tomoko Sano[1]; Brian Schuster[1]; [1]Army Research Laboratory; [2]United States Naval Academy

5:50 PM
Effects of Stretch Forming on Microstructure and Corrosion of Al-Cu-Li Alloys: *Ellen Wright*[1]; Michael Kaufman[1]; Gary Weber[2]; [1]Colorado School of Mines; [2]Boeing

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Permanent Magnets I

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday PM
February 17, 2016
Room: 209C
Location: Music City Center

Session Chairs: George Hadjipanayis, University of Delaware; Rajarshi Banerjee, University of North Texas

2:00 PM Invited
Dy-free High Coercivity Nd-Fe-B Permanent Magnets: *Kazuhiro Hono*[1]; Taisuke Sasaki[1]; Hossein Sepehri-Amin[1]; Tadakatsu Ohkubo[1]; [1]NIMS

2:30 PM Invited
Synthesis of Submicron R-Co and R-Fe-B Particles by the Mechanochemical Process: *George Hadjipanayis*[1]; Alexander Gabay[1]; Ozlem Koylu-Alkan[1]; Manu Barandiaran[1]; Daniel Salazar[1]; [1]University of Delaware

3:00 PM
Co-based Rare Earth Free Permanent Magnet Materials: Meiyu Wang[1]; Michael Lucis[1]; *Jeff Shield*[1]; [1]University of Nebraska

3:20 PM Break

3:40 PM
Developing Permanent Magnet Alloys via Rapid Assessment Methodologies: *Ryan Ott*[1]; Jie Geng[2]; Ikenna Nlebedim[2]; Emrah Simsek[2]; Matthew Besser[2]; Valentin Taufour[2]; Matthew Kramer[2]; [1]Ames Laboratory (USDOE); [2]Ames Laboratory (USDOE)

4:00 PM
Enhanced Powder-processed Alnico Magnets by Thermal Gradient Control: *Emma White*[1]; Aaron Kassen[2]; Kevin Dennis[1]; Wei Tang[1]; Andriy Palasyuk[1]; Lin Zhou[1]; R. William McCallum[1]; Iver Anderson[1]; [1]Ames Laboratory; [2]Iowa State University

4:20 PM
Heavy Rare Earths at Grain Boundaries to Achieve Maximum Coercivity in Industrial Magnetic Materials: *Spomenka Kobe*[1]; [1]Jožef Stefan Institute

4:40 PM
A Solid-State Approach to Alnico-based Permanent Magnets: *Aaron Kassen*[1]; Emma White[2]; Wei Tang[2]; Andriy Palasyuk[2]; Lin Zhou[2]; Iver Anderson[2]; [1]Iowa State University; [2]Ames Laboratory

5:00 PM
Microstructural Effects of Thermomagnetic Treatments in Sintered Nd-Fe-B Magnets: *Catherine Smith*[1]; Michael Kaufman[1]; John Speer[1]; Michael McGuire[2]; [1]Colorado School of Mines; [2]Oak Ridge National Laboratory

Aluminum Alloys, Processing and Characterization — Thermal Mechanical Processing

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Wednesday PM
February 17, 2016
Room: 201B
Location: Music City Center

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM Introductory Comments

2:05 PM
A Study of the Formation Mechanism of Mn Containing Precipitates during Homogenization in a 6xxx Series Aluminum Alloy: Gongwang Zhang[1]; *Tongguang Zhai*[1]; Yi Han[2]; Yi Xu[2]; Hiromi Nagaumi[2]; Gang Sha[3]; Chad Parish[4]; Donovan Leonard[4]; [1]University of Kentucky; [2]Suzhou Research Institute for Nonferrous Metals; [3]Nanjing University of Science and Technology; [4]Oak Ridge National Laboratory

2:30 PM
Precipitation of Al_3Zr Dispersoids during Homogenization of Al-Zn-Cu-Mg-Zr Alloys: *Pikee Priya*[1]; Matthew Krane[1]; David Johnson[1]; [1]Purdue University

2:55 PM
Characterization and Simulation of Microstructure Evolution of 7075 Aluminium Alloy during Homogenization: *Siamak Rafiezadeh*[1]; Ahmad Falahati[1]; Ernst Kozeschnik[1]; [1]Vienna University of Technology

3:20 PM Break

3:35 PM
Application of Secondary Shear Effects in the Extrusion-Machining Process to Explore Recrystallization Mechanics during Conventional Extrusion of 7050 Aluminum: *Daniel Klenosky*[1]; David Johnson[1]; Kevin Trumble[1]; [1]Purdue University

4:00 PM
Fatigue Crack Growth in Structural Cast Aluminum Alloys: Microstructural Mechanisms, Modeling Strategies, and Integrated Design: *Anthony Spangenberger*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

4:25 PM
Large Strain Extrusion Machining on 6013 Aluminum Alloy: *Xiaolong Bai*[1]; Andrew Kustas[1]; Srinivasan Chandrasekar[1]; Kevin Trumble[1]; [1]Purdue University

Aluminum Reduction Technology — Environment II

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Wednesday PM
February 17, 2016
Room: 202B
Location: Music City Center

Session Chair: Michael Gershenzon, Alcoa

2:00 PM
Assessing the Role of Smelter Grade Alumina Porosity in the HF Scrubbing Mechanism: *Gordon Agbenyegah*[1]; Grant McIntosh[2]; Margaret Hyland[3]; Jim Metson[4]; [1]Chemical and Material Engineering Dept., University of Auckland / Light Metals Research Center; [2]School of Chemical Sciences, University of Auckland/Light Metal Research Center; [3]Faculty of Engineering, University of Auckland / Light Metals Research Center; [4]Faculty of Science, University of Auckland / Light Metals Research Center

2:25 PM
The Competitive Adsorption of HF and SO2 on Smelter Grade Alumina: Neal Dando[1]; *Stephen Lindsay*[1]; [1]Alcoa

2:50 PM
Evaluation of Gas Composition from Laboratory Scale Electrolysis Experiments with Anodes of Different Sulphur Content: *Thor Anders Aarhaug*[1]; Ole Sigmund Kjos[1]; Henrik Gudbrandsen[1]; Alain Ferber[1]; Arne Petter Ratvik[1]; [1]SINTEF

3:15 PM
Sustainable Reduction of Anode Effect and Low Voltage PFC Emissions: *Eliezer Batista*[1]; Dando Neal[1]; Nicola Menegazzo[1]; Luis Espinoza-Nava[1]; [1]Alcoa

3:40 PM Break

3:55 PM
QCL-based Perfluorocarbon Emission Monitoring: *Luis Espinoza-Nava*[1]; Nicola Menegazzo[1]; Neal Dando[1]; Peter Geiser[2]; [1]Alcoa Technical Center; [2]NEO

4:20 PM
Using Artificial Neural Network to Predict Low Voltage Anode Effect PFCs at the Duct End of an Electrolysis Cell: *Lukas Dion*[1]; Charles-Luc Lagacé[2]; László Kiss[1]; Sándor Poncsák[1]; [1]Université du Québec à Chicoutimi;

[2]Aluminerie Alouette inc.

4:45 PM
Anode Effect Initiation during Aluminium Electrolysis in a Two-compartment Laboratory Cell: *Henrik Åsheim*[1]; Ole Kjos[2]; Espen Sandnes[1]; Thor Aarhaug[2]; Asbjørn Solheim[2]; Steinar Kolås[3]; Geir Haarberg[1]; [1]NTNU; [2]SINTEF; [3]Hydro

Aluminum Reduction Technology — Materials & Equipment

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Wednesday PM
February 17, 2016
Room: 202C
Location: Music City Center

Session Chair: Olivier Martin, Rio Tinto Alcan

2:00 PM
Alumina Handling in the Smelter- from Port to Pot: *Anders Sorhuus*[1]; Sivert Ose[1]; Morten Karlsen[2]; Are Dyrhaug[2]; [1]Alstom; [2]Hydro Aluminium AS

2:25 PM
Recent Developments in Hyper-Dense Phase Alumina Handling Systems: *Guillaume Girault*[1]; Philippe Godde[1]; Jean-Philippe Laine[1]; Mehrdji Hemati[2]; [1]Rio Tinto Alcan; [2]Université de Toulouse

2:50 PM
The Challenge to Supply Consistent Alumina Quality to All Pots on the Increasing Longer and Higher Capacity Potlines: *Shane Polle*[1]; Shaikha Al Shehhi[1]; Sunny Mathew[1]; Bharat Gadilkar[1]; Deepu Ramchandran[1]; [1]Emirates Global Aluminium, Al Taweela

3:15 PM Break

3:30 PM
Design and Demonstration of an Improved Automated Pot Tapping Method and Equipment: *Jean-Francois Desmeules*[1]; Martin Tremblay[2]; Jean-Benoit Neron[1]; [1]Dynamic Concept; [2]Aluminerie Alouette

3:55 PM
Evolution of Crust Breaker Control for DX+ and DX+ Ultra Technologies: *Konstantin Nikandrov*[1]; Abdalla Zarouni[1]; Sergey Akhmetov[1]; Nadia Ahli[1]; Michel Reverdy[1]; [1]Emirates Global Aluminium (EGA)

4:20 PM
SiC in Electrolysis Pots: An Update: *Rudolf Pawlek*[1]; [1]TS+C

Bio Nano Interfaces and Engineering Applications — Bio-Nano Interfaces: Medical Applications

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Wednesday PM
February 17, 2016
Room: 206B
Location: Music City Center

Session Chair: Mohan Edirisinghe, University College London

2:00 PM Invited
Green Nanotechnology Approach Towards Water-soluble Iron Oxide MRI Contrast Agents: *Sanjay Mathur*[1]; [1]University of Cologne

2:40 PM Invited
Gene Expression Profiling of Preosteoblasts on Conventional and Nanostructured Bulk Titanium: *Rebecca Reiss*[1]; Terry Lowe[2]; [1]New Mexico Tech; [2]Colorado School of Mines

3:10 PM Invited
Implantable Magnetic Nanocompsites for Cancer Treatment: *Nima Rahbar*[1]; [1]Worcester Polytechnic Institute

3:40 PM Break

4:00 PM Invited
Modeling the Organic-Inorganic Nano Interface in Nanocomposites in Bone Tissue Engineering: *Kalpana Katti*[1]; Dinesh Katti[1]; Anurag Sharma[1]; [1]North Dakota State University

4:40 PM Invited
How Do Nano and Microscale Surface Topographies Affect Bacterial Attachment? Designing a New Generation of Antimicrobial Surfaces: *Benjamin Hatton*[1]; Nicolas Lavielle[1]; Dalal Asker[1]; [1]University of Toronto

5:10 PM
Rules of Induction Towards Chimeric Antimicrobial Peptide Design as Implant Biocoatings: *Kyle Boone*[1]; Sarah VanOosten[1]; Marcos Simoes[1]; Candan Tamerler[1]; [1]University of Kansas

5:30 PM
Self-reinforced Fibro-porous 3D Tubes for Vascular Graft Applications: *Vinoy Thomas*[1]; Paloma Coelho[1]; Siddhartha Patel[2]; Andrew Wood[1]; [1]University of Alabama at Birmingham; [2]University of North Georgia

Biological Materials Science Symposium — Biomaterials III

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

Wednesday PM
February 17, 2016
Room: 207A
Location: Music City Center

Session Chairs: Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes

2:00 PM Invited
Towards Computer-aided, Rational Design of Ceramic Biomaterials: Combining Micro-Computed Tomography, Nanoindentation, Ultrasonic, and Micromechanical Theory: *Christian Hellmich*[1]; [1]Vienna University of Technology

2:40 PM
Microstructure and Tribological Behaviors of Laser Clad Ti-based Metallic Glass Composite Coatings: *Hong Wu*[1]; Xiaodong Lan[1]; Xiongfei Zai[1]; Yong Liu[1]; [1]Central South University

3:00 PM
The Effects of Closed-Cell Metallic and Polymeric Foams on the Dynamic Mechanical Response of Bone and Brain Simulants via Impact Testing: *Andrew Brown*[1]; Paul Hazell[1]; Juan P. Escobedo-Diaz[1]; [1]UNSW Australia

3:20 PM Break

3:40 PM
Monotonic and Cyclic Response of Austenitic and Martensitic NiTi wires for Medical Device Applications: *Elizabeth Gurin*[1]; Yiyi Yang[1]; Hyunmin Kim[1]; Sharvan Kumar[1]; [1]Brown University

4:00 PM
Micropillar Cyclic Compression Study of a Nitinol Tube Intended for Medical Devices: *Hyunmin Kim*[1]; Hyokyung Sung[1]; Sharvan Kumar[1]; [1]Brown University

4:20 PM
Transient Simulation of Low Volume Gravity Driven Flow in a Human Organ Mimicking Microfluidic Platform: *Kazi Tasneem*[1]; Christopher Long[1]; James Hickman[1]; [1]University of Central Florida

4:40 PM
Detecting Bacterial Pathogens and Antibiotic Resistance Genes in Wastewater

Treatment Plants Using Annotations and Bioinformatics: *Aziza Al Sawafi*[1]; Andreas Henschel[1]; [1]Masdar Institute

Bulk Metallic Glasses XIII — Hidden Orders in Structures and Deformation

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Wednesday PM
February 17, 2016
Room: 101E
Location: Music City Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Xie Xie, The University of Tennessee

2:00 PM Invited
Temperature Dependent slip Avalanche Statistics in Bulk Metallic Glasses – Experiments and Model: Corey Fyock[1]; Peter Thurnheer[2]; Robert Maass[1]; Michael LeBlanc[1]; Peter Liaw[3]; Jonathan Uhl[4]; Joerg Loeffler[2]; *Karin Dahmen*[5]; [1]University of Illinois at Urbana Champaign; [2]ETH Zuerich; [3]University of Tennessee Knoxville; [4]private; [5] University of Illinois at Urbana Champaign

2:20 PM Invited
Universal Scaling of the Viscosity of Metallic Liquids: *Ken Kelton*[1]; [1]Washington University

2:40 PM
Local Structure Orders in Metallic Liquids and Glasses and Their Influence on the Phase Selection: *Cai-Zhuang Wang*[1]; Yue Zhang[1]; Feng Zhang[1]; Yang Sun[1]; Zhou Ye[1]; Kai-Ming Ho[1]; M. I. Memdelev[1]; M. J. Kramer[1]; [1]Ames Laboratory

3:00 PM Invited
Jerky Flow Dynamics in Bulk Metallic Glasses: *Junwei Qiao*[1]; Zhong Wang[1]; Huijun Yang[1]; [1]Taiyuan University of Technology

3:20 PM Break

3:35 PM Invited
Insights into ß-Relaxation-Mediated Performance of Metallic Glasses: An Integrated Density-Functional-Theory and Electron-Work-Function Study: *William Yi Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Kristopher Darling[2]; Laszlo Kecskes[2]; Peter Liaw[3]; Xidong Hui[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]U.S. Army Research Laboratory; [3]University of Tennessee; [4]University of Science and Technology Beijing

3:55 PM
The 2.5 Power Law: A General Rule of Metallic Glasses: *Qiaoshi Zeng*[1]; [1]Carnegie Institution of Washington

4:15 PM Invited
Toughen and Harden Metallic Glass through Designing Statistical Heterogeneity: Yongwei Wang[1]; *Mo Li*[2]; [1]University of Science and Technology Beijing; [2]Georgia Institute of Tech

4:35 PM Invited
Time-dependent Mechanical Properties of Metallic Glass via Molecular Dynamics Simulations: *Yunche Wang*[1]; Nai-Hua Yeh[1]; Peter Liaw[2]; [1]National Cheng Kung University; [2]University of Tennessee

4:55 PM
Constraint Effects on the Serrated Behavior in the Compression and Nanoindentation for Bulk Metallic Glasses: *Xie Xie*[1]; Guangfeng Zhao[2]; Peizhen Li[2]; Shuying Chen[1]; Fuqian Yang[2]; Karin Dahmen[3]; Peter Liaw[1]; [1]The University of Tennessee; [2]University of Kentucky; [3]University of Illinois at Urbana Champaign

5:15 PM
Local Ordering in Molten State and Its Legacy on Abnormal Primary Crystallization in Al-RE Metallic Glasses: Mustafacan Kutsal[1]; *Eren Kalay*[1]; [1]METU

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — Metal Treatment and Metal Quality

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Wednesday PM
February 17, 2016
Room: 202A
Location: Music City Center

Session Chair: Mark Badowski, Hydro Aluminium Rolled Products GmbH

2:00 PM Introductory Comments

2:05 PM
Inline Melt Treatment for Low to Medium Metal Flow Rates: *Arild Hakonsen*[1]; Terje Haugen[1]; John Fagerlie[1]; [1]Hycast AS

2:30 PM
Effect of Soaking Treatment on the Microstructure and Wear Behavior of the Ultrasonic Melt-treated B390 Hypereutectic Al-Si Alloy: Mona Fadl[1]; *Waleed Khalifa*[1]; Shimaa El-Hadad[2]; [1]Cairo University; [2]Central Metallurgical Research and Development Institute

2:55 PM
Influence of Oxidation on Contact Angle between Liquid Aluminum and Al2O3: Ping Shen[1]; *Lifeng Zhang*[1]; Yi Wang[1]; [1]University of Science and Technology Beijing

3:20 PM
Optimization of the Ultrasonic Processing in a Melt Flow: *Iakovos Tzanakis*[1]; Gerard Lebon[2]; Dmitry Eskin[1]; Koulis Pericleous[2]; [1]Brunel University; [2]Greenwich University

3:45 PM Break

4:25 PM
Assessment of Settling Behavior of Particles with Different Shape Factors by LiMCA Data Analysis: *Mertol Gökelma*[1]; Pierre Le Brun[2]; Thien Dang[3]; Mark Badowski[4]; Johannes Morscheiser[5]; Bernd Friedrich[1]; Sebastian Tewes[6]; [1]RWTH Aachen University; [2]Constellium Technology Center; [3]TRIMET Aluminium SE; [4]Hydro Aluminium Rolled Products GmbH; [5]Aleris Rolled Products Germany GmbH; [6]NEMAK Europe GmbH

4:50 PM
Modeling of Inclusion Behaviour in an Aluminium Induction Furnace: *Emmanuel Waz*[1]; Akshay Bansal[2]; Pierre Chapelle[2]; Yves Delannoy[3]; Jean-Pierre Bellot[2]; Pierre Le Brun[1]; [1]Constellium Technology Center; [2]Université de Lorraine; [3]Grenoble-INP

4:00 PM
A Comparison of Cold and Hot PoDFA Procedure for Particle Monitoring in Liquid Aluminium: *Mark Badowski*[1]; Roland Schmoll[1]; [1]Hydro Aluminium

5:15 PM
Inclusion Measurement with PoDFA / Prefil — On-site and Off-site: *Volker Ohm*[1]; Anand Santhanam[2]; Arun Kumar Ghosala[2]; [1]HOESCH Metallurgie GmbH; [2]Aluminium Bahrain

Characterization of Minerals, Metals, and Materials — Extraction

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Wednesday PM
February 17, 2016
Room: 103A
Location: Music City Center

Session Chairs: Li Qian, Central South University; Mingming Zhang, ArcelorMittal Global R&D

2:00 PM Invited
Experimental Study on Quality Evaluation of Calcium-based Agents for Desulfurization of Sinter Gas on SDA: *Lu Lj*[1]; Huang Jianyang[1]; [1]Wisco

2:20 PM
Recovery of Palladium from Spent Pd/Al2O3 Catalyst by Hydrochloric Acid Leaching: Yang Yong-bin[1]; Hu Long[1]; *Li Qian*[1]; Xu Bin[1]; Rao Xue-fei[1]; Jiang Tao[1]; [1]Central South University

2:40 PM
Prevention of Airborne Dust from Petroleum Coke Stockpiles: *Robert Kozicki*[1]; George Wrightson[1]; [1]Andrew S. McCreath & Son, Inc.

3:00 PM
Experimental Analysis of Interlocking Pavement of Concrete with Addition of Waste Glass Applied in Construction: *Victor Souza*[1]; Niander Cerqueira[2]; Andre Jardim[3]; [1]Universidade Federal Fluminense; [2]Universidade Estadual do Norte Fluminense; [3]Sociedade Universitária Redentor

3:20 PM Break

3:35 PM
Ligand Selection Model for Leaching of Low Grade Zinc Oxide Ores: Yang Tianzu[1]; Rao Shuai[1]; *Zhang Duchao*[1]; Chen Lin[1]; Liu Weifeng[1]; [1]Central South University

3:55 PM
Using of Combined Electrochemical Reactions for the Extraction of Metals from Different Raw Materials: *Bagdaulet Kenzhaliyev*[1]; [1]Kazakh-British Technical University

4:15 PM
Effect of Ferric Ions on Bioleaching of Pentlandite Concentrate: *Li Qian*[1]; Lai Hui-min[1]; Yang Yong-bin[1]; Xu Bin[1]; Jiang Tao[1]; Zhang Ya-ping[2]; [1]Central South University; [2]jimei university

4:35 PM
Characterization and Stoichiometry of the Cyanidation Reaction in NaOH, of Argentian Waste Tailings of Hidalgo, México: *Mizraim Flores*[1]; Francisco Patiño[2]; Iván Reyes[3]; Martín Reyes[2]; Julio Juárez[2]; Ister Mireles[2]; Juán Hernández[2]; [1]Universidad Tecnológica de Tulancingo; [2]Universidad Autónoma del Estado de Hidalgo; [3]Universidad Autónoma de San Luis Potosí

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Bulk Materials Discovery and Design

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Wednesday PM
February 17, 2016
Room: 207D
Location: Music City Center

Session Chair: Richard Hennig, University of Florida

2:00 PM Invited
Machine Learning in Chemical Space: *Anatole von Lilienfeld*[1]; [1]University of Basel

2:30 PM
A General-Purpose Toolkit for Predicting the Properties of Materials using Machine Learning: *Logan Ward*[1]; Amar Krishna[1]; Rosanne Liu[1]; Vinay Hegde[1]; Ankit Agrawal[1]; Alok Choudhary[1]; Chris Wolverton[1]; [1]Northwestern University

2:50 PM
Exploring the Structure-composition Design Space in Multi-component Alloy Systems Using Nature Inspired Optimization Algorithms: *Aayush Sharma*[1]; Rahul Singh[1]; Peter Liaw[2]; Ganesh Balasubramanian[1]; [1]Iowa State University; [2]The University of Tennessee, Knoxville, TN

3:10 PM
Proving the Exact Ground State of a Generalized Ising Model by Convex Optimization and MAX-SAT: *Wenxuan Huang*[1]; Daniil Kitchaev[1]; Stephen Dacek[1]; Ziqin Rong[1]; Alexander Urban[1]; Alexander Toumar[1]; Shan Cao[1]; Chuan Luo[2]; Gerbrand Ceder[1]; [1]MIT; [2]Key Laboratory of High Confidence Software Technologies of Ministry of Education, Peking University

3:30 PM Break

3:45 PM
Effect of Charge on Point Defect Size Misfits from Ab Initio: Aliovalently Doped $SrTiO_3$: *Hyojung Kim*[1]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign

4:05 PM
Electronic Structures of Ferromagnetic $Fe_{1-x}TM_xPt$ Alloys (TM = Mn, Fe, Co, Ni, Cu): *Jihoon Park*[1]; Yang-Ki Hong[1]; Woncheol Lee[1]; Seong-Gon Kim[2]; Chul-Jin Choi[3]; [1]The University of Alabama; [2]Mississippi State University; [3]Korea Institute of Materials Science

4:25 PM
First Principles Investigation On TiAl3 Alloys Substitutively Doped With Si: *Qing Du*[1]; WeiDong Hu[1]; WangJun Peng[1]; GuangXin Wu[1]; Wende Dan[1]; JieYu Zhang[1]; [1]Shanghai University

4:45 PM
A Fast Algorithm for the Discovery of Optimal Nickel-based Superalloys: *Edern Menou*[1]; Gérard Ramstein[2]; Emmanuel Bertrand[1]; Franck Tancret[1]; [1]Institut des matériaux Jean Rouxel; [2]Laboratoire d'informatique de Nantes Atlantique

5:05 PM
Computational Exploration of Rare-earth Zirconate Pyrochlores for Thermal Barrier Coatings: Accurate Prediction of Thermal Conductivities and Thermal Expansion Coefficients from First-principles Calculations: *Guoqiang Lan*[1]; Jun Song[1]; [1]McGill University

Computational Methods for Uncertainty Quantification, Model Validation, and Stochastic Predictions — Uncertainty Quantification and Effects in Coarse Grain, Finite Element and Crystal Plasticity Modeling

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Richard Hennig, University of Florida; Mark Tschopp, Army Research Laboratory; Li Ma, NIST

Wednesday PM
February 17, 2016

Room: 207C
Location: Music City Center

2:00 PM Invited
Accuracy of Kinetics in Coarse-Grained Molecular Dynamics: Andrew Binder[1]; Mitchell Luskin[2]; Arthur Voter[3]; *Danny Perez*[3]; [1]University of Minnesota ; [2]University of Minnesota; [3]Los Alamos National Laboratory

2:40 PM
How Important are the Smallest Grains on Grain Aggregate Mechanics?: *Tias Maiti*[1]; Philip Eisenlohr[1]; [1]Michigan State University

3:00 PM
Grain Deformation in a Cast Ni Superalloy: Comparing Experimental and Modelling Results: *Mohammed Fazal*[1]; Wei Li[2]; Michael Preuss[1]; João Quinta Da Fonseca[1]; [1]University of Manchester; [2]Rolls-Royce plc.

3:20 PM Break

3:40 PM Invited
Probabilistic Homogenization of Crystal Plasticity Modeling for Ti Alloys: Somnath Ghosh[1]; *Shravan Kumar Kotha*[1]; Deniz Ozturk[1]; [1]Johns Hopkins University

4:20 PM
Microstructure-Uncertainty Propagation in Sheet Metal Forming FE-Simulations: *Stephen Niezgoda*[1]; Ayman Salem[2]; Joshua Shaffer[2]; Daniel Satko[2]; [1]The Ohio State University; [2]Materials Resources LLC

4:40 PM
Functional Uncertainty Quantification for Multi-fidelity and Multi-scale Simulations: *Sam Reeve*[1]; Alejandro Strachan[1]; [1]Purdue University

5:00 PM
Computational Simulation and Physical Validation of Welded Aluminum Structures: *Charles Fisher*[1]; Matthew Sinfield[1]; Gary Margelowsky[1]; Yared Amanuel[1]; Jazalyn Dukes[1]; Ken Nahshon[1]; [1]Naval Surface Warfare Center

Computational Thermodynamics and Kinetics — CALPHAD, Multiscale Modeling, and ICME

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Wednesday PM
February 17, 2016

Room: 208B
Location: Music City Center

Session Chairs: David McDowell, Georgia Institute of Technology; Nicholas Hatcher, QuesTek Innovations LLC

2:00 PM Invited
Density Functional Theory (DFT) Methods for Integrated Computational Materials Engineering (ICME): *Jeff Doak*[1]; James Saal[1]; Jason Sebastian[1]; Greg Olson[1]; Nicholas Hatcher[1]; [1]QuesTek Innovations LLC

2:30 PM
Revisiting Thermodynamic Models for TCP Phases Utilizing DFT Calculations: *Ursula Kattner*[1]; Mauro Palumbo[2]; Jörg Koßmann[2]; Suzana Fries[2]; Thomas Hammerchmidt[2]; Ralf Drautz[2]; [1]National Institute of Standards and Technology; [2]ICAMS, Ruhr-University Bochum

2:50 PM
Revisiting Thermodynamics of The Co-Al-W System: Peisheng Wang[1]; *Wei Xiong*[1]; Oleg Kontsevoi[1]; Ursula Kattner[2]; Carelyn Campbell[2]; Gregory Olson[1]; [1]Northwestern University; [2]National Institute of Standards and Technology

3:10 PM
First-principles Thermodynamic Modeling of μ Phase in the Co-W Alloy System: *Oleg Kontsevoi*[1]; Wei Xiong[1]; Gregory Olson[1]; [1]Northwestern University

3:30 PM Break

3:50 PM
Thermodynamics of $L1_2$-containing Co-Al-W Alloys from First-Principles: *Robert Rhein*[1]; Tresa Pollock[1]; Anton Van der Van[1]; [1]University of California Santa Barbara

4:10 PM
Experimental Investigation and Thermodynamic Assessment of Phase Equilibria in the Al-rich Portion of the Al-Mn-Ce Ternary System: *Francisco Coury*[1]; Andre Luiz Costa e Silva[2]; Walter Botta[1]; Claudio Kiminami[1]; Michael Kaufman[3]; [1]Universidade Federal de São Carlos; [2]Universidade Federal Fluminense; [3]Colorado School of Mines

4:30 PM
The Application Software Interface to the Open Calphad Software and Some Examples: *Bo Sundman*[1]; Matthias Stratmann[2]; Mauro Palumbo[2]; Suzana Fries[2]; Ursula Kattner[3]; [1]CEA Saclay; [2]Ruhr University Bochum; [3]NIST

4:50 PM Invited
Considering the Role of Kinetics in Computational Materials Discovery and Development: *David McDowell*[1]; Laurent Capolungo[1]; Ting Zhu[1]; [1]Georgia Institute of Technology

5:20 PM
A Discrete Dislocation Model of Creep in Single Crystals: *M. Rajaguru*[1]; Shyam Keralavarma[1]; [1]Indian Institute of Technology Madras

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Wetting Behavior; Solders for New Applications

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Wednesday PM
February 17, 2016

Room: 201A
Location: Music City Center

Session Chair: Tae-kyu Lee, Cisco Systems

2:00 PM
Solder Wetting Behavior of Plasma Organic Surface Finish with Multiple Heat-Treatment: *Kyoung-Ho Kim*[1]; Sehoon Yoo[1]; Junichi Koike[2]; [1]Korea Institute of Industrial Technology; [2]Tohoku University

2:20 PM
The Early Stage Wetting Behaviors between Solder and Cu: *Wei-Chih Huang*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

2:40 PM
Grain-structure Engineering in Copper TSVs: Q. Zhu[1]; H. Ma[1]; J. Guo[1]; *J. Shang*[2]; [1]Shenyang National Laboratory for Materials Science; [2]University of Illinois

3:00 PM
Effect of Bump Height on Grain Size and Orientation of Solder Microbumps Bonded by Thermal Compression: *Yu-An Shen*[1]; Chih Chen[1]; [1]Na-

tional Chiao Tung University

3:20 PM Break

3:40 PM
In Situ Mechanical Testing of Micro-Scale Solder Joints: Leila Ladani[1]; *Soud Choudhury*[2]; [1]University of Connecticut ; [2]University of Connecticut

4:00 PM
Estimation of Constitutive Parameters in beta-Sn by Instrumented Nanoindentation and Crystal Plasticity Simulation: *Aritra Chakraborty*[1]; Zhuowen Zhao[1]; Philip Eisenlohr[1]; Thomas Bieler[1]; [1]Michigan State University

4:20 PM
Study of Low Melting Solder Alloys: Chih-Hao Chen[1]; *Albert T. Wu*[1]; [1]National Central University

4:40 PM
Using Sn-Bi-Zn Solder as the LED Die-attach Material by Controlling the Sn-Bi-Zn Composition and the Roughness of the Substrate: *Yue Kai Tang*[1]; Chengyi Liu[1]; [1]National Central University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Fatigue Properties of Engineering Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

Wednesday PM
February 17, 2016
Room: 213
Location: Music City Center

Session Chair: Tongguang (Tony) Zhai, University of Kentucky

2:00 PM Invited
What Causes the Formation of Crack Initiation Characteristic Region for Very-High-Cycle Fatigue of Metallic Materials?: *Youshi Hong*[1]; Xiaolong Liu[1]; Zhengqiang Lei[1]; Chengqi Sun[1]; [1]LNM, Institute of Mechanics, Chinese Academy of Sciences

2:20 PM Invited
Statistical Characterization of Multimodal Behavior in Material Properties: *D Gary Harlow*[1]; [1]Lehigh University

2:40 PM Invited
Creep-fatigue of Steels with Cyclic Softening: *Jarir Aktaa*[1]; Ulrich Führer[1]; [1]Karlsruhe Institute of Technology

3:00 PM Invited
Ultra Small Scale High Cycle Fatigue Testing by Micro-cantilevers: *Jicheng Gong*[1]; Angus Wilkinson[1]; [1]University of Oxford

3:20 PM
Thermal Fatigue as the Origin of Rock Break-up on Asteroids (Note: This presentation will also appear in the poster session.): *Kavan Hazeli*[1]; Stefanos Papanikolaou[1]; Charles El Mir[1]; Marco Delbo[2]; K. T. Ramesh[1]; [1]Johns Hopkins University; [2]UNS-CNRS-Observatoire de la Cote d'Azur

3:40 PM Break

4:00 PM
Fatigue Monitoring of Metals Based on Physical Data Like Electrical Resistance, Temperature and Electromagnetic Ultrasound: *Dietmar Eifler*[1]; [1]University of Kaiserslautern

4:20 PM
Microstructure-Sensitive Probabilistic Prediction of Small Fatigue Crack Growth Behavior in a Ni-Base Superalloy: *Patrick Golden*[1]; [1]Air Force Research Laboratory

4:40 PM
Hydrogen Influences on Notched Fatigue Life of Stainless Steels: *Paul Gibbs*[1]; Jonathan Zimmerman[1]; Kyle Karlson[1]; Xiaoli Tang[2]; Samuel Kernion[3]; Kevin Nibur[4]; Christopher San Marchi[1]; [1]Sandia National Laboratories; [2]Swagelok Company; [3]Carpenter Technology Corporation; [4]Hy-Performance Materials

5:00 PM
Short Crack Growth and Very High Cycle Fatigue Behavior of Magnesium Alloy WE43: *Jacob Adams*[1]; J. Wayne Jones[1]; John Allison[1]; [1]University of Michigan

5:20 PM
Microstructural Effects on Small-Fatigue Crack Growth in Resistance Spot Welded Sheet 5754 and 6111 Aluminum and Durability Modeling of Eyebrow Cracking in Resistance Spot Welds (Note: This presentation will also appear in the poster session.): *Vir Nirankari*[1]; [1]University of Michigan

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Defects/Conclusions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Wednesday PM
February 17, 2016
Room: 105A
Location: Music City Center

Session Chairs: Hervé Combeau, Institut Jean Lamour; Jon Dantzig, Univ of Illinois

2:00 PM Invited
Atomistic Modeling of Grain Boundary Melting and Pre-melting in Alloys: J. Hickman[1]; *Y. Mishin*[1]; [1]George Mason University

2:25 PM Invited
Hot Tearing: After the Rappaz-Drezet-Gremaud Criterion, Where Are We?: *Jean-Marie Drezet*[1]; Nicolas Chobaut[1]; Michael Drakopoulos[2]; Thilo Pirling[3]; [1]Ecole Polytechnique Federale Lausanne; [2]I12 (JEEP) Diamond Light Source Ltd; [3]Salsa, Institut Laue Langevin

2:50 PM Invited
Grain Structures and Segregations: *Charles-Andre Gandin*[1]; [1]MINES Paris Tech

3:15 PM Invited
Granular Modelling of Solidification and Semi-solid Defect Formation: *Andre Phillion*[1]; Fariba Sheykh-Jaberi[1]; Hamid Reza Zareie Rajani[1]; Steve Cockcroft[1]; Daan Maijer[1]; [1]University of British Columbia

3:40 PM Break

4:00 PM Invited
Hot Tear Criterion Accounting for the Last Stage Precipitation Phenomena in the Solidification Path: A Refinement of the Rappaz Drezet Gremaud Approach: *Philippe Jarry*[1]; [1]Constellium

4:25 PM Invited
Dendrite Arm and Grain Boundary Coalescence: *William Boettinger*[1]; [1]NIST

4:50 PM Invited
Future Challenges in Solidification: *Michel Rappaz*[1]; [1]EPFL

High-Temperature Systems for Energy Conversion and Storage — Systems for Energy Conversion and Storage II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

Wednesday PM
February 17, 2016

Room: 104E
Location: Music City Center

Session Chairs: Jung Pyung Choi, PNNL; William Chueh, Stanford University

2:00 PM Invited
Molecular View of High Temperature Oxygen Reduction & Evolution Reactions: *William Chueh*[1]; [1]Stanford University

2:25 PM Invited
Solid Acid Electrolytes Applied to Electricity Generation and Gas Separation: *Alexander Papandrew*[1]; Ramez Elgammal[1]; Ondrej Dyck[1]; David Wilson[1]; Wesley Tennyson[2]; Gabriel Veith[2]; Thomas Zawodzinski[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

2:50 PM
The Role of Fe-O Complex in Determining Oxygen Nonstoichiometry in the Lanthanum Strontium Ferrite (LSF) System: Tridip Das[1]; Jason Nicholas[1]; *Yue Qi*[1]; [1]Michigan State University

3:10 PM Invited
Two-Dimensional Transition Metal Carbides and Carbonitrides Derived from MAX Phases for Electrochemical Energy Storage Systems: *Michael Naguib*[1]; [1]Oak Ridge National Laboratory

3:35 PM Break

3:55 PM Invited
Understanding the Mechanisms of Electrode Degradation in Solid Oxide Fuel Cells by Phase-field Modeling: *Jiamian Hu*[1]; Liang Hong[1]; Linyun Liang[1]; Kirk Gerdes[2]; Long-Qing Chen[1]; [1]Pennsylvania State University; [2]National Energy Technology Laboratory

4:15 PM
(Co,Mn)304 and (Co,Mn)3O4-perovskite Composites for SOFC Cathode-side Contact Application: *Yutian Yu*[1]; Jiahong Zhu[1]; [1]Tennessee Tech University

4:35 PM Invited
In-Operando XRD Tests of LSCF and LSM/YSZ SOFC Cathodes: *John Hardy*[1]; Christopher Coyle[1]; Jared Templeton[2]; Nathan Canfield[1]; Jeffry Stevenson[1]; [1]Pacific Northwest National Laboratory; [2]WRPS

High Entropy Alloys IV — Mechanical and Other Properties I

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Wednesday PM
February 17, 2016

Room: 102B
Location: Music City Center

Session Chairs: Rajiv Mishra, University of North Texas; Nilesh Kumar, University of North Texas

2:00 PM Invited
Lattice Strain Framework for Plastic Deformation in Complex Concentrated Alloys Including High Entropy Alloys: *Rajiv Mishra*[1]; Nilesh Kumar[1]; Mageshwari Komarasamy[1]; [1]University of North Texas

2:20 PM
From Pure Element to High-entropy Alloy : Limits of the Concept: *Lola Lilensten*[1]; Jean-Philippe Couzinié[1]; Ivan Guillot[1]; Loïc Perrière[1]; Guy Dirras[2]; [1]CNRS - ICMPE; [2]CNRS - LSPM

2:40 PM
Microstructures of Annealed and Oxidized Al8(NiCoCrFe)92, Al15(NiCoCrFe)85, and Al30(NiCoCrFe)70 High-Entropy Alloys: *Todd Butler*[1]; Mark Weaver[1]; [1]University of Alabama

3:00 PM
Precipitation Kinetics in High Entropy Alloy Al0.5CrFeCoNiCu: *Nicholas Jones*[1]; Kathy Christofidou[1]; Edward Pickering[1]; Roberto Izzo[1]; Howard Stone[1]; [1]University of Cambridge

3:20 PM Break

3:35 PM Invited
Atomic and Electronic Basis for Viscous Flow Mediated Avalanches of Ultrastrong Refractory High Entropy Alloys: *William Yi Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Yidong Wu[2]; Kristopher Darling[3]; Xie Xie[4]; Oleg Senkov[5]; Laszlo Kecskes[3]; Karin Dahman[6]; Xidong Hui[2]; Peter Liaw[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]University of Science and Technology Beijing; [3]U.S. Army Research Laboratory; [4]University of Tennessee; [5]Air Force Research Laboratory; [6]University of Illinois at Urbana Champaign

3:55 PM
Trace Elements and Processing of High Entropy Alloys: *Paul Jablonski*[1]; Joseph Licavoli[1]; John Sears[1]; Jeffrey Hawk[1]; [1]US Department of Energy

4:15 PM
Tailoring the Microstructure and Mechanical Properties of a CoCrFeNi High Entropy Alloy by Supercooling Method: *Jinshan Li*[1]; Wenjuan Jia[1]; Jun Wang[1]; Hongchao Kou[1]; [1]Northwestern Polytechnical University

4:35 PM
Vacancy Formation and Migration Energy of High Entropy Alloy: *Congyi Li*[1]; Artur Tamm[2]; G. Malcolm Stocks[3]; Brian Wirth[4]; Steve Zinkle[4]; Alfredo Caro[2]; Alvo Aabloo[5]; Mattias Klintenberg[6]; [1]Bredesen Center; [2]Los Alamos National Lab; [3]Oak Ridge National Lab; [4]University of Tennessee; [5]University of Tartu; [6]Uppsala University

4:55 PM
Thin Film Approach to Optimize Structure and Composition of High Entropy Alloys: *Azin Akbari*[1]; Artashes Ter-Isahakyan[2]; Julia Lehmann[2]; Thomas Balk[2]; [1]University of Kentucky ; [2]University of Kentucky

High Entropy Alloys IV — Structures and Mechanical Properties II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Wednesday PM
February 17, 2016

Room: 102A
Location: Music City Center

Session Chairs: Oleg Senkov, Air Force Research Laboratory; Gong Li, The University of Tennessee

2:00 PM
A Thermodynamic Parameter to Predict Formation of Solid Solution or Intermetallic Phases in High Entropy Alloys: *Oleg Senkov*[1]; Dan Miracle; [1]Air Force Research Laboratory

2:20 PM Invited
Mechanical Study of a Refractory bcc High Entropy Solid Solution: Deformation Mechanisms and Strain Rate Effect: *Jean-Philippe Couzinie*[1]; Lola Lilensten[1]; Guy DIRRAS[2]; David Tingaud[2]; Loïc Perriere[1]; Jeno Gubicza[3]; Ivan GUILLOT[1]; Hervé Couque[4]; [1]CNRS/UPEC; [2]Université Paris 13 - Sorbonne Paris Cité; [3]Eötvös Loránd University; [4]Nexter Munitions

2:40 PM
A Non-equiatomic, Dual-phase, TRIP-assisted HEA: *Cem Tasan*[1]; Zhiming Li[1]; Dierk Raabe[1]; [1]Max-Planck Institute for Iron Research

3:00 PM
Mechanical Properties of Refractory High Entropy Alloys Fabricated by the Powder Metallurgy Process: Seoungwoo Kuk[1]; Woojin Lim[1]; *Hojin Ryu*[1]; Soon Hyung Hong[1]; [1]Korea Advanced Institute of Science and Technology

3:20 PM Invited
Solute Effects in High-Entropy FeNiMnAlCr Alloys: *I. Baker*[1]; Zhangwei Wang[1]; [1]Dartmouth College

3:40 PM Break

3:55 PM Invited
Microstructure and Mechanical Properties of YxCoCrFeNi High Entropy Alloys: *Gong Li*[1]; Huan Zhang[2]; Lijun Zhang[3]; Pengfei Yu[3]; Hu Cheng[3]; Qin Jing[3]; Mingzhen Ma[3]; P. K Liaw[3]; Riping Liu[3]; [1]University of Tennessee; [2]State Key Laboratory of Metastable Materials Science and Technology, Yanshan University, Qinhuangdao 066004, China; [3]State Key Laboratory of Metastable Materials Science and Technology, Yanshan University, Qinhuangdao 066004, China

4:15 PM
Nanomechanical Behavior and Dislocation Nucleation in FCC High Entropy Alloys: Sanghita Mridha[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

4:35 PM
Microstructure and Mechanical Behavior of Equiatomic CoCuFeMnNi High-entropy Alloy: Anna Fraczkiewicz[1]; *Michal Mroz*[1]; [1]MINES St-Etienne

4:55 PM
Precious Metal High Entropy Alloys - Microstructure, Phase Evolution and Properties: *Caitlin Healy*[1]; Allison Lim[2]; Lucia Kaye[2]; Lorri Bassman[2]; Jörg Löffler[3]; Michael Ferry[1]; Kevin Laws[1]; [1]University of New South Wales; [2]Harvey Mudd College; [3]ETH Zürich

Hume-Rothery Award Symposium: Thermodynamics of Materials — High Throughput Methods

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Ursula Kattner, National Institute of Standards and Technology; Michael Manley, Oak Ridge National Laboratory

Wednesday PM
February 17, 2016
Room: 107A
Location: Music City Center

Session Chairs: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Olle Hellman, California Institute of Technology

2:00 PM Invited
Lattice Excitations in Magnetic Alloys: Recent Advances in Ab Initio Modeling of Coupled Spin and Atomic Fluctuations: *Fritz Körmann*[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

2:30 PM Invited
Thermodynamics of Multicomponent Alloys: Beyond the Binary Approximation: *Marcel Sluiter*[1]; [1]TU Delft

3:00 PM
Information is Not Knowledge: *Suzana Fries*[1]; [1]ICAMS, Ruhr University Bochum

3:20 PM Break

3:40 PM
Comments on Thermodynamic Instability: *John Morris*[1]; [1]University of California Berkeley

4:00 PM Invited
Genetic Algorithm Structure Optimization Applied to Defect Clusters and Nanoparticles with Integrated Experimental Data: *Dane Morgan*[1]; Min Yu[1]; Amy Kaczmarowski[1]; Hyunseok Ko[1]; Paul Voyles[1]; [1]University of Wisconsin - Madison

4:30 PM Invited
First-principles Studies of Strongly Anharmonic Crystalline Solids: Fei Zhou[1]; Weston Nielson[2]; Yi Xia[2]; *Vidvuds Ozolins*[2]; [1]Lawrence Livermore National Laboratory; [2]University of California, Los Angeles

5:00 PM Concluding Comments

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In-Situ Characterization of Mechanical Properties of Materials III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Wednesday PM
February 17, 2016
Room: 212
Location: Music City Center

Session Chairs: Arief Budiman, Singapore University of Technology and Design; Weizhong Han, Xi'an Jiaotong University

2:00 PM Invited
In-situ Micromechanical Testing Using Correlated 3-D X-ray and 2-D Electron Microscopy Analyses: *Robert Wheeler*[1]; [1]MicroTesting Solutions LLC

2:30 PM
Cyclic Electro-mechanical Behaviour of Ductile Films Examined with In-situ Methods: *Megan Cordill*[1]; Oleksandr Glushko[1]; [1]Erich Schmid Institute of Materials Science

2:50 PM
In Situ Corrosion-Fatigue of 7075 Aluminum in 3.5 wt% NaCl: Tyler Stannard[1]; Jason Williams[1]; Sudhanshu Singh[1]; Xianghui Xiao[2]; *Nikhilesh Chawla*[1]; [1]Arizona State University; [2]Advanced Photon Source, Argonne National Laboratory

3:10 PM
Investigation of Deformation Twinning under Complex Stress States in a Rolled Magnesium Alloy: *Wei Wu*[1]; Chih-Pin Chuang[2]; Yang Ren[2]; Ke An[1]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory

3:30 PM Break

3:50 PM Invited
Direct Imaging of Mechanically or Thermally Induced Grain Structure Changes in Nanocrystalline Metals: *Christian Kuebel*[1]; Aaron Kobler[1]; Krishna Kanth[1]; Horst Hahn[1]; [1]KIT

4:20 PM
In-situ High-energy X-ray Investigation of Plastic Deformation and Damage Evolution in Polycrystalline Cu-5%W Composite: *Reeju Pokharel*[1]; Timothy Ickes[1]; Bjorn Clausen[1]; Ching-Fong Chen[1]; Darren Dale[2]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory; [2]Cornell High Energy Synchrotron Source

4:40 PM
An In Situ Load Stage to Combine 3D X-ray Tomography with Nanomechanical Testing: *William Harris*[1]; Benjamin Hornberger[1]; Arno Merkle[1]; Hrishikesh Bale[1]; Leah Lavery[1]; Roberty Bradley[2]; Xuekun Lu[2]; Philip Withers[2]; Nikolaus Cordes[3]; Brian Patterson[3]; [1]Carl Zeiss X-ray Microscopy, Inc.; [2]University of Manchester; [3]Los Alamos National Laboratory

5:00 PM
Understanding the Ultra High Strength of Ni Micro-wires from In-situ Deformation Study under X-rays: Soham Mukherjee[1]; Ludovic Thilly[1]; *Celine Gerard*[1]; Atul Chokshi[2]; Satyam Suwas[2]; [1]Institut Pprime, CNRS - ENSMA - Université de Poitiers; [2]Indian Institute of Science

5:20 PM
Novel In-situ Mechanical Test within an X-ray Microscope: *Jürgen Gluch*[1]; Kristina Kutukova[2]; Ehrenfried Zschech[1]; [1]Fraunhofer IKTS; [2]Dresden International University

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Microstructural Evolution II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Wednesday PM
February 17, 2016
Room: 108
Location: Music City Center

Session Chair: Timofey Frolov, University of California at Berkeley

2:00 PM
Microstructure Evolution and Consolidation Kinetics Prediction in Powder Materials during Field Assisted Sintering Technique: *Sudipta Biswas*[1]; Vikas Tomar[1]; [1]Purdue University

2:20 PM
Interface Mediated Formation of Monatomic Metallic Glasses: *Scott Mao*[1]; Li Zhong[1]; Jiangwei Wang[1]; Ze Zhang[2]; Hongwei Sheng[3]; [1]University of Pittsburgh; [2]Zhejiang University; [3]George Mason University

2:40 PM
Grain Network Connectivity in 3D Copper Microstructures Resulting from Disparate Processing Routes: *J. Lind*[1]; S. F. Li[1]; M. Kumar[1]; [1]Lawrence Livermore National Laboratory

3:00 PM
Nanostructures Formation from Pulsed-laser Induced Rayleigh-Taylor Instabilities at Metal/fluid Interfaces: *Venkatanarayana prasad Sandireddy*[1]; Sagar Yadavali[1]; Ramki Kalyanaraman[1]; [1]University of Tennessee Knoxville

3:20 PM Break

3:40 PM Invited
Zener Pinning of Grain Boundary Migration in Immiscible Nano-crystalline Alloys: Raj K. Koju[1]; K. A. Darling[2]; L. J. Kecskes[2]; *Y. Mishin*[1]; [1]George Mason University; [2]U.S. Army Research Laboratory

4:20 PM
The Development of Large Twin Related Domains in Grain Boundary Engineered Cu: *David Bober*[1]; Rupalee Mulay[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

4:40 PM
The Influence of Temperature in the Formation of Highly Nanotwinned Cu Alloys: Varying the Twin Thickness: *Leonardo Velasco*[1]; Andrea Hodge[1]; [1]University of Southern California

5:00 PM
Watching the Growth of Si Particles in a Liquid:
The Role of Twin Defects on Microstructural Evolution: *Ashwin Shahani*[1]; E. Gulsoy[1]; Michael Chapman[2]; Xianghui Xiao[3]; Marc De Graef[2]; Peter Voorhees[1]; [1]Northwestern University; [2]Carnegie Mellon University; [3]Argonne National Laboratory

Magnesium-based Biodegradable Implants — Corrosion / Market and Clinic

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Wim Sillekens, European Space Agency; Martyn Alderman, Magnesium Elektron; Patrick Bowen, Michigan Technological University; Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund

Wednesday PM
February 17, 2016
Room: 206A
Location: Music City Center

Session Chairs: Pat Bowen, Michigan Technological University; Martyn Alderman, Magnesium Elektron

2:00 PM Invited
Understanding Corrosion-assisted Cracking of Magnesium Alloys for Bio-implant Applications: RK Singh Raman[1]; *Shervin Eslami Harandi*[1]; [1]Monash University

2:30 PM
In Vitro Corrosion and Cytocompatibility Properties of Mg-2Gd-X(Ag, Ca) Alloys: *Yiyi Lu*[1]; Yuanding Huang[1]; Frank Feyerabend[1]; Regine Willumeit-Römer[1]; Karl-Ulrich Kainer[1]; Norbert Hort[1]; [1]Helmholtz-Zentrum Geesthacht

