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 — Room: 104A
February 15, 2016 — 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 — Room: 209B
February 15, 2016 — 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]University of California, San Diego

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, 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 — Room: 211
February 16, 2016 — Location: Music City Center

Session Chairs: Nitin Chorpa, The University of Alabama; Jinwoo Hwang, The Ohio State University

8:30 AM Invited
Three-Dimensional Imaging of Point Defects in Functional Materials Using Quantitative STEM: *Jinwoo Hwang*[1]; [1]The Ohio State University

9:00 AM Invited
Invited: Contact Thermal Resistance between Individual Nanostructures: *Deyu Li*[1]; [1]Vanderbilt University

9:30 AM
Size-Dependence in Thermo-Mechanical Characterization of Multifunctional Nanocomposite Materials: *V. U. Unnikrishnan*[1]; [1]The University of Alabama

9:50 AM Break

10:10 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

10:30 AM
Fabrication of Tubular Structures with Optimized Nanoporous Sandwich Walls: *Theresa Juarez*[1]; Andrea Hodge[1]; [1]University of Southern California

10:50 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

11:10 AM
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; Key Laboratory of Vacuum Metallurgy for Nonferrous Metal of Yunnan Province; Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization; [2]National Engineering Laboratory for Vacuum Metallurgy; Key Laboratory of Vacuum Metallurgy for Nonferrous Metal of Yunnan Province; Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; [3]National Engineering Laboratory for Vacuum Metallurgy; Key Laboratory of Vacuum Metallurgy for Nonferrous Metal of Yunnan Province

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: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
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[1]; Xipeng Tan[2]; Wai Jack Sin[1]; Shu Beng Tor[2]; Jun Wei[1]; [1]Singapore Institute of Manufacturing Technology (SIMTech); [2]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
Microstructural and Mechanical Characterization of γ-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

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 Laboratory

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, 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, 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

11:50 AM
Miniature Medical Implants from Nanostructured Titanium: Irina Semenova[1]; Grigory Dyakonov[1]; *Ruslan Valiev*[2]; [1]Ufa State Aviation Technical University; [2]Ufa State Aviation Technical University; Saint Petersburg State University

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

*Sponsored by:*TMS Functional Materials Division, 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
Leaching Kinetics for Recovering Alumina from Waste Tricalcium Aluminate Generated after Filtration of Bayer's Liquor: *Balakrushna Padhi*[1]; [1]National Aluminium Company Limited

10:15 AM Break

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

11:20 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

11:45 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, 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 — Room: 206B
February 16, 2016 — 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, 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 — Room: 207A
February 16, 2016 — 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

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 Chairs: Garry Warren, University of Alabama; Roxana Ruxanda, Emerson Climate Technologies

8:30 AM Introductory Comments

8:35 AM Keynote
Connections: Superplasticity, Damascus Steels, Laminates, the Giza Pyramid, and Carbon Dating: *Jeffrey Wadsworth*[1]; [1]Battelle 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, University of Tennessee; Yanfei Gao, University 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]Oak Ridge National Laboratory

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]Oak Ridge National Laboratory

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, Irvine

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]Politechnico 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
Mechanism of Zirconium Poisoning Effect on TiB2 Inoculation in Aluminium Alloys: *Yun Wang*[1]; Li Zhou[1]; Zhongyun Fan[1]; [1]Brunel University

10:15AM Break

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, Université de Lorraine Nancy

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]; *Georgi Djambazov*[1]; [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

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 the ICME 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, 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 Technology

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, 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 Laboratory

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 — Room: 104D
February 16, 2016 — 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 — Room: 213
February 16, 2016 — 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, EPFL; 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; A. Greer, University of Cambridge

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

11:40 AM Invited
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

High-Temperature Systems for Energy Conversion and Storage — Recent Advancements in Solid Oxide Fuel Cell Technology II

Sponsored by: TMS Functional Materials Division, 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, 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]Oak Ridge National Laboratory and the University of Tennessee; [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, 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, 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]; Stéphane Berbenni[2]; [1]Sandia National Laboratories; [2]Université 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

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]Pennsylvania State University

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
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]Pennsylvania State 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, 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, 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
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:*TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
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: Elsa Olivetti, Massachusetts Institute of Technology

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

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, 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
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

2:50 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

3:10 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

3:30 PM
Hybrid Nanostructures and Nanoarchitectures: Fundamentals and Applications: *Simona Hunyadi Murph*[1]; [1]Savannah River National Laboratory

3:50 PM Break

4:10 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

4:30 PM
Multifunctional Self-cleaning Nanofiber Membranes for Water Filtration: *Salman Arshad*[1]; Sobia Dilpazir[1]; Mohammad Usman[1]; [1]Lahore University of Management Sciences

4:50 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

5:10 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]; *Baojun Zhao*[2]; [1]University of Science and Technology Beijing; [2]The University of Queensland

