
7th International Symposium on High Temperature Metallurgical Processing — Characterization and Simulation of High Temperature Process

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

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

Thursday AM
February 18, 2016

Room: 105B
Location: Music City Center

Session Chairs: Baojun Zhao, The University of Queensland; Tarasankar DebRoy, The Pennsylvania State University

8:30 AM Introductory Comments

8:35 AM

Heat and Fluid Flow Modeling to Examine 3D-Printability of Alloys: Tuhin Mukherjee¹; James Zuback¹; Amitava De¹; *Tarasankar DebRoy*¹; ¹The Pennsylvania State University

8:55 AM

Characterization of Iron-bearing Dust Pellet in Composite Agglomeration Process (CAP): Zhuyin Chen¹; Bingbing Liu¹; Chen Liu¹; Xiao Kang¹; *Yuanbo Zhang*¹; ¹Central South University

9:15 AM

Evaluation of Heat Flow and Thermal Stratification in a Steelmaking Ladle through Mathematical Modelling: *Varadarajan Seshadri*¹; Izabela Duarte²; Itavahn Alves da Silva²; Carlos Antonio da Silva²; ¹Universidade Federal de Minas Gerais; ²Universidade Federal de Ouro Preto

9:35 AM

Viscous and Crystallization Characteristics of CaO-SiO₂-MgO-Al₂O₃-FeO-P₂O₅-(CaF₂) Steelmaking Slags: *Zhanjun Wang*¹; Zuotai Zhang²; Yongqi Sun²; Min Guo¹; Mei Zhang¹; ¹University of Science and Technology Beijing; ²Peking University

9:55 AM

Microstructure and Texture Evolution of Different High Manganese Cast Steels during Hot Deformation and Subsequent Treatment: Mohammad Masoumi¹; *Waydson Ferreira*¹; Hamilton de Abreu¹; ¹Universidade Federal do Ceara

10:15 AM Break

10:30 AM

Online Temperature Measurement System for Process Control and Endpoint Detection: Goran Vukovic¹; *Klaus Gamweger*¹; Bojan Zivanovic¹; Bob Drew¹; ¹RHI AG

10:50 AM

Dynamic Thermal Simulation Study of Copper Slag Dilution under Direct Current Field: *Zhang Jing*¹; Sun Ying¹; Li Qiuju¹; ¹Shanghai University

11:10 AM

Analysis of Turbulence at the Metal / Slag Interface in the Meniscus Region of a Continuous Casting Mold through Physical and Mathematical Modelling: *Varadarajan Seshadri*¹; Jose de Arruda²; Amanda Arruda²; Samuel de Souza²; Carlos Antonio da Silva²; Itavahn Alves da Silva²; ¹Universidade Federal de Minas Gerais; ²Universidade Federal de Ouro Preto

11:30 AM

Computer Simulation of Copper Smelting with FCS Slags: *Chen Wang*¹; ¹Central South University

11:50 AM

Study on the Properties and Damage Analysis on the Lining Used in Cooling Section of Coke Dry Quench Furnaces: *Guotao Xu*¹; ¹Wuhan Iron and Steel Group Company

7th International Symposium on High Temperature Metallurgical Processing — Utilization of Complex Ores

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

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

Thursday AM
February 18, 2016

Room: 105A
Location: Music City Center

Session Chairs: Varadarajan Seshadri, Universidade Federal de Minas Gerais; Guanghui Li, Central South University

8:30 AM Introductory Comments

8:35 AM

Characterization of Sulfidation Roasting of an Iron-rich Manganese Oxide Ore with Elemental Sulfur: Tao Jiang¹; Li Qin¹; Zhixiong You¹; Yuanbo Zhang¹; *Guanghui Li*¹; ¹School of Minerals Processing and Bioengineering, Central South University

8:55 AM

Research on Recovering Iron Oxide from the Iron, Tin-bearing Tailings: Jun Chen¹; Zijian Su¹; *Yuanbo Zhang*¹; Yingming Chen¹; Bingbing Liu¹; ¹Central South University

9:15 AM

A Study on the Characterization of Nickel Laterites of Central Anatolia: *Ender Keskinilic*¹; Saeid Pournaderi²; Ahmet Geveci³; Yavuz A. Topkaya³; ¹Atilim University; ²Karadeniz Technical University; ³Middle East Technical University

9:35 AM

Recovery of Powdered Metallic Iron from Ludwigite Ore via Reductive Roasting with Sodium Salts-Magnetic Separation: *Guanghui Li*¹; Huanpeng Mi¹; Binjun Liang¹; Zhiwei Peng¹; Yuanbo Zhang¹; Tao Jiang¹; ¹School of Minerals Processing and Bioengineering, Central South University

9:55 AM

Selective Reduction of TiO₂-SiO₂ in the Preparation of Titanium Oxycarbide through Carbothermal Reduction of Titanium Raw Materials: *Jiusan Xiao*¹; Bo Jiang¹; Kai Huang¹; Shuqiang Jiao¹; Hongmin Zhu¹; ¹University of Science and Technology Beijing

10:15 AM Break

10:30 AM

Kinetic Study on the Pyrolysis of Low Grade Coals: *Ruiling Du*¹; ¹University of Science and Technology Beijing

10:50 AM

Salt Roasting of Nickel Sulfide Concentrate Using KCl: *Changyuan Lu*¹; xingli zou¹; Xionggang Lu¹; ¹Shanghai University

11:10 AM

Research on Leaching of Zinc Sulfide Ores through Synergistic Coordination: *Kun Yang*¹; Shiwei Li¹; Jinhui Peng¹; Libo Zhang¹; Aiyuan Ma¹; Weiheng Chen¹; Feng Xie¹; ¹Kunming University of Science and Technology

11:30 AM

Effect of Compound Additives on Synthetic Magnesium Aluminate Spinel under Low Temperature: Xiaoyan Xiang¹; Wentang Xia¹; ¹University of Science and Technology

11:50 AM

Microwave Thermal Prereduction with Carbon and Leaching of Chromite Ore Finest: Qin Guo¹; Lingqing Dai¹; Lei Li¹; Shenghui Guo¹; Jinhui Peng¹; Libo Zhang¹; ¹Kunming University of Science and Technology

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

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Thursday AM

Room: 101B

February 18, 2016

Location: Music City Center

Session Chair: Dennis Keiser, Idaho National Laboratory

8:30 AM Invited

Observed U-Mo Alloy Microstructures After Irradiation in the Advanced Test Reactor: Dennis Keiser¹; Jan-Fong Jue¹; Jian Gan¹; Brandon Miller¹; Adam Robinson¹; ¹Idaho National Laboratory

9:00 AM

High-energy Synchrotron Radiation Study of Heavy Ion Irradiated U-Mo/Al Dispersion Fuel: Kun Mo¹; Bei Ye¹; Sumit Bhattacharya²; Di Yun¹; Yinbin Miao³; Walid Mohamed¹; Jonathan Almer¹; Laura Jamison¹; Michael Pellin¹; Abdellatif Yacout¹; ¹Argonne National Laboratory; ²Northwestern University; ³University of Illinois at Urbana-Champaign

9:20 AM

Noble Gas Behavior in Nuclear Fuel and Ceramic Nuclear Waste Forms: Caitlin Taylor¹; Maulik Patel¹; Yanwen Zhang²; Yongqiang Wang³; Haizhou Xue¹; Chien-Hung Chen¹; Ke Jin²; Miguel Crespillo¹; William Weber¹; ¹The University of Tennessee-Knoxville; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory

9:40 AM

Mechanical Behavior of UO₂ at Sub-Grain Length Scales: A Quantification of Creep Properties via High Temperature Mechanical Testing: Benjamin Shaffer¹; Bowen Gong¹; Harn Chyi-Lim¹; Robert McDonald¹; Pedro Peralta¹; ¹Arizona State University

10:00 AM

Initial Post Irradiation Examination Results of a Novel Fuel Concept with Enhanced Thermal Properties: Andrew Casella¹; David Senor¹; Edgar Buck¹; Mehdi Balooch²; Peter Hosemann²; ¹Pacific Northwest National Laboratory; ²University of California, Berkeley

10:20 AM Break

10:40 AM Invited

In-Situ Measurement of Tritium Released from Gamma-LiAlO₂ Pellets Irradiated in the Advanced Test Reactor: Walter Luscher¹; David Senor¹; Kevin Clayton²; ¹Pacific Northwest National Laboratory; ²Idaho National Laboratory

11:10 AM

Finite Element Analysis of Micro-cantilever Beam Experiments in UO₂: Bowen Gong¹; David Frazer²; Harn Chyi Lim¹; Shaffer Benjamin¹; Peter Hosemann²; Pedro Peralta¹; ¹Arizona State University; ²University of California, Berkeley

11:30 AM

An Experimental Study to Elucidate Stage IV Recovery Mechanism of Heavy Ion Irradiated High Purity Molybdenum: Di Yun¹; Jeffrey Terry²; Yinbin Miao³; Joshua Wright⁴; Kevin Logan²; Zhigang Mei⁴; Kun Mo⁴; Walid Mohamed⁴; Bei Ye⁴; Michael Pellin⁴; Abdellatif Yacout⁴; ¹Xi'an Jiao Tong University; Argonne National Laboratory; ²Illinois Institute of Technology; ³University of Illinois at Urbana-Champaign; ⁴Argonne National Laboratory

11:50 AM

Correlative and Dynamic S/TEM Characterization of Heavily Irradiated Pyrochlores and Fluorites: Terry Holesinger¹; Sanchita Dey²; Jeffrey Augier³; Pallas Papin¹; James Valdez¹; Yongqiang Wang¹; Blas Uberuaga¹; Ricardo Castro²; ¹Los Alamos National Laboratory; ²University of CA-Davis; ³National Renewable Energy Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification — Strategies for Qualification in AM II

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Powder Materials Committee, TMS: Process Technology and Modeling Committee

Program Organizers: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University; David Bourell, University of Texas; Reginald Hamilton, The Pennsylvania State University; Edward Herderick, GE; Rajiv Mishra, University of North Texas; James Sears, GE GRC

Thursday AM

Room: 205A

February 18, 2016

Location: Music City Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Allison Beese, Pennsylvania State University

8:30 AM

Study of Material Consolidation at Higher Throughput Parameters in Selective Laser Melting of Inconel 718: Tracie Prater¹; ¹NASA

8:50 AM

Applying Knowledge from Multi-pass Welding to Selective Electron Beam Melting: Curtis Frederick¹; Michael Kirka²; Surdarsanam Babu¹; Ryan Dehoff²; Michael Massey¹; Michael Haines¹; Edwin Schwalbach³; Lee Semiatin³; Jonathan Miller³; ¹University of Tennessee Knoxville; ²Oak Ridge National Lab; ³Air Force Research Lab

9:10 AM

The Effect of Powder Characteristics on the Properties of Powder-bed Binder-jet Printed Inconel 625 Samples: Amir Mostafaei¹; Eamonn Hughes¹; Shannon Biery¹; Colleen Hilla¹; Markus Chmielus¹; ¹University of Pittsburgh

9:30 AM

Study of Internal Channels Surface Roughness Manufactured by Selective Laser Melting in Aluminum and Titanium Alloys: Jukka Pakkanen¹; Flaviana Calignano²; Francesco Trevisan¹; Massimo Lorusso²; Elisa Ambrosio²; Diego Manfredi²; Paolo Fino¹; ¹Politecnico di Torino; ²Istituto Italiano di Tecnologia

9:50 AM

Constitutive and Failure Behaviour in Selective Laser Melted Stainless Steel for Microlattice Structures: Peifeng Li¹; ¹Nanyang Technological University

10:10 AM Break

10:30 AM

Microstructural Characterization and Process Mapping in Beam-Based Additive Manufacturing of Inconel 718: Luke Sheridan¹; John Thompson¹; Nathan Klingbeil¹; Gregory Loughnane²; ¹Wright State University; ²Mound Laser & Photonics Center, Inc.

10:50 AM

Microstructural Characterization of Functionally Graded Transition Joints between Dissimilar Metals Obtained with Laser-based Additive Manufacturing: *Ercan Cakmak*¹; Niyanth Sridharan²; Sudarsanam Babu¹; William Peter¹; Ryan Dehoff¹; Thomas Watkins¹; David Gandy³; ¹Oak Ridge National Laboratory; ²University of Tennessee; ³Electric Power Research Institute Inc.

11:10 AM

Analysis of Microstructure Manipulation of the Parts Fabricated by Additive Manufacturing with the Help of Numerical Modeling Aided by High Performance Computing: *Narendran Raghavan*¹; Ryan Dehoff²; Sudarsanam Babu¹; Srdjan Simunovic²; Neil Carlson³; John Turner²; ¹University of Tennessee Knoxville; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory

11:30 AM

Optimizing Laser Melting Additive Manufacturing Process for Inconel 718: *Magda Sadowski*¹; Leila Ladani¹; ¹University of Connecticut

11:50 AM

High Temperature Mechanical and Electrical Properties of Additively Manufactured Metal Nanoparticle Films: *Md Taibur Rahman*¹; Amy Wo¹; C. V. Ramana²; Rahul Panat¹; ¹Washington State University; ²University of Texas at El Paso

Advanced Magnetic Materials: An FMD Symposium in Honor of Michael E. McHenry — Permanent Magnets II

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Raju Ramanujan, Nanyang Technological University; Matthew Willard, Case Western Reserve University; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory

Thursday AM
February 18, 2016

Room: 209C
Location: Music City Center

Session Chairs: Mariappan Paranthaman, Oak Ridge National Laboratory; J.Ping Liu, University of Texas-Arlington

8:30 AM

Magnetic Phases in the Systems Mn-Bi, Mn-Sb, and Mn-Bi-Sb: *Peter Kainzbauer*¹; Martin Marker¹; Ipsker Herbert¹; ¹Inst. f. anorg. chem. (Materialchemie) / University of Vienna

8:50 AM

Optimizing Process Parameters for Additive Manufacturing of Bonded Permanent Magnets: *Mariappan Paranthaman*¹; Orlando Rios¹; Huseyin Ucar¹; Michael McGuire¹; William Carter¹; Brett Compton¹; Cajetan Nlebedim²; William McCallum²; Scott McCall³; ¹Oak Ridge National Laboratory; ²Ames Laboratory; ³Lawrence Livermore National Laboratory

9:10 AM

Processes for the Recycling of Rare Earth Permanent Magnets: Roland Gauss¹; *Oliver Diehl*¹; Eva Brouwer¹; Alex Buckow¹; Konrad G uth¹; Oliver Gutfleisch¹; ¹Fraunhofer ISC-IWKS

9:30 AM

Comparison of Grain Boundary Diffusion Processes (GBDP) in Nd-Fe-B Permanent Magnets: *Oliver Gutfleisch*¹; Simon Sawatzki¹; Konrad L owe¹; Christoph Schw obel¹; Tim Helbig¹; ¹TU Darmstadt

9:50 AM Break

10:10 AM

Rapid Crystallization of Non-equilibrium Rare-earth and Non-rare-earth Permanent Magnet Materials: *Orlando Rios*¹; Michael McGuire¹; Benjamin Conner¹; William Carter¹; William McCallum²; Cajetan Nlebedim²; Matthew Kramer²; ¹Oak Ridge National Laboratory; ²Ames Laboratory

10:30 AM

Rare Earth Lean Nanocrystalline Permanent Magnets: *Zafer Turgut*¹; ¹AFRL

Aluminum Alloys, Processing and Characterization — Precipitation Behavior

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

Thursday AM
February 18, 2016

Room: 201B
Location: Music City Center

Session Chair: Ramasis Goswami, Naval Research Laboratory

8:30 AM Introductory Comments

8:35 AM Invited

Effect of Ag and Mg Additions on the Nature of Grain Boundary Precipitates and Fracture Behavior of Al-Cu-Li Alloys: *Ramasis Goswami*¹; Noam Bernstein¹; ¹Naval Research Laboratory

9:00 AM

Characterization of Intragranular Mg-rich Precipitates Formed in Al 5xxx Alloys Aged at 343 K: *Gaosong Yi*¹; Ken Littrell²; Michael Free¹; ¹University of Utah; ²Oak Ridge National Laboratory

9:25 AM

The Influence of Low Temperature Clustering on Strengthening Precipitation in Al-Mg-Si Alloys: *Alex Poznak*¹; Paul Sanders¹; ¹Michigan Technological University

9:50 AM

Synthesis of Al-TiC Nanocomposites by an In-Situ Gas-Liquid Method: *Inigo Anza*¹; Mahklouf Mahklouf¹; ¹Advanced Casting Research Center, Worcester Polytechnic Institute

10:15 AM Break

10:30 AM

Precipitation in the Gradient Nanostructured Al-Cu-Mg Alloy: *Zongqiang Feng*¹; Xuan Luo¹; Tianlin Huang¹; Guilin Wu¹; ¹Chongqing University

10:55 AM

Orientation Relationships of Precipitates with the Matrix in an Aluminium Quasicrystalline Alloy: *Franco Zupanic*¹; Tonica Boncina¹; Christian Gspan¹; ¹University of Maribor

Aluminum Reduction Technology — Fundamentals in Chemistry II

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

Thursday AM
February 18, 2016

Room: 202B
Location: Music City Center

Session Chair: Gu r un S evarsd ttir, Reykjavik University

8:30 AM Introductory Comments

8:35 AM

Alcoa STARProbeTM – Update in Further Development for Measuring Cryolite Properties: *Xiangwen Wang*¹; ¹Alcoa, Inc.

