TMS 2018

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PRELIMINARY TECHNICAL PROGRAM

The content in this preliminary program was generated on November 30. However, changes are still being implemented for the technical program. Please refer to the online session sheets for the most up-to-date information.

Please note that Monday programming start and end times differ slightly from the rest of the week. Programming will begin at 8:00 (rather than 8:30) and end at 6:00 (rather than 5:30) that day in order to accommodate a one-hour, all-conference plenary session on Monday at lunch time

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March 11–15, 2018 • Phoenix Convention Center • Phoenix, Arizona, USA

TMS2018

147th Annual Meeting & Exhibition

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ANNOUNCING OUR ALL-CONFERENCE PLENARY

Monday, March 12, Noon to 1:00 p.m.

DEFINING THE FUTURE OF MATERIALS AND MANUFACTURING INNOVATION

This special session with Tesla and SpaceX leadership will explore potential futures for the automotive and aerospace industries and discuss the need for new and innovative materials that can make game-changing advances possible.

FEATURED SPEAKER: CHARLIE KUEHMANN

Charlie Kuehmann currently leads the materials engineering organizations at both Tesla and SpaceX, driving material solutions to enable the world's transition to a sustainable future, the commercialization of space, and a multi-planetary civilization.

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Symposium and Session	Day	Time	Room	Page
Additive Technologies				
Additive Manufacturing Joint Keynote Session				
Joint Keynote Session	MON PM	2:30 PM	231ABC	48
Additive Manufacturing of Metals: Establishing Location Specific Processing-Microstructure-Property Relationships III				
Additive Manufacturing: A Revolution in Materials Processing	MON AM	8:00 AM	230	23
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	225
Mechanical Behavior of Additively Manufactured Materials	TUE AM	8:30 AM	230	73
High Temperature Alloys and Properties	TUE PM	2:00 PM	230	102
Post-build Thermal Processing: Effects on Microstructure and Properties	WED AM	8:30 AM	230	131
Emerging Materials and Processes	WED PM	2:00 PM	230	161
Modeling of Additive Manufacturing Processes	WED PM	2:00 PM	232A	161
Additive Manufacturing of Advanced Light-weight Materials	THU AM	8:30 AM	230	189
Advanced Characterization and Innovative Applications	THU PM	2:00 PM	230	209
Additive Manufacturing of Metals: Fatigue and Fracture				
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Additive Manufacturing: Building the Pathway towards Process and Material Qualification				
High Speed Imaging in Additive Manufacturing	MON AM	8:00 AM	231A	24
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Beam Line Science in Additive Manufacturing	TUE AM	8:30 AM	231A	74
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Metals in Additive Manufacturing I	WED AM	8:30 AM	231A	132
Metals in Additive Manufacturing II	WED PM	2:00 PM	231A	162
Qualification in Additive Manufacturing	THU AM	8:30 AM	231A	189
Advances in Additive Manufacturing of Titanium and Titanium Based Alloys				
Overview of Additive Manufacturing for Titanium Alloys	MON AM	8:00 AM	231C	27
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Solidification and Microstructure I	TUE PM	2:00 PM	231C	105
ICME for Additive Manufacturing	WED AM	8:30 AM	231C	134
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Design of Aluminum Alloys	THU AM	8:30 AM	232B	193
Design of Ni and Fe Alloys	THU PM	2:00 PM	232B	210
Application of Solidification Fundamentals to Challenges in Metal Additive Manufacturing				
Process to Microstructure Relationships	MON AM	8:00 AM	232B	28
Advanced Characterization	TUE AM	8:30 AM	232B	79
Solidification Modeling	TUE PM	2:00 PM	232B	107
Multi-material Additive Manufacturing: Processing and Materials Design				
Functionally Graded Metals and Composites	TUE AM	8:30 AM	232C	94
Architectured and Mesostructured Materials	TUE PM	2:00 PM	232C	123
Non-beam Based and Emerging AM Technologies for Metals	WED AM	8:30 AM	232C	153
Extrusion, Stereolithography, Binder Jetting, and Others	WED PM	2:00 PM	232C	183
Materials Processing				
9th International Symposium on High Temperature Metallurgical Processing				
Energy-efficient and Clean Metallurgical Technology	MON AM	8:00 AM	227B	22
Simulation and Modeling of High Temperature Metallurgical Process	MON PM	2:30 PM	227B	47
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Poster Session II	MON EVE	6:00 PM	Exhibit Hall E	223
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Fundamental Research on High Temperature Metallurgical Processing	TUE PM	2:00 PM	227B	100
Extraction and Recovery of Metals	WED AM	8:30 AM	227B	129
Treatment and Recycling of Metallurgical Slag/Solid Wastes	WED PM	2:00 PM	227B	159
Ironmaking, Steelmaking and Casting	THU AM	8:30 AM	227B	188
Agglomeration and Direct Reduction of Complex Iron Ores	THU PM	2:00 PM	227B	209
CFD Modeling and Simulation in Materials Processing				
Casting and Solidification I	MON AM	8:00 AM	228B	29
Casting and Solidification II	MON PM	2:30 PM	228B	53
Processing I	TUE AM	8:30 AM	228B	82
Processing II	TUE PM	2:00 PM	228B	110
Processing III	WED AM	8:30 AM	228B	141
Materials Processing Fundamentals				
Steelmaking - Processing	MON AM	8:00 AM	228A	40

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Alloy Processing and Properties Modeling	TUE PM	2:00 PM	228A	122
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Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals				
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Aluminium Powder Metallurgy and Composites	TUE PM	2:00 PM	225A	125
Porous Metal Materials	WED AM	8:30 AM	225A	156
Powder Metallurgy Processes of Various Materials	WED PM	2:00 PM	225A	185
Titanium Powder Metallurgy and Additive Manufacturing I	THU AM	8:30 AM	225A	206
Titanium Powder Metallurgy and Additive Manufacturing II	THU PM	2:00 PM	225A	220
Rare Metal Extraction & Processing				
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Rare Earth Elements II and Platinum Group Metals	MON PM	2:30 PM	227C	68
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Ti, V, Mo & W	TUE PM	2:00 PM	227C	126
Mechanics & Structural Reliability				
Coupling Experiments and Modeling to Understand Plasticity and Failure				
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Plasticity Induced Damage	TUE AM	8:30 AM	126B	86
Dislocation Scale Plasticity	TUE PM	2:00 PM	126B	113
Plasticity in HCP Alloys	WED AM	8:30 AM	126B	145
Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys				
1A: Grain Size Development During Forging & Heat Treatment in Ni-based Superalloys. 1B: Recrystallization & Grain Growth Ni-based Superalloys.	MON AM	8:00 AM	126A	34
2A: Precipitation Dissolution, Liquation in & Welding of Ni-based Superalloys. 2B: Effects of Ordering and Precipitate Behavior in Ni-based Superalloys.	MON PM	2:30 PM	126A	57
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3A: Characterising Strain Localization in Ni-based Superalloys. 3B Characterization & Understanding of Deformation in Ni-based Superalloys.	TUE AM	8:30 AM	126A	86

Symposium and Session	Day	Time	Room	Page
4A: Characterization of Creep Deformation & Damage in Ni-based Superalloys. 4B: Characterization of Creep or Fatigue Deformation & Damage in Ni-based Superalloys	TUE PM	2:00 PM	126A	114
5A: Fe-based Superalloy Development & Properties. 5B: Deformation & Damage in Fe and Ni-based Superalloys	WED AM	8:30 AM	126A	146
6A:Ni-based Superalloy Development & Properties. 6B: Microstructure & Properties of Co-based Superalloys.	WED PM	2:00 PM	126A	175
Dynamic Behavior of Materials VIII				
Effect of Microstructure of Dynamic Response I	MON AM	8:00 AM	127B	35
Energetic Materials	MON PM	2:30 PM	127B	58
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	230
Dynamic Response of BCC Materials	TUE AM	8:30 AM	127B	87
Effect of Microstructure of Dynamic Response II	TUE PM	2:00 PM	127B	115
Dynamic Response of HCP Materials	WED AM	8:30 AM	127B	146
Effect of Microstructure of Dynamic Response III	WED PM	2:00 PM	127B	176
Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention				
Data-driven Investigations of Fatigue	MON AM	8:00 AM	125B	36
Multiscale Modeling Approaches to Improve Fatigue Predictions	MON PM	2:30 PM	125B	60
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	231
Multi-mechanical Interactions During Extreme Environment Fatigue Loadings	TUE AM	8:30 AM	125B	88
Relationships among Processing, Microstructure, and Fatigue Properties	TUE PM	2:00 PM	125B	116
Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D	WED AM	8:30 AM	125B	147
Fatigue Behaviors in Engineering Materials	WED PM	2:00 PM	125B	177
Fracture: 65 Years after the Weibull Distribution and the Williams Singularity				
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Poster Session	MON EVE	6:00 PM	Exhibit Hall E	231
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Thermo-mechanical Response of Materials with Special Emphasis on In-situ Techniques				
High Temperature Mechanical Properties of Materials I	TUE AM	8:30 AM	101A	99
High Temperature Mechanical Properties of Materials II	TUE PM	2:00 PM	101A	128
In-Situ TEM/SEM Nanomechanics	WED AM	8:30 AM	101A	157
Nanomechanics with Synchrotron Diffraction	WED PM	2:00 PM	101A	187

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Stress Corrosion Cracking II	WED AM	8:30 AM	105A	147
Environmental Degradation of Structural Materials	WED PM	2:00 PM	105A	176
Environmentally Assisted Cracking in Aluminum Alloys	THU AM	8:30 AM	102A	201
High Temperature Corrosion of Structural Materials				
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Ni-base Alloys and Corrosive Environments at Elevated Temperatures	WED AM	8:30 AM	227C	149
Fe-base Alloys, Effect of CO2, and Coatings	WED PM	2:00 PM	227C	179
Hot Corrosion, Materials Developed for Corrosive Environments at Elevated Temperatures, and Ti-alloys I	THU AM	8:30 AM	227C	203
Hot Corrosion, Materials Developed for Corrosive Environments at Elevated Temperatures, and Ti-alloys II	THU PM	2:00 PM	227C	217
Surface Engineering for Improved Corrosion Resistance				
Session I	MON PM	2:30 PM	227A	69
Session II	TUE AM	8:30 AM	227A	98
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Nuclear Materials				
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Mechanical Behavior and Technique Development	WED AM	8:30 AM	102A	130
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ATF Program Overview	MON AM	8:00 AM	104A	23
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Poster Session	MON EVE	6:00 PM	Exhibit Hall E	224
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Coupling Advanced Characterization and Modeling Tools for Understanding Fundamental Phase Transformation Mechanisms: An MPMD Symposium in Honor of Hamish Fraser				
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Computational Thermodynamic Approaches	TUE PM	2:00 PM	127C	119
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Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao				
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Structure of Non-equilibrium Grain Boundaries	MON PM	2:30 PM	125A	66
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Phase Transformation Across Multiscale Material Interfaces				
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Special Topics in Phase Transformations I	WED AM	8:30 AM	124B	156
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Light Metals				
2018 Light Metals Keynote				
Sustainability in the Aluminum Industry: Climate Neutral Industry with Zero Emissions and Zero Waste?	MON AM	8:00 AM	222ABC	22
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Digestion and Precipitation	MON PM	2:30 PM	221A	51
Fundamentals, Product Quality, Efficiency and Modeling	TUE AM	8:30 AM	221A	78
Valorisation of Bayer Process Residues: Red Mud Treatment and Scandium Extraction	WED AM	8:30 AM	221A	136
Processing of Low Grade Bauxite: Flotation and Pretreatment	WED PM	2:00 PM	221A	166
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Poster Session II - Characterizations of Aluminum Alloys	MON EVE	6:00 PM	Exhibit Hall E	227
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Aluminum Alloy Development	TUE PM	2:00 PM	221B	107
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Simulations and Studies of Processing	WED PM	2:00 PM	221B	166
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Aluminum Reduction Technology				
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Poster Session	MON EVE	6:00 PM	Exhibit Hall E	227
Joint Session: Alumina Quality	TUE PM	2:00 PM	221C	107
Cell Design & Modelling	WED AM	8:30 AM	221C	137

Symposium and Session	Day	Time	Room	Page
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Poster Session	MON EVE	6:00 PM	Exhibit Hall E	228
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Casting and Cast House Products	THU AM	8:30 AM	222A	196
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Cast Shop Technology: Energy Joint Session				
Cast Shop Technology: Energy Joint Session	TUE AM	8:30 AM	222A	81
Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session				
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Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session	WED PM	2:00 PM	222A	169
Cast Shop Technology: Recycling and Sustainability Joint Session				
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	228
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Electrode Technology Symposium for Aluminum Production				
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Joint Session with Aluminum Reduction	TUE AM	8:30 AM	222C	87
Anode Materials and Properties	TUE PM	2:00 PM	222C	115
Cathode Materials and Properties	WED AM	8:30 AM	222C	146
Anode Forming and Baking	WED PM	2:00 PM	222C	176
Environmental Challenges and Opportunities for the Magnesium Industry: Recycling and Sustainability Joint Session				
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Magnesium Alloy Development: An LMD Symposium in Honor of Karl Kainer				
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	231
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Wrought Alloys	TUE PM	2:00 PM	223	120
Degradation and Microstructure	WED AM	8:30 AM	223	151
Magnesium Technology 2018				
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Poster Pitches	MON PM	4:30 PM	224A	63

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Deformation Mechanisms	THU AM	8:30 AM	224A	203
Thermo-Mechanical Processing	THU PM	2:00 PM	224A	218
Scandium Extraction and Use in Aluminum Alloys				
Scandium Extraction	MON PM	2:30 PM	222B	69
Aluminium Scandium Alloys	TUE AM	8:30 AM	222B	98
Characterization				
Advanced Characterization Techniques for Quantifying and Modeling Deformation				
Local Strain & Misorientation I	MON AM	8:00 AM	122B	25
Local Strain & Misorientation II	MON PM	2:30 PM	122B	48
Damage / Phase Transformation Plasticity	TUE AM	8:30 AM	122B	74
Dislocations and Planar Faults	TUE PM	2:00 PM	122B	103
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	234
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Advanced Real Time Optical Imaging				
Iron and Steelmaking I	WED AM	8:30 AM	123	134
High Temperature Phenomena	WED PM	2:00 PM	123	164
Iron and Steelmaking II	THU AM	8:30 AM	123	192
Iron and Steelmaking III	THU PM	2:00 PM	123	210
Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials				
General Methods and Development	TUE AM	8:30 AM	124A	79
Novel Applications and Modelling	TUE PM	2:00 PM	124A	108
Light-weight Alloys	WED AM	8:30 AM	124A	138
Fe-based Alloys and High-entropy Alloys	WED PM	2:00 PM	124A	167
Nuclear Materials	THU AM	8:30 AM	124A	194
Characterization of Minerals, Metals, and Materials				
Characterization Methods	MON AM	8:00 AM	122C	29
Characterization of Non-ferrous Metals	MON AM	8:00 AM	124B	30
Characterization of Ceramics	MON PM	2:30 PM	122C	54
Microstructure and Performance of Materials	MON PM	2:30 PM	124B	54
Characterization and Uses of Metallurgical Slags	TUE AM	8:30 AM	122C	82

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Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	237
Analysis of Surfaces and Interfaces	WED AM	8:30 AM	122C	141
Characterization Methods II	WED PM	2:00 PM	122C	170
Characterization of Powder Materials	WED PM	2:00 PM	125A	170
Mechanical Behaviors of Materials	WED PM	2:00 PM	126B	171
Characterization of Ferrous Materials	THU AM	8:30 AM	122C	196
Mineral Processing and Analysis	THU AM	8:30 AM	125A	197
Nanostructure and Characterization of Materials	THU AM	8:30 AM	126B	197
Thermal Processing and Analysis	THU PM	2:00 PM	122C	213
Nanostructured Materials				
2018 Symposium on Functional Nanomaterials: Emerging Nanomaterials and Nanotechnology				
3D Structures and Hybrid Materials	MON AM	8:00 AM	101B	22
2D Nanoelectronics	MON PM	2:30 PM	101B	46
Nanomaterials for Environmental and Energy Applications	TUE AM	8:30 AM	101B	71
Design and Synthesis of 2D Materials	TUE PM	2:00 PM	101B	100
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	234
Nanomaterials, Characterization, and Applications	WED AM	8:30 AM	101B	129
Joint with Bio-Nano Interface Engineering and Applications Symposium	WED PM	2:00 PM	101B	159
Frontiers in Advanced Functional Thin Films and Nanostructured Materials				
Session I	MON AM	8:00 AM	103A	37
Session II	MON PM	2:30 PM	103A	60
Session III	TUE AM	8:30 AM	103A	89
Session IV	TUE PM	2:00 PM	103A	117
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	241
Mechanical Behavior at the Nanoscale IV				
Nanoporous Materials and Thin Films	MON AM	8:00 AM	101C	41
Twinning at the Nanoscale	MON PM	2:30 PM	101C	65
Nanolayers and Nanocomposites	TUE AM	8:30 AM	101C	93
2D and Unique Structured Materials	TUE PM	2:00 PM	101C	122
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	245
Material Properties in Small Dimensions	WED AM	8:30 AM	101C	152
Temperature, Rate and Environmental Effects	WED AM	8:30 AM	103A	153
Damage, Failure and Fracture	WED PM	2:00 PM	101C	183

Symposium and Session	Day	Time	Room	Page
Crystallite Effects and the Nanoscale	THU AM	8:30 AM	101C	205
Atomistic Simulations	THU PM	2:00 PM	101C	219
Nanocomposites V: Structure-Property Relationships in Nanostructured Materials				
Nanolaminates	MON AM	8:00 AM	102C	42
Nanostructures and Polymer Nanocomposites	MON PM	2:30 PM	102C	66
Nanocarbon/Metal Composites	TUE AM	8:30 AM	102C	95
Metallic and Ceramic Nanocomposites	TUE PM	2:00 PM	102C	124
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	245
Metal Matrix Nanocomposites	WED AM	8:30 AM	102C	154
Surface Interactions in Materials				
Chemical and Physical Interactions	MON AM	8:00 AM	101A	45
Physical and Mechanical Interactions	MON PM	2:30 PM	101A	70
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	247
Thermal and Mechanical Stability of Nanocrystalline Materials				
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	234
Thermal Stability of Nanocrystalline Metals I	TUE PM	2:00 PM	128B	127
Thermal Stability of Nanocrystalline Metals II	WED AM	8:30 AM	128B	157
Joint Session with Non-equilibrium Features of Grain Boundaries	WED PM	2:00 PM	128B	186
Mechanical Stability and Deformation Behavior	THU AM	8:30 AM	128B	207
Nanotwin and Oxide Induced Stabilization	THU AM	8:30 AM	127C	207
Composites and Heterophase Interfaces	THU PM	2:00 PM	128B	221
Ultrafine-Grained Materials X				
Pioneers of ECAE/ECAP and HPT	MON AM	8:00 AM	103B	46
Pioneers of Alternative SPD Methods	MON PM	2:30 PM	103B	70
Temperature Effects and Thermal Stability	TUE AM	8:30 AM	103B	99
Early Career Scientist	TUE PM	2:00 PM	103B	128
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	247
Grain Boundary Diffusion and Migration: Joint Session with Non-Equilibrium Features on Grain Boundaries	WED AM	8:30 AM	125A	158
Rolling Studies	WED AM	8:30 AM	103B	158
Radiation Tolerance and Particulate Approaches	WED PM	2:00 PM	102C	187
Surface Processing and Twinning Phenomena	WED PM	2:00 PM	103B	188
High Pressure Torsion and Equal Channel Angular Extrusion/ Pressing Studies	THU AM	8:30 AM	103B	208
Texture Studies and Microstructural Evolution	THU AM	8:30 AM	102C	208
Bulk Processing and Applications	THU PM	2:00 PM	103B	222

Symposium and Session	Day	Time	Room	Page
Advanced Materials				
Advanced High-Strength Steels				
High Mn Steels	MON AM	8:00 AM	121C	25
Quenching and Partitioning (Q&P) Steels	MON PM	2:30 PM	121C	49
1st Generation AHSS	TUE AM	8:30 AM	121C	75
Medium Mn Steels	TUE PM	2:00 PM	121C	104
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	235
Hydrogen Embrittlement, Fracture and Damage	WED AM	8:30 AM	121C	133
Phase Transformation and Thermo-mechanical Processing	WED PM	2:00 PM	121C	163
Bainitic and Stainless Steels	THU AM	8:30 AM	121C	190
Bulk Metallic Glasses XV				
Alloy Development and Application I	TUE AM	8:30 AM	122A	81
Structures and Mechanical Properties I	TUE PM	2:00 PM	122A	109
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	236
Alloy Development and Application II	WED AM	8:30 AM	122A	140
Structures and Mechanical Properties II	WED PM	2:00 PM	122A	169
Structures and Modeling	THU AM	8:30 AM	122A	195
Modeling and Thermal Properties	THU PM	2:00 PM	122A	212
Structures and Characterization	THU PM	2:00 PM	121C	213
High-Entropy Alloys VI				
Alloy Development and Applications I	MON AM	8:00 AM	121B	37
Thermal and Other Properties I	MON AM	8:00 AM	122A	38
Alloy Development and Applications II	MON PM	2:30 PM	121B	61
Thermal and Other Properties II	MON PM	2:30 PM	122A	61
Structures and Mechanical Properties I	TUE AM	8:30 AM	121B	89
Structures and Mechanical Properties II	TUE PM	2:00 PM	121B	118
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	243
Structures and Characterization I	WED AM	8:30 AM	121A	148
Structures and Modeling I	WED AM	8:30 AM	121B	149
Mechanical and Other Properties I	WED PM	2:00 PM	121B	178
Structures and Characterization II	WED PM	2:00 PM	121A	178
Mechanical and Other Properties II	THU AM	8:30 AM	121A	202
Structures and Modeling II	THU AM	8:30 AM	121B	202
Alloy Development and Applications III	THU PM	2:00 PM	121B	216
Mechanical and Other Properties III	THU PM	2:00 PM	121A	217

Symposium and Session	Day	Time	Room	Page
Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr.				
Aluminum and Lightweight Metal Matrix Composites	MON AM	8:00 AM	121A	41
Synthesis and Developments of Emerging Composites	MON PM	2:30 PM	121A	65
Basic History and Advances in Metal Matrix Composites	TUE AM	8:30 AM	121A	94
Mechanical Behavior of Metal Matrix Composites	TUE PM	2:00 PM	121A	123
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	245
Refractory Metals 2018				
Refractory Metal Silicides and Composites	MON AM	8:00 AM	124A	45
Refractory Metals and Alloys	MON PM	2:30 PM	124A	69
Electronic Materials				
Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder				
3D Microelectronic Packaging	MON AM	8:00 AM	226C	26
Quality and Reliability of Advanced Microelectronic Packaging I	MON PM	2:30 PM	226C	50
Advanced Microelectronic Packaging Materials	TUE AM	8:30 AM	226C	76
Quality and Reliability of Advanced Microelectronic Packaging II	TUE PM	2:00 PM	226C	105
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	235
Emerging Interconnects	WED AM	8:30 AM	226C	134
Pb Free Solder Alloy I	WED PM	2:00 PM	226C	164
Pb Free Solder Alloy II	THU AM	8:30 AM	226C	191
Alloys and Compounds for Thermoelectric and Solar Cell Applications VI				
Session I	MON AM	8:00 AM	226B	27
Session II	MON PM	2:30 PM	226B	50
Session III	TUE AM	8:30 AM	226B	77
Session IV	TUE PM	2:00 PM	226B	106
Student Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	235
Session V	WED AM	8:30 AM	226B	136
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	246
Phase Stability of Advanced Electronic Interconnection I	WED AM	8:30 AM	227A	155
Electromigration and Stability of Electronic Materials	WED PM	2:00 PM	227A	184
Phase Stability of Advanced Electronic Interconnection II	THU AM	8:30 AM	227A	205
Phase Stability of Energy Materials	THU PM	2:00 PM	227A	220
Recent Advances in Functional Materials for Printed, Flexible and Wearable Electronics				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	246
Printed Electronics and Additive Manufacturing	WED PM	2:00 PM	226B	186

Symposium and Session	Day	Time	Room	Page
2D/3D Sensors and Devices	THU AM	8:30 AM	226B	206
Material, Process Integration, and Characterization	THU PM	2:00 PM	226B	221
Solar Cell Silicon				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	247
Silicon Photovoltaics	WED PM	2:00 PM	223	186
Silicon Recycling, Refining, and Impurity Removal	THU AM	8:30 AM	223	207
Silicon Production, Crystallization, and Properties	THU PM	2:00 PM	223	221
Energy & Environment				
Advanced Magnetic Materials for Energy and Power Conversion Applications				
Application of Advanced Soft Magnetic Materials in Power Electronics and Motors	MON AM	8:00 AM	229A	26
Advances in Permanent Magnet Alloys	MON PM	2:30 PM	229A	49
Poster Session - Magnetism in Energy Applications	MON EVE	6:00 PM	Exhibit Hall E	226
Development in Rare Earth Free Permanent Magnet Alloys	TUE AM	8:30 AM	229A	75
Alloy Development and Application of Magneto-thermal Materials	TUE PM	2:00 PM	229A	104
Additive Manufacturing and Advanced Processing of Permanent Magnetic Materials	WED AM	8:30 AM	229A	133
Additive Manufacturing and Advanced Processing of Soft Magnetic Materials	WED PM	2:00 PM	229A	163
Development and Application of Soft Magnetic Materials	THU AM	8:30 AM	229A	191
Deriving Value from Challenging Waste Materials: Recycling and Sustainability Joint Session				
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	229
Urban Mining and Electronic Waste	WED PM	2:00 PM	224B	175
Industrial Streams I	THU AM	8:30 AM	224B	200
Industrial Streams II	THU PM	2:00 PM	224B	215
Energy Technologies and CO_2 Management Symposium				
CO_2 Capture	MON AM	8:00 AM	224B	35
Carbon-based Energy Materials and Sustainable Metallurgical Processes	MON PM	2:30 PM	224B	59
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	230
Novel Energy Technologies	TUE AM	8:30 AM	224B	88
Technologies for Energy Efficiency	TUE PM	2:00 PM	224B	115
Materials for Energy Conversion and Storage				
Energy Storage I	MON AM	8:00 AM	229B	40
Solid Oxide Fuel Cells I	MON PM	2:30 PM	229B	64
Poster Session	MON EVE	6:00 PM	Exhibit Hall E	232
Solid Oxide Fuel Cells II	TUE AM	8:30 AM	229B	92

Symposium and Session	Day	Time	Room	Page
Energy Storage II	TUE PM	2:00 PM	229B	121
Functional Materials I	WED AM	8:30 AM	229B	152
Energy Harvesting I	WED PM	2:00 PM	229B	182
Energy Storage III	THU AM	8:30 AM	229B	205
Energy Storage IV	THU PM	2:00 PM	229B	219
Perfluorocarbon Generation and Emissions from Industrial Processes				
PFC Generation Mechanisms from Industrial Processes	TUE PM	2:00 PM	222B	125
PFC Measurements, Reduction and Abatement Methods	WED AM	8:30 AM	222B	154
PFC Emissions Accounting Methods and Global Inventory	WED PM	2:00 PM	222B	183
Stored Renewable Energy in Coal				
Stored Renewable Energy in Coal	WED AM	8:30 AM	224B	157
Biomaterials				
Bio-nano Interfaces and Engineering Applications Symposium				
Bio-Nano Interfaces I	MON AM	8:00 AM	225A	28
Bio-Nano Interfaces Ii	MON PM	2:30 PM	225A	52
Bio-Nano Interfaces III	TUE AM	8:30 AM	105A	80
Biodegradable Materials for Medical Applications				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	236
Magnesium Alloys I	WED AM	8:30 AM	226A	138
Magnesium Alloys II	WED PM	2:00 PM	226A	167
Biodegradable Metals	THU AM	8:30 AM	226A	194
Polymers and Glasses	THU PM	2:00 PM	226A	211
Biological Materials Science				
Structural Biological Materials	MON AM	8:00 AM	225B	28
Synthesis of Bio-inspired Materials and Structures	MON PM	2:30 PM	225B	52
Biomaterials and Biomedical Applications I	TUE AM	8:30 AM	225B	80
Bones, Teeth, and Dental Materials	TUE PM	2:00 PM	225B	108
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	236
Functional Biological Materials	WED AM	8:30 AM	225B	139
Biomaterials and Biomedical Applications II	WED PM	2:00 PM	225B	168
Recent Developments in Biological, Structural and Functional Thin Films & Coatings				
Biomedical & Polymeric Applications	MON AM	8:00 AM	226A	44
Functional Films & Coatings I	MON PM	2:30 PM	226A	68
Functional Coatings for Green Technology and Sustainability	TUE AM	8:30 AM	226A	97

Symposium and Session	Day	Time	Room	Page
Functional Films & Coatings II	TUE PM	2:00 PM	226A	126
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	246
Materials Design				
Algorithm Development in Materials Science and Engineering				
DFT, Atomistic and Machine Learning Algorithms for Study and Design of Materials	TUE AM	8:30 AM	130	77
DFT and Atomistic Algorithms for Study and Design of Materials	TUE PM	2:00 PM	130	106
Atomistic Algorithms for Study and Design of Materials	WED AM	8:30 AM	130	135
Atomistic and Micro Scale Algorithms and Models	WED PM	2:00 PM	130	165
Experimental and Computational Algorithms	THU AM	8:30 AM	130	192
Applications of Microscale Algorithms and Models	THU PM	2:00 PM	130	210
Building an ICME Infrastructure: Developing Tools that Integrate Across Length and Time Scales to Accelerate Materials Design				
ICME Gap Analysis: Multiscale Modeling and Characterization of Structural Materials: I	WED AM	8:30 AM	132C	139
ICME Gap Analysis: Multiscale Modeling and Characterization of Structural Materials: II	WED PM	2:00 PM	132C	168
Materials Design Collaboration Platforms and Tools	THU AM	8:30 AM	132C	195
Integration Tools and Methods for Linking Processing-structure-property Relationships	THU PM	2:00 PM	132C	212
Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations				
Boundaries and Interfaces I	MON AM	8:00 AM	131A	30
Boundaries and Interfaces II	TUE AM	8:30 AM	131A	82
Methodology and Chemistry of Materials	TUE PM	2:00 PM	131A	111
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	239
Diffusion I	WED AM	8:30 AM	131A	142
Diffusion II	WED PM	2:00 PM	131A	171
Defects and Microstructure	THU AM	8:30 AM	131A	198
Thermodynamics	THU PM	2:00 PM	131A	214
Transport	THU PM	2:00 PM	131B	214
Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations				
Phase Field Simulations I: Functional Materials and Microstructure Evolution	MON AM	8:00 AM	131B	31
Phase Field Simulations II: Lightweight Alloys	MON PM	4:40 PM	131B	55
Dislocation, Plasticity, and Fracture	TUE AM	8:30 AM	131B	83
Multiscale Modeling	TUE PM	2:00 PM	131B	111
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	240
Microstructure and Processing Simulations I	WED AM	8:30 AM	131B	142

Symposium and Session	Day	Time	Room	Page
Microstructure and Processing Simulations II	WED PM	2:00 PM	131B	172
Mechanical and Process Simulations	THU AM	8:30 AM	131B	198
Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials				
Computational Design of Materials: CALPHAD	MON AM	8:00 AM	131C	32
Computational Design of Materials: Uncertainty	MON PM	4:40 PM	131C	55
Computational Design of Materials: Case Studies	TUE AM	8:30 AM	131C	83
Computational Design of Materials: Machine Learning	TUE PM	2:00 PM	131C	112
Computational Design: Microstructure and Mechanical Behaviors	WED AM	8:30 AM	131C	143
Computational Design: Tools and Data	WED PM	2:00 PM	131C	172
Computational Design and Simulation of Materials (CDSM 2018): Plenary				
Plenary	MON PM	2:30 PM	131B	55
Computational Materials Discovery and Optimization				
Materials Informatics	MON AM	8:00 AM	132B	32
Materials Interfaces, 2D Materials, and Nanomaterials	MON PM	2:30 PM	132B	55
Bulk Materials: Thermal, Magnetic, and Optical Properties	TUE AM	8:30 AM	132B	84
Materials for Energy Technologies	TUE PM	2:00 PM	132B	112
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	240
Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	240
Mathematical and Machine Learning Approaches Applied to UQ	WED AM	8:30 AM	132B	144
Development, UQ and Validation of Classical Potential	WED PM	2:00 PM	132B	173
UQ of Quantum Calculations (DFT and Other Approaches)	THU AM	8:30 AM	132B	199
UQ and Validation of Mesoscale Simulations	THU PM	2:00 PM	132B	215
Design for Mechanical Behavior of Architectured Materials via Topology Optimization				
Optimal Design of Microlattices and Architected Materials	MON AM	8:00 AM	132C	34
Architected and Topology Optimization (TO) Design for Dynamic, Nonlinear, and Energy Applications	MON PM	2:30 PM	132C	58
Design and Topology Optimization (TO) Considering Manufacturability, Microstructure, and Surface Effects	TUE AM	8:30 AM	132C	87
Recent Advancements and Material Applications of Topology Optimization (TO)	TUE PM	2:00 PM	132C	114
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	241
Integrative Materials Design III: Performance and Sustainability				
New Directions, Process Optimization, and Computational Modeling in Additive Manufacturing	MON AM	8:00 AM	132A	39
Microstructure Evolution and Fatigue Performance in Additive Manufacturing & Other Advanced Manufacturing Technologies	MON PM	2:30 PM	132A	62

Symposium and Session	Day	Time	Room	Page
Advanced Materials Characterization & Multi-scale Computational Modeling for Integrative Design and Reliability	TUE AM	8:30 AM	132A	90
Role of ICME, Data Management & Integrative Design for Fatigue and High Temperature Performance	TUE PM	2:00 PM	132A	119
Integrative Materials Design and Manufacturing: Approaches, Advances, and Applications	WED AM	8:30 AM	132A	150
Energy and Sustainability Considerations in Integrative Materials Design and Manufacturing	WED PM	2:00 PM	132A	180
Special Topics				
2018 EPD Distinguished Lecture				
Distinguished Lecture and Award Presentation	MON AM	8:00 AM	228A	22
Acta Materialia Symposium				
Award Session	TUE PM	3:15 PM	129B	102
All-Conference Plenary				
Defining the Future of Materials and Manufacturing Innovation	MON PM	12:00 PM	301	46
Bladesmithing 2018				
Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	236
Bladesmithing I	WED AM	8:30 AM	224A	236
Federation of European Materials Societies (FEMS) Keynote Symposium: Energy and Transportation from a European Materials Perspective				
Keynote Session I	WED AM	8:30 AM	228A	148
Keynote Session II	WED PM	2:00 PM	228A	177
General Poster Session				
General Poster Session	TUE EVE	6:00 PM	Exhibit Hall E	242
Looking through the Kaleidoscope: Discovering Your Path to Leadership				
Morning Session	TUE AM	8:30 AM	124B	91
Afternoon Session	TUE PM	2:00 PM	124B	120
Materials Innovation Keynote				
Big Data and Machine Learning for Materials	TUE AM	8:30 AM	129B	92

2018 EPD Distinguished Lecture – Distinguished Lecture and Award Presentation

*Sponsored by:*TMS Extraction and Processing Division
Program Organizer: Cynthia Belt, Consultant

Monday AM — Room: 228A
March 12, 2018 — Location: Phoenix Convention Center

Session Chair: Cynthia Belt, Consultant

8:00 AM Introductory Comments

8:05 AM Invited
The Revolutions Ahead in Pyrometallurgy: *Geoffrey Brooks*[1]; [1]Swinburne University of Technology

8:45 AM Question and Answer Period

2018 Light Metals Keynote Session – Sustainability in the Aluminum Industry: Climate Neutral Industry with Zero Emissions and Zero Waste?

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Arne Ratvik, SINTEF

Monday AM — Room: 101B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: To be announced.

8:30 AM Introductory Comments
To be announced.

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – 3D Structures and Hybrid Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Monday AM — Room: 101B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Wenda Tan, University of Utah; Chang-Yong Nam, Brookhaven National Lab

8:00 AM Introductory Comments

8:10 AM Invited
Adaptive Electrospinning: a Smart Electrospinning System for Low-cost and Scalable Flexible Electronics: *Jiyoung Chang*[1]; Dongwoon Shin[1]; Jonghyun Kim[1]; [1]University of Utah

8:40 AM Invited
Large Scale Laser Crystallization of Solution-based Nanoinks for Highly Transparent Conductive Electrode: *Qiong Nian*[1]; [1]Arizona State University

9:10 AM Invited
Additive Manufacturing of Nanomaterials-based Devices: *Yong Lin Kong*[1]; [1]University of Utah

9:40 AM Break

10:00 AM Invited
Functional Hybrid Polymer-inorganic Materials by Vapor Phase Infiltration: *Mato Knez*[1]; [1]CIC nanoGUNE

10:30 AM
Fully CMOS-Compatible Synthesis and Photodetector-integration of Ultrathin, Parallel-aligned ZnO Nanowire Arrays by Infiltration Synthesis: *Chang-Yong Nam*[1]; Aaron Stein[1]; [1]Brookhaven National Laboratory

10:50 AM
Hybrid Nanomaterials and their Applications in Energy and Water Areas: Yongjie Zhan[1]; *Pei Dong*[2]; Hua Guo[3]; Lidia Kuo[3]; Jun Kim[3]; Emily Hacopian[3]; Qilin Li[3]; Jun Lou[3]; [1]Northwest University; [2]Rice University; George Mason University; [3]Rice University

11:10 AM
NIR to UV-Vis-NIR Upconverting Nanolights for Phototriggered Drug Delivery and Tracking In-vivo: *Ghulam Jalani*[1]; [1]Dalhousie University

9th International Symposium on High Temperature Metallurgical Processing – Energy-efficient and Clean Metallurgical Technology

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Monday AM — Room: 227B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Zhiwei Peng, Central South University

8:00 AM Introductory Comments

8:05 AM
Solid Oxide Membrane-based Green Processing and Modeling of Silicon Production: Thomas Villalon[1]; Jicheng Guo[1]; *Uday Pal*[1]; Soumendra Basu[1]; [1]Boston University

8:25 AM
Exergy and its Efficiency Estimations for Sponge Iron Production in a Rotary Hearth Furnace: *Binay Kumar*[1]; Gour Roy[1]; Prodip Sen[1]; [1]IIT Kharagpur

8:45 AM
Simplified Process for Making Anode Copper: Zhi Wang[1]; Haibin Wang[1]; Xueyi Guo[2]; Zhixiang Cui[1]; *Baojun Zhao*[3]; [1]Dongying Fangyuan Nonferrous Metals; [2]Central South University; [3]The University of Queensland

9:05 AM
Preparation of Manganese Ferrite by Low-temperature Solid-state Synthesis under CO-CO_2 Atmosphere: Bingbing Liu[1]; *Yuanbo Zhang*[1]; Juan Wang[1]; Manman Lu[1]; Zijian Su[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University

9:25 AM Break

9:45 AM
Techno-economic Analysis of Energy Recovery from Plastic Waste: *Maryam Ghodrat*[1]; Bijan Samali[1]; [1]Western Sydney University

10:05 AM
Development of Continuous Blast Furnace Slag Solidification Process for Coarse Aggregates: *Yasutaka Ta*[1]; Hiroyuki Tobo[1]; Hisahiro Matsunaga[1]; Keiji Watanabe[1]; [1]JFE Steel Corporation

10:25 AM
An Innovative Oxygen-enriched Flash Smelting Technology for Lead Smelting and its Industrial Application: Baozhong Ma[1]; *Chengyan Wang*[1]; Yongqiang Chen[1]; Peng Xing[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

10:45 AM
Characteristics and Control Technology of Fine Particulate Matter (PM) of Iron Ore Sintering: *Tiejun Chun*[1]; [1]Anhui University of Technology

11:05 AM
Sintering Bed Spraying Steam to Reduce NOx and Dioxin Emissions in Shougang: *Pei Dong*[1]; [1]Shougang China

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Ion Irradiation and In-situ TEM

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Monday AM
March 12, 2018
Room: 102A
Location: Phoenix Convention Center

Session Chairs: James Cole, Idaho National Laboratory; Lindsay O'Brien, Naval Nuclear Laboratory

8:00 AM
Irradiation Responses of Ultrastrong Nano Precipitation Martensite Steel at Elevated Temperatures: *Tengfei Yang*[1]; Suihe Jiang[2]; Yuan Fang[3]; Congyi Li[1]; Yugang Yugang[3]; Zhaoping Lu[2]; Steven Zinkle[1]; [1]Department of Nuclear Engineering, The University of Tennessee; [2]State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing 100083, China; [3]State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University, Beijing 100871, People's Republic of China

8:25 AM
Effect of Irradiation Dose Rate on Precipitation in Fe-Cu and Fe-Cu-Mn Model Alloys: *Shipeng Shu*[1]; Nathan Almirall[2]; Dane Morgan[1]; Scott Tumey[3]; Brian Wirth[4]; G. Odette[2]; [1]University of Wisconsin-Madison; [2]University of California, Santa Barbara; [3]Lawrence Livermore National Laboratory; [4]The University of Tennessee, Knoxville

8:50 AM
Impact of Temperature on Microstructural Features using Dual Ion-irradiation in T91 Steel: *Stephen Taller*[1]; Zhijie Jiao[1]; Kevin Field[2]; Gary Was[1]; [1]University of Michigan; [2]Oak Ridge National Laboratory

9:15 AM
The Influence of Bimodal Cavity Distributions on Swelling Evolution in Helium Pre-implanted T91: *Anthony Monterrosa*[1]; Gerrit VanCoevering[1]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan

9:40 AM Break

10:00 AM Invited
Effect of Friction Stir Welding on Microstructure Evolution on In Situ and Ex Situ Self-ion Irradiated MA956: *Elizabeth Getto*[1]; Brian Tobie[1]; Khalid Hattar[2]; Brad Baker[1]; Samuel Briggs[2]; [1]United States Naval Academy; [2]Sandia National Laboratory

10:30 AM
Void Swelling Evolution and Radiation-induced Segregation & Precipitation in Self-ion Irradiated Ferritic/Martensitic HT9 Steel: *Ce Zheng*[1]; Djamel Kaoumi[1]; [1]North Carolina State Univeristy

10:55 AM
Effect of Temperature and Helium on Microstructure Evolution in Dual Ion Irradiated HT9 Steel: *David Woodley*[1]; Zhijie Jiao[1]; Kai Sun[1]; Gary Was[1]; [1]University of Michigan

Accident Tolerant Fuels for Light Water Reactor – ATF Program Overview

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Monday AM
March 12, 2018
Room: 104A
Location: Phoenix Convention Center

Session Chairs: Peng Xu, Westinghouse Electric Company; Jon Carmack, Idaho National Laboratory

8:00 AM Invited
The Department of Energy Advanced Nuclear Fuels Campaign: *Jon Carmack*[1]; [1]Idaho National Laboratory

8:30 AM Invited
Status Update on Westinghouse EnCoreTM ATF: *Robert Oelrich*[1]; Peng Xu[1]; [1]Westinghouse Electric Company

9:00 AM Invited
AREVA NP's Evolutionary Solution for Enhanced Accident Tolerant Fuel: *Jeremy Bischoff*[1]; Christine Delafoy[1]; Elmar Schweitzer[2]; Kiran Nimishakavi[3]; [1]AREVA NP; [2]AREVA GmbH; [3]AREVA Inc.

9:30 AM Break

9:50 AM Invited
Postirradiation of Accident Tolerant Fuel Concepts: Techniques, Highlights and Future Plans: *Jason Harp*[1]; [1]Idaho National Laboratory

10:20 AM Invited
Status of Accident Tolerant Fuel Cladding Development for LWRs: *Kurt Terrani*[1]; [1]Oak Ridge National Laboratory

10:50 AM Invited
Linking Advanced Multi-scale Modeling with Engineering Scale Fuel Performance Assessments of Accident Tolerant Fuels: *Brian Wirth*[1]; Dwaipayan Dasgupta[1]; Gyan Singh[1]; R. Sweet[1]; [1]University of Tennessee - Knoxville

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Additive Manufacturing: A Revolution in Materials Processing

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Monday AM
March 12, 2018
Room: 230
Location: Phoenix Convention Center

Session Chairs: Eric Lass, National Institute of Standards and Technology; Allison Beese, Penn State University

8:00 AM Introductory Comments

8:05 AM Invited
GE Additive - Materials Evolution for the Revolution: *Deborah Whitis*[1]; Behrang Poorganji[1]; [1]General Electric Company

8:35 AM Invited
Assessing Additive Manufacturing Process Heterogeneity: *Edwin Schwalbach*[1]; Michael Groeber[1]; Sean Donegan[1]; [1]Air Force Research Laboratory

9:05 AM
Effect of Processing Parameters on Microstructure of PH 13-8 Stainless Steel Fabricated by Hybrid DED/CNC Manufacturing: *Michael Juhasz*[1]; Jason Walker[1]; Brett Conner[1]; [1]Youngstown State University

9:25 AM Break

9:45 AM Invited
Quantitative Microstructure-property Relationships in Additive Manufacturing of Metals: *Allison Beese*[1]; [1]Pennsylvania State University

10:15 AM
Microstructure-property Relationships in Advanced High Deposition Rate Cold Metal Transfer (CMT) Additive Manufactured IN718: *Benjamin Adam*[1]; Thomas Langston[1]; Ahmet Tanrikulu[1]; Graham Tewksbury[1]; Tae-Kyu Lee[1]; [1]Portland State University

10:35 AM
Using Additive/Subtractive Processing in the Freeform Fabrication of Bi-metallic Components: *Judith Schneider*[1]; Sean Sporie[2]; Robin Osborne[3]; [1]University of Alabama - Huntsville; [2]DMG MORI; [3]NASA

10:55 AM
Bimetallic Structure of Inconel 718 and GRCop-84 Processed Using LENS™: *Bonny Onuike*[1]; Bryan Heer[1]; Amit Bandyopadhyay[1]; [1]School of Mechanical and Material Engineering

Additive Manufacturing of Metals: Fatigue and Fracture – Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International; John Lewandowski, Case Western Reserve University

Monday AM
March 12, 2018
Room: 232A
Location: Phoenix Convention Center

Session Chair: Nikolas Hrabe, National Institute of Standards and Technology

8:00 AM Invited
Evaluation of Tensile and Low Cycle Fatigue Properties of 316 Stainless Using Binder Jetting Additive Manufacturing Technology: *Donald Godfrey*[1]; Brian Baughman[1]; [1]Honeywell

8:30 AM
Fatigue of Solid State Additive Manufactured Inconel 625: Dustin Avery[1]; *JB Jordon*[1]; Paul Allison[1]; Nanci Hardwick[2]; [1]The University of Alabama; [2]Aeroprobe

8:50 AM
Relating Defects at the Fracture Surface to Physical Properties of AM Materials: *Stephanie DeJong*[1]; Andrea Exil[1]; Lisa Deibler[1]; Jay Carroll[1]; [1]Sandia National Laboratories

9:10 AM
Effect of Hot Isostatic Pressing on Fatigue Properties of Additively Manufactured Ti-6Al-4V-ELI: *Julius Bonini*[1]; Dayna Kinsey[1]; Krista Biggs[1]; Kevin Knight[2]; Ernesto Rios[3]; [1]Lucideon M + P; [2]Knight Mechanical Testing; [3]Renovis Surgical Technologies, Inc.

9:30 AM Break

9:50 AM Invited
Fatigue Characteristics of Additively Manufactured Aerospace Materials: *Brad Lerch*[1]; David Ellis[1]; Susan Draper[1]; Chantal Sudbrack[1]; [1]NASA-GRC

10:20 AM
Fracture Characterization of Additive Manufactured Ti-6Al-4V: *Emily Huskins-Retzlaff*[1]; M. Patrick Serbent[1]; Stephen Graham[1]; [1]United States Naval Academy

10:40 AM
Anisotropic Fatigue Properties of IN718 Produced by Powder Bed Fusion: *Amin S. Azar*[1]; Martin Fleissner Sunding[1]; Erik Andreassen[1]; [1]SINTEF

11:00 AM Invited
MIDAS: Material Informed Digital Design Demonstration for Additive Structures: Michael Groeber[1]; *Edwin Schwalbach*[1]; Michael Uchic[1]; Paul Shade[1]; William Musinski[1]; Sean Donegan[1]; Daniel Sparkman[1]; Jonathan Miller[1]; [1]Air Force Research Laboratory

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – High Speed Imaging in Additive Manufacturing

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Monday AM
March 12, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chairs: Manyalibo Matthews, LLNL; Johanna Weker, SLAC

8:00 AM
Correlating Pore Defect Formation in Laser Powder Bed Fusion Processing with In Situ Thermal and Interferometric Optical Measurement: *Manyalibo Matthews*[1]; Philip Depond[1]; Jean Baptiste Forien[1]; Sonny Ly[1]; Gabe Guss[1]; Bradley Jared[2]; Jonathan Madison[2]; Elena Garlea[3]; Hahn Choo[4]; Christopher Spadaccini[1]; [1]Lawrence Livermore National Laboratory; [2]Sandia National Laboratories; [3]Y12 National Security Complex; [4]University of Tennessee

8:20 AM
A Low Cost, High-speed Optical Monitoring System for Tracking Spatter during Laser Powder Bed Fusion: *Christopher Barrett*[1]; Jason Walker[1]; Rodrigo Enriquez Gutierrez[1]; Eric MacDonald[1]; Brett Conner[1]; [1]Youngstown State University

8:40 AM
Three Dimensional Characterization of AM 316L Stainless Steel: *David Rowenhorst*[1]; Lily Nguyen[1]; Richard Fonda[1]; [1]U.S. Naval Research Laboratory

9:00 AM
Defect Detection in LENS AM Using In Situ Thermal Camera Process Monitoring: *Tom Stockman*[1]; Judith Schneider[1]; Cameron Knapp[2]; John Carpenter[2]; [1]University of Alabama Huntsville; [2]Los Alamos National Laboratory

9:20 AM
High Speed Imaging of Particle-melt Interactions in Laser Directed Energy Deposition (L-DED): *James Haley*[1]; Joshua Yee[2]; Nancy Yang[2]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Irvine; [2]Sandia National Laboratories

9:40 AM Break

10:00 AM Invited
Visualizing the Melt Pool and Void Formation in Ti Alloys Using Synchrotron-based X-ray Microscopy: *Johanna Weker*[1]; Andrew Kiss[1]; Anthony Fong[1]; Vivek Thampy[1]; Nicholas Calta[2]; Aiden Martin[2]; Jenny Wang[2]; Philip Depond[2]; Gabe Guss[2]; Kevin Stone[1]; Christopher Tassone[1]; Ryan Ott[3]; Matthew Kramer[3]; Tony Van Buuren[2]; Manyalibo Matthews[2]; Michael Toney[1]; [1]SLAC National Accelerator Laboratory; [2]Lawrence Livermore National Laboratory; [3]Ames Laboratory

10:30 AM
3D Imaging of Metal Powders Used for Additive Manufacturing: *Dileep Singh*[1]; Chih-pin Chuang[1]; Francisco Medina[2]; Rutuja Samant[2]; [1]Argonne National Laboratory; [2]Edison Welding Institute

10:50 AM
Defect Signatures for Metal Laser Powder Bed Fusion: *Bradley Jared*[1]; Jon Madison[1]; Laura Swiler[1]; David Saiz[1]; Kevin Webb[2]; Erich Schwaller[1]; Josh Koepke[1]; Burke Kernan[1]; Brad Boyce[1]; Jeff Rodelas[1]; Manyalibo Matthews[3]; [1]Sandia National Laboratories; [2]Georgia Tech University; [3]Lawerence Livermore National Laboratory

11:10 AM
Correlation of In-situ Process Monitoring Data to Material Properties and the Technologies Potential Impacts on AM Process Qualification: *Alexander Janzen*[1]; Ankit Saharan[1]; [1]EOS North America

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Local Strain & Misorientation I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Monday AM
March 12, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Advances in Information Extraction from Near-field High Energy Diffraction Microscopy Data Sets: *Robert Suter*[1]; Yu-Feng Shen[1]; David Menasche[2]; [1]Carnegie Mellon University; [2]Hamilton LLC

8:30 AM
In-situ Monitoring of Cyclic Deformation by High Resolution Reciprocal Space Mapping: *Annika Diederichs*[1]; Ulrich Lienert[2]; Henning Friis Poulsen[3]; Wolfgang Pantleon[1]; [1]Department of Mechanical Engineering, Section of Materials and Surface Engineering, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark; [2]DESY Photon Science, Deutsches Elektronen Synchrotron, 22607 Hamburg, Germany; [3]Department of Physics, Neutrons and X-Rays for Materials Physics (NEXMAP), Technical University of Denmark, 2800 Kgs. Lyngby, Denmark

8:50 AM
High Resolution Strain Measurements in a Polycrystalline Superalloy during Plastic Deformation: Slip Band Discontinuity Analysis: *J.C. Stinville*[1]; F. Bourdin[2]; M.P. Echlin[1]; W.C. Lenthe[1]; F. Bridier[3]; D. Texier[4]; J. Cormier[2]; P. Villechaise[2]; V. Valle[5]; T.M. Pollock[1]; [1]University of California Santa Barbara; [2]Institut Pprime, CNRS – ENSMA – Université de Poitiers, UPR CNRS 3346; [3]DCNS Research, DCNS; [4]Ecole de Technologie Superieure de Montreal; [5]Institut Pprime, CNRS – Université de Poitiers, UPR CNRS 3346

9:10 AM
Strain Localisation Behaviour in Ti834 Subjected to Cold Creep Testing: *Claudius Dichtl*[1]; Michael Preuss[1]; João Quinta da Fonseca[1]; [1]University of Manchester

9:30 AM Break

9:50 AM
Dominant Axes of Orientation Distributions and the Peculiar Case of [111] Grains in Tension: *Wolfgang Pantleon*[1]; [1]Technical University of Denmark

10:10 AM
Microstructure and Deformation Mechanisms in Ti-7Al: *Patrick Callahan*[1]; Jean-Charles Stinville[1]; Tresa Pollock[1]; [1]University of California, Santa Barbara

10:30 AM
Measuring Intra-grain Orientation Gradient and Elastic Strain Field by Near-field High Energy X-ray Diffraction Microscopy: *Yu-Feng Shen*[1]; R. Suter[1]; [1]Carnegie Mellon University

10:50 AM
An Application of X-Ray Micro Computer Tomography to Understand Material Flow during Friction Stir Channelling Process: Sheetal Pandya[1]; *Amit Arora*[1]; [1]Indian Institute of Technology Gandhinagar

11:10 AM
Modern Diffraction Methods for the Investigation of Thermo-mechanical Processes: *Klaus-Dieter Liss*[1]; [1]Australian Nuclear Science and Technology Organisation

Advanced High-strength Steels – High Mn Steels

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Monday AM
March 12, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Mingxin Huang, The University of Hong Kong; Xuejun Jin, Shanghai Jiao Tong University

8:00 AM Introductory Comments

8:05 AM Invited
Nanoprecipitate-hardened Fine-grained Twinning-induced Plasticity Steels with Excellent Cryogenic Strength-ductility Combinations: *Xuejun Jin*[1]; Yu Li[1]; Wei Li[1]; [1]Shanghai Jiao Tong University

8:30 AM
Deformation Twins Are Not Important for TWIP Steels: *M.X. Huang*[1]; [1]The University of Hong Kong

8:50 AM
Digital Image Correlation (DIC) Analysis of Temperature and Strain Rate Influence on the Serrated Flow Behaviour of High-Mn Steels: *Sebastian Wesselmecking*[1]; Liudmila Tataurova[1]; Wolfgang Bleck[1]; [1]RWTH Aachen

9:10 AM
Investigation of Processing and Deformation Behavior of Strip Cast Aluminum-alloyed High Manganese Steels: *Marco Haupt*[1]; Sebastian Wesselmecking[2]; Gerhard Hirt[1]; [1]Institute of Metal Forming (IBF), RWTH Aachen University; [2]Department of Ferrous Metallurgy (IEHK), RWTH Aachen University

9:30 AM Break

9:45 AM
Mechanical Behavior of a TWIP Steel (Fe-Mn-C-Al-Si) under Tension and Compression Loads.: *Xiaoxue Chen*[1]; Jianguo Li[2]; Laszlo Kecskes[3]; Qiuming Wei[1]; [1]UNC-Charlotte; [2]University of Northwestern Poly-technical University; [3]US Army Research Laboratory

10:05 AM
Impact of Short-range Ordering on the Yield Strength in High Mn Steels: *Simon Sevsek*[1]; Wolfgang Bleck[1]; [1]Steel Institute, RWTH Aachen University

10:25 AM
Cavitation Behavior of an Advanced High-Mn Austenitic TWIP Steel Microalloyed with V and Nb Under Hot-tensile Condition: *Enrique Salas*[1]; Ignacio Mejía[2]; José María Cabrera[3]; [1]National Autonomus University of Mexico; [2]Universidad Michoacana de San Nicolás de Hidalgo; [3]Universitat Politècnica de Catalunya

10:45 AM
On the Fracture Behavior of Twinning-induced Plasticity Steel: *Luo Zhichao*[1]; Huang Mingxin[1]; [1]The University of Hong Kong

11:05 AM
Thermomechanical Processing of High-Mn, High-Al Steels for Thick Plate Applications: *Katherine Sebeck*[1]; Ryan Howell[2]; Demetrios Tzelepis[1]; Michael Foley[1]; [1]US Army TARDEC; [2]US Army PEO GCS

11:25 AM
Crystal-plasticity Modeling of the Dislocation-dominated Strain Hardening in a TWIP Steel: *Yizhuang Li*[1]; Mingxin Huang[1]; [1]The University of Hong Kong

Advanced Magnetic Materials for Energy and Power Conversion Applications – Application of Advanced Soft Magnetic Materials in Power Electronics and Motors

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Monday AM
March 12, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: Paul Ohodnicki, NREL

8:00 AM Introductory Comments

8:05 AM Invited
Amorphous and Nanocomposite Magnets for High Efficiency, High Speed Motor Designs: *Michael McHenry*[1]; [1]Carnegie Mellon University

8:35 AM Invited
Building 3D Structures from Amorphous and Nanocrystalline Ribbon for Applications in High Efficiency Motors: *Eric Theisen*[1]; [1]Metglas Inc.