2:50 PM
Appropriate Corrosion-FatigueTesting of Magnesium Alloys for Temporary Bio-implant Applications: *Shervin Eslami Harandi*[1]; RK Singh Raman[1]; [1]Monash University

3:10 PM Invited
Computer Simulation of the Mechanical Behaviour of Implanted Biodegradable Stents in a Remodelling Artery: *Peter McHugh*[1]; Enda Boland[1]; [1]NUI Galway

3:40 PM Break

4:00 PM Invited
Standardized Guidance for the Preclinical Evaluation of Absorbable Metal Implants: *Byron Hayes*[1]; [1]W.L. Gore and Associates, Inc

4:30 PM Invited
The Industrial Challenges of Manufacturing Bioabsorbable Magnesium: *Robert Thornton*[1]; Paul Lyon[1]; [1]Magnesium Elektron

5:00 PM Invited
Monitoring Biodegradation of Magnesium Implants with Sensors: Daoli Zhao[1]; Tingting Wang[1]; Xuefei Guo[1]; Julia Kuhlmann[1]; Amos Doepke[1]; Zhongyun Dong[1]; Vesselin Shanov[1]; *William Heineman*[1]; [1]University of Cincinnati

5:30 PM Invited
Magnesium-based Compression Screws: *Jan Seitz*[1]; [1]Syntellix AG

Magnesium Technology 2016 — Corrosion

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Wednesday PM
February 17, 2016
Room: 203B
Location: Music City Center

Session Chair: Michele Manuel, University of Florida

2:00 PM
Numerical Investigation of the AE44-mild Steel Galvanic Structural Joint: *Nitin Muthegowda*[1]; Kiran Solanki[1]; Benyamin Bazehhour[1]; [1]Arizona State University

2:20 PM
Fabrication of a Superhydrophobic Films with Self-cleaning Property on Magnesium Alloy and its Corrosion Resistance Properties: *Meng Zhou*[1]; Xiaolu Pang[1]; Kewei Gao[1]; [1]University of Science and Technology Beijing

2:40 PM
The Surface Films and their Possible Roles in Mg Corrosion: *Guang-Ling Song*[1]; [1]Oak Ridge National Lab

3:00 PM
Micro-arc Oxide Film of Aluminum Coating Pre-sprayed on a Magnesium Alloy: *Suyuan Yang*[1]; Lin Zhou[1]; Xingwang Cheng[1]; [1]Beijing Institute of Technology

Magnesium Technology 2016 — Twinning and Plasticity

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Wednesday PM
February 17, 2016
Room: 204
Location: Music City Center

Session Chairs: Tyrone Jones, US Army Research Laboratory; Peifeng Li, Nanyang Technological University

2:00 PM
What is a Strain Hardening "Plateau"?: *Sean Agnew*[1]; Chris Calhoun[1]; Jishnu Bhattacharyya[1]; [1]University of Virginia

2:20 PM
Asymmetric Growth of Tensile Twins in Magnesium: *Zhe Li*[1]; Ben Xu[1]; [1]Tsinghua University

2:40 PM
Non-dislocation Based Room Temperature Plastic Deformation Mechanism in Magnesium: *Bo-Yu Liu*[1]; Zhi-Wei Shan[1]; Evan Ma[2]; [1]Xi'an Jiaotong University; [2]Johns Hopkins University

3:00 PM
Investigation of the Plastic Flow Field in Magnesium Alloy AZ31B in Three Orientations for Empirical Penetration Models: *Tyrone Jones*[1]; John Riegel[2]; Christopher Meredith[1]; Kris Darling[1]; Jim Catalano[1]; Anthony Roberts[1]; [1]US Army Research Laboratory; [2]R3 Technology, Inc

3:20 PM Break

3:40 PM
Deformation Behavior of Mg Single Crystals Compressed Along c-axis: *Kelvin Xie*[1]; Zafir Alam[1]; Alex Caffee[1]; Kevin Hemker[1]; [1]Johns Hopkins University

4:00 PM
The Use of Acoustic Emission and Neutron Diffraction to Reveal the Active Deformation Mechanisms in Polycrystalline Magnesium and Comparison to Theoretical Modeling: *Jan Capek*[1]; Kristian Mathis[1]; Tomáš Krajnák[1]; [1]Charles University in Prague

4:20 PM
Strain Rate Dependent Deformation and Failure Process of Magnesium Foams: *Peifeng Li*[1]; [1]Nanyang Technological University

4:40 PM
Exploration of Thin-walled Magnesium Alloy Tube Extrusion for Improved Crash Performance: Bruce Williams[1]; *Robert Klein*[2]; Jonathan McKinley[1]; Sean Agnew[2]; [1]CanmetMATERIALS, Natural Resources Canada; [2]University of Virginia

5:00 PM
High Temperature Tensile Behaviors and Deformation Mechanisms of Mg-x%Al Alloys: Jiaxing Ji[1]; Fubo Bian[1]; Tiangang Niu[1]; Min He[1]; *Jun Qiao*[1]; [1]The University of Science and Technology Liaoning

Material Behavior Characterization via Multi-Directional Deformation of Sheet Metal — Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: John Carsley, General Motors Research & Development; Daniel Coughlin, Los Alamos National Laboratory; Myoung-Gyu Lee, Korea University; Youngung Jeong, National Institute of Standards and Technology; Piyush Upadhyay, Pacific Northwest National Laboratory

Wednesday PM
February 17, 2016
Room: 104A
Location: Music City Center

Session Chairs: Myoung-Gyu Lee, Korea University ; Youngung Jeong, NIST

2:00 PM Invited
An Experimentally Validated, Microstructure Based Model for Forming of Low-symmetry Alpha-uranium: *Rodney McCabe*[1]; Miroslav Zecevic[2]; Daniel Coughlin[1]; Andrew Richards[1]; Kester Clarke[1]; Irene Beyerlein[1]; Marko Knezevic[2]; [1]Los Alamos National Laboratory; [2]U. of New Hampshire

2:30 PM
Dilational Response of Voided Polycrystals: *Daniel Savage*[1]; Marko Knezevic[1]; Oana Cazacu[2]; [1]University of New Hampshire; [2]University of Florida, REEF

3:00 PM
Effect of Complex Strain Paths on Microstructure Evolution Studied by In-situ Neutron Diffraction: *Steven Van Petegem*[1]; Tobias Panzner[1]; Manas Upadhyay[1]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut

3:30 PM Break

4:00 PM
Predicting Cyclic Deformation of AA6022-T4 and DP590 Using Polycrystal Plasticity: *Milovan Zecevic*[1]; Marko Knezevic[1]; [1]University of New Hampshire

4:30 PM
The Influence of Deformation Mechanisms on Forming of Commercially Pure Titanium Sheets: *Feng Li*[1]; [1]The University of Manchester

5:00 PM
Inflation of Stainless Steel 304L Microtubes under Axial Tension and Internal Pressure to Assess the Plastic Anisotropy: Peter Ripley[1]; *Yannis Korkolis*[1]; [1]University of New Hampshire

Material Design Approaches and Experiences IV — Steels II

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Akane Suzuki, GE Global Research; Ji-Cheng Zhao, The Ohio State University; Michael Fahrmann, Haynes International Inc.; Qiang Feng, University of Science and Technology Beijing

Wednesday PM
February 17, 2016
Room: 208A
Location: Music City Center

Session Chairs: Qiang Feng, University of Science & Technology Beijing; Kip Findley, Colorado School of Mines

2:00 PM Invited
Hydrogen Embrittlement Susceptibility in Tension and Fatigue of Austenitic Stainless Steels: *Kip Findley*[1]; Alex Ly[1]; Brian Somerday[2]; [1]Colorado School of Mines; [2]Sandia National Laboratory

2:30 PM Invited
Flash Processing of Steels: Alternative Pathway to Develop Advanced High Strength Steels for Automotive Applications: Gary Cola[1]; T. Lolla[2]; B. Hanhold[2]; D. Tung[3]; *Sudarsanam Babu*[4]; [1]SFP Works, LLC; [2]Formerly at The Ohio State University; [3]The Ohio State University; [4]The University of Tennessee, Knoxville

3:00 PM
Design and Development of Cast Alumina-forming Austenitic Stainless Steels: *Govindarajan Muralidharan*[1]; Yukinori Yamamoto[1]; Michael Brady[1]; Donovan Leonard[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM Invited
Design Approaches Using TCP Sigma Phase as a Promising Strengthener in Austenitic Heat Resistant Steels: *Masao Takeyama*[1]; Yoshiki Kumagai[1]; [1]Tokyo Institute of Technology

4:10 PM Invited
Development of a New Alloy Family - High Performance Ferrite: *Bernd Kuhn*[1]; M. Talik[1]; L. Singheiser[1]; [1]Forschungszentrum Juelich GmbH

4:40 PM
Alloy Design for Promoting Creep Resistance of Austenitic Cast Steels for Exhaust Component Applications: Yinhui Zhang[1]; Mei Li[2]; Larry Godlewski[2]; Jacob Zindel[2]; *Qiang Feng*[1]; [1]University of Science and Technology Beijing; [2]Ford motor company

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Structural Materials IV

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Wednesday PM
February 17, 2016
Room: 101A
Location: Music City Center

Session Chairs: Thak Sang Byun, Pacific Northwest National Laboratory; Walter Luscher, Pacific Northwest National Laboratory

2:00 PM
Microstructure and Phase Stability of Oxide Dispersion Strengthened Steels: *Brad Baker*[1]; Keith Knipling[2]; [1]U.S. Naval Academy; [2]U.S. Naval Research Laboratory

2:20 PM
Development of Fe-12Cr-5.6Al ODS Alloys for Nuclear Applications: *Caleb Massey*[1]; David Hoelzer[2]; Kinga Unocic[2]; Sebastien Dryepondt[2]; Chad Parish[2]; Bruce Pint[2]; [1]Virginia Commonwealth University; [2]Oak Ridge National Laboratory

2:40 PM
Development of ODS FeCrAl Alloys for Accident-tolerant Fuel Cladding: *Sebastien Dryepondt*[1]; Caleb Massey[2]; Kinga Unocic[1]; Dave Hoelzer[1]; Chad Parish[1]; Bruce Pint[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory; [2]Virginia Commonwealth University

3:00 PM
Laser Shock Peening of Oxide-Dispersion-Strengthened Austenitic Stainless Steels: *Bai Cui*[1]; Qiaofeng Lu[1]; Chenfei Zhang[1]; Dawei Li[1]; Yongfeng Lu[1]; Qing Su[1]; Michael Nastasi[1]; [1]University of Nebraska–Lincoln

3:20 PM Break

3:40 PM
Bulk Extraction and XAS Characterization of Oxides in Nanostructured Ferritic Alloy MA957: *Tiberiu Stan*[1]; David Sprouster[2]; Avishai Ofran[2]; Lynne Ecker[2]; George Odette[1]; [1]University of California Santa Barbara; [2]Brookhaven National Laboratory

4:00 PM
Temperature Effect of Microstructural Evolution in Advanced Nanostructured Alloys by in-situ Synchrotron X-ray Diffraction: *Yingye Gan*[1]; Huijuan Zhao[1]; Di Yun[2]; Kun Mo[2]; David Hoelzer[3]; Xiang Liu[4]; Kuan-Che Lan[4]; Yinbin Miao[4]; [1]Clemson University; [2]Argonne National Lab; [3]Oak Ridge National Laboratory; [4]UIUC

4:20 PM
Texturing, Microcracking and Delamination in 14YWT Nanostructured Ferritic Alloys: *Soupitak Pal*[1]; Md Ershadul Alam[1]; David Gragg[1]; G. Odette[1]; Stuart Maloy[2]; David Hoelzer[3]; John Lewandowski[4]; [1]University of California Santa Barbara; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory; [4]Case Western Reverse University

4:40 PM
Thermal Stability of Nanoscale Hardening Features in Irradiated Reactor Pressure Vessel Steels: *Peter Wells*[1]; Nathan Almirall[1]; Yuan Wu[1]; David Gragg[1]; G. Odette[1]; Takuya Yamamoto[1]; [1]UC Santa Barbara

Materials in Clean Power Systems IX: Durability of Materials — Materials Development for Clean Power Systems

*Sponsored by:*TMS Extraction and Processing Division, TMS Structural Materials Division, TMS Light Metals Division, TMS: Energy Committee, TMS: High Temperature Alloys Committee
Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Peter Hosemann, University of California Berkeley; Kinga Unocic, ORNL; Paul Jablonski, US Department of Energy; Joseph Licavoli, Department of Energy; Donna Guillen, Idaho National Laboratory

Wednesday PM
February 17, 2016
Room: 104D
Location: Music City Center

Session Chairs: Paul Jablonski, NETL; Peter Tortorelli, ORNL

2:00 PM Invited
Precipitation Dynamics and the Role of Microstructural Changes in the Development of Alumina-Forming Austenitic Stainless Steels: *Geneva Trotter*[1]; Ian Baker[1]; [1]Thayer School of Engineering, Dartmouth College

2:30 PM Invited
Development of Creep Resistant High Cr containing FeCrAl Ferritic Alloys for Fossil Energy Applications: *Yukinori Yamamoto*[1]; Bruce Pint[1]; Benjamin Shassere[2]; Sudarsanam Babu[2]; [1]Oak Ridge National Laboratory; [2]The University of Tennessee

3:00 PM
High Temperature Oxidation and Mechanical Properties of Novel Al-containing Fe-based ODS Alloys: *Tyler Slinger*[1]; Iver Anderson[1]; [1]Ames Lab/Iowa State University

3:20 PM Invited
Heat Resistant Alloy Development for Fossil Energy Power Generation: *Jeffrey Hawk*[1]; Paul Jablonski[1]; Gordon Holcomb[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

3:50 PM Break

4:10 PM
Electrodeposition of MCrAlY and Pt-Modified MCrAlY Coatings for Gas-Turbine Engine Applications: Jason Witman[1]; Brian Bates[1]; *Ying Zhang*[1]; Sebastien Dryepondt[2]; Bruce Pint[2]; [1]Tennessee Technological University ; [2]Oak Ridge National Laboratory

4:30 PM
Characterization of Titanium Thin-Film Liquid/Gas Diffusion Layer in Clean and Renewable Power Systems: *Zhenye Kang*[1]; Jingke Mo[1]; Bo Han[1]; Feng-Yuan Zhang[1]; [1]UT Space Institute, The University of Tennessee, Knoxville

4:50 PM
Mechanical Characterization of Solid Acid Materials for Intermediate Temperature Fuel Cells: *Ryan Ginder*[1]; George Pharr[2]; [1]University of Tennessee at Knoxville; [2]University of Tennessee at Knoxville & Oak Ridge National Laboratory

5:10 PM
Development of HfB2-ZrB2 Based Ceramics as High Temperature Electrode Materials for MHD Direct Power Extraction System: Cody Hill[1]; Steven Sitler[1]; Krishnan Raja[1]; *Indrajit Charit*[1]; [1]University of Idaho

Materials Processing Fundamentals — Forming, Joining, Sensing: Devices and Applications

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Laura Bartlett, Texas State University; Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

Wednesday PM
February 17, 2016

Room: 106B
Location: Music City Center

Session Chairs: Cong Wang, Northeastern University,; Jonghyun Lee, University of Massachusetts

2:00 PM
Multiscale Modelling of Hydrogen Transport in Martensitic Steels: *Andrej Turk*[1]; David Bombac[1]; Enrique Galindo-Nava[1]; Pedro Rivera-Diaz-del-Castillo[1]; [1]University of Cambridge

2:20 PM
Contactless Inductive Flow Tomography for Industrially Relevant Applications: *Thomas Wondrak*[1]; Matthias Ratajczak[1]; Frank Stefani[1]; Josef Pal[1]; Klaus Timmel[1]; Sven Eckert[1]; [1]Helmholtz-Zentrum Dresden-Rossendorf

2:40 PM
Ultrasonic Vibration-assisted Laser Surface Drilling: Experimental and Finite Element Analysis: *Seyyed Habib Alavi*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

3:00 PM
Evaluation of Joint Performance on High Nitrogen Stainless Steel which is Expected to Have Higher Allergy Resistance: *Kouichi Nakano*[1]; [1]Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology

3:20 PM Break

3:40 PM
Mechanical Characterization and Microstructure Formation when Joining Stainless Steels with Amorphous Brazing Foils: *David Kemmenoe*[1]; Eric Theisen[2]; Shefford Baker[3]; [1]Cornell University Mechanical Engineering; [2]Metglas Incorporated; [3]Cornell University Department of Material Science

4:00 PM
Co-spray Forming Process of Supermartensitic Stainless Steel Based Bimetallic Pipes: *Guilherme Zepon*[1]; Nils Ellendt[2]; Volker Uhlenwinkel[2]; Claudemiro Bolfarini[3]; [1]Post-Graduation Program of Materials Science and Engineering (PPG-CEM/UFSCar); [2]Foundation Institute of Materials Science (IWT- Bremen University); [3]Departament of Materials Engineering (DEMa/UFSCar)

4:20 PM
Graphite Enhanced Workability of Aluminum 6061: Lourdes Salamance-Riba[1]; Xiaoxiao Ge[1]; Iftekhar Jaim[1]; Marc Zupan[1]; Rick Everett[1]; Mitch Zavala[1]; *Manfred Wuttig*[1]; [1]University of Maryland

Materials Research in Reduced Gravity — Ground-based/Parabolic Aircraft/Sounding Rocket Testing

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Hani Henein, University of Alberta; Robert Hyers, Boston Electrometallurgical Corp.; Ivan Egry, DLR

Wednesday PM
February 17, 2016

Room: 104C
Location: Music City Center

Session Chairs: Douglas Matson, Tufts University; Jonghyun Lee, University of Massachusetts

2:00 PM Invited
Crystal Nucleation and Growth from Levitated Aqueous Solutions Using Electrostatic Levitation: *Geun Woo Lee*[1]; Sooheyong Lee[1]; Haeng Sub Wi[1]; Wonhyuk Jo[1]; Yong Chan Cho[1]; Hyun Hwi Lee[2]; Se-Young Jeong[3]; Yong-Il Kim[1]; [1]Korea Research Institute of Standards and Science; [2]Pohang Accelerator Laboratory; [3]Pusan National University

2:30 PM
Rapid Quench in an Electrostatic Levitator: *Michael SanSoucie*[1]; Jan Rogers[1]; Douglas Matson[2]; [1]NASA MSFC; [2]Tufts University

2:50 PM
Metastable Phase Formation from Undercooled Melt in Peritectic Systems under Terrestrial and Microgravity Conditions: Fe-Co vs. Ti-Al: *Olga Shuleshova*[1]; Wolfgang Löser[1]; Thomas Volkmann[2]; Christian Karrasch[2]; Douglas Matson[3]; Mikhail Krivilyov[4]; Stepan Lomaev[5]; Jan Fransaer[5]; [1]IFW Dresden; [2]German Aerospace Center; [3]Tufts University; [4]Udmurt State University; [5]KU Leuven

3:20 PM
Numerical Simulation of the Oscillation and Damping of Core-Shell-Structured Iron-Slag Droplets for the Measurements of Surface Tension and Viscosity in Reduced Gravity: *Jonghyun Lee*[1]; Eli Baldwin[1]; Kyle Mooney[1]; Robert Hyers[1]; [1]University of Massachusetts

3:40 PM Break

4:00 PM
Simulation of Shrinkage-induced Segregation in Multicomponent Multiphase Alloys during Reduced-gravity Solidification: Ali Saad[1]; *Charles-André Gandin*[1]; Michel Bellet[1]; Thomas Volkmann[2]; Dieter Herlach[2]; [1]ARMINES CEMEF; [2]German Aerospace Center (DLR)

4:20 PM
In Situ Investigation of the Effects of Gravity Level Variations on the Directional Solidification Microstructures during Parabolic Flights: *Lara Abou-Khalil*[1]; Georges Salloum-Abou-Jaoude[2]; Guillaume Reinhart[1]; Christph Pickmann[3]; Ylva Houltz[4]; Jianning Li[4]; Olle Janson[4]; Henri Nguyen-Thi[1]; Gerhard Zimmermann[3]; [1]IM2NP & Aix Marseille university; [2]BCAST; [3]ACCESS e.V; [4]Swedish Space Corporation

4:40 PM
Microstructure Evolution in Undercooled Al-Fe Melts: *Jonas Valloton*[1]; Abdoul-Aziz Bogno[1]; Dieter Herlach[2]; Hani Henein[1]; [1]University of Alberta; [2]Deutsches Zentrum für Luft- und Raumfahrt

5:00 PM
Reduced-gravity Measurements of the Effect of Oxygen on Properties of Zirconium: *Jie Zhao*[1]; Jonghyun Lee[1]; Rainer Wunderlich[2]; Hans Fecht[2]; Stephan Schneider[3]; Michael SanSoucie[4]; Jan Rogers[4]; Robert Hyers[5]; [1]University of Massachusetts; [2]Universität Ulm; [3]DLR / Institut für Materialphysik im Weltraum; [4]NASA MSFC; [5]University of Massachussetts - Amherst

Mechanical Behavior at the Nanoscale III — Dislocation Plasticity and Dislocation-Defects Interactions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Wednesday PM
February 17, 2016

Room: 214
Location: Music City Center

Session Chairs: Joshua Crone, US Army Research Laboratory; Lucas Hale, National Institute of Standards and Technology

2:00 PM Invited
Ab Initio Modeling of Dislocation Core Properties in BCC and HCP Metals: *David Rodney*[1]; Lucile Dezerald[2]; Emmanuel Clouet[3]; Nermine Chaari[3]; Lisa Ventelon[3]; François Willaime[3]; [1]Université de Lyon; [2]Massachusetts Institute of Technology; [3]Commissariat à l'Energie Atomique

2:40 PM
Is the Anomalous Slip in BCC Transition Metals a Consequence of the Transformations of the Core of Screw Dislocations by Applied Stresses?:

Vaclav Vitek[1]; Yi-Shen Lin[1]; [1]University of Pennsylvania

3:00 PM
Effect of Solutes on Dislocation Nucleation from Grain Boundaries in fcc Metals: *Valery Borovikov*[1]; Mikhail Mendelev[1]; Alexander King[1]; [1]The Ames Laboratory

3:20 PM
Stress Statistics and Universal Scaling Exponent Determining Strength-size Scaling at Small Scales: *Robert Maass*[1]; Peter Derlet[2]; [1]University of Illinois at Urbana-Champaign; [2]Paul Scherrer Institute

3:40 PM Break

4:00 PM
On the Relationship among Lattice Misorientation Field, Strain Gradient Effects, and Indentation Size Effects: *Yanfei Gao*[1]; Lucia Nicola[2]; Bennett Larson[3]; George Pharr[1]; [1]Univ of Tennessee; [2]Delft University of Technology; [3]Oak Ridge National Laboratory

4:20 PM
Capturing the Collaborative Strengthening Effects of Dislocations and Nanoscale Obstacles: *Joshua Crone*[1]; [1]US Army Research Laboratory

4:40 PM
Simulations of Orientation Dependence of Strain-Hardening Characteristics and Dislocation Microstructure Evolution in 20, 6 micron Size Ni Microcrystals: *Satish Rao*[1]; Dennis Dimiduk[2]; Michael Uchic[2]; triplicane parthasarathy[3]; Jaafar El-Awady[4]; Ahmed Hussein[4]; William Curtin[1]; [1]EPFL; [2]AFRL; [3]UES Inc.; [4]Johns Hopkins University

5:00 PM
Dynamic Investigations of Dislocation-Self Point Defect Interactions in BCC Metals: *Lucas Hale*[1]; Yuri Mishin[2]; Zachary Trautt Trautt[1]; Chandler Becker[1]; [1]National Institute of Standards and Technology; [2]George Mason University

Metal and Polymer Matrix Composites II — Processing of Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

Wednesday PM
February 17, 2016
Room: 110A
Location: Music City Center

Session Chair: To Be Announced

2:00 PM Invited
Laser Processing of Hybrid Materials for Biomedical Applications: *Roger Narayan*[1]; [1]UNC/NCSU Joint Department of Biomedical Engineering

2:20 PM
Polytetrafluoroethylene-based Composites Containing Multi-walled Carbon Nanotubes Fabricated via Solid-state Mixing and Hot-pressing: *Jiyeon Suh*[1]; Seungwon Kang[1]; Donghyun Bae[1]; [1]Yonsei University

2:40 PM
Surface Characterization of Carbon Fiber Polymer Composites and Aluminum Alloys after Laser Interference Structuring: *Adrian Sabau*[1]; Clayton Greer[2]; Jian Chen[1]; Charles Warren[1]; Claus Daniel[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

3:00 PM
Simulation of Ultrasonic Processing to Fabricate Carbon Nanotube-reinforced Magnesium Composite: *Yuansheng Yang*[1]; Fuze Zhao[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Nanostructured Materials for Nuclear Applications — Session VI

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Wednesday PM
February 17, 2016
Room: 101C
Location: Music City Center

Session Chairs: Khalid Hattar, Sandia National Laboratory; Osman Anderoglu, Los Alamos National Laboratory

2:00 PM Invited
Phase Stability and Solute Redistribution at Metal-oxide Interface under Ion Irradiation: *Nan Li*[1]; Yun Xu[1]; Satyesh Yadav[1]; Jeffery Aguiar[1]; Osman Anderoglu[1]; Yongqiang Wang[1]; Amit Misra[2]; Hongmei Luo[3]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory; [2]University of Michigan, Ann Arbor; [3]New Mexico State University, Las Cruces

2:30 PM
Surface and Interface Effects on Zinc Oxide Nanowires due to Ionizing Radiation: *Daniel Mayo*[1]; Ryan Nolen[2]; Richard Haglund[1]; [1]Vanderbilt University; [2]David Lipscomb University

2:50 PM
Behavior of Twin Boundaries in Nanotwinned Metals under In Situ Heavy Ion Radiation: *Kaiyuan Yu*[1]; Jin Li[2]; Daniel Bufford[3]; Youxing Chen[4]; Mark Kirk[5]; Meimei Li[5]; Haiyang Wang[2]; Xinghang Zhang[2]; [1]China University of Petroleum-Beijing; [2]Texas A&M University; [3]Sandia National Laboratories; [4]Los Alamos National Laboratory; [5]Argonne National Laboratory

3:10 PM
Evolution of Helium Bubbles in Nano-engineered SiC under Irradiation: *Chien-Hung Chen*[1]; Yongqiang Wang[2]; Miguel Crespillo[1]; Cristiano Fontana[3]; Joseph Graham[1]; Steven Shannon[4]; Yanwen Zhang[3]; William Weber[1]; [1]University of Tennessee; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory; [4]North Carolina State University

3:30 PM Break

3:50 PM Invited
Synergistic Effects in Multi-Ion Irradiated Nano-Oxide Dispersed Ferritic Alloys: *Luke Hsiung*[1]; Michael Fluss[1]; [1]Lawrence Livermore National Laboratory

4:20 PM
TEM Characterization of Irradiated and Unirradiated Fe-Cr Steels, Ni-based and and ODS Fe-12Cr-5Al Alloys: *Kinga Unocic*[1]; David Hoelzer[1]; Chad Parish[1]; Mark Bannister[1]; Kevin Field[1]; [1]ORNL

4:40 PM
Preparation and Characterization of Nanostructured UO2 for LWR Fuel Safety Assessment: *Vaclav Tyrpekl*[1]; Marco Cologna[1]; Joseph Somers[1]; [1]EC JRC ITU

5:00 PM
Nanoprecipitates with High Coarsening Resistance in Irradiated Cu-Mo-Si Thin Films: *Jae Yel Lee*[1]; John Beach[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign

Phase Transformations and Microstructural Evolution — Phase Transformations - Titanium Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Wednesday PM
February 17, 2016

Room: 109
Location: Music City Center

Session Chair: Raj Banerjee, University of North Texas

2:00 PM
Integrated Experimental and Computational Investigation of Omega Phase and Omega Phase Assisted Super-refined Alpha Precipitation: *Yufeng Zheng*[1]; Robert Williams[1]; Talukder Alam[2]; Deep Choudhuri[2]; Rongpei Shi[1]; Niraj Gupta[2]; Srinivasan Srivilliputhur[2]; Yunzhi Wang[1]; Rajarshi Banerjee[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

2:30 PM
Efficient Experimental Determination of Diffusion Coefficients and Elastic Modulus for the Ti-Mo-Nb-Ta-Zr System: *Zhangqi Chen*[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

2:50 PM
Alpha Phase Precipitation in Metastable Beta Ti-Nb-Fe Alloys: Fernando Costa[1]; Eder Lopes[1]; *Rubens Caram*[1]; [1]University of Campinas

3:10 PM
There and Back Again: Microstructural Investigations of Forward and Reverse α- ω Phase Transformations in HCP Metals: *Benjamin Morrow*[1]; Carl Trujillo[1]; Francis Addessio[1]; Curt Bronkhorst[1]; Turab Lookman[1]; George Gray[1]; Ellen Cerreta[1]; [1]Los Alamos National Laboratory

3:30 PM Break

3:50 PM
Study of Phase Transitions Occurring in \946-Titanium Alloy Ti-15Mo: *Pavel Zhánal*[1]; Petr Harcuba[1]; Michal Hájek[1]; Jana Šmilauerová[1]; Josef Veselý[1]; [1]Charles University in Prague

4:10 PM
The Influence of Aluminum Content on Recrystallization and Grain Growth in a-titanium Alloys: *Anna Trump*[1]; John Allison[1]; [1]University of Michigan

4:30 PM
In-situ Small-angle Scattering Study of ω Particles Growth in Metastable β Titanium Alloys: *Jana Šmilauerová*[1]; Petr Harcuba[1]; Dominik Kriegner[1]; Miloš Janecek[1]; Václav Holý[1]; [1]Charles University

4:50 PM
Thermal Stability of ω-phase in Pure Ti Formed by High-pressure Torsion Process: *Nozomu Adachi*[1]; Yoshikazu Todaka[1]; Minoru Umemoto[1]; [1]Toyohashi university of technology

5:10 PM
Observation of All 12 Alpha Variants and Strip Microstructure in Multi-component Titanium Alloys: *Hongchao Kou*[1]; Yi Chen[1]; Jiangkun Fan[1]; Yudong Zhang[2]; Bin Tang[1]; Jinshan Li[1]; [1]Northwestern Polytechnical University; [2]Laboratoire d'Étude des Microstructures et de Mécanique des Matériaux (LEM3), CNRS UMR 7239, Université de Lorraine

5:30 PM
Assessment of Tribological Properties of Cast and Forged Ti-6Al-7Nb and Ti-6Al-4V Implants for Dental Application: Ahmed Zaki[1]; *Shimaa El-Hadad*[1]; Waleed Khalifa[2]; [1]Central Metallurgical Research and Development Institiute; [2]Cairo University

Phase Transformations and Microstructural Evolution — Phase Transformations during Non-Equilibrium Processing - Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Wednesday PM
February 17, 2016

Room: 107B
Location: Music City Center

Session Chair: Monica Kapoor, U. Alabama Tuscaloosa

2:00 PM
Effect of Velocity Change on Ternary Eutectic Morphology: *Amber Genau*[1]; Subhojit Chakraborty[1]; [1]University of Alabama at Birmingham

2:20 PM
Mechanical Properties of 5000 Series Aluminum Alloys Following Fire Exposure: *Jillian Free*[1]; Patrick Summers[1]; Brian Lattimer[1]; Scott Case[1]; [1]Virginia Polytechnic Institute and State University

2:40 PM
Effect of Concurrent Microstructure Evolution and Hydrogen Level on Flow Behavior of Near Alpha Ti-alloy: *Jagadeesh Babu S M*[1]; B. P. Kashyap[1]; N. Prabhu[1]; R. Kapoor[2]; R. N. Singh[2]; Bhupendra K Kumawat[2]; J. K Chakravartty[2]; [1]Indian Institute of Technology Bombay; [2]Bhabha Atomic Research Centre

3:00 PM
Isothermal Annealing of Shocked Zirconium: Stability of the \945-\969 2-phase Microstructure: *Thaddeus Song En Low*[1]; Donald Brown[2]; Brian Welk[1]; Ellen Cerreta[2]; John Okasinski[3]; Stephen Niezgoda[1]; [1]The Ohio State University; [2]Los Alamos National Laboratory; [3]Argonne National Laboratory

3:20 PM
Microstructure Evolution and Stability of Nanostructured Electrodeposited Al-Mn Alloys upon Heating: *Ting-Yun Huang*[1]; Christopher Schuh[1]; [1]MIT

3:40 PM Break

4:00 PM
Phase Field Modelling of Microstructural Evolution in Titanium Alloy Welds: *David Wu*[1]; Nathaniel Ng[1]; Adele Lim[1]; Mark Wong[1]; Siu Sin Quek[1]; Rajeev Ahluwalia[1]; [1]Institute of High Performance Computing, A*STAR

4:20 PM
The Effect of Cooling Rate on the Microstructure and Mechanical Properties of Thin Wall Ductile Iron Castings: *Alexander Reinl*[1]; [1]Michigan Technological University

4:40 PM
Using Temporary Hydride Formation in Metastable Beta Titanium Alloys to Improve the Microstructure: *Hans-Juergen Christ*[1]; Vitali Macin[1]; [1]University of Siegen

5:00 PM
Numerical Simulation of Solidification Microstructure with Active Fiber Cooling for Making Fiber-Reinforced Aluminum Matrix Composites: *Zhiliang Yang*[1]; Bo Wang[1]; Shupei Liu[1]; Jie Ma[1]; Wanping Pan[1]; Shuai Feng[1]; Liang Bai[1]; Jieyu Zhang[1]; [1]shanghai university

5:20 PM
Interplay of Substrate Interaction, Electric Field and Confinement on Microphase Separation of Diblock Copolymers: *Arnab Mukherjee*[1]; Rajdip Mukherjee[2]; Kumar Ankit[3]; Avisor Bhattacharya[1]; Britta Nestler[3]; [1]Karlsruhe University of Applied Sciences; [2]Indian Institute of Technology Kanpur; [3]Karlsruhe Institute of Technology

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Use of Advanced Tools to Understand Phase Transformations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

Wednesday PM
February 17, 2016
Room: 110B
Location: Music City Center

Session Chairs: Robert Hackenberg, Los Alamos National Laboratory; Hatem Zurob, McMaster University

2:00 PM
A Correlative Six-dimensional Study of Phase Separation: Atom-probe Tomographic Measurements and Vacancy-mediated Lattice Kinetic Monte Carlo Simulations: *David Seidman*[1]; [1]Northwestern University

2:20 PM
An In-situ TEM Investigation of a Reverse Martensite Transformation in an Fe-20Ni-5.4Mn Alloy: Frédéric Mompiou[1]; Jing Wu[2]; *Wenzheng Zhang*[2]; [1]CEMES-CNRS; [2]Tsinghua University

2:40 PM
Analyzing Internal Interfaces Chemistry down to the Atomic Scale: *Frederic Danoix*[1]; Xavier Sauvage[1]; Mohamed Goune[2]; Claire Debreux[1]; Fabien Cuvilly[1]; Thomas Sourmail[3]; [1]CNRS - Université de Rouen; [2]ICMCB Bordeaux ; [3]CREAS - AscoIndustries

3:00 PM
Evolution of Mn/Cr Composition Gradients in Cementite during Annealing of DP Steels: *Marc Moreno*[1]; Hugo Van Landeghem[1]; Jaafar Ghanbaja[1]; Julien Teixeira[1]; Frédéric Bonnet[2]; Sébastien Allain[1]; [1]Institut Jean Lamour; [2]Arcelormittal

3:20 PM Break

3:40 PM Invited
Kinetics of Decomposition in Fe-Cr Alloys and Refractory Carbides: *Joakim Odqvist*[1]; [1]KTH Royal Institute of Technology

4:10 PM
Segregation and Nanoscale Precipitation in Multi-component Fe-Cu Based Steel: *Zhongwu Zhang*[1]; [1]Harbin Engineering University

4:30 PM
Effects of Internal Oxidation on Microstructure in Ni Alloy 600: *Brian Langelier*[1]; Suraj Persaud[2]; Roger Newman[2]; Gianluigi Botton[1]; [1]McMaster University; [2]University of Toronto

4:50 PM
High Throughput Screening of Phase Transformation in Multi-component Ti Alloys: Kinetic Diffusion Multiple: *Bin Tang*[1]; [1]Northwestern Polytechnical University

5:10 PM Concluding Comments

Powder Metallurgy of Light Metals — Additive Manufacturing of Ti and Mg and Ti Powder Metallurgy -- Microstructure and Mechanical Properties

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Zhigang Fang, University of Utah ; Qian Ma, RMIT University

Wednesday PM
February 17, 2016
Room: 205C
Location: Music City Center

Session Chairs: Rajiv Tandon, Magnesium Elektron Powders; Ian Donaldson, GKN Sinter Metals LLC

2:00 PM Invited
Microstructure and Mechanical Properties of Ti-6Al-4V Additively Manufactured by Selective Electron Beam Melting: *Huiping Tang*[1]; Shenglu Lu[1]; Jian Wang[1]; [1]Northwest Institute for Non-ferrous Metal Research

2:30 PM Invited
Advances in Additive Manufacturing of Magnesium: *Rajiv Tandon*[1]; [1]Magnesium Elektron Powders

3:00 PM
Processing-structure-property Relations in Powder Metallurgy Mg97Zn1Y2 Alloys: *R Sadangi*[1]; D Kapoor[2]; T Zahrah[3]; R Tandon[4]; D Madan[4]; [1]Armament Research Development Engineering Center; [2]Armament Research Development Engineering Center; [3]MATSYS, Inc.; [4]Magnesium Electron Powder Products

3:20 PM Break

3:40 PM Invited
Implementation of Titanium Powder Metallurgy for Airframe Applications: *Kathleen Chou*[1]; James Cotton[1]; Kevin Slattery[1]; [1]The Boeing Company

4:10 PM
High Performance Titanium Alloys with Wrought-like Microstructures and Mechanical Properties Produced by Hydrogen Sintering and Phase Transformation (HSPT): *James Paramore*[1]; Brady Butler[2]; Matt Dunstan[1]; Z. Zak Fang[1]; Pei Sun[1]; Mark Koopman[1]; [1]University of Utah; [2]United States Army Research Laboratory

4:30 PM
Mechanism of Microstructural Refinement of Ti-6Al-4V during Hydrogen Sintering and Phase Transformation (HSPT): *Pei Sun*[1]; Zhigang Fang[1]; Mark Koopman[1]; James Paramore[1]; K.S. Ravi Chandran[1]; [1]University of Utah, Dept of Metallurgical Engineering

4:50 PM
Dehydrogenation Kinetics of Hydrogen Sintered Titanium: *Matt Dunstan*[1]; James Paramore[1]; Z. Zak Fang[1]; Mark Koopman[1]; Pei Sun[1]; [1]University of Utah

REWAS 2016 — Understanding & Enabling Sustainability - Education Research Innovation

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

Wednesday PM
February 17, 2016
Room: 104B
Location: Music City Center

Session Chair: To Be Announced

2:00 PM To be announced.

2:25 PM
The Material Life Cycle: A Steering Wheel for Europe's Raw Materials Academy: *Eric Pirard*[1]; Jenny Greberg[2]; [1]Universite de Liege; [2]Lulea University of Technology

2:50 PM
Teaching Sustainable Development and Recycling to First-Year Students -- The Ignition Point in the Academic Journey: *Diran Apelian*[1]; [1]Worcester Polytechnic Institute

3:15 PM
The Educational Aspects of Sustainability Related on Japan: *Toyohisa Fujita*[1]; [1]The University of Tokyo

3:40 PM Break

4:25 PM
Towards a Resource Resilient Society via the Triple Helix Concept: A Story of Transition, Collaboration and Innovation: Tom Hennebel[1]; Diran Apelian[2]; Christina Meskers[3]; Karolien Vasseur[1]; Marleen Esprit[1]; *Maurits Van Camp*[1]; [1]Umicore Group Research & Development; [2]Worcester Polytechnic Institute; [3]Umicore Precious Metals Refining

4:50 PM
Current State of Sustainability Education and Research for Materials Science and Engineering in Korea: *Il Sohn*[1]; [1]Yonsei University

Strip Casting of Light Metals — Strip Casting: Properties

Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht; Jan Bohlen, Helmholtz-Zentrum Geesthacht; Murat Dundar, Assan Aluminium

Wednesday PM
February 17, 2016

Room: 203A
Location: Music City Center

Session Chairs: Murat Dundar, Assan Aluminum; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht

2:00 PM Introductory Comments

2:05 PM
Substitution of Rare Earth Elements in Magnesium Alloys for the Sheet Production via Twin Roll Casting: *Gerrit Kurz*[1]; Tom Petersen[1]; Ibai Portugal Gonzales[1]; Roland Hoppe[1]; Dietmar Letzig[1]; [1]Helmholtz-Zentrum Geesthacht

2:25 PM
Crystallographic Texture Development of As-cast 3105 Alloy Produced by St/Cu Shell Pair: *Hatice Mollaoglu Altuner*[1]; Cemil Isiksaçan[1]; Onur Birbasar[1]; Mert Günyüz[1]; Onur Meydanoglu[1]; [1]Assan Alüminyum San. Tic. AS

2:45 PM
Annealing Curve of 3105 Alloy Produced by Twin Roll and Belt Casting Method: *Dionisios Spathis*[1]; John Tsiros[1]; Andreas Mavroudis[1]; [1]Hellenic Aluminium Industry (ELVAL SA)

3:05 PM
Effect of Heat Treatment on Tensile and Fatigue Properties of Al 3527K Alloy Manufactured by Twin Roll Strip Casting: *Min-Seok Baek*[1]; Gi-Su Ham[1]; Kwang-Jun Euh[2]; Young-Mok Rhyim[2]; Kee-Ahn Lee[1]; [1]Andong National University; [2]Korea Institute of Materials Science

3:25 PM Break

3:55 PM
Effect of As-cast Strip Thickness and Reduction Prior to Soft Annealing on the Formability of Twin-roll Cast 5754 Sheets: *Onur Meydanoglu*[1]; Cemil Isiksaçan[1]; Mert Günyüz[1]; Onur Birbasar[1]; Hatice Mollaoglu Altuner[1]; [1]Assan Alüminyum San. Tic. AS

4:15 PM
Microstructure and Mechanical Properties of Ca Containing AZX310 Alloy Sheets Produced via Twin Roll Casting Technology: *Sangbong Yi*[1]; Junho Park[2]; Dietmar Letzig[1]; Oh Duck Kwon[2]; Karl Ulrich Kainer[1]; Jae Joong Kim[2]; [1]Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung; [2]POSCO

4:35 PM Poster Previews

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Database Development and Experimental Measurements

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Wednesday PM
February 17, 2016

Room: 106A
Location: Music City Center

Session Chairs: Pekka Taskinen, Aalto University; Stephan Petersen, GTT-Technologies

2:00 PM
Thermodynamic Assessments of the Nd-Fe-B-C and Nd2O3-SiO2-CaO-Al2O3 Systems: *Kai Tang*[1]; Yuyang Bian[1]; Thu Hoai Le[1]; [1]SINTEF Materials and Chemistry

2:20 PM
Measurement of the Thermodynamic Properties of Rare Earth Oxide Melts: *Bradley Nakanishi*[1]; Guillaume Lambotte[2]; Antoine Allanore[1]; [1]Massachusetts Institute of Technology; [2]University of Massachusetts Amherst

2:40 PM
An Experimental and Thermodynamic Investigation of the Iron Saturated FeO-B_2O_3-Nd_2O_3 System: *Lars Klemet Jakobsson*[1]; Gabriella Tranell[1]; In-Ho Jung[2]; [1]Norwegian University of Science and Technology; [2]McGill University

3:00 PM
Thermodynamics of Gaseous Metal Hydroxides: A Review: *Elizabeth Opila*[1]; [1]University of Virginia

3:20 PM
Searching L12 phase in Ternary and Quaternary Super Alloy Compositions (Ni-Al-Co-Ti): *Surendra Saxena*[1]; Selva Vennila Raju[1]; Krishna Rajan[2]; Rupa Dumpala[3]; Scott Broderick[3]; [1]Florida Int University; [2]University at Buffalo-State University of New York; [3]Iowa State University

3:40 PM Break

4:00 PM Keynote
MTDATA and the Prediction of Phase Equilibria in Oxide Systems: Thirty Years of Industrial Collaboration: *John Gisby*[1]; Pekka Taskinen[2]; Hugh Davies[1]; Zushu Li[3]; Jonathan Pearce[1]; Jouni Pihlasalo[4]; Jim Robinson[1]; Mark Tyrer[5]; [1]National Physical Laboratory; [2]Aalto University; [3]Tata Steel R&D; [4]Outotec Research Center, Pori; [5]Mineral Industry Research Organisation

4:40 PM
A New FactSage Optimization Tool and Its Application in the Assessment of Multicomponent Alkali-containing Oxide Systems: *Evgenii Nekhoroshev*[1]; Sergei Decterov[1]; [1]CRCT

5:00 PM
Prediction of the Thermal Conductivity of Oxide Microstructures by a New Self Consistent Thermodynamics Method Supported by First Principle Calculations: *Aimen Gheribi*[1]; Chartrand Patrice[1]; [1]Ecole Polytechnique de Montreal

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Non-Ferrous Applications II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Wednesday PM
February 17, 2016

Room: 106C
Location: Music City Center

Session Chairs: John Morral, The Ohio State University; Alexander Pisch, Lafarge LCR

2:00 PM Keynote
Thermochemical Modeling in Industry – A 30-Year Perspective: *R. Diemer*[1]; [1]University of Delaware

2:40 PM
Use of Thermodynamic Modelling for Selection of Electrolyte for Electrorefining of Mg from Al Alloy Melts: Adam Gesing[1]; *Subodh Das*[1]; Raouf Loutfy[2]; [1]Phinix,LLC; [2]MER Corporation

3:00 PM
Application of Thermodynamic Calculations on the Pyro-refining Process of High Purity Bismuth: *Mohammad-Mezbahul Islam*[1]; Patrice Chartrand[2]; Frederic Belanger[1]; In-Ho Jung[3]; Pascal Coursol[1]; [1]5N Plus Inc.; [2]École Polytechnique de Montréal; [3]McGill University

3:20 PM Break

Ultrafine Grained Materials IX — High Pressure Torsion Studies I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Wednesday PM
February 17, 2016

Room: 209B
Location: Music City Center

Session Chairs: Zenji Horita, Kyushu University; Julian Rosalie, Erich Schmid Institute for Materials Science

2:00 PM Invited
High-Pressure Torsion from 1935 to 1988: *Kaveh Edalati*[1]; Zenji Horita[1]; [1]Kyushu University

2:30 PM Invited
Microstructure Evolution, Phase Stability and Mechanical Behavior of Ultra-fine Grained AlFeNiCuCoCr High Entropy Alloy Processed by Severe Plastic Deformation: Baolong Zheng[1]; Zhiqiang Fu[1]; Lilia Kurmanaeva[2]; Yaojun Lin[3]; Julia Ivanisenko[4]; Yizhang Zhou[1]; Fei Chen[3]; Horst Hahn[4]; Lianmeng Zhang[3]; *Enrique Lavernia*[1]; [1]University of California, Irvine; [2]University of California, Davis; [3]Wuhan University of Technology,; [4]Karlsruhe Institute of Technology (KIT)

3:00 PM
New Advances in High Pressure Torsion Processing: *Anton Hohenwarter*[1]; Reinhard Pippan[2]; [1]Department of Materials Physics, Montanuniversität Leoben, Austria; [2]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

3:20 PM
Mechanical Alloying of Magnesium-manganese Alloys via High-pressure Torsion: *Julian Rosalie*[1]; Zaoli Zhang[1]; [1]Erich Schmid Institute for Materials Science

3:40 PM Break

4:00 PM Invited
Work-Hardening Induced Tensile Ductility of Bulk Metallic Glasses via High-Pressure Torsion: *Hyoung Seop Kim*[1]; Soo Hyun Joo[1]; [1]POSTECH

4:30 PM
Peculiar Mechanical Properties and Microstructures of CoCrFeNiMn High Entropy Alloy after High Pressure Torsion at 300 K and 77 K: Aleksey Podolskiy[1]; Elena Tabachnikova[1]; *Erhard Schafler*[2]; Christian Rentenberger[2]; Bertalan Joni[3]; Stefan Maier[2]; M. Tikhonovsky[4]; A. Tortika[4]; Tamas Ungar[3]; Michael Zehetbauer[2]; [1]B. Verkin Institute for Low Temperature Physics & Engineering; [2]University of Vienna; [3]Eötvös Lorand University Budapest; [4]Kharkov Institute of Physics and Technology

4:50 PM
Substantially Reduced Elastic Modulus in Nanocrystalline Tantalum Processed by High Pressure Torsion: Jonnathan Ligda[1]; Brian Schuster[1]; Laszlo Kecskes[1]; *Qiuming Wei*[2]; [1]US-ARL; [2]University of North Carolina at Charlotte

Ultrafine Grained Materials IX — Powder Processing Studies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Wednesday PM
February 17, 2016

Room: 209A
Location: Music City Center

Session Chairs: Raj Sadangi, U.S. Armament Research Development Engineering Center; Deliang Jiang, Shanghai Jiao Tong University

2:00 PM Invited
Recrystallization during Thermomechanical Consolidation of Nanostructured Metallic and Metal Matrix Nanocomposite Powders: *Deliang Zhang*[1]; Dengshan Zhou[1]; Jiamiao Liang[1]; Xun Yao[1]; Yifeng Zheng[1]; [1]Shanghai Jiao Tong University

2:30 PM
Deformation Behavior of Ultrafine Grained Tungsten from Powder Metallurgy Processes: *Brady Butler*[1]; Tomoko Sano[1]; Jonathan Ligda[1]; [1]U.S. Army Research Laboratory

2:50 PM
Microstructure and Mechanical Properties of AA5083 Produced through Cryogenic Attrition and HIP: *Clara Hofmeister*[1]; Le Zhou[1]; Frank Kellogg[2]; Anit Giri[3]; Tony Zahrah[4]; Kyu Cho[5]; Yongho Sohn[1]; [1]University of Central Florida; [2]Bowhead Science and Technology; [3]TKC Global; [4]Matsys Inc; [5]U.S. Army Research Laboratory

3:10 PM
Consolidation of Copper/Copper Oxide Nanoparticles by Spark Plasma Sintering
: *Takahiro Kunimine*[1]; Hisashi Sato[2]; Motoko Yamada[2]; Yoshimi Watanabe[2]; Nobuhiro Tsuji[1]; [1]Kyoto University; [2]Nagoya Institute of Technology

3:30 PM Break

3:50 PM Invited
Elevated Temperature Mechanical Behavior of Cryomilled UFG Al-Cu-Mg-Ag Alloys: *Troy Topping*[1]; Lilia Kurmanaeva[2]; Hanry Yang[3]; Julie Schoenung[4]; Enrique Lavernia[4]; [1]California State University, Sacramento; [2]University of California, Davis; [3]Washington State University; [4]University of California, Irvine

4:20 PM
Study of Sm-Fe Alloy Powders Prepared by Cryomilling in Liquid Nitrogen: *Bin Yang*[1]; [1]University of Science and Technology Beijing

4:40 PM
Solid Hydrocarbon Assisted Reduction: A Novel Approach to Generation of Sub-micron and Nano-metal Particles: *Jonathan Phillips*[1]; [1]Naval Postgraduate School

5:00 PM
Mechanical Behavior of UFG-Al/B4C Composites Tubes Produced by Severe Plastic Deformation Consolidation of Powders: *Hamid Alihosseini*[1]; Kamran Dehghani[1]; [1]amirkabir university of technology