9:00 AM

Analysis and Visualization of Aluminum Reduction Cell Noise Based on Wavelet Transform: *Anton Verdenik*¹; ¹TALUM Kidricevo

9:25 AM

Study on Effect of Al-O-C Compound in Alumina Carbonthermal Reduction: Jun Yang¹; Yang Tian¹; ¹Kunming University of Science and Technology

9:50 AM

The Impact of Alumina Quality on Current Efficiency and Energy Efficiency in Aluminum Reduction: Grant McIntosh¹; James B. Metson¹; Pascal Lavoie²; Thomas Niesenhaus³; Till Reek³; Linus Perander⁴; ¹Light Metals Research Centre, the University of Auckland; ²LMRC; ³TRIMET Aluminium SE; ⁴Outotec GmbH & Co

10:15 AM Break

10:30 AM

Sideedge Facing Metal in Aluminium Electrolysis Cells: Preliminary Modelling Study of Bath Film Formation: Nils-Håvard Giskeødegård¹; Asbjørn Solheim²; Nancy Jorunn Holt¹; ¹HYDRO; ²SINTEF Materials and Chemistry

10:55 AM

Pilot Test of Aluminum Electrolysis by the NiFe₂O₄-M Inert Anodes: Biao Wang¹; Feng Liang¹; Yudong Wang¹; Kun Peng²; ¹Kunming University of Science and Technology; ²Limited Company of Earth Environmental Protection Materials of Yunnan

Aluminum Reduction Technology — Process Control in Reduction

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

Thursday AM
February 18, 2016

Room: 202C
Location: Music City Center

Session Chair: Abdalla Zarouni, Emirates Global Aluminium

8:30 AM Introductory Comments

8:35 AM

Detection of Local Cell Conditions Based on Individual Anode Current Measurements: Yuchen Yao¹; Cheuk-Yi Cheung¹; Jie Bao¹; Maria Skyllas-Kazacos¹; Barry Welch¹; Sergey Akhmetov²; ¹University of New South Wales; ²Emirates Global Aluminum

9:00 AM

Dynamic Response of Cryolitic Bath and Influence on Cell Heat and Mass Balance with Large Scale Potline Power Shifts: Jingjing Liu¹; Mark Taylor¹; Mark Dorreen²; ¹University of Auckland; ²Light Metals Research Center, The University of Auckland

9:25 AM

Simulations on the Bath Chemistry Variables using Neural Networks: Patrizia Chermont¹; Fabio Soares²; Roberto De Oliveira¹; ¹UFPA; ²Exodus

9:50 AM

Technology Research on Decreasing the Aluminum Surface Waves and Reducing the Cathode Voltage Drop in Aluminum Electrolysis Cells: Zhirong Shi¹; Dengpeng Chai¹; Haibo Huang¹; Yanan Zhang¹; Bin Fang¹; ¹Zhengzhou Research Institute of CHALCO

10:15 AM Break

10:30 AM

Hall-Héroult Cell Simulator: A Tool for the Operation and Process Control: Jacques Antille¹; Louis Bugnion¹; René von Kaenel¹; ¹KAN-NAK SA

10:55 AM

Studies on Anode Preheating Using Individual Anode Current Signals in Hall-Héroult Reduction Cells: Ali Jassim¹; Sergey Akmetov¹; Barry Welch²; Jie Bao²; Maria Skyllas-Kazacos²; Yuchen Yao²; ¹EGA Dubai Aluminium; ²The University of New South Wales

Bio Nano Interfaces and Engineering Applications — Bio-inspired Interfaces: Structure to Mechanics

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)

Thursday AM
February 18, 2016

Room: 206B
Location: Music City Center

Session Chair: Wen Yang, Swiss Federal Institute of Technology in Zurich (ETHZ)

8:30 AM Invited

The Structure and Mechanics of the Interfaces within Biological and Bio-inspired Materials: Francois Barthelat¹; ¹McGill University

9:10 AM

Analytical Study on the Effect of Interface Properties in Brick and Mortar Structured Composites: Sina Askarinejad¹; Nima Rahbar¹; ¹Worcester Polytechnic Institute

9:30 AM

Nonuniform Breaking of Molecular Bonds, Peripheral Morphology, and Releasable Adhesion by Elastic Anisotropy in Bio-adhesive Contacts: Yan Liu¹; Yanfei Gao¹; ¹University of Tennessee

9:50 AM

Effect of Water on the Mechanical Properties of Lignin Carbohydrate Complex: Sina Youssefian¹; Nima Rahbar¹; ¹Worcester Polytechnic Institute

10:10 AM Break

10:30 AM Invited

Graphite Oxide/Cellulose Composites as Innovative Solid Support Material for DNA Extraction Applications: Helena Li¹; G. Akceoglu¹; N. Saito¹; ¹Nagoya University

11:00 AM

Coarse-Grained Modeling of Interaction between Vesicle and Active Rotational Nanotube: Xianqiao Wang¹; Liuyang Zhang¹; ¹University of Georgia

11:20 AM

Graphene Oxide Reinforced Double Network Hydrogel: Jilong Wang¹; Junhua Wei¹; Jingjing Qiu¹; ¹Texas Tech University

11:40 AM

Engineering of Biodegradable Boron-Based, Carbon Enriched Nano Fiber in A Hybrid Composite Via DIMOX, Rheocasting and Thixocasting: Bakr Rabeeh¹; ¹German University in Cairo, GUC

12:00 PM

Synthesis of Self-cleaning, Transparent and Superhydrophobic/Oleophobic Metal Oxide Coatings by Atmospheric Pressure Plasma Technique: Ching-Yu Yang¹; Shang-I Chuang¹; Yu-Hsiang Lo¹; Hsin-Ming Cheng²; Po-Yu Chen¹; Jenq-Gong Duh¹; ¹Department of Materials Science and Engineering, National Tsing Hua University; ²Material and Chemical Research Laboratories, Industrial Technology Research Institute

Bulk Metallic Glasses XIII — Mechanical and Other Properties II

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

Thursday AM
February 18, 2016
Room: 101E
Location: Music City Center

Session Chairs: Hans-J. Fecht, University of Ulm; Jianzhong Jiang, Zhejiang University

8:30 AM Invited

Role of Alloy Chemistry and Free Volume on the Corrosion Behavior of Bulk Metallic Glasses: Ayyagari Aditya¹; Sundeep Mukherjee¹; ¹University of North Texas

8:55 AM Invited

Properties of BMG Nanoglasses Prepared by Thin Film Deposition in Comparison with Mechanical Methods: Hans Fecht¹; Pierre Denis¹; ¹UlM University

9:20 AM

Saving the Environment from Toxic Chemicals Using Amorphous Metals: Santanu Das¹; Seth Garrison¹; Sundeep Mukherjee¹; ¹University of North Texas

9:40 AM Invited

The Mechanism of Structural Rejuvenation in Recovery Annealed Metallic Glasses: Rui Yamada¹; Naoyuki Tanaka¹; Junji Saida¹; ¹Tohoku University

10:00 AM Break

10:15 AM Invited

Multifunctional Thin Film Metallic Glasses as Potential Coating Materials: Jinn Chul¹; Chia-Chi Yu¹; Wahyu Diyatmika¹; Cheng-Min Lee¹; Chia-Lin Li¹; Yusuke Tanatsugu¹; ¹National Taiwan University of Science and Technology

10:35 AM

An Improved Method for Calculation of Elastic Constants of Metallic Glasses: Henry Neilson¹; J Carter¹; John Lewandowski¹; ¹Case Western Reserve University

10:55 AM

Development of Bio-inspired Hybrid Composite with Ceramic Brick and BMG Mortar Structure: Je In Lee¹; Eun Soo Park¹; Amy Wat²; Robert Ritchie³; ¹Seoul National University; ²University of California Berkeley; ³Lawrence Berkeley National Laboratory

11:15 AM

Protocols for Multi-step Thermoplastic Processing of Metallic Glasses: Punnathat Bordeenithikasem¹; Sungwoo Sohn¹; Ze Liu¹; Jan Schroers¹; ¹Yale University

11:35 AM

String-like Cooperative Motion in Supercooled Cu-Zr Metallic Liquids: Hao Zhang¹; ¹University of Alberta

Cast Shop Technology: An LMD Symposium in Honor of Wolfgang Schneider — General Cast Shop

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

Thursday AM
February 18, 2016
Room: 202A
Location: Music City Center

Session Chair: Daniel Choi, Masdar Institute of Science and Technology

8:30 AM Introductory Comments

8:35 AM

Weibull Analysis for the Repeatability of Die-castings Made by an Al-Mg-Si-Mn Alloy: Shouxun Ji¹; Hailin Yang¹; Douglas Watson¹; Zhongyun Fan¹; ¹Brunel University

9:00 AM

Thermo-Mechanical Properties of Wrought Aluminium Alloys produced from Scrap Mixing: Adesola Ajayi¹; Mohamed Ali¹; Daniel Choi¹; ¹Masdar Institute of Science and Technology

9:25 AM

History and Development of Slag and Dross Pressing: David Roth¹; ¹GPS Global Solutions

9:50 AM

Testing PPE for Molten Aluminum Splash Resistance: John Zeh¹; J.T. Major¹; Jason Sparks¹; ¹Logan Aluminum Inc.

Characterization of Minerals, Metals, and Materials — Electronic, Magnetic, Environmental, and Advanced Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

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

Thursday AM
February 18, 2016
Room: 103B
Location: Music City Center

Session Chairs: Shadia Ikhmayies, Al Isra University; Eren Kalay, METU

8:30 AM

Survey of Mechanical Properties of Cardboard Tubes for Engineering Application: Victor Souza¹; Juvenil Junior²; Vinicius Barbosa³; ¹Universidade Federal Fluminense; ²Instituto Federal Fluminense; ³Sociedade Universitária Redentor

8:50 AM

The Influence of Heat Treatment on the Optical Parameters of Spray-deposited CdS:In Thin Films: Shadia Ikhmayies¹; ¹Al Isra University

9:10 AM

Structural Characterizations of Black TiO₂ Nanoparticles Made from Amorphous Precursors: Mengkun Tian¹; Masoud Mahjouri-Samani²; Gyula Eres²; Kai Wang²; David B. Geohegan²; Gerd Duscher¹; ¹University of Tennessee; ²Oak Ridge National Laboratory

9:30 AM

The Characterization of Photo and Thermal Dual Sensitive Behavior of Azo-substituted Polyrotaxane Nano-micelle: *Lin Ye*¹; ¹Beijing Institute of Technology

9:50 AM

Crystal Structures and Conductivity of Lanthanum Gallate Doped with Strontium and Magnesium Synthesized by Different Methods: *Xiuhua Chen*¹; Jie Xing¹; Bo Yuan¹; Min Wang¹; Wenhui Ma²; Rui Li¹; Jie Yu²; ¹Yunnan University; ²Kunming University of Science and Technology

10:10 AM Break

10:25 AM

HRTEM Analysis of Crystallographic Defects in Cd-Zn-Te Single Crystals: Eren Kalay¹; Yasin Ergunt¹; Merve Kabukcuoglu¹; Mehmet Parlak¹; Rasit Turan¹; *Bengisu Yasar*¹; ¹METU

10:45 AM

Determination of the Stability Constants for Mixed-ligand Coordination Compounds in the Zn(II)-nitritotriacetic Acid-ammonia System: *Chen Lin*¹; Hao Zhandong¹; Yang Tianzu¹; Zhang Duchao¹; Liu Weifeng¹; ¹Central South University

11:05 AM

Resonances of Microwave Power Absorption in Alumina and Silicon Carbide: *Zhiwei Peng*¹; Xiaolong Lin¹; Jiann-Yang Hwang²; Yuzhe Zhang²; Yuanbo Zhang¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University; ²Michigan Technological University

11:25 AM

Physical and Chemical Properties of MSWI Fly Ash: *Xinghua He*¹; Shujing Zhu²; Jiann-Yang Hwang³; ¹Wuhan Polytechnic University; ²WISCO R&D Center; ³Michigan Technological University

11:45 AM

The Adsorption Properties of Porous Boron Nitride Nanosheets: *Huazhang Zhai*¹; ¹Beijing Institute of Technology

Characterization of Minerals, Metals, and Materials — Soft Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

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

Thursday AM

Room: 103A

February 18, 2016

Location: Music City Center

Session Chairs: Sergio Monteiro, IME; Zhiwei Peng, Central South University

8:30 AM

Tensile Strength of Polyester Composites Reinforced with Thinner Ramie Fibers: *Lucas Pontes*¹; Pedro Netto¹; Jordana Ferreira¹; Frederico Margem¹; Sergio Monteiro²; Jean Margem³; Raphael Veloso⁴; ¹Uenf; ²IME; ³Isecensa; ⁴Faculdade Redentor

8:50 AM

Charpy Impact Tests of Polyester Composites Reinforced with PALF Fibers: *Gabriel Glória*¹; Giulio Altoé¹; Maycon Gomes¹; Carlos Mauricio Vieira¹; Frederico Margem¹; Sérgio Neves¹; Glenio Daniel¹; Maria Carolina Teles¹; ¹State University of the Northern Rio de Janeiro

9:10 AM

Dynamic-Mechanical Characterization of Polyester Matrix Composites Reinforced With Eucalyptus Fibers: *Caroline Gomes de Oliveira*¹; Noan Tonini Simonassi¹; Artur Camposo Pereira¹; Sérgio Neves Monteiro²; Frederico Muylaert Margem¹; Anderson Barbosa¹; Anna Cerqueira Neves¹; ¹UENF - Universidade Estadual do Norte Fluminense; ²IME - Instituto Militar de Engenharia

9:30 AM

Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Ramie Fibers Stalk: *Lucas Pontes*¹; Pedro Netto¹; Jordana Ferreira¹; Frederico Margem¹; Sergio Monteiro²; Jean Margem³; ¹UENF; ²IME; ³Isecensa

9:50 AM

Synchrotron X-ray Tomographic Quantification of Microstructural Evolution in Multi-phase Soft Material: *Enyu Guo*¹; Guang Zeng¹; Peter Rockett¹; Julian Bent²; Joan Vila-Comamala³; Peter Lee¹; ¹University of Manchester; ²Unilever; ³Diamond Light Source Ltd.