9:05 AM Invited
Engineering of Magnetic Properties of Co- and Fe-rich Microwires by Stress Annealing: *Arcady Zhukov*[1]; Mihail Ipatov[2]; Juan Blanco[2]; Valentina Zhukova[2]; [1]Basque Country University and Ikerbasque; [2]University of Basque Country

9:35 AM Break

9:50 AM Invited
Core Loss Reduction of Electrical Motor Being Applied to by Low Iron Loss: *Keisuke Fujisaki*[1]; [1]Toyota Technological Institute

10:20 AM
Multiport Converter and High Frequency Transformer Technology for Grid Integration of Distributed Generation Resources: *Paul Ohodnicki*[1]; Michael McHenry[2]; Subhashish Bhattacharya[3]; Mark Juds[4]; Randy Bowman[5]; Alex Leary[5]; Richard Beddingfield[3]; Ronald Noebe[5]; [1]National Energy Technology Laboratory; [2]Carnegie Mellon University; [3]North Carolina State University; [4]Eaton Corporation; [5]NASA Glenn Research Center

10:50 AM
Leakage Flux Induced Losses and Shielding in Magnetic Ribbon Cores: *Richard Beddingfield*[1]; Kevin Byerly[2]; Mark Juds[3]; Subhashish Bhattacharya[1]; Paul Ohodnicki[2]; [1]North Carolina State University; [2]National Energy Technology Labs; [3]Eaton

11:10 AM
Core Loss Measurements and Benchmarking of Commercial Soft Magnetic Core Materials for High Frequency Power Conversion: *Kevin Byerly*[1]; Paul Ohodnicki[1]; Alex Leary; Seung-Ryul Moon[1]; Richard Beddingfield[2]; Subhashish Bhattacharya[2]; [1]National Energy Technology Laboratory; [2]North Carolina State University

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – 3D Microelectronic Packaging

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Monday AM
March 12, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: John Elmer, Lawrence Livermore National Laboratory; Tae-Kyu Lee, Portland State University

8:00 AM Invited
Failure and Material Analysis Challenges in 3D Microelectronic Packages: Pilin Liu[1]; Kaushik Muthur Srinath[1]; Yan Li[1]; *Deepak Goyal*[1]; [1]Intel Corporation

8:30 AM
Damage Mechanisms in TSVs and Back-end Structures due to Thermal Cycling and Electromigration: *Indranath Dutta*[1]; Tae-Kyu Lee[2]; Sukeshwar Kannan[3]; Bibekananda Dutta[1]; [1]Washington State University; [2]Portland State University; [3]Global Foundries

8:50 AM
Effect of Twin Grains on the Void Formation in Copper Filled through Silicon via under Thermal Process: Limin Ma[1]; *Xuewei Zhao*[1]; Yishu Wang[1]; Fu Guo[1]; [1]Beijing University of Technology

9:10 AM
Effect of Tin Orientation on Electromigration Failure of 20-um Microbumps: *Kai-Cheng Shie*[1]; Chih Chen[1]; [1]National Chiao Tung Unirversity

9:30 AM Break

9:50 AM
Effect of Sn Grain Orientation on Thermomigration in Sn2.3Ag Microbumps: *Yu-An Shen*[1]; Fan-Yi Ouyang[2]; Chih Chen[1]; [1]National Chiao Tung University; [2]National Tsing Hua University

10:10 AM
Effects of Zn Addition on Cu-Sn Microjoints for Chip-stacking Applications: *Yi-Wun Wang*[1]; Ting-Li Yang[1]; C.R. Kao[1]; [1]National Taiwan University

10:30 AM
Edge Effect and Phase Formation in Cu-Sn-Ni Micro Joints during Solid-state Aging: *Haiyang Yu*[1]; C.R. Kao[1]; [1]National Taiwan University

10:50 AM
Micromechanical Properties of Single Crystalline $(Cu,Ni)_6Sn_5$ by Micropillar Compression and Nanoindentation: *Jui-Yang Wu*[1]; C. Robert Kao[1]; [1]Department of Materials Science and Engineering, National Taiwan University

11:10 AM
Effective Control of the Statistical Spread in Cu TSV Extrusion by a Cap Layer: *Golareh Jalilvand*[1]; Omar Ahmed[1]; Cullen Fitzgerald[1]; Keenan Bosworth[1]; Zhenlin Pei[1]; Tengfei Jiang[1]; [1]University of Central Florida

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Overview of Additive Manufacturing for Titanium Alloys

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Monday AM
March 12, 2018
Room: 231C
Location: Phoenix Convention Center

Session Chair: Peter Collins, Iowa State University

8:00 AM Introductory Comments

8:10 AM Invited
A History of Titanium Additive Manufacturing for Air Vehicle Structures: *Brian Rosenberger*[1]; [1]Lockheed Martin

8:40 AM Invited
Swedish Initiatives for Additive Manufacturing of Titanium Alloy Components for Aerospace Applications: *Robert Pederson*[1]; [1]University West

9:10 AM Invited
Understanding Light-matter Interaction, Melt Pool Dynamics and Spatter Formation in Laser Powder Bed Fusion Processing: *Manyalibo Matthews*[1]; Andrew Anderson[1]; Nicholas Calta[1]; Philip Depond[1]; Gabe Guss[1]; Saad Khairallah[1]; Wayne King[1]; Tien Roehling[1]; Alexander Rubenchik[1]; Johannes Trapp[1]; Sheldon Wu[1]; [1]Lawrence Livermore National Laboratory

9:45 AM Break

10:00 AM Invited
Processing Modalities of Ti-6Al-4V Fabricated via Additive Manufacturing: *Ryan Dehoff*[1]; Peeyush Nandwana[1]; Sean Yoder[1]; Frederick List[1]; Chasen Ranger[2]; Ross Cunningham[2]; Anthony Rollett[2]; Suresh Babu[3]; [1]Oak Ridge National Laboratory; [2]Carnegie Mellon University; [3]The University of Tennessee

10:30 AM
Additive Manufacturing in a High Temperature Environment with Sensor Monitoring to a Closed-loop In-situ Feedback Control: *James Withers*[1]; Anil Chaudhary[2]; Grady Phillips[3]; Glen Perram[3]; [1]ATS-MER, LLC; [2]Applied Optimization; [3]Air Force Institute of Technology

10:50 AM
In-situ Investigation of Microstructure Evolution during Annealing in Ti-6Al-4V Alloy Produced by Additive Manufacturing: *Sven Vogel*[1]; Shigehiro Takajo[2]; El'ad Caspi[3]; Asaf Pesach[3]; Ori Yeheskel[3]; Eitan Tiferet[3]; [1]Los Alamos National Laboratory; [2]LANL & JFE Steel Corporation, Kurashiki, Japan; [3]Nuclear Research Center Negev

11:10 AM
Numerical and Experimental Study of As-built Powder Bed Fused Ti6Al4V Component: Jonas Zielinski[1]; Jan Duechting[1]; Hans-Wilfried Mindt[2]; *Mustafa Megahed*[2]; [1]Fraunhofer; [2]ESI Group

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Session I

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Monday AM
March 12, 2018
Room: 226B
Location: Phoenix Convention Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Hsin-jay Wu, National Sun Yat-Sen University

8:00 AM Introductory Comments

8:10 AM Invited
Approaching Efficient Thermoelectrics: From Materials to Modules: *Lidong Chen*[1]; Shengqaing Bai[1]; [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences

8:30 AM Invited
Half Heuslers: Promising Mid-to-high Temperature Thermoelectric Alloys: *Joseph Poon*[1]; [1]University of Virginia

8:50 AM Invited
High-performance Oxides-based Thermoelectric Ceramics for Energy Conversion: *Yuanhua Lin*[1]; [1]Tsinghua University

9:10 AM Invited
Low Dimensional Insulator-conductor Nanocomposites and their Thermoelectric Properties: *Teruyuki Ikeda*[1]; Babak Alinejad[1]; [1]Ibaraki University

9:30 AM Break

9:50 AM Invited
High Thermoelectric Figure-of-merit in n-type Ga-incorporated PbTe: *Hsin-jay Wu*[1]; Yi-huei Du[1]; [1]National Sun Yat-sen University

10:10 AM Invited
Enhancement of the Thermoelectric Properties of FeGa3–type Structures with Group 6 Transition Metals: A Computational Exploration: *Regis Gautier*[1]; Benoit Boucher[1]; Rabih Al Rahal Al Orabi[2]; Bruno Fontaine[1]; Yuri Grin[3]; Jean-Francois Halet[1]; [1]ENSC Rennes; [2]Central Michigan University; [3]MPI Dresden

10:30 AM Invited
Enhanced Thermoelectric Properties in a Printed Material: *Koji Miyazaki*[1]; [1]Kyushu Institute of Technology

10:50 AM Invited
Structure/Property Relationships of Thermoelectric Oxyselenides Bi1-xAxOCuSe (A=Ba, Sr, Ca, and Pb): *Winnie Wong-Ng*[1]; Yonggao Yan[2]; Matthew Lawson[3]; Lan Li[3]; James Kaduk[4]; [1]National Institute of Standards and Technology; [2]Wuhan University of Technology; [3]Boise State University; [4]Illinois Institute of Technology

11:10 AM
Phonon Spectroscopy and Elasticity in Thermoelectric Mg2Si1-xSnx: *Raphael Hermann*[1]; Benedikt Klobes[2]; Johannes de Boor[3]; Ahmet Atalasy[4]; Michael Yu[4]; Ronnie Simon[5]; [1]Oak Ridge National Laboratory; [2]University of Applied Sciences Bremerhaven; [3]Institute of Materials Research, German Aerospace Center; [4]Advanced Photon Source, Argonne National Laboratory; [5]Ju¨lich Centre for Neutron Science JCNS and Peter Gru¨nberg Institute PGI, JARA-FIT

Application of Solidification Fundamentals to Challenges in Metal Additive Manufacturing – Process to Microstructure Relationships

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Alex Plotkowski, University of Tennessee - Knoxville; Kevin Chaput, Materials and Manufacturing Directorate; Lang Yuan, GE Global Research

Monday AM
March 12, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Kevin Chaput, Air Force Research Laboratory

8:00 AM Invited
Application of Interface Response Function Theory to Describe Non-equilibrium Solidification during Welding and Additive Manufacturing: *Sudarsanam Babu*[1]; [1]The University of Tennessee, Knoxville

8:30 AM
Enabling New Additive Alloys through Solidification Control: *Hunter Martin*[1]; Brennan Yahata[2]; Robert Mone[2]; Ekaterina Stonkevitch[2]; Jacob Hundley[2]; Tobias Schaedler[2]; Tresa Pollock[1]; [1]University of California, Santa Barbara; [2]HRL Labs

8:50 AM
Crystal Growth in Face-centred-cubic Alloys Made by Additive Manufacturing: Epitaxial Growth, Branching and Splitting: Bogdan Dovgyy[1]; Alessandro Piglione[1]; Chen Liu[1]; Paul Hooper[1]; *Minh-Son Pham*[1]; [1]Imperial College London

9:10 AM
Microstructure Formation in Rapid Solidification of Electron-beam Melted Ni-Sn Alloys: Rijie Zhao[1]; *Jianrong Gao*[1]; Jerry Guo[2]; Brant Wu[2]; [1]Northeastern University; [2]Dynasty Metal Additive Manufacturing Systems Co., Ltd

9:30 AM Break

9:50 AM
Cellular Automata Modeling of Nucleation and Grain Growth in Alloy-based Additive Manufacturing: *Matthew Rolchigo*[1]; Michael Mendoza[1]; Peter Collins[1]; Richard LeSar[1]; [1]Iowa State University

10:10 AM
Solid Solubility Extension and Microstructural Evolution during Single and Double Pass Laser Scans in Al-Co and Al-Ce Binary Alloys: *Cain Hung*[1]; Yu Sun[1]; Rainer Hebert[1]; [1]University of Connecticut

10:30 AM
Building Microstructure-cooling Rate Relationships in Laser Welded Uranium-6 Wt. Pct. Niobium for Laser Powder Bed Fusion Processing: *Amanda Wu*[1]; John Elmer[1]; Tarasankar DebRoy[2]; [1]Lawrence Livermore National Laboratory; [2]Pennsylvania State University

10:50 AM
The Effect of Grain Refiners on the Columnar to Equiaxed Transition in Metal Additive Manufacturing of Aluminium Alloys: *Mitesh Patel*[1]; Dong Qiu[1]; Gui Wang[2]; Mark Gibson[1]; David StJohn[2]; Mark Easton[1]; [1]RMIT University; [2]The University of Queensland

11:10 AM
Microstructure Control in Laser Powder Bed Fusion: Correlating Directional Solidification Parameters with Selected Process Variables and Material's Properties: *Umberto Scipioni Bertoli*[1]; Julie Schoenung[1]; [1]University of California, Irvine

Bio-nano Interfaces and Engineering Applications Symposium – Bio-Nano Interfaces I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Terry Lowe, Colorado School of Mines; Kalpana Katti, North Dakota State University; Po-Yu Chen, National Tsing Hua University; John Nychka, University of Alberta

Monday AM
March 12, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Candan Tamerler, University of Kansas; Kalpana Katti, North Dakota University

8:00 AM Introductory Comments

8:05 AM Invited
Discovery of Biomaterials by Simulation and Experiment: Catalysts, Composites, and Therapeutics: *Hendrik Heinz*[1]; [1]University of Colorado-Boulder

8:35 AM Invited
Nanoclay Based Tissue Engineering Scaffolds for Mimicking Biointerfaces in Mesenchymal to Epithelial Transision of Prostate and Breast Cancer Metastasis to Bone: *Kalpana Katti*[1]; Shahajahan Molla[1]; Sumanta Kar[1]; Dinesh Katti[1]; [1]North Dakota State University

9:05 AM Invited
Nanoscale Structure and Properties of Biomaterials: *Federico Rosei*[1]; [1]INRS

9:35 AM Break

9:50 AM Invited
Biomolecular Design of Soft Interfaces for Technology and Medicine: *Mehmet Sarikaya*[1]; [1]University of Washington

10:30 AM Invited
Investigating the Interaction of Amyloidogenic Proteins with Inorganic Surfaces, Nanoparticles and Biomolecules by Atomistic Simulations: *Stefano Corni*[1]; [1]University of Padova & CNR Institute of Nanoscience

11:00 AM Invited
Modeling the Mechanics of Cancer Cells on Tissue Engineering Substrates: *Dinesh Katti*[1]; Kalpana Katti[1]; [1]North Dakota State University

Biological Materials Science – Structural Biological Materials

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Monday AM
March 12, 2018
Room: 225B
Location: Phoenix Convention Center

Session Chairs: Steven Naleway, University of Utah; Holly Martin, Youngstown State University

8:00 AM Invited
Materials Inspired from Fossils and their Relatives: *David Kisailus*[1]; [1]University of California, Riverside

8:30 AM
A Damper on the Head? Structural Role of the Skull Bone of Woodpeckers: *Jae-Young Jung*[1]; Andrei Pissarenko[1]; Adwait Trikanad[2]; David Restrepo[2]; Frances Su[1]; Damian Gonzalez[1]; Andrew Marquez[1]; Steven Naleway[3]; Marc Meyers[1]; Pablo Zavattieri[2]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]Purdue University; [3]The University of Utah

8:50 AM
Energy Absorbent Natural Keratin Materials and Bioinspired Designs: *Wei Huang*[1]; Alireza Zaheri[2]; David Restrepo[3]; Wen Yang[1]; Horacio Espinosa[2]; Robert Ritchie[4]; Pablo Zavattieri[3]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]Northwestern University; [3]Purdue University; [4]Lawrence Berkeley National Laboratory

9:10 AM
Pangolin Armor: Overlapping, Structure, and Mechanical Properties of the Keratinous Scales: *Wen Yang*[1]; Bin Wang[1]; Marc Meyers[1]; [1]University of California, San Diego

9:30 AM Break

9:50 AM Keynote
Institute of Metals/Robert Franklin Mehl Award Lecture: Biological Materials Science: Challenges and Opportunities: *Marc Meyers*[1]; [1]University of California San Diego

10:30 AM Invited
Structure and Mechanics of Natural Scales: Inspiration for Novel Flexible Protective Systems: Roberto Martini[1]; Yanis Balit[1]; *Francois Barthelat*[1]; [1]McGill University

11:00 AM Invited
Material Architecture Inspired by Nature: Harnessing the Role of Interfaces and Other Clever Mechanisms: *Pablo Zavattieri*[1]; [1]Purdue University

CFD Modeling and Simulation in Materials Processing – Casting and Solidification I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Koulis Pericleous, University of Greenwich; Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, Colorado School of Mines

Monday AM
March 12, 2018
Room: 228B
Location: Phoenix Convention Center

Session Chairs: Koulis Pericleous, University of Greenwich; Gregory Poole, The University of South Alabama

8:00 AM
A Comparison of the Volume-averaged and Continuum Mixture Approaches for Modeling Equiaxed Solidification: *John Coleman*[1]; Matthew Krane[1]; [1]Purdue University

8:20 AM
Massively Parallel GPU Lattice Boltzmann Method for 3D Alloy Solidification and Solute Transport: *Ivars Krastins*[1]; Andrew Kao[1]; Koulis Pericleous[1]; [1]University of Greenwich

8:40 AM
Numerical Simulation on Solidification Structure of 30Cr2Ni4MoV Steel under Different Temperature Gradient Using Procast Software: *Zheng Chen*[1]; Jieyu Zhang[2]; [1]Shanghai University;Tongling University; [2]Shanghai University

9:00 AM
The Influence of Coil Configuration on Fluid Flow and Solidification of Electromagnetically Stirred Aluminum Alloys: *Gregory Poole*[1]; Laurentiu Nastac[2]; [1]University of South Alabama; [2]University of Alabama

9:20 AM
Discussion on Pouring Process Parameters Based on Slow Solidification Experiment of Extra - Thick Plate Mold: *Bao Yang*[1]; Chang-jun Xu[1]; Lian-wang Zhang[1]; Jing Li[1]; [1]School of Materials and Metallurgy, University of Science and Technology Liaoning

9:40 AM Break

10:00 AM
Validation of a Model for Predicting Air Entrainment during Pouring of Metal Castings: *Seyyed Hojjat Majidi*[1]; Christoph Beckermann[1]; [1]University of Iowa

10:20 AM
Modelling Directional Solidification in a Transverse Magnetic Field Validated via High Speed Synchrotron X-Ray Tomography: *Andrew Kao*[1]; Biao Cai[2]; Peter Lee[2]; Koulis Pericleous[1]; [1]University of Greenwich; [2]The University of Manchester

10:40 AM
Simulation Analysis on the Solidification Quality of Heavy Compatible Split Type Ingot: *Lian-wang Zhang*[1]; Yan Zhang[1]; Chun-xiao Sun[1]; Chang-jun Xu[1]; Ye Cui[2]; [1]Technical Center of Metallurgical Engineering, University of Science and Technology Liaoning; [2]Liaoning Fu-An Heavy Industry Co.,Ltd

11:00 AM
Effect of Hook Formation during Initial Solidification on Distribution of Subsurface Inclusions in Ultralow Carbon Steel Slabs: *Xiao Pengcheng*[1]; Liguang Zhu[1]; Caijun Zhang[1]; Jingyi Zhou[1]; [1]North China University of Science and Technology

Characterization of Minerals, Metals, and Materials – Characterization Methods

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

Monday AM
March 12, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chairs: Jian Li, NRCan/RNCan; Andrew Brown, University of New South Wales

8:00 AM Introductory Comments

8:05 AM Invited
Improve Product Quality and On-line Process Control with Three-dimensional Size and Shape Particle Characterization: Terry Stauffer[1]; *Phil Plantz*[1]; Paul Cannon[1]; Alex Greenzweig[1]; [1]Microtrac

8:25 AM
Case Studies Utilizing Advanced X-ray Computed Tomography Techniques: *Jennifer Sietins*[1]; Clara Hofmeister[2]; [1]Army Research Laboratory; [2]ORISE

8:45 AM
Integrated Imaging in Three Dimensions: The Sum is Greater than the Parts: *Ashwin Shahani*[1]; Hrishikesh Bale[2]; Nicolas Gueninchault[3]; Arno Merkle[2]; Erik Lauridsen[3]; [1]University of Michigan; [2]Carl Zeiss X-ray Microscopy Inc.; [3]Xnovo Technology ApS

9:05 AM
On FIB Milling Parameters: *Jian Li*[1]; [1]CanmetMATERIALS

9:25 AM Break

9:40 AM
The Full-field X-ray Nano-tomography System at the Advanced Photon Source: An Instrument Oriented toward In Situ Experiments: *Vincent De Andrade*[1]; Alex Deriy[1]; Michael Wojcik[1]; Deming Shu[1]; Sunil Bean[1]; Doga Gürsoy[1]; Tekin Bicer[1]; Daniel Pelt[2]; Xiaogang Yang[1]; Mark Wolfman[3]; Arthur Glowacki[1]; Chris Jacobsen[1]; Kamel Fezzaa[1]; C Kaira[4]; Nikhilesh Chawla[4]; M Ley[5]; Narayanan Kasthuri[1]; Francesco De Carlo[1]; [1]Argonne National Laboratory; [2]Lawrence Berkeley National Laboratory; [3]University of Illinois Chicago; [4]Arizona State University; [5]Oklahoma State University

10:00 AM
Transmission Kikuchi Diffraction for Characterization of Thin Film Phenomena: *Mikhail Polyakov*[1]; Rachel Schoeppner[1]; Xavier Maeder[1]; Johann Michler[1]; [1]EMPA

10:20 AM
3D Microstructural Characterization of Polymer and Ceramic Matrix Composite Materials (PMC, CMC) Using Serial Sectioning: *Veeraraghavan Sundar*[1]; Satya Ganti[1]; Bryan Turner[1]; [1]UES Inc.

10:40 AM
Correlative Multiscale Tomography for Additive Manufacturing: *Bartlomiej Winiarski*[1]; Grzegorz Pyka[1]; Austin Wade[1]; Dirk Laeveren[1]; Philip Withers[2]; [1]Thermo Fisher Scientific; [2]The University of Manchester

Characterization of Minerals, Metals, and Materials – Characterization of Non-ferrous Metals

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

Monday AM — Room: 124B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Y. Eren Kalay, Middle East Technical University; Xuewei Lv, Chongqing University

8:00 AM Introductory Comments

8:05 AM Invited
Characterization of Chape Memory Ti-Ni-Hf Alloys: *Walman Castro*[1]; Roniere Soares[1]; [1]Universidade Federal de Campina Grande

8:25 AM
In-situ Diagnostics of Damage Accumulation in Nickel-based Superalloy: *Koji Kageyama*[1]; Fauzan Adziman[1]; Tan Sui[1]; Alexander Korsunsky[1]; Roger Reed[1]; [1]University of Oxford

8:45 AM
Increasing Coercivity for Nd-Fe-B Melt Spun Ribbons by Adding 20 at.% Ce: *Munan Yang*[1]; Hang Wang[1]; Yongfeng Hu[2]; Bin Yang[1]; [1]Jiangxi University of Science and Technology; [2]Canadian Light Source

9:05 AM
Exploiting the Thixoformability of Ti-Co Alloys: Microstructure Evolution, Semisolid Deformation Behavior, and Mechanical Properties: *Kaio Campo*[1]; Caio de Freitas[1]; Mariana de Mello[1]; Rubens Caram[1]; [1]UNICAMP - University of Campinas

9:25 AM
The Influence of Liquid Structure on the Devitrification of Solid Amorphous Al-based Marginal Glass Forming Alloys: *Bengisu Yasar*[1]; Ilkay Kalay[2]; Eren Kalay[1]; [1]METU; [2]Cankaya University

9:45 AM Break

10:00 AM
Digital Image Analysis for the Automated Measurement of Dendritic Microstructures in Vacuum Arc Remelted Nickel Alloy 718: Thomas Ivanoff[1]; Trevor Watt[2]; *Eric Taleff*[1]; [1]The University of Texas at Austin; [2]Stratasys

10:20 AM
In Situ EBSD Study on the Development of Recrystallized Cube Texture in 3 Mass% Si Steel: *Shigehiro Takajo*[1]; Sven Vogel[1]; David Field[2]; Colin Merriman[2]; [1]Los Alamos National Laboratory; [2]Washington State University

10:40 AM
Synthesis and Characterization on Nickel Orthosilicate Anode of Lithium-ion Battery: Guihong Han[1]; *Duo Zhang*[1]; Yanfang Huang[1]; [1]Zhengzhou University

11:00 AM
Eletrochemical Behavior and Corrosion Properties of Ti-6Al-4V Alloy Made by Selective Laser Melting for Immersion in Artificial Seawater at Different Temperature: *Yifei Zhang*[1]; [1]Northeastern University

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Boundaries and Interfaces I

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Monday AM — Room: 131A
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Wei Liu, Nanjing University of Science and Technology; Jian Luo, UCSD

8:00 AM Invited
Developing Grain Boundary 'Phase' Diagrams: From Phenomenological Interfacial Thermodynamic Models to Atomistic Simulations: Shengfeng Yang[1]; *Jian Luo*[1]; [1]University of California, San Diego

8:30 AM
An Efficient Monte-Carlo Algorithm for Determining the Minimum Energy Structures of Metallic Grain Boundaries: *Srikanth Patala*[1]; Mark Tschopp[2]; Arash Banadaki[1]; [1]North Carolina State University; [2]US Army Research Laboratory

8:50 AM
First-principles Study of Co_3W Antiphase Boundaries with Al Impurities: *Chiraag Nataraj*[1]; Ruoshi Sun[1]; Axel van de Walle[1]; [1]Brown University

9:10 AM
First-principles Computation Design of CoPt and FePt Nanoparticles with Desired Magnetic Properties through Tailoring Surface Segregation: Zhenyu Liu[1]; *Guofeng Wang*[1]; [1]University of Pittsburgh

9:30 AM Break

9:50 AM
Understanding Defect Tolerance and Grain Boundary Effect on Mechanical Properties of Nano-twinned Yttria-stabilized Tetragonal Zirconia: *Ning Zhang*[1]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology

10:10 AM Invited
Materials Design from Functional Molecule-metal Interface: *Wei Liu*[1]; [1]Nanjing University of Science and Technology

10:40 AM
Modeling Segregation at Stacking Faults Using Cluster-assisted Statistical Mechanics: *Michael Titus*[1]; Robert Rhein[2]; Anton Van der Ven[2]; Tresa Pollock[2]; [1]Purdue University; [2]University of California, Santa Barbara

11:00 AM
Suppression of Martensitic Transitions in NiTi Shape Memory Alloys from Ab Initio Simulations: The Role of Compound Twins: *Luis Sandoval*[1]; Justin Haskins[1]; John Lawson[2]; [1]Analytical Mechanics Associates, Inc.; [2]NASA Ames Research Center

11:20 AM
Simulation on the Effects of Glass-glass Interfaces on the Plastic Deformation of Nano-glasses: *G.P. Zheng*[1]; [1]Hong Kong Polytechnic University

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Phase Field Simulations I: Functional Materials and Microstructure Evolution

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Monday AM
March 12, 2018

Room: 131B
Location: Phoenix Convention Center

Session Chairs: Brandon Runnels, University of Colorado, Colorado Springs; Katsuyo Thornton, University of Michigan, Ann Arbor

8:00 AM Invited
Phase-field Simulation Environment for Functional Materials: Xiaoxing Cheng[1]; Tiannan Yang[1]; Bo Wang[1]; *Long Qing Chen*[1]; [1]Penn State University

8:30 AM
Computational Design and Simulation of Magnetoelectric Composites for Electric Field-controlled Magnetic Properties: *Liwei Geng*[1]; Yu Wang[1]; [1]Michigan Technological University

8:50 AM
Predicting Self-organization of Nanostructured Morphologies in Physical Vapor Deposited Phase-separating Alloys: *Kumar Ankit*[1]; Benjamin Derby[2]; Amit Misra[2]; Michael Demkowicz[3]; [1]Arizona State University; [2]University of Michigan, Ann Arbor; [3]Texas A&M University, College Station

9:10 AM
A Chemo-mechanical Phase-field Model for Phase Separation of a Li-ion Battery Electrode Particle to Study Influence of Surface Irregularities during Intercalation: *Jaykumar Santoki*[1]; Daniel Schneider[1]; Marc Kamlah[1]; Britta Nestler[1]; [1]Karlsruhe Institute of Technology (KIT)

9:30 AM Break

9:50 AM
Phase-field Modelling of Multiply-twinned Structures of FCC Metallic Nanomaterials: Jong-Hyuk Lee[1]; Dong-Uk Kim[2]; Kunok Chang[3]; *Yongwoo Kwon*[1]; [1]Hongik University; [2]University of Michigan; [3]Korea Atomic Energy Research Institute

10:10 AM
Monoclinic Distortion in Nanotwinned Ferroelectrics: *Liwei Geng*[1]; Yongmei Jin[1]; Yu Wang[1]; [1]Michigan Technological University

10:30 AM
Phase Field Simulation of Microstructure Evolution Driven by Strong Grain Boundary Anisotropy Computed Using Realistic Models for Grain Boundary Energy: *Brandon Runnels*[1]; Josep Gras[1]; [1]University of Colorado Colorado Springs

10:50 AM
Phase-field Simulation of Nodule Microstructure near Grain Boundaries in Nickel-based Alloys: *Yuhki Tsukada*[1]; Ryota Oshima[2]; Toshiyuki Koyama[1]; Mitsuharu Yonemura[3]; [1]Nagoya University; [2]Nagoya Institute of Technology; [3]Nippon Steel & Sumitomo Metal

11:10 AM
Influence of Fluid Flow on Morphological Evolution of Seaweed Structures Using Phase Field Modeling: *Pavan Laxmipathy Veluvali*[1]; Fei Wang[2]; Michael Selzer[1]; Kumar Ankit[3]; Britta Nestler[1]; [1]Karlsruhe Institute of Technology (KIT); [2]Karlsruhe University of Applied Sciences; [3]Texas A&M University

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design of Materials: CALPHAD

*Sponsored by:*Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Monday AM
March 12, 2018
Room: 131C
Location: Phoenix Convention Center

Session Chairs: Carelyn Campbell, NIST; Fan Zhang, CompuTherm, LLC

8:00 AM Invited
Use the Full Potential of the CALPHAD Modeling Tools: *Fan Zhang*[1]; Shuanglin Chen[1]; Weisheng Cao[1]; Chuan Zhang[1]; Jun Zhu[1]; Duchao Lv[1]; [1]CompuTherm, LLC

8:30 AM
On the Gibbs Energies of Stable and Metastable Simple Oxides: *Alexander Pisch*[1]; Alain Pasturel[1]; Noël Jakse[1]; [1]SIMAP

8:50 AM Invited
Application of Computational Thermodynamics in Yittria Stablized Zirconia System: *Yu Zhong*[1]; [1]Florida International University

9:20 AM
Thermodynamic Properties of Cu–Pb–F Ternary System: *Satoshi Iikubo*[1]; Shoya Kawano[1]; Kumiko Yamamoto[1]; Yuya Suzuki[1]; Kenji Hirata[1]; Hideyuki Harada[1]; [1]Kyushu Institute of Technology

9:40 AM Break

10:00 AM Invited
Building a Co Diffusion Mobility Database for γ/γ' Co-Superalloys: Greta Lindwall[1]; Kil-won Moon[1]; *Carelyn Campbell*[1]; Peisheng Wang[1]; Ursula Kattner[1]; [1]National Institute of Standards and Technology

10:30 AM
Computational Thermodynamics Aided Design of Co-based γ'-strengthened Superalloys: *Eric Lass*[1]; [1]National Institute of Standards and Technology

10:50 AM
Calphad-type Assessment of the Ni-Ti-Hf System Combined with the DFT Calculations: *Chang-Seok Oh*[1]; Eun Ae Choi[1]; Hak Sung Lee[1]; [1]Korea Institute of Materials Science

11:10 AM
Thermodynamic Database for Co-Al-W-Ni-Ti-Ta-Cr Based Superalloys: *Peisheng Wang*[1]; Ursula Kattner[2]; Carelyn Campbell[2]; Eric Lass[2]; Greg Olson[3]; [1]Northwestern University/NIST; [2]NIST; [3]Northwestern University

Computational Materials Discovery and Optimization – Materials Informatics

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Arizona State University; Arunima Singh, Lawrence Berkeley National Laboratory; Eric Homer, Brigham Young University; Francesca Tavazza, National Institute of Standards and Technology

Monday AM
March 12, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chair: Richard Hennig, University of Florida

8:00 AM Invited
Machine Learning for Materials: *Matthias Rupp*[1]; [1]Fritz Haber Institute of the Max Planck Society

8:30 AM
Learning Grain Boundary Properties from Macroscopic and Microscopic Structural Descriptors: *Ankita Mangal*[1]; Ian Chesser[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

8:50 AM
Minimal Addition of Cerium for Stability of Critical Phases in Hard Magnetic AlNiCo Alloys: Combined Machine Learning and CALPHAD: George Dulikravich[1]; *Rajesh Jha*[1]; [1]Florida International University

9:10 AM Invited
Quantum-accurate Force Fields from Machine Learning of Large Materials Data: *Shyue Ping Ong*[1]; Chi Chen[1]; Zhi Deng[1]; Richard Tran[1]; [1]University of California, San Diego

9:40 AM Break

10:00 AM
Predicting Ferroelectric Properties from Microstructures with Deep Learning: *Isaac Curtis*[1]; Vishnu Boddeti[2]; Samrat Choudhury[1]; [1]University of Idaho; [2]Michigan State University

10:20 AM
Machine Learning for Prediction of Electronic Structures of Multi-component Alloys: *Byung Chul Yeo*[1]; Sang Soo Han[1]; [1]Korea Institute of Science and Technology

10:40 AM
Tailoring Properties in Multi-component Alloys through Heuristic Optimization: *Aayush Sharma*[1]; Rahul Singh[1]; Ganesh Balasubramanian[1]; [1]Iowa State University

Computational Materials Science and Engineering for Nuclear Energy – Nuclear Fuels and Cladding I

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Monday AM
March 12, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Adrien Couet, University of Wisconsin - Madison; Blas Uberuaga, Los Alamos National Laboratory

8:00 AM Invited
Vacancy Clusters and Xenon Diffusion in UO2: *David Andersson*[1]; Christopher Matthews[1]; Romain Perriot[1]; Michael Cooper[1]; Christopher Stanek[1]; [1]Los Alamos National Laboratory

8:30 AM
Thermophysical Properties of (U,Zr)O2 Pellet-cladding Interface though MD Simulations: *Dillon Frost*[1]; Michael Cooper[2]; Patrick Burr[1]; [1]UNSW Sydney; [2]Los Alamos National Lab

8:50 AM
Computational Modelling of Thermal Transport in Uranium Dioxide: *Ahmed Hamed*[1]; Anter El-Azab[1]; [1]Purdue University

9:10 AM
Atomistic Study of Thermal Spike Response of Xe Bubbles in UO_2: *Wahyu Setyawan*[1]; Michael Cooper[2]; Kenneth Roche[1]; Brian Wirth[3]; Blas Uberuaga[2]; David Andersson[2]; Richard Kurtz[1]; [1]Pacific Northwest National Laboratory; [2]Los Alamos National Laboratory; [3]University of Tennessee, Knoxville

9:30 AM Break

9:50 AM
Effect of Post Fabrication Voids on Irradiation Performance of U-10Mo Monolithic Mini-plate: *Walid Mohamed*[1]; Hee Seok Roh[1]; Hakan Ozaltun[2]; James Smith[2]; Joseph Nielsen[2]; Irina Glagolenko[2]; Gerard Hofman[1]; Bertrand Stepnik[3]; Harald Breitkreutz[4]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Idaho National Laboratory; [3]AREVA NP, CERCA; [4]Research Neutron Source Heinz Maier-Leibnitz (FRM II), TUM

10:10 AM
Phase-field Modeling of Fission Rate Effect on the Gas Bubble Swelling in U-Mo Fuel: Linyun Liang[1]; *Zhi-Gang Mei*[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory

10:30 AM
Effect of Dopants on Uranium-based Metallic Fuels to Mitigate Fuel-cladding Chemical Interactions: *Rabi Khanal*[1]; Nathan Jerred[1]; Michael Benson[2]; Robert Mariani[2]; Indrajit Charit[1]; Samrat Choudhury[1]; [1]University of Idaho; [2]Idaho National Laboratory

10:50 AM Invited
Modeling Inclusions with Surface Stresses in the Phase Field Framework: *Daniel Schwen*[1]; Larry Aagesen[1]; [1]Idaho National Laboratory

Computational Thermodynamics and Kinetics – Structure and Property

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Monday AM
March 12, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: Brent Fultz, California Institute of Technology

8:00 AM Invited
A Novel Mechanism for Order Patterning in Alloys Driven by Irradiation: *Pascal Bellon*[1]; Calvin Lear[2]; Robert Averback[1]; [1]University of Illinois; [2]University of Michigan

8:30 AM
Thermoelectric Enhancement in Hybrid Ordered/Disordered Metamaterials via Phonon Localization and Band Anticrossing: *Taishan Zhu*[1]; Elif Ertekin[1]; [1]University of Illinois at Urbana Champaign

8:50 AM
Thermodynamic Analysis of Substitutional and Interstitial Ti Alloys: *Naga Sri Harsha Gunda*[1]; Anton Van der Ven[1]; [1]University of California, Santa Barbara

9:10 AM
Point Defects in Concentrated Alloys : Distributions of Properties: *Celine Varvenne*[1]; Ghani Berkoun[1]; Aitor Luque[2]; William Curtin[2]; Emmanuel Clouet[3]; [1]Aix-Marseille Univ.-CNRS; [2]EPFL; [3]CEA Saclay

9:30 AM Break

9:50 AM Invited
Design of Novel Functional Materials Using the Capabilities of the Materials Project: *Kristin Persson*[1]; [1]University of California, Berkeley

10:20 AM
Point Vacancy Affects on Ni/Al Nanolaminate Interface Diffusion and Combustion: *Brandon Witbeck*[1]; Douglas Spearot[1]; [1]University of Florida

10:40 AM
Interface Co-segregation of Additive Elements for MoSi2-Mo5Si3 Pseudobinary Alloys: A First-principles Study: *Koretaka Yuge*[1]; [1]Department of Materials Science and Engineering, Kyoto University

11:00 AM
Void Superlattice Formation: Symmetry and Lattice Parameter Selection: *Yongfeng Zhang*[1]; Yipeng Gao[1]; Chao Jiang[1]; Daniel Schwen[1]; [1]Idaho National Lab

Coupling Experiments and Modeling to Understand Plasticity and Failure – Plasticity

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

Monday AM
March 12, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chairs: Michael Sangid, Purdue University; Paul Shade, Air Force Research Lab

8:00 AM Invited
A Survey of Several High-energy X-ray Diffraction Studies and Implications for Models of Polycrystal Plasticity: *Armand Beaudoin*[1]; Kamalika Chatterjee[2]; Darren Pagan[2]; Paul Shade[3]; Joel Bernier[4]; [1]Cornell High Energy Synchrotron Source; [2]University of Illinois at Urbana-Champaign; [3]Air Force Research Laboratory; [4]Lawrence Livermore National Laboratory

8:25 AM Invited
The Importance of Introducing Probabilistic Information When Modeling the Constitutive Response of Aggregates (Part I): *Carlos Tome*[1]; Irene Beyerlein[2]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

8:50 AM Invited
The Importance of Introducing Probabilistic Information When Modeling the Constitutive Response of Aggregates (Part II): *Irene Beyerlein*[1]; Carlos Tome[2]; [1]University of California, Santa Barbara; [2]Los Alamos National Laboratory

9:15 AM
Microstructure Evolution during Biaxial Load Path Changes: In-situ Experiments and Multi-scale FE-FFT Modeling: *Manas Upadhyay*[1]; Anirban Patra[2]; Wei Wen[2]; Ricardo Lebensohn[2]; Carlos Tome[2]; Helena Van Swygenhoven[3]; [1]Paul Scherrer Institut; [2]Los Alamos National Laboratory; [3]Paul Scherrer Institute/Ecole Polytechnique Federale de Lausanne

9:35 AM Break

9:50 AM Invited
Understanding Shear Band Formation Using High-resolution X-ray Diffraction and Numerical Modeling: *Darren Pagan*[1]; Armand Beaudoin[2]; Matthew Miller[3]; [1]Cornell High Energy Synchrotron Source; [2]University of Illinois at Urbana-Champaign; [3]Cornell University

10:15 AM Invited
Measurements and Crystal Plasticity Simulations of Microstructure-scale Deformation in Tantalum: *Corbett Battaile*[1]; Hojun Lim[1]; Jay Carroll[1]; [1]Sandia National Laboratories

10:40 AM
Microstructure and Texture Evolution during Thermo-mechanical Processing of Low-symmetry Metals: *Rodney McCabe*[1]; Miroslav Zecevic[2]; Cody Miller[1]; Timothy Barrett[2]; Daniel Coughlin[1]; Marko Knezevic[2]; David Alexander[1]; [1]Los Alamos National Laboratory; [2]University of New Hampshire

11:00 AM
Facile Measurements of Elastic Constants for Coupling Experiments and Modeling to Understand Plasticity and Failure: *Xinpeng Du*[1]; Ji-Cheng Zhao[1]; [1]Ohio State University

11:20 AM
Understanding Plastic Deformation in Polycrystals 301L Stainless Steel(301L SS) Using Far Field High Energy Diffraction Microscopy (HEDM) Experiments: *Jinesh Dahal*[1]; Harshad Paranjapee[1]; Aaron Stebner[1]; Darren Dale[2]; Don Brown[3]; [1]Colorado School Of Mines; [2]Cornell High Energy Synchrotron Source; [3]Los Alamos National Laboratory

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 1A: Grain Size Development During Forging & Heat Treatment in Ni-based Superalloys. 1B: Recrystallization & Grain Growth Ni-based Superalloys.

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Monday AM
March 12, 2018
Room: 126A
Location: Phoenix Convention Center

Session Chairs: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials

8:00 AM Invited
Strain Induced Excessive Grain Growth in Nickel Base Superalloys: *Nathalie Bozzolo*[1]; Marie-Agathe Charpagne[2]; Jean-Michel Franchet[3]; Andrea Agnoli[3]; Marc Bernacki[1]; [1]MINES ParisTech; [2]University of California, Santa Barbara; [3]Safran

8:30 AM Invited
Abnormal Grain Growth upon Annealing of a Hot-worked Ni-base Alloy: *Michael Fahrmann*[1]; David Metzler[1]; [1]Haynes International Inc.