5:20 PM
Effect of Process Control Agents on Composition, Structure, and Properties of Mechanically Alloyed Powders: *R Sadangi*[1]; D Kapoor[2]; T Zahrah[3]; [1]Armament Research Development Engineering Center; [2]Armament Research Development Engineering Center; [3]MATSYS Inc

7th International Symposium on High Temperature Metallurgical Processing — Characterization and Simulation of High Temperature Process

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Thursday AM
February 18, 2016
Room: 105B
Location: Music City Center

Session Chairs: Baojun Zhao, The University of Queensland; Tarasankar DebRoy, The Pennsylvania State University

8:30 AM Introductory Comments

8:35 AM
Heat and Fluid Flow Modeling to Examine 3D-Printability of Alloys: Tuhin Mukherjee[1]; James Zuback[1]; Amitava De[1]; *Tarasankar DebRoy*[1]; [1]The Pennsylvania State University

8:55 AM
Characterization of Iron-bearing Dust Pellet in Composite Agglomeration Process (CAP): Zhuyin Chen[1]; Bingbing Liu[1]; Chen Liu[1]; Xiao Kang[1]; *Yuanbo Zhang*[1]; [1]Central South University

9:15 AM
Evaluation of Heat Flow and Thermal Stratification in a Steelmaking Ladle through Mathematical Modelling: *Varadarajan Seshadri*[1]; Izabela Duarte[2]; Itavahn Alves da Silva[2]; Carlos Antonio da Silva[2]; [1]Universidade Federal de Minas Gerais; [2]Universidade Federal de Ouro Preto

9:35 AM
Viscous and Crystallization Characteristics of CaO-SiO2-MgO-Al2O3-FetO-P2O5-(CaF2) Steelmaking Slags: *Zhanjun Wang*[1]; Zuotai Zhang[2]; Yongqi Sun[2]; Min Guo[1]; Mei Zhang[1]; [1]University of Science and Technology Beijing; [2]Peking University

9:55 AM
Microstructure and Texture Evolution of Different High Manganese Cast Steels during Hot Deformation and Subsequent Treatment: Mohammad Masoumi[1]; *Waydson Ferreira*[1]; Hamilton de Abreu[1]; [1]Universidade Federal do Ceara

10:15 AM Break

10:30 AM
Online Temperature Measurement System for Process Control and Endpoint Detection: Goran Vukovic[1]; *Klaus Gamweger*[1]; Bojan Zivanovic[1]; Bob Drew[1]; [1]RHI AG

10:50 AM
Dynamic Thermal Simulation Study of Copper Slag Dilution under Direct Current Field: *Zhang Jing*[1]; Sun Ying[1]; Li Qiuju[1]; [1]Shanghai University

11:10 AM
Analysis of Turbulence at the Metal / Slag Interface in the Meniscus Region of a Continuous Casting Mold through Physical and Mathematical Modelling: *Varadarajan Seshadri*[1]; Jose de Arruda[2]; Amanda Arruda[2]; Samuel de Souza[2]; Carlos Antonio da Silva[2]; Itavahn Alves da Silva[2]; [1]Universidade Federal de Minas Gerais; [2]Universidade Federal de Ouro Preto

11:30 AM
Computer Simulation of Copper Smelting with FCS Slags: *Chen Wang*[1]; [1]Central South University

11:50 AM
Study on the Properties and Damage Analysis on the Lining Used in Cooling Section of Coke Dry Quench Furnaces: *Guotao Xu*[1]; [1]Wuhan Iron and Steel Group Company

7th International Symposium on High Temperature Metallurgical Processing — Utilization of Complex Ores

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Thursday AM
February 18, 2016
Room: 105A
Location: Music City Center

Session Chairs: Varadarajan Seshadri, Universidade Federal de Minas Gerais; Guanghui Li, Central South University

8:30 AM Introductory Comments

8:35 AM
Characterization of Sulfidation Roasting of an Iron-rich Manganese Oxide Ore with Elemental Sulfur: Tao Jiang[1]; Li Qin[1]; Zhixiong You[1]; Yuanbo Zhang[1]; *Guanghui Li*[1]; [1]School of Minerals Processing and Bioengineering, Central South University

8:55 AM
Research on Recovering Iron Oxide from the Iron, Tin-bearing Tailings: Jun Chen[1]; Zijian Su[1]; *Yuanbo Zhang*[1]; Yingming Chen[1]; Bingbing Liu[1]; [1]Central South University

9:15 AM
A Study on the Characterization of Nickel Laterites of Central Anatolia: *Ender Keskinkilic*[1]; Saeid Pournaderi[2]; Ahmet Geveci[3]; Yavuz A. Topkaya[3]; [1]Atilim University; [2]Karadeniz Technical University; [3]Middle East Technical University

9:35 AM
Recovery of Powdered Metallic Iron from Ludwigite Ore via Reductive Roasting with Sodium Salts-Magnetic Separation: *Guanghui Li*[1]; Huanpeng Mi[1]; Binjun Liang[1]; Zhiwei Peng[1]; Yuanbo Zhang[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

9:55 AM
Selective Reduction of TiO2-SiO2 in the Preparation of Titanium Oxycarbide through Carbothermal Reduction of Titanium Raw Materials: *Jiusan Xiao*[1]; Bo Jiang[1]; Kai Huang[1]; Shuqiang Jiao[1]; Hongmin Zhu[1]; [1]University of Science and Technology Beijing

10:15 AM Break

10:30 AM
Kinetic Study on the Pyrolysis of Low Grade Coals: *Ruiling Du*[1]; [1]University of Science and Technology Beijing

10:50 AM
Salt Roasting of Nickel Sulfide Concentrate Using KCl: *Changyuan Lu*[1]; xingli zou[1]; Xionggang Lu[1]; [1]Shanghai University

11:10 AM
Research on Leaching of Zinc Sulfide Ores through Synergistic Coordination: *Kun Yang*[1]; Shiwei Li[1]; Jinhui Peng[1]; Libo Zhang[1]; Aiyuan Ma[1]; Weiheng Chen[1]; Feng Xie[1]; [1]Kunming University of Science and Technology

11:30 AM
Effect of Compound Additives on Synthetic Magnesium Aluminate Spinel under Low Temperature: Xiaoyan Xiang[1]; *Wentang Xia*[1]; [1]University of Science and Technology

11:50 AM
Microwave Thermal Prereduction with Carbon and Leaching of Chromite Ore Fines: *Qin Guo*[1]; Linqing Dai[1]; Lei Li[1]; Shenghui Guo[1]; Jinhui Peng[1]; Libo Zhang[1]; [1]Kunming University of Science and Technology

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

*Sponsored by:*TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Thursday AM
February 18, 2016
Room: 101B
Location: Music City Center

Session Chair: Dennis Keiser, Idaho National Laboratory

8:30 AM Invited
Observed U-Mo Alloy Microstructures After Irradiation in the Advanced Test Reactor: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Jian Gan[1]; Brandon Miller[1]; Adam Robinson[1]; [1]Idaho National Laboratory

9:00 AM
High-energy Synchrotron Radiation Study of Heavy Ion Irradiated U-Mo/Al Dispersion Fuel: *Kun Mo*[1]; Bei Ye[1]; Sumit Bhattacharya[2]; Di Yun[1]; Yinbin Miao[3]; Walid Mohamed[1]; Jonathan Almer[1]; Laura Jamison[1]; Michael Pellin[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Northwestern University; [3]University of Illinois at Urbana-Champaign

9:20 AM
Noble Gas Behavior in Nuclear Fuel and Ceramic Nuclear Waste Forms: *Caitlin Taylor*[1]; Maulik Patel[1]; Yanwen Zhang[2]; Yongqiang Wang[3]; Haizhou Xue[1]; Chien-Hung Chen[1]; Ke Jin[2]; Miguel Crespillo[1]; William Weber[1]; [1]The University of Tennessee-Knoxville; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

9:40 AM
Mechanical Behavior of UO2 at Sub-Grain Length Scales: A Quantification of Creep Properties via High Temperature Mechanical Testing: *Benjamin Shaffer*[1]; Bowen Gong[1]; Harn Chyi-Lim[1]; Robert McDonald[1]; Pedro Peralta[1]; [1]Arizona State University

10:00 AM
Initial Post Irradiation Examination Results of a Novel Fuel Concept with Enhanced Thermal Properties: *Andrew Casella*[1]; David Senor[1]; Edgar Buck[1]; Mehdi Balooch[2]; Peter Hosemann[2]; [1]Pacific Northwest National Laboratory; [2]University of California, Berkeley

10:20 AM Break

10:40 AM Invited
In-Situ Measurement of Tritium Released from Gamma-LiAlO2 Pellets Irradiated in the Advanced Test Reactor: *Walter Luscher*[1]; David Senor[1]; Kevin Clayton[2]; [1]Pacific Northwest National Laboratory; [2]Idaho National Laboratory

11:10 AM
Finite Element Analysis of Micro-cantilever Beam Experiments in UO2: *Bowen Gong*[1]; David Frazer[2]; Harn Chyi Lim[1]; Shaffer Benjamin[1]; Peter Hosemann[2]; Pedro Peralta[1]; [1]Arizona State University; [2]University of California, Berkeley

11:30 AM
An Experimental Study to Elucidate Stage IV Recovery Mechanism of Heavy Ion Irradiated High Purity Molybdenum: *Di Yun*[1]; Jeffrey Terry[2]; Yinbin Miao[3]; Joshua Wright[4]; Kevin Logan[2]; Zhigang Mei[4]; Kun Mo[4]; Walid Mohamed[4]; Bei Ye[4]; Michael Pellin[4]; Abdellatif Yacout[4]; [1]Xi'an Jiao Tong University; Argonne National Laboratory; [2]Illinois Institute of Technology; [3]University of Illinois at Urbana-Champaign; [4]Argonne National Laboratory

11:50 AM
Correlative and Dynamic S/TEM Characterization of Heavily Irradiated Pyrochlores and Fluorites: *Terry Holesinger*[1]; Sanchita Dey[2]; Jeffrey Augiar[3]; Pallas Papin[1]; James Valdez[1]; Yongqiang Wang[1]; Blas Uberuaga[1]; Ricardo Castro[2]; [1]Los Alamos National Laboratory; [2]University of CA-Davis; [3]National Renewable Energy Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Strategies for Qualification in AM II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Thursday AM
February 18, 2016
Room: 205A
Location: Music City Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University

8:30 AM
Study of Material Consolidation at Higher Throughput Parameters in Selective Laser Melting of Inconel 718: *Tracie Prater*[1]; [1]NASA

8:50 AM
Applying Knowledge from Multi-pass Welding to Selective Electron Beam Melting: *Curtis Frederick*[1]; Michael Kirka[2]; Surdarsanam Babu[1]; Ryan Dehoff[2]; Michael Massey[1]; Michael Haines[1]; Edwin Schwalbach[3]; Lee Semiatin[3]; Jonathan Miller[3]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Lab; [3]Air Force Research Lab

9:10 AM
The Effect of Powder Characteristics on the Properties of Powder-bed Binder-jet Printed Inconel 625 Samples: *Amir Mostafaei*[1]; Eamonn Hughes[1]; Shannon Biery[1]; Colleen Hilla[1]; Markus Chmielus[1]; [1]University of Pittsburgh

9:30 AM
Study of Internal Channels Surface Roughness Manufactured by Selective Laser Melting in Aluminum and Titanium Alloys: *Jukka Pakkanen*[1]; Flaviana Calignano[2]; Francesco Trevisan[1]; Massimo Lorusso[2]; Elisa Ambrosio[2]; Diego Manfredi[2]; Paolo Fino[1]; [1]Politecnico di Torino; [2]Istituto Italiano di Tecnologia

9:50 AM
Constitutive and Failure Behaviour in Selective Laser Melted Stainless Steel for Microlattice Structures: *Peifeng Li*[1]; [1]Nanyang Technological University

10:10 AM Break

10:30 AM
Microstructural Characterization and Process Mapping in Beam-Based Additive Manufacturing of Inconel 718: *Luke Sheridan*[1]; John Thompson[1]; Nathan Klingbeil[1]; Gregory Loughnane[2]; [1]Wright State University; [2]Mound Laser & Photonics Center, Inc.

10:50 AM
Microstructural Characterization of Functionally Graded Transition Joints between Dissimilar Metals Obtained with Laser-based Additive Manufacturing: *Ercan Cakmak*[1]; Niyanth Sridharan[2]; Sudarsanam Babu[1];

William Peter[1]; Ryan Dehoff[1]; Thomas Watkins[1]; David Gandy[3]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]Electric Power Research Institute Inc

11:10 AM
Analysis of Microstructure Manipulation of the Parts Fabricated by Additive Manufacturing with the Help of Numerical Modeling Aided by High Performance Computing: *Narendran Raghavan*[1]; Ryan Dehoff[2]; Sudarsanam Babu[1]; Srdjan Simunovic[2]; Neil Carlson[3]; John Turner[2]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

11:30 AM
Optimizing Laser Melting Additive Manufacturing Process for Inconel 718: *Magda Sadowski*[1]; Leila Ladani[1]; [1]University of Connecticut

11:50 AM
High Temperature Mechanical and Electrical Properties of Additively Manufactured Metal Nanoparticle Films: *Md Taibur Rahman*[1]; Amy Wo[1]; C. V. Ramana[2]; Rahul Panat[1]; [1]Washington State University; [2]University of Texas at El Paso

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Permanent Magnets II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Thursday AM
February 18, 2016
Room: 209C
Location: Music City Center

Session Chairs: Mariappan Paranthaman, Oak Ridge National Laboratory; J.Ping Liu, University of Texas-Arlington

8:30 AM
Magnetic Phases in the Systems Mn-Bi, Mn-Sb, and Mn-Bi-Sb: *Peter Kainzbauer*[1]; Martin Marker[2]; Ipser Herbert[2]; [1]Inst. f. anorg. chem. (Materialchemie) / University of Vienna; [2]Inst. f. anorg. chem. (Materialchemie) / University of Vienna

8:50 AM
Optimizing Process Parameters for Additive Manufacturing of Bonded Permanent Magnets: *Mariappan Paranthaman*[1]; Orlando Rios[1]; Huseyin Ucar[1]; Michael McGuire[1]; William Carter[1]; Brett Compton[1]; Cajetan Nlebedim[2]; William McCallum[2]; Scott McCall[3]; [1]Oak Ridge National Laboratory; [2]Ames Laboratory; [3]Lawrence Livermore National Laboratory

9:10 AM
Processes for the Recycling of Rare Earth Permanent Magnets: Roland Gauss[1]; *Oliver Diehl*[1]; Eva Brouwer[1]; Alex Buckow[1]; Konrad Güth[1]; Oliver Gutfleisch[1]; [1]Fraunhofer ISC-IWKS

9:30 AM
Comparison of Grain Boundary Diffusion Processes (GBDP) in Nd-Fe-B Permanent Magnets: *Oliver Gutfleisch*[1]; Simon Sawatzki[1]; Konrad Löwe[1]; Christoph Schwöbel[1]; Tim Helbig[1]; [1]TU Darmstadt

9:50 AM Break

10:10 AM
Rapid Crystallization of Non-equilibrium
Rare-earth and Non-rare-earth Permanent Magnet Materials: *Orlando Rios*[1]; Michael McGuire[1]; Benjamin Conner[1]; William Carter[1]; William McCallum[2]; Cajetan Nlebedim[2]; Matthew Kramer[2]; [1]Oak Ridge National Laboratory; [2]Ames Laboratory

10:30 AM
Rare Earth Lean Nanocrystalline Permanent Magnets: *Zafer Turgut*[1]; [1]AFRL

Aluminum Alloys, Processing and Characterization — Precipitation Behavior

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Thursday AM
February 18, 2016
Room: 201B
Location: Music City Center

Session Chair: Ramasis Goswami, Naval Research Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Effect of Ag and Mg Additions on the Nature of Grain Boundary Precipitates and Fracture Behavior of Al-Cu-Li Alloys
: *Ramasis Goswami*[1]; Noam Bernstein[1]; [1]Naval Research Laboratory

9:00 AM
Characterization of Intragranular Mg-rich Precipitates Formed in Al 5xxx Alloys Aged at 343 K: *Gaosong Yi*[1]; Ken Littrell[2]; Michael Free[1]; [1]University of Utah; [2]Oak Ridge National Laboratory

9:25 AM
The Influence of Low Temperature Clustering on Strengthening Precipitation in Al-Mg-Si Alloys: *Alex Poznak*[1]; Paul Sanders[1]; [1]Michigan Technological University

9:50 AM Break

10:05 AM
Synthesis of Al-TiC Nanocomposites by an In-Situ Gas-Liquid Method: *Inigo Anza*[1]; Mahklouf Mahklouf[1]; [1]Advanced Casting Research Center, Worcester Polytechnic Institute

10:30 AM
Precipitation in the Gradient Nanostructrured Al-Cu-Mg Alloy: *Zongqiang Feng*[1]; Xuan Luo[1]; Tianlin Huang[1]; Guilin Wu[1]; [1]Chongqing University

10:55 AM
Orientation Relationships of Precipitates with the Matrix in an Aluminium Quasicrystalline Alloy: *Franc Zupanic*[1]; Tonica Boncina[1]; Christian Gspan[1]; [1]University of Maribor

Aluminum Reduction Technology — Fundamentals in Chemistry II

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Thursday AM
February 18, 2016
Room: 202B
Location: Music City Center

Session Chair: Guðrún Sævarsdóttir, Reykjavik University

8:30 AM
Alcoa STARProbeTM – Update in Further Development for Measuring Cryolite Properties: *Xiangwen Wang*[1]; [1]Alcoa, Inc.

8:50 AM
Analysis and Visualization of Aluminum Reduction Cell Noise Based on Wavelet Transform: *Anton Verdenik*[1]; [1]TALUM Kidricevo

9:10 AM
Study on Effect of Al-O-C Compound in Alumina Carbonthermal Reduction: *Jun Yang*[1]; Yang Tian[1]; [1]Kunming University of Science and Technology

9:30 AM
The Impact of Alumina Quality on Current Efficiency and Energy Efficiency in Aluminum Reduction: Grant McIntosh[1]; James B. Metson[1]; *Pascal Lavoie*[2]; Thomas Niesenhaus[3]; Till Reek[3]; Linus Perander[4]; [1]Light Metals Research Centre, the University of Auckland; [2]LMRC; [3]TRIMET Aluminium SE; [4]Outotec GmbH & Co

9:50 AM Break

10:05 AM
Sideledge Facing Metal in Aluminium Electrolysis Cells: Preliminary Modelling Study of Bath Film Formation: *Nils-Håvard Giskeødegård*[1]; Asbjørn Solheim[2]; Nancy Jorunn Holt[1]; [1]HYDRO; [2]SINTEF Materials and Chemistry

10:25 AM
Pilot Test of Aluminum Electrolysis by the NiFe2O4-M Inert Anodes: Biao Wang[1]; *Feng Liang*[1]; Yudong Wang[1]; Kun Peng[2]; [1]Kunming University of Science and Technology; [2]Limited Company of Earth Environmental Protection Materials of Yunnan

Aluminum Reduction Technology — Process Control in Reduction

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Thursday AM
February 18, 2016

Room: 202C
Location: Music City Center

Session Chair: Abdalla Zarouni, Emirates Global Aluminium

8:30 AM
Detection of Local Cell Conditions Based on Individual Anode Current Measurements: *Yuchen Yao*[1]; Cheuk-Yi Cheung[1]; Jie Bao[1]; Maria Skyllas-Kazacos[1]; Barry Welch[1]; Sergey Akhmetov[2]; [1]University of New South Wales; [2]Emirates Global Aluminum

8:55 AM
Dynamic Response of Cryolitic Bath and Influence on Cell Heat and Mass Balance with Large Scale Potline Power Shifts: *Jingjing Liu*[1]; Mark Taylor[1]; Mark Dorreen[2]; [1]University of Auckland; [2]Light Metals Research Center, The University of Auckland

9:20 AM
Simulations on the Bath Chemistry Variables using Neural Networks: Patrizia Chermont[1]; *Fabio Soares*[2]; Roberto De Oliveira[1]; [1]UFPA; [2]Exodus

9:45 AM Break

10:00 AM
Technology Research on Decreasing the Aluminum Surface Waves and Reducing the Cathode Voltage Drop in Aluminum Electrolysis Cells: Zhirong Shi[1]; *Dengpeng Chai*[1]; Haibo Huang[1]; Yanan Zhang[1]; Bin Fang[1]; [1]Zhengzhou Research Institute of CHALCO

10:25 AM
Hall-Héroult Cell Simulator: A Tool for the Operation and Process Control: Jacques Antille[1]; *Louis Bugnion*[1]; René von Kaenel[1]; [1]KAN-NAK SA

10:50 AM
Studies on Anode Preheating Using Individual Anode Current Signals in Hall-Héroult Reduction Cells: *Ali Jassim*[1]; Sergey Akmetov[1]; Barry Welch[2]; Jie Bao[2]; Maria Skyllas-Kazacos[2]; Yuchen Yao[2]; [1]EGA Dubai Aluminium; [2]The University of New South Wales

Bio Nano Interfaces and Engineering Applications — Bio-inspired Interfaces: Structure to Mechanics

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Thursday AM
February 18, 2016

Room: 206B
Location: Music City Center

Session Chair: Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

8:30 AM Invited
The Structure and Mechanics of the Interfaces within Biological and Bio-inspired Materials: *Francois Barthelat*[1]; [1]McGill University

9:10 AM
Analytical Study on the Effect of Interface Properties in Brick and Mortar Structured Composites: *Sina Askarinejad*[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute

9:30 AM
Nonuniform Breaking of Molecular Bonds, Peripheral Morphology, and Releasable Adhesion by Elastic Anisotropy in Bio-adhesive Contacts: Yan Liu[1]; *Yanfei Gao*[1]; [1]Univ of Tennessee

9:50 AM
Effect of Water on the Mechanical Properties of Lignin Carbohydrate Complex: *Sina Youssefian*[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute

10:10 AM Break

10:30 AM Invited
Graphite Oxide/Cellulose Composites as Innovative Solid Support Material for DNA Extraction Applications: *Helena Li*[1]; G. Akceoglu[1]; N. Saito[1]; [1]Nagoya University

11:00 AM
Coarse-Grained Modeling of Interaction between Vesicle and Active Rotational Nanotube: *Xianqiao Wang*[1]; Liuyang Zhang[1]; [1]University of Georgia

11:20 AM
Graphene Oxide Reinforced Double Network Hydrogel: *Jilong Wang*[1]; Junhua Wei[1]; Jingjing Qiu[1]; [1]Texas Tech University

11:40 AM
Engineering of Biodegradable Boron-Based, Carbon Enriched Nano Fiber in A Hybrid Composite Via DIMOX, Rheocasting and Thixocasting: *Bakr Rabeeh*[1]; [1]German University in Cairo, GUC

12:00 PM
Synthesis of Self-cleaning, Transparent and Superhydrophobic/Oleophobic Metal Oxide Coatings by Atmospheric Pressure Plasma Technique: Ching-Yu Yang[1]; Shang-I Chuang[1]; Yu-Hsiang Lo[1]; Hsin-Ming Cheng[2]; *Po-Yu Chen*[1]; Jenq-Gong Duh[1]; [1]Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu 30013, Taiwan; [2]Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu 31040, Taiwan

Bulk Metallic Glasses XIII — Mechanical and Other Properties II

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Thursday AM
February 18, 2016
Room: 101E
Location: Music City Center

Session Chairs: Hans-J. Fecht, University of Ulm; Jianzhong Jiang, Zhejiang University

8:30 AM Invited
Role of Alloy Chemistry and Free Volume on the Corrosion Behavior of Bulk Metallic Glasses: Ayyagari Aditya[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

8:55 AM Invited
Properties of BMG Nanoglasses Prepared by Thin Film Deposition in Comparison with Mechanical Methods: *Hans Fecht*[1]; Pierre Denis[1]; [1]Ulm University

9:20 AM
Saving the Environment from Toxic Chemicals Using Amorphous Metals: Santanu Das[1]; Seth Garrison[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

9:40 AM Invited
The Mechanism of Structural Rejuvenation in Recovery Annealed Metallic Glasses: *Rui Yamada*[1]; Naoyuki Tanaka[1]; Junji Saida[1]; [1]Tohoku University

10:00 AM Break

10:15 AM Invited
Multifunctional Thin Film Metallic Glasses as Potential Coating Materials: *Jinn Chu*[1]; Chia-Chi Yu[1]; Wahyu Diyatmika[1]; Cheng-Min Lee[1]; Chia-Lin Li[1]; Yusuke Tanatsugu[1]; [1]National Taiwan University of Science and Technology

10:35 AM
An Improved Method for Calculation of Elastic Constants of Metallic Glasses: *Henry Neilson*[1]; J Carter[1]; John Lewandowski[1]; [1]Case Western Reserve University

10:55 AM
Development of Bio-inspired Hybrid Composite with Ceramic Brick and BMG Mortar Structure: *Je In Lee*[1]; Eun Soo Park[1]; Amy Wat[2]; Robert Ritchie[3]; [1]Seoul National University; [2]University of California Berkeley; [3]Lawrence Berkeley National Laboratory

11:15 AM
Protocols for Multi-step Thermoplastic Processing of Metallic Glasses: *Punnathat Bordeenithikasem*[1]; Sungwoo Sohn[1]; Ze Liu[1]; Jan Schroers[1]; [1]Yale University

11:35 AM
String-like Cooperative Motion in Supercooled Cu-Zr Metallic Liquids: *Hao Zhang*[1]; [1]University of Alberta

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — General Cast Shop

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mohamed Hassan, Masdar Institute of Science and Technology

Thursday AM
February 18, 2016
Room: 202A
Location: Music City Center

Session Chair: Daniel Choi, Masdar Institute of Science and Technology

8:30 AM Introductory Comments

8:35 AM
Weibull Analysis for the Repeatability of Die-castings Made by an Al-Mg-Si-Mn Alloy: *Shouxun Ji*[1]; Hailin Yang[1]; Douglas Watson[1]; Zhongyun Fan[1]; [1]Brunel University

9:00 AM
Thermo-Mechanical Properties of Wrought Aluminium Alloys produced from Scrap Mixing: *Adesola Ajayi*[1]; Mohamed Ali[1]; Daniel Choi[1]; [1]Masdar Institute of Science and Technology

9:25 AM
History and Development of Slag and Dross Pressing: *David Roth*[1]; [1]GPS Global Solutions

9:50 AM
Testing PPE for Molten Aluminum Splash Resistance: *John Zeh*[1]; J.T. Major[1]; Jason Sparks[1]; [1]Logan Aluminum Inc.

Characterization of Minerals, Metals, and Materials — Electronic, Magnetic, Environmental, and Advanced Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Thursday AM
February 18, 2016
Room: 103B
Location: Music City Center

Session Chairs: Shadia Ikhmayies, Al Isra University; Eren Kalay, METU

8:30 AM
Survey of Mechanical Properties of Cardboard Tubes for Engineering Application: Victor Souza[1]; *Juvenil Junior*[2]; Vinicius Barbosa[3]; [1]Universidade Federal Fluminense; [2]Instituto Federal Fluminense; [3]Sociedade Universitária Redentor

8:50 AM
The Influence of Heat Treatment on the Optical Parameters of Spray-deposited CdS:In Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

9:10 AM
Structural Characterizations of Black TiO_2 Nanoparticles Made from Amorphous Precursors: *Mengkun Tian*[1]; Masoud Mahjouri-Samani[2]; Gyula Eres[2]; Kai Wang[2]; David B. Geohegan[2]; Gerd Duscher[1]; [1]University of Tennessee; [2]Oak Ridge National Lab

9:30 AM
The Characterization of Photo and Thermal Dual Sensitive Behavior of Azo-substituted Polyrotaxane Nano-micelle: *Lin Ye*[1]; [1]Beijing Institute of Technology

9:50 AM
Crystal Structures and Conductivity of Lanthanum Gallate Doped with Strontium and Magnesium Synthesized by Different Methods: *Xiuhua Chen*[1]; Jie Xing[1]; Bo Yuan[1]; Min Wang[1]; Wenhui Ma[2]; Rui Li[1]; Jie Yu[2]; [1]Yunnan University; [2]Kunming University of Science and Technology

10:10 AM Break

10:25 AM
HRTEM Analysis of Crystallographic Defects in Cd-Zn-Te Single Crystals: Eren Kalay[1]; Yasin Ergunt[1]; Merve Kabukcuoglu[1]; Mehmet Parlak[1]; Rasit Turan[1]; *Bengisu Yasar*[1]; [1]METU

10:45 AM
Determination of the Stability Constants for Mixed-ligand Coordination Compounds in the Zn(II)-nitrilotriacetic Acid-ammonia System: *Chen Lin*[1]; Hao Zhandong[1]; Yang Tianzu[1]; Zhang Duchao[1]; Liu Weifeng[1]; [1]Central South University

11:05 AM
Resonances of Microwave Power Absorption in Alumina and Silicon Carbide: *Zhiwei Peng*[1]; Xiaolong Lin[1]; Jiann-Yang Hwang[2]; Yuzhe Zhang[2]; Yuanbo Zhang[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University; [2]Michigan Technological University

11:25 AM
Physical and Chemical Properties of MSWI Fly Ash: *Xinghua He*[1]; Shujing Zhu[2]; Jiann-Yang Hwang[3]; [1]Wuhan Polytechnic University; [2]WISCO R&D Center; [3]Michigan Technological University

11:45 AM
The Adsorption Properties of Porous Boron Nitride Nanosheets: *Huazhang Zhai*[1]; [1]Beijing Institute of Technology

Characterization of Minerals, Metals, and Materials — Soft Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Thursday AM
February 18, 2016
Room: 103A
Location: Music City Center

Session Chairs: Sergio Monteiro, IME; Zhiwei Peng, Central South University

8:30 AM
Tensile Strength of Polyester Composites Reinforced with Thinner Ramie Fibers: *Lucas Pontes*[1]; Pedro Netto[1]; Jordana Ferreira[1]; Frederico Margem[1]; Sergio Monteiro[2]; Jean Margem[3]; Raphael Veloso[4]; [1]Uenf; [2]IME; [3]Isecensa; [4]Faculdade Redentor

8:50 AM
Charpy Impact Tests of Polyester Composites Reinforced with PALF Fibers: *Gabriel Glória*[1]; Giulio Altoé[1]; Maycon Gomes[1]; Carlos Maurício Vieira[1]; Frederico Margem[1]; Sérgio Neves[1]; Glenio Daniel[1]; Maria Carolina Teles[1]; [1]State University of the Northern Rio de Janeiro

9:10 AM
Dynamic-Mechanical Characterization of Polyester Matrix Composites Reinforced With Eucalyptus Fibers: *Caroline Gomes de Oliveira*[1]; Noan Tonini Simonassi[1]; Artur Camposo Pereira[1]; Sérgio Neves Monteiro[2]; Frederico Muylaert Margem[1]; Anderson Barbosa[1]; Anna Cerqueira Neves[1]; [1]UENF - Universidade Estadual do Norte Fluminense; [2]IME - Instituto Militar de Engenharia

9:30 AM
Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Ramie Fibers Stalk: *Lucas Pontes*[1]; Pedro Netto[1]; Jordana Ferreira[1]; Frederico Margem[1]; Sergio Monteiro[2]; Jean Margem[3]; [1]Uenf; [2]IME; [3]Isecensa

9:50 AM
Synchrotron X-ray Tomographic Quantification of Microstructural Evolution in Multi-phase Soft Material: *Enyu Guo*[1]; Guang Zeng[1]; Peter Rockett[1]; Julian Bent[2]; Joan Vila-Comamala[3]; Peter Lee[1]; [1]University of Manchester; [2]Unilever; [3]Diamond Light Source Ltd.

10:10 AM Break

10:25 AM
Tensile Strength of Epoxy Composites Reinforced with Fique Fibers: *Maria Carolina Teles*[1]; Frederico Margem[1]; Sergio Monteiro[2]; Giulio Altoé[1]; Pedro Neto[1]; Luiz Gustavo Borges[3]; [1]State University of the Northern Rio de Janeiro; [2]Instituto Militar de Engenharia; [3]Faculdade Redentor

10:45 AM
Thermal Analysis of Curaua Fiber Reinforced Epoxy Matrix Composites: Mariana Barcelos[1]; Carolina Ribeiro[1]; *Frederico Margem*[2]; Sergio Monteiro[3]; Janaina Vieira[1]; Jordana Vieira[1]; Natalia Maciel[1]; [1]UENF; [2]Redentor; [3]IME

11:05 AM
Characterization of Thermal Behavior of Epoxy Composites Reinforced with Curaua Fibers by Differential Scanning Calorimetry: Mariana Barcelos[1]; Sergio Monteiro[2]; *Frederico Margem*[3]; Carolina Ribeiro[1]; Janaina Vieira[1]; Jordana Ferreira[1]; Natália Maciel[1]; [1]UENF; [2]IME; [3]Redentor

11:25 AM
Comparative Study of the Effects of Cellulose Nanowhiskers and Microcrystalline Cellulose Addition as Reinforcement in Flexible Films Based on Biopolymer Blends: Douglas Paiva[1]; Rene Oliveira[1]; Wilson Maia[2]; Maria Auad[3]; Vijaya Rangari[4]; *Esperidiana Moura*[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2] University of São Paulo; [3]Auburn University; [4]Tuskegee University

11:45 AM
Flexural Test in Epoxy Matrix Composites Reinforced with Hemp Fiber: Lázaro Rohen[1]; Anna Neves[1]; Carlos Vieira[1]; *Frederico Margem*[1]; Sérgio Monteiro[2]; [1]State University of Northern of Rio de Janeiro; [2]Military Institute of Engineering

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Microstructure and Mechanical Properties

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Thursday AM
February 18, 2016
Room: 207D
Location: Music City Center

Session Chair: To Be Announced

8:30 AM
A Differential-Exponential Hardening Model for Crystal Plasticity Modeling of Single Crystals
: *Aboozar Mapar*[1]; Farhang Pourboghrat[1]; Thomas Bieler[1]; [1]Michigan State University

8:50 AM
Atomistic Modeling of Structure-Property Relationships in Grain Boundaries: *Mark Tschopp*[1]; Shawn Coleman[1]; Jenn Synowczynski-Dunn[1]; Kiran Solanki[2]; David McDowell[3]; [1]Army Research Laboratory; [2]Arizona State University; [3]Georgia Institute of Technology

9:10 AM Invited
Combined DFT, MD and Hybrid MD/FEM Simulations to Investigate Realistic Mechanical Deformations during Nanoindentation: *Francesca Tavazza*[1]; Li Ma[1]; Dilip Banerjee[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology

9:30 AM
Microstructural Evolution of High Temperature Ni-Cr ODS Alloy: Genetic Algorithm Approach: *Aniket Dutt*[1]; Somayeh Pasebani[2]; Indrajit Charit[2]; Rajiv Mishra[1]; [1]University of North Texas; [2]University of Idaho

9:50 AM
Applying Graph Kernels to the Transgranular Network for Microstructure Data Mining: *Brian DeCost*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon Uni-

versity

10:10 AM Break

10:30 AM
Non-destructive Boundary Migration Tracking during Coarsening and Subsequent Quantification of Boundary Dynamics: *Siddharth Maddali*[1]; Robert Suter[1]; Shlomo Ta'asan[1]; [1]Carnegie Mellon University

10:50 AM
Multi Scale Modeling of Deformation Behavior in Near Beta Ti-5553 Alloy: *Sudipto Mandal*[1]; Shanoob Balachandran[2]; Dipankar Banerjee[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Indian Institute of Science Bangalore

11:10 AM
Developing Physically-based Three Dimensional Microstructures: Bridging Phase Field and Crystal Plasticity Models: *Hojun Lim*[1]; Fadi Abdeljawad[1]; Steven Owen[1]; Byron Hanks[1]; Corbett Battaile[1]; [1]Sandia National Laboratories

11:30 AM
Fatigue Crack Growth Modeling and Microstructural Mechanisms in Engine Materials under Hot Compressive Dwell Conditions: *Xiang Chen*[1]; Diana Lados[1]; Richard Pettit[2]; David Dudzinski[3]; [1]Worcester Polytechnic Institute, Integrated Materials Design Center; [2]FractureLab; [3]Derivation Research Laboratory Inc.

11:50 AM
Hydrogen-induced Core Structures Change of Screw and Edge Dislocations in Tungsten: *Yinan Wang*[1]; Chengliang Li[2]; Ben Xu[1]; Wei Liu[1]; [1]Tsinghua University; [2]China Nuclear Power Engineering Co.,Ltd

Computational Thermodynamics and Kinetics — Models and Methods

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

Thursday AM
February 18, 2016
Room: 208B
Location: Music City Center

Session Chairs: Shawn Coleman, U.S. Army Research Laboratory; Atsuto Seko, Kyoto University

8:30 AM Invited
First Principles Interatomic Potentials via Compressed Sensing: *Atsuto Seko*[1]; Isao Tanaka[1]; [1]Kyoto University

9:00 AM
A Scalable Parallel Clustering Algorithm for Molecular Dynamics: *Yang Hao Lau*[1]; Ramanarayan Hariharaputran[1]; David Wu[1]; [1]Institute of High Performance Computing

9:20 AM
Cluster Variation Method in Computational Thermodynamics: *Tetsuo Mohri*[1]; [1]Tohoku University

9:40 AM
The Origin of Anharmonicity in fcc Solids: *Albert Glensk*[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut, Duesseldorf, Germany

10:00 AM Break

10:20 AM
Mesoscopic Simulations of Electric-Field-Aligned Bijel Films for Functionalized Porous Membranes: *Paul Millett*[1]; Joseph Carmack[1]; [1]University of Arkansas

10:40 AM
Thermotransport of a Liquid Metal Alloy: Computational Approach: *Graeme Murch*[1]; Alexander Evteev[1]; Elena Levchenko[1]; [1]The University of Newcastle

11:00 AM
Transport and Stokes-Einstein Behavior in Molten Mixtures of Network-formers and Network-modifiers: *Venkateswara Rao Manga*[1]; Nichlas Swinteck[1]; Stefan Bringuier[1]; Pierre Deymier[1]; Krishna Muralidharan[1]; [1]University of Arizona

11:20 AM
Study of the Temperature Effects on Solid-liquid Anisotropic Interfacial Energy: *Lingkang Wu*[1]; Chengliang Li[1]; Ben Xu[1]; Qiulin Li[1]; Wei Liu[1]; [1]School Of Materials Science And Engineering, Tsinghua University

11:40 AM
Application of MIVM for Sn-Ag and Sn-In alloys in Vacuum Distillation: *Lingxin Kong*[1]; Junjie Xu[1]; Baoqiang Xu[1]; Shuai Xu[1]; Bin Yang[1]; Yifu Li[1]; Dachun Liu[1]; Ruibo Hu[2]; [1]The National Engineering Laboratory for Vacuum Metallurgy, Kunming University of Science and Technology, Kunming 650093; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming 650093; Key Laboratory for Nonferrous Vacuum Metallurgy of Yunnan Province, Kunming 650093; [2]Guizhou Normal University

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Intermetallic Compound III; Electromigration

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Thursday AM
February 18, 2016
Room: 201A
Location: Music City Center

Session Chairs: Albert Wu, National Central University; Fan-Yi Ouyang, National Tsing Hua University

8:30 AM
Lead Free Solder Joint Open Failures Post Multiple Reflows due to Void Generation and Accumulation: *Yan Li*[1]; Olen Hatch[1]; Pilin Liu[1]; Deepak Goyal[1]; [1]Intel

8:50 AM
Marker Analysis to Determine Dominant Diffusing Species in Ni3Sn4: *Yi-Ting Chen*[1]; King-Ning Tu[1]; Yingxia Liu[1]; [1]UCLA

9:10 AM
Enhanced Stabilization of □ Cu6Sn5 in Pb-free Solder Joints: *Takatoshi Nishimura*[1]; Mohd Salleh[2]; Guang Zeng[2]; Keith Sweatman[1]; Stewart McDonald[2]; Kazuhiro Nogita[2]; [1]Nihon Superior; [2]The University of Queensland

9:30 AM
Investigation of Anisotropic Micromechanical Behaviors of Cu6Sn5 by In-Situ Micropillar Compression: *Jui-Yang Wu*[1]; J. J. Yu[1]; L. J. Yu[1]; C. R. Kao[1]; [1]Department of Materials Science and Engineering, National Taiwan University

9:50 AM Break

10:10 AM Invited
Effect of Electromigration on Crystal Orientation in Wafer Level Chip Scale Package Using Synchrotron X-ray Diffraction: *Quan Zhao*[1]; Choongun Kim[2]; Thomas Bieler[1]; Tae-kyu Lee[3]; [1]Michigan State University; [2]University of Texas Arlington; [3]Cisco Systems, Inc.

10:35 AM
Failure Mechanism of Ag Alloy Wire Bonding for Electronic Packaging under Electromigration Test: *Jui-Nung Wang*[1]; Tzu-Yu Hsu[1]; Fan-Yi Ouyang[1]; Jing-Yao Chang[1]; Fang-Jun Leu[1]; Hsiao-Min Chang[1]; [1]National Tsing Hua University

10:55 AM
Electromigration in Ni/SnAg/Ni Microbumps with 15µm Solder Height: *Li Yu-Jin*[1]; Chen Chih[1]; [1]National Chiao Tung Unirversity

11:15 AM
Electromigration Failure in Microbumps with Different Grain Sizes: *Meng Wei Chiang*[1]; Chih Chen[1]; Chau Jie Zhan[2]; Yu Wei Huang[2]; [1]National Chiao Tung University; [2]Industrial Technology Research Institute.

11:35 AM
Interactions between Electromigration and Thermal Fatigue of Pb-free Interconnects: *Yong Zuo*[1]; Limin Ma[1]; Fu Guo[1]; [1]Beijing University of Technology

High Entropy Alloys IV — Mechanical and Other Properties II

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Thursday AM
February 18, 2016

Room: 102A
Location: Music City Center

Session Chairs: John Lewandowski, Case Western Reserve University; Ralph Spolenak, ETH Zurich

8:30 AM Invited
Fracture Toughness and Fatigue Crack Growth Behavior of High Entropy Alloys: Mohsen Seifi[1]; Dongyue Li[2]; Zhang Yong[2]; Peter Liaw[3]; *John Lewandowski*[1]; [1]Case Western Reserve University; [2]University of Science and Technology; [3]University of Tennessee

8:50 AM
Microstructures and Properties of CoFeMnNiX (X = Al, Ga, Sn) High Entropy Alloys: *Ting Ting Zuo*[1]; Xiao Yang[1]; Michael Gao[2]; Shu Ying Chen[3]; Peter Liaw[3]; Yong Zhang[1]; [1]University of Science and Technology Beijing; [2]National Energy Technology Laboratory; [3]The University of Tennessee

9:10 AM
A Statistical Study of the Potential-scan-rate and Al-content Dependent Metastable Pitting (Serration) Behavior of AlxFeCoCrNi High-entropy Alloys: *Yunzhu Shi*[1]; Bin Yang[1]; Xie Xie[2]; Zhi Tang[3]; Karin Dahmen[4]; Peter Liaw[2]; [1]University of Science and Technology, Beijing; [2]University of Tennessee, Knoxville; [3]Virginia Tech; [4]University of Illinois at Urbana-Champaign

9:30 AM
Serrated Plastic Flow in CoFeMnNi, CoCrFeMnNi, and CoCrFeNi High Entropy Systems: *Joseph Licavoli*[1]; Karin Dahmen[2]; Paul Jablonski[1]; Michael Gao[3]; Peter Liaw[4]; Jeffrey Hawk[1]; [1]Department of Energy; [2]University of Illinois at Urbana Champaign; [3]AECOM/Department of Energy; [4]University of Tennessee

9:50 AM Invited
On the Microstructural Stability of Nanocrystalline HEA Thin Films and Its Effect on Mechanical Properties: *Jeff Wheeler*[1]; Ralph Spolenak[1]; [1]ETH Zurich

10:10 AM Break

10:25 AM
Serrated Flows in High Entropy Alloys (HEAs): *Shuying Chen*[1]; Peter Liaw[1]; Xie Xie[1]; Karin Dahmen[2]; Yong Zhang[3]; Junwei Qiao[4]; [1]University of Tennessee, Knoxville; [2]The University of Illinois at Urbana Champaign; [3]The University of Science and Technology Beijing; [4]Taiyuan University of Science and Technology

10:45 AM
Deformation and Structural Modeling of a Quenched Al0.1CrCoFeNi Multi-principal Element Alloy under High Strains: *Aayush Sharma*[1]; Peter Liaw[2]; Ganesh Balasubramanian[1]; [1]Iowa State University; [2]The University of Tennessee, Knoxville, TN

11:05 AM Invited
Corrosion Behavior and Passivation Mechanisms in FCC High Entropy Alloys: Ayyagari Aditya[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

11:25 AM
Slip nucleation in Single Crystal FeNiCoCrMn Entropy Alloy: *Luca Patriarca*[1]; Avinesh Ojha[1]; Huseyin Sehitoglu[1]; [1]University of Illinois at Urbana-Champaign

11:45 AM
Fabrication and Tensile Behavior of Bulk High Entropy Alloys Derived from Thin Film Combinatorial Approach
: *Artashes Ter-Isahakyan*[1]; Azin Akbari[1]; John Balk[1]; [1]University of Kentucky

High Entropy Alloys IV — Structures and Characterization

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Thursday AM
February 18, 2016

Room: 102B
Location: Music City Center

Session Chairs: Michael Widom, Carnegie Mellon University; E-Wen Huang, National Chiao Tung University

8:30 AM Invited
Entropy Calculation for High Entropy Alloys: *Michael Widom*[1]; [1]Carnegie Mellon University

8:50 AM Invited
Short-range Disorder and Long-range Order Transitions of a High-entropy Alloy Subjected to Deformation at Different Temperatures: *E-Wen Huang*[1]; Jien-Wei Yeh[2]; [1]National Chiao Tung University; [2]National Tsing Hua University

9:10 AM
Characterization of a High Strength, Refractory High Entropy Alloy AlMo0.5NbTa0.5TiZr using STEM-HAADF and Super-X™ XEDS Tomography: *Jacob Jensen*[1]; John Sosa[1]; Daniel Huber[1]; Gopal Viswanathan[1]; Robert Williams[1]; Adam Pilchak[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]Air Force Research Lab

9:30 AM Invited
High Energy X-ray Diffraction Measurements during Tensile Loading and Hydrogen Embrittlement of a High Entropy Alloy, Al0.1CoCrFeNi: *Matthew Connolly*[1]; Elizabeth Drexler[1]; Andrew Slifka[1]; [1]National Institute of Standards and Technology

9:50 AM Break

10:05 AM
Microstructural Characterization and Phase Evolution of Al1.5CrFeMnTi and Al2CrFeMnTi: *Rui Feng*[1]; Chanho Lee[1]; Peiyong Chen[1]; Michael Gao[2]; Chuan Zhang[3]; Fan Zhang[3]; Peter Liaw[1]; [1]Department of Materials Science and Engineering, The University of Tennessee, Knoxville; [2]National Energy Technology Laboratory/AECOM; [3]CompuTherm, LLC

10:25 AM Invited
The Use of Diffusion Multiples to Explore the Phase Equilibria, Diffusion, and Nano-Mechanical Behavior of CoCrFeMnNi High Entropy Alloys: Paul Wilson[1]; *Michael Kaufman*[1]; Andre Costa e Silva[2]; Robert Field[1]; [1]Colorado School of Mines; [2]Universidade Federal Fluminense

10:45 AM Invited
Ordering in Refractory High-entropy Alloys: *Walter Steurer*[1]; Soumyadipta Maiti[1]; [1]ETH Zurich

11:05 AM
Novel Single BCC Solid Solution High Entropy Alloys: A Combinatorial Approach Assisted by Quantum Mechanical Calculations: *Pradeep Konda Gokuldoss*[1]; [1]Materials Chemistry RWTH Aachen University, Kopernikusstr.10, 52074, Aachen

11:25 AM
Diffusion in Equiatomic FCC High Entropy Alloys: *Mayur Vaidya*[1]; Simon Trubel[2]; B.S. Murty[1]; Gerhard Wilde[2]; Sergiy Divinski[2]; [1]IIT Madras; [2]University of Muenster

11:45 AM Invited
High Strength High Entropy Alloys Prepared by Powder Metallurgy: *Yong Liu*[1]; Bin Liu[1]; Jingshi Wang[1]; [1]Central South University

ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics, and Computational Tools — Microstructure

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Dongwon Shin, Oak Ridge National Laboratory; Jiadong Gong, QuesTek Innovations; Shengyen Li, National Institute of Standards and Technology; Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory

Thursday AM
February 18, 2016
Room: 207B
Location: Music City Center

Session Chairs: Sheng Yen Li, NIST; Stefan Sandfeld, Friedrich-Alexander-Universität Erlangen-Nürnberg

8:30 AM Invited
D2C – Converting and Compressing Discrete Dislocation Microstructure Data: *Stefan Sandfeld*[1]; Dominik Steinberger[1]; Manuel Leimberger[1]; [1]University of Erlangen (FAU)

9:00 AM
Microstructural Modeling of Dynamic Intergranular and Transgranular Fracture Modes in Crystalline Alloys: *S. Ziaei*[1]; Mohammed Zikry[1]; [1]North Carolina State University

9:20 AM
Spectral Database Solutions to Elasto-viscoplasticity within Finite Elements: *Marko Knezevic*[1]; Miroslav Zecevic[1]; Daniel Savage[1]; Rodney McCabe[2]; [1]University of New Hampshire; [2]Los Alamos National Laboratory

9:40 AM
Statistical Characterization of Microstructure-sensitive Models Applied to Engineering Components: *Gustavo Castelluccio*[1]; Joseph Bishop[1]; Richard Field[1]; John Emery[1]; Matthew Brake[1]; [1]Sandia National Laboratories

10:00 AM Break

10:20 AM
Analytics on Large Microstructure Datasets Using 2-pt Statistics: *Ahmet Cecen*[1]; John Gibbs[2]; Peter Voorhees[2]; Surya Kalidindi[1]; [1]Georgia Institute of Technology; [2]Northwestern University

10:40 AM
Evaluating Image Texture Recognition Algorithms for Generic Microstructure Characterization: *Brian DeCost*[1]; Long Qing Chen[2]; Elizabeth Holm[1]; [1]Carnegie Mellon University; [2]Penn State University

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In-Situ Characterization of Mechanical Properties of Materials IV

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Thursday AM
February 18, 2016
Room: 212
Location: Music City Center

Session Chairs: Sanjit Bhowmick, Hysitron, Inc.; Benjamin Morrow, Los Alamos National Laboratory

8:30 AM Invited
In Situ TEM Investigation on the Mechanical Behaviour of Micronanoscaled Single Crystal Titanium and Magnesium: *Zhiwei Shan*[1]; Boyu Liu[1]; [1]Xi'an Jiaotong University

9:00 AM
In Situ High Strain Rate Tensile Testing in the Dynamic TEM: *Thomas Voisin*[1]; Michael Grapes[1]; Yong Zhang[1]; Nicholas Lorenzo[2]; Jonathan Ligda[2]; Brian Schuster[2]; Melissa Santala[3]; Geoffrey Campbell[3]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]Army Research Laboratory; [3]Lawrence Livermore National Laboratory

9:20 AM
Deformation of Nanoscale Composite Structures and Heterophase Interfaces: *Shen Dillon*[1]; Shimin Mao[1]; Rui Hao[1]; [1]University of Illinois at Urbana-Champaign

9:40 AM
Measurement of Micro Strains in Amorphous $Ti_{45}Al_{55}$ Thin Films using Selected Area Diffraction during in situ TEM Straining: *Rohit Sarkar*[1]; Christian Ebner[2]; Christian Rentenberger[2]; Jagannathan Rajagopalan[1]; [1]Arizona State University; [2]Univeristy of Vienna

10:00 AM Break

10:20 AM Invited
Local Strain Measurements during In Situ TEM Deformation with Nanobeam Electron Diffraction: Andrew Minor[1]; *Jim Ciston*[2]; [1]UC Berkeley & LBL; [2]Lawrence Berkeley National Laboratory