10:10 AM Break

10:25 AM

Tensile Strength of Epoxy Composites Reinforced with Figue Fibers: *Maria Carolina Teles*¹; Frederico Margem¹; Sergio Monteiro²; Giulio Altoé¹; Pedro Neto¹; Luiz Gustavo Borges³; ¹State University of the Northern Rio de Janeiro; ²Instituto Militar de Engenharia; ³Faculdade Redentor

10:45 AM

Thermal Analysis of Curaua Fiber Reinforced Epoxy Matrix Composites: Mariana Barcelos¹; Carolina Ribeiro¹; *Frederico Margem*²; Sergio Monteiro³; Janaina Vieira¹; Jordana Vieira¹; Natalia Maciel¹; ¹UENF; ²Redentor; ³IME

11:05 AM

Characterization of Thermal Behavior of Epoxy Composites Reinforced with Curaua Fibers by Differential Scanning Calorimetry: Mariana Barcelos¹; Sergio Monteiro²; *Frederico Margem*³; Carolina Ribeiro¹; Janaina Vieira¹; Jordana Ferreira¹; Natália Maciel¹; ¹UENF; ²IME; ³Redentor

11:25 AM

Comparative Study of the Effects of Cellulose Nanowhiskers and Microcrystalline Cellulose Addition as Reinforcement in Flexible Films Based on Biopolymer Blends: Douglas Paiva¹; Rene Oliveira¹; Wilson Maia²; Maria Aua³; Vijaya Rangari⁴; *Esperidiana Moura*¹; ¹Instituto de Pesquisas Energéticas e Nucleares; ²University of São Paulo; ³Auburn University; ⁴Tuskegee University

11:45 AM

Flexural Test in Epoxy Matrix Composites Reinforced with Hemp Fiber: Lázaro Rohen¹; Anna Neves¹; Carlos Vieira¹; *Frederico Margem*¹; Sérgio Monteiro²; ¹State University of Northern of Rio de Janeiro; ²Military Institute of Engineering

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Microstructure and Mechanical Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Thursday AM

Room: 207D

February 18, 2016

Location: Music City Center

Session Chair: To Be Announced

8:30 AM

A Differential-Exponential Hardening Model for Crystal Plasticity Modeling of Single Crystals: *Aboozar Mapar*¹; Farhang Pournoghbat¹; Thomas Bieler¹; ¹Michigan State University

8:50 AM

Atomistic Modeling of Structure-Property Relationships in Grain Boundaries: *Mark Tschopp*¹; Shawn Coleman¹; Jenn Synowczynski-Dunn¹; Kiran Solanki²; David McDowell³; ¹Army Research Laboratory; ²Arizona State University; ³Georgia Institute of Technology

9:10 AM Invited

Combined DFT, MD and Hybrid MD/FEM Simulations to Investigate Realistic Mechanical Deformations during Nanoindentation: *Francesca Tavazza*¹; Li Ma¹; Dilip Banerjee¹; Lyle Levine¹; ¹National Institute of Standards and Technology

9:30 AM

Microstructural Evolution of High Temperature Ni-Cr ODS Alloy: Genetic Algorithm Approach: *Aniket Dutt*¹; Somayeh Pasebani²; Indrajit Charit²; Rajiv Mishra¹; ¹University of North Texas; ²University of Idaho

9:50 AM

Applying Graph Kernels to the Transgranular Network for Microstructure Data Mining: *Brian DeCost*¹; Elizabeth Holm¹; ¹Carnegie Mellon University

10:10 AM Break

10:30 AM

Non-destructive Boundary Migration Tracking during Coarsening and Subsequent Quantification of Boundary Dynamics: *Siddharth Maddali*¹; Robert Suter¹; Shlomo Ta'asan¹; ¹Carnegie Mellon University

10:50 AM

Multi Scale Modeling of Deformation Behavior in Near Beta Ti-5553 Alloy: *Sudipto Mandal*¹; Shanoob Balachandran²; Dipankar Banerjee²; Anthony Rollet¹; ¹Carnegie Mellon University; ²Indian Institute of Science Bangalore

11:10 AM

Developing Physically-based Three Dimensional Microstructures: Bridging Phase Field and Crystal Plasticity Models: *Hojun Lim*¹; Fadi Abdeljawad¹; Steven Owen¹; Byron Hanks¹; Corbett Battaile¹; ¹Sandia National Laboratories

11:30 AM

Fatigue Crack Growth Modeling and Microstructural Mechanisms in Engine Materials under Hot Compressive Dwell Conditions: *Xiang Chen*¹; Diana Lados¹; Richard Pettit²; David Dudzinski³; ¹Worcester Polytechnic Institute, Integrated Materials Design Center; ²FractureLab; ³Derivation Research Laboratory Inc.

11:50 AM

Hydrogen-induced Core Structures Change of Screw and Edge Dislocations in Tungsten: *Yinan Wang*¹; Chengliang Li²; Ben Xu¹; Wei Liu¹; ¹Tsinghua University; ²China Nuclear Power Engineering Co.,Ltd

Computational Thermodynamics and Kinetics — Models and Methods

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

Thursday AM
February 18, 2016

Room: 208B
Location: Music City Center

Session Chairs: Shawn Coleman, U.S. Army Research Laboratory; Atsuto Seko, Kyoto University

8:30 AM Invited

First Principles Interatomic Potentials via Compressed Sensing: *Atsuto Seko*¹; Isao Tanaka¹; ¹Kyoto University

9:00 AM

A Scalable Parallel Clustering Algorithm for Molecular Dynamics: *Yang Hao Lau*¹; Ramanarayan Hariharaputran¹; David Wu¹; ¹Institute of High Performance Computing

9:20 AM

Cluster Variation Method in Computational Thermodynamics: *Tetsuo Mohri*¹; ¹Tohoku University

9:40 AM

The Origin of Anharmonicity in fcc Solids: *Albert Glensk*¹; Blazej Grabowski¹; Tilmann Hickel¹; Jörg Neugebauer¹; ¹Max-Planck-Institut, Duesseldorf, Germany

10:00 AM Break

10:20 AM

Mesoscopic Simulations of Electric-Field-Aligned Bijel Films for Functionalized Porous Membranes: *Paul Millet*¹; Joseph Carmack¹; ¹University of Arkansas

10:40 AM

Thermotransport of a Liquid Metal Alloy: Computational Approach: *Graeme Murch*¹; Alexander Evteev¹; Elena Levchenko¹; ¹The University of Newcastle

11:00 AM

Transport and Stokes-Einstein Behavior in Molten Mixtures of Network-formers and Network-modifiers: *Venkateswara Rao Manga*¹; Nicholas Swintek¹; Stefan Bringuier¹; Pierre Deymier¹; Krishna Muralidharan¹; ¹University of Arizona

11:20 AM

Study of the Temperature Effects on Solid-liquid Anisotropic Interfacial Energy: *Lingkang Wu*¹; Chengliang Li¹; Ben Xu¹; Qiulin Li¹; Wei Liu¹; ¹School Of Materials Science And Engineering, Tsinghua University

11:40 AM

Application of MIVM for Sn-Ag and Sn-In alloys in Vacuum Distillation: *Lingxin Kong*¹; Junjie Xu¹; Baoqiang Xu¹; Shuai Xu¹; Bin Yang¹; Yifu Li¹; Dachun Liu¹; Ruibo Hu²; ¹The National Engineering Laboratory for Vacuum Metallurgy, Kunming University of Science and Technology; State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization; Key Laboratory for Nonferrous Vacuum Metallurgy of Yunnan Province; ²Guizhou Normal University

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Intermetallic Compound III; Electromigration

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

Thursday AM
February 18, 2016

Room: 201A
Location: Music City Center

Session Chairs: Albert Wu, National Central University; Fan-Yi Ouyang, National Tsing Hua University

8:30 AM

Lead Free Solder Joint Open Failures Post Multiple Reflows due to Void Generation and Accumulation: *Yan Li*¹; Olen Hatch¹; Pilin Liu¹; Deepak Goyal¹; ¹Intel

8:50 AM

Marker Analysis to Determine Dominant Diffusing Species in Ni₃Sn₄: *Yi-Ting Chen*¹; King-Ning Tu¹; Yingxia Liu¹; ¹UCLA

9:10 AM

Enhanced Stabilization of η Cu₆Sn₅ in Pb-free Solder Joints: *Takatoshi Nishimura*¹; Mohd Salleh²; Guang Zeng²; Keith Sweatman¹; Stewart McDonald²; Kazuhiro Nogita²; ¹Nihon Superior; ²The University of Queensland

9:30 AM

Investigation of Anisotropic Micromechanical Behaviors of Cu₆Sn₅ by In-Situ Micropillar Compression: *Jui-Yang Wu*¹; J. J. Yu¹; L. J. Yu¹; C. R. Kao¹; ¹Department of Materials Science and Engineering, National Taiwan University

9:50 AM Break

10:10 AM Invited

Effect of Electromigration on Crystal Orientation in Wafer Level Chip Scale Package Using Synchrotron X-ray Diffraction: *Quan Zhao*¹; Choong-un Kim²; Thomas Bieler¹; Tae-kyu Lee³; ¹Michigan State University; ²University of Texas Arlington; ³Cisco Systems, Inc.

10:35 AM

Failure Mechanism of Ag Alloy Wire Bonding for Electronic Packaging under Electromigration Test: *Jui-Nung Wang*¹; Tzu-Yu Hsu¹; Fan-Yi Ouyang¹; Jing-Yao Chang¹; Fang-Jun Leu¹; Hsiao-Min Chang¹; ¹National Tsing Hua University

10:55 AM

Electromigration in Ni/SnAg/Ni Microbumps with 15 μ m Solder Height: *Li Yu-Jin*¹; Chen Chih¹; ¹National Chiao Tung University

11:15 AM

Electromigration Failure in Microbumps with Different Grain Sizes: *Meng Wei Chiang*¹; Chih Chen¹; Chau Jie Zhan²; Yu Wei Huang²; ¹National Chiao Tung University; ²Industrial Technology Research Institute.

11:35 AM

Interactions between Electromigration and Thermal Fatigue of Pb-free Interconnects: *Yong Zuo*¹; Limin Ma¹; Fu Guo¹; ¹Beijing University of Technology

High Entropy Alloys IV — Mechanical and Other Properties 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

Thursday AM

February 18, 2016

Room: 102A

Location: Music City Center

Session Chairs: John Lewandowski, Case Western Reserve University; Ralph Spolenak, ETH Zurich

8:30 AM Invited

Fracture Toughness and Fatigue Crack Growth Behavior of High Entropy Alloys: Mohsen Seifi¹; Dongyue Li²; Zhang Yong²; Peter Liaw³; *John Lewandowski*¹; ¹Case Western Reserve University; ²University of Science and Technology; ³University of Tennessee

8:50 AM

Microstructures and Properties of CoFeMnNiX (X = Al, Ga, Sn) High Entropy Alloys: *Ting Ting Zuo*¹; Xiao Yang¹; Michael Gao²; Shu Ying Chen³; Peter Liaw³; Yong Zhang¹; ¹University of Science and Technology Beijing; ²National Energy Technology Laboratory; ³The University of Tennessee

9:10 AM

A Statistical Study of the Potential-scan-rate and Al-content Dependent Metastable Pitting (Serration) Behavior of AlxFeCoCrNi High-entropy Alloys: *Yunzhu Shi*¹; Bin Yang¹; Xie Xie²; Zhi Tang³; Karin Dahmen⁴; Peter Liaw²; ¹University of Science and Technology, Beijing; ²University of Tennessee, Knoxville; ³Virginia Tech; ⁴University of Illinois at Urbana-Champaign

9:30 AM

Serrated Plastic Flow in CoFeMnNi, CoCrFeMnNi, and CoCrFeNi High Entropy Systems: *Joseph Licavoli*¹; Karin Dahmen²; Paul Jablonski¹; Michael Gao³; Peter Liaw⁴; Jeffrey Hawk¹; ¹Department of Energy; ²University of Illinois at Urbana Champaign; ³AECOM/Department of Energy; ⁴University of Tennessee

9:50 AM Invited

On the Microstructural Stability of Nanocrystalline HEA Thin Films and Its Effect on Mechanical Properties: *Jeff Wheeler*¹; Ralph Spolenak¹; ¹ETH Zurich

10:10 AM Break

10:25 AM

Serrated Flows in High Entropy Alloys (HEAs): *Shuying Chen*¹; Peter Liaw¹; Xie Xie¹; Karin Dahmen²; Yong Zhang³; Junwei Qiao⁴; ¹University of Tennessee, Knoxville; ²The University of Illinois at Urbana Champaign; ³The University of Science and Technology Beijing; ⁴Taiyuan University of Science and Technology

10:45 AM

Deformation and Structural Modeling of a Quenched Al_{0.1}CrCoFeNi Multi-principal Element Alloy under High Strains: *Aayush Sharma*¹; Peter Liaw²; Ganesh Balasubramanian¹; ¹Iowa State University; ²The University of Tennessee, Knoxville, TN

11:05 AM Invited

Corrosion Behavior and Passivation Mechanisms in FCC High Entropy Alloys: Ayyagari Aditya¹; *Sundeep Mukherjee*¹; ¹University of North Texas

11:25 AM

Slip nucleation in Single Crystal FeNiCoCrMn Entropy Alloy: *Luca Patriarca*¹; Avinash Ojha¹; Huseyin Sehitoğlu¹; ¹University of Illinois at Urbana-Champaign

11:45 AM

Fabrication and Tensile Behavior of Bulk High Entropy Alloys Derived from Thin Film Combinatorial Approach: *Artashes Ter-Isahakyan*¹; Azin Akbari¹; John Balk¹; ¹University of Kentucky

High Entropy Alloys IV — Structures and Characterization

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

Thursday AM

February 18, 2016

Room: 102B

Location: Music City Center

Session Chairs: Michael Widom, Carnegie Mellon University; E-Wen Huang, National Chiao Tung University

8:30 AM Invited

Entropy Calculation for High Entropy Alloys: *Michael Widom*¹; ¹Carnegie Mellon University

8:50 AM Invited

Short-range Disorder and Long-range Order Transitions of a High-entropy Alloy Subjected to Deformation at Different Temperatures: *E-Wen Huang*¹; Jien-Wei Yeh²; ¹National Chiao Tung University; ²National Tsing Hua University

9:10 AM

Characterization of a High Strength, Refractory High Entropy Alloy AlMo_{0.5}NbTa_{0.5}TiZr using STEM-HAADF and Super-XTM XEDS Tomography: *Jacob Jensen*¹; John Sosa¹; Daniel Huber¹; Gopal Viswanathan¹; Robert Williams¹; Adam Pilchak²; Hamish Fraser¹; ¹The Ohio State University; ²Air Force Research Laboratory