9:00 AM
Influence of Thermomechanical Processing and Hot Deformation on Microstructural Evolution

towards Building a Comprehensive Model for Dynamic Recrystallization Kinetics in Alloy IN625: *Benjamin Adam*[1]; Graham Tewksbury[1]; William Wood[1]; Brandon Templin[2]; Jon Tirpak[3]; [1]Portland State University; [2]Scientific Forming Technology Corporation; [3]Advanced Technology International (ATI)

9:20 AM
A Systematic Data-analytics Approach to the Design of Processing Routes for Forged Nickel-based Superalloy Inconel 706: Nishan Senanayake[1]; *Jennifer Carter*[1]; [1]Case Western Reserve University

9:40 AM Break

10:00 AM Invited
Influence of Forging Parameters on the Microstructure of Supersolvus Heat Treated Nickel-based Superalloy RR1000: *Kevin Severs*[1]; Vikas Saraf[1]; Iain Parr[2]; Thomas Jackson[2]; Mark Hardy[2]; [1]ATI Forged Products; [2]Rolls-Royce plc

10:30 AM
Heteroepitaxial Recrystallization in Polycrystalline Nickel-based Superalloys: Nucleation Mechanism: *Marie-Agathe Charpagne*[1]; Jonathan Cormier[2]; Timothy Clark[3]; Tresa Pollock[1]; [1]University of California, Santa Barbara; [2]Institut Pprime, UPR CNRS 3346, ISAE-ENSMA; [3]Carlton Forge Works, PCC

10:50 AM
Deformation Processing and Recrystallization of Single Crystal Ni-base Superalloys: *Kyle Ventura*[1]; Sarah Frith[1]; Yujie Wang[1]; Arianne Lazaro[1]; Gerhard Fuchs[1]; [1]University of Florida

11:10 AM
The Effect of Forging Parameters on Large Unrecrystallized Powder Features in RR1000 Nickel Base Superalloy: *Soran Birosca*[1]; Mark Hardy[2]; [1]Swansea University; [2]Rolls-Royce

Design for Mechanical Behavior of Architectured Materials via Topology Optimization – Optimal Design of Microlattices and Architected Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Additive Manufacturing Bridge Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Natasha Vermaak, Lehigh University; Andrew Gaynor, U.S. Army Research Laboratory

Monday AM
March 12, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chairs: Andrew Gaynor, ARL; Natasha Vermaak, Lehigh University

8:00 AM Invited
Optimal Design of Architected Materials with Extreme Energy Dissipation: *Lorenzo Valdevit*[1]; Alireza Asadpoure[2]; Babak Haghpanah[1]; [1]University of California, Irvine; [2]University of Massachusetts Dartmouth

8:40 AM
Optimized Microlattices for High Strength and Impact Attenuation: *Eric Clough*[1]; Christopher Roper[1]; Zak Eckel[1]; Jacob Hundley[1]; Morgan Stilke[1]; Tobias Schaedler[1]; [1]HRL Laboratories

9:10 AM
Dense Architectured Materials in Engineering and in Nature: Mohammad Mirkhalaf[1]; Zhen Yin[1]; *Francois Barthelat*[1]; [1]McGill University

9:40 AM Break

10:00 AM
Inverse Homogenization Design of Micro-truss Architected Materials Using Geometric Primitives: *Seth Watts*[1]; Wen Chen[1]; Julie Jackson[1]; William Smith[1]; Christopher Spadaccini[1]; Daniel Tortorelli[1]; [1]Lawrence Livermore National Laboratory

10:30 AM
Multiscale Design with Architected Material Connectivity for Multiphysics Problems: *Zongliang Du*[1]; Hayoung Chung[1]; Sandilya Kambampati[1]; Alicia Kim[1]; [1]University of California San Diego

11:00 AM
Deformation and Failure of Bioinspired Segmented Architectured Beams and Plates: *Ahmed Dalaq*[1]; Francois Barthelat[1]; [1]McGill University

Dynamic Behavior of Materials VIII – Effect of Microstructure of Dynamic Response I

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Monday AM
March 12, 2018
Room: 127B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Modeling the Spall Behavior of Metallic Materials at the Atomic Scales and the Mesoscales: *Avinash Dongare*[1]; Garvit Agarwal[1]; Sergey Galitskiy[1]; Jie Chen[1]; [1]University of Connecticut

8:40 AM
Dynamic Tension-compression Anisotropy in a Stable Nanocrystalline Cu Alloy: *Scott Turnage*[1]; Kristopher Darling[2]; Chaitanya Kale[1]; Kiran Solanki[1]; [1]Arizona State University; [2]Army Research Laboratory

9:00 AM
The Role of Interfaces in Nucleation of Dynamic Damage in BCC Materials: *Saryu Fensin*[1]; Eric Hahn[1]; Timothy Germann[1]; George Gray[1]; [1]Los Alamos National Laboratory

9:20 AM
Evaluation of High Strain Rate Plastic Flow Behaviour of Nanocrystalline Nickel Using Ultra Fast Nanoindentation Test System: *Sundararajan Govindan*[1]; Sudharshan Phani[2]; Suresh Babu[2]; Nitin Wasekar[2]; [1]Indian Institute of Technology Madras; [2]ARCI

9:40 AM Break

10:00 AM Invited
Effect of Deviatoric Material Response on Perturbed Shock Front Stability: Saul Opie[1]; Elizabeth Fortin[1]; Ashish Gopalakrishnan[1]; Eric Loomis[2]; *Pedro Peralta*[1]; [1]Arizona State University; [2]Los Alamos National Laboratory

10:40 AM
Prediction of Fragmentation of an Aluminum Expanding Ring: *Gianluca Iannitti*[1]; Andrew Ruggiero[1]; Gabriel Testa[1]; Nicola Bonora[1]; Domenico Gentile[1]; [1]University of Cassino

11:00 AM
Kinetics of Void Nucleation and Growth at Grain Boundaries on Shock Loaded Copper Bicrystals: *Elizabeth Fortin*[1]; Matthew Catlett[2]; Pedro Peralta[1]; [1]Arizona State University; [2]Los Alamos National Laboratory

Energy Technologies and CO_2 Management Symposium – CO_2 Capture

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Donna Guillen, Idaho National Laboratory; Tao Wang, Nucor Steel; Neale Neelameggham, Ind LLC; John Howarter, Purdue University

Monday AM
March 12, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: Ziqi Sun, Queensland University of Technology, Australia; Xia Lou, Curtin University

8:00 AM Keynote
Charge Modulation for Manipulating Material-gas Interactions: CO_2 Capture and H2 Storage: *Sean Smith*[1]; Xin Tan[1]; Hassan Tahini[1]; [1]University of New South Wales

8:40 AM Invited
Gas Hydrate-based CO_2 Separation Process: Quantitative Assessment of the Effectiveness of Various Chemical Additives Involved in the Process: Hossein Dashti[1]; *Xia Lou*[1]; [1]Curtin University

9:00 AM
Interfacial Interactions of Self-healing Polymer-cement Composites Exposed to CO_2 Using Synchrotron Methods: *Mohamed Elbakhshwan*[1]; Simerjeet Gill[1]; Chonghang Zhao[2]; Yu-chen Karen Chen-Wiegart[2]; Lynne Ecker[1]; M. Ian Childers[3]; Christina Lopano[4]; Barbara Kutchko[4]; Carlos Fernandez[3]; [1]Brookhaven National Laboratory; [2]Stony Brook University; [3]Pacific Northwestern National Laboratory; [4]National Energy Technology Laboratory

9:20 AM
Tar Removal from Hot Coke Oven Gas for H_2 Amplification with In Situ CO_2 Capture: *Huaqing Xie*[1]; Qin Qin[1]; Qingbo Yu[1]; [1]School of Metallurgy, Northeastern University

9:40 AM Break

10:00 AM
An Evaluation Method for Material and Energy Conversion Effect with Steel Manufacturing Process Data: *Shipeng Huang*[1]; Zhong Zheng[1]; Xiaoqiang Gao[2]; Shenglong Jiang[1]; Zhaojun Xu[1]; [1]College of Materials Science and Engineering, Chongqing University; [2]College of Economics and Business Administration, Chongqing University

10:20 AM
Preparation and Characterization of Activated Carbon from Waste Ion-exchange Resin for CO_2 Adsorption: *Mengqi Wei*[1]; Qingbo Yu[1]; Qiang Guo[2]; Zongliang Zuo[1]; Qin Qin[1]; [1]Northeastern University, China; [2]Hebei Construction& Investment New Energy Co. Ltd

10:40 AM
Solid Solution CaxSr1-xO Catalysts in Transesterification for Biodiesel Production: *Maria Lourdes Potestades*[1]; Shih-Kang Lin[1]; Wen-Dung Hsu[1]; Masahiro Yoshimura[1]; [1]National Cheng Kung University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Data-driven Investigations of Fatigue

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Monday AM
March 12, 2018
Room: 125B
Location: Phoenix Convention Center

Session Chair: Ashley Spear, University of Utah

8:00 AM Keynote
A Data Science Framework for Reduced-order Microstructure-sensitive Rank Ordering of Fatigue Performance: Noah Paulson[1]; Matthew Priddy[2]; David McDowell[3]; *Surya Kalidindi*[3]; [1]Argonne National Laboratory; [2]Mississippi State University; [3]Georgia Institute of Technology

8:40 AM Invited
Data-driven Approaches for Steel Fatigue Strength Prediction: *Ankit Agrawal*[1]; Alok Choudhary[1]; [1]Northwestern University

9:00 AM
Predicting the Effect of Microstructure on the Likelihood of Early Fatigue Failures Using Data Analytics Algorithms: *Sushant Jha*[1]; Robert Brockman[1]; Rebecca Hoffman[1]; Vikas Sinha[2]; William Porter[1]; Dennis Buchanan[1]; Adam Pilchak[3]; James Larsen[3]; Reji John[3]; [1]University of Dayton Research Institute; [2]UES, Inc.; [3]US Air Force Research Laboratory

9:20 AM Break

9:40 AM
Microstructure, Strain Localization and Fatigue in a Polycrystalline Nickel Base Superalloy at High Temperature: *J.C. Stinville*[1]; E. Martin[2]; M. Karadge[2]; S. Ismonov[2]; M. Soare[2]; T. Hanlon[2]; S. Sundaram[2]; M.P. Echlin[1]; P. Callahan[1]; W.C. Lenthe[1]; V.M. Miller[1]; J. Miao[3]; A.E. Wessman[4]; R. Finlay[4]; A. Loghin[2]; J. Marte[2]; T.M. Pollock[1]; [1]University of California, Santa Barbara; [2]General Electric Global Research; [3]University of Michigan; [4]General Electric Aviation

10:00 AM
Identification of Fatigue Weak Links in Aluminum Alloys Using a Data-driven Approach: *Brian Wisner*[1]; Krzysztof Mazur[1]; Antonios Kontsos[1]; [1]Drexel University

10:20 AM
High-throughput Fatigue Experiments for Early Damage Evolution and Lifetime Prediction: *Thomas Straub*[1]; Michael Buck[1]; Ali Durmaz[2]; Chris Eberl[1]; [1]University of Freiburg; [2]Fraunhofer IWM

Fracture: 65 Years after the Weibull Distribution and the Williams Singularity – Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Brad Boyce, Sandia National Laboratories; Ellen Cerreta, Los Alamos National Laboratory; Jacob Hochhalter, NASA LaRC; Jonathan Zimmerman, Sandia National Laboratories

Monday AM
March 12, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chairs: Ellen Cerreta, Los Alamos National Labs; Philip Noell, Sandia National Labs

8:00 AM Invited
K-dominance of Atomistic Cracks: *Ellad Tadmor*[1]; [1]University of Minnesota

8:30 AM Invited
Singularities of Dynamic Cracks: *Michael Marder*[1]; [1]UT Austin

9:00 AM
The Effect of Loading Rate on Fracture Toughness of Low Ductility Materials: *Carl Cady*[1]; Cheng Liu[1]; [1]Los Alamos National Laboratory

9:20 AM Break

9:40 AM Invited
Fracture Behavior of High Performance Sheet Steel: *Kip Findley*[1]; Lindsay Golem[1]; Mykal Madrid[1]; Kester Clarke[1]; John Speer[1]; [1]Colorado School of Mines

10:10 AM Invited
Physical and Computational Aspects of Engineering Damage Mechanics: *Curt Bronkhorst*[1]; Hashem Mourad[1]; Darby Luscher[1]; Daniele Versino[1]; [1]Los Alamos National Laboratory

10:40 AM
On the Prediction of Failure in 6016 Aluminum Alloy Sheet by GISSMO Damage Model: *Bin Liang*[1]; Yan Zhao[2]; Dengfu Chen[1]; Xinming Wan[2]; Junping Zhang[2]; Jia Zhou[2]; Mujun Long[1]; Huamei Duan[1]; [1]Chongqing University; [2]China Automotive Research Engineering Institute Co. Ltd

11:00 AM
Void Initiation during Ductile Rupture of Pure Metals: *Philip Noell*[1]; Jay Carroll[1]; Khalid Hattar[1]; Blythe Clark[1]; Brad Boyce[1]; [1]Sandia National Labs

Frontiers in Advanced Functional Thin Films and Nanostructured Materials – Session I

Sponsored by: TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Ritesh Sachan, Army Research Office; Srinivasa Rao Singamaneni, The University of Texas at El Paso; Haiyan Wang, Purdue University; Nuggehalli Ravindra, New Jersey Institute of Technology; Raj Singh, Oklahoma State University; Amit Pandey, LG Fuel Cell Systems Inc.

Monday AM
March 12, 2018

Room: 103A
Location: Phoenix Convention Center

Session Chairs: Ritesh Sachan, Army Research Office; Nuggehalli M Ravindra, NJIT

8:00 AM Keynote
Discovery of Ferromagnetism and High-temperature Superconductivity in Q-carbon: *Jagdish (Jay) Narayan*[1]; Anagh Bhaumik[1]; Ritesh Sachan[2]; [1]North Carolina State University; [2]Materials Science Division, Army Research Office

8:40 AM Invited
Diamond Epitaxy for High Power and High Temperature Electronics: *Robert Nemanich*[1]; Franz A. Koeck[1]; Maitreya Dutta[2]; Raghuraj Hathwar[1]; Mehdi Saremi[1]; Srabanti Chowdhury[2]; Stephen M. Goodnick[1]; [1]Arizona State University; [2]Univeristy of California - Davis

9:10 AM Invited
Nanostructure Synthesis by Pulsed Laser Melting: *Ramki Kalyanaraman*[1]; [1]University of Tennessee

9:30 AM Break

9:45 AM Invited
A New Approach to Align CNTs in CNT Films: Yingying Yu[1]; Qingwen Li[2]; *Yuntian Zhu*[1]; [1]North Carolina State University; [2]Suzhou Institute of Nanotechnology and Nanobionics

10:15 AM
Effect of Geometrical Defects on Thermal and Mechanical Properties of Metal-coated Multi-walled Carbon Nanotubes: *Iman Salehinia*[1]; Ravindra Sunil Dhumal[1]; Dinesh Bommidi[1]; [1]Northern Illinois University

10:35 AM
Control of Nucleation of 3C-SiC Utilizing Screw Dislocations in 6H-SiC: *Ryo Watanabe*[1]; Sakiko Kawanishi[1]; Hiroyuki Shibata[1]; [1]Tohoku University

10:55 AM
High-temperature Carbon-based Superconductors: B-doped Q-carbon: *Anagh Bhaumik*[1]; Ritesh Sachan[2]; Siddharth Gupta[1]; Jagdish Narayan[1]; [1]North Carolina State University; [2]Materials Science Division, Army Research Office

11:15 AM
Superhard Q-carbon Nanostructures Formed *via* Nanosecond Laser Melting and Ultrafast Quenching: *Siddharth Gupta*[1]; Ritesh Sachan[2]; Anagh Bhaumik[1]; Punam Pant[1]; Roger Narayan[1]; Jagdish Narayan[1]; [1]North Carolina State University; [2]Materials Science Division, Army Research Office

High Entropy Alloys VI – Alloy Development and Applications I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Monday AM
March 12, 2018

Room: 121B
Location: Phoenix Convention Center

Session Chairs: Peter Liaw, The University of Tennesee; Jien-Wei Yeh, National Tsing Hua University

8:00 AM Keynote
Breakthrough Applications of High-entropy Materials: *Jien-Wei Yeh*[1]; [1]National Tsing Hua University

8:30 AM Keynote
Mechanisms of Damage Tolerance of CrCoNi-based High-entropy Alloys: *Robert Ritchie*[1]; Bernd Gludovatz[2]; Qian Yu[3]; Easo George[4]; [1]University of California, Berkeley; [2]University of New South Wales; [3]Zhejiang University; [4]Oak Ridge National Laboratory

9:00 AM Invited
Microstructure and Properties of New Refractory High Entropy Superalloys: *Oleg Senkov*[1]; Jacob Jensen[2]; Adam Pilchak[1]; Hamish Fraser[2]; [1]Air Force Research Laboratory; [2]The Ohio State University

9:20 AM Invited
Designing Ti-Zr-Ta-Mo-W Refractory High-entropy Alloy: *Aayush Sharma*[1]; Prashant Singh[2]; Mouhamad Diallo[1]; Pratik Ray[2]; Ganesh Balasubramanian[1]; Matthew Kramer[2]; Duane Johnson[2]; [1]Iowa State University; [2]Ames Laboratory

9:40 AM Break

10:00 AM Invited
Developing Light-weight High-entropy Alloys: Modeling and Experiments: *Michael Gao*[1]; Feng Rui[2]; Chuan Zhang[3]; Fan Zhang[3]; Jeffrey Hawk[1]; Paul Jablonski[1]; Kyle Rozman[1]; David Alman[1]; Chan Ho Lee[2]; Peiyong Chen[2]; Peter Liaw[2]; [1]National Energy Technology Lab; [2]University of Tennessee; [3]CompuTherm LLC

10:20 AM Invited
A High-throughput Approach to Accelerate the Evaluation of Multicomponent Alloys: Mu Li[1]; Rohan Mishra[1]; *Katharine Flores*[1]; [1]Washington University

10:40 AM Invited
Investigating Microstructures in the Al-Co-Cr-Fe-Ni Alloys Using Bragg-edge Neutron Imaging Techniques: *Louis Santodonato*[1]; Hassina Bilheux[1]; Rui Feng[2]; Gian Song[1]; Jean Bilheux[1]; Jiao Lin[1]; Zhi Tang[2]; Ke An[1]; Peter Liaw[2]; [1]Oak Ridge National Laboratory; [2]The University of Tennessee

11:00 AM Invited
Assessing High-entropy Alloys for High Temperature Structural Application Possibilities: *Young-Won Kim*[1]; [1]Gamteck LLC

11:20 AM Invited
A New Centimeter–diameter LaCePrCoAl High Entropy Bulk Metallic Glass: Yonghua Meng[1]; Jie Pan[1]; *Yi Li*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

High Entropy Alloys VI – Thermal and Other Properties I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Monday AM
March 12, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Michael Gao, National Energy Technology Lab; Tirumalai Srivatsan, The University of Akron

8:00 AM Invited
High-throughput Screening of High Entropy Alloys Using a Computational Thermodynamic Approach: *Chuan Zhang*[1]; Fan Zhang[1]; Rui Feng[2]; Michael C Gao[3]; Peter K Liaw[2]; [1]Computherm; [2]University of Tennessee; [3]National Energy Technology Laboratory

8:20 AM Invited
Structures, Thermodynamics and Elasticity of High-entropy Alloys: *Michael Gao*[1]; Mike Widom[2]; Jeffrey Hawk[1]; [1]National Energy Technology Lab; [2]Carnegie Mellon University

8:40 AM Invited
Phase-stability and Short-range Ordering Behavior of FeMnCoCrAlx High-entropy Alloy: Theory and Experiment: *Prashant Singh*[1]; Marshal Amalraj[2]; Aayush Sharma[3]; Ganesh Balasubramanian[3]; K. G. Pradeep[2]; Duane Johnson[1]; [1]Ames Laboratory; [2]RWTH Aachen University; [3]Iowa State University

9:00 AM Invited
Development of Refractory High Entropy Alloys Fabricated by Powder Metallurgy Process: Byungchul Kang[1]; Junho Lee[1]; Ho Jin Ryu[1]; *Soon Hyung Hong*[1]; [1]Korea Advanced Institute of Science and Technology (KAIST)

9:20 AM
Compositional Effects on Thermal and Electrical Transport Properties in Ni-containing Single-phase Concentrated Solid Solution Alloys: *Ke Jin*[1]; Brian Sales[1]; George Stocks[1]; Ke An[1]; Wallace Porter[1]; Yanwen Zhang[1]; William Weber[2]; Hongbin Bei[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

9:40 AM Break

10:00 AM Invited
True Thermodynamic Equilibrium in High Entropy Alloys: Al0.3CoCrFeNi as a Case Study: Bharat Gwalani[1]; Vishal Soni[1]; Deep Choudhuri[1]; Stephane Gorsse[2]; *Rajarshi Banerjee*[1]; [1]University of North Texas; [2]CNRS, ICMCB

10:20 AM Invited
Thermal Stability and Coarsening of Coherent Particles in a Precipitation-hardened $(NiCoFeCr)_{94}Ti_2Al_4$ High-entropy Alloy: *Y.Y. Zhao*[1]; T.G. Nieh[1]; [1]University of Tennessee, Knoxville

10:40 AM
Phase Stability and Transformation in a Light-weight High-entropy Alloy: *Rui Feng*[1]; Michael C. Gao[2]; Chuan Zhang[3]; Wei Guo[4]; Jonathan D. Poplawsky[4]; Fan Zhang[3]; Jeffrey A. Hawk[2]; Joerg C. Neuefeind[4]; Yang Ren[5]; Peter K. Liaw[1]; [1]The University of Tennessee, Knoxville; [2]National Energy Technology Laboratory; [3]CompuTherm LLC; [4]Oak Ridge National Laboratory; [5]Argonne National Laboratory

11:20 AM
Phase Stability and Microstructural Optimization in Al0.5NbTa0.8Ti1.5V0.2Zr High Entropy Alloy: *Vishal Soni*[1]; Bharat Gwalani[1]; Oleg Senkov[2]; Adam Pilchak[3]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]UES Inc.; [3]Air Force Research Laboratory

11:00 AM
Beneficial Effect of Non-equiatomic Compositions for Long-term Stability at 500°C of CoCrFeMnNi Family of HEA: *Anna Fraczkiewicz*[1]; Michal Mroz[1]; [1]MINES St-Etienne

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – Keynote Session

*Sponsored by:*TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Monday AM
March 12, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chairs: James Saal, QuesTek Innovations, LLC; Dongwon Shin, Oak Ridge National Laboratory

8:00 AM Introductory Comments Suveen Mathaudhu and Co-Organizers

8:05 AM Invited
Computational Thermodynamics of Materials and its Applications: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

8:40 AM Invited
Diffusion Kinetics in Complex Systems – the Materials-genome Approach: *John Agren*[1]; [1]Royal Institute of Technology

9:10 AM Invited
Materials Genomics: From CALPHAD to Flight: *Greg Olson*[1]; [1]Northwestern University

9:40 AM Break

9:55 AM Invited
Challenges to Predictive Kinetics in Complex Dislocation Energy Landscapes: *David McDowell*[1]; [1]Georgia Institute of Technology

10:25 AM Invited
Thermodynamics of Metal Hydroxide Vapors: Leveraging Theory and Experiment: *Nathan Jacobson*[1]; Dwight Myers[2]; Charles Bauschlicher[3]; Quynhgiao Nguyen[1]; Elizabeth Opila[4]; [1]NASA Glenn Research Center; [2]East Central University; [3]NASA Ames Research Center; [4]Unversity of Virginia

10:55 AM Invited
Automating First-principles Calculations of Point Defects: Danny Broberg[1]; *Mark Asta*[1]; [1]University of California, Berkeley

Integrative Materials Design III: Performance and Sustainability – New Directions, Process Optimization, and Computational Modeling in Additive Manufacturing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Monday AM
March 12, 2018
Room: 132A
Location: Phoenix Convention Center

Session Chairs: Diana Lados, Worcester Polytechnic Institute; Robert Warren, Worcester Polytechnic Institute

8:00 AM Invited
Adoption of Additive Manufacturing for Growth and Sustainment: *David Abbott*[1]; [1]GE Aviation

8:20 AM Invited
Proving Industrial Scale Design Optimization with Big Metal Additive: *Slade Gardner*[1]; [1]Big Metal Additive

8:40 AM Invited
Material-aware Topology Optimization: *Joshua Robbins*[1]; [1]Sandia National Laboratories

9:00 AM Invited
From Mechanical Metamaterials to Simple Systems Made from Programmable Materials: Matthew Berwind[1]; Hamideh Jafarpoorchekap[1]; *Chris Eberl*[2]; [1]University of Freiburg; [2]Fraunhofer IWM

9:20 AM Invited
Integrating Design and Manufacturing in the Topology Optimization of High Performance Architected Materials and Components: *James Guest*[1]; [1]Johns Hopkins University

9:40 AM Break

9:55 AM Invited
Material Selection for Nuclear Engineering Designs a Challenge and Opportunity to Develop Graded Materials via Additive Manufacturing: *Peter Hosemann*[1]; Ashley Recihardt[1]; Andrew Shapiro-Sharlotta[2]; John Paul Borgonia[2]; Peter Dillon[1]; Brian Mcenerney[2]; Massimiliano Fratoni[1]; Michael Ashby[3]; David Frazer[1]; Alan Bolind[1]; [1]University of California, Berkeley; [2]JPL; [3]University of Cambridge

10:15 AM Invited
Data Science and Machine Learning Opportunities in Additive Manufacturing: *Elizabeth Holm*[1]; Brian DeCost[1]; Anna Smith[1]; Andrew Kitahara[1]; [1]Carnegie Mellon University

10:35 AM Invited
Integrated Materials Theory, Modeling, and Data Analytics for Metal Additive Manufacturing: *Alex Plotkowski*[1]; Michael Kirka[1]; Vincent Paquit[1]; Sean Yoder[1]; Ryan Dehoff[1]; Suresh Babu[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee - Knoxvilee

10:55 AM Invited
Development of Advanced Beam Scan Strategies in Electron Beam Powder Bed Additive Manufacturing: *Michael Kirka*[1]; Vincent Paquit[1]; Alex Plotlowski[1]; Peeyush Nandwanna[1]; Sean Yoder[1]; Ryan Dehoff[1]; [1]Oak Ridge National Laboratory

11:15 AM Invited
In-situ Inspection of Laser-based Directed Energy Deposition Processes Using Laser Ultrasonics: *Marissa Brennan*[1]; Todd Palmer[1]; Maxwell Wiedmann[2]; Marvin Klein[2]; [1]Penn State University; [2]Intelligent Optical Systems

11:35 AM Invited
Science-based Qualification for Repair of Stainless Steel Components through Additive Manufacturing: *John Carpenter*[1]; Donald Brown[1]; Bjorn Clausen[1]; Jason Cooley[1]; Cameron Knapp[1]; [1]Los Alamos National Laboratory

Magnesium Technology 2018 – Keynote Session

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Monday AM
March 12, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory - PNNL

8:00 AM Introductory Comments

8:10 AM Keynote
Magnesium Alloys: Challenges and Achievements in Controlling Performance, and Future Application Perspectives: *Karl Kainer*[1]; [1]MagIC—Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht

8:55 AM Keynote
Solute/Stacking Fault Energies in Mg and Implications for Ductility: Binglun Yin[1]; Zhaoxuan Wu[1]; *William Curtin*[1]; [1]EPFL

9:40 AM Break

10:00 AM Keynote
Recent Developments in Magnesium Alloy Corrosion Research: *Nick Birbilis*[1]; [1]Monash University

10:45 AM Keynote
Towards Active Corrosion Protection of Mg Alloys Using Corrosion Inhibition Approaches: *Mikhail Zheludkevich*[1]; S.V. Lamaka[1]; D. Hoeche[1]; C. Blawert[1]; [1]MagIC—Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Fuels I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Monday AM
March 12, 2018
Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM
The Elastic Constants of γ -phase U – 8 wt% Mo between 25-650°C via Resonant Ultrasound Spectroscopy: *Matthew Steiner*[1]; Elena Garlea[2]; Sean Agnew[3]; [1]University of Cincinnati; [2]Y-12 National Security Complex; [3]University of Virginia

8:20 AM
Phase Transformation Kinetics in Rolled U-10 wt. % Mo Foil: Effect of Post-rolling Heat Treatment and Prior γ -UMo Grain Size: *Saumyadeep Jana*[1]; Nicole Overman[1]; Tamas Varga[1]; Curt Lavender[1]; Vineet Joshi[1]; [1]Pacific Northwest National Laboratory

8:40 AM
Effect of C and Si Impurities in U10Mo Alloy: Discovery of New Quaternary Si-rich Phase and its Influence on Transformation Kinetics: *Arun Devaraj*[1]; Libor Kovarik[1]; Saumyadeep Jana[1]; Curt Lavender[1]; Vineet Joshi[1]; [1]Pacific Northwest National Laboratory

9:00 AM
Microstructural Characterization of U-Mo Fuel Plates Irradiated in the Advanced Test Reactor: Recent Observations: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Brandon Miller[1]; Jian Gan[1]; Adam Robinson[1]; James Madden[1]; [1]Idaho National Laboratory

9:20 AM
Isothermal Transformation Kinetics of □ phase from a+□' Phase Mixture in U-10wt.%Mo Alloys: *Ryan Newell*[1]; Youngjoo Park[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

9:40 AM Break

10:00 AM
3D Characterization of High Fluence Irradiated UZr and UMo Fuels: *Maria Okuniewski*[1]; Jonova Thomas[1]; Sri Tapaswi Nori[1]; Alejandro Figueroa[1]; Peter Kenesei[2]; Hemant Sharma[2]; Jon Almer[2]; [1]Purdue University, Materials Engineering; [2]Argonne National Laboratory

10:20 AM
Investigation of Tin as a Fuel Additive to Control FCCI: *Michael Benson*[1]; James King[1]; Robert Mariani[1]; [1]Idaho National Laboratory

10:40 AM
Effect of Thermomechanical Processing on the Microstructure of U-9Zr-3Nb and U-9Zr-3Mo Alloys: *Nathanael Morais*[1]; Denise Lopes[2]; Cláudio Schön[1]; [1]USP; [2]KTH

11:00 AM
Characterization of U-Zr-RE Metallic Fuel Fabricated by Injection Casting: *Jeong-Yong Park*[1]; Seoung-Woo Kuk[1]; Ki-Hwan Kim[1]; Young-Mo Ko[1]; Sung-Chan Park[1]; Jong-Hwan Kim[1]; [1]Korea Atomic Energy Research Institute

Materials for Energy Conversion and Storage – Energy Storage I

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Monday AM
March 12, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Guihua Yu, University of Texas at Austin; Tianbiao Liu, Utah State University

8:00 AM Invited
Effect of Structural Water on Electrochemical Energy Storage of Protons and Magnesium Ions in Layered Tungsten Oxides: *Veronica Augustyn*[1]; [1]North Carolina State University

8:25 AM Invited
High-frequency Supercapacitors: Design, Electrodes, and Applications: *Zhaoyang Fan*[1]; [1]Texas Tech University

8:50 AM Invited
Materials Design for Energy Storage and Beyond: From Nanostructures to Functional Polymers: *Zheng Chen*[1]; [1]University of California, San Diego

9:15 AM Invited
Nanostructured Garnet Electrolytes: Synthesis, Structure, and Electrochemical Properties: Ting Yang[1]; Jon Weller[1]; *Candace Chan*[1]; [1]Arizona State University

9:40 AM Break

9:55 AM Invited
Reversible Aluminum Intercalation in Transition Metal Sulfides: Linxiao Geng[1]; *Juchen Guo*[1]; [1]University of California, Riverside

10:20 AM Invited
Winning at Electricity through Electrowinning: *Daniel Steingart*[1]; [1]Princeton University

10:45 AM Invited
Redox Flow Batteries: From Inorganic to Organic Redox Active Materials: *Tianbiao Liu*[1]; [1]Utah State University

11:10 AM Invited
Atomistic Modeling Based Study of Glassy Electrolytes for All Solid State Sodium Ion Batteries: Aniruddha Dive[1]; Clarence King[1]; Steve Martin[2]; *Soumik Banerjee*[1]; Scott Beckman[1]; [1]Washington State University; [2]Iowa State University

Materials Processing Fundamentals – Steelmaking - Processing

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

Monday AM
March 12, 2018
Room: 228A
Location: Phoenix Convention Center

Session Chair: To Be Announced

9:00 AM
The Effect of a Sulfur Addition on the Formation and Behavior of CaS Inclusions in a Steel Melt during a Secondary Refining Process without a Ca-treatment: *Takanori Yoshioka*[1]; Yuta Shimamura[2]; Andrey Karasev[1]; Yasuhide Ohba[2]; Pär Jönsson[1]; [1]KTH Royal Institute of Technology; [2]Sanyo Special Steel Co., Ltd.

9:20 AM
The Use of the PDA Method to Obtain Process Feedback on Inclusion Characteristics Based on Production Samples: *Par Jonsson*[1]; Andrey Karasev[1]; Jesper Janis[2]; Fredrik Larsson[2]; Diana Janis[3]; [1]KTH Royal Institute of Technology; [2]Outokumpu Stainless; [3]Sandvik Materials Technology

9:40 AM Break

10:00 AM
Measurement of Thermodynamic Property of Mg in Molten Iron Using Transpiration Method: *Tomoyuki Maegawa*[1]; Shun Ueda[1]; Atsushi Okayama[2]; Kazuki Morita[1]; [1]The University of Tokyo; [2]Nippon Steel & Sumitomo Metal Corporation, Ltd.

10:20 AM
Effect of $BO_{1.5}$ Addition on the Thermal Conductivity and the Structure of the CaO-$BO_{1.5}$-$AlO_{1.5}$ Mold Flux System: *Sakae Shirayama*[1]; Youngjae Kim[2]; Kazuki Morita[1]; [1]The University of Tokyo; [2]Korea Institute of Geoscience and Mineral Resources (KIGAM)

10:40 AM
Dephosphorization Kinetics between Bloated Metal Droplet and Slag Containing FeO: The Influence of CO Bubbles on the Mass Transfer of Phosphorus in the Metal: *Kezhuan Gu*[1]; Kenneth Coley[1]; Neslihan Dogan[1]; [1]McMaster University

11:00 AM
Mapping and Evaluating All the Ways to Remove Copper from Steel: *Katie Daehn*[1]; André Cabrera Serrenho[1]; Julian Allwood[1]; [1]University of Cambridge

11:20 AM
Desulfurization of Copper-iron Reduced from Copper Slag: *Baojing Zhang*[1]; Zhang Ting'an[1]; Liping Niu[1]; Zhihe Dou[1]; Zhiqiang Li[1]; Dongliang Zhang[1]; [1]Northeastern University

Mechanical Behavior at the Nanoscale IV – Nanoporous Materials and Thin Films

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Monday AM
March 12, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Garritt Tucker, Colorado School of Mines; Qian Yu, Zhejiang University

8:00 AM Invited
Small-scale Plasticity and Elasticity: Experimental Signatures of the Role of Capillarity: *Jörg Weissmüller*[1]; [1]Hamburg University of Technology and Hemlholtz-Zentrum Geesthacht

8:30 AM
The Mechanical Response of Core-shell Metallic Nanofoams: Chang Kim[1]; Hassan Zbib[1]; Nia Hightower[1]; Hang Ke[2]; Ioannis Mastorakos[2]; *David Bahr*[1]; [1]Purdue University; [2]Clarkson University

8:50 AM
Surface Effect on the Strength of Nanoporous Gold: Peng Wu[1]; *Hai-Jun Jin*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

9:10 AM
Numerical Modeling and Experiments of the Mechanical Behavior of Porous Solids for Large Relative Densities: *Timothy Ibru*[1]; Maximilian Busche[2]; Vadim Roytershteyn[2]; Garritt Tucker[3]; Antonia Antoniou[1]; [1]Georgia Institute of Technology; [2]Other; [3]Colorado School of Mines

9:30 AM Break

9:50 AM
Role of Nano-voids in Shock Wave Mitigation of Single Crystal Cu: Anupam Neogi[1]; *Nilanjan Mitra*[1]; [1]Indian Institute of Technology Kharagpur

10:10 AM
Origins of Residual Stress during Thin Film Growth: *Eric Chason*[1]; [1]Brown University

10:30 AM
Size Effects in Nanoscale Wear of Silicon Carbide and Silicon: *Chaiyapat Tangpatjaroen*[1]; David Grierson[1]; Steve Shannon[2]; Joseph Jakes[3]; Izabela Szlufarska[1]; [1]University of Wisconsin - Madison; [2]North Carolina State University; [3]Forest Biopolymers Science and Engineering

10:50 AM
Thickness-dependent Tensile Behavior of Thermally-grown SiO_2: *Na-Hyang Kim*[1]; Han-geul Kim[1]; Ju-Young Kim[1]; [1]UNIST

11:10 AM
Initiation of Fatigue Damage in Ultra-fine Grained Thin Films: *Oleksandr Glushko*[1]; [1]Erich Schmid Institute

Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao – Compounds and Alloys

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jiann-Yang Hwang, Michigan Technological University; Bowen Li, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

Monday AM
March 12, 2018
Room: 123
Location: Phoenix Convention Center

Session Chairs: Paolo Matteis, Politecnico di Torino (Turin Technical University); Shadia Ikhmayies, Al Isra University

8:00 AM Invited
Sensitization Effects on Environmentally-assisted Cracking in 5XXX Al Alloys: *John Lewandowski*[1]; [1]Case Western Reserve University

8:40 AM
Welding Between Steels and Aluminum Alloys for Hybrid Car-body Applications: *Paolo Matteis*[1]; Alessio Gullino[1]; Giorgio Scavino[1]; Francesco Rosalbino[1]; Graziano Ubertalli[1]; Cesare Puro[2]; Fabio D'Aiuto[2]; [1]Politecnico di Torino (Turin Technical University); [2]Centro Ricerche FIAT (FIAT Research Center)

9:00 AM
Flow Behavior of High Strength Aluminum Alloy after Cold Rolling: *G. Guven Yapici*[1]; K. Shojaei[1]; A. Hosseinzadeh[1]; [1]Ozyegin University

9:20 AM Break

9:40 AM
Production of Cu2O Powder Using Electrodeposition Method: *Shadia Ikhmayies*[1]; [1]Al Isra University

10:00 AM
Inhibitive Influence of Cephalexin Compound on Degradation Characteristics of Mild Steel in NaCl Medium: *O.S.I Fayomi*[1]; A.P.I. Popoola[2]; Olufunmilayo Joseph[1]; A. A. Ayoola[1]; [1]Covenant University; [2]Tshwane University of Technology, Pretoria

Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr. – Aluminum and Lightweight Metal Matrix Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Srivatsan Tirumalai, The University of Akron; Yuzheng Zhang, Gamma Alloys; William Harrigan, Gamma Technology, LLC

Monday AM
March 12, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: Troy Topping, California State University, Sacramento; Xiaodong Li, University of Virginia

8:00 AM Keynote
Aluminum Matrix Composites 1970 to 2017: *William Harrigan*[1]; [1]Gamma Technology, LLC

8:40 AM Invited
Nanostructured Aluminum Alloys and their Composites via Cryomilling: *Troy Topping*[1]; [1]California State University, Sacramento

9:10 AM
Commercial-ready and Large-scale Manufacturing of Light-weight Aluminum Matrix Nanocomposites: *Yuzheng Zhang*[1]; Bill Harrigan[1]; Al Sommer[1]; Marco Currelli[1]; Andy Parker[1]; Miguel Verduzco[1]; Mark Sommer[1]; [1]Gamma Alloys

9:30 AM Break

9:50 AM Invited
Bio-inspired, Graphene/Metal-oxide Reinforced Metal-matrix Composites: Yunya Zhang[1]; *Xiaodong Li*[1]; [1]University of Virginia

10:20 AM
Bioinspired Al Composites Reinforced by In Situ Formed Al3Ni and Al3Ti: Frederick Heim[1]; Yunya Zhang[1]; *Xiaodong Li*[1]; [1]University of Virginia

10:40 AM
Fabrication of Carbon/Aluminum Metal Matrix Composites via Combination of Different Carbon Addition Processes and Friction Stir Welding: *Hrishikesh Das*[1]; Mounarik Mondal[1]; Sung-Tae Hong[1]; Doo-Man Chun[1]; [1]University of Ulsan

11:00 AM Invited
Aluminium and Magnesium Based Metal Matrix Composites: Micro and Nano: Nagaraj Chelliah[1]; *Mirle Surappa*[2]; [1]National Institute of Technology Warangal; [2]Indian Institute of Science

11:30 AM
Development of an Electroless Plating Process for Multi-wall Carbon Nanotubes (MWCNTs) to Improve Their Dispersion and Wettability in Molten Aluminum: *Mohammed Elsharkawi*[1]; Amal Esawi[1]; [1]Department of Mechanical Engineering, The American University in Cairo, New Cairo, Egypt

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Nanolaminates

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

Monday AM
March 12, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Effects of Layer Thickness on the Mechanical Behavior of Oxidation-strengthened Zr/Nb Nanoscale Multilayers: *Jon Molina-Aldareguia*[1]; Miguel Monclús[1]; Mauro Callisti[2]; Tomas Polcar[2]; Lingwei Yang[1]; Javier Llorca[1]; [1]IMDEA Materials Institute; [2]University of Southampton

8:40 AM
Deformation Behavior of Novel Co-sputtered Nanolaminate Metal/Ceramic Composites: *Somya Singh*[1]; C. Shashank Kaira[1]; Hrishikesh Bale[2]; J. Kevin Baldwin[3]; Nathan Mara[3]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Carl Zeiss X-ray Microscopy; [3]Los Alamos National laboratory

9:00 AM
Size Effect in Ti-Fe-(Sn) Ultrafine Lamellar Eutectic Composites during Micro/-nano-indentation: *Tapabrata Maity*[1]; Jürgen Eckert[1]; [1]Erich Schmid Institute of Materials Science, Montan University, Leoben

9:20 AM Break

9:40 AM
The Influence of Laminar Bulk Metallic Glass/Crystalline Metal Interfaces on the Mechanical Properties of Roll Bonded Composites: *Sina Shahrezaei*[1]; Irene Beyerlein[2]; Douglas Hofmann[3]; Suveen Mathaudhu[1]; [1]University of California, Riverside; [2]University of California, Santa Barbara; [3]California Institute of Technology

10:00 AM
Mechanical Behavior of FCC Cu/FCC Co and FCC Cu/HCP Co Nanocomposite Films: *Rohit Berlia*[1]; Jagannathan Rajagopalan[1]; [1]Arizona State University

10:20 AM
Anisotropy of a High Strength Nanolayered Steel Revealed by In-situ Micro Mechanical Testing: *Marlene Kapp*[1]; Anton Hohenwarter[2]; Bo Yang[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science; [2]University of Leoben

10:40 AM
Multilayered Metallic Glass-crystalline Nanocomposites with Improved Wear Resistance: Mohammad Abboud[1]; Zafer Artvin[1]; Amir Motallebzadeh[2]; *Sezer Özerinç*[1]; [1]Middle East Technical University; [2]Koç University

Non-equilibrium Features of Grain Boundaries – Thermal Stability of Non-equilibrium Grain Boundaries

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Liang Qi, University of Michigan; Yue Fan, University of Michigan, Ann Arbor; Josh Kacher, Georgia Tech; Elizabeth Holm, Carnegie Mellon University; Irene Beyerlein, University of California, Santa Barbara; Shigenobu Ogata, Osaka University

Monday AM
March 12, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM Invited
The Role of Non-equilibrium Grain Boundary Structure in Radiation Tolerance and Thermal Stability: *Mitra Taheri*[1]; Pete Baldo[2]; Christopher Barr[1]; Jacob Gruber[1]; Marquis Kirk[2]; Garritt Tucker[1]; Yongqiang Wang[3]; Gregory Vetterick[1]; [1]Drexel University; [2]Argonne National Laboratory; [3]Los Alamos National Laboratory

8:30 AM
Grain Boundary Spinodals: Faceting Instability and the Role of Junction Energetics: *Fadi Abdeljawad*[1]; Douglas Medlin[1]; Jonathan Zimmerman[1]; Khalid Hattar[1]; Stephen Foiles[1]; [1]Sandia National Laboratories

8:50 AM
Unraveling Anti-thermal Behavior in a Variety of FCC Metals: *Ian Chesser*[1]; Yutong Bi[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

9:10 AM
Topological Defects in 2D Orientation-field Models for Grain Growth: *Bálint Korbuly*[1]; Mathis Plapp[2]; Hervé Henry[2]; James Warren[3]; László Gránásy[1]; Tamás Pusztai[1]; [1]Wigner Research Centre for Physics; [2]École Polytechnique; [3]National Institute of Standards and Technology

9:30 AM Break

9:50 AM Invited
Grain Boundaries Driven Far from Equilibrium by a Continuous Influx of Vacancies: *Michael Demkowicz*[1]; [1]Texas A&M University

10:20 AM
The Effect of Segregation and Precipitation on Grain Growth in Eu-doped $MgAl_2O_4$-spinel: *Amanda Krause*[1]; Animesh Kundu[1]; Carlen Donahue[1]; Richard Vinci[1]; Martin Harmer[1]; [1]Lehigh University

10:40 AM
Reconciling Grain Growth and Shear-coupled GB Migration: *Spencer Thomas*[1]; Kongtao Chen[1]; Jian Han[1]; Prashant Purohit[1]; David Srolovitz[1]; [1]University of Pennsylvania

11:00 AM
Exploring the Interactions between Grain Boundaries and Precipitates in a Ni-Al Using Molecular Dynamics: Rachel Morrison[1]; Saryu Fensin[2]; *Jennifer Carter*[1]; [1]Case Western Reserve University; [2]Los Alamos National Laboratory

Phase Transformation Across Multiscale Material Interfaces – Structural Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Soumya Nag, GE Global Research; Sudarsanam Babu, The University of Tennessee, Knoxville; Gregory Thompson, University of Alabama; Mohsen Asle Zaeem, Missouri University of Science and Technology; Niyanth Sridharan, Oak Ridge National Laboratory

Monday AM
March 12, 2018
Room: 126C
Location: Phoenix Convention Center

Session Chairs: Siddharth Pathak, University of Nevada; Monica Kapoor, NETL; Talukder Alam, UNT

8:00 AM Invited
Roles of Transformation Interface for Controlling Microstructure and Properties of High Strength Steels: *Tadashi Furuhara*[1]; Yongjie Zhang[1]; Goro Miyamoto[1]; [1]Tohoku University

8:30 AM Invited
Atomic-scale Characterization of Solute Segregation in Interfaces in Light Alloys: *Jian-Feng Nie*[1]; [1]Monash University

9:00 AM Invited
Structure and Properties of BCC Mg Synthesized Using Interface Strain Engineering: *Siddhartha Pathak*[1]; Manish Jain[1]; Marko Knezevic[2]; Nenad Velisavljevic[3]; Nathan Mara[3]; Irene Beyerlein[4]; [1]University of Nevada, Reno; [2]University of New Hampshire, Durham, NH; [3]Los Alamos National Laboratory, Los Alamos, NM; [4]University of California, Santa Barbara

9:30 AM Break

9:50 AM Invited
Exploiting Non-conventional Pathways for Transformations and Microstructural Evolution in Metastable Beta Ti Alloys: Yufeng Zheng[1]; Rongpei Shi[1]; Yunzhi Wang[1]; Rajarshi Banerjee[2]; *Hamish Fraser*[1]; [1]The Ohio State University; [2]University of North Texas

10:20 AM
Microstructural Characterization of Linear Friction Welded Interfaces in Ti-based Alloys: *Talukder Alam*[1]; Srinivas Aditya Mantri[1]; Thomas Broderick[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]GE Aviation

10:40 AM
Transient-liquid-phase-bonding and Mechanical Properties of Ni-based-superalloy-H230 for Heat Exchangers in Supercritical CO_2 Power Cycles: *Monica Kapoor*[1]; Omer Dogan[1]; Kyle Rozman[1]; Jeffrey Hawk[1]; [1]National Energy Technology Lab

Phase Transformations and Microstructural Evolution – Phase Transformations in Steels I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Monday AM
March 12, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chair: Paul Gibbs, LANL

8:00 AM
Precipitation of CFCC-TmC Carbides during Tempering at 450°C of a Medium Mn Steel: A Thermodynamic and Kinetic Study Followed by Atom Probe Tomography: *Alisson Kwiatkowski da Silva*[1]; Gerhard Inden[1]; Dirk Ponge[1]; Baptiste Gault[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

8:20 AM
Impact of Solute Segregation on Phase Transformations during Cooling and Austempering of Direct-strip-cast High Strength Bainitic Steels: *Jerome Cornu*[1]; Thomas Dorin[1]; Peter Hodgson[1]; [1]Deakin University Australia

8:40 AM
Modelling the Growth of Bainitic Ferrite: *Lindsay Leach*[1]; Lars Höglund[1]; Mats Hillert[1]; John Ågren[1]; Annika Borgenstam[1]; [1]KTH Royal Institute of Technology

9:00 AM
In-situ Analysis of Redistribution of Carbon and Nitrogen during Tempering of Supermartensitic Stainless Steel: *Frank Niessen*[1]; Matteo Villa[1]; Frédéric Danoix[2]; John Hald[1]; Marcel Somers[1]; [1]Technical University of Denmark; [2]Université de Rouen

9:20 AM
Analysis of Misorientation Relationship between Austenite Parent and Twins: *Alex Brust*[1]; Stephen Niezgoda[1]; Eric Payton[2]; [1]The Ohio State University; [2]AFRL

9:40 AM Break

10:00 AM
Modeling the Effect of Stress State on Martensitic Phase Transformation in Austenitic Steel: *Milovan Zecevic*[1]; Manas Upadhyay[2]; Efthymios Polatidis[2]; Helena Van Swygenhoven[2]; Marko Knezecvic[1]; [1]University of New Hampshire; [2]Paul Scherrer Institute

10:20 AM
Role of Interaction between Particles on Particle Stability: *Kunok Chang*[1]; Junhyun Kwon[1]; Gyeong-Geun Lee[1]; [1]Korea Atomic Energy Research Institute

10:40 AM
Austenite Carbon Measurement in Q&P Steels: Atom Probe Tomography vs. High Energy XRay Diffraction: *Frederic Danoix*[1]; Sébastien Allain[2]; Guillaume Geandier[2]; Jean Christophe Hell[3]; Michel Soler[3]; Samy Aoued[4]; Mohamed Goune[4]; [1]CNRS - Université de Rouen; [2]IJL Nancy; [3]Arcelormittal Maizières Research SA; [4]ICMCB Bordeaux

11:00 AM
Study on the Effect of V Microalloying on Earthquake Resisting High-strength Reinforcing Bar Steels: *Junho Chung*[1]; Taehyung Kim[1]; Jusang Lee[1]; [1]Hyundai-steel / Steel Research Center

Rare Metal Extraction & Processing – Rare Earth Element I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Hojong Kim, The Pennsylvania State University; Bradford Wesstrom, Freeport-McMoRan Copper & Gold; Shafiq Alam, University of Saskatchewan; Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto; Neale Neelameggham, Ind LLC; Shijie Wang, Rio Tinto Kennecott Utah Copper; Xiaofei Guan, ShanghaiTech University

Monday AM
March 12, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chairs: Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto

8:00 AM Keynote
The Demonstration Pilot Plant Results for the Search Minerals Direction Extraction Process for Rare Earth Recovery: *David Dreisinger*[1]; Greg Andrews[2]; Niels Verbaan[3]; Mike Johnson[3]; Ernesto Bourricaudy[3]; [1]University of British Columbia; [2]Search Minerals Inc.; [3]SGS Minerals

8:35 AM
Selective Oxidation of Cerium in Rare Earth Solutions, a Comparison of Four Oxidants: *James McNeice*[1]; Ahmad Ghahreman[1]; [1]Queen's Universuty

9:00 AM
A Study on the Effect of Crystal Habit Modifiers on the Co-precipitation of REE with Gypsum: *Farzaneh Sadri*[1]; Zhi Yang[1]; Ahmad Ghahreman[1]; [1]Queen's University

9:25 AM Break

9:45 AM
Beneficiation and Leaching Study of Norra Karr Eudialyte Mineral: *Victoria Vaccarezza*[1]; Corby Anderson[1]; [1]Colorado School of Mines

10:10 AM
Review on the Processes for the Recovery of Rare Earth Metals (REMs) from Secondary Resources: *Archana Kumari*[1]; Manis Kumar Jha[1]; D. D. Pathak[2]; [1]CSIR-National Metallurgical Laboratory; [2]IIT-Indian School of Mines

10:35 AM
Selective Reduction and Separation of Europium from Mixed Rare-earth Oxides Recovered from Waste Fluorescent Lamp Phosphors: *Mark Strauss*[1]; Brajendra Mishra[1]; Gerard Martins[2]; [1]WPI; [2]Colorado School of Mines

11:00 AM
Study of the Mechanochemical Calcification for Mixed Rare Earth Concentrate: *Jiang Liu*[1]; Zhang Ting'an[1]; Zhihe Dou[1]; Yukun Huang[1]; [1]Northeastern University

Recent Developments in Biological, Structural and Functional Thin Films & Coatings – Biomedical & Polymeric Applications

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas - El Paso; Heinz Palkowski, Clausthal University of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology; Vikas Tomar, Purdue University; Gerald Ferblantier, Strasbourg University - ICube Laboratory

Monday AM
March 12, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Adele Carradò, Université de Strasbourg IPCMS; Vikas Tomar, Purdue University

8:00 AM Keynote
Nanoscale Heterogeneous Surfaces: How to Control Nanofriction in Biosensors?: *Karine Mougin*[1]; [1]Institut de Science des Matériaux de Mulhouse

8:40 AM
Examining the Long-term Adhesion Strength of Chitosan Bonded to Titanium when Exposed to the Atmosphere or Simulated Body Fluid: *Holly Martin*[1]; Lauren DeBow[1]; Veronica Marcella[1]; Patrick McWhorter[1]; Snjezana Balaz[1]; [1]Youngstown State University

9:00 AM
Hybrid PMMA-coating for Biomedical Applications: Sebastien Kriegel[1]; Melania Reggente[1]; Patrick Masson[1]; Genevieve Pourroy[1]; Daniele Passeri[2]; Marco Rossi[2]; Heinz Palkowski[3]; *Adele Carradò*[1]; [1]Université de Strasbourg IPCMS CNRS; [2]Sapienza University of Rome; [3]TU Clausthal, IMET

9:20 AM
Shaping of Ti/PMMA Sandwich Sheets for Biomedical Applications: Melania Reggente[1]; Mohamed Harhash[1]; Patrick Masson[2]; Genevieve Pourroy[2]; Adele Carradò[2]; *Heinz Palkowski*[1]; [1]TU Clausthal; [2]Université de Strasbourg IPCMS

9:40 AM Break

10:00 AM Invited
Coupling Electronic Structure to Atomistic Simulations for a Multi-scale Modelling of Realistic Materials: *Christine Goyhenex*[1]; [1]IPCMS

10:30 AM Invited
Functionalization of Thermoset Composite Surfaces for Welding Technologies: *Gerhard Ziegmann*[1]; Widyanto Surjoseputro[1]; [1]Clausthal University of Technology

11:00 AM
Coating of 3D Printed Microlattices via Magnetron Sputtering: *Alina Garcia Taormina*[1]; Andrea M. Hodge[1]; [1]University of Southern California

11:20 AM
3-D Printed Magnetic Polymers: *Asahel Banobre*[1]; Sita Rajyalaxmi Marthi[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Refractory Metals 2018 – Refractory Metal Silicides and Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Eric Taleff, The University of Texas at Austin; Martin Heilmaier, Karlsruhe Institute of Technology (KIT); Kevin Jaansalu, Royal Military College of Canada

Monday AM
March 12, 2018

Room: 124A
Location: Phoenix Convention Center

Session Chairs: Eric Taleff, The University of Texas at Austin; Kevin Jaansalu, Royal Military College of Canada

8:00 AM
Oxidation and Creep Behavior of Mo-Si-Ti Alloys: *Martin Heilmaier*[1]; Daniel Schliephake[1]; Alexander Kauffmann[1]; Camelia Gombola[1]; Xiangna Cong[1]; [1]Karlsruhe Institute of Technology (KIT)

8:20 AM
Oxidation Resistance of W Substituted Mo-Si-B: *Gaoyuan Ouyang*[1]; Pratik Ray[2]; Tuba Karahan[3]; Matthew Kramer[2]; Mufit Akinc[1]; [1]Iowa State University; [2]Ames Laboratory; [3]Gedik University

8:40 AM
Tensile Response of Binary Mo-Si Solid Solution Alloys: *Xiang Yu*[1]; Sharvan Kumar[1]; [1]Brown University

9:00 AM
Mechanical Behavior of a Three-phase Mo-Si-B Alloy Produced by Reaction Synthesis: *Xiang Yu*[1]; Sharvan Kumar[1]; [1]Brown University

9:20 AM
Microstructure and Mechanical Properties of Cr-Si High-temperature Alloys: *Yuki Aono*[1]; Toshihiro Omori[1]; Ryosuke Kainuma[1]; [1]Tohoku University

9:40 AM Break

10:00 AM Invited
Assessments of the Mo-Si-X-(B) System for High Temperature Structural Application Potentials: *Young-Won Kim*[1]; Sang-Lan Kim[1]; [1]Gamteck LLC

10:30 AM
On the Design and Selection of Nb In Situ Composites: *Panayiotis Tsakiropoulos*[1]; [1]University of Sheffield

10:50 AM
Alloying Behaviour and Properties of Tetragonal Nb5Si3: *Panayiotis Tsakiropoulos*[1]; [1]University of Sheffield

11:10 AM
Synthesis of MoC-graphite Composite by High-energy Ball Milling: *Madelyn Madrigal Camacho*[1]; Guillermo Aguilar[1]; Suveen Mathaudhu[1]; [1]University of California, Riverside

Surface Interactions in Materials – Chemical and Physical Interactions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Carlos Schvezov, Institute of Materials of Misiones; Sandip Harimkar, Oklahoma State University; Rajeev Gupta, The University of Akron

Monday AM
March 12, 2018

Room: 101A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:00 AM Introductory Comments

8:05 AM
Effects of Surface Layer Oxides on Spark Plasma Sintering of an Al-Mg Alloy Powder: *Clara Hofmeister*[1]; Frank Kellogg[2]; Scott Walck[2]; Anit Giri[3]; Brandon McWilliams[3]; Kyu Cho[3]; [1]Oak Ridge Institute for Science and Education; [2]SURVICE Engineering Company; [3]US Army Research Laboratory

8:25 AM
Role of Amorphous Alumina Interlayer over Deposition of ZrN Thin Film on U-Mo Fuel for Nuclear Application: *Zhi-Gang Mei*[1]; Sumit Bhattacharya[2]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Northwestern University

8:45 AM
Ultra-fast Boronizing of Low Carbon Steel Compared with Aluminum, and Zinc Coating: *Bakr Rabeeh*[1]; [1]German University in Cairo, GUC

9:05 AM
Silane Compound Modification on SiO2 for the Efficient Copper Diffusion Barrier Layer and Adhesion Enhancer of Electroless Copper Plating: *Wei-Yen Wang*[1]; Tzu-Chien Wei[1]; [1]National Tsing-Hua University

9:25 AM
Analysis of the Interaction of Serum Albumin with Titanium Dioxide Films Using the Extended Derjaguin-Landau-Verwey-Overbeek (X-DLVO) Theory: Jonathan M. Schuster[1]; *Carlos Schvezov*[1]; Mario Rosenberger[1]; [1]IMAM (UNaM-Conicet)

9:45 AM Break

10:00 AM
Pt Decorating Effect on CNT Surface towards Adsorption of SF6 Decomposed Components: *Hao Cui*[1]; Xiaoxing Zhang[2]; Dachang Chen[2]; Jiani Fang[2]; Ju Tang[2]; [1]Chongqing University; [2]Wuhan University

10:20 AM
Surface Energies, Work Functions and Wulff Shapes of Elemental Crystals from High-throughput Density Functional Theory: *Richard Tran*[1]; Zihan Xu[1]; Balachandran Radhakrishnan[1]; Wenhao Sun[2]; Donald Winston[3]; Joseph Montoya[3]; Kristin Persson[3]; Shyue Ong[1]; [1]Department of Nanoengineering, University of California, San Diego; [2]Department of Materials Science and Engineering, Massachusetts Institute of Technology; [3]Energy Technologies Area, Lawrence Berkeley National Laboratory

10:40 AM
Formation Behavior of Fe2Al5 Phase in Fe/Molten Al Diffusion Couples: *Takumi Yamada*[1]; Kwangsik Han[1]; Kaneharu Okuda[2]; Ryosuke Kainuma[1]; [1]Tohoku university; [2]JFE Steel Corporation

11:00 AM
Influence of the Electrolyte on the Surface Free Energy of Anodic TiO_2 Coatings: Maria Vera[1]; Jonathan Schuster[1]; Mario Rosenberger[1]; *Carlos Schvezov*[1]; [1]IMAM (CONICET-UNaM)

Ultrafine-grained Materials X – Pioneers of ECAE/ ECAP and HPT

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Monday AM — Room: 103B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Suveen Mathaudhu, University of California, Riverside; S. Lee Semiatin, U.S. Air Force Research Laboratory

8:00 AM Introductory Comments Lee Semiatin and Suveen Mathaudhu

8:05 AM
The Early Days of Pioneering Ultrafine Grained Metals and Alloys: *Terry Lowe*[1]; [1]Colorado School of Mines

8:35 AM Keynote
Severe Plastic Deformation Technologies: *Vladimir Segal*[1]; [1]EPM

9:05 AM Keynote
Recent Developments in the Processing of Ultrafine-grained Materials Using ECAP and HPT: *Terence Langdon*[1]; [1]University of Southern California

9:35 AM Break

9:55 AM Keynote
Historical Aspects and Future Prospects of NanoSPD Materials Research for Superior Properties: *Ruslan Valiev*[1]; [1]Ufa State Aviation Technical University

10:25 AM Keynote
Struggles in the Land of Opportunity: 25 Years of ECAE Adventures with Tools, Teams, Tough Times, and Triumphs: *Karl Hartwig*[1]; Robert Barber[2]; [1]Texas A&M University; [2]Shear Form, Inc.