10:50 AM
In Situ Observation of Plastic Deformation in Single Grains of Ti6Al4V Fabricated Using E-beam Melting Technology: Leila Ladani[1]; *Samantha Brown*[1]; John Sypek[1]; Seok Woo Lee[1]; [1]University of Connecticut

11:10 AM
A Novel in Situ Bending Test in the micro/nano-Scale: *Mohamed Elhebeary*[1]; Taher Saif[1]; [1]University of Illinois Urbana-Champaign

11:30 AM
An Experimental Investigation of Deformation Mechanisms in FCC Thin Films: *Marissa Linne*[1]; Samantha Daly[1]; [1]University of Michigan

11:50 AM
Size and Strain Rate-dependent Deformation Behavior of Metallic Glass Nanoparticles: *Jinwoo Kim*[1]; Eun Soo Park[1]; Qi Zhang[2]; Mo Li[2]; [1]Seoul National University; [2]Georgia Institute of Technology

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Interfacial Segregation

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Thursday AM
February 18, 2016
Room: 108
Location: Music City Center

Session Chair: Heather Murdoch, US Army Research Lab

8:30 AM
Mitigating Radiation-Induced Segregation and Radiation-Induced Precipitation via Materials Nanoengineering: *Enrique Martinez Saez*[1]; Oriane Senninger[2]; Alfredo Caro[1]; Frédéric Soisson[3]; Maylise Nastar[3]; Blas Uberuaga[1]; [1]LANL; [2]Northwestern University; [3]CEA-Saclay

8:50 AM
Atomic Investigation of the Role of Alloying Elements on the Thermodynamics of Vacancies and Vacancy-Hydrogen Clusters at Symmetric Tilt Boundaries in Nickel: *Xiao Zhou*[1]; Jun Song[1]; [1]McGill Univeristy

9:10 AM
Atomic-Level Mechanisms of Grain Boundary Segregation and Embrittlement in Nickel-Sulfur: *Tao Hu*[1]; Shengfeng Yang[1]; Naixie Zhou[1]; Yuanyao Zhang[1]; Jian Luo[1]; [1]University of California San Diego

9:30 AM
Cr Segregation on Grain Boundary Character and Intrinsic Stress Evolution in Fe(Cr) Nanocrystalline Films: *Xuyang Zhou*[1]; Tyler Kaub[1]; Richard Martens[1]; Gregory Thompson[1]; [1]The University of Alabama

9:50 AM Break

10:10 AM Invited
Microstructure Design of Mechanically Alloyed Materials: *Zachary Cordero*[1]; Christopher Schuh[1]; [1]MIT

10:50 AM
Wetting of Three Different Cu-Nb Interfaces by He Precipitates: *Sanket Navale*[1]; Irene Beyerlein[2]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology; [2]Los Alamos National Laboratory

11:10 AM
Atomistic Parameterization of Analytical Descriptions of H Segregation: *Christopher O'Brien*[1]; Stephen Foiles[1]; [1]Sandia National Laboratories

11:30 AM
The Influence of Local Stress States on Hydrogen Segregation at Grain Boundaries in FCC Metals: *Xiao Zhou*[1]; Jun Song[1]; [1]McGill Univeristy

Magnesium Technology 2016 — Texture and Formability

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Thursday AM
February 18, 2016
Room: 204
Location: Music City Center

Session Chairs: Jan Bohlen, Helmholtz-Zentrum Geesthacht; Nitin Chandola, University of Florida

8:30 AM
In-situ EBSD Observations of Recrystallization and Texture Evolution in Cold Rolled Mg-2Zn-xCe (wt%): *Ajith Chakkedath*[1]; David Escobar[2]; Jan Bohlen[3]; Sangbong Yi[3]; Dietmar Letzig[3]; Carl Boehlert[4]; [1]Michigan State University; [2]Technical University of Madrid, Spain; [3]Magnesium Innovation Centre MagIC; [4] Michigan State University; IMDEA Materials Institute, Spain

8:50 AM
Non-basal Texture Evolution during Annealing of Cold-worked Magnesium Alloy: *Abu Syed Humaun Kabir*[1]; Jing Su[1]; In-Ho Jung[1]; Stephen Yue[1]; [1]McGill University

9:10 AM
On Modeling the Mechanical Behavior and Texture Evolution of Rolled AZ31 Mg for Complex Loadings Involving Strain Path Changes: *Nitin Chandola*[1]; Crystal Pasiliao[2]; Oana Cazacu[1]; Benoit Revil-Baudard[1]; [1]University of Florida; [2]Air Force Research Laboratory

9:30 AM
Formability of Extruded Magnesium Sheet Alloys with Different Textures: *Jan Bohlen*[1]; Oliver Schlung[1]; Sven Gall[2]; Sören Müller[2]; Dietmar Letzig[1]; [1]Helmholtz-Zentrum Geesthacht; [2]TU Berlin

9:50 AM Break

10:10 AM
Prediction of Magnesium Alloy Formability: The Role of Texture: *Victoria Miller*[1]; Tracy Berman[2]; Irene Beyerlein[3]; Tresa Pollock[1]; [1]University of California Santa Barbara; [2]University of Michigan; [3]Los Alamos National Laboratory

10:30 AM
Texture Evolution and Mechanical Properties of Mg-Li Alloy during Thermo-mechanical Process: *Yun Zou*[1]; Yang Zhang[1]; Yu Zhao[1]; Songsong Xu[1]; Hao Guo[1]; Milin Zhang[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

10:50 AM
Effect of Dynamic Recrystallization on Microstructure Evolution and Texture Weakening During Annealing of High Speed Rolled AZ31 Magnesium Alloy Sheets: *Jing Su*[1]; Mehdi Sanjari[1]; Abu Syed Humaun Kabir[1]; In-Ho Jung[1]; Stephen Yue[1]; [1]McGill

11:10 AM
Tailored Hybrid Magnesium Profiles Produces by Direct Extrusion: Rene Nitschke[1]; Sven Gall[1]; *Soeren Mueller*[1]; [1]TU Berlin

Material Behavior Characterization via Multi-Directional Deformation of Sheet Metal — Session III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: John Carsley, General Motors Research & Development; Daniel Coughlin, Los Alamos National Laboratory; Myoung-Gyu Lee, Korea University; Youngung Jeong, National Institute of Standards and Technology; Piyush Upadhyay, Pacific Northwest National Laboratory

Thursday AM
February 18, 2016
Room: 104A
Location: Music City Center

Session Chairs: Piyush Upadhyay, Pacific Northwest National Laboratory ; John Carsley, General Motors Co

8:30 AM
Modeling Anisotropic Hardening and Nonlinear Elasticity under Loading Path Change: *Myoung-Gyu Lee*[1]; Jeong-Yeon Lee[1]; F. Barlat[2]; Jinwoo Lee[3]; [1]Korea University; [2]POSTECH; [3]Korea Institute of Materials Sicnece

9:00 AM
An Experimental and Microstructural Investigation of Biaxial Bauschinger Effects in Sheet Metals: *Markus Härtel*[1]; Martin Wagner[1]; [1]Technische Universität Chemnitz

9:30 AM
Multi-scale Analysis of Springback in Microforming of Thin Nickel Sheets: Ziwei Zeng[1]; Mitica Afteni[2]; Kaifeng Wang[1]; *Mihaela Banu*[1]; [1]University of Michigan; [2]University Dunarea de Jos of Galati

10:00 AM Break

10:30 AM
Evalution of Formability in Aluminum Alloys across Strain Rates Using Digital Image Correlation Technique: *Piyush Upadhyay*[1]; Aashish Rohatgi[1]; Yuri Hovanski[1]; Elizabeth Stephens[1]; David Catalini[1]; Rich Davies[1]; [1]Pacific Northwest National Laboratory

11:00 AM
Determination of Bending Limit Curves for Aluminium Alloy AA6014-T4: An Experimental Approach: *Ipsita Das*[1]; Krishna Saxena[1]; Jyoti Mukhopadhyay[1]; [1]Indian Institute of Technology Gandhinagar, Ahmedabad, India

11:30 AM
Sensitivity Analysis of the Bauschinger Behavior on Bending Springback for Prestrained Sheets: *Shun-lai Zang*[1]; [1]Xi'an Jiaotong University

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Structural Materials V

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday AM
February 18, 2016
Room: 101A
Location: Music City Center

Session Chairs: Kumar Sridharan, University of Wisconsin - Madison; Indrajit Charit, University of Idaho

8:30 AM
The Status of a Quantitative Multiscale Master Model of Helium-Displacement Damage Interaction Effects on Cavity Evolution in Fusion Structural Alloys: *Takuya Yamamoto*[1]; G. Robert Odette[1]; Yuan Wu[1]; [1]Univ. of California Santa Barbara

8:50 AM
Simulation of Hafnium-Aluminum Thermal Neutron Absorber Material: *Donna Guillen*[1]; William Harris[2]; [1]Idaho National Laboratory; [2]North Carolina State University

9:10 AM
Microstructure Characterization of P91 and P92 Steels and Weld Metals: *Mustafa Acarer*[1]; Fikret Kabakci[2]; Selcuk Keskinkilic[3]; Filiz Kumdali Acar[4]; Ismail Hakki Kara[5]; [1]Selcuk University; [2]Bulent Ecevit University; [3]Gedik Kaynak ; [4]Gedik Kaynak; [5]Karabuk University

9:30 AM
Solid-state Diffusion Bonding of Ni-base Hastelloy-X: *Injin Sah*[1]; Chan Soo Kim[1]; Yong-Wan Kim[1]; Eung-Seon Kim[1]; Min-Hwan Kim[1]; [1]KAERI

9:50 AM Break

10:10 AM
Fracture Criteria for Liquid Sodium Embrittlement in T91 Martensitic Steel: *Samuel Hemery*[1]; Clotilde Berdin[2]; Thierry Auger[3]; [1]Institut Pprime; [2]Univ. Paris - Sud; [3]CNRS

10:30 AM
Thermal Oxidation Behavior of Nuclear Graphite Powder: *Eung-Seon Kim*[1]; In-Jin Sah[1]; Min-Hwan Kim[1]; [1]Korea Atomic Energy Research Institute

10:50 AM
The Study of Irradiation Resistance Behavior of the New Generation Reactor Pressure Vessel Steel A508-IV: *Xue Bai*[1]; Sujun Wu[1]; Peter Liaw[2]; [1]Beihang University; [2]University of Tennessee, Knoxville

Materials in Clean Power Systems IX: Durability of Materials — Material Characterization and Degradation Mechanisms

*Sponsored by:*TMS Extraction and Processing Division, TMS Structural Materials Division, TMS Light Metals Division, TMS: Energy Committee, TMS: High Temperature Alloys Committee
Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Peter Hosemann, University of California Berkeley; Kinga Unocic, ORNL; Paul Jablonski, US Department of Energy; Joseph Licavoli, Department of Energy; Donna Guillen, Idaho National Laboratory

Thursday AM
February 18, 2016
Room: 104D
Location: Music City Center

Session Chairs: Unocic Kinga, ORNL; Joseph Licavoli, NETL

8:30 AM Invited
High Pressure Steam Oxidation of Boiler and Turbine Alloys: *Gordon Holcomb*[1]; Joseph Tylczak[1]; Casey Carney[2]; [1]National Energy Technology Laboratory; [2]AECOM and NETL

9:00 AM Invited
High Temperature Corrosion in Molten Salts & Molten Salts Technology: Past, Present and Future: *Francisco Perez Trujillo*[1]; [1]Universidad Complutense de Madrid

9:30 AM
Computational Modeling of Metal Oxidation: *Youhai Wen*[1]; [1]National Energy Technology Laboratory

9:50 AM
Weldability of Gradient Tubes for High Temperature Application: *Peter Brziak*[1]; [1]Welding Research institute - institute industrial of SR

10:10 AM Break

10:30 AM
Long-term Microstructural Stability in Haynes 282 after High Temperature Exposure: *Jeffrey Hawk*[1]; John Sears[1]; Paul Jablonski[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

10:50 AM
Evaluation of the Creep-Rupture Behavior of Haynes Alloy 282® for Advanced Ultrasupercritical Boiler Service: *Peter Tortorelli*[1]; Kinga Unocic[1]; H. Wang[1]; Michael Santella[1]; [1]Oak Ridge National Laboratory

11:10 AM
Cyclic Behavior and Fatigue Properties for Haynes 282: *Kyle Rozman*[1]; John Sears[1]; Jeffrey Hawk[1]; Paul Jablonski[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

Materials Research in Reduced Gravity — Electromagnetic Levitation (EML)

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Hani Henein, University of Alberta; Robert Hyers, Boston Electrometallurgical Corp.; Ivan Egry, DLR

Thursday AM
February 18, 2016
Room: 104C
Location: Music City Center

Session Chairs: Ivan Egry, RWTH Aachen University; James Patton Downey, NASA

8:30 AM
Installation and Operation of the Electromagnetic Levitator EML on ISS and Experiment Preparation: *Stephan Schneider*[1]; Angelika Diefenbach[2]; Julianna Schmitz[1]; Sandra Schumann[2]; [1]DLR / Institut für Materialphysik im Weltraum; [2]DLR / MUSC

9:00 AM
The Electromagnetic Levitator on-board the ISS: Capabilities, On-Orbit Performance and Future Enhancements.: Achim Seidel[1]; *Wolfgang Soellner*[1]; [1]Airbus Defence and Space

9:20 AM
Electromagnetic Levitation Processing on the International Space Station: *Douglas Matson*[1]; [1]Tufts University

9:40 AM
Thermophysical and Kinetic Properties of Fe60Cr21Ni19 - Measurements under Reduced Gravity Conditions: *Douglas MATSON*[1]; Robert Hyers[2]; Jonghyun LEE[2]; Rada Novakovic[3]; Enrica Ricci[4]; Jacqueline Etay[5]; Rainer Wunderlich[6]; Hans-Jörg Fecht[5]; [1]Tufts University; [2]University of Massachusetts; [3]IENI-CNR ; [4]IENI-CNR; [5]CNRS, SIMAP-EPM; [6]Universität Ulm

10:00 AM Break

10:20 AM
A Review on Thermophysical Property Measurements of Liquid Metallic Drops on Parabolic Flights, Texus Rocket Flights and the International Space Station
: *Hans Fecht*[1]; Rainer Wunderlich[1]; [1]Ulm University

10:50 AM
Influence of Convection on the Dendrite/Eutectic Growth Velocity in Cu-Zr Alloys (project MULTIPHAS): Stefanie Koch[1]; Jan Gegner[2]; *Peter Galenko*[1]; Markus Rettenmayr[1]; Dieter Herlach[3]; [1]Friedrich-Schiller-University; [2]German Aerospace Center; [3]Ruhr-University

11:10 AM
Growth Morphology and Velocity of Undercooled Fe-B Alloys under Different Fluid Flow Conditions: *Christian Karrasch*[1]; Thomas Volkmann[2]; Matthias Kolbe[2]; Jianrong Gao[3]; Dieter Herlach[2]; [1]Ruhr-University Bochum; [2]German Aeroscpace Center DLR; [3]Northeastern University

11:30 AM
Dendritic Growth Kinetics in Undercooled Melts of Pure Fe under Static Magnetic Fields: *Jianrong Gao*[1]; Weina Zhao[1]; Andrew Kao[2]; Koulis Pericleous[2]; Peter Galenko[3]; Dmitri Alexandrov[4]; [1]Northeastern University; [2]University of Greenwich; [3]Friedrich Schiller University of Jena; [4]Ural Federal University

11:50 AM
Metallic Liquid Structures, Properties, and Phase Transitions – Ground-Based Studies for ISS Experiments: *Ken Kelton*[1]; Anup Gangopadhyay[1]; Matthew Blodgett[1]; [1]Washington University

Mechanical Behavior at the Nanoscale III — Mechanical Behavior of Nanoscale Structures

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

Thursday AM
February 18, 2016
Room: 214
Location: Music City Center

Session Chairs: Jiangwei Wang, University of Pittsburgh; Jonathan Zimmerman, Sandia National Laboratories

8:30 AM
Dislocation Dynamics in Nanopillars: Strengthening and Abrupt Plastic Event Statistics: *Stefanos Papanikolaou*[1]; [1]Johns Hopkins University

8:50 AM
Modeling Strain Softening and Failure of Single Wall Carbon Nanotube (SWCNT) Membranes: *Ankit Gupta*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

9:10 AM
Structure-mechanical Property-deformation Mechanism Relationship in Nanotwinned FCC Metallic Nanowires: *Jiangwei Wang*[1]; Frederic Sansoz[2]; Ting Zhu[3]; Ze Zhang[4]; Scott X. Mao[1]; [1]University of Pittsburgh; [2]The University of Vermont; [3]Georgia Institute of Technology; [4]Zhejiang University

9:30 AM
The Effect of Pre-existing Defects on the Strength and Deformation Behavior of a-Fe Nanopillars: *Kelvin Xie*[1]; Xiaozhou Liao[2]; Julie Cairney[2]; Simon Ringers[2]; [1]Johns Hopkins University; [2]The University of Sydney

9:50 AM
Approaching the Theoretical Elasticity Limit and Liquid-drop Behaviors in Nano-Scale Metals: *Xiaodong Han*[1]; [1]Beijing University of Technology

10:10 AM Break

10:30 AM
Measuring the Adhesion Energy of Carbon Nanotube Films to Substrates via Microscratch Testing: *Andrew Westover*[1]; Naoki Hayakawa[2]; Rong Xiang[2]; Kehang Cui[2]; Kensuke Tsuchiya[2]; Shigeo Maruyama[2]; Cary Pint[1]; [1]Vanderbilt University; [2]University of Tokyo

10:50 AM
How Microstructure and Temperature Influence the Small Scale Deformation Behavior of Au: *Verena Maier*[1]; Alexander Leitner[2]; Reinhard Pippan[1]; Daniel Kiener[2]; [1]Austrian Academy of Science; [2]Montanuniversität Leoben

11:10 AM
Nanolamellar Tantalum Carbides: Structure and Properties: *Christopher Weinberger*[1]; Bradford Schultz[2]; Hang Yu[1]; HeDong Lee[3]; Lawrence Matson[4]; Gregory Thompson[2]; [1]Drexel University; [2]University of Alabama; [3]UES, Inc.; [4]Wright Patterson Air Force Base

11:30 AM
A Direct Comparison of Length Scale Strengthening from Different Dimensions: *Xiaodong Hou*[1]; [1]National Physical Lab, UK

Nanostructured Materials for Nuclear Applications — Session VII

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Nuclear Materials Committee, TMS: Nanomaterials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Cheng Sun, Los Alamos National Laboratory; Michael Demkowicz, Massachusetts Institute of Technology; Amit Misra, University of Michigan; Osman Anderoglu, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories

Thursday AM
February 18, 2016
Room: 101C
Location: Music City Center

Session Chairs: Cheng Sun, Los Alamos National Laboratory; Amit Misra, University of Michigan

8:30 AM Invited
Modeling Extreme Levels of Helium Implantation into Tungsten Divertors for Fusion Reactors: *Brian Wirth*[1]; [1]University of Tennessee

9:00 AM
Effect of Tube Processing Methods on Microstructure and Mechanical Properties of Nanostructured Ferritic Alloys: *Eda Aydogan*[1]; O. Anderoglu[1]; S.A. Maloy[1]; S.C Vogel[1]; G. Odette[2]; D.T. Hoelzer[3]; J.J. Lewandowski[4]; I.E. Anderson[5]; J.R. Rieken[5]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara; [3]Oak Ridge National Laboratory; [4]Case Western Reserve University; [5]Ames Laboratory

9:20 AM
Response of Equal Channel Angular Extrusion Processed Ultrafine Grained T91 Steel Subjected to High Temperature Heavy Ion Irradiation: *Miao Song*[1]; Di Chen[1]; Yuedong Wu[2]; Youxing Chen[1]; Lin Shao[1]; Yong Yang[2]; Karl Hartwig[1]; Xinghang Zhang[1]; [1]Texas A&M University; [2]University of Florida

9:40 AM
Effect of Annealing on Microstructure and Mechanical Properties of Fe-14Cr-YWT Nanostructured Ferritic Alloy: *Md Ershadul Alam*[1]; Soupitak Pal[1]; David Hoelzer[2]; Stuart Maloy[3]; G. Odette[1]; [1]University of California, Santa Barbara; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory, Los Alamos, NM

Phase Transformations and Microstructural Evolution — Phase Transformations - Extreme Conditions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Thursday AM
February 18, 2016

Room: 107B
Location: Music City Center

Session Chair: MOHSEN ASLE ZAEEM , Missouri University of Science and Technology

8:30 AM Invited
An Overview of Lower Temperature Precipitation under Irradiation: Mechanisms, Models, Consequences and Applications: *G. Robert Odette*[1]; [1]University of California Santa Barbara

9:00 AM
Effect of Non-wetting Nanoparticles on Precipitation Evolution: *Shipeng Shu*[1]; Xuan Zhang[2]; Pascal Bellon[1]; Robert S. Averback[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Lab

9:20 AM
In Situ Characterization and Phase Field Modeling of Irradiation-Induced Grain Growth: *Daniel Bufford*[1]; Fadi Abdeljawad[1]; Stephen Foiles[1]; Khalid Hattar[1]; [1]Sandia National Laboratories

9:40 AM Invited
Japan Institute of Metals International Scholar: Effective Utilization of e-martensite in Fe-high Mn Austenitic Steels: Aspects of Deformation-induced Reverse Transformation: *Motomichi Koyama*[1]; T. Sawaguchi[2]; Kaneaki Tsuzaki[3]; [1]Kyushu University; [2]National Institute for Materials Science; [3]Kyushu University; National Institute for Materials Science

10:00 AM Break

10:20 AM
Shear-induced Phase Transition in Zr via Severe Plastic Deformation: *Hui Wang*[1]; Wojciech Dmowski[1]; Yoshihiko Yokoyama[2]; Koichi Tsuchiya[3]; Takeshi Egami[1]; [1]University of Tennessee, Knoxville; [2]Tohoku University; [3]National Institute for Materials Science

10:40 AM
Shock-Induced Phase and Microstructural Changes in Metallic Glass: *Alex Bryant*[1]; Christopher Wehrenberg[2]; Faisal Alamgir[1]; Samson Lai[1]; Karren More[3]; Jonathan Poplawsky[3]; Bruce Remington[2]; Naresh Thadhani[1]; [1]Georgia Institute of Technology; [2]Lawrence Livermore National Laboratory; [3]Oak Ridge National Laboratory

11:00 AM
Shock Induced Amorphization and Nanocrystallization in Silicon: *Shiteng Zhao*[1]; Bimal Kad[1]; Eric Hahn[1]; Tane Remington[1]; Bruce Remington[2]; Christopher Wehrenberg[2]; Karren More[3]; Marc Meyers[1]; [1]University of California, San Diego; [2]Lawrence Livermore National Laboratory; [3]Oak Ridge National Laboratory

11:20 AM
Shot Peening Induced Microstructural Stability of a High Nb Containing TiAl Alloy during High Temperature Exposure: *Lu Fang*[1]; Xian Fei Ding[1]; Junpin Lin[1]; [1]University of Science and Technology Beijing

11:40 AM Invited
Titanium Aluminides and Steels under Extreme Conditions: *Klaus-Dieter Liss*[1]; Ayumi Shiro[2]; Ken-ichi Funakoshi[3]; Mark Reid[4]; Hiroshi Suzuki[2]; Takahisa Shobu[2]; Yuji Higo[5]; Hiroyuki Saitoh[2]; Shuoyuan Zhang[3]; Yo Tomota[6]; Koichi Akita[2]; [1]Australian Nuclear Science and Technology Organisation + University of Wollongong; [2]Japan Atomic Energy Agency; [3]CROSS-Tokai; [4]University of Wollongong + Australian Nuclear Science and Technology Organisation; [5]Japan Synchrotron Radiation Research Institute; [6]Ibaraki Univ.

Phase Transformations and Microstructural Evolution — Phase Transformations in Shape Memory and Magnetic Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Thursday AM
February 18, 2016

Room: 109
Location: Music City Center

Session Chair: Peter Anderson, The Ohio State University

8:30 AM
H-phase Precipitation and its Influence on Shape Memory Properties in Ni-Ti-Zr and Ni-Ti-Hf Alloys: *Suzanne Kornegay*[1]; Monica Kapoor[1]; Ronald Noebe[2]; Gregory Thompson[1]; [1]The University of Alabama; [2]NASA Glenn Research Center

8:50 AM
Magnetic Domain Structure Studies in Ferromagnetic Alloys: *Isha Kashyap*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

9:10 AM
Mechanical Properties of NiMnGa Alloys as a Function of Composition and Phase Transformations Measured by Nanoindentation: *Le Zhou*[1]; Anit Giri[2]; Kyu Cho[3]; Yongho Sohn[1]; [1]University of Central Florida; [2]TKC Global ; [3]US Army Research Laboratory

9:30 AM
Microscale Studies of Transformation Mechanisms in SMAs: Michael Kimiecik[1]; J Wayne Jones[1]; *Samantha Daly*[1]; [1]University of Michigan

10:00 AM Break

10:20 AM
Thermomechanical Characterization of Shape Memory Alloy Mode I Fracture: *William LePage*[1]; John Shaw[1]; Samantha Daly[1]; [1]University of Michigan

10:40 AM
Transformation and Deformation Characterization of NiTiHf and NiTiAu High Temperature Shape Memory Alloys: *Lee Casalena*[1]; Daniel Coughlin[2]; Fan Yang[1]; Xiang Chen[1]; Santo Padula[3]; Glen Bigelow[3]; Darrell Gaydosh[3]; Othmane Benafan[3]; Ronald Noebe[3]; Yunzhi Wang[1]; Peter Anderson[1]; Michael Mills[1]; [1]The Ohio State University; [2]Los Alamos National Laboratory; [3]NASA Glenn Research Center

11:10 AM
The Influence of Nanoscale Precipitates on Phase Transformations in Shape Memory Alloys: *Peter Anderson*[1]; Harshad Paranjape[2]; Kathryn Esham[1]; Lee Casalena[1]; Xiang Chen[1]; Michael Mills[1]; Yunzhi Wang[1]; Ronald Noebe[3]; [1]The Ohio State University; [2]Colorado School of Mines; [3]NASA Glenn Research Center

Ultrafine Grained Materials IX — High Pressure Torsion Studies II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday AM
February 18, 2016

Room: 209B
Location: Music City Center

Session Chairs: Ruslan Valiev, Ufa State Aviation Technical University; Milos Janecek, Charles University

8:30 AM Invited
High-Pressure Torsion and Nanoindentation: *Jae-il Jang*[1]; In-Chul Choi[2]; Dong-Hyun Lee[1]; Megumi Kawasaki[1]; Terence Langdon[3]; [1]Hanyang University; [2]Karlsruhe Institute of Technology; [3]University of Southern California

9:00 AM Invited
Recent Findings in Paradox of Severe Plastic Deformation: *Ruslan Valiev*[1]; [1]Ufa State Aviation Technical University

9:20 AM
Mechanical Properties of Pure Titanium and a Ti-45Nb Alloy: A Comparative Study: *Bernhard Völker*[1]; Nikolaus Jäger[1]; Ajit Panigrahi[2]; Michael Zehetbauer[2]; Reinhard Pippan[3]; Anton Hohenwarter[1]; [1]Department of Materials Physics, Montanuniversität Leoben; [2]Physics of Nanostructured Materials, Faculty of Physics, University of Vienna; [3]Erich Schmied Institute of Materials Science, Austrian Academy of Sciences

9:40 AM
Microstructural Evolution and Mechanical Properties of a Titanium Alloy Processed by High-pressure Torsion: *Shima Sabbaghianrad*[1]; Terence Langdon[1]; [1]University of Southern California

10:00 AM Break

10:20 AM Invited
Production of Nanograined Ge Using Severe Plastic Deformation under High Pressure: *Yoshifumi Ikoma*[1]; Takamitsu Toyota[1]; Katsuhiko Saito[2]; Qixin Guo[2]; Zenji Horita[1]; [1]Kyushu University; [2]Saga University

10:50 AM
Synthesis of a Metal Matrix Nanocomposiete through the Application of High-pressure Torsion: *Megumi Kawasaki*[1]; Byungmin Ahn[2]; Han-Joo Lee[1]; Alexander Zhilyaev[3]; Terence Langdon[4]; [1]Hanyang University; [2]Ajou University; [3]Institute for Metals Superplasticity Problems; [4]University of Southern California

11:10 AM
Microstructure Evolution, Defect Structure and Mechanical Properties in Ultrafine-grained MgGd Alloy Processed by High Pressure Torsion: *Miloš Janecek*[1]; Michaela Poková[1]; Jitka Stráská[1]; Jakub Cížek[1]; Radomír Kužel[1]; Jung Gi Kim[2]; Hyoung Seop Kim[2]; [1]Charles University; [2]POSTECH Pohang

11:30 AM
Effect of Hydrostatic Extrusion and High Pressure Torsion on Grain Refinement and High-angle Grain Boundaries in Al5Mg Alloy: *Peter Bazarnik*[1]; Malgorzata Lewandowska[1]; Yi Huang[2]; Terence Langdon[3]; [1]Warsaw University of Technology, Faculty of Materials Science; [2]Materials Research Group, Faculty of Engineering and the Environment, University of Southampton, Southampton SO17 1BJ, UK; [3]Materials Research Group, Faculty of Engineering and the Environment, University of Southampton, Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California

11:50 AM
Hydrogen Diffusion in Ultrafine-Grained Iron Processed by High-Pressure Torsion: *Hideaki Iwaoka*[1]; Makoto Arita[1]; Zenji Horita[1]; [1]Kyushu University

Ultrafine Grained Materials IX — Thin Films and Functional Properties

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday AM
February 18, 2016

Room: 209A
Location: Music City Center

Session Chairs: Indranil Roy, Schlumberger; Nicole Overman, Pacific Northwest National Laboratory

8:30 AM Invited
Study of Dynamic Recovery in Nanocrystalline Metals Using In-situ X-ray Diffraction and MD Simulations: Zhen Sun[1]; *Steven Van Petegem*[1]; Christian Brandl[2]; Manas Upadhyay[1]; Karsten Durst[3]; Wolfgang Blum[4]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]Karlsruhe Institute of Technology; [3]Technische Universität Darmstadt; [4]University Erlangen-Nürnberg

9:00 AM
Sputter Deposited Nickel-Molybdenum-Tungsten Thin Films with High Strength and Ductility for Use in Metal MEMS Applications: *Gi-Dong Sim*[1]; K.Madhav Reddy[1]; Gianna Valentino[1]; Jessica Krogstad[1]; Timothy Weihs[1]; Kevin Hemker[1]; [1]Johns Hopkins University

9:20 AM
Insights into the Thermal Stability of Nanocrystalline Pt(Au,Pd) films: *Christopher O'Brien*[1]; Blythe Clark[1]; Stephen Foiles[1]; [1]Sandia National Laboratories

9:40 AM
Nanostructured Al and Cu Alloys with Superior Strength and Electrical Conductivity: *Maxim Murashkin*[1]; Ilchat Sabirov[2]; Xavier Sauvage[3]; Ruslan Valiev[1]; [1]Ufa State Aviation Technical University; [2]IMDEA Materials Institute; [3]Université et INSA de Rouen

10:00 AM Break

10:20 AM
Sensitization and Corrosion Properties of Sputtered Al-Mg Alloy: *Jianfeng Yan*[1]; Andrea Hodge[1]; [1]University of Southern California

10:40 AM
Engineering High Strength Nanostructured Water Reactive Alloys for Multi Stage Stimulation: *Indranil Roy*[1]; Gregoire Jacob[1]; Rashmi Bhavsar[1]; [1]Schlumberger

7th International Symposium on High Temperature Metallurgical Processing — Treatment and Recycling of Solid Slag/Wastes

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Thursday PM
February 18, 2016

Room: 105B
Location: Music City Center

Session Chairs: Tao Jiang, Central South University; Matthew Andriese, Michigan Technological University

2:00 PM Introductory Comments

2:05 PM
Development of Reliable Viscosity Model for Iron Silicate Slags: Mao Chen[1]; Zhixiang Cui[2]; Leonel Contreras[3]; *Baojun Zhao*[1]; [1]The University of Queensland; [2]Dongying Fangyuan Nonferrous Metals Co., Ltd; [3]National Copper Corporation of Chile

2:25 PM
Removal of Iron Impurity from Zinc Calcine after Magnetization Roasting: *Junwei Han*[1]; Wei Liu[1]; Wenqing Qin[1]; Fen Jiao[1]; Dawei Wang[1]; [1]Central South University

2:45 PM
The Electrochemical Synthesis of TiC Reinforced Fe Based Composite Powder from Titanium-rich Slag: *Qian Xu*[1]; [1]Shanghai University

3:05 PM
Preparation of High-quality Titanium-rich Material from Titanium Slag with High Ca and Mg Content by Activation Roasting Process: *Wenting Duan*[1]; Feng Chen[1]; Fuqiang Zheng[1]; Tao Jiang[1]; Yufeng Guo[1]; [1]Central South University

3:25 PM Break

3:40 PM
Preparation of TiC from Titanium Bearing Blast Furnace Slag By Carbothermal Reduction in Vacuum: Fangqing Yin[1]; Zhengfeng Qu[1]; Mengjun Hu[1]; Qingyu Deng[1]; *Meilong Hu*[1]; [1]Chongqing University

4:00 PM
Study on Preparation of Activated Carbon from Hawaii Nut Shell via Steam Physical Activation: *Jianbo Lan*[1]; Shenghui Guo[1]; Hongying Xia[1]; Libo Zhang[1]; Jinhui Peng[1]; [1]State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology, Kunming, Yunnan, China

4:20 PM
New EAF Dust Treatment Process by Lime Addition and Ammonia-Leaching: *Zeqiang Xie*[1]; Yufeng Guo[1]; Tao Jiang[1]; Feng Chen[1]; Yujia Tan[1]; [1]School of Minerals Processing and Bioengineering, Central South University, Changsha, Hunan, China

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling — Characterization Techniques, Environmental Interaction and Materials Development

*Sponsored by:*TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Thursday PM
February 18, 2016

Room: 101B
Location: Music City Center

Session Chair: James Cole, Idaho National Laboratory

2:00 PM
Accelerating Post-irradiation Examination with Latest-generation Electron Microscopy Hardware and Software: *Chad Parish*[1]; Kevin Field[1]; Philip Edmondson[1]; Jeremy Busby[1]; Keith Leonard[1]; Yutai Katoh[1]; David Hoelzer[1]; Sebastien Dryepondt[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory

2:20 PM
A Synchrotron Peak Broadening and Modelling Study of Proton-Irradiated Zircaloy-2: *Thomas Seymour*[1]; Rory Hulse[1]; Allan Harte[1]; Philipp Frankel[1]; Levente Balogh[2]; Mark Daymond[2]; Claire Murray[3]; Antoine Ambard[4]; Javier Romero[5]; Lars Hallstadius[6]; Christopher Race[1]; Michael Preuss[1]; [1]School of Materials, The University of Manchester; [2]Department of Mechanical and Materials Engineering, Queen's University; [3]Diamond Light Source; [4]Electricite de France; [5]Westinghouse Electric Company; [6]Westinghouse Electric Sweden AB

2:40 PM
In-situ High-Energy X-ray Study of Neutron Irradiation Effect on Tensile Deformation Behavior of an Fe-Cr Model Alloy: *Xuan Zhang*[1]; Chi Xu[2]; Meimei Li[1]; Jun-Sang Park[1]; Peter Kenesei[1]; Jonathan Almer[1]; Kun Mo[1]; Carolyn Tomchik[3]; James Stubbins[3]; Jian Gan[4]; [1]Argonne National Lab; [2]University of Florida; [3]University of Illinois at Urbana-Champaign; [4]Idaho National Lab

3:00 PM
Non-contact Determination of Ion Irradiation Effects in Pure Polycrystalline Copper: *Cody Dennett*[1]; Sara Ferry[1]; Vikash Mishra[1]; Jeffrey Eliason[1]; Alexei Maznev[1]; Keith Nelson[1]; Michael Short[1]; [1]MIT

3:20 PM Break

3:40 PM
Non-contact Analysis of Dislocation Effects in Single Crystal Niobium and Vacancy Effects in Intermetallic NiAl: *Sara Ferry*[1]; Cody Dennett[1]; Michael Short[1]; [1]MIT

4:00 PM
In Situ Corrosion Studies of Nuclear Claddings in Extreme Environments: *Simerjeet Gill*[1]; Mohamed Elbakhshwan[1]; Randy Weidner[1]; Thomas Anderson[1]; Arthur Motta[2]; Lynne Ecker[1]; [1]Brookhaven National Lab; [2]The Pennsylvania State University

4:20 PM
Evidence of Accelerated Oxide Dissolution during Irradiation-Corrosion of 316L Stainless Steel in Primary Water: *Stephen Raiman*[1]; Gary Was[1]; [1]University of Michigan

4:40 PM
Optimization of the Composition of FeCrAl Alloys for Radiation Environments: *Kevin Field*[1]; Yukinori Yamamoto[1]; Samuel Briggs[2]; Maxim Gussev[1]; Kenneth Littrell[1]; Xunxiang Hu[1]; Richard Howard[1]; Philip Edmondson[1]; Kumar Sridharan[2]; Bruce Pint[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory; [2]University of Wisconsin - Madison

5:00 PM
Oxide Dispersion Strengthened Steel and Silicon Carbide Composite Cladding Materials: *Kathy Lu*[1]; Zhihao Hu[1]; Zhi Tang[1]; [1]Virginia Tech

Aluminum Alloys, Processing and Characterization — Joining Technologies

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Thursday PM
February 18, 2016

Room: 201B
Location: Music City Center

Session Chair: Yuri Hovanski, Pacific Northwest National Laboratory

2:00 PM Introductory Comments

2:05 PM
Dissimilar Alloy Aluminum Tailor Welded Blanks: *Yuri Hovanski*[1]; Piyush Upadhyay[1]; Ayoub Soulami[2]; John Carsley[3]; Blair Carlson[3]; Susan Hartfield-Wunsch[3]; Mark Eisenmenger[4]; Tom Luzanski[4]; Dustin Marshall[4]; Brandon Landino[5]; Glenn Jarvis[5]; [1]Pacific Northwest National Laboratory; [2]Pacific Northwest National Laboratories; [3]General Motors; [4]TWB Company; [5]Alcoa

2:30 PM
Fusion Weld Joint Properties of Aluminum Base Metal 7020 and Filler Metals 5087, 5556A, and Al-Mg6-Zr: *John Chinella*[1]; Nick Kapustka[2]; Seth Shira[2]; [1]U.S. Army Research Laboratory; [2]Edison Welding Institute

2:55 PM
Finite Element and Neutron Diffraction Analysis of Self-piercing Riveting in Dissimilar Metal Sheets: Li Huang[1]; J. C. Moraes[2]; *Dimitry Sediako*[3]; J. Jordon[2]; Haiding Guo[1]; Xuming Su[4]; [1]Nanjing University of Aeronautics and Astronautics; [2]The University of Alabama; [3]Canadian Neutron Beam Centre; [4]Ford Motor Company

3:20 PM
Microstructure Evolution, Tensile Properties, and Thermo-Mechanical Modeling in Wrought and Cast Aluminum Alloys Fabricated by Friction Stir Processing and Welding: *Yi Pan*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institution

3:45 PM
Important Considerations for Laser Marking an Identifier on Aluminum: *Alex Fraser*[1]; Vincent Brochu[1]; Daniel Gingras[1]; Xavier Godmaire[1]; [1]Laserax Inc

Aluminum Reduction Technology — Investigations and Design Using Computer Modelling

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Stephan Broek, Hatch Ltd

Thursday PM
February 18, 2016

Room: 202C
Location: Music City Center

Session Chair: Vinko Potocnik, Vinko Potocnik Consultant Inc.

2:00 PM
Alumina Dissolution Modeling in Aluminium Electrolysis Cell Considering MHD Driven Convection and Thermal Impact: *Benoit Bardet*[1]; Thomas Foetisch[2]; Steeve Renaudier[1]; Jacques Rappaz[2]; Michel Flueck[2]; Marco Picasso[2]; [1]Rio Tinto Alcan; [2]EPFL

2:25 PM
Numerical Investigation on the Impact of Anode Change on Heat Transfer and Fluid Flow in Aluminum Smelting Cells: *Qiang Wang*[1]; Meijia Sun[1]; Baokuan Li[1]; Jianping Peng[1]; Yaowu Wang[1]; [1]Northeastern University of China

2:50 PM
On the Importance of Field Validation in the Use of Cell Thermal Balance Modeling Tools: *Marc Dupuis*[1]; Richard Jeltsch[2]; [1]GéniSim Inc; [2]Richard Jeltsch Consulting

3:15 PM Break

3:30 PM
Sideledge Facing Metal in Aluminium Reduction Cells: Freezing and Melting in the Presence of a Bath Film: *Asbjorn Solheim*[1]; Nils-Haavard Giskeodegard[2]; Nancy Holt[2]; [1]SINTEF; [2]Hydro Aluminium

3:55 PM
Modelling of Metal Flow and Metal Pad Heaving in a Realistic Reference Aluminium Reduction Cell: *Jinsong Hua*[1]; Magne Rudshaug[1]; Christian Droste[2]; Robert Jorgensen[3]; Nils-Haavard Giskeodegard[3]; [1]Institute for Energy Technology; [2]Hydro Aluminium Deutschland GmbH; [3]Hydro Aluminium

Bulk Metallic Glasses XIII — Mechanical and Other Properties III

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Thursday PM
February 18, 2016

Room: 101E
Location: Music City Center

Session Chairs: Dan Miracle, AF Research Laboratory; Dong Ma, Oak Ridge National Laboratory

2:00 PM Invited
Non-equilibrium Phase Transformation in Bulk Metallic Glasses: *Dong Ma*[1]; Alexandru. D. Stoica[1]; [1]ORNL

2:20 PM
Amorphization of Fe-6.25 at% C Alloy by Mechanical Alloying: *A. Aning*[1]; Ibrahim Khalfallah[1]; [1]Virginia Tech

2:40 PM
Comparison of the Entropy in $Cu_{50}Zr_{50}$ and $Cu_{46}Zr_{46}Al_8$: *Hillary Smith*[1]; Andrew Hoff[1]; Chen Li[2]; Tabitha Swan-Wood[3]; Chae-Reem Yang[1]; Sarah Randolph[3]; Marios Demetriou[1]; Brent Fultz[1]; [1]California Institute of Technology; [2]Oak Ridge National Laboratory; [3]California State University Channel Islands

3:00 PM Invited
Monatomic Metallic Glasses and Their Deformation through Ultrafast Liquid Quenching: *Scott Mao*[1]; Li Zhong[1]; Jiangwei Wang[1]; Ze Zhang[2]; Hongwei Sheng[3]; [1]University of Pittsburgh; [2]Zhejiang University; [3]George Mason University

3:20 PM Break

3:35 PM
Predictive Modeling of Glass-Forming Ability in the Ternary Fe-Nb-B System: *David Dominikus Brennhaugen*[1]; Huahai Mao[2]; Lars Arnberg[1]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]Royal Institute of Technology

3:55 PM
Role of Niobium Concentration on Glass Forming Ability and Crystallization Behavior of Zr-Ni-Al-Cu-Nb Bulk Metallic Glasses with Low Cu Concentration: *Kevin Cole*[1]; Donald Kirk[1]; Chandra Veer Singh[1]; Steven Thorpe[1]; [1]University of Toronto

4:15 PM Invited
Simultaneous Efficient Atomic Packing in Metallic Glass Structures: Kevin Laws[1]; *Dan Miracle*[2]; Michael Ferry[1]; [1]School of Materials Science and Engineering; [2]AF Research Laboratory

4:35 PM
The Effect of Cooling Rate on the Local Elastic Fluctuations in Metallic Glass Alloys: *Peter Tsai*[1]; Kelly Kranjc[1]; Katharine Flores[1]; [1]Washington University in St. Louis

4:55 PM
Enhanced Plasticity in Zr-Cu-Ag-Al-Be Bulk Metallic Glasses: Jianzhong Jiang[1]; *Q.P. Cao*[1]; J.B. Jin[1]; X.D. Wang[1]; D.X. Zhang[1]; [1]Zhejiang University

5:15 PM
Microstructure and Wear Behavior of Laser Clad Multi-layered Fe-based Amorphous Coatings on Steel Substrates: *Tanaji Paul*[1]; S. Habib Alavi[1]; Sourabh Biswas[1]; Sandip Harimkar[1]; [1]Oklahoma State University

Characterization of Minerals, Metals, and Materials — Welding and Solidification

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Thursday PM
February 18, 2016
Room: 103A
Location: Music City Center

Session Chairs: Yuanbo Zhang, Central South University; Ece Kosmaz, TEI-TUSAS Engine Industries, Inc.