9:30 AM Invited

High Energy X-ray Diffraction Measurements during Tensile Loading and Hydrogen Embrittlement of a High Entropy Alloy, Al_{0.1}CoCrFeNi: *Matthew Connolly*¹; Elizabeth Drexler¹; Andrew Slifka¹; ¹National Institute of Standards and Technology

9:50 AM Break

10:05 AM

Microstructural Characterization and Phase Evolution of Al_{1.5}CrFeMnTi and Al₂CrFeMnTi: *Rui Feng*¹; Chanho Lee¹; Peiyong Chen¹; Michael Gao²; Chuan Zhang³; Fan Zhang³; Peter Liaw¹; ¹Department of Materials Science and Engineering, The University of Tennessee, Knoxville; ²National Energy Technology Laboratory/AECOM; ³CompuTherm, LLC

10:25 AM Invited

The Use of Diffusion Multiples to Explore the Phase Equilibria, Diffusion, and Nano-Mechanical Behavior of CoCrFeMnNi High Entropy Alloys: Paul Wilson¹; *Michael Kaufman*¹; Andre Costa e Silva²; Robert Field¹; ¹Colorado School of Mines; ²Universidade Federal Fluminense

10:45 AM Invited

Ordering in Refractory High-entropy Alloys: *Walter Steurer*¹; Soumyadipta Maiti¹; ¹ETH Zurich

11:05 AM

Diffusion in Equiatomic FCC High Entropy Alloys: *Mayur Vaidya*¹; Simon Trubel²; B.S. Murty¹; Gerhard Wilde²; Sergiy Divinski²; ¹IIT Madras; ²University of Muenster

11:25 AM Invited

High Strength High Entropy Alloys Prepared by Powder Metallurgy: *Yong Liu*¹; Bin Liu¹; Jingshi Wang¹; ¹Central South University

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

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

Thursday AM
February 18, 2016

Room: 207B
Location: Music City Center

Session Chairs: Sheng Yen Li, NIST; Stefan Sandfeld, Friedrich-Alexander-Universität Erlangen-Nürnberg

8:30 AM Invited

D2C – Converting and Compressing Discrete Dislocation Microstructure Data: *Stefan Sandfeld*¹; Dominik Steinberger¹; Manuel Leimberger¹; ¹University of Erlangen (FAU)

9:00 AM

Microstructural Modeling of Dynamic Intergranular and Transgranular Fracture Modes in Crystalline Alloys: *S. Ziaei*¹; Mohammed Zikry¹; ¹North Carolina State University

9:20 AM

Spectral Database Solutions to Elasto-viscoplasticity within Finite Elements: *Marko Knezevic*¹; Miroslav Zecevic¹; Daniel Savage¹; Rodney McCabe²; ¹University of New Hampshire; ²Los Alamos National Laboratory

9:40 AM

Statistical Characterization of Microstructure-sensitive Models Applied to Engineering Components: *Gustavo Castelluccio*¹; Joseph Bishop¹; Richard Field¹; John Emery¹; Matthew Brake¹; ¹Sandia National Laboratories

10:00 AM Break

10:20 AM

Analytics on Large Microstructure Datasets Using 2-pt Statistics: *Ahmet Cecen*¹; John Gibbs²; Peter Voorhees²; Surya Kalidindi¹; ¹Georgia Institute of Technology; ²Northwestern University

10:40 AM

Evaluating Image Texture Recognition Algorithms for Generic Microstructure Characterization: *Brian DeCost*¹; Long Qing Chen²; Elizabeth Holm¹; ¹Carnegie Mellon University; ²Penn State University

In Operando Nano- and Micro-mechanical Characterization of Materials with Special Emphasis on In Situ Techniques — In-Situ Characterization of Mechanical Properties of Materials IV

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Sanjit Bhowmick, Hysitron Inc.; Amit Pandey, Rolls Royce LG Fuel Cell Systems Inc.; Vikas Tomar, Purdue University; Vikram Jayaram, Indian Institute of Science; Benjamin Morrow, Los Alamos National Laboratory; Paul Shade, Air Force Research Laboratory; Weizhong Han, Xi'an Jiaotong University; Arief Budiman, Singapore University of Technology and Design

Thursday AM
February 18, 2016

Room: 212
Location: Music City Center

Session Chairs: Sanjit Bhowmick, Hysitron, Inc.; Benjamin Morrow, Los Alamos National Laboratory

8:30 AM Invited

In Situ TEM Investigation on the Mechanical Behaviour of Micronanoscaled Single Crystal Titanium and Magnesium: *Zhiwei Shan*¹; Boyu Liu¹; ¹Xi'an Jiaotong University

9:00 AM

In Situ High Strain Rate Tensile Testing in the Dynamic TEM: *Thomas Voisin*¹; Michael Grapes¹; Yong Zhang¹; Nicholas Lorenzo²; Jonathan Ligda²; Brian Schuster²; Melissa Santala³; Geoffrey Campbell³; Timothy Weihs¹; ¹Johns Hopkins University; ²Army Research Laboratory; ³Lawrence Livermore National Laboratory

9:20 AM

Deformation of Nanoscale Composite Structures and Heterophase Interfaces: *Shen Dillon*¹; Shimin Mao¹; Rui Hao¹; ¹University of Illinois at Urbana-Champaign

9:40 AM

Measurement of Micro Strains in Amorphous Ti₄₅Al₅₅ Thin Films Using Selected Area Diffraction during in situ TEM Straining: *Rohit Sarkar*¹; Christian Ebner²; Christian Rentenberger²; Jagannathan Rajagopalan¹; ¹Arizona State University; ²University of Vienna

10:00 AM Break

10:20 AM Invited

Local Strain Measurements during In Situ TEM Deformation with Nanobeam Electron Diffraction: Andrew Minor¹; Jim Ciston²; ¹UC Berkeley & LBL; ²Lawrence Berkeley National Laboratory

10:50 AM

In Situ Observation of Plastic Deformation in Single Grains of Ti6Al4V Fabricated Using E-beam Melting Technology: Leila Ladani¹; Samantha Brown¹; John Sypek¹; Seok Woo Lee¹; ¹University of Connecticut

11:10 AM

A Novel in Situ Bending Test in the micro/nano-Scale: Mohamed Elhebeary¹; Taher Saif¹; ¹University of Illinois Urbana-Champaign

11:30 AM

An Experimental Investigation of Deformation Mechanisms in FCC Thin Films: Marissa Linne¹; Samantha Daly¹; ¹University of Michigan

11:50 AM

Size and Strain Rate-dependent Deformation Behavior of Metallic Glass Nanoparticles: Jinwoo Kim¹; Eun Soo Park¹; Qi Zhang²; Mo Li²; ¹Seoul National University; ²Georgia Institute of Technology

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Interfacial Segregation

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

Thursday AM

Room: 108

February 18, 2016

Location: Music City Center

Session Chair: Heather Murdoch, US Army Research Lab

8:30 AM

Mitigating Radiation-Induced Segregation and Radiation-Induced Precipitation via Materials Nanoengineering: Enrique Martinez Saez¹; Oriane Senninger²; Alfredo Caro¹; Frédéric Soisson³; Maylise Nastar³; Blas Uberuaga¹; ¹LANL; ²Northwestern University; ³CEA-Saclay

8:50 AM

Atomic Investigation of the Role of Alloying Elements on the Thermodynamics of Vacancies and Vacancy-Hydrogen Clusters at Symmetric Tilt Boundaries in Nickel: Xiao Zhou¹; Jun Song¹; ¹McGill University

9:10 AM

Atomic-Level Mechanisms of Grain Boundary Segregation and Embrittlement in Nickel-Sulfur: Tao Hu¹; Shengfeng Yang¹; Naixie Zhou¹; Yuanyao Zhang¹; Jian Luo¹; ¹University of California San Diego

9:30 AM

Cr Segregation on Grain Boundary Character and Intrinsic Stress Evolution in Fe(Cr) Nanocrystalline Films: Xuyang Zhou¹; Tyler Kaub¹; Richard Martens¹; Gregory Thompson¹; ¹The University of Alabama

9:50 AM Break

10:10 AM Invited

Microstructure Design of Mechanically Alloyed Materials: Zachary Cordero¹; Christopher Schuh¹; ¹MIT

10:50 AM

Wetting of Three Different Cu-Nb Interfaces by He Precipitates: Sanket Navale¹; Irene Beyerlein²; Michael Demkowicz¹; ¹Massachusetts Institute of

Technology; ²Los Alamos National Laboratory

11:10 AM

Atomistic Parameterization of Analytical Descriptions of H Segregation: Christopher O'Brien¹; Stephen Foiles¹; ¹Sandia National Laboratories

11:30 AM

The Influence of Local Stress States on Hydrogen Segregation at Grain Boundaries in FCC Metals: Xiao Zhou¹; Jun Song¹; ¹McGill University

Magnesium Technology 2016 — Texture and Formability

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Alok Singh, National Institute for Materials Science; Kiran Solanki, Arizona State University; Michele Manuel, University of Florida; Neale Neelameggham, Ind LLC

Thursday AM

Room: 204

February 18, 2016

Location: Music City Center

Session Chairs: Jan Bohlen, Helmholtz-Zentrum Geesthacht; Nitin Chandola, University of Florida

8:30 AM

In-situ EBSD Observations of Recrystallization and Texture Evolution in Cold Rolled Mg-2Zn-xCe (wt%): Ajith Chakkedath¹; David Escobar²; Jan Bohlen³; Sangbong Yi³; Dietmar Letzig³; Carl Boehlert⁴; ¹Michigan State University; ²Technical University of Madrid, Spain; ³Magnesium Innovation Centre MagIC; ⁴Michigan State University; IMDEA Materials Institute, Spain

8:50 AM

Non-basal Texture Evolution during Annealing of Cold-worked Magnesium Alloy: Abu Syed Humaun Kabir¹; Jing Su¹; In-Ho Jung¹; Stephen Yue¹; ¹McGill University

9:10 AM

On Modeling the Mechanical Behavior and Texture Evolution of Rolled AZ31 Mg for Complex Loadings Involving Strain Path Changes: Nitin Chandola¹; Crystal Pasilio²; Oana Cazacu¹; Benoit Revil-Baudard¹; ¹University of Florida; ²Air Force Research Laboratory

9:30 AM

Formability of Extruded Magnesium Sheet Alloys with Different Textures: Jan Bohlen¹; Oliver Schlung¹; Sven Gall²; Sören Müller²; Dietmar Letzig¹; ¹Helmholtz-Zentrum Geesthacht; ²TU Berlin

9:50 AM Break

10:10 AM

Prediction of Magnesium Alloy Formability: The Role of Texture: Victoria Miller¹; Tracy Berman²; Irene Beyerlein²; Tresa Pollock¹; ¹University of California Santa Barbara; ²University of Michigan; ³Los Alamos National Laboratory

10:30 AM

Texture Evolution and Mechanical Properties of Mg-Li Alloy during Thermo-mechanical Process: Yun Zou¹; Yang Zhang¹; Yu Zhao¹; Songsong Xu¹; Hao Guo¹; Milin Zhang¹; Zhongwu Zhang¹; ¹Harbin Engineering University

10:50 AM

Effect of Dynamic Recrystallization on Microstructure Evolution and Texture Weakening During Annealing of High Speed Rolled AZ31 Magnesium Alloy Sheets: Jing Su¹; Mehdi Sanjari¹; Abu Syed Humaun Kabir¹; In-Ho Jung¹; Stephen Yue¹; ¹McGill

11:10 AM

Tailored Hybrid Magnesium Profiles Produces by Direct Extrusion: Rene Nitschke¹; Sven Gall¹; Soeren Mueller¹; ¹TU Berlin

Material Behavior Characterization via Multi-Directional Deformation of Sheet Metal — Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: John Carsley, General Motors Research & Development; Daniel Coughlin, Los Alamos National Laboratory; Myoung-Gyu Lee, Korea University; Youngung Jeong, National Institute of Standards and Technology; Piyush Upadhyay, Pacific Northwest National Laboratory

Thursday AM Room: 104A
February 18, 2016 Location: Music City Center

Session Chairs: Piyush Upadhyay, Pacific Northwest National Laboratory; John Carsley, General Motors Co

8:30 AM

Modeling Anisotropic Hardening and Nonlinear Elasticity under Loading Path Change: Myoung-Gyu Lee¹; Jeong-Yeon Lee¹; F. Barlat²; Jinwoo Lee³; ¹Korea University; ²POSTECH; ³Korea Institute of Materials Science

9:00 AM

An Experimental and Microstructural Investigation of Biaxial Bauschinger Effects in Sheet Metals: Markus Härtel¹; Martin Wagner¹; ¹Technische Universität Chemnitz

9:30 AM

Multi-scale Analysis of Springback in Microforming of Thin Nickel Sheets: Ziwei Zeng¹; Mitica Afteni²; Kaifeng Wang¹; Mihaela Banu¹; ¹University of Michigan; ²University Dunarea de Jos of Galati

10:00 AM Break

10:30 AM

Evaluation of Formability in Aluminum Alloys across Strain Rates Using Digital Image Correlation Technique: Piyush Upadhyay¹; Aashish Rohatgi¹; Yuri Hovanski¹; Elizabeth Stephens¹; David Catalini¹; Rich Davies¹; ¹Pacific Northwest National Laboratory

11:00 AM

Determination of Bending Limit Curves for Aluminium Alloy AA6014-T4: An Experimental Approach: Ipsita Das¹; Krishna Saxena¹; Jyoti Mukhopadhyay¹; ¹Indian Institute of Technology Gandhinagar, Ahmedabad, India

11:30 AM

Sensitivity Analysis of the Bauschinger Behavior on Bending Springback for Prestrained Sheets: Shun-lai Zang¹; ¹Xi'an Jiaotong University

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

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday AM Room: 101A
February 18, 2016 Location: Music City Center

Session Chairs: Kumar Sridharan, University of Wisconsin - Madison; Indrajit Charit, University of Idaho

8:30 AM

The Status of a Quantitative Multiscale Master Model of Helium-Displacement Damage Interaction Effects on Cavity Evolution in Fusion Structural Alloys: Takuya Yamamoto¹; G. Robert Odette¹; Yuan Wu¹; ¹University of California, Santa Barbara

8:50 AM

Simulation of Hafnium-Aluminum Thermal Neutron Absorber Material: Donna Guillen¹; William Harris²; ¹Idaho National Laboratory; ²North Carolina State University

9:10 AM

Microstructure Characterization of P91 and P92 Steels and Weld Metals: Mustafa Acarer¹; Fikret Kabakci²; Selcuk Keskinilic³; Filiz Kumdali Acar³; Ismail Hakki Kara⁴; ¹Selcuk University; ²Bulent Ecevit University; ³Gedik Kaynak; ⁴Karabuk University

9:30 AM

Solid-state Diffusion Bonding of Ni-base Hastelloy-X: Injin Sah¹; Chan Soo Kim¹; Yong-Wan Kim¹; Eung-Seon Kim¹; Min-Hwan Kim¹; ¹KAERI

9:50 AM Break

10:10 AM

Fracture Criteria for Liquid Sodium Embrittlement in T91 Martensitic Steel: Samuel Hemery¹; Clotilde Berdin²; Thierry Auger³; ¹Institut Pprime; ²Univ. Paris - Sud; ³CNRS