10:55 AM Keynote
Incremental Feeding for Upsizing Severely Deformed Areas under High Pressure: Kosei Sumikawa[1]; Yoichi Takizawa[2]; Manabu Yumoto[2]; Yoshiharu Otagiri[2]; *Zenji Horita*[1]; [1]Kyushu University; [2]Nagano Forging Co., Ltd

All-Conference Plenary – Defining the Future of Materials and Manufacturing Innovation

Monday PM — Room: 301
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: David DeYoung, Alcoa

12:00 PM Introductory Comments

12:05 PM Plenary
Insight into Materials and Manufacturing Innovation at SpaceX and Tesla: *Charles Kuehmann*[1]; [1]SpaceX/Tesla
To be announced.

12:45 PM Concluding Comments

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – 2D Nanoelectronics

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Monday PM — Room: 101B
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Dong Lin, Kansas State University; Lanxia Cheng, University of Texas at Dallas

2:30 PM Invited
Van der Waals (vdW) Heterojunctions for Low Power Electronics: *Tania Roy*[1]; [1]University of Central Florida

3:00 PM
High Performance Graphene Field Effect Transistor Fabrication Using Alternative Metal Etching Route: *Arul Vigneswar Ravichandran*[1]; Lanxia Cheng[1]; Antonio Lucero[1]; Jaebeom Lee[1]; Joy Lee[1]; Jiyoung Kim[1]; Archana Venugopal[2]; Arup Polley[2]; Luigi Colombo[2]; [1]The University of Texas at Dallas; [2]Texas Instruments

3:20 PM Invited
In-plane and Cross-plane Thermoelectric Transport in 2D Materials: *Mona Zebarjadi*[1]; [1]University of Virginia

3:50 PM Break

4:10 PM Invited
Making Electronic Structure Theory Predictive and Practical: Computational Modeling of Defects and Interfaces in Nano-materials: *Avik Ghosh*[1]; Yaohua Tan[1]; [1]University of Virginia

4:40 PM
Metal-2D Contact Engineering: *Keren Freedy*[1]; Peter Litwin[1]; Hans Olson[1]; Ashutosh Giri[1]; Patrick Hopkins[1]; Stephen McDonnell[1]; [1]University of Virginia

5:00 PM
Conduction Path in a 2D/2D Face Overlapped Heterojunction: *Hirokjyoti Kalita*[1]; Tania Roy[1]; [1]University of Central Florida

5:20 PM Invited
Novel In-situ Electrical Characterization of the Dielectric Deposition Process on 2D Transition Metal Dichalcogenides: *Antonio Lucero*[1]; Jaebeom Lee[1]; Lanxia Cheng[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

9th International Symposium on High Temperature Metallurgical Processing – Simulation and Modeling of High Temperature Metallurgical Process

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Monday PM
March 12, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Mark Kennedy, Proval Partners SA; Baoqiang Xu, Kunming University of Science and Technology

2:30 PM Introductory Comments

2:35 PM
Modeling of Reactive Melt Infiltration Used in the Fabrication of Si-Co/C Composites: *Khurram Iqbal*[1]; [1]University of Karachi

2:55 PM
Neural Prediction Model for Extraction of Germanium from Zinc Oxide Dust by Microwave Alkaline Roasting-water Leaching: *Wankun Wang*[1]; Fuchun Wang[1]; [1]Guizhou Institute of Technology

3:15 PM
Numerical and Experimental Study of Carbothermal Reduction of Silica in a Laboratory Thermal Plasma Reactor: *Yudong Li*[1]; Ramana Reddy[1]; [1]University of Alabama

3:35 PM
Simulation of Velocity Field of Molten Steel in Electric Arc Furnace Steelmaking: *Zeshi Yang*[1]; Lingzhi Yang[1]; Yufeng Guo[1]; Guangsheng Wei[2]; Ting Cheng[1]; [1]Central South University; [2]University of Science and Technology Beijing

3:55 PM Break

4:15 PM
Thermodynamic Modelling of Magnesium, Calcium and Strontium-oxides Reduction Systems in Vacuum: *Mehmet Bugdayci*[1]; Kerem Tasyurek[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

4:35 PM
Metallization and Carburization Kinetics in DR Shaft Furnaces. The Metcarb Model: *Edelink Falero*[1]; Jose D'Abreu[1]; Mauricio Otaviano[2]; [1]Pontifícia Universidade Católica do Rio de Janeiro; [2]Samarco

4:55 PM
CFD Modeling of Flow and Chemical Reactions in a Submerged Lance Copper Smelting Furnace: Guangwu Tang[1]; Kaile Tang[1]; Armin Silaen[1]; Hongjie Yan[2]; Zhixiang Cui[3]; Zhi Wang[3]; Haibin Wang[3]; Ping Zhou[2]; *Chenn Zhou*[1]; [1]Purdue University Northwest; [2]Central South University; [3]Dongying Fangyuan Nonferrous Metals

5:15 PM
Numerical Simulation of Ultrasound-Induced Cavitation Bubbling in a Calcium Ferrite Melt: *Ruirui Wei*[1]; [1]Chongqing University

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Neutron Irradiation and Ion vs Neutron

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Monday PM
March 12, 2018
Room: 102A
Location: Phoenix Convention Center

Session Chairs: John Jackson, Idaho National Laboratory; Janelle Wharry, Purdue University

2:30 PM
High-dose Neutron Irradiation Induced Evolution of Mechanical Properties and Microstructure of Ferritic/Martensitic Steels: *Kun Wang*[1]; Kevin Field[1]; Chad Parish[1]; Josina Geringer[1]; Yutai Katoh[1]; [1]Oak Ridge National Laboratory, UT-Battelle

2:55 PM
Microstructural Investigations of Temperature Effects in Reactor Pressure Vessel Steels from the UCSB ATR-2 Irradiation: *Nathan Almirall*[1]; Peter Wells[1]; Takuya Yamamoto[1]; David Gragg[1]; Kirk Fields[1]; G. R. Odette[1]; Randy Nanstad[2]; Keith Wilford[3]; Tim Williams[3]; Lynne Ecker[4]; David Sprouster[4]; [1]University of California, Santa Barbara; [2]Oak Ridge National Laboratory; [3]Rolls Royce; [4]Brookhaven National Laboratory

3:20 PM
Using Ion Irradiation to Extend the Damage Level of Neutron Irradiated 304L Stainless Steel: *Samara Levine*[1]; Zhijie Jiao[1]; Gary Was[1]; [1]University of Michigan

3:45 PM
Neutron Re-irradiation and Neutron-ion Irradiation Bootstrapping Approaches to Study Very High Dpa and He Effects in Nuclear Materials: *Takuya Yamamoto*[1]; Danny Edwards[2]; Richard Kurtz[2]; G. Robert Odette[1]; [1]University of California, Santa Barbara; [2]Pacific Northwest National Laboratory

4:10 PM Break

4:30 PM Invited
Temperature Shift for Emulating Solute Cluster Evolution Using Higher Dose Rate Irradiation: *Matthew Swenson*[1]; Janelle Wharry[2]; [1]University of Idaho; [2]Purdue University

4:55 PM
Microstructure Evolution in BOR60 Irradiated T91: *Zhijie Jiao*[1]; Stephen Taller[1]; Kevin Field[2]; Gary Was[1]; [1]University of Michigan; [2]ORNL

5:20 PM
The Structure and Composition of Mn-Ni-Si Precipitates in an Irradiated High-Ni RPV Steel Following Aging at 425°C for 57 Weeks: *Soupitak Pal*[1]; Peter Wells[1]; G Odette[1]; [1]University of California, Santa Barbara

Accident Tolerant Fuels for Light Water Reactor – Modeling & Simulation

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Monday PM
March 12, 2018
Room: 104A
Location: Phoenix Convention Center

Session Chairs: Brian Wirth, University of Tennessee; Yongfeng Zhang, Idaho National Laboratory

2:30 PM Invited
Atomic to Mesoscale Research and Development for U3Si2 Accident Tolerant Fuel: *Yongfeng Zhang*[1]; David Andersson[2]; [1]Idaho National Lab; [2]Los Alamos National Laboratory

3:00 PM
Calculating Swelling in U3Si2 Nuclear Fuel Using a Multi-scale Computational Approach: *Larry Aagesen*[1]; Karim Ahmed[1]; Benjamin Beeler[1]; David Andersson[2]; Daniel Schwen[1]; Yongfeng Zhang[1]; [1]Idaho National Laboratory; [2]Los Alamos National Laboratory

3:20 PM
Rate Theory Simulation of Fission Gas Behavior in U3Si2 under LWR Conditions: *Yinbin Miao*[1]; Kyle Gamble[2]; David Andersson[3]; Bei Ye[1]; Mei Zhi-Gang[1]; Gerard Hofman[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Idaho National Laboratory; [3]Los Alamos National Laboratory

3:40 PM
Gaseous Fission Product Swelling Behavior in U_3Si_2 Fuel: *Kyle Gamble*[1]; Tommaso Barani[2]; Davide Pizzocri[2]; Giovanni Pastore[1]; Yinbin Miao[3]; Jason Hales[1]; [1]Idaho National Laboratory; [2]Politecnico di Milano; [3]Argonne National Laboratory

4:00 PM Break

4:20 PM
UB2 as Advanced Nuclear Fuel: Modelling In-reactor Evolution of Thermo-physical and Chemical Properties: *Patrick Burr*[1]; Simon Middleburgh[2]; [1]UNSW Sydney; [2]Westinghouse Electric

4:40 PM
Improvements to TRISO Based FCM Fuel Performance Modeling: *Daniel Schappel*[1]; Kurt Terrani[2]; Brian Wirth[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

5:00 PM
Thermal Conductivity of Uranium: Fei Lin[1]; Eric Tea[1]; Manuel Umanzor[1]; Shuxiang Zhou[2]; Ryan Jacobs[2]; Dane Morgan[2]; *Celine Hin*[1]; [1]Virginia Tech; [2]University of Wisconsin-Madison

5:20 PM
Thermal Conductivity of SiC Fiber-reinforced Composites for Accident Tolerant Fuel by the Finite Element Method: *Leo Carrilho*[1]; Artem Aleshin[1]; Peng Xu[1]; [1]Westinghouse Electric Company

5:40 PM
PCI Analysis of Coated Zircaloy Cladding under LWR Steady State and Startup Operations: *Nathan Capps*[1]; Wenfeng Liu[1]; [1]Structrual Integraty

Additive Manufacturing Joint Keynote Session – Joint Keynote Session

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory

Monday PM
March 12, 2018
Room: 231ABC
Location: Phoenix Convention Center

Session Chair: David Bourell, University of Texas

2:30 PM Introductory Comments

2:35 PM Keynote
Additive Manufacturing Technologies, Applications, Markets and Opportunities: *Ming Leu*[1]; [1]Missouri University of Science and Technology

3:05 PM Keynote
Enabling Next Generation Additive Manufacturing: the 3D Deposition of Functional Materials for the Additive Manufacturing of Smart Devices - A UK Perspective: *Richard Hague*[1]; [1]University of Nottingham

3:35 PM Keynote
Metal Additive Manufacturing in Australasia and China: *Ma Qian*[1]; [1]Centre for Additive Manufacturing, Royal Melbourne Institute of Technology (RMIT University)

4:05 PM Break

4:25 PM Keynote
Additive Manufacturing of Metals: Current Status and Future Outlook: *Todd Palmer*[1]; [1]Pennsylvania State University

4:55 PM Keynote
Polymers in Additive Manufacturing: Survey and Opportunities: *David Rosen*[1]; [1]Georgia Institute of Technology

5:25 PM Keynote
Additive Manufacturing of Ceramics: *Suman Das*[1]; [1]Georgia Institute of Technology

5:55 PM Concluding Comments

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Local Strain & Misorientation II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Monday PM
March 12, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Invited
Applications of Low(er) Voltage EBSD to Heavily Deformed Material Systems: *Marc De Graef*[1]; [1]Carnegie Mellon University

3:00 PM
Investigating Surface Deformation and 3D Microstructure in Polycrystalline Metals: *Zhe Chen*[1]; Samantha Daly[1]; [1]University of California, Santa Barbara

3:20 PM
Characterization of Dislocation/GB Interactions via HR-EBSD and Machine Learning: *Landon Hansen*[1]; Jay Carroll[2]; David Fullwood[1]; Eric Homer[1]; Robert Wagoner[3]; [1]Brigham Young University; [2]Sandia National Laboratories; [3]Ohio State University

3:40 PM
Using Correlative HRDIC, EBSD and ECCI to Answer Questions of Microstructure-specific Plasticity: *Allan Harte*[1]; Alistair Garner[1]; Alberto Orozco-Caballero[1]; João Quinta da Fonseca[1]; Michael Preuss[1]; [1]The University of Manchester

4:00 PM Break

4:20 PM
Using EBSD to Quantify Defect Structures in Deformed IF Steels: *David Field*[1]; [1]Washington State University

4:40 PM
In-situ Characterization of Plasticity Mechanisms along Complex Stain Paths: *Emeric Plancher*[1]; Ke Qu[1]; Nicolaas Vonk[1]; Cem Tasan[1]; [1]MIT

5:00 PM
Plastic Deformation Behaviour of a γ -TiAl Alloy in High Cycle Fatigue at up to 700 °C by Nano-scale Digital Image Correlation of a Remodelled Au Speckle Pattern: Thomas Edwards1; Fabio Di Gioacchino1; Nigel Martin2; Mark Dixon2; William Clegg1; 1University of Cambridge; 2Rolls-Royce plc

5:20 PM
Microstructural Evolution of 316L Stainless Steel Subjected to Shear: *Veronica Livescu*[1]; Curt Bronkhorst[1]; Benjamin Morrow[1]; Cheng Liu[1]; Hashem Mourad[1]; Bineh Ndefru[1]; Carl Trujillo[1]; [1]Los Alamos National Laboratory

5:40 PM
Correlating Structural Heterogeneity to Deformation of Metallic Glasses Using Fluctuation Microscopy and Mesoscale Simulation: Soohyun Im[1]; Pengyang Zhao[1]; Ju Li[2]; Yunzhi Wang[1]; *Jinwoo Hwang*[1]; [1]The Ohio State University; [2]Massachusetts Institute of Technology

Advanced High-strength Steels – Quenching and Partitioning (Q&P) Steels

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Monday PM
March 12, 2018

Room: 121C
Location: Phoenix Convention Center

Session Chairs: Amy Clarke, Colorado School of Mines; Sébastien Allain, Université de Lorraine

2:30 PM Invited
About the Origins and the Effects of Internal Stresses in Retained Austenite of Q&P Steels: *Sébastien Allain*[1]; Steve Gaudez[1]; Guillaume Geandier[1]; Jean-Christophe Hell[2]; Samy Aoued[3]; Mohamed Gouné[3]; Michel Soler[2]; Frédéric Danoix[4]; Angéline Poulon[3]; [1]Institut Jean Lamour UMR 7198; [2]Arcelormittal Maizières Research SA; [3]Institut de Chimie de la Matière Condensée de Bordeaux UPR 9048; [4]Groupe de Physique des Matériaux UMR 6634

2:55 PM
Retained Austenite Stability in Quenching and Partitioning Steels Investigating by Means of In Situ High Energy X-ray Diffraction during Tensile Testing: *Jean Christophe Hell*[1]; Michel Soler[1]; Sébastien Allain[2]; Guillaume Geandier[2]; Mohamed Gouné[3]; Frédéric Danoix[4]; Samy Aoued[3]; [1]ArcelorMittal Global R&D; [2]Institut Jean Lamour; [3]ICMCB Bordeaux; [4]GPM Rouen

3:15 PM
A Modified Quenching and Partitioning Process of Medium Mn Steel: *Ran Ding*[1]; Jie Su[2]; [1]Tsinghua University; [2]Central Iron & Steel Research Institute

3:35 PM
On the Selection of Optimal Quenching Temperature in Quenching and Partitioning (Q&P) Steels: *Li Liu*[1]; Mingxin Huang[1]; [1]The University of Hong Kong

3:55 PM Break

4:15 PM Invited
Interface Migration and Carbon Partitioning during Quenching and Partitioning: Role of Interfacial Mn Partitioning: *Hao Chen*[1]; Zongbiao Dai[1]; Chi Zhang[1]; Zhigang Yang[1]; [1]Tsinghua University

4:40 PM
Microstructure Evolution in a Model Fe-0.3%C-1.5%Si-2.5%Mn Steel during Quenching and Partitioning Treatments: In-situ Investigation by High Energy X-ray Diffraction and Modeling: *Samy Aoued*[1]; Angéline Poulon-Quintin[1]; Frédéric Danoix[2]; Sébastien Allain[3]; Steve Gaudez[3]; Guillaume Geandier[3]; Jean-Christophe Hell[4]; Michel Soler[4]; Mohamed Gouné[1]; [1]CNRS, Univ. Bordeaux, ICMCB, UPR 9048, F-33600 Pessac, France; [2]Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France; [3]Institut Jean Lamour, CNRS - Université de Lorraine, Parc de Saurupt, 54011 Nancy, France; [4]Automotive Products, ArcelorMittal Maizières Research, Voie Romaine, 57283 Maizières-lès-Metz, France

5:00 PM
Austenite-martensite Interface Migration during Partitioning Treatment in a Quenching & Partitioning Steel: *Zhuangming Li Zhuangming Li*[1]; Richard Thiessen[2]; Stefan Zaefferer[1]; Dierk Raabe[1]; [1]Max-Planck-Institut fuer Eisenforschung; [2]ThyssenKrupp AG

5:20 PM
The Super High Strength of Aluminium-added Medium Manganese Steel after the Quenching and Tempering-associated Partitioning Process: *Liang Juhua*[1]; Zhao Zhengzhi[1]; Liang Jiangtao[1]; Tang Di[1]; [1]USTB

5:40 PM
Deformation Behaviour and Finite Element Method Modelling of TWinning Induced Plasticity (TWIP) Steel: Ching-Tun Peng[1]; *Huijun Li*[2]; [1]Jiangsu University; [2]University of Wollongong

Advanced Magnetic Materials for Energy and Power Conversion Applications – Advances in Permanent Magnet Alloys

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Monday PM
March 12, 2018

Room: 229A
Location: Phoenix Convention Center

Session Chair: Jun Cui, Iowa State University

2:30 PM Introductory Comments

2:35 PM Invited
Nd-Fe-B Permanent Magnets with Ultimate Hard Magnetic Properties: *Kazuhiro Hono*[1]; Taisuke Sasaki[1]; Hossein Sepehri-Amin[1]; Tadakatsu Ohkubo[1]; [1]National Institute for Materials Science

3:05 PM
Role of Ga on the Microstructure and Coercivity in Nd-rich Ga-doped Nd-Fe-B Sintered Magnets: *Taisuke Sasaki*[1]; Yukio Takada[2]; Takashi Sato[2]; Tadakatsu Ohkubo[1]; Akira Kato[3]; Yuji Kaneko[2]; Kazuhiro Hono[1]; [1]National Institute for Materials Science; [2]Toyota Central R&D Labs., Inc.; [3]Toyota Motor Corp.

3:25 PM
Advances in Solid State Texture Development in Powder Processed Alnico Magnets: *Aaron Kassen*[1]; Emma White[2]; Wei Tang[2]; Liangfa Hu[2]; Matthew Kramer[2]; Iver Anderson[2]; [1]Iowa State University; [2]Ames Laboratory

3:45 PM Invited
Toward Production of Bulk Exchange-spring Magnets: *Scott McCall*[1]; Alex Baker[1]; Sarah Baker[1]; Matthew Worthington[1]; Jonathon Lee[1]; Christine Orme[1]; Joshua Kuntz[1]; [1]Lawrence Livermore National Laboratory

4:15 PM Break

4:30 PM Invited
Microstructure and Coercivity in Alnico Permanent Magnets: *M. Kramer*[1]; Liqin Ke[1]; Ralph Skomski[2]; Lin Zhou[1]; Duane Johnson[1]; Qingfeng Xing[1]; Wei Tang[1]; Iver Anderson[1]; [1]Iowa State University; [2]University of Nebraska

5:00 PM Invited
Microstructural Effects of Thermomagnetic Processing in Nd2Fe14B-based Permanent Magnet Materials: *Michael Kesler*[1]; B. Jensen[2]; Lin Zhou[2]; Olena Palasyuk[2]; Kewei Sun[2]; Kevin Dennis[2]; Ben Conner[1]; William Carter[1]; Orlando Rios[1]; Matthew Kramer[2]; Cajetan Nlebedim[2]; Michael McGuire[1]; [1]Oak Ridge National Laboratory; [2]The Ames Laboratory

5:20 PM
Nitrogenation of $Nd_{1-x}Zr_xFe_{10}Si_2$ with the ThMn12-type Structure as a Candidate Alloy for Permanent Magnets: *Andrés Martín-Cid*[1]; David Mérida[2]; Margarit Gjoka[3]; Daniel Salazar[1]; Jose Manuel Barandiaran[2]; Dimitris Niarchos[3]; George Hadjipanayis[4]; [1]BCMaterials; [2]University of the Basque Country (UPV/EHU); [3]NCSR Demokritos; [4]University of Delaware

5:40 PM
Quantifying Contributions of Praseodymium and Dysprosium to Hard Magnetic Properties of Nd-Fe-B Magnets: *Cajetan Nlebedim*[1]; Kinjal Gandha[1]; Wei Tang[1]; Matthew Kramer[1]; [1]Ames Laboratory, US Department of Energy

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Quality and Reliability of Advanced Microelectronic Packaging I

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Monday PM
March 12, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: Chih Chen, National Chiao tung Univ; Luhua Xu, Apple

2:30 PM
In Situ Studies of Whisker Nucleation Induced by Thermal Strain: Nupur Jain[1]; Andrew Hitt[1]; Justin Vasquez[1]; *Eric Chason*[1]; [1]Brown University

2:50 PM
IMCs Growth Mechanism in Tricrystal Sn3.0Ag0.5Cu Solder Joints under Current Stressing: *Fu Guo*[1]; Jing Han[1]; Yishu Wang[1]; Yu Tian[1]; [1]Beijing University of Technology

3:10 PM
Electromigration Behavior in SABI333 Solder Joints: *Jing Han*[1]; Yishu Wang[1]; Peng Li[1]; Fu Guo[1]; [1]Beijing University of Technology

3:30 PM
The Role of Inhomogeneous Properties on Tin Solder Electromigration Performance: *Zachary Morgan*[1]; Yongmei Jin[1]; Vahid Attari[2]; Raymundo Arróyave[2]; [1]Michigan Technological University; [2]Texas A&M University

3:50 PM
Characterization of Electromigration Damage in Sn-Cu Solder Joints Using Electron Backscatter Diffraction and 3D X-ray Microtomography: *Marion Branch Kelly*[1]; C. Shashank Kaira[1]; Antony Kirubanandham[1]; Tyler Stannard[1]; Jason Williams[1]; Aravindha Antoniswamy[2]; Ravi Mahajan[2]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Intel

4:10 PM Break

4:30 PM
Growth of Intermetallic Compound in Co/Sn3.5Ag/Co and Co/Sn3.5Ag/Cu Structure under Thermomigration: *Yuan-Ruei Hsu*[1]; Gong-Lin Hong[1]; Shan-Yu Mao[1]; Wei-Jun Liu[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

4:50 PM
Investigation of Processes Leading to Whisker Growth in Tin Thin Films with Advanced Multi-physics Simulations: *Aritra Chakraborty*[1]; Philip Eisenlohr[1]; Pratheek Shanthraj[2]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung GmbH

5:10 PM
Role of Surface Layer on Whisker Mitigation in Tin Doped with Indium: *Sherin Bhassyvasantha*[1]; Bhaskar Majumdar[1]; Indranath Dutta[2]; [1]New Mexico Tech; [2]Washington State University

5:30 PM
Effect of Copper Wire Diameter on the Variation in Shear Mode and Shear Strength: *Patrick McCluskey*[1]; Subramani Manoharan[1]; Christian Runyon[2]; Stevan Hunter[3]; [1]University of Maryland; [2]Virginia Tech; [3]ON Semconductor

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Session II

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Monday PM
March 12, 2018
Room: 226B
Location: Phoenix Convention Center

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

2:30 PM Invited
Effect of the Processing Method on the Thermoelectric Properties of Mg2(Si,Sn,Ge) Materials: *Theodora Kyratsi*[1]; [1]University of Cyprus

2:50 PM Invited
Novel Synthesis and Optimization of Half-Heusler Materials for Thermoelectric Applications: Brian Jaques[1]; *Samuel Pedersen*[1]; Joseph Croteau[1]; Addrianna Lupercio[1]; Robert Bellomy[1]; Nick Kempf[2]; Matthew Lawson[1]; Lan Li[1]; Yanliang Zhang[2]; Darryl Butt[3]; [1]Boise State University; [2]Notre Dame; [3]University of Utah

3:10 PM Invited
Thermoelectric Performance Enhancement via Modifying Band Structure: *Wenjie Xie*[1]; [1]University of Stuttgart

3:30 PM Invited
Atomic and Electronic Structures of 2D Semiconductors: *Kyeongjae Cho*[1]; [1]UT Dallas

3:50 PM
Hierarchical Control of Microstructure in Fe-Si-Ge Based Thermoelectric Alloys to Control Thermal Boundary Conductance: *Wade Jensen*[1]; [1]University of Virginia

4:10 PM Break

4:30 PM Invited
Controllable Electrical Contact Resistance between Cu and Oriented-Bi2Te3 Film via Interface Tuning: *Yuan Deng*[1]; Xixia Kong[1]; Lili Cao[1]; [1]Beihang University

4:50 PM Invited
Controlling Stoichiometry, Defects, and Interfaces in Epitaxial Heusler Compounds: a Multifunctional Thermoelectrics Platform: *Jason Kawasaki*[1]; [1]University of Wisconsin Madison

5:10 PM Invited
Low Thermal Conductivity and Stacking Faults in Layered Selenides: Ba4Cu8Se13 and InGeTe3: *Franck Gascoin*[1]; [1]CRISMAT Laboratory

5:30 PM Invited
Thermoelectric Properties of Porphyrins: *Lawrence Cook*[1]; Winnie Wong-Ng[2]; Greg Brewer[1]; Lan Li[3]; [1]The Catholic University of America; [2]National Institute of Standards and Technology; [3]Boise State University

Alumina & Bauxite – Digestion and Precipitation

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Linus Perander, Outotec

Monday PM
March 12, 2018

Room: 221A
Location: Phoenix Convention Center

Session Chair: Alessio Scarsella, Outotec GmbH

2:30 PM Introductory Comments

2:35 PM
Roasting Pretreatment- low Temperature Digestion Method for Comprehensive Utilization of High-sulfur Bauxite: Dong Lu[1]; *Guozhi Lyu*[1]; Zhang Ting'an[1]; Weiguang Zhang[1]; Dong Xie[1]; Yanxiu Wang[1]; Long Wang[1]; [1]Northeastern University

3:00 PM
Industrial Experience of Sinter Hydro-chemical Processing at Bogoslovsk Alumina Refinery: Andrey Panov[1]; *Maksim Pechenkin*[1]; Sergey Ordon[1]; Oleg Milshin[2]; Aleksandr Fedyaev[3]; [1]RUSAL Engineering & Technology Centre; [2]RUSAL Global Management B.V.; [3]"RUSAL-VAMI" LLC

3:25 PM
Effect of Sintering Conditions on the Stability of \946-2CaO·SiO_2 in High Sodium Carbonate Solution: Dongdong Ma[1]; *Bo Wang*[1]; [1]Hebei University of Science and Technology

3:50 PM
Research on Impurity Removal of Low Grade Bauxite: Zhuang Li[1]; *Yijun Cao*[1]; Guihong Han[1]; Guixia Fan[1]; [1]Zhengzhou University

4:15 PM Break

4:30 PM
Study on the Structure and Generation Mechanism of Intermediate (6AlO-OH) in Decomposition Process of Sodium Aluminate Solutions: *Wei Liu*[1]; Zhoulan Yin[1]; Yaling Huang[1]; Zhiying Ding[1]; [1]Central South University

4:55 PM
The Properties of Superfine ATH Precipitated by Carbonation Method: *Andrey Panov*[1]; Aleksandr Senyuta[1]; Aleksandr Damaskin[1]; [1]RUSAL Engineering & Technology Centre

5:20 PM
Effect of Organic Impurity on Seed Precipitation in Sodium Aluminate Solution: *Zhang Baiyong*[1]; [1]Shenyang Branch of China Aluminium International Engineering CO.Ltd

Aluminum Alloys, Processing and Characterization – Characterizations and Applications of High Strength Aluminum Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Monday PM
March 12, 2018

Room: 221B
Location: Phoenix Convention Center

Session Chair: Richard Hamerton, Novelis

2:30 PM Invited
Aluminum for Aerospace Application: History, Current Challenges, and Path Forward: *Zhengdong (Steven) Long*[1]; [1]Kaiser Aluminum

3:00 PM
Grain Boundary Precipitation and Fracture Behavior of Al-Cu-Li Alloys: *Ramasis Goswami*[1]; Noam Bernstein[1]; [1]Naval Research Laboratory

3:20 PM
Characterization and Constitutive Modelling of AA 7075 for Hot Blank-cold Die Stamping: *Gopinath Kannadasan*[1]; Fadi Abu-Farha[1]; Zeren Xu[1]; [1]Clemson University

3:40 PM
Comparison of Texture and Surface Finish Evolution during Single Point Incremental Forming and Formability Testing of AA 7075: *Maya Nath*[1]; Jaekwang Shin[1]; Ankush Bansal[1]; Mihaela Banu[1]; Alan Taub[1]; [1]University of Michigan

4:00 PM Break

4:20 PM
Understanding the Co-precipitation Mechanisms of Al3(Sc, Zr) with Strengthening Phases in Extruded Al-Cu-Li Model Alloys: *Katrin Mester*[1]; Baptiste Rouxel[1]; Timothy Langan[1]; Justin Lamb[1]; Matthew Barnett[1]; Thomas Dorin[1]; [1]Institute for Frontier Materials, Deakin University

4:40 PM
Microstructural Evolution after Single and Multi-pass Friction Stir Welding (FSW) of Wrought Mg-WE43 and Al-2024 Alloys: *Michael Frank*[1]; Saurabh Nene[1]; Gaurav Argade[1]; Rajiv Mishra[1]; R.E. Brennan[2]; K. Cho[2]; [1]University of North Texas; [2]U.S. Army Research Laboratory

5:00 PM
Determining a Retrogression Heat Treatment to Apply during Warm Forming of a High Strength AA7075 Sheet Material: *Katherine Rader*[1]; Thomas Ivanoff[1]; Hyunwook Shin[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]General Motors

5:20 PM
Development of High-strength and High-electrical-conductivity Aluminum Alloys for Power Transmission Conductors: *Francisco Flores*[1]; Nhon Vo[1]; David Seidman[2]; David Dunand[2]; [1]NanoAl; [2]Northwestern University

Aluminum Reduction Technology – Cell Operations, Control & Improvements

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Monday PM
March 12, 2018

Room: 221C
Location: Phoenix Convention Center

Session Chair: Till Reek, TRIMET Aluminium SE

2:30 PM Introductory Comments

2:35 PM
Maximizing Previous Pot Design to Have Higher Capacity: Sahala Sijabat[1]; *Ivan Ermisyam*[1]; Indah Pandia[1]; Ivan Yudho[1]; [1]PT Inalum (Persero)

3:00 PM
On the Use of Multivariate Statistical Methods to Detect, Diagnose and Mitigate Abnormal Events in Aluminium Smelters: *Petre Manolescu*[1]; Carl Duchesne[1]; Jayson Tessier[2]; Gudrun Saevarsdottir[3]; [1]Laval University; [2]Alcoa Corporation, Smelting Center of Excellence; [3]Reykjavik University

3:25 PM
Spike Detection Using Advanced Analytics and Data Analysis: *Arthur Martel*[1]; [1]Rio Tinto

3:50 PM
Speed, Agility and Simplicity (SAS) Recovery of Reduction Line-5 in Alba: *Abdulla Ahmed*[1]; [1]Aluminium Bahrain (Alba)

4:15 PM Break

4:30 PM
Partial Repair and Restart of a Damaged Aluminium Reduction Cell: Abd El Zaher Abd El Star[1]; *Khalid Youssif*[1]; Mahmoud Salem[1]; [1]Aluminium Company of Egypt "EGYPTALUM"

4:55 PM
Theory and Practice of High Temperature Gas Baking Technology for Alumninium Electrolysis Cells: *Xudong Wang*[1]; Chengbo Wu[1]; Yingwu Li[1]; [1]Zhengzhou Jingwei Technology Industry Co., Ltd

5:20 PM Concluding Comments

Bio-nano Interfaces and Engineering Applications Symposium – Bio-Nano Interfaces II

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Terry Lowe, Colorado School of Mines; Kalpana Katti, North Dakota State University; Po-Yu Chen, National Tsing Hua University; John Nychka, University of Alberta

Monday PM
March 12, 2018

Room: 225A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Invited
Use of Nanostructured Diamond in Medical Device Applications: *Roger Narayan*[1]; [1]UNC/NCSU Joint Department of Biomedical Engineering

3:00 PM
Surface Modification of Ti6Al4V to Confer Antibacterial Properties against *Listeria Monocytogenes*: *Jesus Morales Espejo*[1]; Susana Díaz A.[1]; David Bahr[1]; Lia Stanciu[1]; [1]Purdue University

3:20 PM Invited
Oligopeptides and Recombinamers at Surfaces and Interfaces to Address Oral Infections: *Conrado Aparicio*[1]; [1]University of Minnesota

3:50 PM
New Antimicrobial Peptides Generated through Genetic Algorithm Approach Using Chemical Property Based Cross-over: *Kyle Boone*[1]; Kyle Camarda[1]; Paulette Spencer[1]; Candan Tamerler[1]; [1]University of Kansas

4:05 PM Break

4:20 PM Invited
Connecting Biology and Electronics with Protons: From Ion Channels to Cells: *Marco Rolandi*[1]; [1]University of California, Santa Cruz

4:50 PM
Chemically Functionalised Graphene FET with Double Conductance Minima for the Label-free Sensing of Exosomes: *Deana Kwong Hong Tsang*[1]; [1]Imperial College London

5:05 PM Invited
Bioconjugated Nanoparticle Imaging Probes for Molecular Imaging with Computed Tomography: *Ryan Roeder*[1]; Tyler Curtis[1]; Prakash Nallathamby[1]; Tyler Finamore[1]; Lisa Irimata[1]; Tracie McGinnity[1]; Lisa Cole[1]; Tracy Vargo-Gogola[2]; Karen Cowden Dahl[2]; [1]University of Notre Dame; [2]Indiana University School of Medicine

5:35 PM
Biofilm Formation Behavior on Polymer Brush Surfaces by E.coli and S. Epidermidis: *Hideyuki Kanematsu*[1]; Takaya Sato[2]; Toshio Kamijo[2]; Saika Honma[2]; Atsuya Ohizumi[1]; Senshin Umeki[3]; Akiko Ogawa[1]; Nobumitsu Hirai[1]; Takeshi Kogo[1]; Daisuke Kuroda[1]; Hajime Ikegai[4]; Yoshimitsu Mizunoe[5]; [1]National Institute of Technology, Suzuka College; [2]National Institute of Technology, Tsuruoka College; [3]Tohoku University; [4]University of Human Arts and Science; [5]Jikei University

Biological Materials Science – Synthesis of Bio-inspired Materials and Structures

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Monday PM
March 12, 2018

Room: 225B
Location: Phoenix Convention Center

Session Chairs: Vinoy Thomas, University of Alabama, Birmingham; Steven Naleway, University of Utah

2:30 PM Invited
Synergistic Structures from Magnetic Freeze Casting with Surface Magnetized Alumina Particles and Platelets: Michael Frank; Sze Hei Siu[1]; Keyur Karandikar[1]; Chin-Hung Liu[1]; Steven Naleway[2]; Michael Porter[3]; Olivia Greave[1]; *Joanna McKittrick*[1]; [1]University of California, San Diego; [2]University of Utah; [3]Clemson University

3:00 PM
Synthesis of PVA Scaffolds with Gradient Porous Structures by Freeze Casting: *Ching-Chun Chiu*[1]; Haw-Kai Chang[1]; Hsin-Juei Wang[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

3:20 PM
Freeze Casting of Surface-magnetized TiO_2 Using a Uniform Magnetic Field to Fabricate Materials Inspired by Bone: *Isaac Nelson*[1]; Taylor Ogden[1]; Jake Abbott[1]; Steven Naleway[1]; [1]Department of Mechanical Engineering, University of Utah

3:40 PM Invited
Development of Bamboo Based Bio-composites: *Uday Vaidya*[1]; Vinoy Thomas[2]; [1]University of Knoxville; [2]University of Alabama at Birmingham

4:10 PM Break

4:30 PM Invited
Bioinspired Structural and Functional Materials: *Cordt Zollfrank*[1]; [1]Technische Universität München, Germany

5:00 PM
Brick-and-mortar Alumina Containing a Nickel Compliant Phase Synthesized Using Spark Plasma Sintering: *Amy Wat*[1]; Claudio Ferraro[2]; Xu Deng[3]; Antoni Tomsia[4]; Eduardo Saiz Gutierrez[2]; Robert Ritchie[1]; [1]University of California, Berkeley; [2]Imperial College London; [3]University of Electronic Science and Technology of China; [4]Lawrence Berkeley National Laboratory

5:20 PM
Mechanics and Toughening Mechanisms of Nacre-inspired Composites: *Sina Askarinejad*[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute

5:40 PM
Porous Bioinspired Materials through a Variety of Templating Techniques: *Steven Naleway*[1]; Isaac Nelson[1]; Taylor Ogden[1]; [1]University of Utah

Cast Shop Technology – HSE and Cast House Operation

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Badowski, Hydro Aluminium

Monday PM
March 12, 2018

Room: 222A
Location: Phoenix Convention Center

Session Chair: Jean-Francois Desmeules, Dynamic Concept

2:30 PM Introductory Comments

2:35 PM
Root Cause Analysis Findings of a Force 3 Explosion: *Alex Lowery*[1]; [1]WISE CHEM LLC

3:00 PM
Condensation Warning System for Dry Material Storage: *Gregory Blackstock*[1]; Jake Niedling[1]; [1]Arconic Inc.

3:25 PM
A New Aluminium Crucible Skimmer (ACS) for Smelter Plants – Main Benefits Further to Two Years of Experimentation in Industrial Environment: *Bruno Maltais*[1]; Florent Gougerot[1]; [1]STAS Inc.

3:50 PM
Drive-in Feeding of Crucibles for Casting Machine: Jean-Francois Desmeules[1]; *Jean-Benoît Néron*[1]; [1]Dynamic Concept

4:15 PM Break

4:30 PM
In-line Salt Fluxing Process with an FFD™ Industrial Experience with a Box-Type Degasser: Florent Gougerot[1]; *Bruno Maltais*[1]; Etienne Tremblay[1]; [1]STAS Inc.

4:55 PM
The "Alcoa Filter System": A Cost Effective Solution for Enhanced CFF Performance: *Robert Dumont*[1]; Jean-Francois Desmeules[2]; [1]Alcoa; [2]Dynamic Concept

5:20 PM
Continuous Centrifugal Casting: A Revolutionary Process for Casting Aluminium Tubes: *Luc Montgrain*[1]; Olivier Dion-Martin[2]; Jean-François Desmeules[2]; [1]AluMC3; [2]Dynamic-Concept

5:45 PM
Development of a Prototype Unit for Continuous Centrifugal Casting of Aluminium Tubes: *Olivier Dion-Martin*[1]; Jean-François Desmeules[1]; Luc Montgrain[2]; [1]Dynamic-Concept; [2]AluMC3

CFD Modeling and Simulation in Materials Processing – Casting and Solidification II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Koulis Pericleous, University of Greenwich; Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, Colorado School of Mines

Monday PM
March 12, 2018

Room: 228B
Location: Phoenix Convention Center

Session Chairs: Gregory Poole, The University of South Alabama; Adrian Sabau, Oak Ridge NL

2:30 PM
Numerical Investigation on the Effect of Steel Strip Feeding on Solidification in Continuous Casting: *Ran Niu*[1]; Baokuan Li[1]; Zhongqiu Liu[1]; Xianglong Li[1]; [1]Northeastern University

2:50 PM
Microstructure Effects in High-pressure Die Casting Using an Innovative Two-phase Cooling System: *Adrian Sabau*[1]; Emilian Popov[1]; Sam Kassoumeh[2]; [1]Oak Ridge National Laboratory; [2]Shiloh Industries

3:10 PM
Numerical Modelling of Shrinkage and Hot Tears in High Pressure Die Casting of Al-Si-Cu Alloys: *Mikko Karkkainen*[1]; Tao Liu[1]; Laurentiu Nastac[1]; Luke Brewer[1]; Vishweshwar Arvikar[2]; Ilya Levin[2]; [1]The University of Alabama; [2]Nemak Alabama

3:30 PM Invited
Modeling the De-agglomeration and Dispersion of Particles in Metallic Alloy Melts during Ultrasonic Treatment: *Koulis Pericleous*[1]; Georgi Djambazov[1]; Bruno Lebon[1]; Anton Manoylov[1]; [1]University of Greenwich

4:00 PM Break

4:20 PM
Numerical Modeling and Experimental Verification of Macrosegregation and CET Predictions in Large Steel Roll Ingots: *Laurentiu Nastac*[1]; Konstantin Redkin[2]; Chris Hrizo[2]; Kevin Marsden[2]; [1]The University of Alabama; [2]Whemco

4:40 PM
Numerical Simulation of Electromagnetic and Heat Transfer Phenomena in Inductively Heated Risers: Michael Cox[1]; *Gregory Poole*[1]; [1]University of South Alabama

5:00 PM
Effect of Inlet Velocities on Mould Filling in Investment Casting: *Victoria Thomas*[1]; Steve Leyland[2]; Steve Brown[1]; Nicholas Lavery[1]; Robbie Bennett[2]; [1]Swansea University; [2]Jiangyin Uni-Pol Ltd.

5:20 PM
Modeling of the Effect of Ultrasonic Frequency and Amplitude on Acoustic Streaming: *Young Ki Lee*[1]; Jeong IL Youn[1]; Young Jig Kim[1]; Woo Chun Kim[2]; Tae Yup Lee[2]; [1]Sungkyunkwan University; [2]DR Axion Co., Ltd.

Characterization of Minerals, Metals, and Materials – Characterization of Ceramics

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

Monday PM
March 12, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chair: Bowen Li, Michigan Technological University

2:30 PM Introductory Comments

2:35 PM Invited
Natural Fiber Composites: Could They Compete with Kevlar™ in Personal Armor Systems against High Impact Ammunition?: *Sergio Monteiro*[1]; [1]Military Institute of Engineering

2:55 PM Invited
3D Chracterization of Ultra High Temperature Ceramics: *Veeraraghavan Sundar*[1]; Derek King[1]; Satya Ganti[1]; Brian Turner[1]; [1]UES Inc.