2:00 PM
Humectation Kinetics of a Quasi-ceramic Matrix Destined to Fluxes for Submerged Arc Welding: *Jesús Hernández Ruiz*[1]; Rafael Quintana Puchol[1]; Lázaro Pino Rivero[1]; [1]Universidad Central de Las Villas

2:20 PM
The Effect of Post-weld Heat Treatment on the Properties of TIG Welded Inconel 718 alloy: *Ece Canan Kosmaz*[1]; Hüseyin Çimenoglu[2]; Rabia Günay[1]; [1]TEI-TUSAS Engine Industries, Inc.; [2]Istanbul Technical University

2:40 PM
Influence of Al and C Content on Mechanical Properties of Sub-rapidly Solidified Fe–20Mn–xAl–yC Low-density Steels: *Libing Liu*[1]; Zheng Shen[1]; Yang Yang[1]; Chang Song[1]; Qi Zhai[1]; [1]Shanghai University

3:00 PM
Dynamic Deep Etching and Particle Extraction for High-strength Aluminium Alloys: *Tonica Boncina*[1]; Franc Zupanic[1]; [1]UNIVERSITY OF MARIBOR

3:20 PM
Optimization of TiNp/Ti Content for Si_3N_4/42CrMo Joints Brazed with Ag-Cu-Ti+TiNp Composite Filler: *Tianpeng Wang*[1]; Jie Zhang[1]; Chunfeng Liu[1]; [1]harbin institute of technology

3:40 PM Break

3:55 PM
Effect of Interlayer Material on the Mechanical Properties of Diffusion Bonded Aluminum Joints: *Sila Atabay*[1]; Arcan Dericioglu[1]; [1]Middle East Technical University

4:15 PM
Preparating Magnetic Iron Ore from Copper Slag at Intermediate Temperature: *Zhenya Xu*[1]; [1]Shanghai University

4:35 PM
Interface Analysis of Solid State Welded AA7075 to Ti64 Joints: *Frank Balle*[1]; [1]University of Kaiserslautern

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Multiscale Modeling of Materials Properties

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Thursday PM
February 18, 2016
Room: 207D
Location: Music City Center

Session Chair: To Be Announced

2:00 PM
Lithiation Kinetics of Crystalline Silicon Nanowires Regulated by Native Oxide Layer: A Molecular Dynamics Simulation Using ReaxFF.: *Alireza Ostadhossein*[1]; Adri C.T. van Duin[1]; [1]Pennsylvania State University

2:20 PM
Three-Dimensional Simulation of Intercalation-Induced Stress in LiCoO2 Cathode Reconstructed by Focused Ion Beam Tomography: *Linmin Wu*[1]; Jing Zhang[1]; [1]Indiana University-Purdue University Indianapolis

2:40 PM
A Machine Learning Approach to Bulk Property Prediction for the Laser Assisted Cold Spray Process: *Aaron Birt*[1]; Joseph Dallarosa[2]; Diran Apelian[1]; [1]Worcester Polytechnic Institute; [2]IPG Photonics

3:00 PM
Development of First Principles Methods for the Thermal Characterization of Materials: Patrick Hermet[1]; *Philippe Jund*[1]; [1]Université Montpellier 2

3:20 PM Break

3:40 PM
Monte Carlo Simulation of Two-phase Film Growth on a Patterned Substrate: *Xiao Lu*[1]; Boya Lai[1]; David Laughlin[2]; Jian-Gang Zhu[2]; Jingxi Zhu[1]; [1]Sun Yat-sen University-Carnegie Mellon University Joint Institute of Engineering,; [2]Carnegie Mellon University

4:00 PM
Ionization Induced by Swift Heavy Ions in Metals and Strength of the Coulomb Explosion: *Magda Caro*[1]; Alfredo Correa[2]; Artur Tamm[1]; Alfredo Caro[1]; [1]Los Alamos National Laboratory; [2]Lawrence Livermore National Laboratory

4:20 PM
Modeling the Hydroforming of a Large Grain Niobium Tube: *Aboozar Mapar*[1]; Thomas Bieler[1]; Farhang Pourboghrat[1]; [1]Michigan State University

High Entropy Alloys IV — Compositional Effect

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Thursday PM
February 18, 2016
Room: 102B
Location: Music City Center

Session Chairs: Steven Zinkle, Oak Ridge National Laboratory; Hongbin Bei, Oak Ridge National Laboratory

2:00 PM Invited
Alloying Effects on the Microstructures and Mechanical Properties of Compositionally Complex Alloys: Zhenggang Wu[1]; *Hongbin Bei*[1]; [1]Oak Ridge National Laboratory

2:20 PM Invited
An Oxide Doped High Temperature High Entropy Alloy: *Shizhong Yang*[1]; Liuxi Tan[1]; Shengmin Guo[1]; Yan Yang[1]; [1]Southern University and A&M College

2:40 PM Invited
The Role of Extreme Compositional on the Physical Properties of High Entropy Alloy: *Malcolm Stocks*[1]; Suffian Khan[1]; German Samulyuk[1]; Claudia Troparevsky[1]; Markus Daene[2]; Julie Staunton[3]; Sebastian Wimmer[4]; [1]ORNL; [2]Lawrence Livermore National Laboratory; [3]University of Warwick; [4]Ludwig-Maximilian-Universitaet

3:00 PM
Effects of Chemical Composition on Mechanical Behavior of CoCrFeMnNi Alloys: The Origins of High Strength of A3S Grade of Alloys: *Anna Fraczkiewicz*[1]; Michal Mroz[1]; Matthieu Lenci[1]; Andras Borbely[1]; Xavier Sauvage[2]; [1]MINES St-Etienne; [2]Université et INSA de Rouen

3:20 PM Invited
High Entropy Brasses and Bronzes - Microstructure, Phase Evolution and Properties: *Kevin Laws*[1]; Cody Crosby[2]; Aarthi Sridhar[2]; Patrick Conway[1]; Leah Kolaodin[1]; Mo Zhao[2]; Shifrah Aron-Dine[2]; Michael Ferry[1]; Lori Bassman[2]; [1]University of New South Wales; [2]Harvey Mudd College

3:40 PM Break

3:55 PM
Influence of Cr Removal on Alloying Behavior, Microstructure and Mechanical Behavior of Ultra-fine Grained Al0.8Ti0.2CoNiFeCr High Entropy Alloy: Zhiqiang Fu[1]; Weiping Chen[2]; Baolong Zheng[1]; Yaojun Lin[3]; Fei Chen[3]; Yizhang Zhou[1]; Lianmeng Zhang[3]; *Enrique Lavernia*[1]; [1]University of California, Irvine; [2]South China University of Technology; [3]Wuhan University of Technology

4:15 PM
Ion Irradiation Effects on Microstructure and Mechanical properties of a High Entropy Alloy: *Anantha Phani Nimishakavi*[1]; Congyi Li[2]; Hongbin Bei[1]; Keith Leonard[1]; Steven Zinkle[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

4:35 PM
Ion Irradiation Induced Swelling in Ni-Based FCC Equiatomic Alloys: *Ke Jin*[1]; Hongbin Bei[1]; Yanwen Zhang[1]; William Weber[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

4:55 PM Invited
High-Entropy Alloys Including 3d, 4d and 5d Transition Metals from the Same Group in the Periodic Table: *Akira Takeuchi*[1]; Kenji Amiya[1]; Takeshi Wada[1]; Kunio Yubuta[1]; [1]Tohoku University

5:15 PM Invited
Effect of Zr and Si Addition on Microstructure and Properties of AlFeNiCuCrTi High Entropy Alloys: *Dai-hong Xiao*[1]; P.F. Zhou[1]; Peter K. Liaw[2]; [1]Central South University; [2]University of Tennessee

High Entropy Alloys IV — Structures and Modeling

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

Thursday PM
February 18, 2016
Room: 102A
Location: Music City Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Xie Xie, The University of Tennessee

2:00 PM Invited
A Model for the Deformation Mechanisms and the Serration Statistics of High Entropy Alloys: *Karin Dahmen*[1]; Robert Carroll[2]; Xie Xie[3]; Shuying Chen[3]; Michael LeBlanc[2]; Jien Wei Yeh[4]; Chi Lee[4]; Che Wei Tsai[4]; Peter Liaw[3]; Jonathan Uhl[5]; [1] University of Illinois at Urbana Champaign; [2]University of Illinois at Urbana Champaign; [3]University of Tennessee Knoxville; [4]National Tsing Hua University, Hsinchu; [5]private

2:25 PM Invited
Computational-Thermodynamics-Aided Development of Lightweight High Entropy Alloys: *Chuan Zhang*[1]; Jun Zhu[1]; Fan Zhang[1]; Shuanglin Chen[1]; Chuan Zhang[1]; Rui Feng[2]; Shuying Chen[2]; Haoyan Diao[2]; Peter Liaw[2]; [1]Computherm; [2]University of Tennessee

2:45 PM Invited
Computational High-Entropy Alloy Design and Phase Equilibria of an Al-Co-Cr-Fe-Ni System: *Zhi Tang*[1]; Oleg Senkov[2]; Jonathon Poplawsky[3]; Chuan Zhang[4]; Fan Zhang[4]; Carl Lundin[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]Air Force Research Laboratory; [3]Oak Ridge National Laboratory; [4]CompuTherm LLC

3:05 PM Invited
Computational Modeling of High-Entropy Alloys: Entropy Sources, Enthalpy, Elasticity, Electronic and Magnetic Properties: *Michael Gao*[1]; Mike Widom[2]; Jeff Hawk[1]; David Alman[1]; [1]National Energy Technology Lab; [2]Carnegie Mellon University

3:25 PM Invited
Thermally Activated Processes in a Crystal Plasticity Model for Deformation in Equiatomic Alloys: *Yanfei Gao*[1]; Hongbin Bei[2]; Zhenggang Wu[1]; George Pharr[1]; [1]Univ of Tennessee; [2]Oak Ridge National Laboratory

3:45 PM Break

4:00 PM Invited
Understanding High-Entropy Alloys Using a Cluster-based Structural Model: *Qing Wang*[1]; Wen Lu[1]; Chuang Dong[1]; Peter K. Liaw[2]; [1]Dalian University of Technology; [2]The University of Tennessee

4:20 PM Invited
Predicting the Formation of Single-phase High Entropy Alloys: A First Principles Approach: *M. Claudia Troparevsky*[1]; [1]Oak Ridge National Laboratory

4:40 PM
First Principles Calculations of the Lattice Distortions and Elastic Constants of the HfNbTaTiZr Alloy: *Maryam Ghazisaeidi*[1]; [1]Ohio State University

5:00 PM
Magnetic Treasure Maps for CoFeNi-based High-entropy-alloys from First-principles: *Fritz Körmann*[1]; Duancheng Ma[2]; Blazej Grabowski[2]; Marcel Sluiter[1]; [1]Delft University of Technology; [2]Max-Planck-Institut für Eisenforschung GmbH

5:20 PM
A Novel, Single Phase, Refractory CrMoNbV High-entropy Alloy: *Rui Feng*[1]; Michael Widom[2]; Michael Gao[3]; Peter Liaw[1]; [1]Department of Materials Science and Engineering, The University of Tennessee, Knoxville; [2]Department of Physics, Carnegie Mellon University; [3]URS at National Energy Technology Laboratory (NETL)

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Phase Transitions

Sponsored by: TMS Functional Materials Division (formerly EMPMD), TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Fadi Abdeljawad, Sandia National Laboratories; Stephen Foiles, Sandia National Laboratories; Timofey Frolov, UC Berkeley; Emine Gulsoy, Northwestern university; Heather Murdoch, Army Research Lab; Mitra Taheri, Drexel University

Thursday PM
February 18, 2016
Room: 108
Location: Music City Center

Session Chair: Fadi Abdeljawad, Sandia National Laboratories

2:00 PM Invited
Grain Boundary Adsorption Transition and Their Influence on Mass Transport and Microstructural Evolution: *Shen Dillon*[1]; [1]University of Illinois at Urbana-Champaign

2:40 PM
The Temperature Dependence of Grain Boundary Energy in Yttria-doped Alumina: Effect of a Complexion Transition: *Madeleine Kelly*[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

3:00 PM
HREM Studies on the Nature of Morphological Changes in (110) Grain Boundaries of Silicon Phase Found in Sr-induced Al-Si Eutectic Alloys: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

3:20 PM
Kinetics of Phase Transformation during Lithiation of Sn Electrode Materials: *Eric Chason*[1]; Chun-Hao Chen[1]; Srivatsan Hulikal[1]; Allan Bower[1]; Pradeep Guduru[1]; [1]Div of Engineering

3:40 PM Break

4:00 PM
The Atomistic Mechanism of Interface Migration during a Diffusional Structural Phase Transition: Tao Yang[1]; *Yipeng Gao*[2]; Dong Wang[1]; Zhen Chen[3]; Yunzhi Wang[2]; [1]Xi'an Jiaotong University; [2]The Ohio State University; [3]Northwestern Polytechnical University

4:20 PM
The Role of Interfaces for Structural Transformations Among Austenite, Ferrite and Cementite in Fe-C Alloys: Xie Zhang[1]; *Tilmann Hickel*[1]; Jutta Rogal[2]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH; [2]Interdisciplinary Centre for Advanced Materials Simulation

4:40 PM
Allotropic HCP to BCC Ti Transitions in Ti/BCC Multilayered Thin Films: *Li Wan*[1]; Xiao-xiang Yu[1]; Gregory Thompson[1]; [1]The University of Alabama

5:00 PM
Periodic Layers Structure in Mg/SiO_2 System Created in the Solid State: *Joanna Wojewoda-Budka*[1]; Anna Wierzbicka-Miernik[1]; Lidia Litynska-Dobrzynska[1]; Boguslaw Onderka[1]; [1]Polish Academy of Sciences

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Structural Materials VI

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday PM
February 18, 2016
Room: 101A
Location: Music City Center

Session Chair: Isabella Van Rooyen, Idaho National Laboratory

2:00 PM
Characterization of Thermal Aging Embrittlement of Cast Duplex Stainless Steels by Mechanical Testing and FEM Modeling: *Samuel Schwarm*[1]; R. Prakash Kolli[1]; Sarah Mburu[1]; Daniel Perea[2]; Sreeramamurthy Ankem[1]; [1]University of Maryland, College Park; [2]Pacific Northwest National Laboratory

2:20 PM
Development of Engineering Parameters for Low Pressure Diffusion Bonds of 316 SS Tube-to-Tube Sheet Joints for FHR Heat Exchangers: *Nils Haneklaus*[1]; Rony Reuven; Cristian Cionea[1]; Peter Hosemann[1]; Per F. Peterson[1]; [1]University of California, Berkeley

2:40 PM
SiC/SiC Composites for Current and Advanced Reactors: *David Frazer*[1]; Joanna Szornel[1]; Julie Tucker[2]; David Cahill[3]; Christian Deck[4]; Christina Back[4]; Kurt Terrani[5]; Steve Roberts[6]; David Armstrong[7]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Oregon State University ; [3]University of Illinois, Urbana Champaign; [4]General Atomics; [5]Oak Ridge National Laboratory; [6]University of Oxford ; [7]University of Oxford

3:00 PM
Helium Behavior after Thermal Treatment in V and Fe-based Systems: *Sofia Maria Gorondy Novak*[1]; François Jomard[2]; Michael Walls[3]; Nathalie Brun[3]; Frédéric Prima[4]; Hélène Lefaix-Jeuland[1]; [1]CEA; [2]Groupe d'Etude de la Matière Condensée (CNRS and Université de Versailles Saint-Quentin-en-Yvelines); [3]Laboratoire de Physique des Solides (Université Paris-Sud); [4]Institut de Recherche de Chimie Paris, CNRS – Chimie ParisTech

3:20 PM Break

3:40 PM
Microstructural Characterization of Creep-Fatigue Interactions in 9Cr-1MoV Steel and Welds: *Harrison Whitt*[1]; Tyler Payton[1]; Wei Zhang[1]; Michael Mills[1]; [1]The Ohio State University

4:00 PM
Thermomechanical Processing and Microstructural Evolution of Alloy 690, and Its Effects on Stress Corrosion Cracking: *Cody Miller*[1]; Michael Kaufman[1]; [1]Colorado School of Mines

4:20 PM
Investigation of Thermal Conductivity in Ion Irradiated Samples Using Laser Based Thermoreflectance Methods: *M Faisal Riyad*[1]; Vinay Chauhan[1]; Ahmed Gashgash[1]; Xinpeng Du[1]; Changdong Wei[1]; Marat Khafizov[1]; [1]The Ohio State University

4:40 PM
Mitigation of IASCC Susceptibility in a BWR-irradiated 304L Stainless Steel Utilizing Post-irradiation Annealing: Justin Hesterberg[1]; Zhijie Jiao[1]; Maxim Gussev[2]; Jeremy Busby[2]; *Gary Was*[1]; [1]University of Michigan; [2]Oak Ridge National Laboratory

5:00 PM
Mechanical and Microstructural Characterization of Some High Fluence Intermediate Flux Neutron Irradiated Reactor Pressure Vessel Steels: *Nathan Almirall*[1]; Peter Wells[1]; Takuya Yamamoto[1]; David Gragg[1]; Kirk Fields[1]; G. Robert Odette[1]; Randy Nanstad[2]; Keith Wilford[3]; Ian Edmonds[3]; [1]University of California Santa Barbara; [2]Oak Ridge National Laboratory; [3]Rolls-Royce

Phase Transformations and Microstructural Evolution — Phase Transformations - Characterization and Modeling

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

Thursday PM
February 18, 2016
Room: 107B
Location: Music City Center

Session Chair: Michael Mills, The Ohio State University

2:00 PM
High Temperature Microstructural Evolution of Ni-Co-Al-Ti-Cr Alloys Studied by In-situ Neutron Diffraction: *Katerina Christofidou*[1]; Nicholas Jones[1]; Roxana Flacau[2]; Mark Hardy[3]; Howard Stone[1]; [1]University of Cambridge; [2]Canadian Neutron Beam Centre; [3]Rolls Royce plc

2:30 PM
A Study of Phase Equilibria and Interdiffusion in Iron-based Alloy Systems Using Diffusion Multiples: *Christopher Eastman*[1]; Ji-Cheng Zhao[2]; [1]TimkenSteel Corporation, The Ohio State University; [2]The Ohio State University

3:00 PM
Application of Dual-anneal Diffusion-multiple (DADM) Approach to Studies of Phase Transformations: *Changdong Wei*[1]; Siwei Cao[1]; Ji-cheng Zhao[1]; [1]The Ohio State University

3:20 PM
In Situ Analysis of Microstructural Evolution during the Devitrification of Amorphous Tantalum Films: Olivia Donaldson[1]; Khalid Hattar[2]; *Jason Trelewicz*[1]; [1]Stony Brook University; [2]Sandia National Laboratories

3:40 PM Break

4:00 PM
Atomic Resolution Energy Dispersive Spectroscopy of η Phase Formation Along SESFs in a Ni-Based Disk Alloy: *Tim Smith*[1]; Robert Williams[1]; Bryan

Esser[1]; Nikolas Antolin[1]; Wolfgang Windl[1]; David McComb[1]; Hamish Fraser[1]; Michael Mills[1]; [1]The Ohio State University

4:30 PM
Determine Crystallographic Orientation Relationship and Orientation of Planar and Linear Features by Electron Microscopy: *Qingfeng Xing*[1]; Thomas Lograsso[1]; [1]Ames Laboratory

Ultrafine Grained Materials IX — Novel Thermomechanical Processing

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday PM
February 18, 2016
Room: 209B
Location: Music City Center

Session Chairs: Enrico Bruder, TU Darmstadt; Seok-Woo Lee, University of Connecticut

2:00 PM Invited
Grain Refinement and Post Processing Phenomena in Hydrostatically Extruded Materials: *Malgorzata Lewandowska*[1]; Witold Chrominski[1]; Agnieszka Krawczynska[1]; Piotr Bazarnik[1]; [1]Warsaw University of Technology

2:20 PM
Friction Consolidation Processing of n-Type Bismuth-Telluride Thermoelectric Material: *Scott Whalen*[1]; [1]Pacific Northwest National Laboratory

2:40 PM
SPD of Binary Al-Mg Alloys Pre-processed by Continuous Screw Extrusion: *Kristian Skorpen*[1]; Hans Jørgen Roven[1]; Oddvin Reiso[2]; [1]The Norwegian University of Science and Technology (NTNU); [2]Hydro Aluminium AS

3:00 PM
Two Different Pathways to Produce Novel Cu-based Nanostructured Alloys with Enhanced Strength and Ductility: Keith Dusoe[1]; Thomas Bissell[1]; Sriram Vijayan[1]; Mark Aindow[1]; *Seok-Woo Lee*[1]; [1]University of Connecticut

3:20 PM Break

3:40 PM
Beneficial and Detrimental Effects of Heat Treatments on the Formability of Ultrafine Grained Steel: *Enrico Bruder*[1]; Vanessa Kaune[2]; Anton Hohenwarter[3]; Clemens Müller[1]; [1]TU Darmstadt; [2]Dr. Robert-Murjahn-Institut GmbH; [3]Erich Schmid Institute of Materials Science

4:00 PM
Scaling-up of High-pressure Sliding: Production of High Strength and Superplasticity of Metallic Materials: *Yoichi Takizawa*[1]; Kazushige Fujimitsu[1]; Takahiro Masuda[1]; Takahiro Kajita[1]; Kyohei Watanabe[1]; Manabu Yumoto[2]; Yoshiharu Otagiri[2]; Zenji Horita[1]; [1]Kyushu University; [2]Nagano Forging Co., Ltd

4:20 PM
Roadmap for Tailoring the Strength and Ductility of Ferritic/Martensitic T91 Steel via Thermo-mechanical Treatment: *Miao Song*[1]; Cheng Sun[2]; Zhe Fan[1]; Youxing Chen[1]; Ruixian Zhu[1]; Kaiyuan Yu[3]; Karl Hartwig[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University; [2]Los Alamos National Laboratory; [3]China University of Petroleum-Beijing

4:40 PM
Review of Bake Hardening Mechanisms of Ultra Fine Grained and Coarse Grained Low Carbon Steel Sheets: *Uma Gupta*[1]; V.K. Sharma[1]; M.K. Banerjee[1]; [1]MNIT Jaipur

Ultrafine Grained Materials IX — Student Oral Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday PM
February 18, 2016
Room: 209A
Location: Music City Center

Session Chairs: Malgorzata Lewandowska, Warsaw University of Technology; Kaveh Edalati, Kyushu University

2:00 PM
Hydrogen Generation Behavior of Ultrafine Grained Al Alloys in Pure Water after Processing by High-pressure Torsion: *Fan Zhang*[1]; Kaveh Edalati[1]; Makoto Arita[1]; Zenji Horita[1]; [1]Kyushu University

2:20 PM
Deformation Mechanisms and Microstructural Evolution in Cu-Ag Alloys Produced by High-pressure Torsion: *Karoline Kormout*[1]; Zaoli Zhang[1]; Bo Yang; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

2:40 PM
Development of Dislocation Structures in Hydrostatically Extruded Pure Aluminium: *Witold Chrominski*[1]; Malgorzata Lewandowska[1]; [1]Warsaw University of Technology

3:00 PM
Effects of Severe Plastic Deformation on the Grain and Precipitate Structures in Beta Ti Alloys: *Ahmad Zafari*[1]; Wei Xu[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]RMIT University

3:20 PM Break

3:40 PM
Tungsten Processed by ECAE: *Zachary Levin*[1]; K. Ted Hartwig[1]; [1]Texas A&M University

4:00 PM
Twinning and Spall of Nanocrystalline Tantalum: *Eric Hahn*[1]; Diego Tramontina[2]; Eduardo Bringa[2]; Marc Meyers[1]; [1]UCSD; [2]Universidad Nacional de Cuyo

4:20 PM
Mechanical Behavior of Ultrafine Grained High-Mn Steels Containing Nano-scale Oxides: *Jonggyu Jeon*[1]; Seungjin Nam[1]; Hyunjoo Choi[1]; [1]Kookmin University

4:40 PM
Flow Characteristics of Ultrafine Grained Zircaloy-4 Processed by Multiaxial Forging: *Devasri Fuloria*[1]; Nikhil Kumar[1]; R. Jayaganthan[1]; S. Jha[2]; D. Srivastava[3]; [1]IIT Roorkee; [2]NFC, Hyderabad; [3]Materials Science Division, Bhabha Atomic Research Centre

5:00 PM
Mechanical Properties and Deformation Behavior of High-Mn Austenitic Steels with Fully Recrystallized Ultrafine Grained Structure: *Hiroki Kitamura*[1]; Yu Bai[1]; Yanzhong Tian[2]; Rajib Saha[3]; Akinobu Shibata[1]; Nobuhiro Tsuji[1]; [1]Kyoto University; [2]Chinese Academy of Science; [3]Tata Steel

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Nanomaterials Committee
Program Organizers: Terry Xu, UNC Charlotte; Nitin Chopra, The University of Alabama; Jung-Kun Lee, University of Pittsburgh; Jiyoung Kim, University of Texas; V. U. Unnikrishnan, The University of Alabama

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Room: Poster Area
Location: Music City Center

Session Chairs: Terry Xu, UNC Charlotte; Jiyoung Kim, UT Dallas; Jung-Kun Lee, Univesity of Pittsburgh; Vinu Unnikrishnan, The University of Alabama; Nitin Chorpa, The University of Alabama

A New Method to Produce CQDs by a One-step Thermal Decomposition: *Li Dong*[1]; Hong-Yi Li[1]; [1]Chongqing University

Facile Synthesis of Water-soluble Graphene Quantum Dots/Graphene Hybrid Nanoplatelets as Efficient Photodetector: J. Walden[1]; *Sanju Gupta*[1]; [1]Western Kentucky University

Laser-Assisted Purification of Electron-Beam-Induced Deposits: *Michael Stanford*[1]; Brett Lewis[1]; Joo Hyon Noh[1]; Jason Fowlkes[1]; Philip Rack[1]; [1]University of Tennessee

Study of Radiation Grafting Polymerization of Poly (Acrylic Acid) onto Carbon Nanotubes Yarns Surface: *Maria Cecilia Evora*[1]; Xinyi Lu[2]; Namgoo Kang[2]; Kunlun Hong[3]; Roberto Uribe[4]; Jimmy Mays[2]; [1]Instituto de Estudos Avançados; [2]University of Tennessee; [3]Oak Ridge National Laboratory; [4]Kent State University

Thermal Enhancement with Multi-Walled Carbon Nanotubes in Transient Heating Applications: *Karen Supan*[1]; Celeste Robert[1]; Stephen Bartolucci[2]; [1]Norwich University; [2]US Army Benet Laboratories - ARDEC

Effect of Calcinating Temperature on the Structure and Performance of Fayalite@C Nanocomposites as Anode for Lithium Ion Battery: *Qingtang Zhang*[1]; Langlang Liu[1]; Songwang Ge[1]; [1]School of Petrochemical Engineering, Lanzhou University of Technology

2016 Technical Division Student Poster Competition — Extraction and Processing Division (EPD) Graduate Students

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Isothermal Reduction Behavior of CF(calcium ferrite) with Addition of Al2O3: *Cheng Yi Ding*[1]; [1]Chongqing University

Low Energy Method to Separate Magnetite Generated By Reduction of Bauxite Residue: *Sumedh Gostu*[1]; Brajendra Mishra[2]; [1]Colorado School of Mines; [2]Worcester Polytechnic Institute

Non-isothermal Crystallization Behavior of CF with Addition of SiO2: *Cheng Yi Ding*[1]; [1]Chongqing University

On the Effect of Mo on Austenite-ferrite Transformation Kinetics: *Jianing Zhu*[1]; Hao Chen[1]; Kangying Zhu[2]; Zhigang Yang[1]; Chi Zhang[1]; [1]Tsinghua University; [2]Acelor Mittal

Solvent Extraction of Lanthanum (III) Using PC-88A Extractant Diluted in Kerosene: *Vivek Agarwal*[1]; Jennifer Galvin[1]; Mohammad Sadegh Safarzadeh[1]; John Bendler[1]; [1]South Dakota School of Mines and Technology

Synthesis of Nanocrystalline Tungsten Carbide (WC) via Carburization of WO_4^{2-} on an Activated Carbon Matrix: *Grant Wallace*[1]; Jerome Downey[1]; David Hutchins[1]; Jannette Chorney[1]; [1]Montana Tech of the University of Montana

Synthesis of Stable and Metastable Phases in the Ni-Si System by Mechanical Alloying: *Ahmed Al-Joubori*[1]; [1]University of Central Florida

2016 Technical Division Student Poster Competition — Extraction and Processing Division (EPD) Undergraduate Students

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Characterization of Inclusions in High Strength Interstitial Free (IF) Steel: *David Sartor*[1]; Marvin Ambrosio[1]; [1]University of Toronto - St. George Campus

Separation and Recovery of Rare Earth Elements Using Ion Exchange: *Maureen Chorney*[1]; [1]Montana Tech

Synthesis of Aluminum Multiwalled Carbon Nanotubes by Mechanical Alloying and Sintering: *Johnny Lopez*[1]; Oscar Marcelo[1]; Hector Colon[1]; Alfer Castro[1]; [1]University Of Puerto Rico

2016 Technical Division Student Poster Competition — Functional Materials Division (FMD) Graduate Students

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A Novel Effect of Ag3Sn: Effective Suppression of Thermomigration-induced Cu Dissolution in Micro-scale Pb-free Interconnects: *Yu - Fang Lin*[1]; Wei-Neng Hsu[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

An Eco-friendly Red Phosphor with Very High Intensity: *Chieh-Szu Huang*[1]; Shih-kang Lin[1]; Cheng-Liang Huang[1]; [1]National Cheng Kung University

Comparison on Electrochemical Migration Behavior of Fine-pitch Ag Interconnects Prepared by Screen Printing and Lithography Methods: *Chia-Hung Tsou*[1]; Heng-Tien Lin[2]; Fan-Yi Ouyang[1]; [1]Dept. of Engineering and System Science, National Tsing Hua University, Hsinchu, TAIWAN; [2]Industrial Technology Research Institute, Hsinchu, TAIWAN

High-Performance Anode Material Using Hierarchical Micro-Lamella-Structured 3D Porous Copper Current Collector for Advanced Lithium-Ion Batteries: *Hyeji Park*[1]; Jihyun Um[2]; Myounggeun Choi[1]; Yung-Eun Sung[2]; Heeman Choe[1]; [1]Kookmin University; [2]Seoul National University/ School of chemical and biological engineering

Interfacial Reaction in Cu/Pb-free Solders during Solid-state Aging Process: *Chieh-Fu Chen*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

Interfacial Reactions at the Joints of Bi2Te3-based Thermoelectric Devices: Sinn-wen Chen[1]; Tz-wen Liou[1]; *Alan Chu*[1]; Hsu-shen Chu[2]; Jenn-dong Huang[2]; [1]Department of Chemical Engineering, National Tsing Hua University; [2]Material & Chemical Research Laboratory, Industrial Technology Research Institute

Liquidus Projection of the Bi-In-Te Thermoelectric Material System: Sinn-wen Chen[1]; Shi-Ting Lu[1]; *Po-Han Lin*[1]; [1]National Tsing Hua University

Mechanical, Ferroelastic and Piezoelectric Behavior of Highly Textured PZT Films: *Debashish Das*[1]; Luz Sanchez[2]; Joel Martin[2]; Brian Power[2]; Steven Isaacson[2]; Ronald Polcawich[2]; Ioannis Chasiotis[1]; [1]University of Illinois at Urbana-Champaign; [2]U.S. Army Research Laboratory

Morphology and Microstructure of Ag Alloy Wire for Electronic Packaging under Electromigration: *Jui-Nung Wang*[1]; Tzu-Yu Hsu[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

Oxide-coated Fe Powders for SMC Applications: *Katie Jo Sunday*[1]; [1]Drexel University

Ultrathin Tantalum Based Power Capacitors with Low Leakage and High Operating Frequency: *Parthasarathi Chakraborti*[1]; Himani Sharma[1]; Markondeya Raj Pulugurtha[1]; Rao Tummala[1]; [1]Georgia Institute of Technology

Why Does Electromigration Occur? – A Combinatorial Study Using Ab

Initio Calculations and Synchrotron Radiation Diffractometry : *Yu-chen Liu*[1]; Yung-si Yu[1]; Shang-Jui Chiu[2]; Yen-Ting Liu[2]; Hsin-Yi Lee[2]; Shih-kang Lin[1]; [1]National Cheng Kung University; [2]National Synchrotron Radiation Research Center

Why Does Li-rich Layered Oxide Cathode Material Degrade in Lithium Ion Batteries?: *Yu-cheng Chuang*[1]; Ping-chun Tsai[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

2016 Technical Division Student Poster Competition — Functional Materials Division (FMD) Undergraduate Students

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Crosslinked Poly(Ethylene Oxide) Solid Polymer Electrolytes for Lithium-Metal Batteries: *Ziyin Huang*[1]; Qiwei Pan[1]; Christopher Li[1]; [1]Drexel University

First Principles Study of Lattice Disordering in CuNiMnAl and CuNiMnSn Heusler Alloys: *Shifrah Aron-Dine*[1]; Greg Pomrehn[2]; Aurora Pribram-Jones[3]; Kevin Laws[4]; Michael Ferry[4]; Lori Bassman[1]; [1]Harvey Mudd College; [2]Boeing Corporation; [3]Lawrence Livermore National Laboratory; [4]School of Materials Science and Engineering, University of New South Wales

Nanofabrication and Characterization of Quasi-Crystal Metasurfaces Using Shadow-Sphere Lithography: *Caroline Zellhofer*[1]; Emily MacDonald[2]; Alex Nemiroski[3]; George Whitesides[3]; [1]UMBC; [2]Whitworth University; [3]Harvard University

Processing, Microstructure, and Oxidation Behavior of Iron Foam: *Kicheol Hong*[1]; Hyeji Park[1]; Hyelim Choi[1]; Yoonsook Noh[1]; Heeman Choe[1]; [1]Kookmin University

2016 Technical Division Student Poster Competition — Light Metals Division (LMD) Graduate Students

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

A Study On Recrystallization and Grain Growth in Pure Magnesium: *Aeriel Murphy*[1]; John Allison[1]; [1]University of Michigan

Application of Computational Thermodynamics & Kinetics to Rare Earth Reduction in Magnesium Alloys: *Kyle Fitzpatrick-Schmidt*[1]; Danielle Cote[1]; Diran Apelian[1]; [1]Worcester Polytechnic Institute

Coupled Infrared Thermography and Digital Image Correlation for Advanced Characterization of Material Behavior during Hot Stamping: *Nan Zhang*[1]; Fadi Abu-Farha[1]; [1]Clemson University

Dissimilar Metal Casting: *Carl Soderhjelm*[1]; [1]Worcester Polytechnic Institute

Effect of Milling Time on Morphology and Properties of a New Mechanical Alloyed Fe-base ODS Alloy Powder: Xu Haijian[1]; Lu Zheng[1]; *Wang Dongmei*[1]; Liu Chunming[1]; [1]Northeastern University

Effect of NbB_2 Nanoparticles on the Portevin-Le Chatelier Phenomenon in Al-Mg Alloys: *David Florian-Algarin*[1]; Michelle Marrero-García[1]; Javier Martínez[1]; Rafael Martínez[1]; Oscar Marcelo Suárez[1]; [1]University of Puerto Rico Mayaguez(UPRM)

Influence of Processing on the Microstructure and Tensile Behavior of HPDC Mg AM Series Alloys: *Erin Deda*[1]; John Allison[1]; [1]University of Michigan

On the Microstructure and Properties of Supersaturated Al-Zn-Mg Alloy Fabricated by Friction Stir Processing: *Qu Liu*[1]; Gaoqiang Chen[1]; Qingyu Shi[1]; [1]Tsinghua University

Thermodynamic & Kinetic Model Application to Strengthening Mechanisms of Aluminum Alloys for Additive Manufacturing: *Derek Tsaknopoulos*[1]; Danielle Cote[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

2016 Technical Division Student Poster Competition — Light Metals Division (LMD) Undergraduate Students

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Study of Thermomechanical Properties of an Al-Zn Matrix Reinforced with Dodecaboride Particles: *Marivic Hernández-Quezada*[1]; José Colón[1]; Sujeily Soto[1]; Oscar Suárez[1]; [1]University of Puerto Rico - Mayaguez Campus

2016 Technical Division Student Poster Competition — Materials Processing and Manufacturing Division (MPMD) Graduate Students

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

A Study of the Microstructural Evolution of Powder Aluminum Alloys after Thermal Processing: *Caitlin Walde*[1]; Danielle Cote[1]; Victor Champagne[2]; Richard Sisson[1]; [1]WPI; [2]US Army Research Laboratory

Carbon Nanotube Reinforced Aluminum Composites with Enhanced Mechanical and Electrical Properties: *Daron Spence*[1]; Baratunde Cola[1]; [1]Georgia Institute of Technology

Dissolution Behavior of Ni Substrate and Ni3Sn4 Phase in Molten Lead-free Solders: *Yen Wei Chang*[1]; Meng Han Guo[1]; Yee Wen Yen[1]; [1]National Taiwan University of Science and Technology

Experimental Design Analysis of Stir Casting of Enhanced Aluminum Filler Reinforced with NbB2 Nanoparticles: *Andres Calle*[1]; Christian vazquez[1]; Jorge de jesus[1]; Oscar Marcelo suarez[1]; [1]University of Puerto Rico at Mayagüez

Grain Texture Manipulation & its Effect on the Tribological Response of Carbides: *Sagar Patel*[1]; Mathew Kuttolamadom[1]; [1]Texas A&M University

Joining 1018 Steel to 304L Stainless Steel by Friction and Fusion Welding: *Nathan Switzner*[1]; Zhenzhen Yu[1]; [1]Colorado School of Mines

Mechanical Characterization of Free Form Cold Spray Al 1100 Deposits: *Benjamin White*[1]; William Story[1]; Brian Jordon[1]; Luke Brewer[1]; [1]University of Alabama

Nano-Strength Testing of Additive Manufactured Parts Using Atomic Force Microscopy: *Robert DelSignore*[1]; Danielle Cote[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

On the Atomistic Mechanism of Solid State Bonding Between Aluminum by Severe Thermal Plastic Deformation: A Molecular Dynamics Study: *Gaoqiang Chen*[1]; Zhili Feng[2]; Yucan Zhu[1]; Qingyu Shi[1]; [1]Tsinghua University; [2]Oak Ridge National Laboratory

Phase Equilibria of the Sn-Fe-Ni Ternary System at 270oC: *Tzu Ting Huang*[1]; Dai Jia Ying[2]; Yen Yee Wen[2]; Liu Hung Lun[2]; Lin Shih Wei[2]; [1]National Taiwan University of Science and Technology; [2]National Taiwan University of Science and Technology

Predicting the Stagnant Zone of Material Flow during Friction Stir Welding by Using a Novel Computational Fluid Dynamics Model: *Yucan Zhu*[1]; Qingyu Shi[1]; [1]Tsinghua University

Printing of Graphene-coated Copper Nano-ink on Flexible Substrate Using Light Sintering Method: *YeonHo Son*[1]; Min Kyu Kang[1]; Young Jun Pyo[1]; Eric H Yoon[1]; Seung-Boo Jung[1]; Yongil Kim[1]; Caroline Sunyong Lee[1];

[1]Multi-Functional Materials & Devices Lab

2016 Technical Division Student Poster Competition — Materials Processing and Manufacturing Division (MPMD) Undergraduate Students

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Microstructural Evolution and Aging Behavior In a Ni-21Ti-25Hf-4Al Alloy: *Brittani Maskley*[1]; Michael Kesler[1]; Michele Manuel[1]; [1]University of Florida

Selective Dissolution of Al-Cu-Mg Alloys for Porous Metals Applications: *Abel Urbán Ríos*[1]; Juan Vargas Martínez[1]; Oscar Marcelo Suárez[1]; [1]University of Puerto Rico at Mayaguez

2016 Technical Division Student Poster Competition — Structural Materials Division (SMD) Graduate Students

Monday PM
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Room: Poster Area
Location: Music City Center

Choice of Intermetallic Compounds for Structural Applications in Near Submicron Joints: *Jen-Jui Yu*[1]; Jui-Yang Wu[2]; Li-Jen Yu[2]; C. Robert Kao[2]; [1]UCLA; [2]National Taiwan University

Cross Polarization for Enhanced Digital Image Correlation Fidelity: *William LePage*[1]; John Shaw[1]; Samantha Daly[1]; [1]University of Michigan

Cross Slip at a Screw Dislocation Pile-up: A Concurrent Atomistic-continuum Study: *Shuozhi Xu*[1]; Liming Xiong[2]; Youping Chen[3]; David McDowell[1]; [1]Georgia Tech; [2]Iowa State University; [3]University of Florida

Differential Responses of Head and Neck Cancer Cell Lines Induced by N2/He Micro-plasma Exposure: *Chih-Ying Wu*[1]; [1]Department of Materials Science and Engineering, National Cheng Kung University

Effect of Annealing Temperature on Tensile Properties and Hole Expansion Behavior of Fe-Mn-Al-C Dual Phase Light-weight Steel: *Jae Hyung Kim*[1]; Taekyung Lee[2]; Chong Soo Lee[1]; [1]Pohang University of Science and Technology; [2]Northwestern University

Effect of Chemistry and Microstructure on the Toughness of C-½ Mo Steel: *Maneel Bharadwaj*[1]; Carl Lundin[1]; Martin Prager[2]; [1]University of Tennessee; [2]Welding Research Council

Effect of Friction Stir Processing on Microstructure and Mechanical Properties of Cast Eglin Steel (ES-1): *Vedavyas Tungala*[1]; Amit Arora[2]; Rajiv Mishra[1]; Kyu Cho[3]; Raymond Brennan[3]; [1]University of North Texas; [2]IIT Gandhinagar; [3]Army Research Laboratory

Effect Of Increasing Temperature On Cracking Behavior of Titanium Alloys During Hot Salt Stress Corrosion Cracking (HSSCC): *Kavisha Tekade*[1]; Mangesh Pustode[2]; V Raja[2]; [1]University of Texas at Arlington; [2]Indian Institute of Technology Bombay

Effects of Friction Stir Processing on Toughness of WE43 Thin Sheets: *Shamiparna Das*[1]; Rajiv Mishra[1]; Kevin Doherty[2]; Kyu Cho[2]; Bruce Davis[3]; [1]University of North Texas; [2]Army Research Laboratory; [3]Magnesium Elektron

Friction Stir Welding of Thick Aluminum 7449 Alloys: *Nelson Martinez*[1]; Rajiv Mishra[1]; Kevin Doherty[2]; [1]University of North Texas; [2]U.S. Army Research Laboratory

Investigations on the Combustion Behavior of Ti-6Al-4V Alloy Exposed to Atmospheric Re-entry Environments: *Jessica Buckner*[1]; Stephen Stafford[1]; Darren Cone[1]; [1]University of Texas at El Paso

Nanomechanical Study of Mechanical Properties: *Claire Teresi*[1]; [1]University of Minnesota

New Developments in the Rolling Contact Fatigue of M50 Bearing Steel: *Gael Guetard*[1]; Pedro Rivera-Díaz-del-Castillo[1]; [1]University of Cambridge

Purification of Metallurgical-Grade Silicon Prepared from Rice Husk Ash Using Tin as Impurity Getter: *Benedict Ayomanor*[1]; [1]Sheffield Hallam University

Synchrotron Study on the Thermal Stability of Retained Austenite in High-carbon Chromium Steels: *Wen Cui*[1]; David San Martín[2]; Pedro Rivera-Díaz-del-Castilloa[1]; [1]Cambridge University; [2]Centro Nacional de Investigaciones Metalurgicas (CENIM-CSIC)

Strength Prediction in NiCo Alloys - The Role of Composition and Nanotwins: *Piyas Chowdhury*[1]; Huseyin Sehitoglu[1]; Hans Maier[2]; Richard Rateick[3]; [1]University of Illinois at Urbana-Champaign; [2]Leibniz Universität Hannover; [3]Honeywell Aerospace

2016 Technical Division Student Poster Competition — Structural Materials Division (SMD) Undergraduate Students

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Biomimetic Narce Composite Synthesis: Michael Sabatini[1]; *Olivia Yalnizyan-Carson*[1]; [1]University of Toronto

Effect of Heat Treatment and Chemical Composition on the High Temperature Hydrogen Attack (HTHA) Resistance of C-1/2 Mo Steels: *Will Hoskins*[1]; Maneel Bharadwaj[1]; Carl Lundin[1]; Martin Prager[2]; [1]University of Tennessee; [2]Welding Research Council

Generalized Stacking Fault Energies of Multicomponent Alloys: *Jonas Kaufman*[1]; Josh Sanz[1]; Greg Pomrehn[2]; Aurora Pribram-Jones[3]; Reza Mahjoub[4]; Kevin Laws[4]; Michael Ferry[4]; Lori Bassman[1]; [1]Harvey Mudd College; [2]Boeing Corporation; [3]Lawrence Livermore National Laboratory; [4]School of Materials Science and Engineering, University of New South Wales

High Strength Air-entrained Concrete with Partial Replacement of Fly Ash and Nanostructured Silica: *Marivette Rullán~Semidey*[1]; O. Marcelo Suárez[1]; Hildelix Soto[1]; Carlos Medina[1]; [1]UPR at Mayaguez

Micro-Tensile Testing on Proton Beam-Irradiated 304 SS: *Hi Vo*[1]; Ashley Reichardt[1]; David Frazer[1]; Peter Chou[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Electric Power Research Institute

2016 Technical Division Young Professional Poster Competition — Extraction and Processing Division (EPD)

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February 15, 2016

Room: Poster Area
Location: Music City Center

Removal of Iron from Cu Ore for the Production of Copper Sulfide: *Jungshin Kang*[1]; Jin-Young Lee[1]; [1]Korea Institute of Geoscience and Mineral Resources

The Effects of Quartz Amount on the Physical and Microstructural Properties of Tile Bodies: *Pelin Karadeniz*[1]; Yildirim Karadeniz[1]; Nermin Demirkol[1]; [1]Kocaeli University

2016 Technical Division Young Professional Poster Competition — Functional Materials Division (FMD)

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Optimization of the Morphology of Volatile Organic Compound Sensors Based on Polymer-metal Nanocomposites: *Nega Alemayehu Zerihun*[1]; Franz Faupel[2]; Vladmir Zaporjchenko[2]; [1]Addis Ababa Institute of Technology; [2]CAU Kiel

2016 Technical Division Young Professional Poster Competition — Light Metals Division (LMD)

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

A Study on Mechanical Properties of Particulate Reinforced 6063 Aluminium Alloy: *Lawrence Osoba*[1]; [1]Universit of Lagos

DIC In-Situ of Tensile Deformation and Synchrotron Diffraction for the Accurate Investigation of Austenite-to-Martensite Transformation in AHSSs: *Fadi Abu-Farha*[1]; [1]Clemson University

Refinement of Primary and Eutectic Silicon in Hypereutectic Al-Si Alloys with Electromagnetic Stirring: *Jong Ho Kim*[1]; Myoung Gyun Kim[1]; Joonpyo Park[1]; [1]Research Institute of Industrial Science and Technology

2016 Technical Division Young Professional Poster Competition — Materials Processing and Manufacturing Division (MPMD)

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Novel Conductive Scanning Probe Microscopy (SPM) Probes with Reduced Capacitive Coupling: *Yigezu Mulugeta Birhane*[1]; Joan Bausells[2]; Jordi Otero[3]; Gabriel Gomila[3]; [1]Addis Ababa Institute of Technology; [2]Barcelona Microelectronics Institute, IMB-CNM (CSIC); [3]Institut de Bioenginyeria de Catalunya (IBEC), Universitat de Barcelona

Study of Reduction of Zinc Ferrite Contained in Electric Arc Furnace Dusts by CO - CO2 Gas Mixtures: *Mery Gómez-Marroquín*[1]; [1]Universidad Nacional de Ingenieria

2016 Technical Division Young Professional Poster Competition — Structural Materials Division (SMD)

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Effect of Neutron Irradiation on Friction Stir Processed ODS Alloys: *Ramprashad Prabhakaran*[1]; Yaqiao Wu[2]; Jatu Burns[2]; James Cole[3]; Indrajit Charit[4]; Rajiv Mishra[5]; KL Murty[6]; [1]Pacific Northwest National Laboratory; [2]Boise State University; [3]Idaho National Laboratory; [4]University of Idaho; [5]University of North Texas; [6]North Carolina State University

Understanding of Deformation Twinning Characteristics in HCP Materials: *Arul Mariyappan*[1]; Irene Beyerlein[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory

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

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

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Room: Poster Area
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A Combined Radiation and Corrosion Experiment for Molten Salt Reactor (MSR): *Weiyue Zhou*[1]; Michael Short[1]; [1]Massachusetts Institute of Technology

Comparison of Nanoindentation, Microhardness, and Tensile Testing on Neutron Irradiated Ferritic/Martensitic Steels: *David Krumwiede*[1]; Manuel Abad[1]; Takuya Yamamoto[2]; Stuart Maloy[3]; Tarik Saleh[3]; George Odette[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]University of California, Santa Barbara; [3]Los Alamos National Laboratory

Effects of Neutron Irradiation on Zr52.5Cu17.9Ni14.6Al10Ti5 (BAM-11) Bulk Metallic Glass: *Jamieson Brechtl*[1]; N.A.P. Kiran Kumar[2]; Hongbin Bei[2]; Steven Zinkle[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

Grain Boundary Character Effect on Radiation Induced Defect Distribution in Nanocrystalline Nickel and Nickel-Chromium Thin Films: *James Nathaniel*[1]; Osman El-Atwani[1]; Asher Leff[1]; Mitra Taheri[1]; Jon Baldwin[2]; Khalid Hattar[3]; [1]Drexel University; [2]Los Alamos National Laboratory; [3]Sandia National Laboratory

Kinetics of Defect Formation in Advanced F/M Steels Under Ion-Beam Irradiation Using In-situ TEM: *Djamel Kaoumi*[1]; Jordan Huygue[1]; [1]The University of South Carolina

Preliminary Experiments to Develop a He-W Calibration Standard for Laser Induced Breakdown Spectroscopy: *Guinevere Shaw*[1]; Nicolas Andre[1]; Mark Bannister[2]; Theodore Biewer[2]; Madhavi Martin[2]; Fred Meyer[2]; Brian Wirth[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

Reexamination of the "Temperature-shift" Arising from Increases in dpa rate during Ion Bombardment: *Frank Garner*[1]; Alexander Kalchenko[2]; Michael Short[3]; Lin Shao[4]; Stuart Maloy[5]; [1]Radiation Effects Consulting; [2]Kharkov Institute of Physics and Technology; [3]Massachusetts Institute of Technology; [4]Texas A&M University; [5]Los Alamos National Laboratory

Room Temperature Au2+ Irradiation of Ni, Ni-Co and Ni-Fe Single Phase Alloys: *Taini Yang*[1]; Chenyang Lu[1]; Ke Jin[2]; Yanwen Zhang[2]; Lumin Wang[1]; [1]University of Michigan; [2]Oak Ridge National Laboratory

Study of Thermal Aging on Corrosion Fatigue of Z3CN20.09M Duplex Stainless Steel in High Temperature Water: *Bin Yang*[1]; [1]University of Science and Technology Beijing

Swift Heavy Ion Irradiation Damage in Ti-6Al-4V: Characterization of the Microstructure and Mechanical Properties: *Aida Amroussia*[1]; Carl Boehlert[1]; Florent Durantel[2]; Clara Grygriel[2]; Wolfgang Mittig[3]; Isabelle Monnet[2]; Frederique Pellemoine[4]; [1]Michigan State University; [2]CIMAP-GANIL; [3]FRIB-NSCL-MSU; [4]FRIB-MSU

X-ray Micro-computed Tomography for Nondestructive Examination of Nuclear Materials: *Chinthaka Silva*[1]; Yutai Katoh[1]; Eliot Specht[1]; John Hunn[1]; Kurt Terrani[1]; Keith Leonard[1]; [1]Oak Ridge National Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University ; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Additive Manufactured Material Physical Property Variations and Measurements: *Roger England*[1]; Thomas Watkins[2]; Ryan DeHoff[2]; [1]Cummins, Inc.; [2]ORNL

Additive Manufacturing of Metals: Testing Durability: *Roberta Beal*[1]; Veronica Livescu[1]; George Gray[1]; Manny Lovato[1]; [1]Los Alamos National Laboratory

Characterization of Ti-6Al-4V to 304L SS Gradient Components Fabricated with Laser Deposition: Hayden Horan[1]; *Ashley Reichardt*[1]; Theresa Green[1]; Douglas Hofmann[2]; Scott Roberts[2]; Richard Otis[3]; R. Peter Dilon[2]; An-

drew Shapiro-Scharlotta[2]; Zi-Kui Liu[3]; John Paul Borgonia[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Jet Propulsion Laboratory; [3]Pennsylvania State University

Comparing Micro-computed X-ray Tomography with Various Methods to Characterize Differently Atomized Inconel 625 Powders for Additive Manufacturing: *Shannon Biery*[1]; Colleen Hilla[1]; Eamonn Hughes[1]; Amir Mostafaei[1]; Markus Chmielus[1]; [1]University of Pittsburgh

Computational Modeling and Experimental Validation of Melting and Solidification in Single-Crystal and Equiaxed Superalloys Processed Through Scanning Laser Epitaxy (SLE) for Additive Manufacturing: *Amrita Basak*[1]; Ranadip Acharya[1]; Suman Das[1]; [1]Georgia Institute of Technology

In Situ Monitoring of Ceramic Materials Manufactured Using Binder Jetting Additive Manufacturing Technology: *Jorge Mireles*[1]; [1]The University of Texas at El Paso

Inconsistent Mechanical Performance of Additively Manufactured 17-4PH: *Bradley Salzbrenner*[1]; Brad Boyce[1]; Jeff Rodelas[1]; John Laing[1]; [1]Sandia National Labs

Investigation and Quality Control of the Effect of Multiple Compounding Operations on Recycled 3D Printer Feedstock: *Derek Thomas*[1]; Michael Snyder[1]; Jan Clawson[1]; Todd Letcher[2]; [1]Made In Space, Inc.; [2]South Dakota State University

Effect of Printing Orientation on Strength of 3D Printed ABS Plastics: *Jing Zhang*[1]; Yi Zhang[1]; Michael Golub[1]; [1]Indiana University - Purdue University Indianapolis

Micromechanical Modeling of Additively Manufactured Ti-6Al-4V from 3D PFIB Serial Sectioned EBSD Datasets: *Ross Cunningham*[1]; Tugce Ozturk[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

Microstructural Response of Additively Manufactured 316L Stainless Steel in Forced Shear: *Emily Walker*[1]; Carl Trujillo[1]; Ellen Cerreta[1]; John Carpenter[1]; Thomas Lienert[1]; Saryu Fensin[1]; Curt Bronkhorst[1]; [1]Los Alamos National Laboratory

Microstructure Based Fatigue Modeling of IN 718 Produced by DMLS: *Veerappan Prithivirajan*[1]; Michael Sangid[1]; [1]Purdue University

Modeling and Characterization of the Deposition Stability in the Highly Efficient Laser Hot-wire Additive Manufacturing: *Zhenguo Nie*[1]; Gang Wang[1]; James Cawley[2]; Yiming (Kevin) Rong[1]; [1]Tsinghua University; [2]CWRU

Sulfuric Acid Corrosion to Simulate Microbial Influenced Corrosion on Stainless Steel 420: *Jacob Miller*[1]; Holly Martin[1]; Brett Conner[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Mechanical Engineering, Youngstown State University

Surface Morphology Analysis and Microstructure Evolution for Selective Laser Melting NiCrBSi Powder under a Vacuum Environment: *Baicheng Zhang*[1]; [1]Simtech

The Effect of Thermal History on Porosity, Surface Feature and Mechanical Properties of LENS Printed Ti-64: *Colleen Hilla*[1]; Jakub Toman[2]; Erica Stevens[2]; Qingcheng Yang[2]; Pu Zhang[2]; Albert To[2]; Markus Chmielus[2]; [1]University of Pittsburgh ; [2]University of Pittsburgh

The Effects of Porosity and Infiltrated Metal on the Corrosion Behavior and Tensile Strength of Binder Jet Printed Stainless Steel 420: *Luke Johnson*[1]; Holly Martin[1]; Brett Conner[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Mechanical Engineering, Youngstown State University

Verification of Numerically Calculated Cooling Rates of Powder Bed Additive Manufacturing: *Mustafa Megahed*[1]; Hans-Wilfried Mindt[1]; Nicholas Lavery[2]; Stephen Brown[2]; [1]ESI Group; [2]Swansea University

EBSD Study of Ti-6Al-4V Alloy Fabricated by Powder-Bed Electron Beam Additive Manufacturing: Xiaoqing Wang[1]; *Kevin Chou*[1]; [1]The University of Alabama

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Shaping and Forming Committee

Program Organizers: Rodney McCabe, Los Alamos National Laboratory; John Carpenter, Los Alamos National Laboratory; Marko Knezevic, University of New Hampshire; Wolfgang Pantleon, Technical University of Denmark; Thomas Bieler, Michigan State University; Khalid Hattar, Sandia National Laboratories; Irene Beyerlein, Los Alamos National Laboratory

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

3D Crystal Plasticity based Modeling of Deformation Behavior in Commercial Purity Titanium: *Harsha Phukan*[1]; Chen Zhang[1]; Thomas Bieler[1]; Philip Eisenlohr[1]; Carl Boehlert[1]; Martin Crimp[1]; Ruqing Xu[2]; Wenjun Liu[2]; [1]Michigan State University; [2]Argonne National Laboratory

A First Prediction of Dislocation Patterns in Single Crystals Using Continuum Dislocation Dynamics Theory: *Shengxu Xia*[1]; Anter El-Azab[1]; [1]Purdue University

Delayed Cracking in Deep-drawn Duplex Stainless Steels: The Role of Plastic Anisotropy, Transformation Kinetics, and Stress Partitioning: *Peijun Hou*[1]; Yuan Li[1]; Dongchul Chae[2]; Yang Ren[3]; Hahn Choo[1]; [1]University of Tennessee; [2]POSCO Technical Research Laboratory; [3]Argonne National Laboratory

Effect of Cold Rolling on the Microstructure and Properties of Cr-Ni-Mo-Ti Maraging Stainless Steel: *Yong Lian*[1]; Jin Zhang[1]; Jinfeng Huang[2]; Chao Zhao[1]; Wen Gao[1]; Cheng Zhang[2]; Zunjun Zhang[2]; [1]Institute of Advanced Materials and Technology, University of Science and Technology Beijing; [2]State Key Laboratory for Advanced Metals and Materials; University of Science and Technology Beijing