10:30 AM

Thermal Oxidation Behavior of Nuclear Graphite Powder: Eung-Seon Kim¹; In-Jin Sah¹; Min-Hwan Kim¹; ¹Korea Atomic Energy Research Institute

10:50 AM

The Study of Irradiation Resistance Behavior of the New Generation Reactor Pressure Vessel Steel A508-IV: Xue Bai¹; Sujun Wu¹; Peter Liaw²; ¹Beihang University; ²University of Tennessee, Knoxville

Materials in Clean Power Systems IX: Durability of Materials — Material Characterization and Degradation Mechanisms

Sponsored by: TMS Extraction and Processing Division, TMS Structural Materials Division, TMS Light Metals Division, TMS: Energy Committee, TMS: High Temperature Alloys Committee
Program Organizers: Sebastien Dryepondt, Oak Ridge National Laboratory; Peter Hosemann, University of California Berkeley; Kinga Unocic, ORNL; Paul Jablonski, US Department of Energy; Joseph Licavoli, Department of Energy; Donna Guillen, Idaho National Laboratory

Thursday AM Room: 104D
February 18, 2016 Location: Music City Center

Session Chairs: Unocic Kinga, ORNL; Joseph Licavoli, NETL

8:30 AM Invited

High Pressure Steam Oxidation of Boiler and Turbine Alloys: Gordon Holcomb¹; Joseph Tylczak¹; Casey Carney²; ¹National Energy Technology Laboratory; ²AECOM and NETL

9:00 AM Invited

High Temperature Corrosion in Molten Salts & Molten Salts Technology: Past, Present and Future: Francisco Perez Trujillo¹; ¹Universidad Complutense de Madrid

9:30 AM

Computational Modeling of Metal Oxidation: Youhai Wen¹; ¹National Energy Technology Laboratory

9:50 AM

Weldability of Gradient Tubes for High Temperature Application: Peter Brziak¹; ¹Welding Research Institute - Institute Industrial of SR

10:10 AM Break

10:30 AM

Long-term Microstructural Stability in Haynes 282 after High Temperature Exposure: *Jeffrey Hawk*¹; John Sears¹; Paul Jablonski¹; ¹U.S. Department of Energy, National Energy Technology Laboratory

10:50 AM

Evaluation of the Creep-Rupture Behavior of Haynes Alloy 282® for Advanced Ultrasupercritical Boiler Service: *Peter Tortorelli*¹; Kinga Unocic¹; H. Wang¹; Michael Santella¹; ¹Oak Ridge National Laboratory

11:10 AM

Cyclic Behavior and Fatigue Properties for Haynes 282: *Kyle Rozman*¹; John Sears¹; Jeffrey Hawk¹; Paul Jablonski¹; ¹U.S. Department of Energy, National Energy Technology Laboratory

Materials Research in Reduced Gravity — Electromagnetic Levitation (EML)

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Hani Henein, University of Alberta; Robert Hyers, Boston Electrometallurgical Corp.; Ivan Egly, DLR

Thursday AM Room: 104C
February 18, 2016 Location: Music City Center

Session Chairs: Ivan Egly, RWTH Aachen University; James Patton Downey, NASA

8:30 AM

Installation and Operation of the Electromagnetic Levitator EML on ISS and Experiment Preparation: *Stephan Schneider*¹; Angelika Diefenbach²; Julianna Schmitz¹; Sandra Schumann²; ¹DLR / Institut für Materialphysik im Weltraum; ²DLR / MUSC

9:00 AM

Electromagnetic Levitation Processing on the International Space Station: *Douglas Matson*¹; ¹Tufts University

9:20 AM

Thermophysical and Kinetic Properties of Fe₆₀Cr₂₁Ni₁₉ - Measurements under Reduced Gravity Conditions: *Douglas MATSON*¹; Robert Hyers²; Jonghyun LEE²; Rada Novakovic³; Enrica Ricci⁴; Jacqueline Etay⁵; Rainer Wunderlich⁶; Hans-Jörg Fecht⁵; ¹Tufts University; ²University of Massachusetts; ³IENI-CNR ; ⁴IENI-CNR; ⁵CNRS, SIMAP-EPM; ⁶Universität Ulm

9:40 AM

A Review on Thermophysical Property Measurements of Liquid Metallic Drops on Parabolic Flights, Texas Rocket Flights and the International Space Station: *Hans Fecht*¹; Rainer Wunderlich¹; ¹Ulm University

10:10 AM Break

10:30 AM

Influence of Convection on the Dendrite/Eutectic Growth Velocity in Cu-Zr Alloys (project MULTIPHAS): *Stefanie Koch*¹; Jan Gegner²; *Peter Galenko*¹; Markus Rettenmayr¹; Dieter Herlach³; ¹Friedrich-Schiller-University; ²German Aerospace Center; ³Ruhr-University

10:50 AM

Growth Morphology and Velocity of Undercooled Fe-B Alloys under Different Fluid Flow Conditions: *Christian Karrasch*¹; Thomas Volkmann²; Matthias Kolbe²; Jianrong Gao³; Dieter Herlach²; ¹Ruhr-University Bochum; ²German Aerospace Center DLR; ³Northeastern University

11:10 AM

Dendritic Growth Kinetics in Undercooled Melts of Pure Fe under Static Magnetic Fields: *Jianrong Gao*¹; Weina Zhao¹; Andrew Kao²; Koulis Pericleous²; Peter Galenko³; Dmitri Alexandrov⁴; ¹Northeastern University; ²University of Greenwich; ³Friedrich Schiller University of Jena; ⁴Ural

Federal University

11:30 AM

Metallic Liquid Structures, Properties, and Phase Transitions – Ground-Based Studies for ISS Experiments: *Ken Kelton*¹; Anup Gangopadhyay¹; Matthew Blodgett¹; ¹Washington University

Mechanical Behavior at the Nanoscale III — Mechanical Behavior of Nanoscale Structures

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

Thursday AM Room: 214
February 18, 2016 Location: Music City Center

Session Chairs: Jiangwei Wang, University of Pittsburgh; Jonathan Zimmerman, Sandia National Laboratories

8:30 AM

Dislocation Dynamics in Nanopillars: Strengthening and Abrupt Plastic Event Statistics: *Stefanos Papanikolaou*¹; ¹Johns Hopkins University

8:50 AM

Modeling Strain Softening and Failure of Single Wall Carbon Nanotube (SWCNT) Membranes: *Ankit Gupta*¹; Elizabeth Holm¹; ¹Carnegie Mellon University

9:10 AM

Structure-mechanical Property-deformation Mechanism Relationship in Nanotwinned FCC Metallic Nanowires: *Jiangwei Wang*¹; Frederic Sansoz²; Ting Zhu³; Ze Zhang⁴; Scott X. Mao¹; ¹University of Pittsburgh; ²The University of Vermont; ³Georgia Institute of Technology; ⁴Zhejiang University

9:30 AM

The Effect of Pre-existing Defects on the Strength and Deformation Behavior of a-Fe Nanopillars: *Kelvin Xie*¹; Xiaozhou Liao²; Julie Cairney²; Simon Ringers²; ¹Johns Hopkins University; ²The University of Sydney

9:50 AM

Approaching the Theoretical Elasticity Limit and Liquid-drop Behaviors in Nano-Scale Metals: *Xiaodong Han*¹; ¹Beijing University of Technology

10:10 AM Break

10:30 AM

Measuring the Adhesion Energy of Carbon Nanotube Films to Substrates via Microscratch Testing: *Andrew Westover*¹; Naoki Hayakawa²; Rong Xiang²; Kehang Cui²; Kensuke Tsuchiya²; Shigeo Maruyama²; Cary Pint¹; ¹Vanderbilt University; ²University of Tokyo

10:50 AM

How Microstructure and Temperature Influence the Small Scale Deformation Behavior of Au: *Verena Maier*¹; Alexander Leitner²; Reinhard Pippan¹; Daniel Kiener²; ¹Austrian Academy of Science; ²Montanuniversität Leoben

11:10 AM

Nanolamellar Tantalum Carbides: Structure and Properties: *Christopher Weinberger*¹; Bradford Schultz²; Hang Yu¹; HeDong Lee³; Lawrence Matson⁴;

Gregory Thompson²; ¹Drexel University; ²University of Alabama; ³UES, Inc.;
⁴Wright Patterson Air Force Base

11:30 AM

A Direct Comparison of Length Scale Strengthening from Different Dimensions: *Xiaodong Hou*¹; ¹National Physical Lab, UK

Nanostructured Materials for Nuclear Applications — Session VII

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

Thursday AM
February 18, 2016

Room: 101C
Location: Music City Center

Session Chairs: Cheng Sun, Los Alamos National Laboratory; Amit Misra, University of Michigan

8:30 AM Invited

Modeling Extreme Levels of Helium Implantation into Tungsten Divertors for Fusion Reactors: *Brian Wirth*¹; ¹University of Tennessee

9:00 AM

Effect of Tube Processing Methods on Microstructure and Mechanical Properties of Nanostructured Ferritic Alloys: *Eda Aydogan*¹; O. Anderoglu¹; S.A. Maloy¹; S.C. Vogel¹; G. Odette²; D.T. Hoelzer³; J.J. Lewandowski⁴; I.E. Anderson⁵; J.R. Rieken⁶; ¹Los Alamos National Laboratory; ²University of California, Santa Barbara; ³Oak Ridge National Laboratory; ⁴Case Western Reserve University; ⁵Ames Laboratory

9:20 AM

Response of Equal Channel Angular Extrusion Processed Ultrafine Grained T91 Steel Subjected to High Temperature Heavy Ion Irradiation: *Miao Song*¹; Di Chen¹; Yuedong Wu²; Youxing Chen¹; Lin Shao¹; Yong Yang²; Karl Hartwig¹; Xinghang Zhang¹; ¹Texas A&M University; ²University of Florida

9:40 AM

Effect of Annealing on Microstructure and Mechanical Properties of Fe-14Cr-YWT Nanostructured Ferritic Alloy: *Md Ershadul Alam*¹; Souptik Pal¹; David Hoelzer²; Stuart Maloy³; G. Odette¹; ¹University of California, Santa Barbara; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory

Phase Transformations and Microstructural Evolution — Phase Transformations - Extreme Conditions

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

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

Thursday AM
February 18, 2016

Room: 107B
Location: Music City Center

Session Chair: MOHSEN ASLE ZAEEM, Missouri University of Science and Technology

8:30 AM Invited

An Overview of Lower Temperature Precipitation under Irradiation: Mechanisms, Models, Consequences and Applications: *G. Robert Odette*¹; ¹University of California Santa Barbara

9:00 AM

Effect of Non-wetting Nanoparticles on Precipitation Evolution: *Shipeng Shu*¹; Xuan Zhang²; Pascal Bellon¹; Robert S. Averback¹; ¹University of Illinois at Urbana-Champaign; ²Argonne National Laboratory

9:20 AM

In Situ Characterization and Phase Field Modeling of Irradiation-Induced Grain Growth: *Daniel Bufford*¹; Fadi Abdeljawad¹; Stephen Foiles¹; Khalid Hattar¹; ¹Sandia National Laboratories

9:40 AM Invited

Japan Institute of Metals International Scholar: Effective Utilization of e-martensite in Fe-high Mn Austenitic Steels: Aspects of Deformation-induced Reverse Transformation: *Motomichi Koyama*¹; T. Sawaguchi²; Kaneaki Tsuzaki³; ¹Kyushu University; ²National Institute for Materials Science; ³Kyushu University; National Institute for Materials Science

10:00 AM Break

10:20 AM

Shear-induced Phase Transition in Zr via Severe Plastic Deformation: *Hui Wang*¹; Wojciech Dmowski¹; Yoshihiko Yokoyama²; Koichi Tsuchiya³; Takeshi Egami¹; ¹University of Tennessee, Knoxville; ²Tohoku University; ³National Institute for Materials Science

10:40 AM

Shock-Induced Phase and Microstructural Changes in Metallic Glass: *Alex Bryant*¹; Christopher Wehrenberg²; Faisal Alamgir¹; Samson Lai¹; Karren More³; Jonathan Poplawsky³; Bruce Remington²; Naresh Thadhani¹; ¹Georgia Institute of Technology; ²Lawrence Livermore National Laboratory; ³Oak Ridge National Laboratory

11:00 AM

Shock Induced Amorphization and Nanocrystallization in Silicon: *Shiteng Zhao*¹; Bimal Kad¹; Eric Hahn¹; Tane Remington¹; Bruce Remington²; Christopher Wehrenberg²; Karren More³; Marc Meyers¹; ¹University of California, San Diego; ²Lawrence Livermore National Laboratory; ³Oak Ridge National Laboratory

11:20 AM

Shot Peening Induced Microstructural Stability of a High Nb Containing TiAl Alloy during High Temperature Exposure: *Lu Fang*¹; Xian Fei Ding¹; Junpin Lin¹; ¹University of Science and Technology Beijing

Phase Transformations and Microstructural Evolution — Phase Transformations in Shape Memory and Magnetic Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

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

Thursday AM
February 18, 2016

Room: 109
Location: Music City Center

Session Chair: Peter Anderson, The Ohio State University

8:30 AM

H-phase Precipitation and its Influence on Shape Memory Properties in Ni-Ti-Zr and Ni-Ti-Hf Alloys: *Suzanne Kornegay*¹; Monica Kapoor¹; Ronald Noebe²; Gregory Thompson¹; ¹The University of Alabama; ²NASA Glenn Research Center

8:50 AM

Magnetic Domain Structure Studies in Ferromagnetic Alloys: *Isha Kashyap*¹; Marc De Graef¹; ¹Carnegie Mellon University

9:10 AM

Mechanical Properties of NiMnGa Alloys as a Function of Composition and Phase Transformations Measured by Nanoindentation: *Le Zhou*¹; Anit Giri²; Kyu Cho³; Yongho Sohn¹; ¹University of Central Florida; ²TKC Global; ³US Army Research Laboratory

9:30 AM

Microscale Studies of Transformation Mechanisms in SMAs: Michael Kimiecik¹; J Wayne Jones¹; *Samantha Daly*¹; ¹University of Michigan

10:00 AM Break

10:20 AM

Thermomechanical Characterization of Shape Memory Alloy Mode I Fracture: *William LePage*¹; John Shaw¹; *Samantha Daly*¹; ¹University of Michigan

10:40 AM

Transformation and Deformation Characterization of NiTiHf and NiTiAu High Temperature Shape Memory Alloys: *Lee Casalena*¹; Daniel Coughlin²; Fan Yang¹; Xiang Chen¹; Santo Padula³; Glen Bigelow³; Darrell Gaydosh³; Othmane Benafan³; Ronald Noebe³; Yunzhi Wang¹; Peter Anderson¹; Michael Mills¹; ¹The Ohio State University; ²Los Alamos National Laboratory; ³NASA Glenn Research Center

11:10 AM

The Influence of Nanoscale Precipitates on Phase Transformations in Shape Memory Alloys: *Peter Anderson*¹; Harshad Paranjape²; Kathryn Esham¹; Lee Casalena¹; Xiang Chen¹; Michael Mills¹; Yunzhi Wang¹; Ronald Noebe³; ¹The Ohio State University; ²Colorado School of Mines; ³NASA Glenn Research Center