3:15 PM
The Study of Freeze-thaw Cycling of Water-saturated Porous Illite-based Ceramics: *Michal Knapek*[1]; Tomas Hulan[2]; Patrik Dobron[1]; Stefan Csaki[1]; Frantisek Chmelik[1]; [1]Charles University; [2]Constantine the Philosopher University

3:35 PM
Preparation and Characteristics of Steel Slag Ceramics from Converter Slag: *Mingsheng He*[1]; Bowen Li[2]; Wangzhi Zhou[1]; Meng Liu[1]; Huasheng Chen[1]; Long Zou[1]; [1]Wuhan Iron & Steel Co., Ltd.; [2]Michigan Technological University

3:55 PM Break

4:10 PM
In-situ XRD Investigation of Bauxite Dehydroxylation: *Hong Peng*[1]; James Vaughan[1]; [1]The University of Queensland

4:30 PM
New Higher Temperature Composites Based on Zirconium Cements: *Ilyoukha Nickolai*[1]; [1]Academic Ceramic Center

4:50 PM
The Investigation of Humics as a Binder for LiFePO4 Cathode Using in Lithium Ion Battery: *Guihong Han*[1]; Shuzhen Yang[1]; Jiongtian Liu[1]; Yanfang Huang[1]; [1]Zhengzhou University

5:10 PM
Evaluation of Brazilian Bentonite Modified by Acid Attack in Biofuel Production: *Christiano Gianesi Bastos Andrade*[1]; Samuel Marcio Toffoli[1]; Francisco Rolando Valenzuela Diaz[1]; [1]University of São Paulo

5:30 PM
Influence of Addition of Na_2CO_3 on the Al_2O_3-4wt% Nb_2O_5 Ceramic Compound: *Jheison Santos*[1]; Luis Henrique Louro[1]; Lúcio Fábio Nascimento[1]; Paulo Roberto Jesus[1]; Rubens Marçal[1]; [1]Military Institute of Engineering

Characterization of Minerals, Metals, and Materials – Microstructure and Performance of Materials

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

Monday PM
March 12, 2018
Room: 124B
Location: Phoenix Convention Center

Session Chair: Paul Sanders, Michigan Technological University

2:30 PM Introductory Comments

2:35 PM
Automated Microstructure Validation and Flaw Detection Using Computer Vision: *Andrew Kitahara*[1]; Brian DeCost[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

2:55 PM
Correlation between As-solidified Microstructures and Mechanical/ Tribological Behavior of Al-5wt.%Si-Xwt.%Bi Alloys: *José Marcelino da Silva Dias*[1]; Thiago Costa[2]; Fábio Mariani[3]; Luiz Casteletti[3]; Noé Cheung[1]; Amauri Garcia[1]; [1]UNICAMP; [2]IFPA; [3]USP

3:15 PM
Correlation of Microstructure to Dynamic Properties in Two Grades of Alumina: *Tomoko Sano*[1]; Ian Buterbaugh[2]; Timothy Walter[1]; James Catalano[1]; Brendan Koch[3]; Calvin Lo[3]; James Hogan[3]; [1]U.S. Army Research Laboratory; [2]University of Arizona; [3]The University of Alberta

3:35 PM
Effect of Orientations on Microstructure and Mechanical Properties of 7075 Aluminum Alloy by Rolling at Liquid Nitrogen Temperature: *Jun Luo*[1]; Hongyun Luo[1]; [1]Beihang University

3:55 PM Break

4:10 PM
Grain Size Characterization in Austenitic Stainless Steel Using Parameterized Ultrasonic Gaussian Echo Model: *Song Peng*[1]; Qi Ouyang[1]; Zizong Zhu[1]; Tao Liu[1]; [1]Chongqing University

4:30 PM
Laboratory Methods for Controlling Microstructure in Titanium Grade 2 and 5 Materials for the Calibration of Ultrasonic Microstructure Characterization: *Matthew Schick*[1]; Philip Noell[2]; Thomas Ivanoff[1]; Doyle Motes[3]; Mark Warchol[3]; Lyudmila Warchol[3]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]Sandia National Laboratories; [3]TRI/Austin

4:50 PM
The Effect of Extrusion Rate on the Microstructural Evolution of ECAE Processed Pure Mg: *Nicholas Krywopusk*[1]; Laszlo Kecskes[2]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]Army Research Laboratory, Aberdeen Proving Ground

5:10 PM
The Influence of Microstructure on the Collapse Mechanisms and Specific Energy Absorption Capacity of Aluminium Alloy Foams: *Md Abdul Kader*[1]; Paul Hazell[1]; Mohammad Saadatfar[2]; Andrew Brown[1]; Md Ashraful Islam[1]; Juan Escobedo-Diaz[1]; [1]UNSW, Canberra; [2]Australian National University

5:30 PM
Bending Mechanical Evaluation in Composites with Epoxy Matrix Incorporating with Natural Fabric of Malva/Jute Fiber: *Janaina da Silva Vieira*[1]; Felipe Perissé Duarte Lopes[1]; Ygor Macabú de Moraes[1]; Sergio Neves Monteiro[2]; Frederico Muylaert Margem[3]; Jean Igor Margem[4]; Djalma Souza[1]; [1]State University of the Northern Rio de Janeiro; [2]Military Institute of Engineering; [3]UniREDENTOR; [4]Institutos Superiores de Ensino do CENSA

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Phase Field Simulations II: Lightweight Alloys

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Monday PM
March 12, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chair: John Allison, University of Michigan, Ann Arbor

4:40 PM
Examination of Precipitate Composition, Morphology, and Interactions in Mg-RE Alloys Using Phase Field Modeling: *Stephen DeWitt*[1]; Katsuyo Thornton[1]; John Allison[1]; [1]University of Michigan - Ann Arbor

5:00 PM
Microstructure Prediction of Titanium Aluminides Using Multi-phase Phase Field Modelling: *Junyi Lee*[1]; Daniel Balint[1]; [1]Imperial College London

5:20 PM
Multiscale Modelling of the Morphology and Spatial Distribution of θ' Precipitates in Al-Cu Alloys: *Hong Liu*[1]; Bárbara Bellón[2]; Javier Llorca[2]; [1]KU Leuven; [2]IMDEA Materials Institute

5:40 PM
Phase Field Simulations of Grain Boundary Variant Selection and Intragranular Microstructure Formation in Polycrystalline Ti-6Al-4V: *Bala Radhakrishnan*[1]; Sarma Gorti[1]; John Turner[1]; [1]Oak Ridge National Laboratory

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design of Materials: Uncertainty

*Sponsored by:*Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Monday PM
March 12, 2018
Room: 131C
Location: Phoenix Convention Center

Session Chair: Raymundo Arroyave, Texas A&M University

4:40 PM Invited
Uncertainty of Thermodynamic Data for Materials Design: *Marius Stan*[1]; Noah Paulson[1]; [1]Argonne National Laboratory

5:10 PM Invited
Thermodynamic Modeling with Uncertainty Quantification and its Implications for Additive Manufacturing: *Richard Otis*[1]; Zi-Kui Liu[2]; [1]Jet Propulsion Laboratory; [2]Pennsylvania State University

5:40 PM
Reduced Order Modelling and Smart Regression Sampling of Energy Landscapes: *Ruben Villarreal*[1]; [1]A&M University

Computational Design and Simulation of Materials (CDSM 2018): Plenary Session – Plenary

*Sponsored by:*Chinese Society for Metals
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Monday PM
March 12, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chair: Alan Luo, The Ohio State University

2:30 PM Introductory Comments

2:35 PM Plenary
Genomic Materials Design: From CALPHAD to Space: *Greg Olson*[1]; Charles Kuehmann[2]; [1]Northwestern University; [2]SpaceX & Tesla

3:25 PM Plenary
Theoretical Modeling and Atomistic Calculation Verifications of Size-dependent Mechanical and Thermal Behaviors in Nanomaterials: *Tong-Yi Zhang*[1]; [1]Shanghai University

4:15 PM Break

Computational Materials Discovery and Optimization – Materials Interfaces, 2D Materials, and Nanomaterials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Arizona State University; Arunima Singh, Lawrence Berkeley National Laboratory; Eric Homer, Brigham Young University; Francesca Tavazza, National Institute of Standards and Technology

Monday PM
March 12, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chairs: Francesca Tavazza, NIST; Houlong Zhuang, Mechanical and Aerospace Engineering

2:30 PM Invited
The Use of Cluster Expansions to Predict the Structure and Properties of Catalysts: *Tim Mueller*[1]; [1]Johns Hopkins University

3:00 PM
A Combined Experimental-computational Approach to Determining Nanoscale Structures: *Spencer Hills*[1]; Alper Kinaci[2]; Fatih Sen[1]; Maria Chan[1]; [1]Argonne National Laboratory; [2]Northwestern University

3:20 PM
Data-driven Discovery of Photocathodes for CO_2 Reduction: *Arunima Singh*[1]; Kristin Persson[1]; [1]Lawrence Berkeley National Laboratory

3:40 PM
High-throughput Investigation of the Electronic Properties of 2D and Bulk Materials in the MaterialsWeb Database: *Joshua Paul*[1]; Andy Linscheid[1]; Joshua Gabriel[1]; Richard Hennig[1]; [1]University of Florida

4:00 PM Break

4:20 PM
Computational Screening of Novel Two-dimensional Topological Insulators and Layer-dependent Properties: *Kamal Choudhary*[1]; Kevin Garrity[1]; Francesca Tavazza[1]; [1]National Institute of Standards and Technology

4:40 PM
First Principle Prediction of Magnetic Topological Phase in Thin Films of Bi2XY4 (X = Mn, Cr; Y = Se, Te): *Sugata Chowdhury*[1]; Joseph Hagmann[1]; Curt Richter[1]; Angela Hight Walker[1]; Francesca Tavazza[1]; [1]National Institute of Standard and Technology

5:00 PM
First-principles Calculations on the Multiferroic Properties of Two-dimensional Oxides: *G.P. Zheng*[1]; [1]Hong Kong Polytechnic University

Computational Materials Science and Engineering for Nuclear Energy – Nuclear Fuels and Cladding II

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Monday PM
March 12, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: David Anderson, Los Alamos National Laboratory; Daniel Schwen, Idaho National Laboratory

2:30 PM Invited
Fundamental Understanding of Corrosion of Nuclear Materials: Holistic Approach to Fuel Cladding Corrosion under Irradiation: *Adrien Couet*[1]; [1]University of Wisconsin - Madison

3:00 PM
A Model Coupling Hydrides Formation and Mechanical Behavior of Zircaloy Cladding during Fuel Rod Lifecycle: *Hao Wang*[1]; Vikas Tomar[1]; [1]Purdue University

3:20 PM
Competition of Deformation Modes in Irradiated Zr Alloys: A Micromechanical Approach: *Pierre-Alexandre Juan*[1]; Remi Dingreville[1]; [1]Sandia National Laboratories

3:40 PM
Effect of Stress on Hydrides Precipitation and Re-orientation in Zircaloy: A Phase Field Study: *Karim Ahmed*[1]; Bulent Biner[1]; Larry Aagesen[1]; Yongfeng Zhang[1]; [1]INL

4:00 PM Break

4:20 PM
Hydrogen Transport and Trapping in Irradiation Damaged Zirconium Alloys: *Jared Tannenbaum*[1]; Jesse Carter[1]; Richard Smith[1]; Bruce Kammenzind[1]; [1]Bettis Laboratory, NNL

4:40 PM
Formation and Re-orientation of Multi-phase Zirconium Hydrides under Applied Strain: Jacob Bair[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

5:00 PM
Residual Point Defects and their Evolution near Dislocation Loops and Grain Boundaries in α-zirconium: An Atomistic Study: *Cong Dai*[1]; Peyman Saidi[1]; Zhongwen Yao[1]; Mark Daymond[1]; [1]Queen's University

5:20 PM
A Quantitative Phase-Field Model for Gas Bubble Evolution in Nuclear Fuels: *San-Qiang Shi*[1]; Z. Xiao[1]; [1]The Hong Kong Polytechnic University

Computational Thermodynamics and Kinetics – Transport

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Monday PM
March 12, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: Elif Ertekin, University of Illinois

2:30 PM Invited
Supersonic Phasons Observed in Fresnoite: *Michael Manley*[1]; [1]Oak Ridge National Laboratory

3:00 PM
A First-principles Investigation of Various Vibrational Entropy Contribution Methods on Self-diffusion Coefficient Calculations in FCC and BCC Metals: *Chelsey Hargather*[1]; John O'Connell[1]; Harrison Lee[1]; [1]New Mexico Institute of Mining and Technology

3:20 PM
Development of a Mg Mobility Database Using Diffusion Multiples and Liquid-solid Diffusion Couples: *Wei Zhong*[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

3:40 PM Invited
Nanophononic Metamaterial: Severe Thermal Conductivity Reduction by Non-scattering Resonance Hybridizations: *Mahmoud Hussein*[1]; [1]University of Colorado Boulder

4:10 PM Break

4:30 PM
Ab Initio Molecular Dynamics Simulation of Transport in Al-Si Binary Liquids: *Venkateswara Rao Manga*[1]; David Poirier[1]; [1]University of Arizona

4:50 PM
Anharmonic Phonons in Low-symmetry $FeGe_2$ at the Paramagnetic Phase: *Yang Shen*[1]; Hillary Smith[1]; Dennis Kim[1]; Fred Yang[1]; Doug Abernathy[2]; Matt Stone[2]; Brent Fultz[1]; [1]California Institute of Technology; [2]Oak Ridge National Laboratory

5:10 PM
Effects of Simultaneous Pressure and Temperature on the Stability of $Silicon_{24}$: *Brent Fultz*[1]; Timothy Strobel[2]; [1]California Institute of Technology; [2]Carnegie Institution of Washington

Coupling Experiments and Modeling to Understand Plasticity and Failure – Fatigue

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

Monday PM
March 12, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chairs: Michael Sangid, Purdue University; Paul Shade, Air Force Research Laboratory; Matt Miller, Cornell University; Philip Eisenlohr, Michigan State University

2:30 PM Invited
Integrated Micromechanical Approaches to Understand Dwell Fatigue: In-situ Experiments from the Micro-scale Upwards: Terry Jun[1]; Zhen Zhang[1]; Fionn Dunne[1]; *T Ben Britton*[1]; [1]Department of Materials, Imperial College

2:55 PM Invited
Integrated Micromechanical Approaches to Understand Dwell Fatigue: Crystal and Discrete Dislocation Plasticity Modelling: *Fionn Dunne*[1]; Ben Britton[1]; Zebang Zheng[1]; Daniel Balint[1]; Zhen Zhang[1]; [1]Imperial College

3:20 PM Invited
Understanding the Fatigue Response of Each Crystal within a Copper Aggregate: Mark Obstalecki[1]; Robert Carson[1]; Paul Dawson[1]; *Matthew Miller*[1]; [1]Cornell University

3:45 PM
Characterizing the Effects a Smooth Crystal Lattice Orientation Field Formulation Has on the Evolution of Intragrain Deformation: *Robert Carson*[1]; Paul Dawson[1]; [1]Cornell University

4:05 PM Break

4:25 PM Invited
Opportunities for Validation of Grain-Level Plasticity and Fatigue Crack Growth Using High Energy X-ray Diffraction Microscopy; Part 1: Experimental Methods: *Paul Shade*[1]; William Musinski[1]; Todd Turner[1]; David Menasche[2]; Joel Bernier[3]; Sirina Safriet[4]; Darren Pagan[5]; Peter Kenesei[6]; Jun-Sang Park[6]; Jon Almer[6]; [1]Air Force Research Laboratory; [2]Hamiltonian Group; [3]Lawrence Livermore National Laboratory; [4]University of Dayton Research Institute; [5]Cornell High Energy Synchrotron Source; [6]Argonne National Laboratory

4:50 PM Invited
Opportunities for Validation of Grain-Level Plasticity and Fatigue Crack Growth Using High Energy X-ray Diffraction Microscopy; Part 2: Modeling Development and Considerations: *William Musinski*[1]; Paul Shade[1]; Todd Turner[1]; David Menasche[2]; Joel Bernier[3]; Sirina Safriet[4]; Darren Pagan[5]; Peter Kenesei[6]; Jun-Sang Park[6]; Jon Almer[6]; [1]US Air Force Research Lab; [2]Hamiltonian Group; [3]Lawrence Livermore National Laboratory; [4]University of Dayton Research Institute; [5]Cornell High Energy Synchrotron Source; [6]Argonne National Laboratory

5:15 PM Evening Poster Session Overview - Michael D Sangid, Philip Eisenlohr, Matthew P. Miller, Paul A. Shade

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 2A: Precipitation Dissolution, Liquation in & Welding of Ni-based Superalloys.
2B: Effects of Ordering and Precipitate Behavior in Ni-based Superalloys.

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Monday PM
March 12, 2018
Room: 126A
Location: Phoenix Convention Center

Session Chairs: Chantal Sudbrack, NASA Glenn Research Center; Mark Hardy, Rolls-Royce plc

2:30 PM Invited
An Overview of the Modeling of Precipitation and Dissolution in Gamma-gamma Prime Nickel-base Superalloys: *Lee Semiatin*[1]; David Mahaffey[1]; Eric Payton[1]; Jay Tiley[1]; Oleg Senkov[2]; Nathan Levkulich[3]; [1]US Air Force Research Laboratory; [2]UES, Inc; [3]Wright-State University

3:00 PM
Liquation Mechanisms of a Powder Processed Nickel Superalloy: *Sean John*[1]; Helen Davies[1]; Simon Bray[2]; [1]Swansea University; [2]Rolls Royce Plc

3:20 PM
Peculiar Semi-solid Deformation Behaviour in Co and Ni Alloys: An In Situ X-ray Tomographic Investigation: *Mohammed Azeem*[1]; Robert Atwood[2]; Peter Lee[1]; [1]Manchester University; [2]Diamond Light Source

3:40 PM
Role of Anisotropic Deformation on the Weld Cracking of a Directionally Solidified Ni-base Superalloy: *Avinash Prabhu*[1]; Sudarsanam Suresh Babu[1]; [1]The University of Tennessee

4:00 PM Break

4:20 PM Invited
Portevin-Le Chatelier Effect in Ni-based Superalloys: Experiments and Mechanisms: *Chuanyong Cui*[1]; [1]Institute of Metal Research

4:50 PM
The Effect of γ Particles in γ' Precipitates on the Mechanical Properties in Ni-Al-Ti Superalloys: *Markus Kolb*[1]; Steffen Neumeier[1]; Mathias Göken[1]; [1]Universität Erlangen-Nürnberg

5:10 PM
Influence of the Starting Microstructure on the Hot Deformation Behavior of a Low Stacking Fault Energy Ni-based Superalloy: *Joshua McCarley*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

5:30 PM
Mechanical Properties of Modified INCONEL® Alloy 718 with □'/□" Compact Morphology: *Martin Detrois*[1]; Kyle Rozman[1]; Paul Jablonski[1]; Jeffrey Hawk[1]; [1]National Energy Technology Laboratory

Design for Mechanical Behavior of Architectured Materials via Topology Optimization – Architected and Topology Optimization (TO) Design for Dynamic, Nonlinear, and Energy Applications

*Sponsored by:*TMS Structural Materials Division, TMS: Additive Manufacturing Bridge Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Natasha Vermaak, Lehigh University; Andrew Gaynor, U.S. Army Research Laboratory

Monday PM — Room: 132C
March 12, 2018 — Location: Phoenix Convention Center

Session Chair: Ted Blacker, Sandia National Labs

2:30 PM
Design of Honeycomb TWIP Steels for Maximum Energy Absorption: *Mackenzie Jones*[1]; David Garcia[1]; Yunhui Zhu[1]; Hang Yu[1]; [1]Virginia Tech

3:00 PM
Discrete-element Modeling of Nacre-like Materials: Random Microstructures, Nonlinear Deformations and Fracture: *Najmul Abid*[1]; Mohammad Mirkhalaf[1]; Francois Barthelat[1]; [1]McGill University

3:30 PM
Designing Metamaterials for Enhanced Noise and Vibration Properties: *Lise Noel*[1]; Claus Claeys[1]; Elke Deckers[1]; Wim Desmet[1]; [1]KU Leuven

4:00 PM Break

4:20 PM
Tailoring the Dynamic Properties of 3D Woven Metallic Lattices through Topology Optimization: *Hak Yong Lee*[1]; David Mills[1]; Ju Xue[1]; Timothy Weihs[1]; Kevin Hemker[1]; James Guest[1]; [1]Johns Hopkins University

4:50 PM Invited
Extreme Design: An Adrenalin Rush with Topology Optimization, Metamaterials and Additive Manufacturing: *Ted Blacker*[1]; [1]Sandia National Laboratories

Dynamic Behavior of Materials VIII – Energetic Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Monday PM — Room: 127B
March 12, 2018 — Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Invited
Initiation of Explosives by Hypervelocity Metal Fragments: *John Yeager*[1]; Patrick Bowden[1]; Daniel Guildenbecher[2]; Joseph Olles[2]; [1]Los Alamos National Laboratory; [2]Sandia National Laboratories

3:10 PM
Modeling ß-HMX-based Polymer-bonded Explosive: Shock, Plasticity and Damage Mechanics: *Nicolò Grilli*[1]; Camilo Duarte Cordon[1]; Marisol Koslowski[1]; [1]Purdue University

3:30 PM
Atomistic Insights into Decomposition and Reactions of Energetic Materials under Shock and Thermal Loading: *Md Mahbubul Islam*[1]; Alejandro Strachan[1]; [1]Purdue University

3:50 PM
Hotspots in High-energy Density Materials: The Role of Non-equilibrium Loading in Reactivity: *Michael Sakano*[1]; Mahbub Islam[1]; Brenden Hamilton[1]; Alejandro Strachan[1]; [1]Purdue University

4:10 PM Break

4:30 PM Invited
Anisotropic Shock Response of Poly (P-Phenylene Terephthalamide) (PPTA) and its Implications for Aramid-based Fibers Performance: *Paulo Branicio*[1]; Subodh Tiwari[1]; Kohei Shimamura[1]; Fuyuki Shimojo[2]; Aiichiro Nakano[1]; Rajiv Kalia[1]; Priya Vashishta[1]; [1]University of Southern California; [2]Kumamoto University

5:10 PM
Dynamic Deformation and Stress Wave Propagation in Ballistic Gel: *Ghatu Subhash*[1]; [1]University of Florida

5:30 PM Demonstration One minute oral presentation for posters

Electrode Technology Symposium for Aluminum Production – Anode Raw Materials

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xianan Liao, Elkem Carbon

Monday PM — Room: 222C
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Guanghui Lang, Sunstone Development; Jilai Xue, University of Science and Technology Beijing

2:30 PM Introductory Comments

2:35 PM
An XANES Study of Sulfur Speciation and Reactivity of Cokes Used for Aluminium Production: *Gøril Jahrsengene*[1]; Richard Haverkamp[2]; Hannah Wells[2]; Stein Rørvik[3]; Arne Petter Ratvik[3]; Ann Mari Svensson[1]; [1]Norwegian University of Science and Technology; [2]Massey University; [3]SINTEF Materials and Chemistry

3:00 PM
Influence of Crushing Technology and Particle Shape on the Bulk Density of Anode Grade Petroleum Coke: *Frank Cannova*[1]; Mike Davidson[1]; Laura Forte[1]; Barry Sadler[2]; [1]BP; [2]Net Carbon Consulting

3:25 PM
Study on the Calcination Performance and Desulfurization Mechanism of Petroleum Cokes with Different Sulfur Contents between 700-1100□: *Shoulei Gao*[1]; Jilai Xue[1]; Guanghui Lang[1]; Rui Liu[1]; Chongai Bao[1]; Zhiguo Wang[1]; Fali Zhang[1]; [1]Sunstone Development Co., Ltd

3:50 PM
Rotary Hearth Calcining of Petroleum Cokes: *William Barraclough*[1]; [1]Tenova Inc.

4:15 PM Break

4:30 PM
Effects of High-Sulfur Cokes on Physicochemical Properties of Prebaked Anodes in Aluminium Electrolysis: *Jiang Haitao*[1]; Tang Changting[1]; Ma Zhengqing[1]; Zhou Ping[1]; Li Yuan[1]; GAO Panpan[1]; [1]Shandong Nanshan Aluminium Co. Ltd

4:55 PM
The Research and Industrial Application of An Improved Impact Cleaning Technology of the Double Anode Butts in Aluminium Electrolysis: Youlai Wang[1]; Qiusi Yang[1]; Yong Li[1]; Xiancong Xiao[2]; Lei He[1]; *Hengjun Zhao*[1]; [1]Sichuan Aostar Aluminium CO.,LTD; [2]Guiyang New High Alumina Carbon Technology Co., Ltd.

5:20 PM
Analysis on the Material Balance Based on the Calcination Characteristics of a Chamber Calciner: Sun Jiyun[1]; *Wei Dong*[2]; [1]Guiyang Aluminium Magnesium Design & Research Institute Co. Ltd, Guiyang; [2]Elkem Carbon (China)

Energy Technologies and CO_2 Management Symposium – Carbon-based Energy Materials and Sustainable Metallurgical Processes

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Donna Guillen, Idaho National Laboratory; Tao Wang, Nucor Steel; Neale Neelameggham, Ind LLC; John Howarter, Purdue University

Monday PM
March 12, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: Nawshad Haque, CSIRO, Australia; Jie Tang, National Institute for Materials Science

2:30 PM Keynote
Graphene Electrode of Porous Structure for Supercapacitors with Ionic Liquid Electrolyte: *Jie Tang*[1]; Lu-Chang Qin[2]; [1]Natioanl Institute for Materials Science; [2]University of North Carolina at Chapel Hill

3:10 PM Invited
Carbon Nanotube-containing Electrocatalysts for Oxygen Reduction Reaction: Jincheng Li[1]; Pengxiang Hou[1]; *Chang Liu*[1]; Hui-Ming Cheng[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

3:30 PM Invited
Electrochemical Exfoliation of Graphite and Production of Functional Graphene: *Yu Lin Zhong*[1]; [1]Griffith University

3:50 PM Invited
Atom-functionalized Carbon-based Nanomaterials in Energy Applications: DFT Study: *Ting Liao*[1]; [1]Queensland University of Technology

4:10 PM Break

4:25 PM Invited
Evaluation of Variation in the Life Cycle Based Environmental Impacts for Copper Concentrate Production: Will Sikora[1]; Trevor Saldanha[1]; *Nawshad Haque*[1]; [1]CSIRO

4:45 PM
Direct Reduction of Copper Slag Composite Pellets within Lignite Using Biomass as Binder: *Zongliang Zuo*[1]; Qingbo Yu[1]; Huaqing Xie[1]; Qin Qin[1]; Mengqi Wei[1]; [1]Northeastern University

5:05 PM
Thermodynamic Analysis of Incineration Treatment of Waste Disposable Syringes in an EAF Steel-making Process: *Maryam Ghodrat*[1]; Bijan Samali[1]; [1]Western Sydney University

5:25 PM
The Reduction Kinetic of the Combined Cu-based Oxygen Carrier Used for Chemical Looping Gasification Technology: *Kun Wang*[1]; Weipeng Luan[1]; Qingbo Yu[1]; Qin Qin[1]; [1]Northeastern University

5:45 PM
Synergistic Effect Between Fat Coal and Poplar During Co-pyrolysis with Thermal Behavior and ATR-FTIR Analysis: *Qingyun Zhang*[1]; Shengfu Zhang[1]; Rongjin Zhu[1]; Shuxing Qiu[1]; Yue Wu[1]; [1]Chongqing University

Environmentally Assisted Cracking: Theory and Practice – Stress Corrosion Cracking I

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Monday PM
March 12, 2018
Room: 127A
Location: Phoenix Convention Center

Session Chairs: Gary Was, University of Michigan; Peter Andresen, GE Global Research

2:30 PM Introductory Comments

2:40 PM Invited
Environmental Cracking: Theory Depends on Practice: *Peter L. Andresen*[1]; [1]GE Global Research (Retired)

3:20 PM
Characterization of Stress Corrosion Cracking of 304 Stainless Steel Using High-energy Synchrotron X-ray Microtomography: Li Xi[1]; *Djamel Kaoumi*[1]; D. G. Enos[2]; Peter Kenesei[3]; [1]North Carolina State Univeristy; [2]Sandia National Laboratory; [3]Argonne National Laboratory

3:40 PM
Fundamental Mechanisms of Preventing Stress Corrosion Cracking of Austenitic Alloys by Laser Shock Peening: *Bai Cui*[1]; Xueliang Yan[1]; Fei Wang[1]; Chenfei Zhang[1]; Yongfeng Lu[1]; Michael Nastasi[1]; [1]University of Nebraska–Lincoln

4:00 PM Break

4:20 PM Invited
Mechanisms of High Temperature Stress Corrosion Crack Initiation in Austenitic Alloys: *Gary Was*[1]; Wenjun Kuang[1]; Mi Wang[1]; Miao Song[1]; Mo-RIgen He[2]; Ian Robertson[2]; Zhijie Jiao[1]; [1]University of Michigan; [2]University of Wisconsin

5:00 PM
IASCC Behavior of Additively Manufactured 316L Stainless Steel in Light Water Reactor Environments: *Mi Wang*[1]; Miao Song[1]; Xiaoyuan Lou[2]; Raul Rebak[3]; Gary Was[1]; [1]University of Michigan; [2]Corromet LLC; [3]GE Global Research

5:20 PM
The Effects of Grain Boundary Structure on the Intergranular Stress Corrosion Cracking Initiation Susceptibility of Alloy 690 in High Temperature Water: *Wenjun Kuang*[1]; Gary Was[1]; [1]University of Michigan

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Multiscale Modeling Approaches to Improve Fatigue Predictions

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Monday PM
March 12, 2018
Room: 125B
Location: Phoenix Convention Center

Session Chair: Ashley Spear, University of Utah

2:30 PM Invited
Simulation and Experimental Validation of Damage Accumulation and Phase Transformation during Cyclic Mechanical Loading of a Metastable Austenitic Stainless Steel Considering Prehistory Effects: *Martina Zimmermann*[1]; Philipp Hilgendorff[2]; Andrei Grigorescu[3]; Claus Fritzen[4]; Hans-Jürgen Christ[4]; [1]TU Dresden; [2]Otto Fuchs KG; [3]Thyssenkrupp Presta; [4]Universitaet Siegen

2:50 PM Invited
Prediction of Microstructurally–influenced Fatigue Crack Propagation: *Patrick Golden*[1]; Robert Brockman[2]; Rebecca Hoffman[2]; William Musinski[1]; Sushant Jha[2]; Reji John[1]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute

3:10 PM
A Qualitative FE Analysis of the Effect of the Local Texture on the Heterogeneous Plastic Strain Field in Nickel-based Superalloys during Low Cycle Fatigue: *Jean-Briac le Graverend*[1]; [1]Texas A&M University

3:30 PM
A Voxel-based Meshing Framework for the Simulation of Arbitrary 3D Crack Growth in Heterogeneous Materials: *Brian Phung*[1]; Ashley Spear[1]; [1]University of Utah

3:50 PM Break

4:10 PM
A Physically-based Methodology for the Deterministic Prediction of Microstucturally-sensitive Fatigue Crack Growth: *David Wilson*[1]; Fionn Dunne[1]; [1]Imperial College London

4:30 PM Invited
Time-based Subcycle Formulation for Fatigue Crack Growth under Arbitrary Random Variable Loadings: *Yongming Liu*[1]; Karthik Rajan Venkatesan[1]; Wei Zhang[2]; [1]Arizona State University; [2]Beihang University

4:50 PM
Cyclic Stress-strain Response and Microstructural Evolution Modeling of Nickel-based Superalloys during Low Cycle Fatigue: *Fernando Leon-Cazares*[1]; Enrique Galindo-Nava[1]; Olivier Messé[1]; Thomas Jackson[2]; Catherine Rae[1]; [1]University of Cambridge; [2]Rolls-Royce

5:10 PM
Prediction of Intergranular Micro-crack Initiation Induced by the Impingement of Persistent Slip Bands on Grain Boundaries: *Jerome Hazan*[1]; Maxime Sauzay[1]; [1]CEA

Fracture: 65 Years after the Weibull Distribution and the Williams Singularity – Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Brad Boyce, Sandia National Laboratories; Ellen Cerreta, Los Alamos National Laboratory; Jacob Hochhalter, NASA LaRC; Jonathan Zimmerman, Sandia National Laboratories

Monday PM
March 12, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chairs: Brad Boyce, Sandia National Labs; K. Ravi-Chandar, University of Texas at Austin

2:30 PM Invited
Toughness, Roughness and Crack Path Engineering for Improved Ductile Fracture Resistance: *Alan Needleman*[1]; [1]Texas A&M University

3:00 PM Invited
An Integrity Basis of Fracture Challenges: *Amine Benzerga*[1]; [1]Texas A&M University

3:30 PM Invited
The Complexity of Ductile Fracture: *Krishnaswamy Ravi-Chandar*[1]; [1]The University of Texas at Austin

4:00 PM Break

4:20 PM Invited
Computational Procedure for Designing New Gen 3 Steels with High Formability and Ductile Fracture Resistance: *Louis Hector Jr*[1]; Ankit Srivastava[2]; Daniel Gerbig[3]; Allan Bower[3]; [1]General Motors; [2]Texas A&M University; [3]Brown University

4:50 PM Invited
Re-tooling the Engineering Predictive Practices for Durability and Damage Tolerance: *Robert Piascik*[1]; Norman Knight[2]; [1]NASA Lanley Research Center; [2]Retired

5:20 PM Invited
NASA's Plan for Development and Transition of Computational Materials-based Capabilities for Next-generation Durability / Damage Tolerance and Additive Manufacturing: *Ed Glaessgen*[1]; [1]NASA

Frontiers in Advanced Functional Thin Films and Nanostructured Materials – Session II

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Ritesh Sachan, Army Research Office; Srinivasa Rao Singamaneni, The University of Texas at El Paso; Haiyan Wang, Purdue University; Nuggehalli Ravindra, New Jersey Institute of Technology; Raj Singh, Oklahoma State University; Amit Pandey, LG Fuel Cell Systems Inc.

Monday PM
March 12, 2018
Room: 103A
Location: Phoenix Convention Center

Session Chairs: Srinivasa Rao Singamaneni, Univ of Texas-El Paso; John Prater, Army Research Office

2:30 PM Invited
Graphene Film Nano Geometry Control for Advanced Functional Properties: *Sungho Jin*[1]; [1]University of California, San Diego

3:00 PM Invited
Materials Science in Two Dimensions: *Daniel Kaplan*[1]; [1]U,S, Army RDECOM-ARDEC

3:30 PM
Defects in Nanoscale Transitional Metal Di-chalcogenide Semiconducting Layers: *L. M. Martinez*[1]; J. van Tol[2]; Srinivasa Rao Singamaneni[1]; [1]The University of Texas at El Paso; [2]National High Magnetic Field Laboratory

3:50 PM
Graphitization and Growth of Free-standing Nanocrystalline Graphene Using In Situ Transmission Electron Microscopy: C.N. Shyam Kumar[1]; Kiran Chakravadhanula[1]; Di Wang[1]; Xiaoke Mu[1]; Ralph Krupke[2]; *Christian Kuebel*[1]; [1]KIT; [2]TU Darmstadt

4:10 PM Break

4:30 PM
Functionalized Graphene-polyoxometalate Nanodots Assembly as "Organic-inorganic" Hybrid Supercapacitors and Advanced Electrochemical Microscopy: *Sanju Gupta*[1]; Bryce Aberg[1]; Sara Carrizosa[1]; [1]Western Kentucky University

4:50 PM Invited
Processing and Properties of Nanomaterials in the C-B-N System: *Raj Singh*[1]; [1]Oklahoma State University

5:20 PM
Novel Synthesis and Characterization of Carbon-doped Cubic Boron Nitride (c-BN) by Pulsed Laser Annealing Technique: *Ariful Haque*[1]; Jagdish Narayan[1]; [1]NCSU

High Entropy Alloys VI – Alloy Development and Applications II

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Monday PM
March 12, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: James Saal, QuesTek Innovations; An-Chou Yeh, National Tsing Hua University

2:30 PM Invited
Development of High Temperature Alloys Based on the HEA Design Concept: *An-Chou Yeh*[1]; [1]National Tsing Hua University

2:50 PM Invited
Brazing of Ni-base Superalloy 600 Using a Newly Developed Mn35Fe5 (CoNiCu)20 Filler Foil: *Zhenzhen Yu*[1]; Minrui Gao[1]; Stephen Liu[1]; Michael Kaufman[1]; [1]Colorado School of Mines

3:10 PM Invited
High-throughput Predictive Design of Refractory High-entropy Alloys: Application to Ti-Zr-Ta-Mo-W with Validation: *Duane Johnson*[1]; Prashant Singh[1]; Andrei Smirnov[1]; Pratik Ray[1]; Matt Kramer[1]; [1]Ames Laboratory/ Iowa State University

3:30 PM Invited
Calphad and New-phacomp Assisted Design of Single Phase CrMnFeCoNi-type High Entropy Alloys: *Katerina Christofidou*[1]; Thomas McAuliffe[1]; Paul Mignanelli[1]; Pietro Orsatti[1]; Ed Pickering[2]; Howard Stone[1]; Nicholas Jones[1]; [1]University of Cambridge; [2]University of Manchester

3:50 PM Break

4:10 PM Invited
ICME Design of High Entropy Alloys: *James Saal*[1]; Ricardo Komai[1]; Pin Lu[1]; Ida Berglund[1]; Jeff Doak[1]; Jason Sebastian[1]; Greg Olson[1]; [1]QuesTek Innovations

4:30 PM Invited
Intermetallic Compound Enhances Twinning and Strength in a Duplex High Entropy Alloy: *Deep Choudhuri*[1]; Bharat Gwalani[1]; Mageshwari Komarasamy[1]; Sinivas Mantri[1]; Rajiv Mishra[1]; Rajarshi Banerjee[1]; [1]University of North Texas

4:50 PM
Strengthening of an High Entropy Alloys Using Nanotwinned Grains: *Bin Gan*[1]; William Yi Wang[1]; Yiguang Wang[1]; Jeffrey M. Wheeler[2]; [1]Northwestern Polytechnical University; [2]ETH Zurich

5:10 PM Invited
Insight into High-temperature Oxidation of Refractory High-entropy Alloys and Mechanical Properties: *Saad Sheikh*[1]; Sheng Guo[1]; [1]Chalmers University of Technology

5:30 PM
Solidification and Miscibility of 3d Transition Metal High Entropy Alloys Containing Copper: *Nicholas Derimow*[1]; Abraham Munitz[2]; Reza Abbaschian[1]; [1]University of California, Riverside; [2]Nuclear Research Center-Negev

High Entropy Alloys VI – Thermal 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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Monday PM
March 12, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Jim Hu, HRA; Alice Hu, City University of Hong Kong

2:30 PM Invited
Configuration Entropy of High Entropy Alloys: *Alice Hu*[1]; JW Yeh[2]; PK Liaw[3]; CH Hu[4]; Ky Fung[1]; PJ Yu[1]; [1]City University of Hong Kong; [2]National Tsing Hua University; [3]The University of Tennessee; [4]National Taiwan University

2:50 PM
Evaluation of Microstructure and Mechanical Property Variations in AlxCrCoFeNi High Entropy Alloys by a High-throughput Laser Deposition Method: *Mu Li*[1]; Rohan Mishra[1]; Katharine Flores[1]; [1]Washington University in St. Louis

3:10 PM Invited
Validation of High Entropy Alloy Diffusion Databases: *John Morral*[1]; [1]The Ohio State University

3:30 PM Invited
Phase Stabilization of High Entropy Alloy under Dynamic Forcing Condition: Hyun Seok Oh[1]; Zhiming Li[2]; Jin Yeon Kim[1]; Chae Woo Ryu[1]; Andreas Meyer[3]; Koichi Tsuchiya[4]; Dierk Raabe[2]; *Eun Soo Park*[1]; [1]Seoul National University; [2]Max-Planck Institut für Eisenforschung GmbH; [3]Deutsches Zentrum fuer Luft- und Raumfahrt (DLR); [4]National Institute for Materials Science

3:50 PM Invited
Phase Formation and Stability in High Entropy Alloys: Nicholas Derimow[1]; Trevor Clark[1]; Reza Abbaschian[1]; *Suveen Mathaudhu*[1]; [1]University of California, Riverside

4:10 PM Break

4:30 PM
Rare-earth High-entropy Alloys with Giant Magnetocaloric Effect: *Yuan Wu*[1]; Y. Yuan[1]; X. Tong[2]; Z. P. Lu[1]; [1]State Key Lab for Advanced Metals and Materials, USTB; [2]Oak Ridge National Laboratory

4:50 PM
Phase Stability in the Al-Co-Cr-Fe-Nb-Ni High-entropy Alloy System: *Martin Detrois*[1]; Stoichko Antonov[2]; Sammy Tin[2]; [1]National Energy Technology Laboratory; [2]Illinois Institute of Technology

5:10 PM Invited
Investigation of High Entropy Alloys (HEAs) and the Application in Dissimilar Metals Welding: *Jim Hu*[1]; Eric Walker[1]; Peiyong Chen[2]; Chanho Lee[2]; Douglas Fielden[2]; Peter Liaw[2]; [1]Honda R&D Americas; [2]The University of Tennessee, Knoxville

5:30 PM
Unusual Interstitial Strengthening of High-entropy Alloys Evading the Strength-ductility Trade-off: *Zhifeng Lei*[1]; Xiongjun Liu[1]; Shudao Wang[1]; Hui Wang[1]; Yuan Wu[1]; Paraskevas Kontis[2]; Baptiste Gault[2]; Dierk Raabe[2]; Houwen Chen[3]; Tai-Gang Nieh[4]; Zhaoping Lu[1]; [1]University of Science and Technology Beijing; [2]Max-Planck-Institut für Eisenforschung GmbH; [3]Chongqing University; [4]University of Tennessee

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – Density Functional Theory Methods

*Sponsored by:*TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Monday PM
March 12, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chairs: Richard Hennig, University of Florida; Chelsey Hargather, New Mexico Institute of Mining and Technology

2:30 PM Invited
Density Functional Theory Applied to Alloy Phase Stability and Transformations – Is it Worth it?: *Patrice Turchi*[1]; [1]Lawrence Livermore National Laboratory

3:00 PM Invited
Automated Solute Diffusivity from First Principles: *Dallas Trinkle*[1]; [1]University of Illinois, Urbana-Champaign

3:30 PM Invited
Vibrational Entropy Effects on the Phase Diagrams of Nanostructured Thermoelectrics: *Chris Wolverton*[1]; [1]Northwestern University

4:00 PM Break

4:20 PM Invited
A Study of (Ti-6Al-4V)-hydrogen Phase Diagram and its Application in Engineering Microstructures of Ti Alloys: *Z. Zak Fang*[1]; Pei Sun[1]; [1]University of Utah, Dept of Metallurgical Engineering

4:50 PM Invited
Exploration of Large Ab Initio Data Spaces to Design Structural Materials with Superior Mechanical Properties: *Joerg Neugebauer*[1]; Jan Janssen[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; [1]Max-Planck-Institut fuer Eisenforschung

5:20 PM Invited
Thermodynamics of Some Liquid Alkali Metals: *Marcel Sluiter*[1]; Masanori Enoki[2]; Hiroshi Ohtani[2]; [1]TU Delft; [2]Tohoku University

Integrative Materials Design III: Performance and Sustainability – Microstructure Evolution and Fatigue Performance in Additive Manufacturing & Other Advanced Manufacturing Technologies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Monday PM
March 12, 2018
Room: 132A
Location: Phoenix Convention Center

Session Chairs: Fei Cao, Worcester Polytechnic Institute; Yuwei Zhai, Worcester Polytechnic Institute

2:30 PM Invited
Additive Materials Behavior: Importance of Collecting Data Along the Way: *Amber Andreaco*[1]; [1]GE Additive

2:50 PM Invited
Characterization of Very High Cycle Fatigue in Ti-6Al-4V and Al-10Si-0.4Mg Alloys Fabricated by Laser Powder Bed Fusion: *Jason Carroll*[1]; [1]Eaton

3:10 PM
A Comparison of Fatigue Performance and Behavior of Ti-6Al-4V Made by Different Additive Manufacturing Technologies: *Fei Cao*[1]; Diana Lados; [1]Worcester Polytechnic Institute

3:30 PM
Microstructure, Tensile Properties, and Fatigue Crack Growth Mechanisms at the Microstructure Scale in Inconel 718 Manufactured by Laser Engineered Net Shaping: *Yuwei Zhai*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

3:50 PM
Microstructure Evolution, Fatigue Crack Growth Mechanisms, and Effects of Heat Treatment in Ti-6Al-4V and Al-10Si-0.4Mg Alloys Fabricated by Laser and Electron Beam Powder Bed Fusion: *Robert Warren*[1]; Haize Galarraga[1]; Diana Lados[1]; Ryan Dehoff[2]; Michael Kirka[2]; Ed Hummelt[3]; [1]Worcester Polytechnic Institute; [2]Oakridge National Laboratory; [3]Eaton Corporation

4:10 PM Break

4:25 PM Invited
Optimizing HIP and Printing Parameters for EBM Ti-6Al-4V: *Magnus Ahlfors*[1]; [1]Quintus Technologies

4:45 PM Invited
Through-process Modeling for Alloy Design and Process Optimization for Cold Spray: *Danielle Cote*[1]; Victor Champagne[2]; [1]Worcester Polytechnic Institute; [2]US Army Research Laboratory

5:05 PM
Design of Cold-spray 6061 Aluminum Alloys for Fatigue Crack Growth Resistance in Structural Components, Coatings, and Repairs: *Christopher Sample*[1]; Robert Warren[1]; Anastasios Gavras[2]; Diana Lados[1]; Victor Champagne[3]; [1]Worcester Polytechnic Institute; [2]Riley Power; [3]US Army Research Laboratory

5:25 PM
Friction Stir Welding of Wrought and Cast Aluminum Alloys: Property Evaluations and Thermo-mechanical Modeling: *Yi Pan*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institution

5:45 PM
Friction Stir Welding of Dissimilar Metals: *Xiangbin Wang*[1]; Yi Pan[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

Magnesium Technology 2018 – Corrosion and Surface Protection

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Monday PM
March 12, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Mikhail Zheludkevich, Helmholtz-Zentrum Geesthacht (HZG); Nick Birbilis, Monash University

2:30 PM Introductory Comments

2:35 PM
Adding Dimensions to the Immersion Testing of Magnesium Corrosion: Lars Wadsö[1]; *Dmytro Orlov*[1]; [1]Lund University

2:55 PM
Corrosion Characteristics of Two RE Containing Magnesium Alloys: *Marwa AbdelJawad*[1]; Bilal Mansoor[1]; Ali Usman Chaudhry[1]; [1]Texas A&M University at Qatar

3:15 PM
Effect of Fluoride Ion on the Microstructure and Properties of Permanganate Conversion Coating on AZ91D Magnesium Alloy: *Shih-An Yang*[1]; Chao-Sung Lin[1]; [1]Department of Materials Science and Engineering, National Taiwan University

3:35 PM
Ni-P-MWNTs Composite Coatings on Magnesium Alloys AZ31 Part 1: MWNTs Content in Coating: *Dong Guo*[1]; [1]Hebei University of Science and Technology

3:55 PM
Ni-P-MWNTs Composite Coatings on Magnesium Alloys AZ31 Part 2: Tribological Behavior and MWNTs Content in Coating: *Dong Guo*[1]; [1]Hebei University of Science and Technology

4:15 PM Break

Magnesium Technology 2018 – Poster Pitches

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Monday PM
March 12, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Vineet Joshi, Pacific Northwest National Laboratory - PNNL; Neale Neelameggham, IND LLC

4:30 PM Poster Pitches

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Nuclear Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Monday PM
March 12, 2018
Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM
Characterization of Intragranular Creep Deformation in Uranium Dioxide Using Electron Backscatter Diffraction and Electron Channeling Contrast Imaging: *Benjamin Shaffer*[1]; Pedro Peralta[1]; [1]Arizona State University

2:50 PM
Corrosion Assessment of an Alloy/Oxide Composite Using Electrochemical Techniques: *Vineeth Kumar Gattu*[1]; William Ebert[1]; J Ernesto Indacochea[2]; [1]Argonne National Laboratory; [2]University of Illinois at Chicago

3:10 PM
Grain Boundary Engineering for Improved Resistance to Corrosion and Stress Corrosion Cracking Resistance of Nuclear Alloys: Abhishek Telang[1]; Amrinder Gill[2]; Mukul Kumar[3]; Sebastien Teysseyre[4]; Seetha Mannava[5]; Dong Qian[6]; *Vijay Vasudevan*[5]; [1]Integer; [2]AK Steel; [3]Lawrence Livermore National Laboratory; [4]Idaho National Laboratory; [5]University of Cincinnati; [6]University of Texas at Dallas

3:30 PM
Development of an Alternative Manufacturing Process for U3Si2 Fuel by a Novel Additive Manufacturing Process: *Isabella van Rooyen*[1]; Clemente Parga[1]; Jhonathan Rosales[1]; Ed Lahoda[2]; [1]Idaho National Laboratory; [2]Westinghouse Electric Company

3:50 PM
Fabrication of Lumped Gd2O3 Inserted Oxide Pellets □for Burnable Absorber Fuel: *Qusai Mistarihi*[1]; Ho Jin Ryu[1]; [1]Korea Advanced Institute of Science and Technology

4:10 PM Break

4:30 PM
Importance of the Amount/thickness of Lubricant on the Die Wall during UO2 Powder Cold Compaction: *Ousseïni Marou Alzouma*[1]; Anne-Charlotte Robisson[1]; [1]CEA Cadarache

4:50 PM
Understanding Micromechanical Deformation in Hard-facing Alloys for Improving Galling Resistance: *Chong Zhao*[1]; Jun Jiang[1]; Fionn Dunne[1]; [1]Imperial College London

5:10 PM
Probing Local Disorder in Ln-UO2 (Ln = Y, Nd, La) and UO2+x Systems: Raul Palomares[1]; Sarah Finkeldei[2]; Lei Zhang[3]; Tiankai Yao[4]; Felix Brandt[2]; Alexandra Navrotsky[3]; Jie Lian[4]; *Maik Lang*[1]; [1]The University of Tennessee; [2]Forschungszentrum Jülich; [3]University of California Davis; [4]Rensselaer Polytechnic Institute

5:30 PM
Radiation Effect on Nanomaterials at High Temperature
-New Type of Radiation Detector for TREAT Nuclear Reactor-
: *You Qiang*[1]; Lokendra Khanal[1]; [1]University of Idaho and The Center for Advanced Energy Studies

Materials for Energy Conversion and Storage – Solid Oxide Fuel Cells I

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Monday PM
March 12, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Amit Pandey, LGFCS; Jung Pyung Choi, PNNL

2:30 PM Invited
Comparison of Chromium Poisoning Effects on Performances of (La,Sr) MnO3 and (La,Sr)FeO3 Based Cathodes in Solid Oxide Fuel Cells: *Uday Pal*[1]; Ruofan Wang[1]; Srikanth Gopalan[1]; Soumendra Basu[1]; [1]Boston University

2:55 PM Invited
Chromium Sensor for Use in SOFC Systems: *Jeffrey Fergus*[1]; Moaiz Shahzad[1]; Tommy Britt[1]; [1]Auburn University

3:15 PM
Chromium Evaporation from Metallic Components and Cathode Poisoning in SOFC: *Ashish Aphale*[1]; Md Aman Uddin[1]; Junsung Hong[1]; Justin Webster[1]; Su Jeong Heo[1]; Boxun Hu[1]; Prabhakar Singh[1]; [1]University of Connecticut

3:40 PM Invited
Advanced Reactive Air Aluminization Process for SOFC Stacks: *Jung Pyung Choi*[1]; Jeffry Stevenson[1]; [1]Pacific Northwest National Laboratory

4:05 PM Break

4:20 PM Introductory Comments

4:25 PM Invited
Cr-poisoning and Recovery at SOFC Cathode/Electrolyte Interfaces: *Teruhisa Horita*[1]; [1]AIST

4:50 PM
Gaseous Chromium Capture and Mitigation of LSM Cathode Poisoning at 650 °C: *Su Jeong Heo*[1]; Boxun Hu[1]; Ashish Aphale[1]; Junsung Hong[1]; Prabhakar Singh[1]; [1]University of Connecticut

5:10 PM
Developing an ITSOFC for Electrocatalytically Controlled Partial Oxidation of Methane to Methanol: *Abhinav Poozhikunnath*[1]; Radenka Maric[1]; [1]University of Connecticut

5:30 PM Invited
Electrochemical Properties of (La,Sr)MnO3 for Interconnector Application: Fen Qin[1]; Hyun-Jong Choi[2]; Sun-Dong Kim[2]; Sang-Kuk Woo[2]; *Jung-Kun Lee*[1]; [1]University of Pittsburgh; [2]Korea Institute of Energy

5:55 PM
Structural, Electrical and Dielectric Properties of Iron (Fe) Doped Gallium Oxide (Ga2O3): *Swadipta Roy*[1]; Ramana Chintalapalle[1]; [1]University of Texas at El Paso

Materials Processing Fundamentals – Steelmaking - Properties

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

Monday PM
March 12, 2018
Room: 228A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM
Characterization of Non-metallic Inclusions and Clusters in Steels by Using Different Modern Analytical Techniques: *Andrey Karasev*[1]; Dmitry Gorkusha[1]; Konstantin Grigorovich[1]; Pär Jönsson[1]; [1]KTH Royal Institute of Technology

2:50 PM
Research on the Pinpoint Controlling of CRA N08028 OCTG Microstructure and Properties: *Pan Dong*[1]; Zhiqiang Yu[2]; Zhifang Zhang[3]; Genshu Zhou[2]; Pengsheng Yao[4]; Xitang Kang[4]; Guangwei Fan[5]; [1]State Key Laboratory of Advanced Stainless Steel Materials, Taiyuan Iron & Steel (Group) Co., Ltd.; [2]State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University; [3]Shanxi Taigang Stainless Steel Co., Ltd.; [4]Shanxi Taigang Stainless Steel Tubes & Pipes Co., Ltd.; [5]Technology Center, Shanxi Taigang Stainless Steel Co., Ltd.

3:10 PM
Electron Beam Surface Hardening of AISI H13 Tool Steel: *Sandeep Thakare*[1]; [1]Bharat Forge Limited

3:30 PM
Mechanical Properties of FeCoCrNi High Entropy Alloy (HEA) Produced from Industrial Raw Materials by Induction Melting: *Gokhan Polat*[1]; Anil Erdal[1]; Eren Kalay[1]; [1]METU

3:50 PM
Effects of Aging Treatment on the Microstructure and Mechanical Properties of a Nanoprecipitates-strengthened Ferritic Steel: *Yu Zhao*[1]; Ye Cui[1]; Hao Guo[1]; Songsong Xu[1]; Xinghao Wei[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

4:10 PM Break

4:30 PM
Experimental Study on Formation Mechanism of Hot Charging Cracks of HSLA Steel: Banglun Wang[1]; *Fenglian Wang*[1]; [1]Anhui Polytechnic University

4:50 PM
Structural and Deformation Behavior of Different Hematite Ore Pellets: *Saikat Kuila*[1]; Tarun Kundu[1]; [1]Indian Institute of Technology Kharagpur

5:10 PM
Influence of Heat Treatment on PKS-HSS Cutting Tool (ASTM A600) and its Behaviour during Machining of Mild Steel (ASTM A36): Adeniran Afolalu[1]; Enesi Salawu[1]; Imhade Okokpujie[1]; Abiodun Abioye[1]; Olugbenga Omotosho[1]; Babatope Adejuyigbe[2]; Olayide Adetunji[3]; Omolayo Ikumapayi[4]; Oluwabunmi Abioye[1]; *Oluseyi Ajayi*[1]; [1]Covenant University; [2]Federal University of Oye; [3]Federal University of Agriculture, Abeokuta; [4]Afe Babalola University, Ado-Ekiti

Mechanical Behavior at the Nanoscale IV – Twinning at the Nanoscale

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Monday PM — Room: 101C
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Irene Beyerlein, UCSB; Andrea Hodge, USC

2:30 PM Invited
The Mechanics of Twinning at the Nanoscale: *Irene Beyerlein*[1]; [1]University of California, Santa Barbara

3:00 PM
Deformation Twinning in BCC Nanocrystals: Atomistic Modeling and In Situ Experiment: *Yin Zhang*[1]; Jiangwei Wang[2]; Li Zhong[3]; Christopher Weinberger[4]; Scott Mao[3]; Ting Zhu[1]; [1]Georgia Institute of Technology; [2]Zhejiang University; [3]University of Pittsburgh; [4]Colorado State University

3:20 PM
Mechanical Behavior and Strengthening Mechanisms of Nanotwinned AlMg Alloy: *Sichuang Xue*[1]; Qiang Li[1]; Zhe Fan[2]; Yifan Zhang[1]; Han Wang[1]; Xinghang Zhang[1]; [1]Purdue University; [2]Texas A&M University

3:40 PM Invited
Mechanical Behavior of Nanotwinned Alloys: *Andrea Hodge*[1]; [1]University of Southern California

4:10 PM Break

4:30 PM
In Situ Study on Strain-rate-dependent Work Hardening in FCC Co Dominated by High-density Stacking Faults: *Ruizhe Su*[1]; Dajla Neffati[2]; Sichuang Xue[1]; Qiang Li[1]; Zhe Fan[1]; Yue Liu[3]; Haiyan Wang[1]; Yashashree Kulkarni[2]; Xinghang Zhang[1]; [1]Purdue University; [2]University of Houston; [3]Shanghai Jiao Tong University

4:50 PM
Uniaxial Deformation of Nanotwinned Nanopillars/Nanotubes in Body-centered Cubic Tungsten: *Shuozhi Xu*[1]; Thomas Payne[2]; Jacob Startt[2]; Chaitanya Deo[2]; David McDowell[2]; [1]University of California, Santa Barbara; [2]Georgia Institute of Technology

5:10 PM
Development of New Titanium Alloys with High Strain Hardening Thanks to combined TRIP and TWIP Effects: Microstructure/ Mechanical Properties Relationships: *Yolaine Danard*[1]; Lola Lilensten[1]; Cédrik Brozek[1]; Fan Sun[1]; Philippe Vermaut[1]; Frédéric Prima[1]; [1]PSL Research University, Chimie ParisTech — CNRS, Institut de Recherche de Chimie Paris

Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao – Steel

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

Program Organizers: Shadia Ikhmayies, Al Isra University; Jiann-Yang Hwang, Michigan Technological University; Bowen Li, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

Monday PM — Room: 123
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Pasquale Spena, Free University of Bozen-Bolzano; Jiann-Yang Hwang, Michigan Technological University

2:30 PM Invited
Quench Embrittlement and Intergranular Fracture in High Carbon Steels: *George Krauss*[1]; [1]Colorado School of Mines

3:10 PM
Effect of Initial As-cast Structure on the Evolution of Microstructure and Texture and Finally Ridging Behavior of Ferritic Stainless Steel: *Pranabananda Modak*[1]; Sudipta Patra[1]; Rahul Mitra[1]; Debalay Chakrabarti[1]; [1]Indian Institute of Technology Kharagpur

3:30 PM
Friction and Wear Characteristics of 304 Stainless and Rolled Upper Bainitic Rail Steels: *Ayodeji Aapata*[1]; [1]Federal Polytechnic Idah

3:50 PM Break

4:10 PM
Tensile Behavior and Microstructure of TWIP Steels from Low to Warm Temperatures: *Pasquale Russo Spena*[1]; [1]Free University of Bozen-Bolzano

4:30 PM
Hot Ductility of X70 Pipeline Steel in Continuous Casting: *Wenxiang Jiang*[1]; Mujun Long[1]; Dengfu Chen[1]; Huamei Duan[1]; Wenjie He[1]; Sheng Yu[1]; Yunwei Huang[1]; Junsheng Cao[1]; [1]Chongqing University

Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr. – Synthesis and Developments of Emerging Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee

Program Organizers: Srivatsan Tirumalai, The University of Akron; Yuzheng Zhang, Gamma Alloys; William Harrigan, Gamma Technology, LLC

Monday PM — Room: 121A
March 12, 2018 — Location: Phoenix Convention Center

Session Chairs: Peter Liaw, University of Tennessee; Bakr Rabeeh, German University in Cairo, GUC

2:30 PM Invited
Study on Hot Deformation Behavior and Processing Map of 20vol.%Al18B4O33w/2024 Composites: *Wenchen Xu*[1]; [1]Harbin Institute of Technology

3:00 PM
High-entropy-alloy Composites: Microstructures and Mechanical Behavior: Rui Feng[1]; Michael C. Gao[2]; Xuesong Fan[1]; Haoyan Diao[1]; Wei Li[3]; *Peter K. Liaw*[1]; [1]The University of Tennessee; [2]National Energy Technology Laboratory; [3]University of Shanghai for Science and Technology

3:20 PM
Mechanisms of Solid State Interactions of Titanium Nitride and Titanium Carbide Particles in a Secondary Hardenable Steel Matrix: *Josef Pörnbacher*[1]; Stefan Marsoner[1]; Harald Leitner[2]; Gerald Ressel[1]; [1]Materials Center Leoben Forschung GmbH; [2]Böhler Edelstahl GmbH & Co KG

3:40 PM
Influence of Interface Microstructure on Mechanical Properties of Metal/Ceramic Bonding in Cu-SiC and Cu-Al2O3 Composites: *Dariusz Jarzabek*[1]; Marcin Chmielewski[2]; [1]Institute of Fundamental Technological Research; [2]Institute of Electronic Materials Technology

4:00 PM Break

4:20 PM
Development and Characterization of In-situ Al-TiC Composites Prepared by Pneumatic Powder Injection Route: *Sheetal Gupta*[1]; Anirban Giri[1]; Saikat Adhikari[1]; Vivek Srivastava[2]; [1]Aditya Birla Science & Tech. Co. Pvt. Ltd.; [2]Hindalco Industries Ltd.