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: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
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
Customisation of Metal Powders for Additive Manufacturing Applications: the Tekna Process: *Jean-Francois Carrier*[1]; [1]Tekna Plasma Systems

4:20 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
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

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, 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 — Room: 209C
February 16, 2016 — 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, 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 — Room: 103C
February 16, 2016 — 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]; Chin C. Lee[5]; 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; [5]University of California Irvine

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 — Room: 203A
February 16, 2016 — Location: Music City Center

Session Chair: Paul McGlade, GHD

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
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

3:45 PM Break

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 — Room: 201B
February 16, 2016 — 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
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]CanmetMATERIALS; [3]General Motors Research and Development Center

3:45 PM Break

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 — Room: 202C
February 16, 2016 — Location: Music City Center

Session Chair: Till Reek, TRIMET Aluminium SE

2:00 PM Introductory Comments

2:05 PM
Enhancing Production Performance by Optimization All Resources at PT INALUM (Persero): Muhammad Syafri Sunardi[1]; *Sahala Sijabat*[1]; Ivan Ermisyam[1]; Muhammad Ridwan[1]; [1]PT. Indonesia Asahan Aluminium (INALUM)

2:30 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

2:55 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

3:20 PM
Understanding the Basic Requirements of the Anode Set Modifier: *Hershall Cotten*[1]; [1]RTW-Refractory, Inc.

3:45 PM Break

4:00 PM
Reduction Operating Experience on Power Shading at Maaden: *Abdulaziz Al Taisan*[1]; [1]Ma'aden Aluminium

4:25 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, 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 — Room: 206B
February 16, 2016 — 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, 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 — Room: 207A
February 16, 2016 — 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

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 — Room: 104A
February 16, 2016 — Location: Music City Center

Session Chairs: Thomas Battle, Midrex Technologies; Peter Hosemann, University of California Berkeley

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 Technologoy

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, University of Tennessee; Yanfei Gao, University 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
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

4:30 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

4:50 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

5:10 PM Invited
Metallic Glass Formation: A Narrow Path to Success: *Jan Schroers*[1]; [1]Yale 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 Jlao 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 Room: 202A
February 16, 2016 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]; Muhammad Ridwan[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, Université de Lorraine Nancy

Tuesday PM Room: 207D
February 16, 2016 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

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

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

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 Room: 103A
February 16, 2016 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

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 — Room: 207C
February 16, 2016 — 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, 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 — Room: 208B
February 16, 2016 — 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; [2]Department of Materials Science and Engineering, Cornell University

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, 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[1]; Wenjun Duan[1]; Zongliang Zuo[1]; Qin Qin[1]; [1]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
Re-examining 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, EPFL; 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: William Boettinger, NIST

2:00 PM Invited
Dendrite Growth Kinetics in Undercooled Melts of Intermetallic Compounds: *Dieter Herlach*[1]; Raphael Kobold[1]; Wolfgang Hornfeck[1]; Matthias Kolbe[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]; Wilfried Kurz[3]; [1]Iowa State University; [2]Northwestern Polytechnical University; [3]EPFL

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

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

*Sponsored by:*TMS Functional Materials Division, 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
February 16, 2016
Room: 104E
Location: Music City Center

Session Chairs: Jeffrey Fergus, Auburn University; Sumudu Tennakoon, University of Mississippi

2:00 PM
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, 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: 102A
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, 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, 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, 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
Solid Solution Strengthening in Mg-Gd Alloys: Yuling Xu[1]; Zheng Ren[1]; Yuanding Huang[1]; Karl Kainer[1]; *Norbert Hort*[1]; [1]Helmholtz Zentrum Geesthacht

3:00 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

3:20 PM Break

4:00 PM
The Structure of ß" and ß' in an Aged Mg-Nd Alloy: *Ellen Solomon*[1]; Emmanuelle Marquis[1]; [1]University of Michigan

3:40 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

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]; *Ji Yuan*[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]; *Ude Hangen*; [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 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

3:40 PM Break

4:00 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

4:20 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

4:40 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, 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 Nanocrystalline 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, 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 Mg2TiO4: 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
Grain Boundary-discontinuous Precipitation Controlling Magnetic Anisotropy of Melt-spun Cu-10 at.% Co Alloy: *Guillermo Solorzano*[1]; Natasha Suguihiro[1]; [1]PUC-Rio

2:50 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)

3:10 PM Invited
Diffusional Phase Transformations in Multicomponent Single-Phase/ Two-Phase Diffusion Couples: *John Morral*[1]; [1]The Ohio State University

3:40 PM Break

4:00 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

4:20 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:TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
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 Chairs: Elsa Olivetti, Massachusetts Institute of Technology; Cem Tasan, Max-Planck Institute for Iron Research

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:*TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
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: 104C
Location: Music City Center

Session Chairs: Neale Neelameggham, Ind LLC; Anne Kvithyld, SINTEF

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
February 16, 2016
Room: 203B
Location: Music City Center

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, 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

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