Ultrafine Grained Materials IX — High Pressure Torsion Studies II

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

Thursday AM

Room: 209B

February 18, 2016

Location: Music City Center

Session Chairs: Ruslan Valiev, Ufa State Aviation Technical University; Milos Janecek, Charles University

8:30 AM Invited

High-Pressure Torsion and Nanoindentation: *Jae-il Jang*¹; In-Chul Choi²; Dong-Hyun Lee¹; Megumi Kawasaki¹; Terence Langdon³; ¹Hanyang University; ²Karlsruhe Institute of Technology; ³University of Southern California

9:00 AM Invited

Recent Findings in Paradox of Severe Plastic Deformation: *Ruslan Valiev*¹; ¹Ufa State Aviation Technical University

9:20 AM

Mechanical Properties of Pure Titanium and a Ti-45Nb Alloy: A Comparative Study: *Bernhard Völker*¹; Nikolaus Jäger¹; Ajit Panigrahi²; Michael Zehetbauer²; Reinhard Pippan³; Anton Hohenwarter¹; ¹Department of Materials Physics, Montanuniversität Leoben; ²Physics of Nanostructured Materials, Faculty of Physics, University of Vienna; ³Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

9:40 AM

Microstructural Evolution and Mechanical Properties of a Titanium Alloy Processed by High-pressure Torsion: *Shima Sabbaghanrad*¹; Terence Langdon¹; ¹University of Southern California

10:00 AM Break

10:20 AM Invited

Production of Nanograined Ge Using Severe Plastic Deformation under High Pressure: *Yoshifumi Ikoma*¹; Takamitsu Toyota¹; Katsuhiko Saito²; Qixin Guo²; Zenji Horita¹; ¹Kyushu University; ²Saga University

10:50 AM

Synthesis of a Metal Matrix Nanocomposite through the Application of High-pressure Torsion: *Megumi Kawasaki*¹; Byungmin Ahn²; Han-Joo Lee¹; Alexander Zhilyaev³; Terence Langdon⁴; ¹Hanyang University; ²Ajou University; ³Institute for Metals Superplasticity Problems; ⁴University of Southern California

11:10 AM

Microstructure Evolution, Defect Structure and Mechanical Properties in Ultrafine-grained MgGd Alloy Processed by High Pressure Torsion: *Miloš Janecek*¹; Michaela Poková¹; Jitka Stráská¹; Jakub Cížek¹; Radomír Kužel¹; Jung Gi Kim²; Hyoung Seop Kim²; ¹Charles University; ²POSTECH Pohang

11:30 AM

Effect of Hydrostatic Extrusion and High Pressure Torsion on Grain Refinement and High-angle Grain Boundaries in Al5Mg Alloy: *Peter Bazarnik*¹; Malgorzata Lewandowska¹; Yi Huang²; Terence Langdon³; ¹Warsaw University of Technology, Faculty of Materials Science; ²Materials Research Group, Faculty of Engineering and the Environment, University of Southampton, UK; ³Materials Research Group, Faculty of Engineering and the Environment, University of Southampton, Departments of Aerospace & Mechanical Engineering and Materials Science, University of Southern California

11:50 AM

Hydrogen Diffusion in Ultrafine-Grained Iron Processed by High-Pressure Torsion: *Hideaki Iwaoka*¹; Makoto Arita¹; Zenji Horita¹; ¹Kyushu University

Ultrafine Grained Materials IX — Thin Films and Functional Properties

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

Thursday AM

Room: 209A

February 18, 2016

Location: Music City Center

Session Chairs: Indranil Roy, Schlumberger; Nicole Overman, Pacific Northwest National Laboratory

8:30 AM Invited

Study of Dynamic Recovery in Nanocrystalline Metals Using In-situ X-ray Diffraction and MD Simulations: Zhen Sun¹; *Steven Van Petegem*¹; Christian Brandl²; Manas Upadhyay¹; Karsten Durst³; Wolfgang Blum⁴; Helena Van Swygenhoven¹; ¹Paul Scherrer Institut; ²Karlsruhe Institute of Technology; ³Technische Universität Darmstadt; ⁴University Erlangen-Nürnberg

9:00 AM

Sputter Deposited Nickel-Molybdenum-Tungsten Thin Films with High Strength and Ductility for Use in Metal MEMS Applications: *Gi-Dong Sim*¹; K.Madhav Reddy¹; Gianna Valentino¹; Jessica Krogstad¹; Timothy Weihs¹; Kevin Hemker¹; ¹Johns Hopkins University

9:20 AM

Insights into the Thermal Stability of Nanocrystalline Pt(Au,Pd) Films: *Christopher O'Brien*¹; Blythe Clark¹; Stephen Foiles¹; ¹Sandia National Laboratories

9:40 AM

Nanostructured Al and Cu Alloys with Superior Strength and Electrical Conductivity: *Maxim Murashkin*¹; Ilchat Sabirov²; Xavier Sauvage³; Ruslan Valiev¹; ¹Ufa State Aviation Technical University; ²IMDEA Materials Institute; ³Université et INSA de Rouen

10:00 AM Break

10:20 AM

Sensitization and Corrosion Properties of Sputtered Al-Mg Alloy: *Jianfeng Yan*¹; Andrea Hodge¹; ¹University of Southern California

10:40 AM

Engineering High Strength Nanostructured Water Reactive Alloys for Multi Stage Stimulation: *Indranil Roy*¹; Gregoire Jacob¹; Rashmi Bhavsar¹; ¹Schlumberger

7th International Symposium on High Temperature Metallurgical Processing — Treatment and Recycling of Solid Slag/Wastes

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee

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

Thursday PM
February 18, 2016

Room: 105B
Location: Music City Center

Session Chairs: Tao Jiang, Central South University; Matthew Andriese, Michigan Technological University

2:00 PM Introductory Comments

2:05 PM

Development of Reliable Viscosity Model for Iron Silicate Slags: *Mao Chen*¹; Zhixiang Cui²; Leonel Contreras³; *Baojun Zhao*¹; ¹The University of Queensland; ²Dongying Fangyuan Nonferrous Metals Co., Ltd; ³National Copper Corporation of Chile

2:25 PM

Removal of Iron Impurity from Zinc Calcine after Magnetization Roasting: *Junwei Han*¹; Wei Liu¹; Wenqing Qin¹; Fen Jiao¹; Dawei Wang¹; ¹Central South University

2:45 PM

The Electrochemical Synthesis of TiC Reinforced Fe Based Composite Powder from Titanium-rich Slag: *Qian Xu*¹; ¹Shanghai University

3:05 PM

Preparation of High-quality Titanium-rich Material from Titanium Slag with High Ca and Mg Content by Activation Roasting Process: *Wenting Duan*¹; Feng Chen¹; Fuqiang Zheng¹; Tao Jiang¹; Yufeng Guo¹; ¹Central South University

3:25 PM Break

3:40 PM

Preparation of TiC from Titanium Bearing Blast Furnace Slag By Carbothermal Reduction in Vacuum: Fangqing Yin¹; Zhengfeng Qu¹; Mengjun Hu¹; Qingyu Deng¹; *Meilong Hu*¹; ¹Chongqing University

4:00 PM

Study on Preparation of Activated Carbon from Hawaii Nut Shell via Steam Physical Activation: *Jianbo Lan*¹; Shenghui Guo¹; Hongying Xia¹; Libo Zhang¹; Jinhui Peng¹; ¹State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology, Kunming, Yunnan, China

4:20 PM

New EAF Dust Treatment Process by Lime Addition and Ammonia-Leaching: *Zeqiang Xie*¹; Yufeng Guo¹; Tao Jiang¹; Feng Chen¹; Yujia Tan¹; ¹School of Minerals Processing and Bioengineering, Central South University, Changsha

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling — Characterization Techniques, Environmental Interaction and Materials Development

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California Berkeley; Todd Allen, Idaho National Laboratory; Elaine West, Knolls Atomic Power Laboratory

Thursday PM
February 18, 2016

Room: 101B
Location: Music City Center

Session Chair: James Cole, Idaho National Laboratory

2:00 PM

Accelerating Post-irradiation Examination with Latest-generation Electron Microscopy Hardware and Software: *Chad Parish*¹; Kevin Field¹; Philip Edmondson¹; Jeremy Busby¹; Keith Leonard¹; Yutai Katoh¹; David Hoelzer¹; Sebastien Dryepondt¹; Kurt Terrani¹; ¹Oak Ridge National Laboratory

2:20 PM

A Synchrotron Peak Broadening and Modelling Study of Proton-Irradiated Zircaloy-2: *Thomas Seymour*¹; Rory Hulse¹; Allan Harte¹; Philipp Frankel¹; Levente Balogh²; Mark Daymond²; Claire Murray³; Antoine Ambar⁴; Javier Romero⁵; Lars Hallstadius⁶; Christopher Race¹; Michael Preuss¹; ¹School of Materials, The University of Manchester; ²Department of Mechanical and Materials Engineering, Queen's University; ³Diamond Light Source; ⁴Electricite de France; ⁵Westinghouse Electric Company; ⁶Westinghouse Electric Sweden AB

2:40 PM

In-situ High-Energy X-ray Study of Neutron Irradiation Effect on Tensile Deformation Behavior of an Fe-Cr Model Alloy: *Xuan Zhang*¹; Chi Xu²; Meimei Li¹; Jun-Sang Park¹; Peter Kenesei¹; Jonathan Almer¹; Kun Mo¹; Carolyn Tomchik³; James Stubbins³; Jian Gan⁴; ¹Argonne National Lab; ²University of Florida; ³University of Illinois at Urbana-Champaign; ⁴Idaho National Lab

3:00 PM

Non-contact Determination of Ion Irradiation Effects in Pure Polycrystalline Copper: *Cody Dennett*¹; Sara Ferry¹; Vikash Mishra¹; Jeffrey Eliason¹; Alexei Maznev¹; Keith Nelson¹; Michael Short¹; ¹MIT

3:20 PM Break

3:40 PM

Non-contact Analysis of Dislocation Effects in Single Crystal Niobium and Vacancy Effects in Intermetallic NiAl: *Sara Ferry*¹; Cody Dennett¹; Michael Short¹; ¹MIT

4:00 PM

In Situ Corrosion Studies of Nuclear Claddings in Extreme Environments: *Simerjeet Gill*¹; Mohamed Elbakhshwan¹; Randy Weidner¹; Thomas Anderson¹; Arthur Motta²; Lynne Ecker¹; ¹Brookhaven National Lab; ²The Pennsylvania State University

4:20 PM

Evidence of Accelerated Oxide Dissolution during Irradiation-Corrosion of 316L Stainless Steel in Primary Water: *Stephen Raiman*¹; Gary Was¹; ¹University of Michigan

4:40 PM

Optimization of the Composition of FeCrAl Alloys for Radiation Environments: *Kevin Field*¹; Yukinori Yamamoto¹; Samuel Briggs²; Maxim Gussev¹; Kenneth Littrell¹; Xunxiang Hu¹; Richard Howard¹; Philip Edmondson¹; Kumar Sridharan²; Bruce Pint¹; Kurt Terrani¹; ¹Oak Ridge National Laboratory; ²University of Wisconsin - Madison

Aluminum Alloys, Processing and Characterization — Joining Technologies

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

Thursday PM Room: 201B
February 18, 2016 Location: Music City Center

Session Chair: Yuri Hovanski, Pacific Northwest National Laboratory

2:00 PM Introductory Comments

2:05 PM

Dissimilar Alloy Aluminum Tailor Welded Blanks: *Yuri Hovanski*¹; Piyush Upadhyay¹; Ayoub Soulam²; John Carsley³; Blair Carlson³; Susan Hartfield-Wunsch³; Mark Eisenmenger⁴; Tom Luzanski⁴; Dustin Marshall⁴; Brandon Landino⁵; Glenn Jarvis⁵; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratories; ³General Motors; ⁴TWB Company; ⁵Alcoa

2:30 PM

Fusion Weld Joint Properties of Aluminum Base Metal 7020 and Filler Metals 5087, 5556A, and Al-Mg6-Zr: *John Chinella*¹; Nick Kapustka²; Seth Shira²; ¹U.S. Army Research Laboratory; ²Edison Welding Institute

2:55 PM

Finite Element and Neutron Diffraction Analysis of Self-piercing Riveting in Dissimilar Metal Sheets: Li Huang¹; J. C. Moraes²; *Dimitry Sediako*³; J. Jordon²; Haiding Guo¹; Xuming Su⁴; ¹Nanjing University of Aeronautics and Astronautics; ²The University of Alabama; ³Canadian Neutron Beam Centre; ⁴Ford Motor Company

3:20 PM

Microstructure Evolution, Tensile Properties, and Thermo-Mechanical Modeling in Wrought and Cast Aluminum Alloys Fabricated by Friction Stir Processing and Welding: *Yi Pan*¹; Diana Lados¹; ¹Worcester Polytechnic Institution

3:45 PM

Important Considerations for Laser Marking an Identifier on Aluminum: *Alex Fraser*¹; Vincent Brochu¹; Daniel Gingras¹; Xavier Godmaire¹; ¹Laserax Inc

Aluminum Reduction Technology — Investigations and Design Using Computer Modelling

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

Thursday PM Room: 202C
February 18, 2016 Location: Music City Center

Session Chair: Vinko Potocnik, Vinko Potocnik Consultant Inc.