4:40 PM
The Effect of Si on the Interface Reaction of Ti3SiC2/Al Composites: *Jianbo Zhang*[1]; Taotao Hu[1]; Yiming Jin[1]; [1]Jiangxi University of Science & Technology

5:00 PM
The Synthesis and Processing of Light Weight Low Cost and High Performance Structural Aluminum Metal Matrix Composite Foam: *Bakr Rabeeh*[1]; Mahmoud M. AbuEl-khier[1]; [1]German University in Cairo, GUC

5:20 PM
Tensile Behavior of Hot Isostatically Pressed TiC-SKD11 Composite and Characteristic Analysis: *Seong-Ju Park*[1]; Seung-Chan Cho[2]; Sang-Kwan Lee[2]; Dae-Ha Kim[3]; Keum-Cheol Hwang[3]; Hyun-Uk Hong[1]; [1]Department of Materials Science and Engineering, Changwon National University; [2]Composites Research Division, Korea Institute of Materials Science; [3]Daewha Alloytech

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Nanostructures and Polymer Nanocomposites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

Monday PM
March 12, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Invited
Interfacial Study of Nanocomposites and Hybrid Systems: *Jun Lou*[1]; [1]Rice University

3:10 PM
***In Situ* Deformation Characteristics of a Free-standing Three-dimensional Graphene Foam-aluminum Nanohybrid:** *Pranjal Nautiyal*[1]; Mubarak Mujawar[1]; Benjamin Boesl[1]; Arvind Agarwal[1]; [1]Florida International University

3:30 PM
Probing the Effects of Composition and Morphology on the Mechanical Properties of Nanocomposites Made via Liquid Metal Dealloying: *Ian McCue*[1]; Bernard Gaskey[2]; Michael Demkowicz[1]; Jonah Erlebacher[2]; [1]Texas A&M University; [2]Johns Hopkins University

3:50 PM
Synthesis and Characterization of Highly Porous Carbon from Waste Packaging Material for Value Added Products: *Vijay Rangari*[1]; Mohanad Idrees[1]; [1]Tuskegee University

4:10 PM Break

4:30 PM
Structure Property Relationship in Polyimide Nanocomposite for High-temperature Applications: *Colin Rowbottom*[1]; Jonathan Spowart[2]; Hassan Mahfuz[1]; [1]Florida Atlantic University; [2]Air Force Research Laboratory

4:50 PM
Ultra-high Elastic Strain Energy Storage in Hybrid Metal-oxide Infiltrated Polymer Nanocomposites: *Keith Dusoe*[1]; Xinyi Ye[2]; Kim Kisslinger[2]; Aaron Stein[2]; Seok-Woo Lee[1]; Chang-Yong Nam[2]; [1]University of Connecticut; [2]Brookhaven National Laboratory

5:10 PM
Carbon Nanocomposite for Reliable Seal Applications in High-temperature, High-pressure, Corrosive Environments: *Lei Zhao*[1]; Zhiyue Xu[1]; [1]Baker Hughes, Inc.

5:30 PM
The Dielectric Behavior in Reduced Graphene Oxide /Polymer Composites with a Segregated Structure: *Yonghua Li*[1]; Mengkai Li[2]; [1]Harbin Engineering University; [2]Jilin University

Non-equilibrium Features of Grain Boundaries – Structure of Non-equilibrium Grain Boundaries

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Liang Qi, University of Michigan; Yue Fan, University of Michigan, Ann Arbor; Josh Kacher, Georgia Tech; Elizabeth Holm, Carnegie Mellon University; Irene Beyerlein, University of California, Santa Barbara; Shigenobu Ogata, Osaka University

Monday PM
March 12, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Invited
Understanding the Behavior of a Polycrystalline Aggregate with Sub-crystal Resolution Using High Energy X-rays: *Matthew Miller*[1]; [1]Cornell University

3:00 PM
Changes in the Grain Boundary Character and Curvature Distributions of Nickel at Multiple Annealing Stages from Three-dimensional X-ray Microscopy: *Aditi Bhattacharya*[1]; C.M. Hefferan[2]; S.F. Li[3]; J. Lind[4]; Yufeng Shen[1]; R.M. Suter[1]; G.S. Rohrer[1]; [1]Carnegie Mellon University; [2]R. J. Lee Group; [3]Ditto Inc.; [4]Lawence Livermore National Laboratory

3:20 PM
CSL Pinning Mechanism Associated with Non-thermally Activated Mobility in Sigma 7 and Sigma 9 Grain Boundaries: *Jake Bair*[1]; Eric Homer[1]; [1]Brigham Young University

3:40 PM
Discovering the Atomic Building Blocks of Grain Boundaries Using Machine Learning: Conrad Rosenbrock[1]; Jonathan Priedeman[1]; *Eric Homer*[1]; Gus Hart[1]; Gábor Csányi[2]; [1]Brigham Young University; [2]University of Cambridge

4:00 PM Break

4:20 PM Invited
Structures and Transitions in BCC W Grain Boundaries: *Timofey Frolov*[1]; [1]LLNL

4:50 PM
Grain Boundary Network Structural Metrics and Phase Transitions: *Oliver Johnson*[1]; Christian Kurniawan[1]; [1]Brigham Young University

5:10 PM
Grain Boundary Structure Characterization with the Smooth Overlap of Atomic Positions Descriptor: *Jonathan Priedeman*[1]; Conrad Rosenbrock[1]; Gus Hart[1]; Eric Homer[1]; [1]Brigham Young University

5:30 PM
Mapping of 3D Grain Boundary Characteristics by LabDCT: Nicolas Gueninchault[1]; Jun Sun[1]; Florian Bachmann[1]; Hrishikesh Bale[2]; Christian Holzner[2]; Leah Lavery[2]; *Erik Lauridsen*[1]; [1]Xnovo Technology ApS; [2]Carl Zeiss X-ray Microscopy Inc.

Phase Transformation Across Multiscale Material Interfaces – Modeling and Joined Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Soumya Nag, GE Global Research; Sudarsanam Babu, The University of Tennessee, Knoxville; Gregory Thompson, University of Alabama; Mohsen Asle Zaeem, Missouri University of Science and Technology; Niyanth Sridharan, Oak Ridge National Laboratory

Monday PM
March 12, 2018
Room: 126C
Location: Phoenix Convention Center

Session Chairs: Niyanth Sridharan, ORNL; Timofey Frolov, UC Berkeley; Timothy Rupert, University of California, Irvine

2:30 PM Invited
Effect of Lattice-level Covalent Character on Phase and Interfacial Stability in Mg-alloys: D Choudhuri[1]; R Banerjee[1]; *Srinivasan Srivilliputhur*[1]; [1]University of North Texas

3:00 PM Invited
Modeling Transitions at Interfaces: *Timofey Frolov*[1]; [1]LLNL

3:30 PM Invited
Modeling of Complexion Transitions at One- and Two-dimensional Defects: *Timothy Rupert*[1]; [1]University of California, Irvine

4:00 PM Break

4:20 PM Invited
Efficient and Systematic Study of Phase Transformations Using Dual-anneal Diffusion Multiples: *Ji-Cheng Zhao*[1]; [1]The Ohio State University

4:50 PM
Interdiffusion and Kinetics Study of Ti-Al Intermetallic by Brazing: *Sutinee Sujittosakul*[1]; Samad Firdosy[1]; Kevin Yu[1]; Kevin Smith[1]; Brian Phan[1]; Sevan Chanakian[1]; Vilupanur Ravi[2]; Terry Hendricks[1]; Jean-Pierre Fleurial[1]; Thierry Caillat[1]; Ike Chi[1]; [1]Jet Propulsion Laboratory (NASA/JPL); [2]California State Polytechnic University, Pomona

5:10 PM
Analysis of the Stability of Interfaces Fabricated Using Solid State Welds: *Niyanth Sridharan*[1]; Maxim Gussev[1]; Chad Parish[1]; Juan Carlos Tapia[1]; Kurt Terrani[1]; Sudarsanam Babu[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee Knoxville

5:30 PM
Prevention of Coarsening Induced Phase Transformations in Al-Cu Alloys: Role of Interfaces: *Amit Shyam*[1]; Dongwon Shin[1]; Yukinori Yamamoto[1]; Patrick Shower[1]; Brian Milligan[1]; James Morris[1]; Lawrence Allard[1]; Jonathan Poplawsky[1]; Juan Idrobo[1]; German Samolyuk[1]; James Haynes[1]; [1]Oak Ridge National Laboratory

Phase Transformations and Microstructural Evolution – Phase Transformations in Steels II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Monday PM
March 12, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chairs: Tushar Borkar, Cleveland State Univesity ; Peeyush Nandwana, ORNL

2:30 PM
The Evolution of Grain Structure of Pure Iron during Directional Recrystallization: *Ye Cui*[1]; Naimeng Liu[1]; Xianliang Xin[1]; Yang Zhang[1]; Dan Chen[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

2:50 PM
Computational Design of Creep-resistant Ferritic Alloy Strengthened by Laves Phase: *Chih-Hsiang Kuo*[1]; Benjamin Shassere[2]; Yukinori Yamamoto[2]; Sudarsanam Babu[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:10 PM
Solid State Phase Transformation Mechanism in High Carbon Steel under Compressive Load and with Varying Cr Percent: *Rumana Hossain*[1]; Farshid Pahlevani[1]; Veena Sahajwalla[1]; [1]Centre for Sustainable Materials, Research & Technology

3:30 PM Demonstration Poster preview. Each poster presenter is given 2 minutes to highlight his/her poster that will be presented later that evening. An opportunity for attendees to get a "sneak peek" of the posters.

4:00 PM Break

4:20 PM
Phase Transformations, Boron Segregation, and the Metatectic Reaction in Boron-containing Steels: *Kara Luitjohan*[1]; Matthew Krane[1]; Volkan Ortalan[1]; David Johnson[1]; [1]Purdue University

4:40 PM
Microstructure Characterization of Aged Heat Resistant Steels: *Victor Lopez-Hirata*[1]; Maribel Saucedo-Muñoz[1]; Arturo Ortiz-Mariscal[1]; Jose Villegas-Cardenas[2]; [1]Instituto Politecnico Nacional (ESIQIE); [2]Universidad Politécnica

5:00 PM
Microstructural Modeling and Thermodynamics-kinetics Relations of the Austenite-to-ferrite Transformation in Fe-C-Mn-Si Steels: *Shaojie Song*[1]; Wenkan Che[1]; Feng Liu[1]; [1]Northwestern Polytechnical University

5:20 PM
Abnormal Formation of the Sigma Phase in Sputter-deposited Austenitic Stainless Steel Coatings: *Uma M.R. Seelam*[1]; Challapalli Suryanarayana[2]; [1]EAG Laboratories; [2]University of Central Florida

Rare Metal Extraction & Processing – Rare Earth Elements II and Platinum Group Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Hojong Kim, The Pennsylvania State University; Bradford Wesstrom, Freeport-McMoRan Copper & Gold; Shafiq Alam, University of Saskatchewan; Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto; Neale Neelameggham, Ind LLC; Shijie Wang, Rio Tinto Kennecott Utah Copper; Xiaofei Guan, ShanghaiTech University

Monday PM
March 12, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chairs: Hojong Kim, The Pennsylvania State University; Shijie Wang, Rio Tinto

2:30 PM
Electrochemical Formation of Tb Alloys in Molten LiCl-KCl Eutectic Melts and Separation of Tb: *Hirokazu Konishi*[1]; Hideki Ono[1]; Tetsuo Oishi[2]; Toshiyuki Nohira[3]; [1]Osaka University; [2]National Institute of Advanced Industrial Science and Technology (in Japan); [3]Kyoto University

2:55 PM
Electrochemical and Spectroscopic Study of Eu(III)/Eu(II) Couple in the Ehtylmethylimidazolium Bis(trifluromethanesulfonyl)imide Ionic Liquid: *David Bengio*[1]; Thomas Dumas[1]; Eric Mendes[1]; Pier Lorenzo Solari[2]; Richard Husar[1]; Michel Schlegel[3]; Philippe Moisy[1]; Stéphane Pellet-Rostaing[4]; [1]CEA Marcoule; [2]Synchrotron SOLEIL; [3]CEA Saclay; [4]ICSM

3:20 PM
The Electrolytic Production of Rare Earths from their Oxides: *James Withers*[1]; [1]ATS-MER, LLC

3:45 PM
Commercial Processes for the Extraction of Platinum Group Metals (PGMs): *Rekha Panda*[1]; Manis Kumar Jha[1]; D. D. Pathak[2]; [1]CSIR-National Metallurgical Laboratory; [2]IIT-Indian School of Mines

4:10 PM Break

4:30 PM
Recovery of Valuable Metals from Waste Printed Circuit Boards by Using Iodine-Iodide Leaching and Precipitation: *Altansukh Batnasan*[1]; Kazutoshi Haga[1]; Atsushi Shibayama[1]; [1]Akita University

4:55 PM
Cyclone Electrowinning of Amtimony from Antimonic Gold Concentrate Ores: *Weijiao Yang*[1]; Liugen Sun[2]; Yihang Hu[3]; Yongqiang Yang[3]; Xingming Jiang[1]; Hua Wang[1]; [1]Kunming University of Science and Technology; [2] Beijing General Research Institute of Mining and Metallurgy; [3]Beijing General Research Institute of Mining and Metallurgy

Recent Developments in Biological, Structural and Functional Thin Films & Coatings – Functional Films & Coatings I

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas - El Paso; Heinz Palkowski, Clausthal University of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology; Vikas Tomar, Purdue University; Gerald Ferblantier, Strasbourg University - ICube Laboratory

Monday PM
March 12, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Ravindra Nuggenhalli, New Jersey Institute of Technology - NJIT; Ramana Chintalapalle, University of Texas at El Paso El Paso - UTEP

2:30 PM Keynote
Application of Synchrotron Techniques in Characterization of Metal Matrix Nano Composites: *Prakash Srirangam*[1]; [1]University of Warwick

3:10 PM Invited
Deformation, Failure and Fracture Mechanisms of ZrC-ZrB2 and Cu-ZrB2 Multilayered Nanostructures: An Atomistic Simulation Study: *Ashfaq Adnan*[1]; Md. Kayser[1]; Krutarth Patel[1]; [1]The University of Texas at Arlington

3:40 PM Invited
Decoration of Carbon Nanostructures by Metal and Metal Oxide Nanoparticles: *Emanuela Tamburri*[1]; [1]University of Rome "Tor Vergata"

4:10 PM Break

4:30 PM Invited
Exploring the Thermal and Mechanical Stability of Amorphous and Nanocrystalline Tantalum Films: *Khalid Hattar*[1]; Olivia Donaldson[2]; Kathryn Small[1]; Jason Trelewicz[2]; [1]Sandia National Laboratories; [2]Stony Brook University

5:00 PM
Influence of Very Low Frequency on Particles in Freely Suspended Single Floating Droplet: *Kinnari Shah*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

5:20 PM
Stresses and Strains Effect on Light Emission from Indirect-bandgap Semiconductors: *Sufian Abedrabbo*[1]; Nuggehalli Ravindra[2]; Anthony Fiory[2]; [1]Khalifa Institute of Science and Technology and the University of Jordan; [2]New Jersey Institute of Technology

5:40 PM
Ceramic Nanofibers for High-temperature Gas Sensing Applications: *Nanthakishore Makeswaran*[1]; James Kelly[2]; Jeffery Haslam[2]; Ramana Chintalapalle[1]; [1]University of Texas-El Paso; [2]Lawrence Livermore National Laboratory

6:00 PM
Influence of Pressure and Temperature on Chromic Materials and their Technological Applications: *Airefetalo Sadoh*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Refractory Metals 2018 – Refractory Metals and Alloys

*Sponsored by:*TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: Eric Taleff, The University of Texas at Austin; Martin Heilmaier, Karlsruhe Institute of Technology (KIT); Kevin Jaansalu, Royal Military College of Canada

Monday PM
March 12, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: Martin Heilmaier, KIT Karlsruhe; Eric Taleff, The University of Texas at Austin

2:30 PM
High Temperature Oxidation Behaviors of Refractory Complex Concentrated Alloys (RCCAs): *Todd Butler*[1]; Kevin Chaput[1]; James Dietrich[1]; Oleg Senkov[2]; [1]Air Force Research Laboratory; [2]UES, Inc.

2:50 PM
Opportunities for BCC Refractory-metal-based Superalloys: *Alexander Knowles*[1]; Howard Stone[2]; David Dye[1]; [1]Imperial College London; [2]University of Cambridge

3:10 PM
High Ductility in Bulk Polycrystalline Tungsten Produced by Equal Channel Angular Extrusion: *Zachary Levin*[1]; Karl Hartwig[1]; [1]Texas A&M University

3:30 PM
Fracture Toughness Evaluation and Microstructural Characterization of Drawn Tungsten Wires: *Vladica Nikolic*[1]; Manuel Pfeifenberger[1]; Anton Hohenwarter[2]; Reinhard Pippan[1]; [1]Austrian Academy of Sciences - Erich Schmid Institute of Materials Science; [2]Department of Materials Physics, University of Leoben

3:50 PM
Fabrication of Tungsten Nanopowder by Combustion-based Method: *Mingli Qin*[1]; Zheng Chen[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

4:10 PM Break

4:30 PM
A Study on the Potential Analogous Rhenium Effect of Manganese in Tungsten-molybdenum Alloys Prepared by Mechanical Alloying: Ossama Elsebaie[1]; *Kevin Jaansalu*[1]; [1]Royal Military College of Canada

4:50 PM
Effect of Oxide Coating on the Fusion Welding of Molybdenum Tubing: Samuel Barrette-Bédard[1]; *Kevin Jaansalu*[1]; [1]Royal Military College of Canada

5:10 PM
A Metallurgical Study of Pressure Resistance Welded Molybdenum Based Materials: *Sean Instasi*[1]; Nathan Jerred[1]; Indrajit Charit[1]; Gary Rozak[2]; [1]University of Idaho; [2]H.C. Starck Inc.

5:30 PM
Characteristics of Dynamic Abnormal Grain Growth in Mo and Ta: *Eric Taleff*[1]; [1]The University of Texas at Austin

Scandium Extraction and Use in Aluminum Alloys – Scandium Extraction

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Aleksandr Krokhin, Rusal GM; Dmitry Eskin, Brunel University London; Antoine Allanore, Massachusetts Institute of Technology; Nigel Ricketts, Scandium International Mining Corp

Monday PM
March 12, 2018
Room: 222B
Location: Phoenix Convention Center

Session Chair: Nigel Ricketts, Scandium International Mining

2:30 PM Introductory Comments

2:40 PM
Commercial Scandium Oxide Production by Sumitomo Metal Mining Co., Ltd.: *Fumio Iwamoto*[1]; Nobuhiro Matsumoto[1]; [1]Sumitomo Metal Mining Co., LTD.

3:10 PM
Scandium Recovery from the Nyngan Laterite Project in NSW: *Nigel Ricketts*[1]; Willem Duyvesteyn[2]; [1]EMC Metals Australia Pty Ltd; [2]Scandium International Mining Corp

3:30 PM
Electrochemical Formation of Alloys of Scandium in Molten Salts: *Çaglar Polat*[1]; Metehan Erdogan[2]; Ali Iplikçioglu[3]; Ishak Karakaya[1]; [1]Middle East Technical University; [2]Yildirim Beyazit University; [3]MINERTEK

3:50 PM
Extraction of Scandium from Lateritic Nickel-cobalt Ore Leach Solution by Ion Exchange: A Special Study and Literature Review on Previous Works: *Yigit Altinsel*[1]; Yavuz Topkaya[2]; Serif Kaya[2]; Bülent Sentürk[1]; [1]META Nikel Kobalt A.S.; [2]METU

4:10 PM Break

4:25 PM
Direct Method for Producing Scandium Metal and Scandium-aluminium Intermetallic Compounds from the Oxides: *Ana Maria Martinez*[1]; Karen Osen[1]; Henrik Gudbrandsen[1]; Camilla Sommerseth[1]; Zhaohui Wang[1]; Ove Darell[1]; [1]SINTEF

Surface Engineering for Improved Corrosion Resistance – Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Carlos Schvezov, Institute of Materials of Misiones; Arvind Agarwal, Florida International University

Monday PM
March 12, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Arvind Agarwal, Florida International University; Rajeev Gupta, The University of Akron

2:30 PM Invited
Corrosion Resistant Magnesium Surface Alloys by SMASH: *Krista Limmer*[1]; Joseph Labukas[1]; Heather Murdoch[1]; [1]U.S. Army Research Laboratory

2:50 PM Invited
Enhancing the Corrosion Resistance of Biodegradable WE43 Mg Alloy via Solid Solution Alloying: *Wenjun Cai*[1]; [1]University of South Florida

3:10 PM
Performance of Thermal Spray Coating on Proprietary Magnesium/ Aluminum Alloy: *Deepak Kumar*[1]; Zhiyue Xu[1]; [1]Baker Hughes Inc.

3:30 PM Invited
Influence of Surface Chemistry on the Formation of Crystalline Hydroxide Coatings on Mg Alloys in Liquid Water and Steam Systems: *Xiaobo Chen*[1]; Chong Ke[2]; Nick Birbilis[2]; [1]RMIT; [2]Monash University

3:50 PM Break

4:10 PM
Examining the Corrosion Resistance of Magnesium Coated with Polyetherimide Using Three Different Methods: *Holly Martin*[1]; Snjezana Balaz[1]; [1]Youngstown State University

4:30 PM
Study on Corrosion Behavior of Rare-earth Added High Strength Magnesium in Presence of 8-hydroxyquinoline Corrosion Inhibitor: *Gaurav Argade*[1]; Gowri Mohandass[1]; Steve Sanders[1]; Francis D'souza[1]; Teresa Golden[1]; Rajiv Mishra[1]; [1]University of North Texas

4:50 PM
Impact of Pre-straining Induced Surface Modification on the Corrosion Resistance of Lean Duplex Stainless Steel: *Charles David*[1]; Fiona Ruel[1]; Saghi Saedlou[1]; Paulina Erazmus-Vignal[2]; Vincent Vignal[3]; Muriel Veron[4]; Ricardo Nogueira[5]; [1]Aperam Stainless Europe; [2]SATT Grand Est; [3]ICB, UMR 6303 CNRS - Université Bourgogne Franche-Comté; [4]SIMAP, UMR 5266 CNRS - Université Grenoble-Alpes; [5]The Petroleum Institute

5:10 PM
Corrosion Behavior of Microarc Oxidized Mg Alloy in Simulated Body Fluid: Junqing Zhang[1]; *Lei Zhang*[1]; Benjamin Wilke[1]; Weiping Li[2]; Chengyun Ning[2]; Tonoy Chowdhury[1]; [1]University of Alaska Fairbanks; [2]South China University of Technology

5:30 PM
Corrosion Characteristics of Additively Manufactured Materials: *Daniel Hooks*[1]; Tom Leinert[1]; Justin Tokash[1]; [1]Los Alamos National Laboratory

Surface Interactions in Materials – Physical and Mechanical Interactions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Carlos Schvezov, Institute of Materials of Misiones; Sandip Harimkar, Oklahoma State University; Rajeev Gupta, The University of Akron

Monday PM
March 12, 2018
Room: 101A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM
Melt Expulsion during Ultrasonic Vibration-assisted Continuous Wave Laser Surface Melting: *Sandip Harimkar*[1]; S. Habib Alavi[1]; [1]Oklahoma State University

2:50 PM
Multiscale Evaluation of Surface Behavior of Hydroformed AISI 304 Stainless Steel Using ANSYS Multiphysics: *Ayotunde Olayinka*[1]; William Emblom[2]; [1]University of Louisiana at Lafayette; [2]Mechanical Engineering, University of Louisiana at Lafayette

3:10 PM
Support Structure-dependent Reduction of Cobalt Oxide on Ceria: *Zhongqi Liu*[1]; Ruigang Wang[1]; [1]the University of Alabma

3:30 PM
Effect of Trace Addition of Graphene in Tribological Properties of Ultrasonic Vibration-assisted Laser Surface Textured Stainless Steel: *Sourabh Biswas*[1]; Linqi Zhang[1]; Seyyed Habib Alavi[1]; Ali Kalkan[1]; Sandip Harimkar[1]; [1]Oklahoma State University

3:50 PM Break

4:05 PM
Wear Mechanism for H13 Steel Tool during Friction Stir Welding of CuCrZr Alloy: *Pankaj Sahlot*[1]; Rajiv Mishra[2]; Amit Arora[1]; [1]Indian Institute of Technology Gandhinagar; [2]University of North Texas

4:25 PM
Understanding the Effects of Lubricants/Coatings on Friction and Wear during Reciprocatory Sliding Motion at High Contact Pressures: *Dewika Mishra*[1]; Farjana Sonia[1]; Muntashir Hayat[1]; Ranjan Kathuria[1]; Dinesh Srivastava[2]; G. Ganesha[2]; Utpal Singha[2]; Amartya Mukhopadhyay[1]; [1]Indian Institute of Technology Bombay; [2]Nuclear Fuel Complex, Department of Atomic Energy

4:45 PM
Surface Mediated Diffusive Deformation in Nanometer-sized Metallic Crystals: *Scott Mao*[1]; Li Zhong[1]; Frederic Sansoz[2]; Yang He[1]; Chongmin Wang[3]; Ze Zhang[4]; [1]University of Pittsburgh; [2]University of Vermont; [3]Pacific Northwest National Laboratory; [4]Zhejiang University

5:05 PM
Deformation of Erythrocytes Adhered to a Solid Surface by a Laminar Flow: Alejandro Moreno[1]; Jonathan M. Schuster[2]; *Carlos Schvezov*[3]; Mario Rosenberger[3]; [1]IMAM (UNaM-Conicet) - FCEQyN (UNaM); [2]IMAM (UNaM-Conicet) - Inst. Sabato (UNSAM-CNEA); [3]IMAM (UNaM-Conicet)

5:25 PM
Surface Roughening by Plastic Deformation in Amorphous and Crystalline Solids: *Adam Hinkle*[1]; Lars Pastewka[2]; [1]Sandia National Laboratories; [2]Albert Ludwig University of Freiburg

Ultrafine-grained Materials X – Pioneers of Alternative SPD Methods

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Monday PM
March 12, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:30 PM Keynote
Ultra-fine Grained Al Alloys and Composites Processed via Powder Metallurgy Route: Yaojun Lin[1]; Ying Li[2]; Tao Hu[2]; Fei Chen[1]; *Enrique Lavernia*[3]; [1]Wuhan University of Technology; [2]University of California, Davis; [3]University of California, Irvine

3:00 PM Keynote
Accumulative Roll Bonding (ARB) for Making Bulky Metals with Ultrafine Grained Structures: *Nobuhiro Tsuji*[1]; [1]Kyoto University

3:30 PM Keynote
Exceptional Properties by Expanding Microstructural Landscape via Friction Stir Processing: *Rajiv Mishra*[1]; [1]University of North Texas

4:00 PM Break

4:20 PM Keynote
Heterogeneous Structures: The Next Hot Research Area?!: *Yuntian Zhu*[1]; Xiaolei Wu[2]; [1]North Carolina State University; [2]Institute of Mechanics, Chinese Academy of Science

4:50 PM Invited
Extending the Limits of Nanostructured Metals Created by Dislocation Plasticity: *Darcy Hughes*[1]; Tianbo Yu[2]; Niels Hansen[3]; Xiaoxu Huang[3]; [1]Consultant; [2] Technical University of Denmark; [3]Technical University of Denmark

5:20 PM Panel Discussion

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – Nanomaterials for Environmental and Energy Applications

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Tuesday AM
March 13, 2018
Room: 101B
Location: Phoenix Convention Center

Session Chairs: Chang-Yong Nam, Brookhaven National Lab; Dong Lin, Kansas State University

8:30 AM Invited
Functional Oxide Nanotubes for Energy and Environmental Applications: *Oomman Varghese*[1]; [1]University of Houston

9:00 AM
Mixed-phase Nanoscale TiO_2 Photocatalysts: Aqueous Synthesis and Application to Water Detoxification: *Konstantina Chalastara*[1]; George Demopoulos[1]; [1]McGill University

9:20 AM Invited
Microfluidic Synthesis of Functional Nanomaterials: Principles, Design and its Applications in Biomedical Engineering: *John Zhang*[1]; Nanjing Hao[1]; Yuan Nie[1]; [1]Dartmouth College

9:50 AM
An Enhanced Electrochemical Biosensor Based on Novel 3D Nanowire Array/Nanoparticles Hybrid Structures: *Zhiyang Li*[1]; Fan Gao[1]; Zhiyong Gu[1]; [1]University of Massachusetts Lowell

10:10 AM Break

10:30 AM
Nanoscale Size Control of RuO_2 Particles and Effects on Electron Transfer and Mass Transfer Processes of Oxygen Evolution Reaction: *Kenji Kawaguchi*[1]; Shuhei Kimura[1]; Masatsugu Morimitsu[1]; [1]Doshisha University

10:50 AM
Nickel Promoted CO Oxidation over Ceria Supported Cobalt-nickel Bimetallic Oxide Catalysts: *Zhongqi Liu*[1]; Ruigang Wang[1]; [1]The University of Alabma

11:10 AM Invited
Scalable and Hierarchical Nanostructure Integration for Energy and Environmental Applications: *Pu-Xian Gao*[1]; [1]University of Connecticut

11:40 AM
Sensing Properties of Nano RuO_2 in Amorphous Ta_2O_5 to Hydrogen Phosphate and Hydrogen Carbonate Ions: Ai Honda[1]; Kenji Kawaguchi[1]; *Masatsugu Morimitsu*[1]; [1]Doshisha University

9th International Symposium on High Temperature Metallurgical Processing – Alloys and Materials Preparation

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Tuesday AM
March 13, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Dean Gregurek, RHI AG; Yuanbo Zhang, Central South University

8:30 AM Introductory Comments

8:35 AM
Supersolidus Liquid Phase Sintering of H13 Tool Steel Fabricated via Binder Jet Additive Manufacturing: *Peeyush Nandwana*[1]; Derek Siddel[1]; Christopher Shafer[1]; Amy Elliott[1]; [1]Oak Ridge National Laboratory

8:55 AM
High throughput Experimental Technologies for Novel Amorphous Metallic Materials Research: Xiaoping Jiang[1]; *Andy Huang*[1]; Parker Liu[1]; [1]MTI Corporation

9:15 AM
Pilot Scale Production of Ferrochrome with Si Wafer Kerf Loss Reductants Using 280kW Direct Current Arc Furnace: *Jong Ho Kim*[1]; [1]Research Institute of Industrial Science and Technology

9:35 AM
Sintering Study of WC-Co Hardmetals Obtained from Nanocrystalline Powders: *Zhao Ding*[1]; Leon L. Shaw[1]; [1]Illinois Institute of Technology

9:55 AM Break

10:15 AM
Synthesis of Nanocrystalline Carbide Ceramics via Reduction of Anion-loaded Activated Carbon Precursors: *Grant Wallace*[1]; Jerome Downey[1]; Jannette Chorney[1]; Katie Schumacher[1]; Alaina Mallard[1]; [1]Montana Tech of the Univ of MT

10:35 AM
Growth of Iridium and Iridium Alloy Fibers from the Melt by Alloy-micro-pulling-down Method: *Yuui Yokota*[1]; Takayuki Nihei[1]; Yuji Ohashi[1]; Shunsuke Kurosawa[1]; Kei Kamada[1]; Akira Yoshikawa[1]; [1]Tohoku University

10:55 AM
Production of Lithium-Ion Cathode Material for Automotive Batteries Using Melting Casting Process: *Delin Li*[1]; Wojciech Kasprzak[1]; Gregory Patience[2]; Pierre Sauriol[2]; Hernando Villazón Amarís[2]; Mickaël Dollé[3]; Michel Gauthier[3]; Steeve Rousselot[3]; Thomas Bibienne[3]; Majid Talebi-Esfandarani[3]; Yulong Liu[4]; Xueliang Sun[4]; Guoxian Liang[5]; [1]CanmetMATERIALS; [2]Polytechnique Montréal; [3]Université de Montréal; [4]Western University; [5]Johnson Matthey Battery Materials ltd

11:15 AM
Fabrication Methods and Applications of Microstructured Carbon Based Liquid Copper Alloys: *Khurram Iqbal*[1]; [1]University of Karachi

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Modeling-simulation and Fundamental Studies

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Tuesday AM
March 13, 2018
Room: 102A
Location: Phoenix Convention Center

Session Chairs: Yongfeng Zhang, Idaho National Laboratory; Clinique Brundidge, Naval Nuclear Laboratory

8:30 AM
A Heterogeneous Cavity Nucleation Model for Swelling in Simulated Ferritic Alloys: *Gerrit VanCoevering*[1]; Aaron Kohnert[2]; Brian Wirth[3]; Gary Was[1]; [1]University of Michigan; [2]Los Alamos National Laboratory; [3]University of Tennessee

8:55 AM
Accelerated Materials Evaluation of Damage Mechanisms in Concentrated Solid Solution Alloys: *Yanwen Zhang*[1]; Gihan Velisa[1]; Shijun Zhao[1]; Mohammad Ullah[1]; Ke Jin[1]; Hongbin Bei[1]; William Weber[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

9:20 AM
Simulation of Impact Toughness with the Effect of Temperature and Irradiation in Steels: *Chenchong Wang*[1]; Wei Xu[2]; Chi Zhang[1]; [1]Tsinghua University; [2]Northeastern University

9:45 AM
Impact of Irradiation-Enhanced Diffusion on Implanted Ion Profiles: *Peter Doyle*[1]; Kelsa Benensky[1]; Steven Zinkle[1]; [1]University of Tennessee, Knoxville

10:10 AM Break

10:30 AM Invited
Atomistically-informed Cluster Dynamics Modeling of Defect Cluster Evolution in Irradiated Structural Materials: *Brian Wirth*[1]; Aaron Kohnert[2]; Andrew Payant[1]; [1]University of Tennessee; [2]Los Alamos National Laboratory

11:00 AM
Ion and Neutron Irradiation Effects in a Co-free High Entropy Alloy: *Congyi Li*[1]; Xunxiang Hu[2]; Tengfei Yang[3]; Brian Wirth[3]; Steve Zinkle[3]; [1]Bredesen Center; [2]Oak Ridge National Lab; [3]University of Tennessee, Knoxville

11:25 AM
Microstructural Evaluation of Ion Irradiated Model Binary Alloys: *Ling Wang*[1]; Steve Zinkle[1]; [1]University of Tennessee

Accident Tolerant Fuels for Light Water Reactor – Advanced Fuels

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Tuesday AM
March 13, 2018
Room: 104A
Location: Phoenix Convention Center

Session Chairs: Andrew Nelson, Los Alamos National Laboratory; Jason Harp, Idaho National Laboratory

8:30 AM Invited
Uranium Silicide Behavior in Reactor Relevant Atmospheres: *Elizabeth Sooby Wood*[1]; Joshua White[1]; Christopher Grote[1]; Andrew Nelson[1]; [1]Los Alamos National Laboratory

9:00 AM
Microstructure Studies of Interdiffusion Behavior of U_3Si_2 and SiC: *Rita Hoggan*[1]; Jason Harp[1]; Lingfeng He[1]; [1]Idaho National Laboratory

9:20 AM
Spark Plasma Sintering and Microstructural Analysis of Pure and Mo Doped U3Si2 Pellets: *Denise Adorno Lopes*[1]; Anna Benarosch[1]; Simon Middleburgh[2]; Kyle Johnson[3]; [1]Royal Institute of Technology; [2]Westinghouse Electric Sweden; [3]Studsvik Nuclear

9:40 AM
Investigation of Additives, Sol-gel Process Variables, and HIP Parameters on the Density UN Microspheres: *Jacob McMurray*[1]; Rodney Hunt[1]; Jim Kiggans[1]; Tyler Reif[2]; Grant Helmreich[1]; Chinthaka Silva[1]; Rachel Seibert[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory; [2]X-Energy, LLC

10:00 AM Break

10:20 AM Invited
Laser Based Characterization of Microstructure and Thermal Properties in Nuclear Fuel Materials: *Marat Khafizov*[1]; [1]The Ohio State University

10:50 AM
The Microstructure and Fission Product Behavior in Irradiated AGR TRISO Fuel Particles: *Isabella van Rooyen*[1]; Matthew Cook[1]; Yong Yang[1]; [1]University of Florida

11:10 AM
Density Functional Theory Study of Behavior of Selected Accident Tolerant Nuclear Fuels: *Barbara Szpunar*[1]; Jerzy Szpunar[1]; [1]University of Saskatchewan

11:30 AM
Molecular Dynamics Investigation of Interfaces in U3Si2: *Benjamin Beeler*[1]; Michael Baskes[2]; David Andersson[3]; Yongfeng Zhang[1]; [1]Idaho National Laboratory; [2]University of California, San Diego; [3]Los Alamos National Laboratory

11:50 AM
Microstructure Characterization of U3Si2 Irradiated by High-energy Ions at LWR Temperatures: *Yinbin Miao*[1]; Jason Harp[2]; Kun Mo[1]; Shaofei Zhu[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Idaho National Laboratory

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Mechanical Behavior of Additively Manufactured Materials

Sponsored by: TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Tuesday AM
March 13, 2018

Room: 230
Location: Phoenix Convention Center

Session Chairs: Lee Semiatin, Air Force Research Laboratory; Edwin Schwalbach, Air Force Research Laboratory

8:30 AM Invited
Process-microstructure-property-performance Relationships in Electron Beam Additively Manufactured Ti-6Al-4V: Brian Hayes[1]; Brian Welk[2]; Sam Kuhr[2]; Wenqi Li[3]; Thomas Ales[4]; Iman Ghamarian[4]; Matt Clark[3]; D. Harlow[5]; Hamish Fraser[2]; *Peter Collins*[4]; [1]UES; [2]Ohio State University; [3]University of Nottingham; [4]Iowa State University; [5]Lehigh University

9:00 AM Invited
Strength Variability Assessment within an SLM Ti-6AL-4V Component: *Nicholas Mule*[1]; [1]Aerojet Rocketdyne

9:30 AM
Location Dependent Shear Strength Testing of Additively Manufactured Titanium: *Matthew Vaughn*[1]; Andrew Gaynor[2]; Justin Unger[1]; Jamie Guest[1]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]U.S. Army Research Laboratory

9:50 AM
Dynamic Mechanical Response of AMTi64: Effect of Post-processing Treatments: *Sindhura Gangireddy*[1]; Rajiv Mishra[2]; Eric Faierson[2]; [1]National Institute of Standards and Technology; [2]UNT Denton

10:10 AM Break

10:30 AM
Effect of Laser Scan Strategy and Post Processing on High Strain Rate Deformation Response of Additively Manufactured Stainless Steel: *Brandon McWilliams*[1]; Brahmananda Pramanik[2]; Andelle Kudzal[3]; Bruce Madigan[2]; [1]US Army Research Laboratory; [2]Montana Tech; [3]Worcester Polytechnic Institute

10:50 AM Invited
Implications of Crystallographic Texture and High Dislocation Density in Selective Laser Melted Stainless Steel 316L: *Sean Agnew*[1]; Md Shamsujjoha[1]; J. Fitz-Gerald[1]; [1]University of Virginia

11:20 AM
Deformation Mechanisms of SLM 316L Stainless Steels and Ti-6Al-4V Alloys: *Thomas Voisin*[1]; Joseph McKeown[1]; Jianchao Ye[1]; Nicholas Calta[1]; Ross Cunningham[2]; Anthony Rollett[2]; Melissa Santala[3]; Morris Wang[1]; [1]Lawrence Livermore National Laboratory; [2]Carnegie Mellon University; [3]Oregon State University

11:40 AM
Compositional Influence on Microstructure and Mechanical Behavior of Additively Manufactured Austenitic Stainless Steels: *Thale Smith*[1]; Katherine Terrassa[2]; Baolong Zheng[2]; Joshua Sugar[3]; Chris San Marchi[3]; Julie Schoenung[2]; [1]University of California, Davis; [2]University of California, Irvine; [3]Sandia National Laboratories

12:00 PM
In-situ Synchrotron X-ray Diffraction Measurements of Mechanical Properties, Phase Transformation, and Strain Pole Figures of Additively Produced 17-4 Stainless Steel by Laser Powder Bed Fusion: *Thien Phan*[1]; Darren Pagan[2]; [1]National Institute of Standards and Technology; [2]Cornell High Energy Synchrotron Source

Additive Manufacturing of Metals: Fatigue and Fracture – Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International; John Lewandowski, Case Western Reserve University

Tuesday AM
March 13, 2018

Room: 232A
Location: Phoenix Convention Center

Session Chair: John Lewandowski, Case Western Reserve University

8:30 AM Invited
The 3rd Sandia Fracture Challenge: Blind Predictions of Fracture Performance in Laser Powder Bed 316L: *Brad Boyce*[1]; Sharlotte Kramer[1]; [1]Sandia National Laboratories

9:00 AM
Additive Manufacturing: Efficient Evaluation of Fatigue Properties Using Short-time Procedures Based on Cyclic Indentation and Physical Quantities: *Marcus Klein*[1]; Bastian Blinn[1]; Tilmann Beck; [1]TU Kaiserslautern

9:20 AM
Fatigue Prediction for AlSi10Mg Parts Produced by Laser Powder-bed Fusion: *P. Chris Pistorius*[1]; Ming Tang[1]; [1]Carnegie Mellon University

9:40 AM
Investigating Strain Localization in Additively Manufactured Ti-alloys Using Experimentally Validated Crystal Plasticity Simulations, Explicitly Accounting for Residual Stresses: *Kartik Kapoor*[1]; Todd Book[1]; Michael Sangid[1]; [1]Purdue University

10:00 AM Break

10:20 AM Invited
Fatigue Propterties of AlSi10Mg Manufactured by SLM: the Role of Defects: *Stefano Beretta*[1]; [1]Politecnico di Milano

10:50 AM
Investigating Defect Formation Mechanisms in Powder-bed Metal Additive Manufacturing Using Synchrotron-based High-speed X-ray Radiography and Microtomography: *Ross Cunningham*[1]; Cang Zhao[2]; Tao Sun[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Argonne National Laboratory

11:10 AM
Microstructural Effects on Environmental Assisted Crack Growth Behaviors of Austenitic Stainless Steel by Laser Powder Bed Fusion: *Xiaoyuan Lou*[1]; Raul Rebak[2]; [1]CorroMet LLC; [2]GE Global Research

11:30 AM
Towards a Predictive Failure Model for Metallic Lattice Materials Manufactured with Laser Powder Bed Fusion: *Dhruv Bhate*[1]; [1]Arizona State University

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Beam Line Science in Additive Manufacturing

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Tuesday AM
March 13, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chairs: Reeju Pokharel, LANL; Christoph Kenel, Northwestern University

8:30 AM Invited
High-speed Synchrotron X-ray Imaging of Laser Powder Bed Fusion Process: Cang Zhao[1]; Kamel Fezzaa[1]; Ross Cunningham[2]; Lianyi Chen[3]; Anthony Rollett[2]; *Tao Sun*[1]; [1]Argonne National Laboratory; [2]Carnegie Mellon University; [3]Missouri University of Science and Technology

9:00 AM Invited
In Situ and Real-time Investigation of AM Process by Combining High-speed X-ray Imaging, Acoustic and Optical Sensors and Machine Learning: *Kilian Wasmer*[1]; [1]Empa - Swiss Federal Laboratories for Materials Science and Technology

9:30 AM Invited
In-situ Neutron Diffraction Measurements for Isolating Microstructural Effects on Mechanical Properties of As-built AM 304L SS: *Reeju Pokharel*[1]; Anirban Patra[1]; Don Brown[1]; Bjorn Clausen[1]; [1]Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited
In Situ Synchrotron X-ray Diffraction and Tomography for Time-resolved Study of Phase and Structure Evolution during Consolidation of AM Metals: *Christoph Kenel*[1]; Christian Leinenbach[2]; Ramille Shah[1]; David Dunand[1]; [1]Northwestern University; [2]Empa - Swiss Federal Laboratories for Materials Science and Technology

10:50 AM Invited
Synchrotron and Neutron Residual Stress Characterization of SLM - Ni Superalloy 718 As-built and after Release from Baseplate: *Sandra Cabeza*[1]; Tatiana Mishurova[2]; Christopher Haberland[3]; Giovanni Bruno[2]; [1]Institut Laue-Langevin; [2]Bundesanstalt für Materialforschung und –prüfung (BAM); [3]Siemens AG, Power and Gas

11:20 AM
Investigating Stress Relaxation Behavior and Mechanisms in Ti- and Ni-alloys by In Situ Neutron Diffraction: Application to Additive Manufacturing: *Zhuqing Wang*[1]; Alexandru Stoica[2]; Dong Ma[2]; Allison Beese[1]; [1]Pennsylvania State University; [2]Oak Ridge National Laboratory

11:40 AM
Quasi In Situ Investigation of Microstructure Evolution in Additively Manufactured Layers: *Maria Strantza*[1]; Bjorn Clausen[1]; John S. Carpenter[1]; Jason C. Cooley[1]; Donald W. Brown[1]; [1]Los Alamos National Laboratory

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Damage / Phase Transformation Plasticity

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Tuesday AM
March 13, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Combining Experiments and Models via a Bayesian Network Approach to Predict Short Fatigue Crack Growth: Andrea Rovinelli[1]; *Michael Sangid*[1]; Yoann Guilhem[2]; Henry Proudhon[3]; Ricardo Lebensohn[4]; Wolfgang Ludwig[5]; [1]Purdue University; [2]ENS de Cachan; [3]MINES ParisTech; [4]Los Alamos National Lab; [5]INSA Lyon

9:00 AM
Statistical Model Based on Large Field-of-view Images Predicts Microstructural Damage-sites: *Benjamin Cameron*[1]; C. Tasan[1]; [1]MIT

9:20 AM
Understanding Effect of Texture and Topology on Stress Hotspots Using Machine Learning: *Ankita Mangal*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

9:40 AM Invited
4D Hydrogen Embrittlement Behaviour in High Strength Aluminium Alloy: *Hiroyuki Toda*[1]; Kazuyuki Shimizu[1]; H. Gao[1]; Kyosuke Hirayama[1]; [1]Kyushu University

10:10 AM Break

10:30 AM Invited
In-situ Experiments to Capture the Rapid Evolution of Microstructure during Phase Transformation of Titanium Under Dynamic Loading: *Benjamin Morrow*[1]; David Jones[1]; Paulo Rigg[2]; Ellen Cerreta[2]; [1]Los Alamos National Laboratory; [2]Washington State University

11:00 AM
Novel 3D Crystallite-scale Characterization of Deformation during Cyclic Loading of Low Crystal-symmetry Phases: *Partha Paul*[1]; Harshad Paranjape[2]; Darren Pagan[3]; L Catherine Brinson[1]; Aaron Stebner[2]; [1]Northwestern University; [2]Colorado School of Mines; [3]Cornell University

11:20 AM
In-situ Neutron Diffraction during Biaxial Strain Path Changes: Tobias Panzner[1]; Karl Sofinowski[1]; Efthymios Polatidis[1]; Miroslav Smid[1]; Steven Van Petegem[1]; *Helena Van Swygenhoven*[1]; [1]Paul Scherrer Institut

11:40 AM
In Situ Electron Microscopy Investigation on Plastic Deformation in a Metastable Beta Titanium Alloy: *Kui Du*[1]; Tingting Yao[1]; Miao Song[1]; Yulin Hao[1]; Rui Yang[1]; Hengqiang Ye[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

12:00 PM
Characterization of the Factors Influencing Retained Austenite Transformation in Q&P Steels via EBSD Analysis: *Derrik Adams*[1]; David Fullwood[1]; Jeff Cramer[1]; Shamoon Irfan[1]; Hannah Evanson[1]; Tyler Mathis[1]; Stephen Cluff[1]; Mike Miles[1]; Eric Homer[1]; Tyson Brown[2]; Raj Mishra[2]; Robert Kubic[2]; [1]Brigham Young University; [2]General Motors

Advanced High-strength Steels – 1st Generation AHSS

Sponsored by: TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Tuesday AM
March 13, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Tadashi Furuhara, Tohoku University; Nobuhiro Tsuji, Kyoto University

8:30 AM Invited
Important Factors to Design High-strength Ferritic Steel with Nano-sized Interphase Precipitation of Alloy Carbide: *Tadashi Furuhara*[1]; Yongjie Zhang[1]; Goro Miyamoto[1]; [1]Tohoku University

8:55 AM
Delamination Crack, Core/Shell Interface Precipitate, and Mechanical Properties in HSLA Steels: *Jae Bok Seol*[1]; J.-C. Han[2]; S.-H. Na[2]; [1]NINT, POSTECH; [2]POSTECH

9:15 AM
Significant Influence of Carbon and Niobium on the Precipitation Behavior and Microstructural Evolution and their Consequent Impact on Mechanical Properties in Microalloyed Steels: Devesh Misra[1]; *Vignesh Natarajan*[1]; DM Sidorenko[2]; MD Mullholland[2]; M Manohar[2]; JE Hartmann[2]; [1]University of Texas at El Paso; [2]ArcelorMittal Research and Development Center – Chicago

9:35 AM
Nanoscale Precipitation and Strengthening Mechanisms in Steels: *Zhongwu Zhang*[1]; SongSong Xu[1]; Yu Zhao[1]; [1]Harbin Engineering University

9:55 AM
Effect of Untransformed Ferrite on Tensile and Impact Properties of Martensitic Hot-press-forming Steels: *Min Cheol Jo*[1]; Jaeyeong Park[1]; Seok Su Sohn[1]; Seongwoo Kim[2]; Jinkeun Oh[2]; Sunghak Lee[1]; [1]POSTECH; [2]POSCO

10:15 AM Break

10:30 AM Invited
Deformation Mechanism of Dual Phase Steels Composed of Ferrite and Martensite: *Nobuhiro Tsuji*[1]; Myeong-heom Park[1]; Daisuke Terada[2]; Yu Bai[1]; Akinobu Shibata[1]; [1]Kyoto University; [2]Chiba Institute of Technology

10:55 AM
An Original Press Hardening Steel with Excellent Application Properties Produced by Compact Strip Process Technology: *Wang Hui*[1]; Xinping Mao[1]; Jinqiao Xu[1]; Tao Gong[1]; Jie Wu[1]; Kuanhui Hu[1]; Rutao Zhong[1]; Hao Peng[1]; Yan Yu[2]; Lei Sun[3]; [1]Wuhan Branch of Baosteel Central Research Institute; [2]Automotive Engineering Institute, Guangzhou Automobile Group Co. Ltd.; [3]Beijing Automotive Technology Center, BAIC Motor

11:15 AM
Effect of Strain Rate on Mechanical Properties of a 1 GPa-grade TRIP-aided Multi-microstructure Steel: *Noriyuki Tsuchida*[1]; Satoshi Ohkura[1]; Takaaki Tanaka[2]; Yuki Toji[2]; [1]University of Hyogo; [2]JFE steel

11:35 AM
Research on the Microstructures and Properties of Ti Bearing Hot-dip Galvanizing Multiphase Steel: *Qiu Sheng*[1]; [1]Shougang Research Institute of Technology

11:55 AM
Investigation of Fracture Behaviors of Coatings on Galvannealed CP1000 Steel: *Liu Huasai*[1]; [1]Shougang Research Institute of Technology

Advanced Magnetic Materials for Energy and Power Conversion Applications – Development in Rare Earth Free Permanent Magnet Alloys

Sponsored by: TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Tuesday AM
March 13, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: Ian Ashcroft, University of Nottingham

8:30 AM Introductory Comments

8:35 AM Invited
Opportunities and Challenges of Fe16N2 Compound Based Rare-earth-free Permanent Magnet: *Jian-Ping Wang*[1]; [1]University of Minnesota

9:05 AM Invited
Addressing Criticality in Magnetic Materials: A System Level Performance Assessment Approach: *Cajetan Nlebedim*[1]; Helena Khazdozian[1]; [1]Ames Laboratory, US Department of Energy

9:35 AM Invited
A New, Structural, Permanent Magnet Based on the Theory of High Entropy Alloys: *Abraham Anapolsky*[1]; [1]Intermolecular Inc

10:05 AM Break

10:25 AM Invited
Strategies for the Development of Coercivity in Rare Earth-lean High-energy Permanent Magnets: *Daniel Salazar*[1]; [1]BCMaterials

10:55 AM
Structural and Magnetic Properties of RE-Fe Compounds with Tetragonal $ThMn_{12}$ Structure: *Ana Schönhöbel*[1]; Rajasekhar Madugundo[1]; Cristina Echevarria-Bonet[1]; Daniel Salazar-Jaramillo[2]; José Barandiarán[1]; George Hadjipanayis[2]; [1]BCMaterials; [2]University of Delaware

11:15 AM
Anisotropic Dense Bulk MnBi Magnets with High Magnetic Performance: *Baozhi Cui*[1]; Wei Tang[1]; Jun Cui[1]; [1]Ames Lab, DOE

11:35 AM
Effect of Mn and Sb Substitutions on the Structural and Magnetic Properties of Fe1-xMnxSn1-ySby Alloys: *Cristina Echevarria-Bonet*[1]; Olga Vekilova[2]; Heike C. Herper[2]; Daniel Salazar[1]; Ana Maria Schönhobel[1]; Andres Martin-Cid[1]; Rajasekhar Madugundo[1]; Jose Manuel Barandiaran[1]; George C. Hadjipanayis[3]; [1]BCMaterials; [2]Uppsala University; [3]University of Delaware

11:55 AM
Coercivity Development in Mn-Al Alloys with Multi Elemental Additions: *Rajasekhar Madugundo*[1]; Ana María Schönhöbel[1]; Daniel Jaramillo[1]; Jose Barandiaran[1]; George Hadjipanayis[2]; [1]BCMaterials; [2]University of Delaware

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Advanced Microelectronic Packaging Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Tuesday AM
March 13, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: Albert Wu, National Central University; Carol Handwerker , Purdue University

8:30 AM Invited
Thermosiphon Loops for Data Center Cooling – Exceeding Water Cooling Performance: *Satish Kandlikar*[1]; [1]Rochester Institute of Technology

9:00 AM
Advances in Copper Electroplating for IC Substrate Packaging Applications: *Kousik Ganesan*[1]; Amaneh Tasooji[2]; Rahul Manepalli[1]; [1]Intel Corporation; [2]Arizona State University

9:20 AM
Bonding Property of Silver Sintered Joint between SiC Device and DBC Substrates for EV Power Module: *Won Sik Hong*[1]; Mi Song Kim[1]; Dajung Kim[1]; Chulmin Oh[1]; [1]Korea Electronics Technology Institutue(KETI)

9:40 AM
Zero Pressure Ag Sinter Joining for Low Temperature Interconnection: Hao Zhang[1]; Chuantong Cheng[1]; Yohji Suzuki[2]; Yasuyuki Akai[2]; Hiroyuki Fujii[2]; *Katsuaki Suganuma*[1]; [1]Osaka University; [2]Daicel

10:00 AM Break

10:20 AM
Pressureless Ag Sintering Process for IPM Modules: *Chulmin Oh*[1]; Dajung Kim[1]; Yoonhwa Choi[2]; Won Sik Hong[1]; [1]KETI; [2]JMJ Korea

10:40 AM
Microstructural Investigation on the Mechanism of Ag Thin Film Bonding: *Zhi-Quan Liu*[1]; Hao Zhang[2]; Cai-Fu Li[2]; Tohru Sugahara[2]; Shijo Nagao[2]; Katsuaki Suganuma[2]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]Institute of Scientific and Industrial Research, Osaka University

11:00 AM
Study of Mechanical Properties in Aluminum Wedge-wedge Bonding: *Matt McKay*[1]; Madeleine Peauroi[1]; Panthea Sepehrband[1]; Jamie Ferris[1]; [1]Santa Clara University

11:20 AM
A Study of Microstructure, Electronic Flame-off Characteristics and Electrical Properties of Au-coated Al-Zn Wires: *Keng-Yi Hsu*[1]; Fei-Yi Hung[1]; Truan-Sheng Lui[1]; [1]National Cheng Kung University

11:40 AM
Measurement of Electrical Resistance of CNTs: Leila Ladani[1]; *Zakia Ahmed*[1]; [1]University of Texas at Arlington

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Processing for Quality

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Tuesday AM
March 13, 2018
Room: 231C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Addressing the Challenges for Additively Manufacturing Ti-6Al-4V Components for Structural Applications: *Jay Keist*[1]; Todd Palmer[1]; Edward Reutzel[1]; Rich Martukanitz[1]; [1]Penn State University

9:00 AM Invited
Coupling Laser Path Planning to the Formation Lack of Fusion Defects on Top Layers of Abbreviated Builds in Direct Metal Laser Melting of Ti-6Al-4V: *Kevin Chaput*[1]; Edwin Schwalbach[1]; Sean Donegan[1]; Michael Groeber[1]; Jonathan Miller[1]; [1]Materials and Manufacturing Directorate

9:30 AM Invited
Development of Post-Processing Technologies to Improve the Reliability of Additively Manufactured Titanium Alloy Components: *Brady Butler*[1]; Jonathan Ligda[1]; Nathaniel Saenz[2]; James Paramore[3]; [1]U.S. Army Research Laboratory; [2]CQL AEOP; [3]ORISE

10:00 AM Break

10:15 AM Invited
Ti-6Al-4V by Selective Laser Melting: How Microstructure and Porosity Influence the Mechanical Properties: *Thomas Voisin*[1]; Nicholas Calta[1]; Jianchao Ye[1]; Joseph McKeown[1]; Ross Cunningham[2]; Anthony Rollett[2]; Morris Wang[1]; [1]Lawrence Livermore National Laboratory; [2]Carnegie Mellon University

10:45 AM
Non-destructive Characterization of Porosity Distributions in Additively-manufactured Ti Parts: *Sam Yang*[1]; Jing Zou[2]; Yuqi Ren[3]; Darren Fraser[1]; Peter King[1]; Clement Chu[1]; Tony Murphy[1]; Leon Prentice[1]; [1]CSIRO; [2]Tianjin University; [3]Chinese Academy of Sciences

11:05 AM
Investigating Sources of Porosity in Electron Beam-based Directed Energy Deposition of Titanium Components: *Kyle Snyder*[1]; Richard Martukanitz[1]; Scott Stecker[2]; [1]Penn State Applied Research Lab; [2]Sciaky, Inc.