Effect of Grain Boundary on the Surface Roughness in Single-point Diamond Turning Annealed Copper: *Jianchao Yu*[1]; Gang Wang[1]; Yiming Rong[2]; [1]Tsinghua University; [2]Worcester Polytechnic Institute

Experimental Research and Modeling of the Material Behavior in the Creep Feed Grinding: *Zhenguo Nie*[1]; Gang Wang[1]; Dehao Liu[1]; Yiming (Kevin) Rong[1]; [1]Tsinghua University

In Situ Characterization of Nanoscale Precipitate Nucleation and Growth in Aluminum Alloys Using Transmission X-Ray Microscopy (TXM): *C. Shashank Kaira*[1]; Sudhanshu Singh[1]; Vincent De Andrade[2]; Francesco De Carlo[2]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Advanced Photon Source, Argonne National Laboratory

Influence of Dominant Deformation Mechanism, Strain, and Temperature on the Recrystallization Kinetics of AZ31B Mg Alloy: *Yuan Li*[1]; Peijun Hou[1]; Yang Ren[2]; Hahn Choo[1]; [1]University of Tennessee; [2]Argonne National Laboratory

Investigation of Slip Behavior in Al-Li 2195 Using In Situ High-resolution Digital Image Correlation: *Wesley Tayon*[1]; Roy Crooks[2]; Jacob Hochhalter[1]; John Newman[1]; Ashley Spear[3]; [1]NASA Langley Research Center; [2]Black Laboratories, L.L.C.; [3]University of Utah

Microstructurally-Short Crack Growth Driving Force Identification: Combining DCT, PCT, Crystal Plasticity Simulations and Machine Learning Technique
: *Andrea Rovinelli*[1]; Michael Sangid[1]; Ricardo Lebensohn[2]; Wolfgang Ludwig[3]; Yoann Guilhem[4]; Henry Proudhon[5]; [1]Purdue University; [2]Los Alamos National Lab; [3]European Synchrotron Radiation Facility; [4]ENS de Cachan; [5]MINES ParisTech

Multi-scale Modeling of Hydrogen Embrittlement: *Burak Bal*[1]; Demircan Canadinc[2]; [1]Purdue University; [2]Koç University

Optimized Mechanical Properties of Thermomechanically-processed HSLA-100 Steel Plates: *Mehdi Soltan Ali Nezhad*[1]; Alireza Hoseinifar[2]; [1] Fer-

dowsi University of Mashhad, Mashhad, Iran; [2]shiraz university

The Effect of Temperature and Thermomechanical Processes on the Tensile Deformation Behavior of Beta Titanium Alloys: *Vahid Khademi*[1]; Carl Boehlert[1]; [1]Michigan State University

The Role of Texturing and Recrystallization during Grain Boundary Engineering of Advanced Ni-base Superalloys: *Martin Detrois*[1]; Robert Goetz[2]; Randolph Helmink[2]; Sammy Tin[1]; [1]Illinois Institute of Technology; [2]Rolls-Royce Corporation

Using EBSD to Characterized Deformation under Scratches in Inconel 690 Heat Exchanger Tube: *William Roes*[1]; Tatiana Allen[2]; [1]Tennessee Valley Authority; [2]UT_Chattanooga

Efficient Modeling of Continuum Deformation Variables in Atomistic Simulations: *Doyl Dickel*[1]; [1]Mississippi State University

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Magnetic Materials Committee
Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

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Room: Poster Area
Location: Music City Center

Session Chairs: Raju Ramanujan, NTU; Matthew Willard, Case Western Reserve University

Direct Measurements of Magnetoelastic Coupling in Shape Memory Alloy: Paul Stonaha[1]; *Mike Manley*[1]; Nick Bruno[2]; Ibrahim Karaman[2]; Raymundo Arroyave[2]; Navdeep Singh[3]; [1]Oak Ridge National Lab; [2]Texas A&M University; [3]University of Houston

FeCo Alloys to Cobalt Ferrite: Synthesis Considerations, Structural Characterization and Magnetic Properties: *Dustin Clifford*[1]; Carlos Castano[1]; Amos Lu[1]; Everett Carpenter[1]; [1]Virginia Commonwealth University

Effect of Processing Route and Alloying Substitutions on the Microstructure and Magnetic Properties of Ferrite Magnets: *Waleed Khalifa*[1]; Mohannad Al Jarrah[2]; Omayma Elkady[3]; Mohammad Al Harahsheh[2]; [1]Cairo University; [2]Jordan University of Science & Technology; [3]Central Metallurgical Research and Development Institute

Structural, Microstructure and Magnetic Properties of Superparamagnetic MnxMg1-xFe2O4 Powders Prepared through Co-precipitation Method: *Tarek Abdelhamid*[1]; Mohamed Rashad[1]; Moataz Fayed[1]; EL Said Fayed[1]; [1]Tabbin Institute for Metallurgical Studies

Tailoring of Magnetic Softness of Fe-Ni Based Magnetic Microwires: Valentina Zhukova[1]; Margarita Churyukanova[2]; Sergei Kaloshkin[3]; Vera Sudarchikova[3]; Mihail Ipatov[1]; Ahmed Talaat[1]; Juan Blanco[1]; *Arcady Zhukov*[4]; [1]Basque Country University, UPV/EHU, San Sebastian, Spain; [2]National University of Science and Technology «MISIS», Moscow, ; [3]National University of Science and Technology «MISIS», Moscow,; [4]Basque Country University and Ikerbasque

Synthesis and Characterization of CFO/BCZT Core-shell Structure for Magnetoelectric Application: Venkata Sai Sriram Mosali[1]; Vinitha Reddy Monaji[1]; Mohd Qasim[1]; Paul Praveen[1]; *Tanjore Jayaraman*[2]; Dibakar Das[1]; [1]University of Hyderabad, SEST; [2]University of Michigan - Dearborn

Infiltration Process in Permanent Magnets for Coercivity Enhancement: Daniel Salazar[1]; Andrés Martín-Cid[1]; Rajasekhar Madugundo[2]; José Manuel Barandiarán[1]; *George C. Hadjipanayis*[2]; [1]BCMaterials; [2]Department of Physics and Astronomy, University of Delaware

Advanced Materials in Dental and Orthopedic Applications — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Biomaterials Committee
Program Organizers: Tolou Shokuhfar, University of Illinois at Chicago; Luis Rocha, UNESP, Univ. Estadual Paulista, Faculdade de Ciências; Grant Crawford, South Dakota School of Mines and Technology; Terry Lowe, Colorado School of Mines; Ana Ribeiro, National Institute of Metrology Quality and Technology; Reginald Hamilton, The Pennsylvania State University

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February 15, 2016

Room: Poster Area
Location: Music City Center

Session Chairs: Holly J. Martin, Youngstown State University; Sweetu Patel, Michigan Technological University

DMP1 Peptides Surface Modification of Titanium Implants: *Luciana Trino*[1]; Anne George[2]; Mathew Mathew[3]; Paulo Lisboa-Filho[1]; [1]State university of São Paulo; [2]University of Illinois at Chicago; [3]Rush University Medical Center

Evaluation of Dental Archwires Following Flex Bending Fatigue: *Janet Gbur*[1]; Kimaya Gupte[1]; Brian Benini[1]; John Lewandowski[1]; [1]Case Western Reserve University

Fatigue Performance of New Developed Biomedical Ti-15Mo Alloy with Surface Modified by TiO2 Nanotubes Formation: *Nilson Oliveira*[1]; Leonardo Campanelli[1]; Carolina Borlolan[1]; Claudemiro Bolfarini[1]; [1]Federal University of São Carlos – UFSCar

Nanoscale M23C6 Carbides Formation in Co-Cr-Mo-C Implant Alloy during Martensite Transformation: *Shahab Zangeneh*[1]; [1]Razi University

Surface Chemistry Examination and Adhesion Testing of Chitosan Bonded to Titanium Using Biologically Compatible Solvents: *Kathryn Shields*[1]; Holly Martin[1]; Snjezana Balaz[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Physics and Astronomy, Youngstown State University

Understanding Dental Pulp Stem Cells Response to Spider Silk: Katherine Hafner[1]; Sam Caruso[1]; Delpine Dean[1]; *Marian Kennedy*[2]; [1]Clemson University; [2]Clemson University

Alloys and Compounds for Thermoelectric and Solar Cell Applications IV — Student Poster

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, CRISMAT laboratory; Stephane Gorsse, ICMCB-CNRS; Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University; CW Nan, Tsinghua University; G. Jeffrey Snyder, Northwestern University; Hsin-jay Wu, National Sun Yat-Sen University

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Location: Music City Center

Session Chair: Sinn-wen Chen, National Tsing Hua University

Fabrication of $CrSi_2$/$NbSi_2$ Nanocomposite by Melt Spinning Technique and Thermoelectric Properties
: *Takahito Kurimoto*[1]; Yuji Ohishi[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; [1]Osaka University

Interfacial Reactions at the Joints of Bi2Te3-based Thermoelectric Devices: Sinn-wen Chen[1]; Tz-wen Liou[1]; *Alan Chu*[1]; Hsu-shen Chu[2]; Jenn-dong Huang[2]; [1]Department of Chemical Engineering, National Tsing Hua University; [2]Material & Chemical Research Laboratory, Industrial Technology Research Institute

Liquidus Projection of the Bi-In-Te Thermoelectric Material System:

Sinn-wen Chen[1]; Shi-Ting Lu[1]; *Po-Han Lin*[1]; [1]National Tsing Hua University

Thermoelectric Properties of Si/SiB_3 sub-microcomposite Prepared by Melt Spinning Technique: *Jun Xie*[1]; Yuji Ohishi[1]; Yoshinobu Miyazaki[2]; Aikebaier Yusufu[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; [1]Osaka University; [2]National Institute of Advanced Industrial Science and Technology

Aluminum Alloys, Processing and Characterization — Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Steven Long, Kaiser Aluminum Corporation

Monday PM
February 15, 2016

Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Corrosion Resistance of Different Aluminum Alloys in Ethanol: Gustavo Kramer[1]; Claudia Méndez[2]; *Alicia Ares*[1]; [1]Materials Institute of Misiones-IMAM (CONICET-UNaM); [2]Faculty of Sciences - National University of Misiones

Effects of Alloying Elements on Microstructure, Mechanical Properties and Formability of Al-Si-Fe-Cu-Mn Based Alloys for Micro-channel Tube of Heat Exchanger: *Hyeon-Taek Son*[1]; Yong-Ho Kim[1]; Hyo-Sang Yoo[1]; [1]Korea Institute of Industrial Technology

Hot Deformation Behavior of Al_2Ca Modified AA6082 Alloy Using Dynamic Material Model: *Sangmin Lee*[1]; Hyun-Jin Choi[1]; Ji-Woon Lee[1]; Taek-Kyun Jung[1]; Soong-Keun Hyun[1]; Young-OK Yoon[1]; Shae K Kim[1]; [1]Inha University

Refinement of Primary Silicon Crystals by Novel Al-ZnS Master Alloy in Solidification of Hypereutectic Al-Si Alloys: *Kawther Al-Helal*[1]; Ian Stone[1]; Zhongyun Fan[1]; [1]Brunel University

Bio Nano Interfaces and Engineering Applications — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Po-Yu Chen, National University of Tsing Hua University; Terry Lowe, Colorado School of Mines; John Nychka, University of Alberta; Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

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Location: Music City Center

Session Chair: Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

Elucidation of Sequence-Dependent Structure/Function Relationships for Bimetallic CoPt Nanoparticles: *Hunter Jacobs*[1]; Nicholas Bedford[2]; [1]Virginia Tech; [2]NIST

High Affinity Surface Attachment of F1 Rotary Motors for Nanodevice Fabrication: *Mark Richter*[1]; [1]The University of Kansas

Selection of Peptide Aptamer with Ultrahigh Affinity for TiO_2 by Combination of Phage Display and Electroporation: *Ippei Inoue*[1]; Yasuaki Ishikawa[2]; Yukiharu Uraoka[2]; Ichiro Yamashita[2]; Hisashi Yasueda[1]; [1]Ajinomoto Co., Inc.; [2]Nara Institute of Science and Technology

Self-healing in Super-tough Double Network Hydrogels: *Siheng Su*[1]; Junhua Wei[1]; Jilong Wang[1]; Jingjing Qiu[1]; [1]Texas Tech University

Biological Materials Science Symposium — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Francois Barthelat, McGill University; Kalpana Katti, North Dakota State University; Paul Allison, University of Alabama; Rajendra Kasinath, DePuy Synthes Products, LLC

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Room: Poster Area
Location: Music City Center

Session Chairs: Rajendra Kasinath, DePuy Synthes; Kalpana Katti, North Dakota State University

A Comparative Analysis of Biological and Not Biological Cardiac Valves Replacement in the Brazilian Health Care System: *Frederico Margem*[1]; Martha Marcelle Bastos Margem[2]; Ligia Maria Muylaert[3]; [1]UENF; [2]UNIG - Universidade Iguaçu; [3]FMC Faculdade Medicina de Campos

Analyses and Characterization of Nanofiber Coating Layers of Implant Biomaterials: *James Sun*[1]; Liang Chen[1]; Wei-Ping Ren[1]; Xin Wu[1]; [1]Wayne State University

Biological Response of Interconnected Ti-6Al-4V Foam Constructs for Biomedical Implants: A Vascularization Issue: *Victor Correa*[1]; Kristine Garza[1]; Lawrence Murr[1]; [1]University of Texas at El Paso

Structure and Mechanical Behavior of Human Hair: *Yang Yu*[1]; Bin Wang[1]; Marc Meyers[1]; [1]University of California, San Diego

Synthesis of Polymeric Hydrogels Containing Nano-silver and Antibiotic for Wound Healing Applications: *Angélica Zafalon*[1]; Vinicius dos Santos[2]; Duclerc Parra[1]; Vijaya Rangari[3]; Ademar Lugão[1]; [1]Nuclear and Energy research institute; [2]Nuclear and Energy research institute ; [3]Tuskegee University

The Effects of Obesity on the Shear Strength of Murine Growth Plates: *Moriah Smoot*[1]; Patrick Estep[2]; Shawn Gilbert[2]; Alan Eberhardt[2]; [1]The University of Alabama; [2]University of Alabama at Birmingham

Bladesmithing Symposium 2016 — Poster Session

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Program Organizers: Bharat Jasthi, South Dakota School of Mines and Technology; Roxana Ruxanda, Emerson Climate Technologies; Garry Warren, University of Alabama; Michael West, South Dakota School of Mines and Technology

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Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Experimenting with Damascus Steel: Forging and Metallurgical Characterization: *Alexander Lark*[1]; Brandon Anglesey[1]; Travis Willhard[1]; [1]University of Utah

Novel Plasma Nitriding Technique for Case Hardening Cutting Edge of Blade: *Daniel Peppler*[1]; [1]University of Wisconsin-Milwaukee

Bulk Metallic Glasses XIII — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, Univ of Tennessee; Yanfei Gao, Univ of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

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February 15, 2016

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Location: Music City Center

Session Chair: To Be Announced

Designing of Ti-Fe-Si Ternary Amorphous Alloys via a Themodynamic Approach: *Guohua Zhao*[1]; Huahai Mao[2]; Sergey Ketov[3]; Zhi Wang[3]; Vla-

dislav Zadorozhnyy[3]; Dmitri Louzguine[3]; Ragnhild E. Aune[4]; [1]KTH Royal Institute of Technology; [2]Thermo-Calc Software AB; [3]WPI Advanced Institute for Materials Research (WPI-AIMR); [4]NTNU Norwegian University of Science and Technology

Effect of Ni and Cu on the Thermal and Mechanical Properties of High Strength CoCrMoCB-based Bulk Metallic Glasses: *David Ehinger*[1]; David Geißler[1]; Mihai Stoica[1]; Jürgen Eckert[1]; [1]IFW Dresden

Electrochemical Corrosion and Passivation Behavior of Zr42Cu5Ag8 Bulk Metallic Glass in Artificial Physiological Solutions: Nidhi Singh[1]; Jatin Bhatt[2]; Jagannath Nayak[1]; *Shashi Arya*[1]; [1]National Institute of Technology Karnataka,Surathkal; [2]VNIT Jaipur

Mechanical Properties of FeSiB Amorphous/Nanocrystalline Alloys Using Nanoindentation Technique: *Hamid Lashgari*[1]; J.M. Cadogan[1]; Dewei Chu[1]; Sean Li[1]; [1]UNSW

Shape Memory Bulk Metallic Glass Composites Studied by Molecular Dynamics Simulations: *Daniel Sopu*[1]; Mihai Stoica[1]; Jurgen Eckert[1]; [1]IFW Dresden

CFD Modeling and Simulation in Materials Processing — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, University of Illinois at Urbana-Champaign; Miaoyong Zhu, Northeastern University; Andreas Ludwig, Montanuniversitaet Leoben, Dep. Metallurgy; Adrian Sabau, Oak Ridge National Laboratory; Koulis Pericleous, University of Greenwich; Hervé Combeau, Institut Jean Lamour

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Location: Music City Center

Session Chairs: Laurentiu Nastac, The University of Alabama; Daojie Zhang, The University of Alabama

Finite Element Simulation of Die Forging Process of High Alloy Chromium-cobalt Bearing Steel: *Haiyan Tang*[1]; [1]University of Science and Technology Beijing

Gas-solid Flow and Injected Gas Distribution in Oxygen Blast Furnace Analyzed by DEM-CFD Coupling Model: *Zeshang Dong*[1]; Jingsong Wang[1]; Jinzhou Liu[1]; Xuefeng She[1]; Qingguo Xue[1]; Lin Lin[1]; [1]University of Science and Technology Beijing

Improving Current Efficiency through Optimizing Electrolyte Flow in Zinc Electrowinning Cell: *Hongdan Wang*[1]; Wentang Xia[1]; Wenqiang Yang[1]; Bingzhi Ren[1]; [1]Chongqing University of Science and Technology

Influence of Heavy Reduction(HR) on Internal Quality of Continuous Casting Bloom: *Cheng Ji*[1]; Chenhui Wu[1]; Miaoyong Zhu[1]; [1]Northeastern University of China

Numerical Simulation of Transient Flow in Continuous Casting Mold Based on Lattice Boltzmann Method: *Peng Zhao*[1]; Qiang Li[1]; Zongshu Zou[1]; [1]Northeastern University

Numerical Study of Flow Behavior and Optimization of Nozzle Ports in Continuous Casting Slab Mold: *Shuai Feng*[1]; LingXiang Hong[1]; Bo Wang[1]; Shupei Liu[1]; Zhiliang Yang[1]; Kongfang Feng[1]; Liang Bai[1]; Jieyu Zhang[1]; [1]shanghai Uiniversity

The Effect of Pulse Width on the Characteristic of Discharge and Flow for Pure Aluminum: *Xiang Wang*[1]; Zhishuai Xu[1]; Qixin Wang[1]; Qijie Zhai[1]; Ning Pei[1]; Yongyong Gong[1]; [1]Shanghai University

A Simulation Study on the Spreading and Heat Transfer during Fabrication of Ruthenium Target by Spark Plasma Sintering (SPS): *Hyo Eun Nam*[1]; Jun-Ho Jang[1]; Hyun-Kuk Park[1]; Ik-Hyun Oh[1]; [1]KITECH

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

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Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

A Theoretical Study on the Origin of Mg-based LPSO Structures: *Daisuke Matsunaka*[1]; Yoji Shibutani[2]; [1]Shinshu University; [2]Osaka University

Strain Induced Tuning of Band Gap of Bismuth Monolayer and Its Nonlinear Elastic Properties: *Zhe Shi*[1]; Chandra Singh[1]; [1]University of Toronto

Computational Materials Engineering for Nuclear Reactor Applications — Poster Session

Sponsored by:
Program Organizers: Michael Tonks, Idaho National Laboratory; Julie Tucker, Oregon State University; Mark Tschopp, Army Research Laboratory; Richard Williamson, Idaho National Laboratory

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February 15, 2016

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Location: Music City Center

Funding support provided by: The symposium will be co-sponsored by the ICME committee

Session Chair: To Be Announced

A Spatially Resolved Stochastic Cluster Dynamics Approach for Simulating Radiation Damage Accumulation in a-Fe: *Aaron Dunn*[1]; Rémi Dingreville[2]; Enrique Martínez-Saez[3]; Laurent Capolungo[1]; [1]Georgia Institute of Technology; [2]Sandia National Laboratories; [3]Los Alamos National Laboratory

Ab initio Study of Native Defects near the Stacking Faults of 3C-SiC: *Jianqi Xi*[1]; Bin Liu[1]; Yanwen Zhang[2]; William J. Weber[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

Beryllium Segregation to Zr(0001) Surface by First Principles: *Abhinav Jain*[1]; Dallas Trinkle[1]; [1]University of Illinois, Urbana-Champaign

Cluster Dynamics Modeling of Coupling of Cu-rich and Mn-Ni-Si Precipitates in RPV Steels: *Huibin Ke*[1]; Leland Barnard[1]; Peter Wells[2]; G. Odette[2]; Dane Morgan[1]; [1]University of Wisconsin-Madison; [2]University of California-Santa Barbara

Computational Modeling of the Structure of Jogged Screw Dislocations Responsible for Zircaloy Creep: *Jesse Carter*[1]; Ken Anderson[1]; Richard Smith[1]; [1]Bettis Atomic Power Laboratory

Dislocation Loop Sink Strengths: A 3D Phase-field Modelling Including Realistic Anisotropic Effects: *Ludovic Thuinet*[1]; Hadrien Rouchette[1]; Alexandre Legris[1]; Christophe Domain[2]; Antoine Ambard[2]; [1]Université de Lille; [2]EDF R&D

Gas Bubble Kinetics in an Irradiated U-Mo Using a Multistate Simulation Approach: *Linyun Liang*[1]; Zhi-Gang Mei[1]; Mihai Anitescu[1]; Abdellatif M. Yacout[1]; Yeon Soo Kim[1]; [1]Argonne National Laboratory

Phase Field Model of Multiphase Hydrides in Zirconium Fuel Rod Claddings: *Jake Bair*[1]; Mohsen Asle Zaeem[1]; Michael Tonks[2]; Daniel Schwen[3]; [1]Missouri University of Science and Technology; [2]Penn State University; [3]Idaho National Laboratory

Sensitivity Analysis of Rate Equations and Kinetic Monte Carlo Models: *Richard Hoffman III*[1]; [1]Georgia Institute of Technology

Texture Measurement and Prediction of Rolled a-uranium Foil: *Robert Klein*[1]; Elena Garlea[2]; Sean Agnew[1]; [1]University of Virginia; [2]Y-12 National

Security Complex

Using Phase Field Modelling to Investigate the Bubble Lattice Phenomenon in Nuclear Fission Materials: *Matthew Noble*[1]; Steve Fitzgerald[1]; Michael Tonks[2]; Chris Grovenor[1]; [1]The University of Oxford; [2]Idaho National Laboratory

Computational Methods for Spatio-temporal Scale-bridging: from Atomistics to Mesoscale — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Danny Perez, Los Alamos National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Maryam Ghazisaeidi, Ohio State University; Srujan Rokkam, Advanced Cooling Technologies, Inc.

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February 15, 2016
Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Study of the Structure and Deformation Pathways of Ti-7Al Using Atomistic Simulations, Experiments and Characterization: *Ajey Venkataraman*[1]; Paul Shade[2]; G. Viswanathan[3]; Michael Mills[3]; Michael Sangid[1]; [1]Purdue University; [2]Wright-Patterson Air Force Base; [3]The Ohio State University

Computational Thermodynamics and Kinetics — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS Functional Materials Division (formerly EMPMD), TMS: Chemistry and Physics of Materials Committee
Program Organizers: Dane Morgan, University of Wisconsin - Madison; Shawn Coleman, U.S. Army Research Laboratory; Xiang-Yang Liu, Los Alamos National Lab; Chris Wolverton, Northwestern University

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Session Chair: Chris Wolverton, Northwestern University

Computational Modeling for High Temperature Materials: *Youhai Wen*[1]; [1]National Energy Technology Laboratory

Quantitative Calculation on Sr Segregation of La0.8Sr0.2MnO3±d Perovskite as a Result of Atmospheric CO2 and H2O: *Shadi Darvish*[1]; Yu Zhong[1]; [1]Florida International University

Thermodynamic Modelling of Long Periodic Stacking Ordered Structures in Mg-Gd-Al: An Integrated First-principles Calculations and CALPHAD Modeling Study: *Hongyeun Kim*[1]; William Wang[1]; Xuan Liu[2]; Yi Wang[1]; ShunLi Shang[1]; Zi-Kui Liu[1]; Kristopher Darling[3]; Laszlo Kecskes[3]; [1]Penn state Univ.; [2]Penn State Univ.; [3]US Army Research Laboratory

Experiments and Kinetics Modeling for Gasification of Biomass Char and Coal Char under CO2 and Steam Condition: Guangwei Wang[1]; Jianliang Zhang[1]; JiuGang Sao[2]; *Pengcheng Zhang*[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing; [2]Handan Steel Co.LTD, Handan, 056000, China.

Effect of Particle and Interfacial Energy on Morphology of Phases during Spinodal Decomposition: *Naveen Kumar*[1]; T. A. Abinandanan[1]; [1]Indian Institute of science, Bangalore

Effect of Differential Diffusivities of Solutes on Coarsening in Ternary Two Phase Alloys: *Mithipati Bhaskar*[1]; T.A. Abinandanan[1]; [1]Indian Institute of Science

Rayleigh Instability of Cylindrical Pores: *Chaitanya Joshi*[1]; T.A. Abinandanan[1]; Abhik Choudhury[1]; [1]Indian Institute of Science, Bangalore

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Albert T. Wu, National Central University; Yan Li, Intel; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

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Session Chair: Christopher Gourlay, Imperial College London

Density, Surface Tension and Viscosity of ZnAl+X (X= Li, Na, Si) Alloys: *Tomasz Gancarz*[1]; [1]Institute of Metallurgy and Material Science PAS

Development of a Microwave Sintered TiO2 Reinforced Sn-0.7wt%Cu-0.05wt%Ni Solder Alloy: *M. A. A. Mohd Salleh*[1]; S. D. McDonald[1]; H. Yasuda[2]; K. Nogita[1]; [1]School of Mechanical and Mining Engineering, Univeristy of Queensland; [2]Kyoto University

Effect of Bi on Mechanical Properties and CTE of Pb-free Solders: Selena Smith[1]; Yueqin Wu[1]; Mohd Arif Mohd Salleh[1]; Christopher Gourlay[2]; Sergay Belyakov[2]; Stuart McDonald[1]; *Kazuhiro Nogita*[1]; [1]The University of Queensland; [2]Imperial College London

Effects of Trace Addition of Phosphorus in Sn-Cu-Ni Solders: *M. A. A. Mohd Salleh*[1]; J. Read[1]; Z. I. Abdullah[1]; S. D. McDonald[1]; K. Nogita[1]; [1]School of Mechanical and Mining Engineering, Univeristy of Queensland

Joint Properties of Sn-Cu-(X)Al(Si) for Automotive Electronics Modules: *Dong-Yurl Yu*[1]; Yong-Ho Ko[1]; Junghwan Bang[1]; Chang-Woo Lee[1]; [1]Korea Institute of Industrial Technology

Microstructural Evolution during Processing of Sintered Joints: *Govindarajan Muralidharan*[1]; Donovan Leonard[1]; Chad Parish[1]; Harry Meyer[1]; [1]Oak Ridge National Laboratory

Microstructure and Properties of BGA Joints Soldered with Sn-Cu-Ni-Bi: *Sergey Belyakov*[1]; Arif Mohd Salleh[2]; Takatoshi Nishimura[3]; Keith Sweatman[3]; Kazuhiro Nogita[2]; Christopher Gourlay[1]; [1]Imperial College London; [2]University of Queensland; [3]Nihon Superior Co., Ltd.

The Effect of Aging Temperature on the Phenomena Occurring at the Interface of Solder SnZn with Na on Cu Substrate: *Tomasz Gancarz*[1]; [1]Institute of Metallurgy and Material Science PAS

Energy Technologies and Carbon Dioxide Management — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Li Li, Cornell University ; Donna Guillen, Idaho National Laboratory; Neale Neelameggham, Ind LLC; Lei Zhang, University of Alaska Fairbanks ; Jingxi Zhu, Carnegie Mellon University; Nawshad Haque, CSIRO; Dirk Verhulst, Consultant, Extractive Metallurgy; Soumendra Basu, Boston University; Tao Wang, Nucor Steel; Xuan Liu, Carnegie Mellon University

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Session Chair: To Be Announced

Effect of Microwave Irradiation on Graphitization of Carbon Matrix in Pulverized Coal: *Qinghai Pang*[1]; [1]University of Science and Technology Liaoning

Effect of Microwave Irradiation on Improving Coal Grindability: *Zhijun He*[1]; [1]University of Science and Technology Liaoning

Effect of Microwave Irradiation on Magnetic Properties of Pulverized Coal: *Zhijun He*[1]; [1]University of Science and Technology Liaoning

Study on the Reaction Characteristics of Compound Sulfur Fixing Agent with Inorganic Constituents in Coal Ash: Zhu Guangjun[1]; Zhang Qianying[1]; Yang Yanhua[1]; *Qin Yuelin*[1]; [1]Chongqing University Of Science and Technol-

ogy

Thermodynamic Analysis in the System of Ca(II)-NH3-NH4Cl-H2O: *Zhi-Bo Tong*[1]; Guojun Ma[1]; Xiang Zhang[1]; Baoping Zhang[1]; [1]Key Laboratory for Ferrous Metallurgy and Resources Utilization of Ministry of Education, Wuhan University of Science and Technology, Wuhan 430081, P.R. China

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky; Ashley Spear, University of Utah

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Session Chair: To Be Announced

A Microscopic Study of Polyether Ether Ketone (PEEK) under Mean Strain Fatigue Loadings
: *Rakish Shrestha*[1]; Jutima Simsiriwong[1]; Nima Shamsaei[1]; [1]Mississippi State University

Effect of UNSM and LSP on the Fatigue Behavior of IN718+ at Room and Elevated Temperatures: *Micheal Kattoura*[1]; Vijay Vasudevan[1]; Seetha Ramaiah Mannava[1]; Dong Qian[2]; Abhishek Telang[1]; [1]University of Cincinnati; [2]University of Texas at Dallas

Experimental High Throughput Screening Using Micro Resonant Experiments as a Fundament for Fatigue Life Time Prediction: *Michael Buck*[1]; Thomas Straub[2]; Chris Eberl[2]; [1]University of Freiburg; [2]Fraunhofer Institute for Mechanics of Materials - IWM

Experimental Investigation of Crack Initiation in FCC Materials in the High and Very High Cycle Fatigue Regime: *Thomas Straub*[1]; Michael Buck[1]; Chris Eberl[1]; [1]Fraunhofer Institute for Mechanics of Materials (IWM)

Investigation of Corrosion Fatigue of Duplex Steel X2CrNiMoN22-5-3 Exposed to the Geothermal Environment under Different Electrochemical Conditions: *Marcus Wolf*[1]; Roman Afanasiev[1]; Thomas Boellinghaus[1]; Anja Pfennig[2]; [1]Federal Institute for Materials Research and Testing; [2]Hochschule für Technik und Wirtschaft Berlin – University of Applied Sciences

Tensile and Fatigue Deformation Behaviors of Extruded Hyper-eutectic Al-Si Alloy: *Gi-Su Ham*[1]; Min-Seok Baek[1]; Jong-Ho Kim[2]; See-Woo Lee[3]; Kee-Ahn Lee[1]; [1]Andong National University; [2]RIST; [3]Bowon Light Metal

Evaluating Fatigue Performance and Residual Stresses Effect on Crack Initiation in High Speed Helical Gears Using Modelling and Experimentation: *Ali Jammal*[1]; Hui Wang[1]; Yiming Rong[1]; [1]Tsinghua University

Fracture and Fatigue Crack Growth Behavior of As-cast Ti48Al-2Nb-2Cr and Ti 43Al-4Nb-1Mo
: *Matthew Dahar*[1]; Sesh Tamirisakandala[2]; John Lewandowski[1]; [1]Case Western Reserve University; [2]RTI International Metals, Inc.

Martensite Phase Transformation for Type 304L Stainless Steel under Cyclic Loading: *Jonathan Pegues*[1]; Michael Roach[2]; Judy Schneider[1]; Nima Shamsaei[1]; [1]Mississippi State University; [2]The University of Mississippi Medical Center

Cyclic Deformation, Degradation, and Failure of Paper: *Yoon Joo Na*[1]; James Collins[1]; Christopher Muhlstein[1]; [1]Georgia Institute of Technology

Effects of Corrosion Damage on the Fatigue Behavior of Dissimilar Friction Stir Welded Aluminum Alloys: Rogie Rodriguez[1]; *J Jordon*[1]; Paul Allison[1]; [1]The University of Alabama

High Temperature Fatigue of Dissimilar Metal Joints of IN718:IN713LC by Linear Friction Welding: *Ruoru Ye*[1]; H. Li[1]; T. Doel[1]; S. Bray[2]; A. Walpole[2]; P. Bowen[1]; [1]University of Birmingham; [2]Rolls-Royce plc.

Physically-based Simulation of Surface Microcrack Initiation and Comparison with Experimental Data: *Maxime Sauzay*[1]; J. Liu[1]; [1]CEA

Microstructural Properties and Four-point Bend Fatigue Characteristic of Ti-6.5Al-2Zr-1Mo-1V Welded Joints by Electron Beam Welding: *Peng Liu*[1]; Tongguang Zhai[2]; Yuanbin Zhang[1]; [1]Shandong Jianzhu University, P. R. China; [2]University of Kentucky

Separating the Influence Factors Resulting from Production Processes on the Fatigue Strength in the HCF/VHCF Regime: *Martina Zimmermann*[1]; Martin Cremer[2]; Davi Pessoa[1]; Hans-Jürgen Christ[3]; [1]TU Dresden; [2]Hydro Aluminium Rolled Products GmbH; [3]Universität Siegen

Surface Roughness Evolution and Point Defect Generation in FCC Single Crystals Loaded Cyclically: *Ahmed Hussein*[1]; Jaafar Elawady[1]; [1]Johns Hopkins University

Toward the Use of Machine Learning to Understand the Mechanisms of Complex, Microstructurally Small, Fatigue-Crack Evolution: *Stuart Childs*[1]; Ashley Spear[1]; Jacob Hochhalter[2]; P. Thomas Fletcher[1]; Brian Phung[1]; [1]University of Utah; [2]NASA Langley Research Center

High-Temperature Systems for Energy Conversion and Storage — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Amit Shyam, Oak Ridge National Laboratory; Kyle Brinkman, Clemson University; Paul Ohodnicki, National Energy Technology Laboratory; Jung Pyung Choi, Pacific Northwest National Laboratory

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Session Chair: To Be Announced

Graphene-inorganic Hybrids with Cobalt Oxides for Electrochemical Energy Storage and Conversion Applications: S. Carrizosa[1]; B. McDonald[1]; *Sanju Gupta*[1]; [1]Western Kentucky University

Thermal and Mechanical Properties of $(La_{1-x}Bi_x)_2Mo_2O_9$: *Yusuke Mitazono*[1]; Yuji Ohishi[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; [1]Osaka University

Effect of Heating Rate on the Sintering and Performance of MnCo2O4 Contact Layer with Metallic Powder Precursors: *Joseph Simpson*[1]; J. Zhu[1]; [1]Tennessee Technological University

High Entropy Alloys IV — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Suveen Mathaudhu, University of California Riverside; Gongyao Wang, Alcoa Technical Center

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Location: Music City Center

Session Chair: To Be Announced

Ab Initio Thermodynamics of the CoCrFeMnNi High Entropy Alloy: Importance of Entropy Contributions beyond the Configurational One: Duancheng Ma[1]; Blazej Grabowski[1]; *Fritz Körmann*[2]; Jörg Neugebauer[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Delft University of Technology

Alloy Design Strategy of High Entropy Alloys based on Mechanical·Thermophysical Properties: *Je In Lee*[1]; Hyun Seok Oh[1]; Jun Hyuk Kim[1]; Eun Soo Park[1]; [1]Seoul National University

Compressive Behavior of CoCrFeMnNi High Entropy Alloy: *Min Ji Jang*[1]; Soo-Hyun Joo[1]; Jien-Wei Yeh[2]; Che-Wei Tsai[2]; Hyoung Seop Kim[1]; [1]POS-

TECH; [2]NTHU

Effect of Cooling Rate on Mechanical Properties of MnAlFeNiCo HEAs: Tolga Ulucan[1]; Serkan Koylan[1]; Seyma Koc[1]; *Eren Kalay*[1]; [1]METU

Effects of Processing Conditions on Microstructure and Mechanicals Properties of Selected HEA Alloys from CoCrFeMnNi Family: Anna Fraczkiewicz[1]; *Julia Olszewska*[1]; Julia Olszewska[2]; Jean-Denis Mithieux[2]; [1]MINES St-Etienne; [2]APERAM

Microstructural Characterization and Mechanical Experiments of Lightweight AlxCrFeMn High-Entropy Alloys: *Peiyong Chen*[1]; Chanho Lee[1]; Rui Feng[1]; Michael Gao[2]; Fan Zhang[3]; Chuan Zhang[3]; Peter Liaw[1]; [1]University of Tennessee Knoxville; [2]URS at National Energy Technology Laboratory (NETL); [3]CompuTherm, LLC

Microstructural Characterization in AlxCrFeMnTix advanced Light Weight High-Entropy Alloys: *Chanho Lee*[1]; Peiyong Chen[1]; Rui Feng[1]; Michael Gao[2]; Fan Zhang[3]; Chuan Zhang[3]; Peter Liaw[1]; [1]University of Tennessee; [2]URS at National Energy Technology Laboratory (NETL); [3]CompuTherm, LLC

Microstructures and Mechanical Properties of Compositionally Complex Co-free FeNiMnCr18 Alloy with Simple Microstructure: *Zhenggang Wu*[1]; Hongbin Bei[2]; [1]University of Tennessee; [2]oak ridge national laboratory

Dynamic Recrystallization Behaviour of AlxCoCrFeNi High Entropy Alloys during High Temperature Deformation Process: *Murugesan Annasamy*[1]; Daniel Fabijanic[1]; Adam Taylor[1]; Peter Hodgson[1]; [1]Deakin University

Magnesium Technology 2016 — Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

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Location: Music City Center

Session Chairs: Kiran Solanki, Arizona State University; Eric Nyberg, Pacific Northwest National Laboratory; Martyn Alderman, Magnesium Elektron

Effect of the Volume Fraction of I-phase on Hot Workability in Mg-xZn-xY Alloys: *Tae-yang Kwak*[1]; Young-ok Yoon[1]; Shae k. Kim[1]; Hyunkyu Lim[1]; Woo Jin Kim[2]; [1].Korea Institute of Industrial Technology; [2]Hong-Ik University

Investigation on Plastic Deformability of Mg-Y Alloys by Vickers and Newly Designed In-situ Brinell Indentation Methods: *Takahiro Mineta*[1]; Seiji Miura[1]; Ken-ichi Ikeda[1]; [1]Hokkaido University

Mechanical Response of a Gravity Cast Mg-9Al-1Zn-0.2Sc Alloy at Strain Rates from 10^{-4} to 10^{3}/s: Richard Blessington[1]; *Andrew Brown*[1]; Andrea Lock[1]; Juan P. Escobedo-Diaz[1]; Paul Hazell[1]; Daniel East[2]; Md Zakaria Quadir[1]; [1]UNSW Australia; [2]CSIRO

Study on Fatigue Mechanism of Mg-0.6at%Y Alloy by Cyclic Tensile Test: *Qinghuan Huo*[1]; Daisuke Ando[1]; Junichi Koike[1]; Yuji Sutou[1]; [1]Tohoku University

Study of Stress Relaxation Behavior in AZ31 Magnesium Alloy: *Chaitanya Paramatmuni*[1]; Anand Kanjarla[1]; [1]Indian Institute of Technology, Chennai

A High Specific Strength and Corrosion Resistant Magnesium Alloy: Realizing the Nexus: *Wanqiang Xu*[1]; Michael Ferry[1]; [1]University of New South Wales

Additive Friction Stir Deposition of Mg Alloys Using Powder Filler Materials: Nanci Hardwick[1]; *Kumar Kandasamy*[1]; Jianqing Su[1]; Dietrich Linde[1]; James Donnelly[1]; [1]Aeroprobe Corporation

DSC Investigation of Recrystallization Mechanism in AZ31 Mg Alloy: *Özgün Köse*[1]; Bensu Tunca[1]; Elif Bor[1]; Sakir Bor[1]; [1]METU

Effect of Aging Treatment on Texture Evolution of Magnesium Alloy Sheets: *Jae H. Kim*[1]; Byeong-Chan Suh[2]; Jihyun Hwang[1]; Myeong-Shik Shim[1]; Nack J. Kim[1]; [1]Pohang University of Science and Technology (POSTECH); [2]National Institute for Materials Science

Electrochemical Corrosion Behavior of Acid Pretreated and Plasma Electrolytic Oxide Film over AM50 Mg Alloy in 3.5% NaCl: *Bhavana Rikhari*[1]; Periyathambi Dhaiveegan[2]; Hwa Chul Jung[1]; Nallaiyan Rajendran[2]; kwang Seon Shin[1]; [1]Seoul National University; [2]Anna University

Grain Refinement Mechanism of Magnesium by Addition of Calcium: Guosheng Peng[1]; *Yun Wang*[1]; Zhongyun Fan[1]; [1]Brunel University

Heterogeneous Nucleation Mechanism of Mg by Inoculation of MgO Particles: *Yun Wang*[1]; Guosheng Peng[1]; Zhongyun Fan[1]; [1]Brunel University

Investigation of Corrosion Behavior of Mg-Zn and Mg-Sn-Zn Alloys in NaCl Solution: *Jie Yang*[1]; Chang Dong Yim[2]; Bong Sun You[2]; [1]University of Science and Technology (UST); [2]Korea Institute of Materials Science (KIMS)

Mg-Ni Hydrogen Storage Alloys for Metal Hydride Electrodes: *Gokce Hapci*[1]; Gökhan Orhan[1]; [1]Istanbul University

Microstructure and Mechanical Properties of ARB Processed Mg-3%Gd Alloy: *Xuan Luo*[1]; Zongqiang Feng[1]; Tianlin Huang[1]; Shuai Huang[1]; Guilin Wu[1]; [1]Chongqing University

Preparation, Microstructure and Mechanical Properties of Mg/Ti and Mg/Zr Nanolaminates: Yuanyuan Lu[1]; Jonnathan Ligda[2]; Sergey Yarmolenko[3]; Brian Schuster[2]; *Qiuming Wei*[1]; [1]University of North Carolina at Charlotte; [2]US-ARL; [3]NC A&T SU

Quantification of Solid Solution Strengthening by Al, Zn, Gd and Y in Mg Alloys Investigated by Solid-to-Solid Diffusion Couples and Nanoindentation: *Catherine Kammerer*[1]; Kyu Cho[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]US Army Research Laboratory

Texture and Microstructure Study on Cold Rolled AZ31 Alloy: *Litzy Lina Catorceno*[1]; Mohammad Masoumi[1]; Hamilton de Abreu[1]; [1]UFC - Universidade Federal do Ceará

Enhanced Mechanical Properties of Mg-Gd and Mg-Al Alloys Processed by Simple Shear Extrusion: *Nazanin Bayat Tork*[1]; Seyyed hossein Razavi[1]; Hasan Saghafian[1]; Reza Mahmudi[2]; [1]Iran University of Science and Technology; [2]University of Tehran

Effect of Alloying Element on Deformation Behavior of Magnesium Alloys: *Jihyun Hwang*[1]; Byeong-Chan Suh[2]; Jae H. Kim[1]; S. Y. Lee[3]; B.J. Lee[1]; Nack J. Kim[1]; [1]Pohang University of Science and Engineering (POSTECH); [2]National Institute for Materials Science; [3]Chungnam National University

Effect of Increased Strain Rate on the Deformation Mechanism of AZ31 Magnesium Alloy under a Triaxial Stress State: *Chaitanya Kale*[1]; Scott Turnage[1]; Mansa Rajagopalan[1]; Kiran Solanki[1]; Suveen Mathaudhu[2]; [1]Arizona State University; [2]University of California - Riverside

Study on Biodegradable Mg-Zn-Nd Alloy and Its Application: *Ke Yang*[1]; Lili Tan[1]; Junlei Li[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Effects of Alloying Elements on Deformation Behavior of Twin Roll Cast Mg-Al-X Alloys: *Sang Jun Park*[1]; Hwa Chul Jung[1]; Kwang Seon Shin[1]; [1]Magnesium Technology Innovation Center / Seoul National University

The Use of In-situ Methods in the Research and Development of Magnesium-based Nanocomposites: *Wim Sillekens*[1]; [1]European Space Agency

Materials and Fuels for the Current and Advanced Nuclear Reactors V — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

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Location: Music City Center

Influence of Zirconium Hydride on the Biaxial Thermal Creep Behavior of Zircaloy-4 Cladding at 573 K and 773 K: *Kuan-Che Lan*[1]; Hsiao-Ming

Tung[2]; Yinbin Miao[1]; Xiang Liu[1]; Giuseppe Brunetti[1]; Huan Yan[1]; Di Yun[3]; Kun Mo[3]; James Stubbins[1]; [1]University of Illinois at Urbana-Champaign; [2]Institute of Nuclear Energy Research; [3]Argonne National Laboratory

Fractography of Neutron-irradiated Alloy 690: *Joo-Hag Kim*[1]; Han-Bum Surh[1]; Jong-Wook Kim[1]; [1]KAERI

Fabrication of Interconnected SiC Reinforced ZrO2 Composites by the Coat-mix Process and Spark Plasma Sintering: Qusai Mistarihi[1]; *Hojin Ryu*[1]; [1]Korea Advanced Institute of Science and Technology

Formation of Silicide Coatings on Refractory Alloy Substrates for Accident Resistant Nuclear Fuel Cladding: *Woojin Lim*[1]; Faris Sweidan[1]; Hojin Ryu[1]; [1]Korea Advanced Institute of Science and Technology

Thermal and Mechanical Properties of Bulk Fe_2B: *Fumihiro Nakamori*[1]; Yuji Ohishi[1]; Masaya Kumagai[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Ken-ichi Fukumoto[2]; Shinsuke Yamanaka[1]; [1]Osaka University; [2]Research Institute of Nuclear Engineering, University of Fukui

Thermodynamic Assessment of U-Eu-O System: *Atsuhiro Yoneda*[1]; Yuji Ohishi[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; Masahiko Osaka[2]; Shuhei Miwa[2]; Akihiro Ishimi[2]; Kozo Katsuyama[2]; [1]Osaka University; [2]Japan Atomic Energy Agency

Thermophysical Properties of Molten Zr-Ni Alloys Measured by Electrostatic Levitation: *Yuji Ohishi*[1]; Toshiki Kondo[1]; Hiroaki Muta[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; Junpei Okada[2]; Takehiko Ishikawa[2]; [1]Osaka University; [2]Japan Aerospace Exploration Agency

A Study on the Diffusion of Volatile Fission Products in the Graphite Matrix of HTGR: *Je-Kyun Baek*[1]; Qusai Mistarihi[1]; Sunghwan Yeo[1]; Young-Woo Lee[1]; Hojin Ryu[1]; [1]Korea Advanced Institute of Science and Technology

Characterization of Bubbles Formation in Xenon Irradiated Metallic Fuels with X-Ray Tomography (XTM): *Walid Mohamed*[1]; De Andrade Vincent[1]; Sumit Bhattacharya[1]; Kun Mo[1]; Michael Pellin[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory

Effects of β-decay on Ceramic Nuclear Waste Forms: *Kalie Knecht*[1]; Caitlin Taylor[1]; William Weber[1]; Maulik Patel[1]; [1]The University of Tennessee-Knoxville

Low Temperature Friction Stir Welding (FSW) of Cr-Mo Steels
: Prasad Rao Kalvala[1]; *Javed Akram*[1]; R Damodaram[2]; Mano Misra[1]; [1]University of Utah; [2]SSN College of Engineering

Effects of Irradiation on the Interfacial Reaction between SiC and ODS Steels: *Masego Lepule*[1]; Janelle Wharry[1]; [1]Boise State University

Materials in Clean Power Systems IX: Durability of Materials — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Structural Materials Division, TMS Light Metals Division, TMS: Energy Committee, TMS: High Temperature Alloys Committee
Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Peter Hosemann, University of California Berkeley; Kinga Unocic, ORNL; Paul Jablonski, US Department of Energy; Joseph Licavoli, Department of Energy; Donna Guillen, Idaho National Laboratory

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Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Effect of High Temperature Cyclic Oxidation on the Deformation of ODS and Cast FeCrAlY Alloys: *Josh Turan*[1]; Sebastien Dryepondt[1]; Michael Lance[1]; Bruce Pint[1]; [1]Oak Ridge National Laboratory

Effect of Mechanical Loading on Galvanic Corrosion Using Electrochemical Characterization Techniques and Depth Profiling: *Sreekamal Balijepalli*[1]; Scott Turnage[1]; Kiran Solanki[1]; [1]ARIZONA STATE UNIVERSITY

Electrodeposition of Amorphous/Nanocrystalline Ni–Mo Alloy for Hydrogen Evolution Reaction: Mert Manazoglu[1]; Gokce Hapci[1]; *Gökhan Orhan*[1]; [1]Istanbul University

Phyllanthus Muellerianus and Triethanolamine Synergistic Effects on Steel-reinforced Concrete in 0.5 M H2SO4: Implication for Clean Corrosion-protection of Wind-energy Structures in Industrial Environment: *Joshua Okeniyi*[1]; Olugbenga Omotosho[1]; Cleophas Loto[1]; Abimbola Popoola[2]; [1]Covenant University, Ota, Nigeria; [2]Tshwane University of Technology, Pretoria

Mechanical Behavior at the Nanoscale III — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jonathan Zimmerman, Sandia National Laboratories; Daniel Gianola, University of California, Santa Barbara; Ting Zhu, Georgia Institute of Technology; Julia Greer, California Institute of Technology; Harold Park, Boston University; Garritt Tucker, Drexel University; Jiangwei Wang, University of Pittsburgh

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Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

A Tale of Two Mechanisms: Strain-softening Versus Strain-hardening in Single Crystals under Small Stressed Volumes: *Yanfei Gao*[1]; Hongbin Bei[2]; [1]Univ of Tennessee; [2]Oak Ridge National Laboratory

Analysis of Plastic Anisotropy in Nanotwinned Copper by a Statistical Dislocation Source Model: *Caizhi Zhou*[1]; Rui Yuan[1]; Irene Beyerlein[2]; [1]Missouri University of Science and Technology; [2]Los Alamos National Laboratory

Characterization of Grain Boundary Strain Transfer in High Purity Tantalum: *Bret Dunlap*[1]; Philip Eisenlohr[1]; Claudio Zambaldi[2]; David Mercier[2]; Yang Su[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max-Planck-Institut Für Eisenforschung GmbH

Characterization of Interface Dislocations at the Ferrite/Cementite Interface: *Jaemin Kim*[1]; Keonwook Kang[2]; Seunghwa Ryu[1]; [1]KAIST; [2]Yonsei University

Competing Twinning Mechanisms during Mechanical Deformation of BCC Metals at Nanoscale: *Zhe Shi*[1]; Chandra Singh[1]; [1]University of Toronto

Computational Evaluation of Adhesion and Mechanical Properties of Nanolayered Diffusion Barrier Coating for Nuclear Applications: *Zhi-Gang Mei*[1]; Abdellatif Yacout[1]; Sumit Bhattacharya[2]; Walid Mohamed[1]; Mike Pellin[1]; Hee Roh[1]; [1]Argonne National Laboratory; [2]Northwestern University

Coupled Atomistic-Continuum Framework of Developing Constitutive Relations of Crack Propagation: *Jiaxi Zhang*[1]; Subhendu Chakraborty[1]; Somnath Ghosh[1]; [1]Johns Hopkins University