2:00 PM Introductory Comments

2:05 PM

Alumina Dissolution Modeling in Aluminium Electrolysis Cell Considering MHD Driven Convection and Thermal Impact: *Benoit Bardet*¹; Thomas Foetisch²; Steeve Renaudier¹; Jacques Rappaz²; Michel Flueck²; Marco Picasso²; ¹Rio Tinto Alcan; ²EPFL

2:30 PM

Numerical Investigation on the Impact of Anode Change on Heat Transfer and Fluid Flow in Aluminum Smelting Cells: *Qiang Wang*¹; Meijia Sun¹; Baokuan Li¹; Jianping Peng¹; Yaowu Wang¹; ¹Northeastern University of China

2:55 PM

On the Importance of Field Validation in the Use of Cell Thermal Balance Modeling Tools: *Marc Dupuis*¹; Richard Jeltsch²; ¹GéniSim Inc; ²Richard Jeltsch Consulting

3:20 PM Break

3:35 PM

Sideledge Facing Metal in Aluminium Reduction Cells: Freezing and Melting in the Presence of a Bath Film: *Asbjorn Solheim*¹; Nils-Haavard Giskeodegard²; Nancy Holt²; ¹SINTEF; ²Hydro Aluminium

4:00 PM

Modelling of Metal Flow and Metal Pad Heaving in a Realistic Reference Aluminium Reduction Cell: *Jinsong Hua*¹; Magne Rudshaug¹; Christian Droste²; Robert Jorgensen³; Nils-Haavard Giskeodegard³; ¹Institute for Energy Technology; ²Hydro Aluminium Deutschland GmbH; ³Hydro Aluminium

Bulk Metallic Glasses XIII — Mechanical and Other Properties III

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

Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Jianzhong Jiang, Zhejiang University; Gongyao Wang, Alcoa Technical Center

Thursday PM Room: 101E
February 18, 2016 Location: Music City Center

Session Chairs: Dan Miracle, AF Research Laboratory; Dong Ma, Oak Ridge National Laboratory

2:00 PM Invited

Non-equilibrium Phase Transformation in Bulk Metallic Glasses: *Dong Ma*¹; Alexandru. D. Stoica¹; ¹ORNL

2:20 PM

Amorphization of Fe-6.25 at% C Alloy by Mechanical Alloying: *A. Aning*¹; Ibrahim Khalfallah¹; ¹Virginia Tech

2:40 PM

Comparison of the Entropy in $\text{Cu}_{50}\text{Zr}_{50}$ and $\text{Cu}_{46}\text{Zr}_{46}\text{Al}_8$: *Hillary Smith*¹; Andrew Hoff²; Chen Li²; Tabitha Swan-Wood³; Chae-Reem Yang¹; Sarah Randolph³; Marios Demetriou¹; Brent Fultz¹; ¹California Institute of Technology; ²Oak Ridge National Laboratory; ³California State University Channel Islands

3:00 PM

Predictive Modeling of Glass-Forming Ability in the Ternary Fe-Nb-B System: *David Dominikus Brennhaugen*¹; Huahai Mao²; Lars Arnberg¹; Ragnhild Aune¹; ¹Norwegian University of Science and Technology; ²Royal Institute of Technology

3:20 PM Break

3:35 PM

Role of Niobium Concentration on Glass Forming Ability and Crystallization Behavior of Zr-Ni-Al-Cu-Nb Bulk Metallic Glasses with Low Cu Concentration: *Kevin Cole*¹; Donald Kirk¹; Chandra Veer Singh¹; Steven Thorpe¹; ¹University of Toronto

3:55 PM Invited

Simultaneous Efficient Atomic Packing in Metallic Glass Structures: Kevin Laws¹; *Dan Miracle*²; Michael Ferry¹; ¹School of Materials Science and Engineering; ²AF Research Laboratory

4:15 PM

The Effect of Cooling Rate on the Local Elastic Fluctuations in Metallic Glass Alloys: *Peter Tsai*¹; Kelly Kranjc¹; Katharine Flores¹; ¹Washington University in St. Louis

4:35 PM

Enhanced Plasticity in Zr-Cu-Ag-Al-Be Bulk Metallic Glasses: Jianzhong Jiang¹; *Q.P. Cao*¹; J.B. Jin¹; X.D. Wang¹; D.X. Zhang¹; ¹Zhejiang University

4:55 PM

Microstructure and Wear Behavior of Laser Clad Multi-layered Fe-based Amorphous Coatings on Steel Substrates: *Tanaji Paul*¹; S. Habib Alavi¹; Sourabh Biswas¹; Sandip Harimkar¹; ¹Oklahoma State University

Characterization of Minerals, Metals, and Materials — Welding and Solidification

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee

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

Thursday PM
February 18, 2016

Room: 103A
Location: Music City Center

Session Chairs: Yuanbo Zhang, Central South University; Ece Kosmaz, TEI-TUSAS Engine Industries, Inc.

2:00 PM

Humectation Kinetics of a Quasi-ceramic Matrix Destined to Fluxes for Submerged Arc Welding: *Jesús Hernández Ruiz*¹; Rafael Quintana Puchol¹; Lázaro Pino Rivero¹; ¹Universidad Central de Las Villas

2:20 PM

The Effect of Post-weld Heat Treatment on the Properties of TIG Welded Inconel 718 alloy: *Ece Canan Kosmaz*¹; Hüseyin Çimenoglu²; Rabia Günay¹; ¹TEI-TUSAS Engine Industries, Inc.; ²Istanbul Technical University

2:40 PM

Influence of Al and C Content on Mechanical Properties of Sub-rapidly Solidified Fe-20Mn-xAl-yC Low-density Steels: *Libing Liu*¹; Zheng Shen¹; Yang Yang¹; Chang Song¹; Qi Zhai¹; ¹Shanghai University

3:00 PM

Dynamic Deep Etching and Particle Extraction for High-strength Aluminium Alloys: *Tonica Boncina*¹; Franc Zupanic¹; ¹University of Maribor

3:20 PM

Optimization of TiNp/Ti Content for $\text{Si}_3\text{N}_4/42\text{CrMo}$ Joints Brazed with Ag-Cu-Ti+TiNp Composite Filler: *Tianpeng Wang*¹; Jie Zhang¹; Chunfeng Liu¹; ¹Harbin Institute of Technology

3:40 PM Break

3:55 PM

Effect of Interlayer Material on the Mechanical Properties of Diffusion Bonded Aluminum Joints: *Sila Atabay*¹; Arcan Dericioglu¹; ¹Middle East Technical University

4:15 PM

Preparating Magnetic Iron Ore from Copper Slag at Intermediate Temperature: *Zhenya Xu*¹; ¹Shanghai University

4:35 PM

Interface Analysis of Solid State Welded AA7075 to Ti64 Joints: *Frank Balle*¹; ¹University of Kaiserslautern

Computational Materials Discovery and Optimization: From 2D to Bulk Materials — Multiscale Modeling of Materials Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Oak Ridge National Laboratory; Dallas Trinkle, University of Illinois, Urbana-Champaign; Eric Homer, Brigham Young University

Thursday PM
February 18, 2016

Room: 207D
Location: Music City Center

Session Chair: To Be Announced

2:00 PM

Lithiation Kinetics of Crystalline Silicon Nanowires Regulated by Native Oxide Layer: A Molecular Dynamics Simulation Using ReaxFF: *Alireza Ostadhosseini*¹; Adri C.T. van Duin¹; ¹Pennsylvania State University

2:20 PM

Three-Dimensional Simulation of Intercalation-Induced Stress in LiCoO₂ Cathode Reconstructed by Focused Ion Beam Tomography: *Linmin Wu*¹; Jing Zhang¹; ¹Indiana University-Purdue University Indianapolis

2:40 PM

A Machine Learning Approach to Bulk Property Prediction for the Laser Assisted Cold Spray Process: *Aaron Birt*¹; Joseph Dallarosa²; Diran Apelian¹; ¹Worcester Polytechnic Institute; ²IPG Photonics

3:00 PM

Monte Carlo Simulation of Two-phase Film Growth on a Patterned Substrate: *Xiao Lu*¹; Boya Lai¹; David Laughlin²; Jian-Gang Zhu²; Jingxi Zhu¹; ¹Sun Yat-sen University-Carnegie Mellon University Joint Institute of Engineering.; ²Carnegie Mellon University

3:20 PM Break

3:40 PM

Ionization Induced by Swift Heavy Ions in Metals and Strength of the Coulomb Explosion: *Magda Caro*¹; Alfredo Correa²; Artur Tamm¹; Alfredo Caro¹; ¹Los Alamos National Laboratory; ²Lawrence Livermore National Laboratory

4:00 PM

Modeling the Hydroforming of a Large Grain Niobium Tube: *Aboozar Mapar*¹; Thomas Bieler¹; Farhang Pourboghra¹; ¹Michigan State University

High Entropy Alloys IV — Compositional Effect

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

Thursday PM Room: 102B
February 18, 2016 Location: Music City Center

Session Chairs: Steven Zinkle, Oak Ridge National Laboratory; Hongbin Bei, Oak Ridge National Laboratory

2:00 PM Invited

Alloying Effects on the Microstructures and Mechanical Properties of Compositionally Complex Alloys: Zhenggang Wu¹; Hongbin Bei¹; ¹Oak Ridge National Laboratory

2:20 PM Invited

An Oxide Doped High Temperature High Entropy Alloy: *Shizhong Yang*¹; Liuxi Tan¹; Shengmin Guo¹; Yan Yang¹; ¹Southern University and A&M College

2:40 PM Invited

The Role of Extreme Compositional on the Physical Properties of High Entropy Alloy: *Malcolm Stocks*¹; Suffian Khan¹; German Samulyuk¹; Claudia Troparevsky¹; Markus Daene²; Julie Staunton³; Sebastian Wimmer⁴; ¹ORNL; ²Lawrence Livermore National Laboratory; ³University of Warwick; ⁴Ludwig-Maximilian-Universitaet

3:00 PM

Effects of Chemical Composition on Mechanical Behavior of CoCrFeMnNi Alloys: The Origins of High Strength of A3S Grade of Alloys: *Anna Fraczkiewicz*¹; Michal Mroz¹; Matthieu Lenci¹; Andras Borbely¹; Xavier Sauvage²; ¹MINES St-Etienne; ²Université et INSA de Rouen

3:20 PM Invited

High Entropy Brasses and Bronzes - Microstructure, Phase Evolution and Properties: *Kevin Laws*¹; Cody Crosby²; Aarthi Sridhar²; Patrick Conway¹; Leah Kolaodin¹; Mo Zhao²; Shifrah Aron-Dine²; Michael Ferry¹; Lori Bassman²; ¹University of New South Wales; ²Harvey Mudd College

3:40 PM Break

3:55 PM

Influence of Cr Removal on Alloying Behavior, Microstructure and Mechanical Behavior of Ultra-fine Grained Al0.8Ti0.2CoNiFeCr High Entropy Alloy: Zhiqiang Fu¹; Weiping Chen²; Baolong Zheng¹; Yaojun Lin³; Fei Chen³; Yizhang Zhou¹; Lianmeng Zhang³; *Enrique Lavernia*¹; ¹University of California, Irvine; ²South China University of Technology; ³Wuhan University of Technology

4:15 PM

Ion Irradiation Effects on Microstructure and Mechanical properties of a High Entropy Alloy: *Anantha Phani Nimishakavi*¹; Congyi Li²; Hongbin Bei¹; Keith Leonard¹; Steven Zinkle²; ¹Oak Ridge National Laboratory; ²University of Tennessee

4:35 PM

Ion Irradiation Induced Swelling in Ni-Based FCC Equiatomic Alloys: *Ke Jin*¹; Hongbin Bei¹; Yanwen Zhang¹; William Weber²; ¹Oak Ridge National Laboratory; ²University of Tennessee

4:55 PM Invited

High-Entropy Alloys Including 3d, 4d and 5d Transition Metals from the Same Group in the Periodic Table: *Akira Takeuchi*¹; Kenji Amiya¹; Takeshi Wada¹; Kunio Yubuta¹; ¹Tohoku University

5:15 PM Invited

Effect of Zr and Si Addition on Microstructure and Properties of AlFeNiCuCrTi High Entropy Alloys: *Dai-hong Xiao*¹; P.F. Zhou¹; Peter K. Liaw²; ¹Central South University; ²University of Tennessee

High Entropy Alloys IV — Structures and Modeling

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

Thursday PM Room: 102A
February 18, 2016 Location: Music City Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Xie Xie, The University of Tennessee

2:00 PM Invited

A Model for the Deformation Mechanisms and the Serration Statistics of High Entropy Alloys: *Karin Dahmen*¹; Robert Carroll²; Xie Xie³; Shuying Chen³; Michael LeBlanc²; Jien Wei Yeh⁴; Chi Lee⁴; Che Wei Tsai²; Peter Liaw³; Jonathan Uhl¹; ¹University of Illinois at Urbana Champaign; ²University of Illinois at Urbana Champaign; ³University of Tennessee Knoxville; ⁴National Tsing Hua University, Hsinchu

2:25 PM Invited

Computational-Thermodynamics-Aided Development of Lightweight High Entropy Alloys: *Chuan Zhang*¹; Jun Zhu¹; Fan Zhang¹; Shuanglin Chen¹; Chuan Zhang¹; Rui Feng²; Shuying Chen²; Haoyan Diao²; Peter Liaw²; ¹Computherm; ²University of Tennessee

2:45 PM Invited

Computational High-Entropy Alloy Design and Phase Equilibria of an Al-Co-Cr-Fe-Ni System: *Zhi Tang*¹; Oleg Senkov²; Jonathon Poplawsky³; Chuan Zhang⁴; Fan Zhang⁴; Carl Lundin¹; Peter Liaw¹; ¹The University of Tennessee; ²Air Force Research Laboratory; ³Oak Ridge National Laboratory; ⁴CompuTherm LLC

3:05 PM Invited

Computational Modeling of High-Entropy Alloys: Entropy Sources, Enthalpy, Elasticity, Electronic and Magnetic Properties: *Michael Gao*¹; Mike Widom²; Jeff Hawk¹; David Alman¹; ¹National Energy Technology Lab; ²Carnegie Mellon University

3:25 PM Invited

Thermally Activated Processes in a Crystal Plasticity Model for Deformation in Equiatomic Alloys: *Yanfei Gao*¹; Hongbin Bei²; Zhenggang Wu¹; George Pharr¹; ¹Univ of Tennessee; ²Oak Ridge National Laboratory

3:45 PM Break

4:00 PM Invited

Understanding High-Entropy Alloys Using a Cluster-based Structural Model: *Qing Wang*¹; Wen Lu¹; Chuang Dong¹; Peter K. Liaw²; ¹Dalian University of Technology; ²The University of Tennessee

4:20 PM Invited

Predicting the Formation of Single-phase High Entropy Alloys: A First Principles Approach: *M. Claudia Troparevsky*¹; ¹Oak Ridge National Laboratory

4:40 PM

First Principles Calculations of the Lattice Distortions and Elastic Constants of the HfNbTaTiZr Alloy: *Maryam Ghazisaeidi*¹; ¹Ohio State University

5:00 PM

Magnetic Treasure Maps for CoFeNi-based High-entropy-alloys from First-principles: *Fritz Körmann*¹; Duancheng Ma²; Blazej Grabowski²; Marcel Sluiter¹; ¹Delft University of Technology; ²Max-Planck-Institut für Eisenforschung GmbH

5:20 PM

A Novel, Single Phase, Refractory CrMoNbV High-entropy Alloy: *Rui Feng*¹; Michael Widom²; Michael Gao³; Peter Liaw¹; ¹Department of Materials Science and Engineering, The University of Tennessee, Knoxville; ²Department of Physics, Carnegie Mellon University; ³URS at National Energy Technology Laboratory (NETL)

Interface-driven Phenomena in Solids: Thermodynamics, Kinetics and Chemistry — Phase Transitions

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

Thursday PM Room: 108
February 18, 2016 Location: Music City Center

Session Chair: Fadi Abdeljawad, Sandia National Laboratories

2:00 PM Invited

Grain Boundary Adsorption Transition and Their Influence on Mass Transport and Microstructural Evolution: *Shen Dillon*¹; ¹University of Illinois at Urbana-Champaign

2:40 PM

The Temperature Dependence of Grain Boundary Energy in Yttria-doped Alumina: Effect of a Complexion Transition: *Madeleine Kelly*¹; Gregory Rohrer¹; ¹Carnegie Mellon University

3:00 PM

HREM Studies on the Nature of Morphological Changes in (110) Grain Boundaries of Silicon Phase Found in Sr-induced Al-Si Eutectic Alloys: *Mohammad Shamsuzzoha*¹; ¹University of Alabama

3:20 PM

Kinetics of Phase Transformation during Lithiation of Sn Electrode Materials: *Eric Chason*¹; Chun-Hao Chen¹; Srivatsan Hulikal¹; Allan Bower¹; Pradeep Guduru¹; ¹Brown University

3:40 PM Break

4:00 PM

The Atomistic Mechanism of Interface Migration during a Diffusional Structural Phase Transition: Tao Yang¹; Yipeng Gao²; Dong Wang¹; Zhen Chen³; Yunzhi Wang²; ¹Xi'an Jiaotong University; ²The Ohio State University; ³Northwestern Polytechnical University

4:20 PM

The Role of Interfaces for Structural Transformations Among Austenite, Ferrite and Cementite in Fe-C Alloys: Xie Zhang¹; Tilmann Hickel¹; Jutta Rogal²; Joerg Neugebauer¹; ¹Max-Planck-Institut fuer Eisenforschung GmbH; ²Interdisciplinary Centre for Advanced Materials Simulation