11:25 AM
Effect of Geometry on the Porosity and Microstructure of Additively Manufactured Titanium: *Andelle Kudzal*[1]; Clara Hofmeister[2]; Joshua Taggart-Scarff[2]; Brandon McWilliams[3]; Jianyu Liang[1]; [1]Worcester Polytechnic Insitute; [2]Oak Ridge Institute for Science and Education; [3]US Army Research Laboratory

11:45 AM
Effect of Build Direction on Microstructure and Tensile Properties of Ti-6Al-4V Sheet Fabricated by Selective Electron Beam Melting: *Jian Wang*[1]; Kun Yang[1]; Hui Tang[1]; [1]Northwest Institute for Nonferrous Metal Research

Algorithm Development in Materials Science and Engineering – DFT, Atomistic and Machine Learning Algorithms for Study and Design of Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee

Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Tuesday AM
March 13, 2018

Room: 130
Location: Phoenix Convention Center

Session Chair: Mohsen Asle Zaeem, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:40 AM Invited
Using Machine-learning to Create Predictive Material Property Models: *Chris Wolverton*[1]; [1]Northwestern University

9:10 AM
Accelerating Materials Simulation by Machine Learning: *Alireza Khorshidi*[1]; Andrew Peterson[1]; [1]Brown University

9:30 AM
MSGalaxy: A Web-based Platform for Framework Design and Integration: *Daniel Sauceda*[1]; Raymundo Arroyave[1]; Rodolfo Aramayo[1]; [1]Texas A&M

9:50 AM
Open Source Distributed Tools for Multiscale Modeling of Materials: *Marcus Hanwell*[1]; TJ Corona[1]; Robert O'Bara[1]; Dennis Dimiduk[2]; Michael Jackson[2]; Glen Hansen[3]; Sean Donegan[4]; Michael Groeber[4]; [1]Kitware; [2]BlueQuartz; [3]Sandia National Laboratories; [4]Air Force Research Laboratory

10:10 AM Break

10:30 AM Invited
Rational Design and Parametric Uncertainty Analysis of Classical Interatomic Potentials: Eugene Ragasa[1]; Christopher O'Brien[2]; Richard Hennig[1]; Stephen Foiles[2]; *Simon Phillpot*[1]; [1]University of Florida; [2]Sandia National Laboratories

11:00 AM
High-throughput Evaluation and Comparison of Classical Interatomic-potentials: Structural, Elastic, Defect, Surface and Phonon Properties: *Kamal Choudhary*[1]; Francesca Tavazza[1]; [1]National Institute of Standards and Technology

11:20 AM
Reactive Molecular Dynamics of Electrochemical Processes – Ultrafast Resistance Switching in Electro-metallization Cells: *Alejandro Strachan*[1]; Nicolas Onofrio[2]; Md Mahbubul Islam[1]; [1]Purdue University; [2]The Hong Kong Polytechnic University

11:40 AM
Atomistically-informed Chemistry Models for Thermo-chemical Degradation of Ablative Composite Materials: *Srujan Rokkam*[1]; Kiran Sasikumar[1]; Raghavan Ranganathan[2]; Peter Cross[3]; Richard Burnes[3]; [1]Advanced Cooling Technologies, Inc.; [2]Massachusetts Institute of Technology; [3]Naval Air Warfare Center

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Session III

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Tuesday AM
March 13, 2018

Room: 226B
Location: Phoenix Convention Center

Session Chairs: Albert Wu, National Central University; Hsin-jay Wu, National Sun Yat-Sen University

8:30 AM Invited
Phase Boundary Mapping for the Discovery and Optimization of Thermoelectric Materials: *G. Jeffrey Snyder*[1]; [1]Northwestern University

8:50 AM Invited
Phase Diagrams Evaluation for Design of Thermoelectric Materials and Development of Fabrication Processes: *Yoshisato Kimura*[1]; Natsumi Kaneko[1]; Yosuke Kubo[1]; Yong Hoon Lee[2]; Hiroyuki Matsunami[2]; Hirokuni Hachiuma[2]; [1]Tokyo Institute of Technology; [2]KELK Ltd.

9:10 AM Invited
Phase Diagram of Ag-In-Se System and Thermoelectric Properties of In-containing Ag_2Se: *Sinn-wen Chen*[1]; Zi-yang Huang[1]; Pai-chen Wei[2]; Yang-yuan Chen[2]; [1]National Tsing Hua University; [2]Academia Sinica

9:30 AM
Phase Diagrams of Ternary Zn-Sb-In Systems and Thermoelectric Properties of In Doped Zn4Sb3: *Su Hui Yi*[1]; Wu Hsin Jay[1]; [1]National Sun Yat-sen University

9:50 AM
The Phase Diagram of Ge-Te-Sb and Enhanced Thermoelectric Properties of Sb-doped GeTe: *Yi-Fen Tsai*[1]; Wu Hsin Jay[1]; [1]Department of Materials and Optoelectronic science, National Sun Yat-sen University

10:10 AM Break

10:30 AM Invited
Evaluation of Interfacial Stability of PbTe Thermoelectric Module: *Albert T. Wu*[1]; H. C. Hsieh[1]; T. H. Lee[2]; H. S. Chu[2]; [1]National Central University; [2]Industrial Technology Research Institute

10:50 AM Invited
Thin-film Metallic Glass: an Effective Diffusion Barrier for Mid-temperature Thermoelectric Modules: Chia-Chi Yu[1]; Hsin-jay Wu[2]; Ping-Yuan Deng[2]; Matthias T. Agne[3]; G. Jeffrey Snyder[3]; *Jinn Chu*[1]; [1]National Taiwan University of Science and Technology; [2]National Sun Yat-sen University; [3]Northwestern University

11:10 AM
Evaluation of Co-P Diffusion Barrier for p-Bi2Te3 Thermoelectric Material: *Chun-Hsien Wang*[1]; Albert T. Wu[1]; [1]National Central University, Taiwan

11:30 AM
Role of Ni-Mo Diffusion Barrier on the High Temperature Stability of PbTe Based Thermoelectric Module: *Sundararajan Govindan*[1]; D Sivaprahasam[2]; Raghavan Gopalan[2]; [1]Indian Institute of Technology Madras; [2]ARCI

Alumina & Bauxite – Fundamentals, Product Quality, Efficiency and Modeling

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Linus Perander, Outotec

Tuesday AM
March 13, 2018

Room: 221A
Location: Phoenix Convention Center

Session Chair: Astrid Meyer, Hydro

8:30 AM Introductory Comments

8:35 AM
Fitness-for-service Assessment and Re-rating of Flawed Alumina Feeding Vessels: Maher Al-Dojayli[1]; *Kyle Chomyn*[1]; Hamid Ghorbani[1]; Patrice Barriault[1]; [1]Hatch

9:00 AM
Miniplant Tests of HCl Technology of Alumina Production: *Andrei Smirnov*[1]; Dmitriy Kibartas[1]; Aleksandr Senyuta[1]; Andrey Panov[1]; [1]RUSAL ETC

9:25 AM
Development and Usage of Detailed Models of Technology at RUSAL Alumina Refineries: *Mamadou-Bano Balde*[1]; Vladimir Golubev[1]; Dmitriy Chistyakov[1]; [1]Windalco

9:50 AM
Features of Pseudoboehmite from Alumina Production: Evgeny Vlasov[1]; Natalia Maltseva[1]; *Rustam Seytenov*[2]; Vadim Lipin[3]; N.A. Odincova[1]; [1]St. Petersburg State Technological Institute (technical university); [2]Outotec CIS; [3]Saint Petersburg State University of Industrial Technologies and Design, Higher School of Technology and Energy

10:15 AM Break

10:30 AM
Digital Transformation in Alumina Refining: *Robert Jonas*[1]; [1]Honeywell

10:55 AM
Thermodynamics Analysis on Process of Pelletizing Chlorination of Fly Ash: *Long Wang*[1]; Zhang Ting'an[1]; Guozhi Lyu[1]; Jingzhong Zhang[1]; Zhihe Dou[1]; Weiguang Zhang[1]; Xijuan Pan[1]; Yanxiu Wang[1]; [1]Northeastern University

11:20 AM
Research on Alumina Preparation from Aluminium Chloride Solution by Electrolysis Process: *Zhang Ting'an*[1]; Xiuxiu Han[1]; Guozhi Lyu[1]; Xijuan Pan[1]; Shagulyyev Agajan[1]; Daxue Fu[1]; Jiang Liu[1]; Junjie Zhang[1]; [1]Northeastern University

11:45 AM
How Digitalization Can Further Improve Plant Performance and Product Quality - Outotec Pretium Advisory Tool for Alumina Calcination: *Michael Missalla*[1]; Linus Perander[2]; Steffen Haus[2]; Nikola Anastasijevic[2]; Susanna Horn[3]; [1]Outotec Tecnologia Brasil Ltda; [2]Outotec GmbH & Co. KG; [3]Outotec Oyi

Aluminum Alloys, Processing and Characterization – Behavior of Casting Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Tuesday AM
March 13, 2018

Room: 221B
Location: Phoenix Convention Center

Session Chair: Wei Wen, Arconic

8:30 AM Invited
Aluminum In-situ Formed, Low Cost, Aluminum-silicon Nano Composite Materials: Peter Guba[1]; Jerry Sokolowski[1]; Al Conle[1]; Andrzej Sobiesiak[1]; Adam Gesing[2]; *Subodh Das*[3]; [1]University of Windsor; [2]Gesing Consultants Inc.; [3]Phinix,LLC

9:00 AM
Predicting Local Segregation and Microstructures in an Advanced High Pressure Die Cast Al Alloy: *Tracy Berman*[1]; John Allison[1]; [1]University of Michigan

9:20 AM
The Combined Effects of Sr Additions and Heat Treatment on the Microstructure and Mechanical Properties of High Pressure Die Cast A383 Alloy: *Tao Liu*[1]; Sydney Morales[1]; Luke Brewer[1]; Mikko Karkkainen[1]; Nastac Laurentiu[1]; Arvikar Vish[2]; Levin Ilya[2]; [1]The University of Alabama; [2]Nemak Alabama

9:40 AM
The Effect of Energy Attenuation in Molten A356 Alloy during Ultrasonic Degassing: *Jeong IL Youn*[1]; Young Ki Lee[1]; Young Jig Kim[1]; Jeong Wook Park[2]; [1]Sungkyunkwan University; [2]DR AXION Co.,Ltd

10:00 AM Break

10:20 AM
Influence of Additional Elements (Si Ti and B) on the Castability, Corrosion and Mechanical Properties of A201 Alloys: *Suzan Abd El Majid*[1]; [1]Technion, Israel Institue of Technology

10:40 AM
Effect of Ni Addition on the Solidification Process and Microstructure of Al-12%Si-4%Cu-1.2%Mn-x%Ni Heat-resistant Alloys: *Hengcheng Liao*[1]; Qu Liu[1]; Guangjin Li[1]; Uday Dixit[2]; [1]Southeast University; [2] IIT Guwahati

11:00 AM
New Design of High Strength Wrought Aluminum Alloys: *Alexander Alabin*[1]; Viktor Mann[1]; Anton Frolov[1]; Aleksandr Krokhin[1]; [1]UC RUSAL

11:20 AM
The Effect of Mn on Microstructure and Mechanical Properties of A356 Alloy: *Yulin Liu*[1]; [1]Shenyang Aerospace University

Application of Solidification Fundamentals to Challenges in Metal Additive Manufacturing – Advanced Characterization

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Alex Plotkowski, University of Tennessee - Knoxville; Kevin Chaput, Materials and Manufacturing Directorate; Lang Yuan, GE Global Research

Tuesday AM
March 13, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Michael Kirka, ORNL

8:30 AM Invited
Fast Synchrotron X-ray Imaging of the Mechanisms Controlling Laser Additive Manufacturing: *Peter D. Lee*[1]; Chu Lun Alex Leung[1]; Enyu Guo[1]; Sebastian Marussi[1]; Robert Atwood[2]; Mike Towrie[3]; Phil Withers[1]; [1]The University of Manchester; [2]Diamond Light Source; [3]Science & Technology Facilities Council

9:00 AM
Solidification Cracking during Selective Laser Melting (SLM) of Nickel-base Superalloy Inconel-738LC: *Avinash Hariharan*[1]; Jeroen Risse[2]; Eric Jägle[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Fraunhofer-Institut für Lasertechnik ILT

9:20 AM
Development of an In-situ TEM with Laser Sintering Capabilities at Sandia National Laboratories: Patrick Price[1]; Adam Cook[1]; LaRico Treadwell[1]; *Khalid Hattar*[1]; [1]Sandia National Laboratories

9:40 AM
Characterization of Rapid Cooling during Laser Powder Bed Fusion Additive Manufacturing of Ti-6Al-4V Using In Situ High Speed Synchrotron X-ray Diffraction: *Nicholas Calta*[1]; Aiden Martin[1]; Jenny Wang[1]; Philip Depond[1]; Gabriel Guss[1]; Vivek Thampy[2]; Andrew Kiss[2]; Anthony Fong[2]; Johanna Nelson Weker[2]; Kevin Stone[2]; Christopher Tassone[2]; Ryan Ott[3]; Matthew Kramer[3]; Michael Toney[2]; Tony Van Buuren[1]; Manyalibo Matthews[1]; [1]Lawrence Livermore National Laboratory; [2]SLAC National Accelerator Laboratory; [3]Ames Laboratory

10:00 AM Break

10:20 AM
Tomography and 3D Grain Mapping for Additive Manufacturing Qualification: *Leah Lavery*[1]; Luke Hunter[2]; Jeff Gelb[1]; [1]Carl Zeiss X-ray Microscopy; [2]Carl Zeiss Industrial Metrology

10:40 AM
Laser Powder Bed Fusion of Metal and Bioactive Glass Revealed Via Synchrotron X-ray Imaging: *Chu Lun Alex Leung*[1]; Robert Atwood[2]; Jesus Del Val Garcia[3]; Julian Jones[3]; Peter Lee[1]; [1]University of Manchester; [2]Diamond Light Source Ltd,; [3]Imperial College London

11:00 AM
In-situ Monitoring of Solidification during Powder-deposition Based Additive Manufacturing: *Sarah Wolff*[1]; Hao Wu[1]; Cang Zhao[2]; Niranjan Parab[2]; Tao Sun[2]; Jian Cao[1]; [1]Northwestern University; [2]Argonne National Laboratory

11:20 AM
Microstructure and Wear Resistance of Laser Deposited Cobalt-free Cu-based Alloy for Valve Seat Application: *Hajime Kato*[1]; Tadashi Oshima[1]; Kouji Tanaka[1]; Minoru Kawasaki[2]; Natsuki Sugiyama[2]; Hironori Aoyama[2]; [1]Toyota Central R&D Labs., Inc.; [2]Toyota Motor Corporation

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials – General Methods and Development

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Haiming Wen, Missouri University of Science and Technology; Simon Ringer, The University of Sydney; Gregory Thompson, University of Alabama; Arun Devaraj, Pacific Northwest National Laboratory; Keith Knipling, U.S. Naval Research Laboratory; Gang Sha, Nanjing University of Science and Technology; David Seidman, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center

Tuesday AM
March 13, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: David Seidman, Northwestern University; Haiming Wen, Missouri University of Science & Technology

8:30 AM Introductory Comments

8:35 AM Keynote
The Evolution of the Atom-Probe: *John Panitz*[1]; [1]The University of New Mexico

9:15 AM Invited
Instrumentation Developments for Emerging Metals and Minerals Applications of Atom Probe Tomography: *Thomas Kelly*[1]; Ty Prosa[1]; David Reinhard[1]; Robert Ulfig[1]; David Larson[1]; [1]Cameca Instruments, Inc.

9:50 AM
A New Approach to Detect Clusters of Varying Density in Atom Probe Tomography and Its Applications to Oxide-dispersion Strengthened Alloys: *Jing Wang*[1]; Nathan Bailey[2]; Peter Hosemann[2]; Daniel Schreiber[1]; Mychailo Toloczko[1]; [1]Pacific Northwest National Laboratory; [2]University of California, Berkeley

10:10 AM Break

10:25 AM Invited
Segregations at Defects and Interfaces and their Relations to Properties: *Baptiste Gault*[1]; Paraskevas Kontis[1]; Huan Zhao[1]; Alisson Kwiatowski da Silva[1]; Surendra Kumar Makineni[1]; Yanhong Chang[1]; Dirk Ponge[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

11:00 AM Invited
Applications of APT in Characterization of Magnesium Alloys – A Tool to Develop Heat-Treatable Wrought Magnesium Alloys: *Kazuhiro Hono*[1]; Taisuke Sasaki[1]; Ming-Zhe Bian[1]; [1]National Institute for Materials Science

11:35 AM Invited
Atom-probe Tomography of Materials with Nanometer-Range Characteristic Dimensions: *Dieter Isheim*[1]; David Seidman[1]; [1]Northwestern University

Bio-nano Interfaces and Engineering Applications Symposium – Bio-Nano Interfaces III

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Kansas; Terry Lowe, Colorado School of Mines; Kalpana Katti, North Dakota State University; Po-Yu Chen, National Tsing Hua University; John Nychka, University of Alberta

Tuesday AM
March 13, 2018
Room: 105A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Synthesis and Characterization of Superomniphobic Surfaces Inspired by Springtails: *Po-Yi Chen*[1]; Ching-Yu Yang[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

9:00 AM
Effects of Hydration and Mineralization on the Mechanical Behavior of Collagen Fibrils: Marco Fielder[1]; *Arun Nair*[1]; [1]University of Arkansas

9:20 AM Invited
Revealing the Full Hierarchical Structure of Spider Silks across All Length Scales: *Hannes Schniepp*[1]; [1]The College of William & Mary

9:50 AM
Revealing the Multi-functional Surface and Material Property of Venus Flytrap (Dionaea Muscipula): *Tiffany Liao*[1]; Po-Yi Chen[1]; Yueh-Ying Chou[1]; Wei-Chen Hung[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

10:10 AM Break

10:25 AM Invited
Single Molecular Imaging of Fluorescent-tagged Peptides Diffusing on a Surface of Boron Nitride: Peiying Li[1]; Takakazu Seki[1]; Linhao Sun[1]; *Yuhei Hayamizu*[1]; [1]Tokyo Institute of Technology

10:55 AM
Smart Biomaterials for MoS2 and Gold Mining: *Sibel Cetinel*[1]; Wei-Zheng Shen[1]; Maral Aminpour[1]; Prasanna Bhomkar[2]; Feng Wang[2]; Carlo Montemagno[1]; [1]University of Alberta; [2]National Institute for Nanotechnology

11:15 AM
Computational Study of Selective Adsorption of Peptides on MoS_2 Surface: *Maral Aminpour*[1]; Niloofar Nayebi[1]; Sibel Cetinel[1]; Carlo Montemagno[1]; [1]University of Alberta

11:35 AM
Transmission Synchrotron X-ray Tomography and Nano-indentation Measurements for the Investigation of the Teeth Microstructure of Dinosaurs: Tzu-Hsuan Huang[1]; *E-Wen Huang*[1]; Chun-Chieh Wang[2]; Shou-Yi Chang[3]; [1]National Chiao Tung University; [2]National Synchrotron Radiation Research Center, Hsinchu, Taiwan; [3]National Tsing Hua University, Hsinchu, Taiwan

Biological Materials Science – Biomaterials and Biomedical Applications I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Tuesday AM
March 13, 2018
Room: 225B
Location: Phoenix Convention Center

Session Chairs: Holly Martin, Youngstown State University; Dwayne Arola, University of Washington

8:30 AM
Fracture and Fatigue Behavior of Silver-cored Drawn Filled Tube Strands for Biomedical Applications: *Janet Gbur*[1]; John Lewandowski[1]; [1]Case Western Reserve University

8:50 AM
3D Full-field Mechanical Measurement of Shoulder Bones under Implant Loading: *Yuxiao Zhou*[1]; Michael Lamberty[2]; Gregory Lewis[3]; April Armstrong[3]; Jing Du[1]; [1]Pennsylvania State University; [2]University of Puerto Rico at Mayagüez; [3]Penn State College of Medicine and M.S. Hershey Medical Center

9:10 AM
Adsorption of Maleic Acid on the Surface of Hydroxyapatite and TiO2: A Pathway Towards Biomaterial Composites: *Mitchell Albert*[1]; Amanda Clifford[1]; Igor Zhitomirsky[1]; Oleg Rubel[1]; [1]McMaster University

9:30 AM Keynote
Fracture, Disease and Therapies in Human Bone: *Robert Ritchie*[1]; [1]University of California, Berkeley

10:10 AM Break

10:30 AM Invited
Bioinspired Polyphenolic Materials: From Biomolecular Phenomena to Applications: *Phillip Messersmith*[1]; [1]University of California, Berkeley

11:00 AM
Processing, Microstructure Characterization and Biological Response of Cold Sprayed Biocomposite Coatings: *Eden Bhatta*[1]; Grant Crawford[1]; [1]South Dakota School of Mines and Technology

11:20 AM
Implantable Nano-porous Resorbable and Non-resorbable Structures for Cancer Drug Delivery and Tissue Regeneration: *John Obayemi*[1]; Vanessa Uzonwanne[1]; Jingjie Hu[2]; Ali Salifu[1]; Wole Soboyejo[1]; [1]Worcester Polytechnic Institute; [2]Princeton University

11:40 AM
Effect of Nb and Ta Content on Properties of Ti-(26-35)Nb-(0-6)Ta-7Zr -0.7O: *Dalibor Preisler*[1]; Josef Stráský[1]; Michal Landa[2]; Petr Harcuba[1]; [1]Charles University; [2]The Czech Academy of Sciences

Bulk Metallic Glasses XV – Alloy Development and Application I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Tuesday AM
March 13, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Peter Liaw, The University of Tennesee; William Johnson, California Institute of Technology

8:30 AM Keynote
Commercial BMG's - Boutique Material or Disruptive Technology?: *William Johnson*[1]; [1]California Institute of Technology

9:00 AM Keynote
Fe-based Metallic Glass (MG) Ribbons for Energy Applications: *CT Liu*[1]; Anding Wang[1]; [1]City University of Hong Kong

9:30 AM Invited
Bulk Metallic Glasses: A High, but Narrow Path to Success: *Jan Schroers*[1]; [1]Yale University

9:50 AM Invited
Progress and Challenges Associated with the Development of Spacecraft Gearboxes Utilizing Bulk Metallic Glasses: *Douglas Hofmann*[1]; Scott Roberts[1]; Robert Dillon[1]; [1]NASA JPL/Caltech

10:10 AM Break

10:30 AM Invited
Designing Color in Gold Metallic Glasses: Jong-Hyun Na[1]; *Marios Demetriou*[1]; William Johnson[1]; [1]Glassimetal Technology

10:50 AM Invited
Property Enhancement of BMG Based Nanoglasses Prepared by RF Sputtering of Thin Films and High Pressure Torsion: *Hans Fecht*[1]; Pierre Denis[1]; [1]Ulm University

11:10 AM Invited
Manipulation of Plastic Flow in Metallic Glasses via Nanoscale Networks of Compositional Heterogeneities: Jin Woo Kim[1]; Hyun Seok Oh[1]; Wan Kim[1]; Pyuck-Pa Choi[2]; Dierk Raabe[3]; *Eun Soo Park*[1]; [1]Seoul National University; [2]Korea Advanced institute of Science and Technology; [3]Max-Planck Institut für Eisenforschung GmbH

11:30 AM
Determination of Critical Cooling Rates in Metallic Glass Forming Alloy Libraries through Laser Spike Annealing: *Punnathat Bordeenithikasem*[1]; Jingbei Liu[2]; Sebastian Kube[2]; Yanglin Li[2]; Tianxing Ma[3]; Ellen Scanley[4]; Douglas Hofmann[1]; Christine Broadbridge[4]; Joost Vlassak[5]; Jonathan Singer[3]; Jan Schroers[2]; [1]NASA JPL/Caltech; [2]Yale University; [3]Rutgers University; [4]Southern Connecticut State University; [5]Harvard University

11:50 AM Invited
Surface Properties of Thin Film Metallic Glasses Produced by Physical Vapor Deposition: Tatiana Ştefanov[1]; Harsha Vardhan Maraka[1]; *David Browne*[1]; [1]University College Dublin

Cast Shop Technology: Energy Joint Session – Cast Shop Technology: Energy Joint Session

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee, TMS: Energy Committee
Program Organizers: Mark Badowski, Hydro Aluminium; Mark Jolly, Cranfield University; Donald Whipple, Bloom Engineering Co Inc; Cynthia Belt, Consultant

Tuesday AM
March 13, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Mark Jolly, Cranfield University

8:30 AM Introductory Comments

8:35 AM
Productivity and Energy Efficiency Improvements at Two Reverberatory Furnaces at Alcoa, Norway: *Henrik Gripenberg*[1]; Delwyn Forrest[2]; Per-Bjornar Bekkevold[3]; Egil Solberg[3]; Johannes Lodin[1]; Fredrik Stark[4]; Fredrik Nyman[4]; [1]Linde Gas; [2]Alcoa; [3]Alcoa Mosjoen; [4]AGA Gas AB

9:00 AM
The Application of ALTEK Stirring Technology to a 90MT Melting Furnace at ALCOA Moesjen, Norway: *Alan Peel*[1]; Delwyn Forrest[2]; [1]ALTEK Group; [2]Alcoa

9:25 AM
Case Study of Air Cooled Electromagnetic Stirred Melting Furnace at Hydro Henderson: *James Herbert*[1]; Bill Painter[2]; [1]ALTEK LLC; [2]Hydro Henderson

9:50 AM
Efficiency of the Casting Process Starts in the Melt Shop: *Ryan Brown*[1]; [1]Norican Group

10:15 AM Break

10:30 AM
Praxair's OPTIVIEW™ Image Analysis System for Enhanced Combustion Control on Aluminum Tilting Rotary Furnace: *Valmiro Sa Neto*[1]; Joseph Maiolo[1]; Kevin Albrecht[1]; Bryan Bielec[1]; Jorge Visús Pool[2]; Joaquín de Diego Rincón[3]; Daniel Bujeda Celma[2]; Ignacio Parrilla Muñoz[4]; Juan Luis Suazo Tejeda[4]; [1]Praxair Inc.; [2]Praxair España, S.L.U.; [3]Praxair Euroholding, S.L.; [4]Aluminio la Estrella S.L.U.

10:55 AM
Aluminum Melting Furnace Pressure Control: *Edward Williams*[1]; Don Whipple[2]; [1]Alcoa; [2]Bloom Engineering

11:20 AM
Gas Fired Holding Furnace Modeling for Efficient Operation: Mohamed Hassan[1]; Saeed Alshehhi[1]; *Cynthia Belt*[2]; [1]Khalifa University of Science and Technology, Masdar Institute; [2]Energy Consultantant

11:45 AM
Resource Efficiency Analysis of High Pressure Die Casting Process: Micael Gonçalves[1]; *Mark Jolly*[1]; Konstantinos Salonitis[1]; Emanuele Pagone[1]; [1]Cranfield University

CFD Modeling and Simulation in Materials Processing – Processing I

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Koulis Pericleous, University of Greenwich; Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, Colorado School of Mines

Tuesday AM
March 13, 2018
Room: 228B
Location: Phoenix Convention Center

Session Chairs: Laurentiu Nastac, The University of Alabama; Kevin Chou, University of Louisville

8:30 AM
A Multiphase CFD Model for the Prediction of Particulate Accumulation in a Laser Powder Bed Fusion Process: *Adam Philo*[1]; Daniel Butcher[1]; Stuart Sillars[1]; Chris Sutcliffe[2]; Johann Sienz[1]; Stephen Brown[1]; Nicholas Lavery[1]; [1]Swansea University; [2]Renishaw

8:50 AM
Numerical Model to Estimate Tool Wear and Pin Shape during Friction Stir Welding of CuCrZr Alloy: *Pankaj Sahlot*[1]; Amit Arora[1]; [1]Indian Institute of Technology Gandhinagar

9:10 AM
Prediction of Air Entrapment in High Pressure Die Casting Applications: *Juergen Jakumeit*[1]; Herfried Behnken[1]; Julian Gaenz; Frank Schmidt[2]; [1]Access e.V.; [2]Foundry Institute RWTH-Aachen

9:30 AM
CFD Modelling of High Pressure Gas Atomization of Liquid Metals: Aadhithya Priyadharshini Ashok Kumar[1]; Duncan Borman[1]; *Andrew Mullis*[1]; [1]University of Leeds

9:50 AM Break

10:10 AM Invited
Computational Analysis of Thermo-fluid Dynamics with Metallic Powder in SLM: Subin Shrestha[1]; *Kevin Chou*[1]; [1]University of Louisville

10:40 AM
Evaporation and Diffusion of Mn in Inert Systems: *Håkon Olsen*[1]; [1]Norwegian University of Science and Technology

11:00 AM
Correlation of Heat Transfer Coefficient in Quenching Process Using ABAQUS: *Sandeep Davare*[1]; G Balachandran[2]; R.K.P. Singh[1]; [1]Bharat Forge; [2]Kalyani Carpenter Special Steel Pvt Ltd. (KCSSPL)

11:20 AM
A Theoretical Study on Removal of Inclusions from Molten Steel during Ingot Casting by Filtration: *Shahin Akbarnejad*[1]; [1]Royal Institute of Technology (KTH)

Characterization of Minerals, Metals, and Materials – Characterization and Uses of Metallurgical Slags

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

Tuesday AM
March 13, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chairs: Mingming Zhang, ArcelorMittal Global R&D; Mingsheng He, Wuhan Iron & Steel Ltd.

8:30 AM Introductory Comments

8:35 AM
Preparation and Characterization of NaNO3/BFS Composite Phase Change Materials: *Jicheng Liu*[1]; Yuanbo Zhang[1]; Zijian Su[1]; Bingbing Liu[1]; Manman Lu[1]; Tao Jiang[1]; Guanghui Li[1]; [1]Central South University

8:55 AM
Characteristics of WISCO Steelmaking Slags: *Bowen Li*[1]; Mingsheng He[2]; Canhua Li[2]; [1]Michigan Technological University; [2]Wuhan Iron & Steel Co. Ltd.

9:15 AM
Pilot Trial of Direct Modification of Molten Blast Furnace Slag and Production of High Acidity Coefficient Slag Wool Fibers: Jun Li[1]; *Guizhou Zhao*[1]; Lingling Zhang[1]; Daqiang Cang[1]; [1]University of Science and Technology, Beijing

9:35 AM
Reduction Behavior of Ternary Calcium Ferrites for CaO-Fe2O3-MgO System: *Senwei Xuan*[1]; Xuewei Lv[1]; Kai Tang[1]; Chengyi Ding[1]; Gang Li[1]; Chenguang Bai[1]; [1]Chongqing University

9:55 AM Break

10:10 AM
Propagation of Power Ultrasound in Calcium Ferrite Melt: *Ruirui Wei*[1]; [1]Chongqing University

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Boundaries and Interfaces II

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Tuesday AM
March 13, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Panthea Sepehrband, Santa Clara University; Ismaila Dabo, Penn State

8:30 AM Invited
Quantum-continuum Simulations of Solid-liquid Interfaces under Electrochemical Conditions: *Ismaila Dabo*[1]; [1]Department of Materials Science and Engineering & Materials Research Institute, Penn State University

9:00 AM
Droplet Spreading on a Surface Exhibiting Solid-liquid Interfacial Premelting: *Brian Laird*[1]; Yang Yang[2]; [1]University of Kansas; [2]East China Normal University

9:20 AM
In-plane Characterization of Structural and Thermodynamic Properties for the Steps at Faceted Chemically Heterogeneous Solid/Liquid Interfaces: *Yang Yang*[1]; Hongtao Liang[1]; Brian Laird[2]; Mark Asta[3]; [1]East China Normal University; [2]University of Kansas; [3]UC Berkeley

9:40 AM
Quantum Mechanical Simulations of MgO//Mg Interfacial Stability: *Wenwu Xu*[1]; Andrew Horsfield[2]; Peter Lee[3]; [1]San Diego State University; [2]Imperial College London; [3]The University of Manchester

10:00 AM Break

10:20 AM
Atomistic Investigation of the Energetics and Atomic Structure of the Ferrite-cementite Interface in Pearlite: *Matthew Guziewski*[1]; Christopher Weinberger[1]; Shawn Coleman[2]; [1]Colorado State University; [2]Army Research Laboratory

10:40 AM Invited
Friction and Adsorption at Nanoscale: The Effect of Metallic and Nonmetallic Properties: *Wang Gao*[1]; Qing Jiang[1]; [1]Jilin University

11:00 AM
Concurrently Coupled Atomistic and Continuum Simulation of Grain Boundaries in Materials: *Shengfeng Yang*[1]; Youping Chen[2]; [1]Indiana University-Purdue University Indianapolis; [2]University of Florida

11:20 AM
Atomistic Modeling of Point Defects Absorption and Diffusion in α –iron Grain Boundaries: *Helena Zapolsky*[1]; Antoine Vaugeois[1]; Renaud Patte[1]; [1]University of Rouen

11:40 AM
Tribological Properties of Carbon Nanotube Reinforced Natural Rubber Composites: Molecular Dynamics Study: *Sumit Sharma*[1]; Raj Chawla[2]; [1]Lovely Professional University; [2]Mechanical Engineering, Lovely Professional University

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Dislocation, Plasticity, and Fracture

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Tuesday AM
March 13, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chairs: Valery Levitas, Iowa State University; Dallas Trinkle, University of Illinois, Urbana-Champaign

8:30 AM Invited
Phase Field Approach to Coupled Phase Transformations and Dislocation Evolution at Large Strains: *Valery Levitas*[1]; [1]Iowa State University

9:00 AM
A Modified Phase-field Model for Crack Propagation in Multiphase Materials: Arezoo Emdadi[1]; *Mohsen Asle Zaeem*[1]; William Fahrenholtz[1]; Gregory Hilmas[1]; [1]Missouri University of Science and Technology

9:20 AM
A Crystal Plasticity Model for Dynamic Recrystallization in Ti-6Al-4V Alloy: *Arunabha Roy*[1]; Riddhiman Bhattacharya[1]; John Allison[1]; Veera Sundararaghavan[1]; [1]University of Michigan at Ann Arbor

9:40 AM
A Consistent Mesoscale Elastoplastic Phase-field Framework: *Tianle Cheng*[1]; Youhai Wen[2]; Jeffrey Hawk[2]; [1]US Dept of Energy, National Energy Technology Laboratory / AECOM; [2]US Dept of Energy, National Energy Technology Laboratory

10:00 AM Break

10:20 AM
Large Scale Dislocation Dynamics Simulations of Strain Hardening of Ni Microcrystals under Tensile Loading: *Satish Rao*[1]; Christopher Woodward[2]; Brahim Akdim[1]; Edwin Antillon[1]; Triplicane Parthasarathy[1]; Jaafar El-Awady[3]; Dennis Dimiduk[4]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]Johns.Hopkins University; [4]Ohio State University

10:40 AM
Mesoscale Modeling of Mixed-type Dislocations in Al: *Shuozhi Xu*[1]; Jaber Mianroodi[2]; Abigail Hunter[3]; Irene Beyerlein[1]; Bob Svendsen[2]; [1]University of California, Santa Barbara; [2]RWTH Aachen; [3]Los Alamos National Lab

11:00 AM
Submicron Scale {1012} Tensile Twin Embryo Size in Magnesium and its Dependence on Neighboring Grains: *M. Arul Kumar*[1]; Irene Beyerlein[2]; Carlos Tome[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

11:20 AM
Minimal Continuum Dislocation Dynamics Model for Slip in BCC Metals: *Roman Gröger*[1]; Vaclav Vitek[2]; Turab Lookman[3]; [1]CEITEC IPM, Academy of Sciences of the Czech Republic; [2]University of Pennsylvania; [3]Los Alamos National Laboratory

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design of Materials: Case Studies

*Sponsored by:*Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Tuesday AM
March 13, 2018
Room: 131C
Location: Phoenix Convention Center

Session Chairs: Jiadong Gong, Questek; Hao Chen, Tsinghua University

8:30 AM Invited
Materials-by-design: A Mechanism-based Approach: *K Ramesh*[1]; [1]Johns Hopkins University

9:00 AM Invited
Computational Design of Metastable Austenite in the Advanced Transformation Induced Plasticity Steels: *Hao Chen*[1]; Zongbiao Dai[1]; Chi Zhang[1]; Jie Su[1]; Zhigang Yang[1]; Boning Zhang[1]; [1]Tsinghua University

9:30 AM
Materials Design Simulator for Al-Ce Based Alloys: *Aurelien Perron*[1]; Vincenzo Lordi[1]; Orlando Rios[2]; David Weiss[3]; Scott McCall[1]; Patrice Turchi[1]; [1]Lawrence Livermore National Laboratory; [2]Oak Ridge National Laboratory; [3]Eck Industries

9:50 AM
Investigation of Order-disorder Transition in Multi-principal-element Alloys: *Xuejun Huang*[1]; Jiashi Miao[1]; Maryam Ghazisaeidi[1]; Alan Luo[1]; [1]The Ohio State University

10:10 AM Break

10:30 AM Invited
ICME-Based Computational Materials Genomic Design: *Jiadong Gong*[1]; Greg Olson[1]; [1]QuesTek Innovations

11:00 AM
Searching for Corrosion Resistant Mg Alloys Using Genetic Algorithms: *Joshua Paul*[1]; Krista Limmer[1]; Mark Tschopp[1]; Santanu Chaudhuri[2]; [1]U.S. Army Research Laboratory; [2]University of Illinois Urbana-Champaign

11:20 AM
Ultralight Metallic/Composite Materials with Architected Cellular Structures: *Maryam Tabatabaei*[1]; Satya N. Atluri[1]; [1]Texas Tech University

11:40 AM
Effect of Stability of Critical Phases in Nickel-based Superalloys: Combined Machine Learning and CALPHAD Approach: *Rajesh Jha*[1]; George Dulikravich[1]; [1]Florida International University

Computational Materials Discovery and Optimization – Bulk Materials: Thermal, Magnetic, and Optical 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, Arizona State University; Arunima Singh, Lawrence Berkeley National Laboratory; Eric Homer, Brigham Young University; Francesca Tavazza, National Institute of Standards and Technology

Tuesday AM
March 13, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chairs: Tim Muller, Johns Hopkins University; Anubhav Jain, Lawrence Berkeley National Laboratory

8:30 AM
A Materials-informatics Approach for Finding New Hard-magnetic Phases: *Johannes Möller*[1]; Georg Krugel[1]; Wolfgang Körner[1]; Daniel Urban[1]; Christian Elsässer[1]; [1]Fraunhofer IWM

8:50 AM
Design Concepts of Optimized MRI Magnet by COMSOL Multiphysics Simulation: *Akash Oraon*[1]; Sudipto Ghosh[1]; Shampa Aich[1]; Gautam Sinha[2]; [1]IIT Kharagpur; [2]Raja Ramanna Centre for Advanced Technology, Indore 452013, India

9:10 AM
Dual Band Metamaterial Perfect Absorber Based on Mie Resonances: *Xiaoming Liu*[1]; Gaowu Qin[1]; [1]Northeastern University

9:30 AM
Reentrant Melting of Sodium, Magnesium and Aluminum and Possible Universal Trend: *Qijun Hong*[1]; Axel van de Walle[1]; [1]Brown University

9:50 AM
Search for Rare-Earth Free Permanent Magnets in Fe and Co Based Compounds by Adaptive Genetic Algorithm: Xin Zhao[1]; *Cai-Zhuang Wang*[1]; Balamurugan Balasubramanian[2]; David Sellmyer[2]; Manh Cuong Nguyen[1]; Kai-Ming Ho[1]; [1]Ames Laboratory and Department of Physics and Astronomy, Iowa State University; [2]Nebraska Center for Materials and Nanoscience and Department of Physics and Astronomy, University of Nebraska

10:10 AM Break

10:30 AM Invited
Molecular Crystal Structure Prediction with Gator and Genarris: *Noa Marom*[1]; [1]Carnegie Mellon University

11:00 AM
Determination of Thermal Transport in Solids and Liquids by Non-equilibrium Molecular Dynamics Simulations: Jonathan Severin[1]; *Philippe Jund*[1]; Sophie Loehlé[2]; [1]University of Montpellier; [2]Total

11:20 AM
Economic Analysis of National Needs for Technology Infrastructure to Support the Materials Genome Initiative: *Troy Scott*[1]; Alan O'Connor[1]; Gregory Tassey[2]; Amanda Walsh[1]; Benjamin Anderson[1]; [1]RTI International; [2]University of Washington, Economic Policy Research Center

Computational Materials Science and Engineering for Nuclear Energy – Structural Materials I

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Tuesday AM
March 13, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Xian-Ming Bai, Virginia Tech ; Estelle Meslin, CEA

8:30 AM Invited
Fundamentals of Energy Dissipation and Defect Energetics of Maximally Disordered Alloys: *Malcolm Stocks*[1]; Sai Mu[1]; Shijun Zhao[1]; Raina Olsen[1]; German Samolyuk[1]; Bennet Larson[1]; Thom Berlijn[1]; Sebastian Wimmer[1]; Sergiy Mankovsky[1]; Hubert Ebert[1]; Biswanath Dutta[1]; Tilmann Hickel[1]; [1]Oak Ridge National Laboratory

9:00 AM
Density Functional Theory Simulations of Clusters in Reactor Pressure Vessel Steels: *Thomas Whiting*[1]; Daniel King[1]; Patrick Burr[2]; Mark Wenman[1]; [1]Imperial College London; [2]University of New South Wales

9:20 AM
Molecular Dynamics Study of Irradiation Damage in Nano-grain Sized Polycrystal: *Peyman Saidi*[1]; Cong Dai[1]; Zhongwen Yao[1]; Mark Daymond[1]; [1]Queen's University

9:40 AM
Ab Initio Modeling of Vacancy-type Defects in a High Entropy Alloy: *Congyi Li*[1]; George Stocks[2]; Brian Wirth[3]; Steve Zinkle[3]; [1]Bredesen Center; [2]Oak Ridge National Lab; [3]University of Tennessee, Knoxville

10:00 AM Break

10:20 AM
Calculating Free Energies of Metal-He Interfaces from Atomic Models: *Sanket Navale*[1]; Michael Demkowicz[2]; [1]Massachusetts Institute of Technology; [2]Texas A&M University

10:40 AM
Simulation of Phosphorous Migration to Grain-boundary by Molecular Dynamics: *Ken-ichi Ebihara*[1]; Tomoaki Suzudo[1]; Masatake Yamaguchi[1]; [1]Japan Atomic Energy Agency

11:00 AM
Rate Theory Modeling of Fission Gas Behavior in Ion Implantation Experiment: *Xin Xie*[1]; Wenhua Zhang[1]; Yedong Gao[1]; Jing Liu[1]; Hang Zang[1]; Wenbo Liu[1]; Bo Zhang[1]; Di Yun[1]; [1]Xi'an Jiaotong University

11:20 AM Invited
Radiation Damage in Carbon-based Materials: *Nigel Marks*[1]; [1]Curtin University

Computational Thermodynamics and Kinetics – Transport and Structure

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Tuesday AM
March 13, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: Elif Ertekin, University of Illinois

8:30 AM Invited
Non-harmonic Modeling of Materials: *Olle Hellman*[1]; [1]California Institute of Technology

9:00 AM
Numerical Evaluation of Ionic Conducting Properties of $SrTi_{1-x}Fe_xO_{3-\delta}$ Solid Solutions: *Namhoon Kim*[1]; Bin Ouyang[1]; Nicola Perry[2]; Elif Ertekin[1]; [1]University of Illinois; [2]Kyushu University

9:20 AM
A Simple Local Expression for the Prefactor in Transition State Theory: *Sara Kadkhodaei*[1]; Axel van de Walle[1]; [1]Brown University

9:40 AM
Thermal Magnon-phonon Interaction in Pd_3Fe: *Fred (Chae-Reem) Yang*[1]; Olle Hellman[1]; Matthew Lucas[2]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Laboratory

10:00 AM Break

10:20 AM Invited
Advances in Computing Charge Carrier Dynamics from First Principles: *Marco Bernardi*[1]; [1]Caltech

10:50 AM
Extension of the Stability Range of Tau-10 Phase in Al-Fe-Si Alloy: Cluster Expansion Approach: *Biswas Rijal*[1]; Richard Hennig[1]; Michele Manuel[1]; Sujeily Soto[1]; [1]University of Florida

11:10 AM
First-principles Calculations of Bulk and Interfacial Thermodynamic Properties for Al-Li and Al-Cu-Li Alloys: *Bi-Cheng Zhou*[1]; Kyoungdoc Kim[1]; Christopher Wolverton[1]; [1]Northwestern University

11:30 AM
Oxygen Diffusion around (10-12) Twin Boundary in Ti: *Mohammad Shahriar Hooshmand*[1]; Maryam Ghazisaeidi[1]; [1]The Ohio State University

Coupling Advanced Characterization and Modeling Tools for Understanding Fundamental Phase Transformation Mechanisms: An MPMD Symposium in Honor of Hamish Fraser – Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Gregory Thompson, University of Alabama; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; Soumya Nag, GE Global Research; Rajarshi Banerjee, University of North Texas

Tuesday AM
March 13, 2018
Room: 127A
Location: Phoenix Convention Center

Session Chair: Rajarshi Banerjee, University of North Texas

8:30 AM Introductory Comments Symposium Organizers

8:35 AM Invited
Fun-research and Some Exciting Results (FRASER): *Michael Loretto*[1]; [1]University of Birmingham

9:05 AM Invited
Phase Stability of Nanostructured Steel Studied by Atom Probe Tomography and the Defactant Concept: *Reiner Kirchheim*[1]; [1]University of Goettingen

9:35 AM Invited
Lattice Site Correspondence in Active Eutectoid Decomposition in Ti-Cu and Zr-Cu Alloys: Harish Donthula[1]; Raghvendra Tewari[1]; Rajarshi Banerjee[2]; Gautam Dey[1]; *Srikumar Banerjee*[1]; [1]Bhabha Atomic Research Centre; [2]University of North Texas

10:05 AM Break

10:25 AM Invited
Steel Ab Initio: Atomic Scale Characterization and Modeling in the Development of High Strength Steels: *J. Mayer*[1]; M. Beigmohamadi[2]; M. Lipinska-Chwalek[1]; Tilmann Hickel[3]; T. Scheu[4]; Christian Liebscher[4]; Dierk Raabe[4]; James Wittig[5]; [1]RWTH Aachen University; [2]Ernst Ruska Centre; [3]Max-Planck-Institut fuer Eisenforschung GmbH; [4]Max-Planck-Institut für Eisenforschung; [5]Vanderbilt University

10:55 AM Invited
Thermoelastic Equilibrium and Superfunctionality of Pre-transitional Materials: Superelasticity, Supermagnetostriction, Invar and Elinvar Effects: *Armen Khachaturyan*[1]; Weifeng Rao[2]; Ye-Chuan Xu[2]; John Morris[2]; [1]Rutgers University; [2]Nanjing University of Information Science and Technology, Nanjing 210044, China

11:25 AM Invited
Phase Separation and Atomic Ordering in Mixed III – V Epitaxial Layers: *Subhash Mahajan*[1]; [1]University of California

Coupling Experiments and Modeling to Understand Plasticity and Failure – Plasticity Induced Damage

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

Tuesday AM
March 13, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chairs: Matt Miller, Cornell University; Bill Musinski, Air Force Research Laboratory,

8:30 AM Invited
Coupled Experiment and Modelling to Study Grain Orientation and Interaction Effects. Part 1: *Jette Oddershede*[1]; Grethe Winther[2]; [1]Xnovo Technology, Denmark; [2]Department of Mechanical Engineering, Technical University of Denmark

8:55 AM Invited
Coupled Experiment and Modelling to Study Grain Orientation and Interaction Effects. Part 2: *Grethe Winther*[1]; Jette Oddershede[2]; [1]Technical University of Denmark; [2]Xnovo Technology, Denmark

9:20 AM
On the Role of Casting Pores in the Fatigue Damage Process of a Cast Aluminium Alloy: *Marcel Wicke*[1]; Martin Luetje[1]; Inigo Bacaicoa[1]; Angelika Brueckner-Foit[1]; [1]University of Kassel

9:40 AM Invited
Simulation Study on Plasticity and Fracture in Aluminum Based on Real Microstructures: *Martin Diehl*[1]; Pratheek Shanthraj[1]; Franz Roters[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

10:05 AM Break

10:25 AM Invited
Using 3D Microstructure Characterization to Study the Mechanics of Polycrystalline Materials: *Henry Proudhon*[1]; Wolfgang Ludwig[2]; Jean-Charles Stinville[3]; William Lenthe[3]; McLean Echlin[3]; Tresa Pollock[3]; [1]MINES ParisTech; [2]Université de Lyon; [3]University of California, Santa Barbara

10:50 AM Invited
Challenges with Virtual Sample Instantiation for Prediction of Strain Localization and Crack Initiation in Polycrystalline Ni- and Ti-base Alloys: J.C. Stinville[1]; McLean Echlin[1]; William Lenthe[1]; Toby Francis[1]; *Tresa Pollock*[1]; [1]University of California, Santa Barbara

11:15 AM Invited
Integrating High Energy Diffraction Microscopy Data with Crystal Plasticity Models for Strength and Damage: *Joel Bernier*[1]; Darren Pagan[2]; Nathan Barton[1]; Paul Shade[3]; William Musinski[3]; Todd Turner[3]; [1]Lawrence Livermore National Laboratory; [2]Cornell University; [3]Air Force Research Laboratory, WPAFB

11:40 AM
Microstructure Sensitive Crack Nucleation in PM Ni Alloys: *Bo Chen*[1]; Jun Jiang[1]; Fionn Dunne[1]; [1]Imperial College London

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 3A: Characterising Strain Localization in Ni-based Superalloys.
3B Characterization & Understanding of Deformation in Ni-based Superalloys.