Crystal Size Effect on Twinning of Magnesium Microcrystals: *Gi-Dong Sim*[1]; Kelvin Xie[1]; Steven Lavenstein[1]; Kevin Hemker[1]; Jaafar El-Awady[1]; [1]Johns Hopkins University

Cyclic Response of Candidate Engineering Alloy Micro-beams: *Cameron Howard*[1]; Daniel Kiener[2]; Peter Hosemann[1]; [1]UC Berkeley; [2]Montanuniversität Leoben

Dislocation Core Reconstruction Induced by Solute Atom Segregation in BCC Metals: Bérengère Lüthi[1]; Lisa Ventelon[1]; *David Rodney*[2]; François Willaime[1]; [1]CEA Saclay; [2]Université Lyon 1

Effect of Texture and Plastic Anisotropy on Stress-strain Response of Nanoscale Aluminum Films: *Ehsan Izadi*[1]; Harn Lim[1]; Robert McDonald[1]; Pedro Peralta[1]; Jagannathan Rajagopalan[1]; [1]Arizona State University

Influence of Grain Refinement by Severe Plastic Deformation on Corrosion Behavior of Al5083: *Ting Chen*[1]; [1]SET Labs

Investigating Structural, Physical and Mechanical Properties of Graphene/Polymer Hybrid Nanocomposites: B. McDonald[1]; *Sanju Gupta*[1]; [1]Western Kentucky University

Localized Hardness and Modulus Distribution within SiC Grain of a Reaction Bonded SiC/Si Ceramic Matrix Composite: *Chun-yen Hsu*[1]; Fei Deng[1]; Bo Yuan[1]; Prashant Karandikar[1]; Robert Opila[1]; Chaoying Ni[1]; [1]Uni-

versity of Delaware

Mechanical Behavior of a Two Phase Oxide on a Commercial Aluminum Alloy: *Raheleh Mohammad Rahimi*[1]; David F. Bahr[1]; [1]Purdue University

Mechanical Study on Nanocomposites using Nonlocal Differential Quadrature Method: *S. Thamaraikannan*[1]; S.C. Pradhan[1]; [1]Department of Aerospace Engineering, Indian Institute of Technology Kharagpur

Micromechanisms Governing Plastic Instability in Al-Li based Alloys: *Henry Ovri*[1]; Eric Jägle[2]; Andreas Stark[1]; Erica Lilleodden[1]; [1]Helmholtz Zentrum Geesthacht, Germany; [2]Max-Planck-Institut für Eisenforschung GmbH, Germany

Microstructure and Strengthening Mechanisms of Ag/Fe Multilayers: *Jin Li*[1]; Youxing Chen[2]; Sichuang Xue[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University; [2]Los Alamos National Laboratory

Modelling and Calibration of a MEMS Tensile Stage for Elevated Temperature Experiments on Freestanding Metallic Thin Films: *Suhas E P*[1]; Rohit Sarkar[2]; Jagannathan Rajagopalan[2]; [1]Arizona State University ; [2]Arizona State University

Nonlocal Crystal Plasticity Simulations of the Size-dependent Mechanical Response of fcc/bcc Multilayers: *Jason Mayeur*[1]; [1]Los Alamos National Lab

Phase Transformation of Sub-Micrometer Shape Memory Alloys Thin Films Synthesized by Biased Target Ion Beam Deposition: *Huilong Hou*[1]; Reginald Hamilton[1]; [1]The Pennsylvania State University

Spherical Indentation Response of Ti64, Ni49.9Ti50.1 and Ni50.3Ti29.7Hf20 Shape Memory Alloys at Elevated Temperature: *Peizhen Li*[1]; Haluk Karaca[1]; Yang-Tse Cheng[1]; [1]University of Kentucky

Stress Generation and Localization during Thin Film Coalescence Processes: Murat Al[1]; *Edmund Webb*[1]; [1]Lehigh University

Structure and Mechanical Properties of Nickel Nanoparticles And Their Epoxy Composites
: *Claudia Luhrs*[1]; Sarath Menon[1]; Rene de la Fuente[1]; [1]Naval Postgraduate School

The Effect of a Strut Size on the Strength of Nanoporous Cu Foams: *Seungjin Nam*[1]; Junyeon Hwang[2]; Hyunjoo Choi[2]; [1]Kookmin University; [2]Korea Institute of Science and Technology

Strain Rate Dependent Failure of Interfaces in Glass/Epoxy and Energetic Materials at Nano-Microscale via Dynamic Indentation: *Devendra Verma*[1]; Vikas Tomar[1]; [1]Purdue University

The Microstructure and Mechanical Properties of Nanometer Al_2O_3/Cu Composite Fabricated by Internal Oxidation: *Lei Guo*[1]; Shuqiang Guo[1]; Shuai Ma[1]; Jie Liu[1]; Weizhong Ding[1]; [1]ShangHai University

Evaluation of Mechanical Properties of Fe-Gd Alloys by Dynamic-Nano Indentation Method: *Yong Choi*[1]; Youl Baik[1]; Bo Kyeong Kang[1]; Sang Sun Han[1]; Moon Sun Gu[1]; Byung M. Moon[2]; Dong S. Sohn[3]; Sung H. Cho[4]; [1]Dankook University; [2]KIECH; [3]UNIST; [4]HANSCO

Beam Induced Artifacts during in situ Transmission Electron Microscopy Deformation of Nanocrystalline and Ultrafine-grained Metals: *Rohit Sarkar*[1]; Christian Rentenberger[2]; Jagannathan Rajagopalan[1]; [1]Arizona State University; [2]Univeristy of Vienna

Understanding the Relationship between Interface and Mechanical Properties of Cu/Nb Nanoscale Multilayers through In-situ Electromechanical Measurements: *Hashina Parveen Anwar Ali*[1]; Ihor Radchenko[1]; Nan Li[2]; Nathan Mara[2]; Irene Beyerlein[2]; Arief Budiman[1]; [1]Singapore University of Technology and Design; [2]Los Alamos National Laboratory

In Situ Nanoindentation of Fluorinated Ethylene Propylene Copolymers as Polyethylene Tetrafluoride Alternative: *Steven Lee*[1]; Rahmi Ozisik[1]; Alexander Yin[1]; [1]Rensselaer Polytechnic Institute

Deformation Behavior and Shear Band Evolution of Phase Separating Metallic Glass: *Jinwoo Kim*[1]; Eun Soo Park[1]; Andrew Minor[2]; [1]Seoul National University; [2]Lawrence Berkeley National Laboratory

Suppression of Plastic Instability in Submicron FCC Crystals with Ultrahigh Strength: *Tao Hu*[1]; Lin Jiang[1]; Hanry Yang[1]; Kaka Ma[1]; Troy Topping[2]; Amiya Mukherjee[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California Davis; [2]California State University, Sacramento

Role of In-situ Mechanical Testing in Building 3D Structure of Nanomaterials: *Chandra Tiwary*[1]; Sanjit Bhaoumik[2]; Syed Asif[2]; P Ajayan[1]; [1]Rice University; [2]Hysitron, Inc., Minneapolis, Minnesota 55344

Determination of Unknown Single-crystal Orientation Using Transient Grating Spectroscopy and Molecular Dynamics Simulations: *Cody Dennett*[1]; Penghui Cao[1]; Alejandro Vega-Flick[1]; Jeffrey Eliason[1]; Alexei Maznev[1]; Keith Nelson[1]; Michael Short[1]; [1]MIT

Plastic Deformation in Nanocrystalline TiN at Ultra-low Stress: An In Situ Nanoindentation Study: *Jie Jian*[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University

Metal and Polymer Matrix Composites II — Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizer: Nikhil Gupta, New York University

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Location: Music City Center

Fracture Behavior of Ni-graphene Nanocomposites under Mode I Loading: Scott Muller[1]; *Arun Nair*[1]; [1]University of Arkansas

Microhardness Analysis in MMCs Directionally Solidified: *Alicia Ares*[1]; [1]Materials Institute of Misiones-IMAM (CONICET-UNaM)

Natural Aging Effects in HMS-Polypropylene Synthesized by Gamma Radiation in Acetylene Atmosphere: *Washington Oliani*[1]; Luiz Gustavo Komatsu[1]; Duclerc Parra[1]; Ademar Lugao[1]; Vijaya Rangari[2]; [1]Nuclear Energy Research Institute – IPEN/USP; [2]Center for Advanced Materials Science and Engineering Tuskegee University, AL 36088, USA.

Reinforcing Efficiency of CNTs in Transition Metal Matrix Composites to Improve Mechanical Properties with Superior Interface: *Miran Joo*[1]; Donghyun Bae[1]; [1]Yonsei university

Study of Carbon Dioxide Adsorption/Desorption on Fluorelastomer/Multi Walled Carbon Nanotubes Nanocomposites: *Cristina Pozenato*[1]; Sandra Scagliusi[1]; Ademar Lugão[1]; [1]IPEN

Super Aligned Carbon Nanotubes Reinforced Copper Nanocomposites with Enhanced Strength and Electric Conductivity: *Wenzhen Li*[1]; Jing Shuai[1]; Yu Jin[1]; Lin Zhu[1]; [1]Tsinghua University

Fabrication of Gamma-irradiated Polypropylene and AgNPs Nanocomposite Films and their Antimicrobial Activity: *Isabelle Berenguer*[1]; Washington Oliani[1]; Luis Gustavo Komatsu[1]; Vinicius dos Santos[1]; Duclerc Parra[1]; Ademar Lugao[1]; Vijaya Rangari[2]; [1]Nuclear and Research Energetic Institute; [2]Tuskegee University

Phase Transformations and Microstructural Evolution — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Sudarsanam Babu, The University of Tennessee, Knoxville; Dhriti Bhattacharyya, ANSTO; Yunzhi Wang, Ohio State University; Osman Anderoglu, Los Alamos National Laboratory; Juan P. Escobedo-Diaz, UNSW Australia; Jessica Krogstad, University of Illinois, Urbana-Champaign; Long Qing Chen, Penn State University; Monica Kapoor, University of Alabama; Amy Clarke, Los Alamos National Laboratory; Gregory Thompson, University of Alabama

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Session Chair: Kester Clarke, LANL

Precipitation of Scorodite in Arsenic Containing Acidic Solution: *Zixiu Yu*[1]; Cunxiong Li[1]; Minting Li[1]; [1]Kunming university of science and technology

Phase Stability in the Group IVB and VB Transition Metal Carbides:

Chase Smith[1]; Xiao-xiang Yu[1]; Christopher Weinberger[2]; Gregory Thompson[1]; [1]The University of Alabama; [2]Drexel University

Transmission Electron Microscopy Study of Deformation-Induced Martensitic Transformation in 304 Stainless Steel using In-situ and Ex-situ characterization.: Djamel Kaoumi[1]; *Junliang Liu*[1]; [1]The University of South Carolina

The Effect of Aluminum Content on Recrystallization and Grain-Growth of Magnesium: *Aeriel Murphy*[1]; John Allison[1]; [1]University of Michigan

Mapping Dislocation Densities Resulting from Machining-Relevant High Rate Severe Plastic Deformation: *Sepideh Abolghasem Ghazvini*[1]; [1]University of Pittsburgh

Phase Transformations in Multi-component Systems: An MPMD Symposium Honoring Gary R. Purdy — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Hatem Zurob, McMaster University; Annika Borgenstam, KTH, Royal Institute of Technology; Tadashi Furuhara, Tohoku University; Wenzheng Zhang, Tsinghua University; Christopher Hutchinson, Monash University; Robert Hackenberg, Los Alamos National Laboratory

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Session Chair: To Be Announced

Modeling of Acicular Ferrite Growth: *Lindsay Leach*[1]; Mats Hillert[1]; Lars Höglund[1]; John Ågren[1]; Annika Borgenstam[1]; [1]KTH Royal Institute of Technology

Phase Equilibria of Vanadium Bearing Slags: *Jinichiro Nakano*[1]; James Bennett[1]; Anna Nakano[1]; [1]US Department of Energy National Energy Technology Laboratory

Solid State Reaction of $Nd_2Fe_{14}B$ and Carbon: *Jie Liu*[1]; Shuqiang Guo[1]; Yuyang Bian[1]; Lei Guo[1]; Lan Jiang[1]; Man Zhang[1]; Shuai Ma[1]; Weizhong Ding[1]; [1]Shanghai University

Effect of Room Temperature Aging on the Mechanical Properties of Carbide Free Bainite: *Xiaoxu Zhang*[1]; Gary Purdy[1]; Hatem Zurob[1]; [1]McMaster University

Rare Metal Extraction & Processing Symposium — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Shafiq Alam, University of Saskatchewan; Hojong Kim, Penn State University; Neale Neelameggham, Ind LLC; Takanari Ouchi, MIT; Harald Oosterhof, Umicore

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Session Chair: Takanari Ouchi, MIT

Thermal Decomposition of Acid Strontium Oxalate: Mert Zoraga[1]; *Cem Kahruman*[1]; Ibrahim Yusufoglu[1]; [1]Istanbul University

Treatment of a Complex Rare Earth-niobium-iron Associated Ore by a Novel Metallurgical Process: *Mudan Liu*[1]; Yong Liu[1]; Zhenzhen Liu[1]; [1]Guangzhou Research Institute of Nonferrous Metals

Upgrading Platinum from Spent Alumina-supported Catalyst by a Roast-leaching Process: *Haigang Dong*[1]; [1]Kunming Institute of Precious Metals

Recent Advancement on Stretchable and Wearable Electronics — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Electronic Packaging and Interconnection Materials Committee, TMS: Nanomaterials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, ORNL; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Jiahua Zhu, The University of Akron; Nuggehalli Ravindra, New Jersey Institute of Technology; Catherine Dubourdieu, CNRS - INL; Madan Dubey, US Army Research Lab

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Session Chair: To Be Announced

Printing of Graphene-coated Copper Nano-ink on Flexible Substrate Using Light Sintering Method: *YeonHo Son*[1]; Young Jun Pyo[1]; Eric H Yoon[1]; Seung-Boo Jung[1]; Yongil Kim[1]; Caroline Sunyong Lee[1]; [1]Multi-Functional Materials & Devices Lab

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Poster Session

*Sponsored by:*TMS Functional Materials Division (formerly EMPMD), TMS: Thin Films and Interfaces Committee
Program Organizers: Nancy Michael, University of Texas at Arlington; Adele Carradò, IPCMS; Heinz Palkowski, TU Clausthal; Nuggehalli Ravindra, New Jersey Institute of Technology; Chintalapalle Ramana, Univ of Texas at El Paso

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Session Chair: To Be Announced

Block Copolymers as Phase Change Materials for Mitigating Heat Spikes in Handheld Consumer Electronics: *Alex Bruce*[1]; Yash Ganatra[1]; Amy Marconnet[1]; John Howarter[1]; [1]Purdue University

Effects of Aminopropyltriethoxysilane Percentages on Surface Chemistry and Coating Adhesion of Chitosan Bonded to Steel: *Stephen Cornich*[1]; Holly Martin[1]; Snjezana Balaz[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Physics and Astronomy, Youngstown State University

Effects of Solvent on the Surface Chemistry of APTES Deposition and Coating Adhesion of Chitosan Bonded to Steel: *Jacob Millerleile*[1]; Holly Martin[1]; Snjezana Balaz[2]; [1]Department of Chemical Engineering, Youngstown State University; [2]Department of Physics and Astronomy, Youngstown State University

Low Emissive Properties of Amorphous Oxides/Ag/Amorphous Oxides Multilayer for Energy Conservation: *Sang Yeol Lee*[1]; [1]Cheongju University

Nanostructured Ti-Si Metallic Glass Thin Film for Biological Applications: *Guohua Zhao*[1]; Sergey Ketov[2]; Dmitri Louzguine[2]; Huahai Mao[3]; Ragnhild E. Aune[4]; [1]KTH Royal Institute of Technology; [2]WPI Advanced Institute for Materials Research (WPI-AIMR); [3]Thermo-Calc Software AB; [4]NTNU Norwegian University of Science and Technology

REWAS 2016 — Poster Session

Sponsored by:
Program Organizers: Randolph Kirchain, Massachusetts Institute of Technology; Bart Blanpain, KU Leuven; Anne Kvithyld, SINTEF; Christina Meskers, Umicore Precious Metals Refining; Elsa Olivetti, Massachusetts Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory; Diran Apelian, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Neale Neelameggham, Ind LLC

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Location: Music City Center

Session Chair: To Be Announced

Green Structural Ceramic with Addition of Raw Clay Waste: Alessandra Savazzini Reis[1]; Viviana Della Sagrillo[2]; *Francisco Valenzuela Diaz*[3]; [1]USP/IFES; [2]IFES; [3]USP

Electropolymerized Polyaniline/Manganese Iron Oxide Hybrids with Enhanced Color Switching Response and Electrochemical Energy Storage: Yiran Wang[1]; Jiang Guo[1]; *Zhanhu Guo*[1]; Suying Wei[2]; [1]University of Tennessee Knoxville; [2]Lamar University

Magnetic FePd Nanoalloys Decorated Multiwalled Cabon Nanotubes toward Enhanced Ethanol Oxidation Reaction: Yiran Wang[1]; Qingliang He[1]; Jiang Guo[1]; *Zhanhu Guo*[1]; [1]University of Tennessee Knoxville

Reaction between LiBH4 and MgH2 Induced by High-energy Ball Milling: *Zhao Ding*[1]; Leon L. Shaw[1]; [1]Illinois Institute of Technology

A Life-cycle Assessment Framework Approach to Quantifying Substitutability of Critical Materials: *Gabrielle Gaustad*[1]; Michele Bustamante[1]; [1]Rochester Institute of Technology

Recovering of Carbon Fiber Present in an Industrial Polymeric Composite Waste through Pyrolysis Method while Studying the Influence of Resin Impregnation Process: Prepreg: *Thiago Abdou*[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]Department of Chemical Engineering of the Polytechnic School of the University of São Paulo

Study of Cu Ions Uptake in HDX 100 Cationic Membrane: *Daniella Buzzi*[1]; Jorge Tenório[1]; [1]Universidade de São Paulo

Evaluation of Adding Grits in the Manufacture of Soil-cement Bricks: *Rita Alvarenga*[1]; Délio Fassoni[1]; Márcia Pinheiro[1]; Larissa Miranda[1]; [1]Universidade Federal de Viçosa

□he Experience in Development of Technique and Technology of Electric Pulse Disintegration of Rocks and Ores: Anatoly Usov[1]; *Vyacheslav Tsukerman*[1]; Alexander Potokin[1]; Daniil ilin[1]; [1]Kola science centre of Russian Academy of Science

Precipitation of Metals from Liquor Obtained in Nickel Mining: Mónica Jimenez Correa[1]; Paula Aliprandini[1]; *Jorge Alberto Soares Tenório*[1]; Denise Crocce Romano Espinosa[1]; [1]Polytechnic School of University of São Paulo

Nitrogen Doped Magnetic Carbon Nanocomposits Synthesized from Waste Plastic as Unique Absorbant for Highly Efficient Cr(VI) Removal: *Yonghai Cao*[1]; Jiangnan Huang[1]; Xiangfang Peng[2]; Zhanhu Guo[1]; [1]University of Tennessee; [2]South China University of Technology

Strip Casting of Light Metals — Poster Session

Sponsored by:
Program Organizers: Kai Karhausen, Hydro Aluminium Rolled Products GmbH; Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht; Jan Bohlen, Helmholtz-Zentrum Geesthacht; Murat Dundar, Assan Aluminium

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Session Chair: To Be Announced

Continuous Fabrication of Direct Recycling Mg Alloy Strip by Melt Conditioned Twin Roll Casting (MC-TRC) Process: *Xinliang Yang*[1]; Jayesh Patel[1]; Sanjeev Das[1]; Ian Stone[1]; Zhongyun Fan[1]; [1]BCAST

Quality Assurance System for TRC Strips: *Claudia Kawalla*[1]; Michael Hoeck[1]; Matthias Oswald[1]; [1]TU Bergakademie Freiberg

Microstructure and Properties of SiCp/Al Matrix Composite Strip Fabricating by Twin-roll Casting Process: *Huagui Huang*[1]; Ce Ji[1]; Wei Wang[1]; Fengshan Du[1]; [1]Yanshan University

Ultrafine Grained Materials IX — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

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Session Chair: To Be Announced

BNM: Through Science to Innovations: *Natalia Reshetnikova*[1]; [1]Ufa State Aviation Technical University

Characterization of Microstructure and Mechanical Properties of 1350 Aluminium Alloy Processed by Equal-Channel Angular Pressing with Parallel Channels: *Marta Lipinska*[1]; Lech Olejnik[2]; Malgorzata Lewandowska[1]; [1]Warsaw University of Technology Faculty of Materials Science and Engineering; [2]Warsaw University of Technology, Institute of Manufacturing Processes

Corrosion Behavior of Type 316 SS in 3.5 wt% NaCl Solution under Surface Mechanical Attrition Treatment: Samrat Tamuly[1]; Atul Gatey Gatey[2]; Santosh Hosamani[2]; *Shashi Arya*[1]; [1]National Institute of Technology Karnataka,Surathkal; [2]COEP Pune

Dynamic Deformation and Failure Mechanisms of Nanocrystalline Titanium Processed by ECAP + Conform: *Zezhou Li*[1]; Marc Meyers[1]; [1]University of California,San Diego

Effect of Deformation Temperature on Cyclic Loading on 6082 Al Alloy in Strain Controlled Mode: *Nikhil Kumar*[1]; Sunkulp Goel[1]; Devasri fuloria[1]; R. Jayaganthan[1]; [1]IIT Roorkee

Excessive Generation of Defects in Nano/Ultrafine Grained Bulk Produced by Shock Wave Consolidation Process and Analysis on the Process through Finite Element Method: *Dong-Hyun Ahn*[1]; Hyoung Seop Kim[1]; Lee Ju Park[2]; Wooyeol Kim[1]; [1]POSTECH; [2]Agency for Defense Development (ADD)

Flame Retardant Polypropylene Nanocomposites: *Qingliang He*[1]; Xingru Yan[1]; Jiang Guo[1]; Zhanhu Guo[1]; [1]University of Tennessee

Influence of Deformation Temperature on Mechanical and Corrosion Behaviour of 6082-Al Alloy: *Nikhil Kumar*[1]; Devasri fuloria[1]; Sunkulp Goel[1]; R. Jayaganthan[1]; [1]IIT Roorkee

Mechanical and Microstructural Properties of Commercial Twinning-induced Plasticity (TWIP) Steel Processed by High-pressure Torsion (HPT): *Jung Gi Kim*[1]; Byoung Ho Park[1]; Ho Yong Um[1]; Dong Jun Lee[2]; Sunghak Lee[1]; Hyoung Seop Kim[1]; [1]Pohang University of Science and Technology; [2]Korea Institute of Materials Science (KIMS)

Microstructural Evolution and Properties of a ZK60 Magnesium Alloy Processed by High-pressure Torsion: *Seyed Alireza Torbati Sarraf*[1]; Shima Sabbaghianrad[1]; Terence G. Langdon[1]; [1]University of Southern California

Detailed microstructure investigation of LAE442 magnesium alloy processed by EX-ECAP: *Klaudia Horváth*[1]; Jitka Stráská[1]; Peter Minárik[1]; Robert Král[1]; Josef Pešicka[1]; Stanislav Daniš[1]; [1]Charles University in Prague

Microstructure Refinement and Strain Hardening of Beta-titanium Alloys Prepared by High Pressure Torsion: *Kristína Václavová*[1]; Josef Stráský[1]; Petr Harcuba[1]; Jitka Stráská[1]; Veronika Polyakova[2]; Irina Petrovna Semenova[2]; Miloš Janecek[1]; [1]Charles University in Prague; [2]UFA State Aviation Technical

University

Microstructures and Tensile Properties of Ultrafine Structured Cu-5vol.%Al2O3 Nanocomposites Fabricated by Powder Compact Extrusion at Different Temperatures: *Dengshan Zhou*[1]; Deliang Zhang[1]; Paul Munroe[2]; Charlie Kong[2]; Gang Sha[3]; Zakaria Quadir[2]; Wei Zeng[1]; [1]Shanghai Jiao Tong University; [2]University of New South Wales; [3]Nanjing University of Science and Technology

Non-contact CTE Testing of Thin Film Nickel-base Superalloys for Use in High Temperature Metal MEMS Applications: *Gianna Valentino*[1]; Gidong Sim[1]; Jessica Krogstad[2]; Timothy Weihs[1]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]University of Illinois at Urbana-Champaign

Simultaneously Enhanced Strength and Ductility and Corrosion Resistance in 316L Stainless Steel with Well Dispersed Nanograins in Microcrystallines Austenite: Fuan Wei[1]; *Peiqing La*[1]; [1]Lanzhou University of Technology

The Effect of Grain Structure on the Formation of Nitrided Layers in an Austenitic Stainless Steel: *Malgorzata Lewandowska*[1]; Agnieszka Krawczynska[1]; Ryszard Sitek[1]; [1]Warsaw University of Technology

Young Professional "Meet the Candidate" Interactive Session — "Meet the Candidate" Interactive Session

*Sponsored by:*TMS:Young Professionals Committee
Program Organizer: Ramprashad Prabhakaran, Pacific Northwest National Laboratory

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Room: Poster Area
Location: Music City Center

Session Chair: Ramprashad Prabhakaran, Pacific Northwest National Laboratory

Seeking Broader Applications of Materials Science: *Dalong Zhang*[1]; [1]University of California-Davis

Controlling Microstructure for Smart Applications through FSP Advisor - Dr. Rajiv Mishra: *Shamiparna Das*[1]; [1]University of North Texas

Experimental Micro and Nanoscale Mechanics with Microsecond Temporal Resolution for MEMS Applications: *Debashish Das*[1]; [1]University of Illinois at Urbana-Champaign

A engineer fighting for 3D IC development - Jen-Jui Yu: *Jen-Jui Yu*[1]; [1]UCLA

Physical metallurgist with expertise in computational and experimental techniques: *Mithipati Bhaskar*[1]; [1]Indian Institute of Science

Nanomaterials for Energy Applications: *Suraj Nagpure*[1]; [1]University of Kentucky

Metallugical Studies of Dr. Takahiro KUNIMINE: *Takahiro Kunimine*[1]; [1]Kyoto University

Modeling of microstructural evolution accompanying phase transformations: *Pikee Priya*[1]; David Johnson[1]; Matthew Krane[1]; [1]Purdue University

Thermoelectric Materials and Power Generation Modules: *Cheng-Chieh Li*[1]; [1]Northwestern University

Texture Control of Tungsten Carbide Composites
: *Sagar Patel*[1]; [1]Texas A&M University

Sivanesh Palanivel: Expertise in processing, additive manufacturing, characterization, and computation: *Sivanesh Palanivel*[1]; [1]University of North Texas

Understanding fatigue mechanisms through microstructural control: *Phalgun Nelaturu*[1]; [1]University of North Texas

Nano-mechanical behavior of high entropy alloy and bulk metallic glass: *Sanghita Mridha*[1]; [1]University of North Texas

Microstructural evolution and mechanical response by 'design and modeling': *Aniket Dutt*[1]; [1]University of North Texas

Achieving exceptional properties in high temperature materials using friction stir processing (FSP): *Vedavyas Tungala*[1]; [1]University of North Texas

Friction Stir Welding of Aluminum 7000 Series Alloys: *Nelson Martinez*[1]; [1]University of North Texas

Frontiers in Solidification: An MPMD Symposium in Honor of Michel Rappaz — Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Wilfried Kurz, Swiss Fed. Inst. of Techn.; Jon Dantzig, EPFL and University of Illnois; Alain Karma, Northeastern University; Jeffrey Hoyt, McMaster University

Tuesday PM
February 16, 2016

Room: 105A
Location: Music City Center

Session Chair: To Be Announced

Real-time Radiographic Observation of Equiaxed Dendrite Growth in Al-Ge Alloys: *Maike Becker*[1]; Stefan Klein[1]; Florian Kargl[1]; [1]German Aerospace Center

A Multi-scale Multi-component As-cast Grain Size Prediction Model for Inoculated Aluminium Alloys Melt Solidified under Non-isothermal Conditions: *Qiang Du*[1]; Yanjun Li[2]; Yijiang Xu[2]; [1]SINTEF; [2]Norwegian University of Science and Technology

Macrosegregation and Grain Formation Caused by Convection Associated with Directional Solidification through Cross-Section Increase.: *Masoud Ghods*[1]; Mark Lauer[2]; Surendra Tewari[1]; David Poirier[2]; Richard Grugel[3]; [1]Cleveland State University; [2]University of Arizona; [3]NASA

Atomistic Experimental and Simulation Investigation on the Modification of Al-Si Alloys: *Jiehua Li*[1]; Peter Schumacher[1]; [1]University of Leoben

In-situ Synchrotron X-ray Radiography Measurement of the Diffusion Zones during Equiaxed Solidification of Al-Cu Alloys: Enzo Liotti[1]; Andrew Lui[1]; Sundaram Kumar[1]; *David StJohn*[2]; Patrick Grant[1]; [1]University of Oxford; [2]The University of Queensland

Physically Consistent Multiphase Field Theory of First Order Phase Transitions: *Gyula Toth*[1]; Tamas Pusztai[2]; Laszlo Granasy[2]; Bjorn Kvamme[1]; [1]University of Bergen; [2]Wigner Research Centre for Physics

Phase-field Simulation Study of Dendritic Grain Growth Competition during Directional Solidification of Alloys: *Damien Tourret*[1]; Younggil Song[2]; Amy Clarke[1]; Alain Karma[2]; [1]Los Alamos National Laboratory; [2]Northeastern University

A Multivariate Statistics Based Approach to Microsegregation Analysis in Multicomponent Alloys: Joshua Miller[1]; *Nils Warnken*[1]; [1]University of Birmingham

The Model of Peritectic Phases Crystallization in the Zinc Coating: *Dariusz Kopycinski*[1]; [1]AGH University of Science and Technology

Computer Simulation of Freckle Formation Using a Three-Dimensional Micro-scale Model: Mohammad Hashemi[1]; *Mohsen Eshraghi*[2]; Sergio Felicelli[1]; [1]The University of Akron; [2]California State University, Los Angeles

Anomalous Growth Behaviour in the Undercooled Al-Ni Alloy System: *Christian Karrasch*[1]; Matthias Kolbe[2]; Stefan Klein[2]; Georg Ehlen[2]; Reeti Singh[2]; Dieter Herlach[2]; [1]Ruhr-University Bochum; [2]German Aeroscpace Center DLR

Upscaling from Mesoscopic to Macroscopic Solidification Models by Volume Averaging: *Miha Založnik*[1]; Youssef Souhar[1]; Christoph Beckermann[2]; Hervé Combeau[1]; [1]Institut Jean Lamour; [2]The University of Iowa

The Application of Oriented Alloy Single Crystals to the Study of Solidification, Mass Transport, and Related Phenomena: Prior Progress and Future Potential: *Lynn Boatner*[1]; Michel Rappaz[2]; [1]Oak Ridge National Laboratory; [2]Ecole Polytechnique Federale de Lausanne, Laboratoire de Simula-

tion des Matériaux

Anisotropic Crystal Growth in bcc Metals: From Phase-field Crystal to Conventional Phase-field: *Gyula Toth*[1]; Nikolas Provatas[2]; [1]University of Bergen; [2]McGill University

7th International Symposium on High Temperature Metallurgical Processing — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; P. Chris Pistorius, Carnegie Mellon University; Gerardo Alvear Flores, Xstrata Technology; Onuralp Yücel, ITU; Liyuan Cai, Central South University; Baojun Zhao, The University of Queensland; Dean Gregurek, RHI AG; Varadarajan Seshadri, Universidade Federal de Minas Gerais

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

Session Chair: Yuanbo Zhang, Central South University

Central Segregation of High-carbon Steel Billet and Its Heredity to the Hot-rolled Wire Rods: *Yuan Ji*[1]; Yujun Li[1]; Shaoxiang Li[1]; Xiaofeng Zhang[1]; Jiaquan Zhang[1]; [1]University of Science and Technology Beijing

Effect of CaO/SiO2 on the Crystallization Behavior of Blast Furnace Slag: *Qin Yuelin*[1]; Yang Yanhua[1]; Zhang Qianying[1]; Zhu Guangjun[1]; [1]Chongqing University Of Science and Technology

Effects of Alkali Metals on Sinter Metallurgical Properties: *Zhiwu Yan*[1]; [1] University of Science and Technology Beijing

A Review of Microwave Treatment on Coal: Haibin Zuo[1]; *Siyang Long*[1]; Cong Wang[1]; Pengcheng Zhang[1]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing

Influence of CaO on Non-isothermal Crystallization Kinetics of Vanadium Spinel in Vanadium Slag: *Wang Zhou*[1]; Bing Xie[1]; Wen-Feng Tan[1]; Jiang Diao[1]; Hong-Yi Li[1]; Tao Zhang[1]; [1]Chongqing University

Recent Research Progress and Application Status of Cooling Stave in China: *Fengguang Li*[1]; [1]University of Science and Technology Beijing

Recovery of Nickel and Copper from Polymetallic Sulfide Concentrate through Salt Roasting Using NH4Cl: *Cong Xu*[1]; Hongwei Cheng[1]; Guangshi Li[1]; Changyuan Lu[1]; Xingli Zou[1]; Xionggang Lu[1]; Qian Xu[1]; [1]Shanghai University

Reflux Reaction Behavior of Phosphorus under Non-equilibrium Condition of Casting Ladle between Slag and Hot Metal: *Wang Zhenyang*[1]; [1]University of Science and Technology Beijing

Reduction Behavior of Magnetite Pellets by CO-CO2 Mixtures Using Direct Reduction Process: *Guihong Han*[1]; Tao Jiang[2]; Yanfang Huang[1]; [1]Zhengzhou University; [2]Central South University

Studying on Softening and Melting Behavior of Lump Ore in Blast Furnace: Zhennan Qi[1]; Shengli Wu[1]; Mingyin Kou[1]; Xinliang Liu[1]; *Laixin Wang*[1]; Yujue Wang[1]; [1]University of Science and Technology Beijing

Research on the Influence of Specific Cooling Area of Cooling Stave in Blast Furnace Heat Transfer System: *Fengguang Li*[1]; [1]University of Science and Technology Beijing

Study on Compressive Strength of Coke after Gasified with CO2 and Steam: *Wentao Guo*[1]; Qingguo Xue[1]; Xuefeng She[1]; Jingsong Wang[1]; [1]University of Science and Technology Beijing

Indirect Experimental Study on the Oxidation of Hot Metal Bearing Vanadium and Chromium: *Xuan Liu*[1]; Jiang Diao[1]; Yong Qiao[1]; Tao Zhang[1]; Bing Xie[1]; [1]Chongqing University

Effect of Different Cooling System on the Solidification of the Sinters: Haibin Zuo[1]; *Jiangwei Shen*[1]; Cong Wang[1]; [1]State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Effect of CaO/SiO2 and P2O5 on the Viscosity of FeO-SiO2-V2O3-CaO-P2O5 Slags: *Zhen Zhang*[1]; Bing Xie[1]; Pan Gu[1]; Jiang Diao[1]; Hongyi Li[1]; [1]Chongqing University

Characterization of Minerals, Metals, and Materials — Poster Session

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

Program Organizers: Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological University; Sergio Monteiro, Military Institute of Engineering ; Jian Li, CanmetMATERIALS; Donato Firrao, Politecnico di Torino - DISAT; Mingming Zhang, ArcelorMittal Global R&D; Zhiwei Peng, Central South University; Juan P. Escobedo-Diaz, UNSW Australia; Chenguang Bai, Chongqing University

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

Session Chairs: Eren Kalay, METU; Jian Li, CanmetMATERIALS

Tribological Testing, Analysis and Characterization of DC Magnetron Sputtered Ti-Nb-N Thin Film Coatings on Stainless Steel Substrate: *Prathmesh Joshi*[1]; [1]Visvesvaraya National Institute of Technology (V.N.I.T.)

Assimilation Reaction Characteristic Number for Evaluating the Assimilation of Iron Ore in Sintering: *Yong Zhao*[1]; [1]university of science and technology beijing

Study on Oxide Inclusions at Each Process of Steel Production: *Sha Lv*[1]; [1]Central South Unversity

Characterization of Duplex Stainless Steel Casting with Gadolinium as Neutron Absorbers for Spent Fuel Storage Applications: *Byung-Moon Moon*[1]; YONG CHOI[2]; Dong-Seong Sohn[3]; [1]Korea Institute of Industrial Technology; [2]Dankook University; [3]UNIST

Experimental Study of Advanced Treatment of Coking Wastewater Using MBR-RO Combined Process: *Lei Zhang*[1]; [1]Wuhan iron and steel company

Small Punch Creep Test in a 316 Austenitic Stainless Steel: Maribel Saucedo-Muñoz[1]; Shin-Ichi Komazaki[2]; Arturo Ortiz-Mariscal[1]; *Victor Lopez-Hirata*[1]; [1]Instituto Politecnico Nacional (ESIQIE); [2]Kagoshima University

Structural Stabilities of β-Ti alloys in Relation to a New Mo Equivalent Derived from β/(α + β) Phase-Boundary Slopes: *Qing Wang*[1]; Wen Lu[1]; Chuang Dong[1]; Peter K. Liaw[2]; [1]Dalian University of Technology; [2]The University of Tennessee

Characterization of a Mineral of the District Of Zimapan, Mina Concordia, Hidalgo, for the Viability of the Recovery of Tungsten: *Martin Reyes Pérez*[1]; Miguel Pérez Labra[1]; Julio Juárez Tapia[1]; Aislinn Teja Ruiz[1]; Francisco Patiño Cardona[2]; Mizraim Uriel Flores G.[3]; Ivan Reyes D.[4]; [1]Universidad Autónoma del Estado de Hidalgo; [2]Universidad Politécnica Metropolitana de Hidalgo; [3]Universidad Tecnológica de Tulancingo; [4]Universidad Autónoma de San Luis Potosí

Characterization of Incorporation the Glass Waste in Adhesive Mortar: *Afonso Azevedo*[1]; Diogo Pereira Santos[2]; Jonas Alexandre[2]; Gustavo Xavier[2]; Luana Hespanhol[2]; Thales Mendonça[2]; Niander Aguiar[2]; [1]IFF; [2]UENF

Preparation of Polymeric Phosphate Ferric Sulfate Flocculant and Application on Coking Wastewater Treatment: *Lina Wang*[1]; [1]Wuhan Iron and Steel Co.

Effect of Phase Transformations on Hardness in Zn–Al–Cu Alloys: Jose Villegas-Cardenas[1]; *Victor Lopez-Hirata*[2]; Maribel Saucedo-Muñoz[2]; Jorge Gonzalez-Velazquez[2]; Erika Avila-Davila[3]; [1]Universidad Politecnica del Valle de Mexico; [2]Instituto Politecnico Nacional (ESIQIE); [3]Instituto Tecnologico de Pachuca

Effects of Heat Treatment on the Mechanical Properties of CrMo Steel Contained Nb: *Yang Xu*[1]; Jie Xu[1]; Xiangru Chen[1]; [1]Shanghai University

Effect of the Paper Industry Residue on Properties in the Fresh Mortar: *Afonso Azevedo*[1]; Jonas Alexandre[2]; Carlos Maurício Vieira[2]; Gustavo Xavier[2];

Euzebio Zanelato[2]; Lucas Oliveira[2]; [1]IFF; [2]UENF

Mechanical Properties and Microstructure of K418 Using Master Alloy Technique and Mechanical Alloying: *Xiaowei Chen*[1]; Lin Zhang[1]; Chi Chen[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

Passive Films Formed on Stainless Steels in Phosphate Buffer Solution: Claudia Méndez[1]; Rodrigo Burgos[1]; Florencia Bruera[1]; *Alicia Ares*[2]; [1]Faculty of Sciences - National University of Misiones; [2]Materials Institute of Misiones-IMAM (CONICET-UNaM)

Analysis of Absorption in Cardboard Tubes: Victor Souza[1]; *Amanda Camerini*[2]; Niander Cerqueira[3]; [1]Universidade Federal Fluminense; [2]Sociedade Universitária Redentor; [3]UENF

Analysis of the Importance of Heat Treatment Surface of Steel Gear SAE 1045 Transmission Motorcycle to Increase Hardness and Resistance to Wear: *Victor Souza*[1]; Niander Cerqueira[2]; Gean Neiva[3]; [1]Universidade Federal Fluminense; [2]UENF; [3]Sociedade Universitária Redentor

Angle Dependence of Optical Plasmonic Response of Concave Bow-tie Sliver Nanoparticle: *Jingxuan Ge*[1]; Gerd Duscher[1]; Ramakrishnan (Ramki) Kalyanaraman[1]; Abhinav Malasi[1]; Annette Farah[1]; [1]University of Tennessee

Assessment of Concrete Degradation Submitted to the Attack of Magnesium Sulfate through Non-destructive Testing: Gustavo Lima[1]; *Leonardo Pedroti*[1]; José Luiz Paes[1]; Roseli Martins[1]; [1]Universidade Federal de Viçosa - UFV

Brillouin Scattering Spectroscopy on Mg-Nd Alloy in Different Aging Time: *Xinyi He*[1]; Wenjian Meng[1]; Yongquan Wu[1]; [1]Shanghai University

Characterization Mechanics and Copper in Application Cooling Industry: *Victor Souza*[1]; Matheus Torres do Santos[2]; Niander Cerqueira[3]; [1]Universidade Federal Fluminense; [2]Sociedade Universitária Redentor; [3]Universidade Estadual do Norte Fluminense

Characterization Mortar Mechanics Using in their Waste Composition of Stone Extraction Italva -RJ City: Victor Souza[1]; Niander Cerqueira[2]; *Amanda Camerini*[3]; Anna Carolina Rabello[3]; Caio Araujo[3]; [1]Universidade Federal Fluminense; [2]UENF; [3]Sociedade Universitária Redentor

Characterization of Boron in Boron Containing Steels: *Kara Luitjohan*[1]; Volkan Ortalan[1]; David Johnson[1]; [1]Purdue University

Characterization of Irradiated and Non-irradiated Rubber from Automotive Scrap Tires: Clécia Souza[1]; *Leonardo Silva*[1]; [1]IPEN-CNEN?SP

Characterization of Mesoscale Materials with Secondary Signal Imaging Electron Tomography (SSI-ET) in a Transmission Electron Microscope: *Chang Wan Han*[1]; Volkan Ortalan[1]; [1]Purdue University

Characterization of Waste Molding Sands, for Their Possible Use as Building Material: Mauricio Guerrero Rodríguez[1]; Juan Hernández Ávila[1]; *Javier Flores Badillo*[1]; Eleazar Salinas Rodríguez[1]; Isauro Rivera Landero[1]; María Isabel Reyes Valderrama[1]; Eduardo Cerecedo Sáenz[1]; Víctor Esteban Reyes Cruz[1]; Carmen Cortés López[1]; [1]Universidad Autónoma del Estado de Hidalgo

Construction Waste of Civil Use in Concrete Structural: *Victor Souza*[1]; Anna Carolina Rabello[1]; Niander Cerqueira[2]; Renan Tavares[3]; [1]Universidade Federal Fluminense; [2]UENF; [3]Sociedade Universitária Redentor

Development of Bio-based Foams Prepared from PBAT/PLA Reinforced with Bio-calcium Carbonate Compatibilized by Electron-beam Radiation: Elizabeth Cardoso[1]; *Marcus Seixas*[2]; Helio Wiebeck[2]; Glauson Machado[1]; Rene Oliveira[1]; Esperidiana Moura[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Universidade de São Paulo

Direct Synthesis of Carbon Nanotubes at Low Temperature by the Reaction of CCl4 and Ferrocene: *Wei Luo*[1]; Yan Tang[2]; Mingsheng He[1]; Degang Ouyang[1]; Cuijiao Ding[1]; Bin Han[1]; Shanhe Zhu[1]; Minghui Li[1]; [1]Research and Development Center of Wuhan Iron & Steel (Group) Corporation; [2]Wuhan University of Science and Technology

Properties of Ceramic Pigment Zn0.5Cu0.5Cr2O4 Synthesized by Solution Combustion Method: *Edgar Chavarriaga Miranda*[1]; Juan Fernando Montoya Carvajal[1]; Alex Sepulveda Lopera[1]; Juan Camilo Restrepo Gutiérrez[1]; Oscar Jaime Restrepo Baena[1]; [1]Universidad Nacional de Colombia

Evaluation of Porosity and the Carbonation Grout Applied In Structural Masonry: Roseli Martins[1]; Gustavo Emílio Lima[1]; *Leonardo Pedroti*[1]; Rita de Cássia Alvarenga[1]; [1]Universidade Federal de Viçosa

Fabrication and Mechanical Behavior of Carbon Nanofiber Foam Core -Polymeric Shell Structures: *Chanman Park*[1]; C. Dominguez[1]; M. Sanchez[1]; J. Gomez[1]; C.C, Luhrs[1]; [1]Naval Postgraduate School

Green Synthesis, Characterization and Stabilization of AgNPs with Thuja Orientalis Extract: Pedro Ramirez Ortega[1]; *Laura García Hernández*[1]; Diana Arenas Islas[1]; Mizraim Flores Guerrero[1]; Damian Neri Enriquez[1]; [1]Universidad Tecnológica de Tulancingo

Incorporation of Glass Waste Into Mortar: Rafaela Gomes[1]; *Gustavo Xavier*[1]; Jonas Alexandre[1]; Afonso Azevedo[2]; Sergio Monteiro[3]; Leonardo Pedroti[4]; [1]UENF; [2]IFF; [3]IME; [4]UFV

Incorporation of Ornamental Rock Waste into Mortar: Giovani Mori[1]; *Gustavo Xavier*[1]; Jonas Alexandre[1]; Afonso Azevedo[2]; Sergio Monteiro[3]; Carlos Mauricio Vieira[1]; [1]UENF; [2]IFF; [3]IME

Influence of Inoculation on Structure of Chromium Cast Iron: *Dariusz Kopycinski*[1]; Sylwester Piasny[2]; [1]AGH University of Science and Technology ; [2]HARDKOP

Influence of the Dispersant System on the Coloristic Performance of Pigments Applied to Plastic Materials: *Patricia Poveda*[1]; Leonardo Gondim de Andrade e Silva[1]; [1]Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN-SP

Investigation of Medium-Range Correlations in Marginal Glass Forming Alloys: Mustafacan Kutsal[1]; Ryan Ott[2]; Matthew Kramer[2]; *Eren Kalay*[1]; [1]METU; [2]Ames Laboratory

Magnetic and Structural Properties of Sodium Substituted La1-xNaxMnO3 Hole Doped Lanthanum Manganites: *Imaddin Al-Omari*[1]; N. Sethulakshmi[2]; A.N. Unnimaya[3]; Salim Al – Harthi[1]; S. Sagar[4]; Senoy Thomas[5]; G. Srinivasan[6]; M.R. Anantharaman[2]; [1]Sultan Qaboos University; [2]Cochin University of Science and Technology,Cochin; [3]3Centre for Materials for Electronic Technology; [4]Government College for Women; [5]National Institute of Interdisciplinary Science and Technology; [6]Oakland University

Microstructural Characterization of a Ni2HfAl-Precipitate-Strengthened Ferritic Alloy: *Shao-Yu Wang*[1]; Gian Song[1]; Peter K. Liaw[1]; [1]The University of Tennessee

Miracema Clay Characterization, in Northwest Fluminense for Making Structural Masonry Blocks Ceramic: Niander Aguiar[1]; Victor Souza[1]; *Afonso Azevedo*[2]; Gustavo Xavier[1]; Jonas Alexandre[1]; Euzebio Zanelato[1]; [1]UENF; [2]IFF

Monitoring Dislocation Characteristics of Steels during Deformation by TOF Neutron Diffraction: *Takuro Kawasaki*[1]; Stefanus Harjo[1]; Wu Gong[1]; Kazuya Aizawa[1]; [1]Japan Atomic Energy Agency

Clinker Production from Wastes of Cellulose and Granite Industries: Delio Fassoni[1]; Rita Alvarenga[1]; *Leonardo Pedroti*[1]; Beatryz Mendes[1]; [1]Universidade Federal de Vicosa

Properties of Clay for Ceramics with Rock Waste for Production Structural Block by Pressing and Firing: *Niander Cerqueira*[1]; Victor Souza[2]; Daniel Choe[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; Mairyanne Souza[1]; [1]Universidade Estadual do Norte Fluminense Darcy Ribeiro - UENF; [2]Universidade Federal Fluminense

Properties of Mortars with Partial and Total Replacement of Conventional Aggregate by Waste Construction: *Niander Cerqueira*[1]; Victor Souza[2]; Daniel Choe[1]; Gustavo Xavier[1]; Jonas Alexandre[1]; Afonso Azevedo[1]; [1]Universidade Estadual do Norte Fluminense Darcy Ribeiro - UENF; [2]Universidade Federal Fluminense

Research of the Extraction of Valuable Metals from Nickel Laterite by the Ammonium Sulfate Roasting-Water Leaching Process: Yangyang Li[1]; *Jinhui Li*[1]; Yan Gao[2]; Yunfang Zhang[1]; Zhifeng Chen[1]; [1]School of Metallurgy and Chemical Engineering; [2]Henan Institute of Metallurgy Co., Ltd

Synthesis of Spinel ZnCr2-xFexO4 by Combustion Method: *Juan Fernando Montoya*[1]; Edgar Andrés Chavarriaga[2]; Oscar Jaime Restrepo[2]; [1]Corpo-

ración Universitaria Lasallista; [2]Universidad Nacional de Colombia

The Characterization of the Desulfurization Powder in the Semi-dry De-SO2 Process of the Sintering Machine Exhaust Gas and the Interaction with the Soil Particles: *Ling-Chen Kang*[1]; Li-jun Lu[1]; Gai-Feng Xue[1]; Ji-ann-Yang Hwang[2]; [1]The R&D center of WISCO; [2]Michigan Technological University

Effects of Carbon Black Incorporation on Morphological, Mechanical and Thermal Properties of Biodegradable Films: *Julio Harada*[1]; José Macedo[2]; Glauson Machado[1]; Francisco Valenzuela-Díaz[3]; Esperidiana Moura[1]; Derval Rosa[2]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Universidade Federal do ABC - UFABC; [3]Universidade de São Paulo

Evaluation of Physico-Chemical Properties when Adding Boiler Ashes to Mortar: Marina Caetano[1]; Roseli Martins[1]; Gustavo de Lima[1]; Andre Araujo[1]; *Leonardo Pedroti*[1]; Ana Augusta Rezende[1]; Rita Alvarenga[1]; [1]Universidade Federal de Viçosa

Influence of the Brazilian Nanoclay "Branca de Cubati" Incorporation on Properties of Acrylonitrile Butadiene Styrene(ABS): Jorge Sales[1]; Francisco R. Valenzuela-Diaz[2]; Vijaya K. Rangari[3]; *Esperidiana A. B. Moura*[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Universidade de São Paulo, Escola Politécnica,Dep. de Eng. Metalúrgica e de Materiais; [3]Department of Materials Science and Engineering, Tuskegee University

Mechanical Characterization of Mortar Using in its Composition of Waste Wood Processing: Victor Souza[1]; Niander Cerqueira[2]; *Caio Araujo*[3]; [1]Universidade Federal Fluminense; [2]UENF; [3]Sociedade Universitária Redentor

Effect of Magnesium Aluminate Spinel Content on Properties of BN Based Composites: *Meng Liu*[1]; [1]Research and Development Center of Wuhan Iron and Steel (group) Corporation

Microstructure Analysis of Buildups Embedded in Carbon Sleeve in Continuous Annealing Furnace for Non-oriented Silicon Steel: *Mingsheng He*[1]; [1]Research and Development Center of WISCO

Significance of Graphitic Surfaces in Aurodicyanide Adsorption by Activated Carbon: Experimental & Computational Approach
: *Dhiman Bhattacharyya*[1]; Tolga Depci[2]; Keith Prisbrey[1]; Jan Miller[1]; [1]University of Utah; [2]Inonu University