4:40 PM

Allotropic HCP to BCC Ti Transitions in Ti/BCC Multilayered Thin Films: *Li Wan*¹; Xiao-xiang Yu¹; Gregory Thompson¹; ¹The University of Alabama

5:00 PM

Periodic Layers Structure in Mg/SiO₂ System Created in the Solid State: *Joanna Wojewoda-Budka*¹; Anna Wierzbicka-Miernik¹; Lidia Litynska-Dobrzynska¹; Boguslaw Onderka¹; ¹Polish Academy of Sciences

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

Sponsored by: TMS Structural Materials Division, TMS: Nuclear Materials Committee

Program Organizers: Ramprashad Prabhakaran, Pacific Northwest National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research; Clarissa Yablinsky, Los Alamos National Laboratory

Thursday PM Room: 101A
February 18, 2016 Location: Music City Center

Session Chair: Isabella Van Rooyen, Idaho National Laboratory

2:00 PM

Characterization of Thermal Aging Embrittlement of Cast Duplex Stainless Steels by Mechanical Testing and FEM Modeling: *Samuel Schwarm*¹; R. Prakash Kolli¹; Sarah Mburu¹; Daniel Perea²; Sreeramamurthy Ankem¹; ¹University of Maryland, College Park; ²Pacific Northwest National Laboratory

2:20 PM

Development of Engineering Parameters for Low Pressure Diffusion Bonds of 316 SS Tube-to-Tube Sheet Joints for FHR Heat Exchangers: *Nils Haneklaus*¹; Rony Reuven; Cristian Cionea¹; Peter Hosemann¹; Per F. Peterson¹; ¹University of California, Berkeley

2:40 PM

SiC/SiC Composites for Current and Advanced Reactors: *David Frazer*¹; Joanna Szornel¹; Julie Tucker²; David Cahill³; Christian Deck⁴; Christina Back⁴; Kurt Terrani⁵; Steve Roberts⁶; David Armstrong⁷; Peter Hosemann¹; ¹University of California, Berkeley; ²Oregon State University; ³University of Illinois, Urbana Champaign; ⁴General Atomics; ⁵Oak Ridge National Laboratory; ⁶University of Oxford; ⁷University of Oxford

3:00 PM

Helium Behavior after Thermal Treatment in V and Fe-based Systems: *Sofia Maria Gorondy Novak*¹; François Jomard²; Michael Walls³; Nathalie Brun³; Frédéric Prima⁴; Hélène Lefaix-Jeuland¹; ¹CEA; ²Groupe d'Etude de la Matière Condensée (CNRS and Université de Versailles Saint-Quentin-en-Yvelines); ³Laboratoire de Physique des Solides (Université Paris-Sud); ⁴Institut de Recherche de Chimie Paris, CNRS – Chimie ParisTech

3:20 PM Break

3:40 PM

Microstructural Characterization of Creep-Fatigue Interactions in 9Cr-1MoV Steel and Welds: *Harrison Whitt*¹; Tyler Payton¹; Wei Zhang¹; Michael Mills¹; ¹The Ohio State University

4:00 PM

Thermomechanical Processing and Microstructural Evolution of Alloy 690, and Its Effects on Stress Corrosion Cracking: *Cody Miller*¹; Michael Kaufman¹; ¹Colorado School of Mines

4:20 PM

Investigation of Thermal Conductivity in Ion Irradiated Samples Using Laser Based Thermoreflectance Methods: *M Faisal Riyad*¹; Vinay Chauhan¹; Ahmed Gashgash¹; Xinpeng Du¹; Changdong Wei¹; Marat Khafizov¹; ¹The Ohio State University

4:40 PM

Mitigation of IASCC Susceptibility in a BWR-irradiated 304L Stainless Steel Utilizing Post-irradiation Annealing: Justin Hesterberg¹; Zhijie Jiao¹; Maxim Gussev²; Jeremy Busby²; Gary Was¹; ¹University of Michigan; ²Oak Ridge National Laboratory

5:00 PM

Mechanical and Microstructural Characterization of Some High Fluence Intermediate Flux Neutron Irradiated Reactor Pressure Vessel Steels:

*Nathan Almirall*¹; Peter Wells¹; Takuya Yamamoto¹; David Gragg¹; Kirk Fields¹; G. Robert Odette¹; Randy Nanstad²; Keith Wilford³; Ian Edmonds³; ¹University of California Santa Barbara; ²Oak Ridge National Laboratory; ³Rolls-Royce

Phase Transformations and Microstructural Evolution — Phase Transformations - Characterization and Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee

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

Thursday PM Room: 107B
February 18, 2016 Location: Music City Center

Session Chair: Michael Mills, The Ohio State University

2:00 PM

High Temperature Microstructural Evolution of Ni-Co-Al-Ti-Cr Alloys Studied by In-situ Neutron Diffraction: *Katerina Christofidou*¹; Nicholas Jones¹; Roxana Flacau²; Mark Hardy³; Howard Stone¹; ¹University of Cambridge; ²Canadian Neutron Beam Centre; ³Rolls Royce plc

2:30 PM

A Study of Phase Equilibria and Interdiffusion in Iron-based Alloy Systems Using Diffusion Multiples: *Christopher Eastman*¹; Ji-Cheng Zhao²; ¹TimkenSteel Corporation, The Ohio State University; ²The Ohio State University

3:00 PM

Application of Dual-anneal Diffusion-multiple (DADM) Approach to Studies of Phase Transformations: *Changdong Wei*¹; Siwei Cao¹; Ji-cheng Zhao¹; ¹The Ohio State University

3:20 PM

In Situ Analysis of Microstructural Evolution during the Devitrification of Amorphous Tantalum Films: Olivia Donaldson¹; Khalid Hattar²; Jason Trelewicz¹; ¹Stony Brook University; ²Sandia National Laboratories

3:40 PM Break

4:00 PM

Atomic Resolution Energy Dispersive Spectroscopy of η Phase Formation Along SESFs in a Ni-Based Disk Alloy: *Tim Smith*¹; Robert Williams¹; Bryan Esser¹; Nikolas Antolin¹; Wolfgang Windl¹; David McComb¹; Hamish Fraser¹; Michael Mills¹; ¹The Ohio State University

4:30 PM

Determine Crystallographic Orientation Relationship and Orientation of Planar and Linear Features by Electron Microscopy: *Qingfeng Xing*¹; Thomas Lograsso¹; ¹Ames Laboratory

Ultrafine Grained Materials IX — Novel Thermomechanical Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee

Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday PM Room: 209B
February 18, 2016 Location: Music City Center

Session Chairs: Enrico Bruder, TU Darmstadt; Seok-Woo Lee, University of Connecticut

2:00 PM Invited

Grain Refinement and Post Processing Phenomena in Hydrostatically Extruded Materials: *Malgorzata Lewandowska*¹; Witold Chrominski¹; Agnieszka Krawczynska¹; Piotr Bazarnik¹; ¹Warsaw University of Technology

2:20 PM

Friction Consolidation Processing of n-Type Bismuth-Telluride Thermoelectric Material: *Scott Whalen*¹; ¹Pacific Northwest National Laboratory

2:40 PM

SPD of Binary Al-Mg Alloys Pre-processed by Continuous Screw Extrusion: *Kristian Skorpen*¹; Hans Jørgen Roven¹; Oddvin Reiso²; ¹The Norwegian University of Science and Technology (NTNU); ²Hydro Aluminium AS

3:00 PM

Two Different Pathways to Produce Novel Cu-based Nanostructured Alloys with Enhanced Strength and Ductility: Keith Dusoe¹; Thomas Bissell¹; Sriram Vijayan¹; Mark Aindow¹; *Seok-Woo Lee*¹; ¹University of Connecticut

3:20 PM Break

3:40 PM

Beneficial and Detrimental Effects of Heat Treatments on the Formability of Ultrafine Grained Steel: *Enrico Bruder*¹; Vanessa Kaune²; Anton Hohenwarter³; Clemens Müller¹; ¹TU Darmstadt; ²Dr. Robert-Murjahn-Institut GmbH; ³Erich Schmid Institute of Materials Science

4:00 PM

Scaling-up of High-pressure Sliding: Production of High Strength and Superplasticity of Metallic Materials: *Yoichi Takizawa*¹; Kazushige Fujimitsu¹; Takahiro Masuda¹; Takahiro Kajita¹; Kyohei Watanabe¹; Manabu Yumoto²; Yoshiharu Otagiri²; Zenji Horita¹; ¹Kyushu University; ²Nagano Forging Co., Ltd

4:20 PM

Roadmap for Tailoring the Strength and Ductility of Ferritic/Martensitic T91 Steel via Thermo-mechanical Treatment: *Miao Song*¹; Cheng Sun²; Zhe Fan¹; Youxing Chen¹; Ruixian Zhu¹; Kaiyuan Yu³; Karl Hartwig¹; Haiyan Wang¹; Xinghang Zhang¹; ¹Texas A&M University; ²Los Alamos National Laboratory; ³China University of Petroleum-Beijing

4:40 PM

Review of Bake Hardening Mechanisms of Ultra Fine Grained and Coarse Grained Low Carbon Steel Sheets: *Uma Gupta*¹; V.K. Sharma¹; M.K. Banerjee¹; ¹MNIT Jaipur

Ultrafine Grained Materials IX — Student Oral Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee

Program Organizers: Suveen Mathaudhu, University of California Riverside; Irene Beyerlein, Los Alamos National Laboratory; Roberto Figueiredo, Federal University of Minas Gerais; Zenji Horita, Kyushu University; Megumi Kawasaki, Hanyang University; Qizhen Li, Washington State University; Hans Roven, Norwegian University of Science and Technology (NTNU); Timothy Rupert, University of California, Irvine

Thursday PM Room: 209A
February 18, 2016 Location: Music City Center

Session Chairs: Malgorzata Lewandowska, Warsaw University of Technology; Kaveh Edalati, Kyushu University

2:00 PM

Hydrogen Generation Behavior of Ultrafine Grained Al Alloys in Pure Water after Processing by High-pressure Torsion: *Fan Zhang*¹; Kaveh Edalati¹; Makoto Arita¹; Zenji Horita¹; ¹Kyushu University

2:20 PM

Deformation Mechanisms and Microstructural Evolution in Cu-Ag Alloys Produced by High-pressure Torsion: *Karoline Kormout*¹; Zaoli Zhang¹; Bo Yang; Reinhard Pippan¹; ¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

2:40 PM

Development of Dislocation Structures in Hydrostatically Extruded Pure Aluminium: *Witold Chorminski*¹; Malgorzata Lewandowska¹; ¹Warsaw University of Technology

3:00 PM

Effects of Severe Plastic Deformation on the Grain and Precipitate Structures in Beta Ti Alloys: *Ahmad Zafari*¹; Wei Xu²; Kenong Xia¹; ¹The University of Melbourne; ²RMIT University

3:20 PM Break

3:40 PM

Tungsten Processed by ECAE: *Zachary Levin*¹; K. Ted Hartwig¹; ¹Texas A&M University

4:00 PM

Twinning and Spall of Nanocrystalline Tantalum: *Eric Hahn*¹; Diego Tramontina²; Eduardo Bringa²; Marc Meyers¹; ¹UCSD; ²Universidad Nacional de Cuyo

4:20 PM

Mechanical Behavior of Ultrafine Grained High-Mn Steels Containing Nano-scale Oxides: *Jonggyu Jeon*¹; Seungjin Nam¹; Hyunjoo Choi¹; ¹Kookmin University

4:40 PM

Flow Characteristics of Ultrafine Grained Zircaloy-4 Processed by Mutiaxial Forging: *Devasri Fuloria*¹; Nikhil Kumar¹; R. Jayaganthan¹; S. Jha²; D. Srivastava³; ¹IIT Roorkee; ²NFC, Hyderabad; ³Materials Science Division, Bhabha Atomic Research Centre

5:00 PM

Mechanical Properties and Deformation Behavior of High-Mn Austenitic Steels with Fully Recrystallized Ultrafine Grained Structure: *Hiroki Kitamura*¹; Yu Bai¹; Yanzhong Tian²; Rajib Saha³; Akinobu Shibata¹; Nobuhiro Tsuji¹; ¹Kyoto University; ²Chinese Academy of Science; ³Tata Steel

2016 Functional Nanomaterials: Emerging Nanomaterials and Techniques for 3D Architectures — Poster Session

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

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

Session Chairs: Terry Xu, UNC Charlotte; Jiyoung Kim, University of Texas; Jung-Kun Lee, University of Pittsburgh; Vinu Unnikrishnan, The University of Alabama; Nitin Chopra, The University of Alabama

V-1: A New Method to Produce CQDs by a One-step Thermal Decomposition: *Li Dong*¹; Hong-Yi Li¹; ¹Chongqing University

V-2: Facile Synthesis of Water-soluble Graphene Quantum Dots/Graphene Hybrid Nanoplatelets as Efficient Photodetector: *J. Walden*¹; *Sanju Gupta*¹; ¹Western Kentucky University

V-3: Laser-Assisted Purification of Electron-Beam-Induced Deposits: *Michael Stanford*¹; Brett Lewis¹; Joo Hyon Noh¹; Jason Fowlkes¹; Philip Rack¹; ¹University of Tennessee

V-4: Study of Radiation Grafting Polymerization of Poly (Acrylic Acid) onto Carbon Nanotubes Yarns Surface: *Maria Cecilia Evora*¹; Xinyi Lu²; Namgoo Kang²; Kunlun Hong³; Roberto Uribe⁴; Jimmy Mays²; ¹Instituto de Estudos Avançados; ²University of Tennessee; ³Oak Ridge National Laboratory; ⁴Kent State University

V-5: Effect of Calcinating Temperature on the Structure and Performance of Fayalite@C Nanocomposites as Anode for Lithium Ion Battery: *Qingtang Zhang*¹; Langlang Liu¹; Songwang Ge¹; ¹School of Petrochemical Engineering, Lanzhou University of Technology

V-6: Thermal Enhancement with Multi-Walled Carbon Nanotubes in Transient Heating Applications: *Karen Supan*¹; Celeste Robert¹; Stephen Bartolucci²; ¹Norwich University; ²US Army Benet Laboratories - ARDEC

2016 Technical Division Student Poster Competition — Extraction and Processing Division (EPD) Graduate Students

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

SPG-1: Isothermal Reduction Behavior of CF(calcium ferrite) with Addition of Al₂O₃: *Cheng Yi Ding*¹; ¹Chongqing University

SPG-2: Low Energy Method to Separate Magnetite Generated by Reduction of Bauxite Residue: *Sumedh Gostu*¹; Brajendra Mishra²; ¹Colorado School of Mines; ²Worcester Polytechnic Institute

SPG-3: Non-isothermal Crystallization Behavior of CF with Addition of SiO₂: *Cheng Yi Ding*¹; ¹Chongqing University

SPG-4: On the Effect of Mo on Austenite-ferrite Transformation Kinetics: *Jianing Zhu*¹; Hao Chen¹; Kangying Zhu²; Zhigang Yang¹; Chi Zhang¹; ¹Tsinghua University; ²Acelor Mittal

SPG-5: Solvent Extraction of Lanthanum (III) Using PC-88A Extractant Diluted in Kerosene: *Vivek Agarwal*¹; Jennifer Galvin¹; Mohammad Sadegh Safarzadeh¹; John Bendler¹; ¹South Dakota School of Mines and Technology