Optimization of Vector Field Electron Tomography Using Model Based Iterative Reconstructions: *KC Prabhat*[1]; Charles Bouman[2]; Marc De Graef[1]; Charudatta Phatak[3]; K. Aditya Mohan[2]; [1]Carnegie Mellon University; [2]Purdue University; [3]Argonne National Laboratory

Effects of Graphene Oxide Addition on Mechanical and Morphological Properties of EVOH Films: Jesús González-Ruíz[1]; Lourdes Yataco-Lazaro[1]; Sueli Virginio[1]; Maria das Graças Valenzuela[1]; Esperidiana Moura[1]; *Francisco Valenzuela-Díaz*[1]; [1]Instituto de Pesquisas Energéticas e Nucleares

Examining the Stability and Electron Emission Properties of Vacuum Plasma Sprayed Lanthanum Hexaboride Coatings: *Thomas Burton*[1]; Gregory Thompson[1]; Daniel Butts[2]; Alan Joly[3]; [1]University of Alabama; [2]Plasma Processes, LLC; [3]Pacific Northwest National Laboratory

Recovery of Palladium and Aluminum from Spent Catalysts by Roasting-leaching: *Li Qian*[1]; Rao Xue-fei[1]; Yang Yong-bin[1]; Xu Bin[1]; Hu Long[1]; Jiang Tao[1]; [1]Central South University

Improvement of Mechanical Properties in Natural Rubber with Fillers Organics
: *Marcos Fernandes*[1]; Christiano Andrade[1]; Fábio Esper[2]; Francisco Diaz[1]; Hélio Wiebeck[1]; [1]Universidade de São Paulo/PMT; [2]ESTÁCIO

5-Parameter Grain Boundary Measurement from a Single 2-Dimensional EBSD Scan: *Michael Chapman*[1]; Marc DeGraef[1]; [1]Carnegie Mellon University

Silver Cementation with Zinc from Residual X Ray Fixer, Experimental and Thermochemical Study: *Miguel Perez-Labra*[1]; Martin Reyes Pérez[2]; J. Antonio Romero Serrano[3]; E. O. Ávila-Dávila[4]; F. R. Barrientos Hernández[2]; Pandiyan Thangarasu[5]; [1]UAEH MEXICO ; [2]UAEH MEXICO; [3]IPN ESIQIE; [4]ITP; [5]UNAM

Confocal Microscopy Studies on Oxide Inclusions in Ca Treated Steels: Digvijay Kumar[1]; Kateryna Hechu[2]; Jay Warnett[2]; MBV Rao[3]; Mark Williams[2]; Sridhar Seetharaman[2]; GG Roy[1]; *Prakash Srirangam*[2]; [1]Indian Institue of Technology; [2]University of Warwick; [3]Visakhapatnam Steel Plant

Speciation and Characterization of E-waste, Using Analytical Techniques: Carmen Cortés López[1]; Víctor Esteban Reyes Cruz[1]; María Aurora Veloz Rodríguez[1]; Juan Hernández Ávila[1]; *Javier Flores Badillo*[1]; José Ángel Cobos Murcia[1]; [1]Universidad Autónoma del Estado de Hidalgo

Characterization Methodologies for Investigating Surface Integrity in Microelectronics Packaging: *Marion Branch Kelly*[1]; Bethany Smith[1]; Cruz Hernandez[1]; Kimberly McGuinness[1]; Amaneh Tasooji[1]; [1]Arizona State University

Characterization of Gamma-alumina Obtained from Aged Pseudoboehmites: *Antonio Munhoz Jr*[1]; Leonardo Andrade e Silva[2]; Leila Miranda[1]; Raphael Andrades[1]; [1]U.P.Mackenzie; [2]IPEN

Deformation and Annealing Behavior of OFHC Copper and GLIDCOP Al-15: *Daudi Waryoba*[1]; Julie Anderson[2]; Nathan Stiles[1]; [1]Penn State University, DuBois; [2]The Pennsylvania State University, University Park

Densification Behavior and Dielectric Properties of Gel Cast Barium Zinc Tantalate Ceramics: Swathi Manivannan[1]; P.Kumar Sharma[2]; *Dibakar Das*[1]; [1]University of Hyderabad; [2]Institute for Plasma Research

Effect of Alloying Elements on the High Temperature Oxidation of Ti-Al-Fe Alloys: *Jiwon Park*[1]; Do-Heon Kim[1]; Yong-Taek Hyun[1]; [1]Korea Institute of Materials Science

Evaluation of Environmental Aging of Polypropylene Irradiated Versus Pristine: *Rebeca Romano*[1]; Washington Oliani[1]; Duclerc Parra[1]; Ademar Lugao[1]; [1]Nuclear Energy Research Institute – IPEN/USP

In Situ Transmission Electron Microscopy Studies on Solid-state Formation of Quasicrystals in a Mg Alloy: *Zhiqing Yang*[1]; Jianfang Liu[1]; Hengqiang Ye[1]; [1]Institute of Metal Research

Microstructure, Mechanical and Oxidation Behavior of Niobium Modified 9% Chromium Steel: *Anup Mandal*[1]; Tapas Bandyopadhay[1]; [1]Indian Institute of Technology

Failure Analysis of Steel Fasteners Used in Anchoring Details: *Necip Ünlü*[1]; Hakan Nuri Atahan[2]; Burak Türkel[2]; Onuralp Yücel[1]; [1]ISTANBUL TECHNICAL UNIVERSITY FACULTY OF CHEMISTRY-METALLURGY; [2]ISTANBUL TECHNICAL UNIVERSITY CIVIL ENGINEERING DEPARTMENT

How to Manage and Use Material Property Data – in Education, Research and Industry: *Claes Fredriksson*[1]; [1]Granta Design

Hydration Resistance of Y2O3 Doped CaO Refractory and Its Application to Melting Titanium Alloys: *Fanlong Meng*[1]; [1]Shanghai university

Interface Reaction between Y2O3 Doped BaZrO3 and TiNi Melt: ZhiWei Cheng[1]; *Chonghe Li*[1]; [1]Shanghai University

Investigation of the Passivation Mechanism of Copper-based Anodes from In-situ Observations: *Yuma Ninomiya*[1]; Hideaki Sasaki[1]; Masafumi Maeda[1]; [1]The University of Tokyo

Mechanical Behaviour of Multiaxially Forged Mg-2Zn-2Gd: *sunkulp Goel*[1]; Nikhil Kumar[2]; I V Singh[1]; A Srinivasan[1]; R Jayaganthan[1]; [1]indian institute of technology Roorkee India; [2]Indian Institute of Technology Roorkee India

Microstructural Characterization of Boron-rich Boron Carbide by Transmission Electron Microscopy: *Kelvin Xie*[1]; Vlad Domnich[2]; Jim McCauley[1]; Rich Haber[2]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]Rutgers University

Shear Displacement and Actual Strain during Chip Segmentation when Cutting Aerospace Alloy Ti-5553: *David Yan*[1]; Tim Hilditch[2]; Hossam Kishawy[3]; Guy Littlefair[2]; [1]University of Wisconsin-Green Bay; [2]Deakin University; [3]University of Ontario Institute of Technology

Zinc Chloride Influence on the Resins Furan Polymerization to Foundry Moulds: Leila Miranda[1]; *Leonardo Andrade e Silva*[2]; Antônio Munhoz Junior[1]; Marcus Vale[1]; [1]Universidade Presbiteriana Mackenzie; [2]Instituto de Pesquisas Energéticas e Nucleares -IPEN

Optimization of Polishing Parameters of Chemical Mechanical Planarization (CMP) for c-plane (0001) GaN Using Taguchi Method: Durga Nelabhotla[1]; *Tanjore Jayaraman*[2]; Dibakar Das[1]; [1]University of Hyderabad, India;

[2]University of Michigan - Dearborn

Plasmonic Behavior and Optical Transmission of Silver-Cobalt Thin Film Hole Arrays: *Annette Farah*[1]; Roderick Davidson[2]; Benjamin Lawrie[2]; Raphael Pooser[2]; Ramki Kalyanaraman[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

Powder Processing of Bulk Fe-3 wt. %C Alloy: *Ibrahim Khalfallah*[1]; Alex Aning[1]; [1]Virginia Tech

Quasi-static and Dynamic Compression of a Single Phase Ti-7Al Alloy: *Emily Huskins*[1]; Lynn Nguyen[2]; Alexandria Will-Cole[2]; Adam Pilchak[3]; Brian Schuster[2]; [1]United States Naval Academy; [2]US Army Research Laboratory; [3]US Air Force Research Laboratory

Role of Microstructural Anisotropy in Shear Response of Materials: *Olivia Dippo*[1]; George Gray[1]; V Livescu[1]; C Bronkhorst[1]; M Lovato[1]; [1]Los Alamos National Laboratory

Surface Behavior of Iron Sulfide Ore during Grinding with Alumina Media: *Martin Reyes Perez*[1]; Elia Guadalupe Beas[2]; Francisco Cardona[1]; Ramiro García[3]; Mizraim Uriel Guerrero[4]; Ivan Alejandro Dominguez[5]; Laura Patricia Palazuelos[1]; [1]Universidad Autónoma del Estado de Hidalgo; [2]Instituto Politécnico Nacional ESIQuIE; [3]Universidad Michoacana de San Nicolas de Hidalgo UMSNH; [4]Área de Electromecánica Industrial, Universidad Tecnológica de Tulancingo ; [5]Instituto de Metalurgia, Universidad Autónoma de San Luis Potosí

Synchrotron X-Ray Characterization of Inconel 625 Manufactured Through Direct Metal Laser Sintering Technique of Additive Manufacturing: *Yaakov Idell*[1]; Lyle Levine[1]; Andrew Allen[1]; Fan Zhang[1]; Carelyn Campbell[1]; [1]National Institute of Standards and Technology

Texture and Anisotropy Studies in the API 5L X70 Pipeline Steel during Hot Rolling and Various Heat Treatments: *Mohammad Masoumi*[1]; Hamilton de Abreu[1]; [1]Universidade Federal do Ceara

Microstructure, Phase Composition and Shear Strength of the TiAlV/TiCuZrPd/TiAlV Brazed Joints: *Anna Sypien*[1]; Joanna Wojewoda-Budka[1]; Lidia Litynska-Dobrzynska[1]; Kamil Badura[1]; [1]Institute of Metallurgy and Materials Science

Mineralogical Analysis of Nickel/Copper Polymetallic Sulfide Ore by X-ray Diffraction Using Rietveld Method: *Guangshi Li*[1]; Hongwei Cheng[1]; Cong Xu[1]; Changyuan Lu[1]; Xingli Zou[1]; Xionggang Lu[1]; Qian Xu[1]; [1]Shanghai University

Unraveling the Role of Mo in the Aqueous Corrosion of Ni-Cr-Mo Alloys by Combining Electrochemical Passivation Studies with Nanoscale Characterization: *Petra Reinke*[1]; Gopalakrishnan Ramalingam[1]; Kathleen Lutton[1]; Kateryna Gusieva[1]; Brendy Rincon Troconis[1]; John Scully[1]; [1]University of Virginia

The Effects of Carbon on the Rare Earth Elements Distribution in NdFeB Magnet: *Yuyang Bian*[1]; Shuqiang Guo[1]; Kai Tang[2]; Weizhong Ding[1]; [1]Shanghai University; [2]SINTEF Materials and Chemistry

Ionizing Radiation Effects on Properties of Polyamide Composites with Colloidal Silicon Dioxide (Aerosil) and Talc: *Camila Amorim*[1]; Leonardo Silva[1]; [1]IPEN-CNEN/SP

Biodegradable Composite Development Reinforced with Acai Seed Coal: Celio Hitoshi Wataya[1]; Leonardo Silva[2]; [1]INSTITUTO FEDERAL DO PARÁ; [2]IPEN

General Poster Session — Poster Session

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

A Novel Process for Treating with Low Grade Zinc Oxide Ores in Hydrometallurgy: *Dou Aichun*[1]; [1]Jiangsu University, China

A Study of Taguchi Method to Optimize 6060 series Aluminum Anodic Oxide Film's Hardness and Investigation of Corrosion Behaviors of Oxide Films: Deniz Polat[1]; *Burcin Bilici*[2]; Can Akyil[3]; B. P. Afsin[2]; Ozgul Keles[1]; [1]ITU; [2]Istanbul Technical University; [3]Politeknik Metal San Tic AS

Anisotropic Effects of the Bi2Te3 Crystal Orientations on the Bi2Te3/Sn Interfacial Reactions: *Chih-Ming Chen*[1]; [1]National Chung Hsing University

Anticorrosion Performance of *Solanum aethiopicum* on Steel-Reinforcement in Concrete Immersed in Industrial/Microbial Simulating-Environment: *Joshua Okeniyi*[1]; Olugbenga Omotosho[1]; Elizabeth Okeniyi[1]; Adebanji Ogbiye[1]; [1]Covenant University, Ota, Nigeria

Anticorrosive Zr and Zn Coatings on a Pre-Oxidized 304L Steel Surface: *Victor Flores*[1]; Luis Longoria[2]; Francisco Patiño[3]; Eliazar Salinas[3]; Elia Palacios[1]; Mizraim Flores[4]; Iván Reyes[5]; Sayra Ordonez[3]; [1]Instituto Politécnico Nacional; [2]Instituto Nacional de Investigaciones Nucleares; [3]Universidad Autónoma del Estado de Hidalgo; [4]Universidad Tecnológica de Tulancingo; [5]Universidad Autónoma de San Luis Potosí

Applications of Infrared Thermography Technology in Railway Components for Advanced Characterization: *Jeongguk Kim*[1]; [1]Korea Railroad Research Institute

Behavior of Tire Derived Pre-Functionalized Carbon Black for Uranium Adsorption: *Travis Willhard*[1]; Dhiman Bhattacharyya[1]; Mano Misra[1]; [1]University of Utah

Bulk Metallic Glass Composite with Good Tensile Ductility, High Strength and Large Elastic Strain Limit: *Fufa Wu*[1]; [1]Liaoning University of Technology, China

Computational Thermodynamics Assisted Process Design of T-B-X Materials: *Vikas Jindal*[1]; Anthony Sanders[2]; K. S. Chandran[3]; [1]Indian Institute of Technology (Banaras Hindu University); [2]Ortho Development Corp.; [3]University of Utah

Current Status of Characterization of RPV Material from Decommissioned Zion NPP: *Mikhail Sokolov*[1]; Thomas Rosseel[1]; Randy Nanstad[1]; [1]ORNL

Damping Capacity of TiCuNiSiSn Super-elastic Alloy: *Wook Ha Ryu*[1]; Eun Soo Park[1]; [1]Seoul National University, Dept of Materials Science & Engrg

Development of Innovative Barrierless Cu-Alloy Films for Various Applications: *Chon-Hsin Lin*[1]; [1]Asia-Pacific Institute of Creativity/Biotechnology

Development of the Non-contact Surface Make with the Inorganic Binder Using on the Low Melting Point Molten Metal Reaction: *Min Seok Moon*[1]; Myeong Han Yoo[1]; Joon Hyuk Song[1]; Je Ha Oh[1]; Shin Jae Kang[2]; Kee Do Woo[2]; [1]Korea Institute of Carbon Convergence Technology; [2]Chonbuk National University

Effect of Composition on the High-Temperature Strength of Several Model Ni-Base Alloys: *Govindarajan Muralidharan*[1]; [1]Oak Ridge National Laboratory

Effect of Dopants on Barium Calcium Zirconate Titanate Piezoelectric Ceramics: Elugu Chandrakala[1]; Paul Praveen[1]; Tanjore Jayaraman[2]; *Dibakar Das*[1]; [1]University of Hyderabad, SEST; [2]University of Michigan - Dearborn

Effect of Pulsed Magnetic Field on Microstructure of Grain-Oriented Silicon Steel during Primary Recrystallization Process: *Lihua Liu*[1]; Lijuan Li[2]; Qijie Zhai[2]; [1]School of Mechanical Technology Electronic of Shanghai Jian Qiao University; [2]Shanghai University

Effect of Temperature on the Mechanical Behaviour of NiTi Shape Memory Sheets: *Girolamo Costanza*[1]; Maria Elisa Tata[1]; Riccardo Libertini[1]; [1]University of Rome "Tor vergata"

Effects of Laser Heating on HY80 Steel: *Maxwell Wiechec*[1]; Brad Baker[1]; [1]US Naval Academy

Effects of Resistance Spot Welding on the Mechanical Properties in High Strength Steels: *JaeHwang Kim*[1]; EuiPyo Kwon[1]; KwangJin Lee[1]; [1]Korea Institute of Industrial Technology

Evaluation of Forged Aluminum Matrix Composites Reinforced with Carbon Nanotubes(CNTs) Fabricated by Composite Gas Generator(CGG) Process: *Young-sek Yang*[1]; Myeong-hak Kang[1]; Geun-woo Lee[1]; [1]Foosung

Precision Ind. Co., Ltd

Gamma and Neutron Shielding Behavior of Spark Plasma Sintered Boron Carbide-Tungsten Based Composites: *Salih Ozer*[1]; Bulent Buyuk[2]; A. Tugrul[2]; Servet Turan[1]; Onuralp Yucel[2]; Gultekin Goller[2]; Filiz Sahin[2]; [1]Anadolu University; [2]Istanbul Technical University

Grain Boundary Mechanics in Nickel-based Superalloys: *John Rotella*[1]; Martin Detrois[2]; Sammy Tin[2]; Michael Sangid[1]; [1]Purdue University; [2]Illinois Institute of Technology

Green Synthesis of Fe Nanoparticles Using Ruta Graveolens Leaf Extracts for Possible Treatment of Wastewater: *Mizraim Flores*[1]; Iván Reyes[2]; Francisco Patiño[3]; Laura García[1]; Pedro Ramírez[1]; Diana Arenas[1]; Luis García[1]; Lesly Villaseñor[1]; Victor Flores[4]; [1]Universidad Tecnológica de Tulancingo; [2]Universidad Autónoma de San Luis Potosí; [3]Universidad Autónoma del Estado de Hidalgo; [4]Instituto Politécnico Nacional

High Strength Aluminum Alloy Applied Development of the Explosion-proof Lamp Housing through a Vacuum Die Casting Process: *Min Seok Moon*[1]; Myeong Han Yoo[1]; Je Ha Oh[1]; Joon Hyuk Song[1]; Shin Jae Kang[2]; [1]Korea Institute of Carbon Convergence Technology; [2]Chonbuk National University

Image Analysis Investigating Porous Structures of Carbon Cathodes Materials and Melts Penetration: *Xiang Li*[1]; Jilai Xue[1]; Jun Zhu[1]; Shihao Song[1]; [1]University of Science and Technology Beijing

Inhibition of Stainless Steel Corrosion in 0.5 M H_2SO_4 in the Presence of $C_6H_5NH_2$: *Olugbenga Omotosho*[1]; Joshua Okeniyi[1]; Emmanuel Obi[1]; Oluwatobi Sonoiki[1]; Segun Oladipupo[1]; Timi Oshin[1]; [1]Covenant University, Ota

Investigation of Process Parameters for the Nickel Coatings from Sulphamate Baths: *Mertcan Baskan*[1]; Metehan Erdogan[2]; Ishak Karakaya[1]; [1]Middle East Technical University; [2]Yildirim Beyazit University

Investigation of the Corrosion Behavior of Selected Steel Types and Aluminum Alloys in Marine Environment: *Rauf Aksu*[1]; Onur Uguz[2]; Metehan Erdogan[3]; Halim Meço[2]; Mustafa Aras[1]; Ishak Karakaya[1]; [1]Middle East Technical University; [2]FNSS; [3]Yildirim Beyazit University

Investigation of the Impact of Grain Size on the Oxidation Behavior of NiCrAlY Alloys: *Brett Hunter*[1]; Todd Butler[1]; Mark Weaver[1]; [1]University of Alabama

Investigation of the Influence of Grain Refinement on the Oxidation Behavior of NiAl-Hf Alloys: *Rachel Handel*[1]; Isabela Aguiar[2]; Todd Butler[1]; Mark Weaver[1]; [1]University of Alabama; [2]Federal University of Minas Gerais

Micro-truncated Cone Arrays for Light Extraction of Organic Light-emitting Diodes: *Wei-Chu Sun*[1]; [1]National Dong Hwa University

Microstructural Analysis of Zn-Mg Alloy Coated Steel Plate Fabricated by PVD Method: *Su-Ryong Bang*[1]; Jong Min Byun[1]; Tae-Yeob Kim[2]; Soek-Jun Hong[2]; Young Do Kim[1]; [1]Hanyang University; [2]POSCO

Microstructure and Mechanical Properties of TiC-reinforced Steel Matrix Composite: Seong Hoon Kim[1]; *Dong Woo Suh*[1]; [1]Pohang University of Science and Technology

Microstructure of Heat Treated Selective Laser Melting Manufactured Ti-6Al-4V: *Dennis Malka-Markovitz*[1]; Menachem Bamberger[1]; [1]Technion Israel Institute of Technology

Mould Filling Ability Characterisation of SIMA Produced 6063 Alloy: *Omer Vardar*[1]; Izzettin Ergun[1]; Caglar Yuksel[2]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

Multi-layer Resistance Spot Welding in Advanced High Strength Steel: *KwangJin Lee*[1]; EuiPyo Kwon[1]; JaeHwang Kim[1]; [1]Korea Institute of Industrial Technology

Non-stoichiometry of Uranium Oxides: Thomas Meek[1]; *Christopher Shaver*[1]; [1]University of Tennessee

One-step Preparation of TiB2-C Composite by DC Arc Furnance: *Kuanhe Li*[1]; [1]Northeastern University

Preparation of Core-sheath Eletrospinning Polyacrylonitrile Fibers: Jiangnan Huang[1]; *Zhanhu Guo*[1]; Xiangfang Peng[2]; [1]The University of Tennessee; [2]South China University of Technology

Preventing Molten Metal Explosions: *Alex Lowery*[1]; [1]WISE CHEM LLC

Production and Characterization of Fe-based Glassy Composite: *Hamdi Ekici*[1]; Eray Erzi[1]; Derya Dispinar[1]; [1]Istanbul University

Property Evaluation and Fabrication of L7L3Z2O12 Compacts for Solid Electrolyte by a Spark Plasma Sintering Method: *Junho Jang*[1]; Ik-Hyun Oh[1]; Hyun-Kuk Park[1]; Hyo-Eun Nam[1]; Jae-Won Lim[1]; Ho-Sung Kim[1]; [1]KITECH

Recycling System of Waste Home Appliances in Korea: *Soo-Kyung Kim*[1]; Jeongsoo Sohn[1]; Donghyo Yang[1]; Kyungjoong Kwon[2]; [1]Korea Institute of Geoscience and Mineral Resources; [2]Sejong University

Role of Chelating Ligands in Electrochemical Recovery of Rare Earth Elements from Mining Wastewater: *Sunjung Kim*[1]; Sumin Lee[1]; [1]University of Ulsan

Semiconductor Core Optical Fiber for Mid IR Wavelength Transmission: Mustafa Ordu[1]; Jicheng Guo[1]; James Bird[1]; Siddharth Ramachandran[1]; *Soumendra Basu*[1]; [1]Boston University

Si and SiCu Three Dimensional Sculptured Films as Negative Electrodes for Rechargeable Lithium Ion Batteries: Deniz Polat[1]; *Burcin Bilici*[2]; Ozgul Keles[1]; [1]ITU; [2]Istanbul Technical University

Software for Materials Science and Engineering Teaching: *Claes Fredriksson*[1]; [1]Granta Design

Studies on Corrosion Characteristics of Superalloys in Different Environment: *Muideen Bodude*[1]; Olanrewaju Ojo[2]; Harrison Onovo[1]; R. Nnaji[1]; [1]University of Lagos; [2]University of Manitoba

Sustainability of Alumina: *Plácido García Pérez*[1]; [1]Oviedo, Spain Univ. PhD candidate

Tape Casting of Uranium Dioxide: *Christopher Shaver*[1]; Thomas Meek[1]; [1]University of Tennessee

The Effect of Additive V2O5 on Sinter Mechanism and Properties of Inert Anode of NiFe2O4 Spinel: *Yihan Liu*[1]; [1]Northeastern University

The Physico-mechanical Properties of Mg Alloy Reinforced with AlN Nanoparticles: *Sergey Vorozhtsov*[1]; Ilya Zhukov[1]; Dmitry Eskin[1]; Vladimir Promakhov[1]; Anton Khrustalyov[1]; Alexander Vorozhtsov[1]; Vladislav Dammer[1]; [1]Tomsk State University

Thickness Effect on the Three-Dimensional Sculptured SiCu Thin Films Used as Negative Electrodes in Lithium Ion Batteries: Deniz Polat[1]; *Ceren Yagsi*[1]; Ozgul Keles[1]; [1]Istanbul Technical University

Fabrication of Electrochromic Window Using Nano Particle Deposition System (NPDS) with Ionic Liquid Electrolyte: *Dahyun Choi*[1]; Hyungsub Kim[1]; Kwangmin Kim[1]; Won-shik Chu[2]; Dooman Chun[3]; Sunghoon Ahn[2]; Caroline Sunyong Lee[1]; [1]Hanyang university; [2]Seoul National University; [3]University of Ulsan

Topology of the Decomposition of Ammonium Arsenojarosite in Alkaline Medium: *Víctor Flores*[1]; Francisco Patiño[2]; Elia Palacios[1]; Mizraim Flores[3]; Iván Reyes[4]; Sayra Ordoñez[2]; Eliecer Mendez[2]; Hernan Islas[2]; [1]Instituto Politécnico Nacional; [2]Universidad Autónoma del Estado de Hidalgo; [3]Universidad Tecnológica de Tulancingo; [4]Universidad Autónoma de San Luis Potosí

Partial Repair and Restart of a Damaged Aluminium Reduction Cell: *Khalid Youssif*[1]; [1]Aluminium Company Of Egypt "EGYPTALUM"

Tribological Properties of Aluminium-Clay Composites for Brake Disc Rotor Applications: *Ademola Agbeleye*[1]; David Esezobor[1]; S. Balogun[1]; J. Agunsoye[1]; J. Solis[2]; Anne Neville[2]; [1]University of Lagos; [2]University of Leeds

Development of Die-casting Aluminum Alloy with High Thermal Conductivity for Cylinder Head: *Kyung-Moon Lee*[1]; Byung-Ho Min[1]; Hoo-Dam Lee[1]; Jong Kook Lee[1]; [1]Hyundai Motor

Variation of Emotional Color of Copper Alloys with Its Surface Morphology and Reflectivity of the Wavelength: *Shin Hyeong-won*[1]; Hyo-Soo Lee[1];

Hai-Joong Lee[1]; [1]KITECH/Foundry Technology Service Center

Late News Posters — Poster Session

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

A Monte Carlo Approach for Efficient Inclusion of Interface and Grain Boundary Scattering in the Prediction of Effective Thermal Conductivity: Aarthi Ramesh[1]; *Nick Roberts*[1]; [1]Utah State University

A Novel Approach to Synthesize Cu-Ni-Al Thin Films by Electrodeposition with Potential Shape Memory Properties: *Jordina Fornell*[1]; Doga Bilican[1]; Pau Solsona[1]; Santiago Suriñach[1]; Dolors Baró[1]; Eva Pellicer[1]; Jordi Sort[2]; [1]Universitat Autònoma de Barcelona; [2]Institució Catalana de Recerca i Estudis Avançats (ICREA) and Universitat Autònoma de Barcelona

A Systematic First-principles Study of Diffusion Mechanisms in 26 Dilute Ni-X Alloy Systems: *Chelsey Hargather*[1]; ShunLi Shang[2]; Zi-Kui Liu[2]; [1]New Mexico Institute of Mining and Technology; [2]The Pennsylvania State University

Antimony Volatilization by Chloridizing Roasting: *Rafael Padilla*[1]; Ilitch Moscoso[1]; Maria Ruiz[1]; [1]University of Concepcion

Characterization and Optimization of Bulk Ni-Fe Spinels for Solid Oxide Fuel Cell Applications: *David Chesson*[1]; [1]Tennessee Technological University

Characterization of Oxide Structure of Sr-modified Al-Si Alloys: *Ugur Alev*[1]; Derya Dispinar[1]; Cem Kahruman[1]; [1]Istanbul University

Compressive Behavior and Modeling of Ti Foams Processed by Freeze-casting: *Hyelim Choi*[1]; Serge Shilko[2]; Heeman Choe[1]; [1]Kookmin University; [2]V.A. Belyi Metal-Polymer Research Institute of National Academy of Sciences of Belarus

Copper Extraction from Sulfate-chloride Media using Ketoxime and Salicylaldoxime Extractants: *Maria Ruiz*[1]; Ivan Gonzalez[1]; Javier Salgado[1]; Rafael Padilla[1]; [1]University of Concepcion

Direct Comparison between High Temperature Nanoindentation Creep and Uniaxial Creep Measurements: *Kurt Johanns*[1]; Warren Oliver[1]; P. Sudharshan Phani[1]; [1]Nanomechanics, Inc.

Dispersion of Carbon Nanotubes in Aluminum Improves Radiation Resistance: *Kangpyo So*[1]; Akihiro Kushima[1]; Mingda Li[1]; Ju Li[1]; [1]Massachusetts Institute of Technology

Dissimilar Metal Casting: *Carl Soderhjelm*[1]; [1]Worcester Polytechnic Institute

Effect of Boron Addition on High Manganese Steel: Bashir Rabiu[1]; *Mehmet Kelestemur*[1]; Cemal Carboga[2]; Hasan Yesilyurt[1]; [1]Meliksah University; [2]Nevsehir Haci Bektas Veli University

Effects of Microstructure and Mechnical Properties of High Strength Aluminum Alloy Billet & Slab on Low Frequency Electromagnetic Casting: *Myoung-Gyun Kim*[1]; Jonho Kim[1]; Joonpyo Park[1]; Woosuk Yoon[2]; [1]Research Institute of Industrial Science and Technology(RIST); [2]POSTECH

Electrochemical Studies of Inert Anodes for the CaCl2-CaO Melts Deoxidation: *Olivier Lemoine*[1]; Jerome Serp[1]; Mathieu Gibilaro[2]; Pierre Chamelot[2]; Gilles Bourgès[1]; [1]CEA; [2]UPS

Electrodeposited Tin-Antimony-Copper Alloy Negative Electrode for Lithium Ion Batteries: *Srijan Sengupta*[1]; Arijit Mitra[1]; Manila Mallik[1]; Prem Prakash Dahiya[1]; Karabi Das[1]; Subhasis Basu Majumder[1]; Siddhartha Das[1]; [1]IIT Kharagpur

End Product Defects in Direct-Chill Casted Hot Rolling Slabs and Melt Treatment: *Arda Yorulmaz*[1]; Eray Erzi[1]; Caglar Yuksel[2]; Derya Dispinar[1]; [1]Istanbul University; [2]Yildiz Technical University

Fabrication of a Functionally Graded Tungsten-Steel Laminate Plasma-Facing Material: *Lauren Garrison*[1]; Evan Ohriner[1]; Yutai Katoh[1]; [1]Oak Ridge National Lab

High Temperature in Caustic Pretreatment of Gold Locked in the Residue after Filtration from Gold Cyanidation Leaching: *Luc Kabemba*[1]; R.F. Sandenbergh[1]; [1]University of Pretoria

Influence of Thallium Oxide on Formation of Stable Phase of Mullite: *Oleg Chizhko*[1]; [1]Foreign department of Association for German Engineers

Investigation of Phase Stability and Grain Growth in Nanostructured 316L Stainless Steel Produced by High-energy Mechanical Milling at Cryogenic Temperature: *Hasan Kotan*[1]; Kris Darling[2]; [1]Konya NEU; [2]Army Research Laboratory

Investigation of Phase Transformation and Phase Stability of Stainless Steels as a Function of Milling Time and Annealing Temperature: *Ahmet Batibay*[1]; Hasan Kotan[1]; Kris Darling[2]; Hakan Gungunes[3]; [1]Necmettin Erbakan University; [2]U.S Army Research Laboratory; [3]Corum Hitit University

Long-period Martensitic Phases in Co-Al System: *Nataliya Kazantseva*[1]; Sergei Demakov[2]; Nina Vinogradova[1]; Denis Davidov[1]; Pavel Terent'ev[1]; Denis Shishkin[1]; [1]Institute of Metal Physics; [2]Ural Federal University

Modified Rayleigh Plateau Distribution of Dewet Metal Nanoparticles by Varied Solid-Liquid-Vapor and Solid-Liquid-Solid Interactions: Benjamin White[1]; *Nicholas Roberts*[1]; [1]Utah State University

Optimization of Welding Techniques on Accident Tolerant Alloys for Nuclear Reactor Applications: *Emmanuel Perez*[1]; Nathan Jerred[2]; Jian Gan[1]; [1]Idaho National Laboratory; [2]Universities Space Research Association

Oxidation-Induced Ferromagnetism in Nickel Gas Turbine Blades: *Mihkael Rigmant*[1]; Nataliya Kazantseva[1]; Denis Davidov[1]; Sergei Demakov[2]; Maxim Karabanalov[2]; Denis Shishkin[1]; [1]Institute of Metal Physics; [2]Ural Federal University

Phonon Wave-packet Simulations for the Prediction of Thermal Boundary Conductance: ChangJin Choi[1]; *Nick Roberts*[1]; [1]Utah State University

Rapid Solidification Microstructures in Light Metal Alloys Produced by Melt Spinning: *Nicole Overman*[1]; Jens Darsell[1]; Vineet Joshi[1]; [1]Pacific Northwest National Laboratory

Reduction Behavior of Carbon Composite Iron Ore Briquette: *Jeong Han*[1]; Ki-woo Lee[1]; Kang-min Kim[1]; Jae-hong Kwon[1]; Byung-chul Kim[1]; [1]Inha University

Role of Alloying Elements on Thermal Stability of Duplex Stainless Steel: *David Garfinkel*[1]; Jonathan Poplawsky[2]; Wei Guo[2]; George Young[3]; Julie Tucker[1]; [1]Oregon State University; [2]Oak Ridge National Laboratory; [3]Knolls Atomic Power Laboratory

Role of Chemical Dispersion and Functionalization on Mechanical Properties in Carbon Nanotube-Polymer Composites: Sai Praveen Kumar Medisetti[1]; *Nick Roberts*[1]; [1]Utah State University

Role of Negative Strain Rate Sensitivity(NSRS) in Failure of Aluminum Alloy 2024: Experiments and Constitutive Modeling: *Satyapriya Gupta*[1]; Armand Beaudoin[1]; [1]University of Illinois

Role of Stoichiometry on Ordering in Ni-Cr Alloys: *Fei Teng*[1]; Julie Tucker[2]; [1]Oregon State University ; [2]Oregon State University

Scandium Extraction from Nickel Processing Waste with Cyanex 923 in Sulphuric Media: *Ariane Souza*[1]; Jorge Tenorio[1]; [1]University of Sao Paulo

Simulation of Natural Gas Pipeline Structure in Response to External Loads: Finite Element Analysis: *Yousef Alobaid*[1]; Tariq Al-Sarfaf[1]; [1]Kuwait

Oil Company

Size Dependent Thermal Conductivity of Single-Wall Carbon Nanotubes from Molecular Dynamics Simulations: William Yorgason[1]; *Nicholas Roberts*[1]; [1]USU

Statistics of High Purity Nb Properties for SRF Cavities: *Mijoung Joung*[1]; Yoochul Jung[1]; [1]IBS

Study of Powder Metallurgy on Low Melting Temperature Al Alloys for Brazing by Gas Atomizer Process: *Yong-Ho Kim*[1]; Hyo-Sang Yoo[1]; Jung-Han Kim[1]; Hyeon-Taek Son[1]; [1]Korea Institute of Industrial Technology

Synthesis of Creep Resistant Pulse Electrodeposited Sn-Cu-Y2O3 Lead Free Nanocomposite Solder: *Manila Mallik*[1]; Karabi Das[1]; Rabindra Ghosh[1]; Siddhartha Das[1]; [1]IIT Kharagpur

Synthesis of Functionally Graded (Cu, Cu-SiC) Nanocomposite Coating on Copper Substrate by Pulse Electrodeposition: *Swastika Banthia*[1]; Srijan Sengupta[1]; Arijit Mitra[1]; Siddhartha Das[1]; Karabi Das[1]; [1]IIT Kharagpur

The Effects of Heat Treatments on Microstructure and Mechanical Properties of Blade Steel: *Cody Fast*[1]; Sidi Lian[1]; Hector Vergara[1]; David Kim[1]; Martin Mills[2]; Julie Tucker[1]; [1]Oregon State University; [2]Benchmade Knife Co.

The Influence of Processing Parameters on Aluminium Alloy A357 Manufactured by Selective Laser Melting: *Heng Rao*[1]; Stéphanie Giet[1]; Chris Davies[1]; Xinhua Wu[1]; [1]Monash University

Thermal Diffusivity for Cu-based Composite Materials Using the Cu-RGO Flake: Sangwoo Kim[1]; *Hyo-Soo Lee*[1]; [1]Korea Institute of Industrial Technology

Thermal Diffusivity & Conductivity Measurement of Very Thin and Highly Conductive Materials by the Laser Flash Technique: *Bob Fidler*[1]; Tony Thermitus[1]; Juergen Blumm[1]; Andre Lindemann[1]; Martin Brunner[1]; [1]NETZSCH Instruments N.A. LLC

Thermal Phosphorus Recovery from Sewage Sludge: *Sander Arnout*[1]; Els Nagels[1]; [1]InsPyro

Thermodynamic Interpretation of Ti, Re and V Precipitates in Dilute Tungsten Alloys from First Principles Calculations: *Leili Gharaee*[1]; Paul Erhart[1]; Jaime Marian[2]; [1]Chalmers University; [2]University of California

Thermomechanics of Nanostructured II-VI Semiconductors: *Sevil Sarikurt*[1]; Tahir Cagin[1]; [1]Texas A&M University

Towards Engineering the Electronic Structure of Lightweight Structural Alloys: *Deep Choudhuri*[1]; Rajarshi Banerjee[1]; [1]University of North Texas

Ultrathin Tantalum Based High-density Power Capacitors with Low Leakage and High Operating Frequency: *Parthasarathi Chakraborti*[1]; Himani Sharma[1]; Markondeya Raj Pulugurtha[1]; Rao Tummala[1]; [1]Georgia Institute of Technology

Understanding Laser-Matter Interactions: An Integrated Approach for Laser Welding Characterization and Optimization
: *Stephanie Miller*[1]; Ann Chiaramonti Debay[1]; Jeff Sowards[1]; Jim Fekete[1]; Erik Pfeif[1]; John Lehman[1]; Paul Williams[1]; Marla Dowell[1]; [1]National Institute of Standards and Technology

Additive Manufacturing and Architected Materials: *Eric Duoss*[1]; [1]Lawrence Livermore National Laboratory

Wear Behavior in Lubricant Environment of Chopped Fiber Reinforced C/C Composite Fabricated in Activated Carbon Bed: Hasan Yesilyurt[1]; *Mehmet Kelestemur*[1]; [1]Meliksah University

China ENFI: Turn a stone of resource into a gem of fortune: Cheng Liu[1]; Ruijun Zhu[1]; *Haikuo Sun*[1]; [1]China ENFI Engineering Corporation

Influence of Titania on the Hydroxyapatite-Wollastonite-Magnesia Composites: *Nermin Demirkol*[1]; [1]Kocaeli University

Investigation of Microstructural Variation on Yield Strength of X-70M Spiral Welded Line Pipe Steel: *Ashish Singh*[1]; Pushpendra Mahida[1]; Pankaj Mittal[1]; [1]Welspun Pipes Inc.

Discovery/Invention of Superdielectric Materials: *Jonathan Phillips*[1]; [1]Naval Postgraduate School

Carbon Fibers from Sustainable Biomass for Energy Applications: *Ryan Paul*[1]; Deanna Burwell[1]; Xuliang Dai[1]; Andrew Haunser[1]; Amit Naskar[2]; Kokouvi Akato[2]; Nidia Gallego[2]; [1]GrafTech International Holdings Inc.; [2]Oak Ridge National Laboratory

Effectiveness of Single and Composited Stabilizers on Enhancing Stability of Multiple Metals in Mine Soil: *Youze Xu*[1]; Jin Zhang[1]; Yingxiang Cheng[1]; Yuanyuan Zhao[1]; Mengying Si[1]; [1]Hunan Research Academy of Environmental Science

Fabrication of Bulk Nanostructured Materials in Ti-Al-Ni System By Mechanical Alloying and Shock-Wave Consolidation: *Mikheil Chikhradze*[1]; [1]Georgian Technical University

Grain Texture Manipulation & its Effect on the Tribological Response of Carbides: *Sagar Patel*[1]; Mathew Kuttolamadom[1]; [1]Texas A&M University

Simulation of Molten Sn-3.0Ag-0.5Cu Wetting on cylindrical and V-shaped Substrates: *Yan Wu*[1]; Zhangfu Yuan[1]; Bingsheng Xu[1]; [1]Peking University

Simulation Study on Wettability of Sn–3.5Ag on the Inclined Cu Substrate: *lina zhang*[1]; Zhangfu Yuan[1]; Bingsheng Xu[1]; [1]peking university

Towards Engineering the Electronic Structure of Lightweight Structural Alloys: *Deep Choudhuri*[1]; Rajarshi Banerjee[1]; [1]University of North Texas

Crystallization Kinetics of K2O and Li2O Modified Na2O-P2O5 Glasses as Solid Electrolyte: *Paramjyot Jha*[1]; O. Pandey[2]; K. Singh[2]; [1]TMS; [2]Thapar University, Patiala

Materials Processing Fundamentals — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Antoine Allanore, Massachusetts Institute of Technology; Lifeng Zhang, University of Science and Technology Beijing; Laura Bartlett, Texas State University; Jonghyun Lee, University of Massachusetts; Cong Wang, Northeastern University

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

Session Chair: To Be Announced

Behavior of Quartz and Carbon Black Pellets at Elevated Temperature: *Fei Li*[1]; Merete Tangstad[1]; [1]Norwegian University of Science and Technology

Characterization and Heat Treatment of Ti-6Al-4V Powders for Use in Cold Spray Deposition: *Satish Bhattiprolu*[1]; Grant Crawford[1]; Christian Widener[1]; [1]South Dakota School of Mines and Technology

Determination of Total Iron Content in Iron Ore and DRI: Titrimetric Method versus ICP-OES Analysis: *Yousef Mohassab*[1]; Mohamed Elzohiery[2]; Feng Chen[2]; Hong Yong Sohn[2]; [1]University of Utah ; [2]University of Utah

Direct Visualization of Ultrashort-pulse Laser-based Materials Processing with Ultrafast Transmission Electron Microscopy: *Chang Wan Han*[1]; Volkan Ortalan[1]; [1]Purdue University

Effective Inoculation of Grey Cast Iron
: *Dariusz Kopycinski*[1]; Józef Dorula[2]; [1]AGH University of Science and Technology ; [2]Vesuvius Poland - Foseco Plant in Gliwice

Experimental Correlations in Electromagnetic Induction Melting Stations Suitable for Die Casting: *Carlos Larrazabal*[1]; Charles Monroe[1]; [1]UAB

Impact of Different Deoxidizers on the Total Oxygen Contents and Inclusions Composition of 50Cr5MoV Steel during LF Refining: *Sha Lv*[1]; Guangliang Wu[1]; [1]Central South Unversity

Influence of Different Cooling Microstructure on Surface Cracks of HSLA Steel Plate by DHCR: *Banglun Wang*[1]; Fenglian Wang[1]; [1]Anhui Polytechnic

University

Obtaining Multiple Metals through Electron Beam Melting of Refractory Metal Wastes: *Katia Vutova*[1]; Vania Vassileva[1]; [1]Institute of electronics, Bulgarian Academy of Sciences

Planar Flow Casting: Crystalline and Noncrystalline Ribbon Formation: *Joseph Mattson*[1]; Paul Steen[1]; Eric Theisen[2]; [1]Cornell University; [2]Metglas Inc.

Research and Application Progress of High-strength and High-conductivity Cu-Cr-Zr Alloys: *Wang Liqiang*[1]; Yin Jiancheng[1]; Chen Yegao[1]; Liu Yingli[1]; Yang Huan[1]; Liu Lina[1]; Zhong Yi[1]; [1]KMUST

Solidification and Evaluation of Thermal Parameters of Sn-Zn Eutectic Alloys Horizontally Solidified: Alex Kociubczyk[1]; Roberto Rozicki[2]; Verónica Scheiber[2]; *Alicia Ares*[3]; [1]Materials Institute of Misiones-IMAM (CONICET-UNaM); [2]Faculty of Sciences - National University of Misiones; [3]CONICET/FCEQyN-UNaM

Study on the Infrared Spectral Range for Radiation Temperature Measurement of Continuous Casting Slab: *Yunwei Huang*[1]; Dengfu Chen[1]; Lin Bai[1]; Mujun Long[1]; Kui Lv[1]; Pei Xu[1]; [1]Chongqing University

The Cooling Ability Study on CO2 and O2 Mixed Injection in Vanadium Extraction Process
: *Pengcheng Li*[1]; Yu Wang[1]; Wei-Tong Du[1]; Gang Wen[1]; [1]College of Materials Science and Engineering; Chongqing University

Effect of MnO Addition on Sintering and Microstructure of Al2O3-MgO-CaO Refractories: *Xue-liang Yin*[1]; Lei Liu[1]; Xiang Shen[1]; Mei-le He[1]; Min Chen[1]; Nan Wang[1]; [1]School of materials and metallurgy, Northeastern University

The Principle and Application Prospection of Microwave Sintering in Preparing Ti Matrix Composites: Qiu Guibao[1]; *Cui Hao*[1]; Yang[1]; Liao Yilong[1]; [1]Chongqing university

Theoretical Determination of Tool-Chip Contact Length in Cylindrical Machining: *Sunday Ojolo*[1]; Patricia Thomas[1]; [1]University of Lagos

Variation of the real Density of Petroleum Coke during High Temperature Calcined Process: *Tao Liu*[1]; Mujun Long[1]; Xinghong Du[1]; Shikai Gong[2]; Dengfu Chen[1]; Yi Yang[2]; Junhao Sheng[1]; Chunmei Chen[1]; [1]Chongqing University; [2]Guiyang Aluminium Magnesium Design & Research Institute Co., Ltd

Influence of ZrO2 Incorporation into Coating Layer on Electrochemical Response of Low-carbon Steel Processed by Electrochemical Plasma Coating: *Gye-Won Kim*[1]; Ki-Ryong Shin[2]; Yeon-Sung Kim[2]; Young-Gun Ko[3]; Dong-Hyuk Shin[2]; [1]Hanyang University ; [2]Hanyang University; [3]Yeungnam University

Thermodynamic Applications, Optimizations and Simulations in High-Temperature Processes: An EPD Symposium in Honor of Christopher W. Bale's 70th Birthday — Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee
Program Organizers: In-Ho Jung, McGill University; Arthur Pelton, Ecole Polytechnique; Patrice Chartrand, Ecole Polytechnique; Phillip Mackey, P.J. Mackey Technology; David Robertson, Missouri S&T; P Taskinen, Alto Univ; Malin Selleby, KTH Royal Institute of Technology

Wednesday PM
February 17, 2016

Room: Poster Area
Location: Music City Center

Session Chair: In-Ho Jung, McGill University

Experimental and Numerical Investigation of Tantalum Recycling by Electron Beam Melting: *Katia Vutova*[1]; Vania Vassileva[1]; Elena Koleva[1]; Nagegownivari Munirathnam[2]; [1]Institute of electronics, Bulgarian Academy of Sciences; [2]Centre for Materials for Electronics Technology

Experimental and Numerical Investigation of Thermal Plasma Synthesis of Silicon: *Yudong Li*[1]; Ramana Reddy[1]; [1]The University of Alabama

Determination of Phase Equilibria and Thermodynamic Properties of Metal-doped Magnesium Silicides: *Ramana Reddy*[1]; Mallikharjuna Bogala[1]; [1]The University of Alabama

Effect Mechanism of Sodium Carbonate on Carbothermic Reduction of Ilmenite Concentrate: *Bing Song*[1]; [1]Panzhihua Iron & Steel Research Institute

Determination of Stability Constants of Zinc(□) Complex with Iminodiacetic Acid at Different Temperatures: *Dou Aichun*[1]; [1]Jiangsu University, China

Central Segregation of High-carbon Steel Billets and Its Heredity to the Hot-rolled Wire Rods: *Yuan Ji*[1]; Yujun Li[1]; Shaoxiang Li[1]; Xiaofeng Zhang[2]; Jiaquan Zhang[1]; [1]University of Science and Technology Beijing; [2]Beijing Metallurgical Technology Research Institute

Phase Equilibria and Calorimetric Studies of the Ternary Ag-Cu-S System: *Fiseha Tesfaye*[1]; Daniel Lindberg[1]; [1]Åbo Akademi University

Measurement of the Standard Free Energy Change of a Chemical Reaction by the Chemical Equilibration Technique using a Thermo Gravimetric Analyzer (TGA): A Novel Approach: *Aniket Dutt*[1]; Dinabandhu Ghosh[1]; [1]Jadavpur University

Physical Simulation on Electrical Properties in the Electric Slag Cleaning Furnace of Copper Slag: Liu Yan[1]; Fang Yu[1]; Liu Guanting[1]; Li Xiaolong[1]; *Zhang Ting'an*[1]; [1]Northeastern University

Physical Simulation of Copper Side-blown Smelting Process: Li Xiaolong[1]; Liu Yan[1]; Wang Dongxing[1]; Liu Guanting[1]; *Zhang Ting'an*[1]; [1]Northeastern University

The Confirmation of Simulation Parameter and Analysis of Temperature Field of 430 Ferrite Stainless Steel in Water-cooling Condition with 3D-CAFE Method: *Peixiao Liu*[1]; Yanxiang Li[1]; Hanjie Guo[1]; Ruipeng Pang[1]; [1]University of Science and Technology Beijing

Thermodynamic and Ab-initio Investigations of the Os-Th and Os-Y Systems: *Aissam Hidoussi*[1]; Aissa Belgacem-Bouzida[1]; Fiseha Tesfaye[2]; Said Kardellass[3]; [1]University Hadj Lakhdar Batna; [2]Åbo Akademi University; [3]Université Ibn-Zohr

Thermodynamic Modeling of Ti-Fe-Cr Ternary System: *Wang Shusen*[1]; Lin Chongmao[1]; Li Baotong[1]; Wang Hongbin[1]; Lu Xionggang[2]; Li Chonghe[1]; [1]State Key Laboratory of Advanced Special Steel; [2]Shanghai Special Casting engineering technology research center

Thermodynamic Modeling of Hot Metal Desulfurization Using Na_2O-Based Fluxes: *Elmira Moosavi-Khoonsari*[1]; In-Ho Jung[1]; [1]McGill University

Thermodynamic Assessment of the PbO-V2O5 System: Nai Wang[1]; Wei Xie[1]; Zhiyu Qiao[1]; *Zhanmin Cao*[1]; [1]University of Science and Technology Beijing

Thermodynamics and Kinetics of Salt Deposition for Burner Rig Hot Corrosion Studies: *Crescent Islam*[1]; Elizabeth Opila[1]; [1]University of Virginia

Multi-Phase Flow Simulation in Blast Furnace by MPS-SMAC Model: *Tatsuya Kon*[1]; Nobuhiro Maruoka[1]; Hiroshi Nogami[1]; [1]Tohoku University

Thermodynamic Equilibrium in Zn2+-Ida2--CO32--H2O System: The Influence of Solid Phase on the Solubility of Zn (□) in the System: *Dou Aichun*[1]; [1]Jiangsu University, China

Thermodynamic Equilibrium in Zn2+-Ida2--CO32--H2O System at Different Temperatures: *Dou Aichun*[1]; [1]Jiangsu University, China

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