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Tuesday AM
March 13, 2018
Room: 126A
Location: Phoenix Convention Center

Session Chairs: Mark Hardy, Rolls-Royce plc; Kinga Unocic, Oak Ridge National Laboratory

8:30 AM Invited
Novel Techniques for Investigation of Cyclic Plasticity in Nickel Base Polycrystals: *J.C. Stinville*[1]; W.C. Lenthe[1]; M.P. Echlin[1]; P.G. Callahan[1]; T.M. Pollock[1]; [1]University of California, Santa Barbara

9:00 AM
High Resolution Deformation Mapping Studies of the Deformation of a Ni Superalloy: *Joao Fonseca*[1]; Allan Harte[1]; Thomas Armitage[1]; Alberto Orozco-Caballero[1]; [1]The University of Manchester

9:20 AM
Benchmarking Multi-scale Models with Microtensile Experiments and 3D Microstructural Characterization of René 88DT: *David Eastman*[1]; Paul Shade[2]; Michael Uchic[2]; George Weber[1]; Akbar Bagri[1]; Somnath Ghosh[1]; Will Lenthe[3]; Tresa Pollock[3]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]AFRL; [3]University of California, Santa Barbara

9:40 AM
Tailoring the Properties of a Ni-based Superalloy via Modification of the Forging Process: An ICME Approach to Fatigue Performance: *John Rotella*[1]; Martin Detrois[2]; Sammy Tin[3]; Michael Sangid[1]; [1]Purdue University; [2]ORISE, National Energy Technology Laboratory; [3]Illinois Institute of Technology

10:00 AM Break

10:20 AM Invited
New Insights into Rate Limiting Deformation Processes in Ni-base Superalloys: Tim Smith[1]; Don McAllister[2]; Jiashi Miao[2]; Maryam Ghazisaeidi[2]; Stephen Niezgoda[2]; Yunzhi Wang[2]; *Michael Mills*[2]; [1]NASA Glenn Research Center; [2]The Ohio State University

10:50 AM Invited
Deformation Mechanisms in Polycrystalline Superalloys: *Catherine Rae*[1]; Regina Schlütter[1]; Yuan Wang-Koh[1]; Olivier Messe[1]; [1]University of Cambridge

11:20 AM
Effects of Strain Rate and Temperature Variation on Dislocation Structures and Faults in a Polycrystalline Ni-based Superalloy: *Regina Schlütter*[1]; Olivier Messé[1]; Enrique Galindo-Nava[1]; Thomas Jackson[2]; Catherine Rae[1]; [1]University of Cambridge; [2]Rolls-Royce plc

11:40 AM
Influence of Long Term Ageing on Deformation and Damage Behavior in Alloy 617: *Guocai Chai*[1]; Guocai Chai[2]; Mattias Calmunger[1]; Sten Johansson[1]; Johan Moverare[1]; [1]Linköping University; [2]Sandvik Materials Technology

Design for Mechanical Behavior of Architectured Materials via Topology Optimization – Design and Topology Optimization (TO) Considering Manufacturability, Microstructure, and Surface Effects

Sponsored by: TMS Structural Materials Division, TMS: Additive Manufacturing Bridge Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Natasha Vermaak, Lehigh University; Andrew Gaynor, U.S. Army Research Laboratory

Tuesday AM
March 13, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: Andrew Gaynor, ARL

8:30 AM Invited
Incorporating Material Heterogeneity in Automated Design Tools: *Michael Groeber*[1]; Edwin Schwalbach[1]; Michael Uchic[1]; Jonathan Miller[1]; Paul Shade[1]; William Musinski[1]; Sean Donegan[1]; Daniel Sparkman[1]; [1]AFRL

9:10 AM
Realizing Optimized Mesoscale 3D Architected Material Designs via Nanoparticle Assembly by Pointwise Spatial Printing: *Md Sadeq Saleh*[1]; Chunshan Hu[2]; Rahul Panat[1]; [1]Carnegie Mellon University; [2]Washington State University

9:40 AM
Design of Functionally Graded Microstructures with Manufacturability: *Jaejong Park*[1]; Alok Sutradhar[1]; Jami J. Shah[1]; [1]Ohio State University

10:10 AM Break

10:30 AM
Design for Discovery: Integrated Computational Design & Additive Manufacturing of Mechanical Metastructures with a Parametric Level-set Based Approach: *Shikui Chen*[1]; [1]State University of New York at Stony Brook

11:00 AM
Efficient Microstructural Design: A Topological Sensitivity Approach: *Krishnan Suresh*[1]; [1]University of Wisconsin, Madison

11:30 AM
Topology Optimization for Sliding Abrasive Wear of Bi-material Composites: *Xiu Jia*[1]; Natasha Vermaak[1]; [1]Lehigh University

Dynamic Behavior of Materials VIII – Dynamic Response of BCC Materials

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Tuesday AM
March 13, 2018
Room: 127B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Orientation Dependence of the Shock Response and Spall Fracture of Tantalum: *David Jones*[1]; Saryu Fensin[1]; Carl Trujillo[1]; George Gray[1]; [1]Los Alamos National Laboratory

8:50 AM
The Influence of Grain Boundary Orientation on the Strength and Failure of Tantalum: *Eric Hahn*[1]; Saryu Fensin[1]; Tim Germann[1]; [1]Los Alamos National Laboratory

9:10 AM
Improving High Strain-rate Strength Models of Tantalum Using Atomistic Simulations: *Alexander Moore*[1]; Hojun Lim[1]; Justin Brown[1]; J. Matthew Lane[1]; [1]Sandia National Laboratories

9:30 AM Invited
Taylor Impact Tests of Single- and Polycrystalline Tantalum: *Hojun Lim*[1]; Jay Carroll[1]; Corbett Battaile[1]; Hyuk Jong Bong[2]; Shuh-Rong Chen[3]; Matthew Lane[1]; [1]Sandia National Laboratories; [2]Pacific Northwest National Laboratory; [3]Los Alamos National Laboratory

10:10 AM Break

10:30 AM Invited
Using Taylor Cylinder Impact Experiments to Investigate Dynamic Behaviors of Materials: *Shuh Rong Chen*[1]; Daniel Martinez[1]; Carl Trujillo[1]; George (Rusty) Gray[1]; [1]Los Alamos National Laboratory

11:10 AM
Shear Response of High-purity Tantalum during Quasi-static and Dynamic Loading: *Thomas Nizolek*[1]; James Valdez[1]; Cheng Liu[1]; George Gray[1]; [1]Los Alamos National Laboratory

11:30 AM
Quantifying the Role of Grain Boundaries in the Dynamic Mechanical Performance of Additively Manufactured Pure Tantalum through Micropillar Compression and Spherical Nanoindentation Experiments: *Jordan Weaver*[1]; David Jones[1]; Nan Li[1]; Saryu Fensin[1]; G.T. Gray[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

Electrode Technology Symposium for Aluminum Production – Joint Session with Aluminum Reduction

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xianan Liao, Elkem Carbon

Tuesday AM
March 13, 2018
Room: 222C
Location: Phoenix Convention Center

Session Chair: Egil Skybakmoen, Sintef

8:30 AM Introductory Comments

8:35 AM
Formation of Aluminium Carbide in Hall-Héroult Electrolysis Cell Environments: Bronislav Novak[1]; *Arne Ratvik*[2]; Zhaohui Wang[2]; Tor Grande[1]; [1]Norwegian University of Science and Technology; [2]SINTEF

9:00 AM
The Research and Trial of the Aluminum Electrolysis Cells with Current Flowing Out from the Bottom: *Dongfang Zhou*[1]; Yafeng Liu[1]; Shaohu Tao[1]; [1]Shenyang Aluminum & Magnesium Engineering & Research Institute Co.Ltd

9:25 AM
Laboratory Study of the Impact of Cathode Grade on the Formation of Deposits on the Aluminium Cathode Interface in Hall-Héroult Cells: Jean-René Landry[1]; Mojtaba Fallah Fini[1]; *Gervais Soucy*[1]; Martin Desilets[1]; Patrick Pelletier[2]; Loig Rivoaland[3]; Didier Lombard[2]; [1]Université de Sherbrooke; [2]Rio Tinto; [3]Carbone Savoie

9:50 AM
Understanding the Anode Porosity as a Means for Improved Aluminium Smelting: *Epma Putri*[1]; Geoffrey Brooks[2]; Graeme Snook[3]; Stein Rørvik[4]; Lorentz Petter Lossius[5]; Ingo Eick[6]; [1]Swinburne University of Technology; [2]Swinburne University of Technology; [3]CSIRO, Mineral Resources; [4]SINTEF Materials & Chemistry; [5]Hydro Aluminium AS; [6]Hydro Aluminium Deutschland GmbH

10:15 AM Break

10:30 AM
Effect of Changes in Anode Top Cover Composition on Anode Butt Quality: *Ali Jassim*[1]; Edouard Mofor[1]; Jamil Wazir Eddin[1]; Shane Polle[1]; Daniel Whitfield[1]; [1]Emirates Global Aluminium

10:55 AM
Inert Anodes – the Blind Alley to Environmental Friendliness?: *Asbjorn Solheim*[1]; [1]SINTEF

11:20 AM
Role of the Porosity of Carbon Anodes in the Nucleation and Growth of Gas Bubbles: *Sandor Poncsak*[1]; Laszlo Kiss[1]; [1]University of Quebec at Chicoutimi

Energy Technologies and CO_2 Management Symposium – Novel Energy Technologies

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Donna Guillen, Idaho National Laboratory; Tao Wang, Nucor Steel; Neale Neelameggham, Ind LLC; John Howarter, Purdue University

Tuesday AM
March 13, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: Xiaobo Chen, RMIT, Australia; Jian Li Kang, Tianjin Polytechnic University

8:30 AM Invited
Failure Behavior of Electrode Materials: *Cheng Yan*[1]; Hansinee Sitinamaluwa[1]; [1]Queensland University of Technology

8:50 AM Invited
Flexible and Hierarchical Nano-porous Catalyst with Efficient for Hydrogen Evolution Reaction: *Jianli Kang*[1]; Guoliang Zhang[1]; Zhijia Zhang[1]; Qin Huang[1]; [1]Tianjin Polytechnic University

9:10 AM Invited
Guided Evolution of Bulk Metallic Glass Nanostructures: A Platform for Designing 3D Electrocatalytic Surfaces: *Gustavo Doubek*[1]; [1]University of Campinas

9:30 AM Invited
Stifling Magnesium Corrosion via a Novel Anodic Coating: *Xiaobo Chen*[1]; [1]RMIT

9:50 AM Break

10:10 AM
2D Metal Oxide Nanosheets for Sustainable Applications: *Ziqi Sun*[1]; [1]Queensland University of Technology

10:30 AM
Vertically Aligned Ferroelectric KNbO3 Nanowire Arrays for Solar Energy Conversion: *Shun Li*[1]; Boping Zhang[2]; Federico Rosei[3]; [1]Southern University of Science and Technology; [2]University of Science & Technology Beijing; [3]INRS

10:50 AM
Flow Characteristic of Two-phase Bubble Reactor for Slag Waste Heat Recovery: *Wenjun Duan*[1]; [1]Northeastern University

11:10 AM
Two-dimensional Metal Oxide-based Nanomaterials for Energy Storage Devices: *Jun Mei*[1]; Yuanwen Zhang[1]; Ziqi Sun[1]; [1]Queensland University of Technology

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Multi-mechanical Interactions During Extreme Environment Fatigue Loadings

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday AM
March 13, 2018
Room: 125B
Location: Phoenix Convention Center

Session Chair: Jean-Briac le Graverend, Texas A&M University

8:30 AM Keynote
From the Mechanistic Modelling of Fatigue Crack Formation to the Complexity of Component Fatigue Life Assessment: *Esteban Busso*[1]; [1]ONERA

9:10 AM
Investigation of Slip Transfer across Phase Boundaries with Application to Cold Dwell Facet Fatigue: *Zebang Zheng*[1]; Daniel Balint[1]; Fionn Dunne[1]; [1]Imperial College London

9:30 AM
Temperature and Microstructural Dependence of Dwell Fatigue in Dual-phase Titanium Alloys: *Michelle Harr*[1]; Samantha Daly[2]; Adam Pilchak[3]; [1]University of Michigan; [2]University of California Santa Barbara; [3]Air Force Research Lab

9:50 AM
The Effect of Dwell on Fatigue Crack Growth in a Ti-6Al-2Sn-4Zr-6Mo Alloy: *Georgia Mills*[1]; Hangyue Li[2]; S. Williams[3]; P. Bowen[1]; [1]University of Birmingham; [2]The University of Birmingham; [3]Rolls-Royce plc

10:10 AM Break

10:30 AM
Characterization of Creep-fatigue Deformation in 9Cr-1MoV Steel and Weldments: *Harrison Whitt*[1]; Tyler Payton[1]; Wei Zhang[1]; Michael Mills[1]; [1]The Ohio State University

10:50 AM
Modeling of Creep-fatigue Crack Growth in Steels for High Temperature Structural Applications: Jose J. Ramirez[1]; *Gabriel P. Potirniche*[1]; Harrison Pugesek[1]; Martin Taylor[1]; Robert Stephens[1]; Indrajit Charit[1]; [1]University of Idaho

11:10 AM
Thermal Fatigue Behavior of High Cr Roller Steel: *Goran Kugler*[1]; David Bombac[2]; Milan Tercelj[1]; [1]University of Ljubljana, NTF-OMM; [2]University of Cambridge

Fracture: 65 Years after the Weibull Distribution and the Williams Singularity – Session III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Brad Boyce, Sandia National Laboratories; Ellen Cerreta, Los Alamos National Laboratory; Jacob Hochhalter, NASA LaRC; Jonathan Zimmerman, Sandia National Laboratories

Tuesday AM
March 13, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chairs: Jacob Hochhalter, NASA; Ashley Spear, University of Utah

8:30 AM Invited
Trends in Microstructure-sensitive Computational Approaches to Fatigue Cracking: *David McDowell*[1]; [1]Georgia Institute of Technology

9:00 AM Invited
A Data-driven Approach to Predict Microstructurally Small Crack Evolution: Kyle Pierson[1]; Jacob Hochhalter[2]; P. Thomas Fletcher[1]; *Ashley Spear*[1]; [1]University of Utah; [2]NASA Langley Research Center

9:30 AM Invited
Composite Overwrapped Pressure Vessel (COPV) Life Test: *Richard Russell*[1]; David Dawicke[2]; Jacob Hochhalter[1]; [1]NASA; [2]Analytical Services and Materials, Inc.

10:00 AM Break

10:20 AM Invited
Forward Propagation of Random Microstructural Features for Reliability Estimates of Engineering Structures: *John Emery*[1]; Peter Coffin[1]; Brian Robbins[1]; Samuel Bowie[2]; Jay Carroll[1]; [1]Sandia National Laboratories; [2]Georgia Tech

10:50 AM
Grain and Sub-grain Level Strains ahead of an Evolving Fatigue Short Crack as Measured by X-ray Techniques: *Diwakar Naragani*[1]; Michael Sangid[1]; Paul Shade[2]; Peter Kenesei[3]; Hemant Sharma[3]; [1]Purdue University; [2]Air Force Research Laboratory; [3]Argonne National Laboratory

11:10 AM Invited
Using R-curves to Predict Fatigue Behavior in Crack Bridging Toughened Ceramics: *Jamie Kruzic*[1]; [1]UNSW Australia

11:40 AM Invited
Size, Temperature, Environmental Effects on Brittle Fracture (BDT): *William Gerberich*[1]; Nathan Mara; [1]University of Minnesota

Frontiers in Advanced Functional Thin Films and Nanostructured Materials – Session III

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Ritesh Sachan, Army Research Office; Srinivasa Rao Singamaneni, The University of Texas at El Paso; Haiyan Wang, Purdue University; Nuggehalli Ravindra, New Jersey Institute of Technology; Raj Singh, Oklahoma State University; Amit Pandey, LG Fuel Cell Systems Inc.

Tuesday AM
March 13, 2018
Room: 103A
Location: Phoenix Convention Center

Session Chairs: Amit Pandey, LG-Fuel Cell Systems; R. Singh, Oklahoma State University

8:30 AM Invited
Stabilization of Nanocrystalline Grain Size at Elevated Temperatures: Theory and Experiment: *Carl Koch*[1]; [1]North Carolina State University

8:55 AM Invited
Superlattices of Heusler Alloys for Engineering Magnetism and Electronic States: *Frank Tsui*[1]; [1]UNC-CH

9:20 AM Invited
Structures and Mechanical Behavior of Metal-metal Nitride Nanolayered Films: *Amit Misra*[1]; [1]University of Michigan

9:45 AM
Hydrogen Plasma Annealing of E-Beam Evaporated SiO2 Tunnel Barriers: *Matthew Filmer*[1]; Gregory Snider[1]; Alexei Orlov[1]; [1]University of Notre Dame

10:05 AM Break

10:20 AM Invited
Thin Film and Coatings for Biomaterials Applications: *Adele Carradò*[1]; [1]Université de Strasbourg IPCMS

10:45 AM Invited
Nanoscience and Nanotechnology Using Energetic Ion Beams/Gamma Radiation/Lasers: *Anand Pathak*[1]; S. V. S. Rao[1]; V. S. Vendamani[1]; M. Dhanunjaya[1]; S. Rao[1]; [1]University of Hyderabad

11:05 AM
Engineering Elastic Strain Gradients to Tune the Electrical Properties of Semiconductors for Thermoelectric Applications: *Eric Yao*[1]; Gyuseok Kim[2]; Brian Piccione[2]; Jungho Shin[2]; Daniel Gianola[1]; [1]University of California, Santa Barbara; [2]University of Pennsylvania

11:25 AM
An Investigation of the Relationship between Mechanical and Optical Properties of Transparent Metal Oxide Multilayers: *Chelsea Appleget*[1]; Andrea Hodge[1]; [1]University of Southern California

11:45 AM
Unravelling Defects in Hybrid Perovskite Solar Cell Structures: *C. Saiz*[1]; L. M. Martinez[1]; Srinivasa Rao Singamaneni[1]; [1]The University of Texas at El Paso

High Entropy Alloys VI – Structures and Mechanical Properties I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Tuesday AM
March 13, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: Dan Miracle, AF Research Laboratory; Carl Lundin, The University of Tennessee, Knoxville

8:30 AM Invited
Influence of Crystal Defects upon Phase Stability of High Entropy Alloys: *Mingwei Chen*[1]; [1]Johns Hopkins University

8:50 AM Invited
Mechanical Properties and Strengthening Mechanisms of Concentrated Solid Solution and High Entropy Alloys: *Hongbin Bei*[1]; Zhenggang Wu[1]; Yanfei Gao[2]; [1]Oak Ridge National Laboratory; [2]Oak Ridge National Laboratory and The University of Tennessee

9:10 AM Keynote
High Entropy Alloys, High throughput Experiments and High Temperature Materials: *Dan Miracle*[1]; [1]AF Research Laboratory, Materials and Manufacturing Directorate

9:30 AM Invited
Solid Solution Softening of an Equiatomic Ternary Refractory Alloy by Additional Alloying with a Fourth Element: *Oleg Senkov*[1]; Satish Rao[1]; Christopher Woodward[1]; Adam Pilchak[1]; S. Semiatin[1]; [1]Air Force Research Laboratory

9:50 AM Invited
Effects of Chemical Disorder on Radiation Response in Medium– and High–entropy Alloys: *Yanwen Zhang*[1]; Gihan Velisa[1]; Shijun Zhao[1]; Mohammad Ullah[1]; Ke Jin[1]; Chenyang Lu[2]; Fuxiang Zhang[1]; Hongbin Bei[1]; Lumin wang[2]; William Weber[3]; [1]Oak Ridge National Laboratory; [2]University of Michigan; [3]University of Tennessee

10:10 AM Break

10:25 AM Invited
Continued and Expanded Studies on Fusion Welds in High Entropy Alloys: *Carl Lundin*[1]; John Bohling[1]; Joshua Burgess[2]; Cameron Hale[1]; Maneel Bharadwaj[3]; Peter Liaw[1]; [1]University of Tennessee; [2]GE Power; [3]John Deere

10:45 AM Invited
Evolution of Microstructure, Texture and Strength during Severe Plastic Deformation of CrMnFeCoNi High-entropy Alloy: *Werner Skrotzki*[1]; Aurimas Pukenas[1]; Bertalan Joni[2]; Eva Odor[2]; Tamas Ungar[2]; Anton Hohenwarter[3]; Reihard Pippan[3]; Easo George[4]; [1]Dresden University of Technology; [2]Eötvös University Budapest; [3]Montanuniversität Leoben; [4]Oak Ridge National Laboratory

11:05 AM
Orientation Dependence of the Mechanical Response and Microstructural Evolution of NiCoCr Single Crystal Medium Entropy Alloys: *Benay Uzer*[1]; Sezer Picak[2]; Jun Liu[2]; Demircan Canadinc[1]; Yuri I. Chumlyakov[3]; Ibrahim Karaman[2]; [1]Koc University; [2]Texas A&M University; [3]Tomsk State University

11:25 AM Invited
Processing, Structure and Tensile Behavior of a Nano-lamellar Eutectic AlCoCrFeNi2.1 High Entropy Alloy: *Pinaki Bhattacharjee*[1]; Irfan Wani[1]; Tilak Bhattacharjee[2]; Saad Sheikh[3]; Sheng Guo[3]; Nobuhiro Tsuji[2]; [1]IIT hyderabad; [2]Kyoto University; [3]Chalmers University

11:45 AM Invited
Carbon and Nitrogen Co-doping in an Equiatomic High-entropy Alloy: *Zhiming Li*[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – CALPHAD Methods

*Sponsored by:*TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Tuesday AM
March 13, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chairs: Michael Gao, National Energy Technology Laboratory; Carelyn Campbell, National Institute of Standards and Technology

8:30 AM Invited
Software Tools for High-throughput CALPHAD from First-principles Data: *Axel van de Walle*[1]; Ruoshi Sun[1]; Qijun Hong[1]; Sara Kadkhodaei[1]; [1]Brown University

9:00 AM Invited
Computational Design of High Entropy Alloys: CALPHAD and Atomistic Simulation: Won-Mi Choi[1]; *Byeong-Joo Lee*[1]; [1]Pohang University of Science and Technology

9:30 AM Invited
CALPHAD, Are We There Yet?: *Ursula Kattner*[1]; [1]National Institute of Standards and Technology

10:00 AM Break

10:20 AM Invited
Serving up CALPHAD Data to Build Better Databases and Design New Materials: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

10:50 AM Invited
Computational Thermodynamics in the Y-Si-C-H-O System: *Hans Seifert*[1]; [1]Karlsruhe Institute of Technology (KIT)

11:20 AM Invited
Thermodynamic and Kinetic Modeling of Solidification and Precipitation Microstructure in Magnesium Alloys: Jiashi Miao[1]; Chuan Zhang[2]; Weihua Sun[1]; Andrew Klarner[1]; Fan Zhang[2]; *Alan Luo*[1]; [1]The Ohio State University; [2]CompuTherm LLC

11:50 AM Invited
Accurate Energetics beyond the Semilocal Density Functional Theory: Focusing on Transition Metal Disulfides and Cu2ZnSnS4-related Sulfides: *Shun-Li Shang*[1]; Yi Wang[1]; Tim Anderson[2]; Zi-Kui Liu[1]; [1]Pennsylvania State University; [2]University of Florida

Integrative Materials Design III: Performance and Sustainability – Advanced Materials Characterization & Multi-scale Computational Modeling for Integrative Design and Reliability

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Tuesday AM
March 13, 2018
Room: 132A
Location: Phoenix Convention Center

Session Chairs: Corbett Battaile, Sandia National Laboratories; Tiantian Zhang, Worcester Polytechnic Institute

8:30 AM Invited
The Hierarchy of Microstructure Parameters Affecting Tensile Ductility in Cast and Forged Ti-834 Alloy during High Temperature Exposure: *Soran Birosca*[1]; [1]Swansea University

8:50 AM
Plasticity in Textured Ti-6Al-4V under Tensile and Dwell-fatigue Loading: *Tiantian Zhang*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

9:10 AM Invited
3D Tomography for Graphite Morphology Characterizations in Cast Irons Using High-energy X-rays: *Dileep Singh*[1]; Chih-Pin Chuang; John Hryn[1]; Jonathan Almer; Peter Kenesei; [1]Argonne National Laboratory

9:30 AM
In Situ Study of Strain Partitioning and Damage in Carbide Free Bainitic Steels Using Micro Digital Image Correlation: *Ankit Kumar*[1]; Aniruddha Dutta[2]; Roumen Petrov[3]; Jilt Sietsma[1]; [1]Delft University of Technology; [2]Max-Planck-Institut für Eisenforschung GmbH; [3]Ghent University

9:50 AM
Experimental and Computational Studies of Fatigue Crack Propagation in Cast Al-Si Alloys Containing Secondary Phases: *Tiantian Zhang*[1]; Anthony Spangenberger[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

10:10 AM Break

10:25 AM Invited
Constitutive Model Development and Validation via Mesoscale X-ray Diffraction Data: *Joel Bernier*[1]; Paul Shade[2]; Todd Turner[2]; Darren Pagan[3]; David Menasche[4]; [1]Lawrence Livermore National Laboratory; [2]Air Force Research Laboratory (WPAFB); [3]Cornell High Energy Synchrotron Source; [4]Hamiltonian Group, LLC

10:45 AM Invited
Insights into Multiscale Deformation Phenomena from In Situ TEM Nanomechnical Testing: *Andrew Minor*[1]; [1]University of California, Berkeley & LBL

11:05 AM Invited
Deformation Twinning as a Design Parameter for Magnesium Alloys: *Antonios Kontsos*[1]; [1]Drexel University

11:25 AM Invited
Heterogeneous Deformation in High Purity Niobium: *Thomas Bieler*[1]; Mingmin Wang[1]; Di Kang[1]; Derek Baars[1]; Aboozar Mapar[1]; Eureka Pai[1]; Tias Maiti[1]; Pulkit Garg[2]; Philip Eisenlohr[1]; Farhang Pourboghrat[3]; Kiran Solanki[2]; [1]Michigan State University; [2]Arizona State University; [3]The Ohio State University

11:45 AM
A Multi-scale Model for Plasticity in BCC Metals: *Corbett Battaile*[1]; Hojun Lim[1]; Christopher Weinberger[2]; [1]Sandia National Laboratories; [2]Colorado State University

Looking through the Kaleidoscope: Discovering Your Path to Leadership – Morning Session

Program Organizers: Emily Bautista, Virginia Tech; Mackenzie Jones, Virginia Tech; Thomas Maulbeck, Virginia Tech; Rose Roberts, Virginia Tech

Tuesday AM
March 13, 2018
Room: 124B
Location: Phoenix Convention Center

Session Chairs: Emily Bautista, Virginia Tech; Thomas Maulbeck, Virginia Tech; Mackenzie Jones, Virginia Tech

8:30 AM Invited
Materials Entrepreneurship as a Young Scientist: *Michael Gibson*[1]; [1]Desktop Metal

8:50 AM Invited
When to Step Up: *Amanda Krause*[1]; [1]Lehigh University; GrainBound, Inc.

9:10 AM Invited
Leadership within Different Spheres: *David Williams*[1]; [1]The Ohio State University

9:30 AM
Student Leadership: Igniting the Spark within Yourself and at Your University: *Emily Bautista*[1]; [1]Virginia Tech

9:50 AM Panel Discussion

10:10 AM Break

10:30 AM Invited
Technical Leadership: Risk vs Comfort: *Christopher O'Brien*[1]; [1]ATI Specialty Materials

10:50 AM Invited
Materials Design: Leading by Example: *Greg Olson*[1]; [1]Northwestern University

11:10 AM
Overcoming Challenges for Minorities in Leadership: *Michele Manuel*[1]; Martin Thuo[2]; [1]University of Florida; [2]Iowa State University

11:30 AM Panel Discussion

Magnesium Alloy Development: An LMD Symposium in Honor of Karl Kainer – Cast Alloys

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Alan Luo, The Ohio State University

Tuesday AM
March 13, 2018
Room: 223
Location: Phoenix Convention Center

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Alan Luo, The Ohio State University

8:30 AM Introductory Comments

8:35 AM Keynote
Solutions for Next Generation Automotive Lightweight Concepts Based on Material Selection and Functional Integration: *Horst Friedrich*[1]; Elmar Beeh[1]; Carmen Roider[1]; [1]Institute of Vehicle Concepts, German Aerospace Centre (DLR)

9:05 AM Keynote
Recent Developments in the Application of the Interdependence Model of Grain Formation and Refinement: *David StJohn*[1]; [1]University of Queensland

9:35 AM Invited
Development of Magnesium-Rare Earth Die-casting Alloys: *Mark Easton*[1]; Mark Gibson[2]; Suming Zhu[1]; Trevor Abbott[3]; Jian-Feng Nie[4]; Colleen Bettles[4]; Gary Savage[2]; [1]Royal Melbourne Institute of Technology University; [2]CSIRO; [3]Magontec; [4]Monash University

9:55 AM Break

10:10 AM Keynote
Magnesium Pistons in Engines: Fiction or Fact?: *Norbert Hort*[1]; Hajo Dieringa[1]; Karl Kainer[1]; [1]Helmholtz-Zentrum Geesthacht

10:40 AM
Thermodynamics of Phase Formation in Mg–Al–C Alloys Applied to Grain Refinement: *Guillaume Deffrennes*[1]; Bruno Gardiola[1]; Marc Lomello[2]; Jérôme Andrieux[1]; Olivier Dezellus[1]; Rainer Schmid-Fetzer[3]; [1]Université Claude Bernard Lyon 1, Laboratoire des Multimatériaux et Interfaces; [2]Université Savoie Mont Blanc, SYMME; [3]Institute of Metallurgy, Clausthal University of Technology

11:00 AM
Creep Resistant Mg-Mn Based Alloys for Automotive Powertrain Applications: *Mert Celikin*[1]; Mihriban Pekguleryuz[1]; [1]McGill University

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Fuels II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Tuesday AM
March 13, 2018
Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Experimental Studies on Microstructure and Mechanical Properties of High Burnup Urania: *Kurt Terrani*[1]; Chad Parish[1]; Mehdi Balooch[1]; Tyler Gerczak[1]; Philip Edmondson[1]; [1]Oak Ridge National Laboratory

8:50 AM
Advanced Characterization of Irradiated UO2 Fuel: *Lingfeng He*[1]; David Shuh[2]; Xianming Bai[3]; Michael Moorehead[1]; Brandon Miller[1]; Claude Degueldre[4]; Jason Harp[1]; [1]Idaho National Laboratory; [2]Lawrence Berkeley National Laboratory; [3]Virginia Polytechnic Institute and State University; [4]Lancaster University

9:10 AM
In-situ Elevated Temperature Micro-cantilever Testing of UO2: *David Frazer*[1]; Benjamin Shaffer[2]; Pedro Peralta[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Arizona State University

9:30 AM
Microstructural Characterization of Plutonium Based Fuels: *Assel Aitkaliyeva*[1]; Cynthia Papesch[2]; [1]University of Florida; [2]Idaho National Laboratory

9:50 AM
Phase Verification and Thermophysical Properties of Pu-Zr Alloys: *Cynthia Papesch*[1]; Assel Aitkaliyeva[2]; [1]Idaho National Laboratory; [2]University of Florida

10:10 AM Break

10:30 AM
Electron Microscopy Analysis of TRISO Fuel Particles with Failed SiC Layers from the AGR-2 Irradiation: *Tyler Gerczak*[1]; John Hunn[1]; [1]Oak Ridge National Laboratory

10:50 AM
Chemical and Microstructural Analysis of Irradiated Mixed Oxide Fuels: *Riley Parrish*[1]; Jason Harp[2]; Assel Aitkaliyeva[3]; [1]University of Florida; [2]Idaho National Laboratory; [3]University of Florida, Idaho National Laboratory

11:10 AM
Improvements and Applications of the FAST Fuel Model to Thorium-based and Mixed Oxide Fuels: Andrew Prudil[1]; *John Bell*[2]; Evan Thomas[3]; Michael Welland[1]; Paul Chan[2]; [1]Canadian Nuclear Laboratories; [2]Royal Military College of Canada; [3]McMaster University

11:30 AM
Non-destructive 3D Neutron Imaging of Composition in Nuclear Fuels: *Adrian Losko*[1]; Sven Vogel[1]; Mark Bourke[1]; Kenneth McClellan[1]; Andy Nelson[1]; Darrin Byler[1]; Michael Mocko[1]; [1]Los Alamos National Laboratory

Materials for Energy Conversion and Storage – Solid Oxide Fuel Cells II

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Tuesday AM
March 13, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Soumendra N. Basu, Boston University; Uday Pal, Boston University

8:30 AM Invited
Active Sites for Surface Exchange Reaction on Dual-phae-type Mixed Conductors: Takuya Hatakeyama[1]; Itaru Oikawa[1]; *Hitoshi Takamura*[1]; [1]Tohoku University

8:55 AM Invited
Nano-tailoring of Infiltrated Catalysts for Solid Oxide Regenerative Fuel Cells: *Kyung Joong Yoon*[1]; [1]Korea Institute of Science and Technology

9:20 AM
Phase-field Modeling of Microstructure Evolution in SOFC Electrodes: Yinkai Lei[1]; Tianle Cheng[1]; *Youhai Wen*[1]; [1]National Energy Technology Laboratory

9:40 AM Invited
Unravelling the Mystery of Interlayers and their Role on SOFC Durability: *Xiao-Dong Zhou*[1]; Emir Dogdibegovic[2]; [1]University of Louisiana at Lafayette; [2]University of South Carolina

10:05 AM Break

10:20 AM Invited
Rare Earth Nickelate Cathodes for SOFCs for Enhanced Oxygen Partial Pressure Operation: Jane Banner[1]; *Srikanth Gopalan*[1]; [1]Boston University

10:45 AM
Direct Performance Simulation Based on the Microstructure of SOFC Electrodes: A Phase Field Approach: *Yinkai Lei*[1]; Tian-Le Cheng[1]; You-Hai Wen[1]; [1]National Energy Technology Laboratory

11:05 AM
Solid Oxide Fuel Cell-battery Hybrid Electrochemical System for Electricity Grid Stability: *Xiaofei Guan*[1]; Jun Jiang[1]; Shriram Ramanathan[2]; [1]Harvard University; [2]Purdue University

11:25 AM Invited
Infiltration of SOFC Anodes with Stable Nano-catalysts for Performance Improvement: Yanchen Lu[1]; Paul Gasper[1]; Boshan Mo[1]; Uday Pal[1]; Srikanth Gopalan[1]; *Soumendra Basu*[1]; [1]Boston University

11:50 AM
Electrodeposition of Manganese/Cobalt Alloys for Solid Oxide Fuel Cell Interconnect Application: Junwei Wu; *Xingbo Liu*[1]; [1]West Virginia University

Materials Innovation Keynote – Big Data and Machine Learning for Materials

Program Organizer: Carelyn Campbell, National Institute of Standards and Technology

Tuesday AM
March 13, 2018
Room: 129B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments
To be announced.

Materials Processing Fundamentals – Multiphysics - Process Modeling and Sensing

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

Tuesday AM
March 13, 2018
Room: 228A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Convection-Diffusion Model of Lithium-Bismuth Liquid Metal Batteries: *Rakan Ashour*[1]; Douglas Kelley[1]; [1]University of Rochester

8:50 AM
Electrovortex Flow in Metal Melts: Experiment and Simulation: *Douglas Kelley*[1]; Rakan Ashour[1]; Alejandro Salas[2]; Norbert Weber[2]; Tom Weier[2]; [1]University of Rochester; [2]Helmholtz-Zentrum Dresden-Rossendorf

9:10 AM
Surface Tension and Viscosity of Gamma-TiAl Alloys and Ti6Al4V Measured in Containerless Electromagnetic Processing under Reduced Gravity Conditions: *Rainer Wunderlich*[1]; Ulrike Hecht[2]; Hans-Jörg Fecht[1]; [1]Ulm University; [2]ACCESS eV

9:30 AM
Interface Fields Affecting Solidification Microstructure: *Martin Glicksman*[1]; Kumar Ankit[2]; [1]Florida Institute of Technology; [2]Arizona State University

9:50 AM
Chalcogenide Melts Study for High Temperature Thermoelectricity: Youyang Zhao[1]; *Antoine Allanore*[1]; [1]Massachusetts Institute of Technology

10:10 AM Break

10:30 AM
Ultrasound for Next-generation Alloy Casting: *Bitong Wang*[1]; Andrew Caldwell[2]; Antoine Allanore[2]; Douglas Kelley[1]; [1]University of Rochester; [2]Massachusetts Institute of Technology

10:50 AM
The Internet of Things (IoT) for Casting with 3D Printed Sand Molds: *Jason Walker*[1]; Brian Vuksanovich[1]; Brett Conner[1]; Guha Manogharan[1]; Rich Lonardo[1]; Gerard Thiel[1]; Kirk Rogers[1]; Eric MacDonald[1]; [1]Youngstown State University

11:10 AM
Study on Emulsion Phenomena and Field Flow Pattern in Side-blown Copper Smelting Process: *Xiaolong Li*[1]; Zhang Ting'an[1]; Yan Liu[1]; Dongxing Wang[1]; [1]Northeastern University

11:30 AM
Study on Minimum Starting Energy of Self-stirring Reactor Driven by Pressure Energy: *Zimu Zhang*[1]; Qiuyue Zhao[1]; Maoyuan Li[1]; Xuhuan Guo[1]; Dianhua Zhang[1]; Zhang Ting'an[1]; [1]Northeastern University

11:50 AM
Spatio-temporal Evolution Modeling of the Laser Helical Drilling with Femtosecond Pulses: Xiaoji Li[1]; *Yiwei Dong*[1]; Qi Zhao[1]; Ertai Wang[1]; [1]Xiamen University

Mechanical Behavior at the Nanoscale IV – Nanolayers and Nanocomposites

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Tuesday AM
March 13, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Tim Rupert, UCI; Mao Scott, University of PIttsburgh

8:30 AM Invited
Small-scale Mechanical Testing of Hierarchical Nanostructured Materials: *Timothy Rupert*[1]; [1]University of California, Irvine

9:00 AM
Fracture of Cu-Nb Multilayer Films on Polyimide: *Megan Cordill*[1]; David Economy[2]; Marian Kennedy[2]; [1]Erich Schmid Institute of Materials Science; [2]Clemson University

9:20 AM
A Multiscale Investigation of Core-shell Nanostructures Using the Coupled Atomistic and Discrete Dislocation Method: Scott Muller[1]; *Arun Nair*[1]; [1]University of Arkansas

9:40 AM
Thickness Dependent Strain Rate Sensitivity in Metallic Nanolayers: *Yue Liu*[1]; Jennifer Hay[2]; Engang Fu[3]; Xinghang Zhang[4]; [1]Shanghai Jiao Tong University; [2]Nanomechanics, Inc.; [3]Peking University; [4]Purdue University

10:00 AM Break

10:20 AM
Mechanical Properties of Ni Nanocomposites Embedded with Carbyne Chains: *Scott Muller*[1]; Arun Nair[1]; [1]University of Arkansas

10:40 AM
Atomistic Modeling of the Mechanical Properties of Nanoglass-metallic Glass Nanolaminates: *Paulo Branicio*[1]; Z. Sha[2]; [1]University of Southern California; [2]Xi'an Jiaotong University

11:00 AM
Interface Driven Mechanical Behavior of Mg/Nb Nano-layered Composites: *Milan Ardeljan*[1]; Irene Beyerlein[2]; Siddhartha Pathak[3]; Marko Knezevic[1]; [1]University of New Hampshire; [2]University of California, Santa Barbara; [3]University of Nevada

11:20 AM
Atomistic Investigation into the Mechanical Response of Ferrite-cementite Interfaces in Pearlite: *Matthew Guziewski*[1]; Shawn Coleman[2]; Christopher Weinberger[1]; [1]Colorado State University; [2]Army Research Laboratory

11:40 AM
Microstructure, Residual Stress, and Intermolecular Force Distribution of Graphene/Polymer Hybrid Composites: Nanoscale Morphology-promoted Synergistic Effects: *Sanju Gupta*[1]; [1]Western Kentucky University

Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao – Corrosion and Fatigue

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jiann-Yang Hwang, Michigan Technological University; Bowen Li, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

Tuesday AM
March 13, 2018
Room: 123
Location: Phoenix Convention Center

Session Chairs: Amit Shyam, Oak Ridge National Laboratory; Bowen Li, Michigan Technological University

8:30 AM Invited
Fatigue Behavior of Metastable Austenitic Stainless Steel AISI 304 under Different Test Frequencies: *Davi Pessoa*[1]; Gunter Kirchhoff[2]; Martina Zimmermann[1]; [1]Technische Universität Dresden; [2]Fraunhofer-Institut für Werkstoff -und Strahltechnik

9:10 AM
Corrosion Micro-scale Features and Alloy Microstructure Effects on Fatigue Initiation of AA7050-T7451: *Noelle Easter Co*[1]; James Burns[1]; [1]University of Virginia

9:30 AM
Creep-oxidation-small Fatigue Crack Interaction in Grade 91 Steel: Sumit Bahl[1]; Sebastien Dryepondt[2]; Lawrence Allard[2]; Satyam Suwas[2]; *Amit Shyam*[2]; [1]Indian Institute of Science; [2]Oak Ridge National Laboratory

9:50 AM Break

10:10 AM
Influence of Surface and Near Surface Defects Caused by Laser Beam Cutting on the Fatigue Behavior of Plate-like Shaped Parts Made of Metastable Austenitic Stainless Steel AISI 304: *Davi Pessoa*[1]; Patrick Herwig[2]; Martina Zimmermann[1]; [1]Technische Universität Dresden; [2]Fraunhofer-Institut für Werkstoff -und Strahltechnik IWS

10:30 AM
Effect of NaNO2 in Corrosion Inhibition of Micro-alloyed Steel in E20 and E40 Simulated Fuel Grade Ethanol Environment: *Olufunmilayo Joseph*[1]; Seetharaman Sivaprasad[2]; O.S.I Fayomi[1]; Raghuvir Singh[2]; Olakunle Olaleye Joseph[3]; [1]Covenant University; [2]CSIR-National Metallurgical Laboratory; [3]Federal University of Technology, Akure

10:50 AM
Ductile Fracture Assessment of Hot Isostatically Pressed Stainless Steel Using 3D X-ray Computed Tomography: *Adam Cooper*[1]; [1]University of Manchester

Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr. – Basic History and Advances in Metal Matrix Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Srivatsan Tirumalai, The University of Akron; Yuzheng Zhang, Gamma Alloys; William Harrigan, Gamma Technology, LLC

Tuesday AM
March 13, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: John Lewandowski, Case Western Reserve University; Dan Miracle, AF Research Laboratory

8:30 AM Invited
Metal Matrix Composites – from Science to Technological Significance: *Dan Miracle*[1]; [1]AF Research Laboratory

9:00 AM Invited
Microstructure and Mechanical Behavior of Cryomilled Al-Mg Composites Reinforced with Nanometric Yttria Partially Stabilized Zirconia: *Julie Schoenung*[1]; [1]University of California, Irvine

9:30 AM
Hierarchically Engineered MMC's, a History of MMC Research at Powdermet Inc.: *Andrew Sherman*[1]; [1]Powdermet Inc

9:50 AM Break

10:10 AM Invited
Fracture and Fatigue of Particulate Composites, Nano-composites, and Toughening Mechanisms: *John Lewandowski*[1]; [1]Case Western Reserve University

10:40 AM
Designing New Self-healing Metallic Materials and Self-healing Metal Matrix Composites: Volkan Kilicli[1]; Nathan Salowitz[2]; *Changsoo Kim*[2]; Pradeep Rohatgi[2]; [1]Gazi University; [2]University of Wisconsin Milwaukee

11:00 AM
Fatigue Crack Growth Resistance of Titanium Metal Matrix Composites: *Hannah Stanley*[1]; [1]University of Birmingham

11:20 AM
Experimental Optimization of Dry Sliding Wear Behavior of Titanium Matrix Composites Using Taguchi Methods: *Koutarou Hattori*[1]; Shogen Hirami[1]; Yoshiko Hasegawa[2]; Hiroshi Izui[1]; Yoshiki Komiya[1]; [1]Nihon University; [2]Hasegawa Professional Engineer Office

11:40 AM
Model-based Algorithm for Damage Detection in Piezoelectric Fiber-based Composites: Khalid Shalan[1]; Mohamed AbdelMeguid[1]; *Tarek Hatem*[1]; Hesham Hegazi[2]; Yehia Bahei-El-Din[1]; [1]British University in Egypt; [2]Cairo University

Multi-material Additive Manufacturing: Processing and Materials Design – Functionally Graded Metals and Composites

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Hang Yu, Virginia Tech; Nanci Hardwick, Aeroprobe Corporation; Steven Boles, Hong Kong Polytechnic University; Blake Barnett, Army Research Laboratory; Michael Gibson, Desktop Metal

Tuesday AM
March 13, 2018
Room: 232C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Developing Functionally Graded Metals through Additive Manufacturing: Progress, Challenges, and Future Vision for a Unique Technology: *Douglas Hofmann*[1]; Scott Roberts[1]; Robert Dillon[1]; Richard Otis[1]; Samad Firdosy[1]; [1]NASA JPL/Caltech

9:00 AM Invited
Experimental-computational Approach toward Design of Additively Manufactured Functionally Graded Metallic Materials: *Allison Beese*[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

9:30 AM
Hybrid Manufacturing of Functionally Graded M300 and 316L Steels: Tim Daughtery[1]; Brian Vuksanovich[1]; Jason Walker[1]; Pedro Cortes[1]; *Brett Conner*[1]; [1]Youngstown State University

9:50 AM
Additively Manufactured Functionally Graded Steels through a Novel Approach to Path Finding: *Olga Eliseeva*[1]; Tanner Kirk[1]; Ji Ma[1]; Raymundo Arroyave[1]; Ibrahim Karaman[1]; [1]Texas A&M

10:10 AM Break

10:30 AM Invited
Additive Manufacturing of Periodic Metal-metal Composites: *Zachary Cordero*[1]; Matthew French[1]; Alexander Pawlowski[2]; Derek Splitter[2]; Amit Shyam[2]; [1]Rice University; [2]Oak Ridge National Laboratory

11:00 AM
Development of High-performance 316L Stainless Steel Nanocomposites by Additive Manufacturing: *Bandar AlMangour*[1]; Dariusz Grzesiak[2]; [1]Harvard University; [2]West Pomeranian University of Technology

11:20 AM
Additive Manufacturing of Inconel 718 – Ti6Al4V Bimetallic Structures Using LENS™: *Bonny Onuike*[1]; Amit Bandyopadhyay[1]; [1]School of Mechanical and Material Engineering

11:40 AM
Bimetallic Bonding via Two Methods of Direct Metal Deposition Additive Manufacturing: *Ryan Anderson*[1]; Timothy Hill[1]; Judy Schneider[1]; [1]University of Alabama at Huntsville

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Nanocarbon/Metal Composites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

Tuesday AM
March 13, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Predicting the Failure Mechanisms in Ni-graphene Nanocomposites for Different Loading, Crack Orientations and Graphene Structure: *Scott Muller*[1]; Arun Nair[1]; [1]University of Arkansas

8:50 AM
Development of Nanocarbon-infused Metals: A New Class of Covetic Materials: *U. (Balu) Balachandran*[1]; [1]Argonne National Laboratory

9:10 AM
Synthesis, Characterization, and Properties of Graphene Reinforced Metal-matrix Nano Composites Using Powder Metallurgy: Meysam Tabandeh-Khorshid[1]; Sourav Das[1]; Ajay Kumar P.[1]; Benjamin Schultz[1]; *Changsoo Kim*[1]; Pradeep Rohatgi[1]; [1]University of Wisconsin Milwaukee

9:30 AM
Intragranular Dispersion of Carbon Nanotubes Comprehensively Improves Aluminum Alloys: *Kang Pyo So*[1]; Akihiro Kushima[1]; Jong Gil Park[2]; Xiaohui Liu[3]; Dong Hoon Keum[2]; Hye Yun Jeong[2]; Soo Hyun Joo[4]; Hyoung Seop Kim[4]; Hwanuk Kim[5]; Ju Li[1]; Young Hee Lee[2]; [1]Massachusetts Institute of Technology; [2]Sungkyunkwan University; [3]Shanghai Jiao Tong University; [4]Pohang University of Science and Technology; [5]Korea Basic Science Institute

9:50 AM Break

10:10 AM
Investigation of Mechanical Properties of Cu-MWCNT Nanocomposites Synthesized by Wet Chemical Reduction Route: *Shakti Mishra*[1]; Sambedan Jena[1]; Siddhartha Das[1]; Karabi Das[1]; [1]IIT Kharagpur

10:30 AM
Carbon Nanotubes Reinforced Nanostructured WC-Co Hard Alloys: *Guolong Tan*[1]; Chenglong Li[2]; Xijun Wu[3]; [1]Wuhan University of Technology; [2]Nostan Company; [3]Zhejiang University

Non-equilibrium Features of Grain Boundaries – Mechanical Responses of Non-equilibrium Grain Boundaries - Part I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Liang Qi, University of Michigan; Yue Fan, University of Michigan, Ann Arbor; Josh Kacher, Georgia Tech; Elizabeth Holm, Carnegie Mellon University; Irene Beyerlein, University of California, Santa Barbara; Shigenobu Ogata, Osaka University

Tuesday AM
March 13, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Atomic-scale Study of Twin Growth in Zirconium: Olivier MacKain[1]; Emmanuel Clouet[1]; *David Rodney*[2]; [1]CEA Saclay; [2]Université de Lyon

9:00 AM Invited
Effect of Neutron Irradiation on Deformation Homogeneity in Polycrystalline Materials: *Meimei Li*[1]; Xuan Zhang[1]; Jonathan Almer[1]; Jun-Sang Park[1]; Hemant Sharma[1]; Peter Kenesei[1]; [1]Argonne National Lab

9:30 AM
An Atomistic Survey of Grain Boundary – Dislocation Interactions in FCC Nickel: *Devin Adams*[1]; Eric Homer[1]; David Fullwood[1]; Robert Wagoner[2]; Landon Hansen[1]; HyukJong Bong[2]; [1]Brigham Young University; [2]Ohio State University

9:50 AM Break

10:10 AM Invited
Grain Boundary Factors Related to Void Formation: *Curt Bronkhorst*[1]; Sabine Zentgraf[2]; Veronica Livescu[1]; Marcy Peter[1]; Scott Vander Wiel[1]; George Gray[1]; Hashem Mourad[1]; Brandon Runnels[2]; [1]Los Alamos National Laboratory; [2]University of Colorado - Colorado Springs

10:40 AM Invited
Understating the Deformation and Fracture Behaviors of Heterogeneous Lamella Structures: *Caizhi Zhou*[1]; Sixie Huang[1]; Rui Yuan[1]; [1]Missouri University of Science and Technology

11:10 AM
Mechanical Behavior of (Ni,Fe)Cr2O4 Spinel Grain Boundaries Studied by Molecular Dynamics Simulations: *Laurent Van Brutzel*[1]; Alain Chartier[1]; Maxime Sauzay[1]; [1]CEA

11:30 AM
Dislocation Nucleation from Grain Boundary: A Comparison between Conventional MD and Accelerated MD: *Jun-Ping Du*[1]; Yun-Jiang Wang[2]; Yu-Chieh Lo[3]; Liang Wan[4]; Shigenobu Ogata[4]; [1]Center for Elements Strategy Initiative for Structural Materials (ESISM), Kyoto University; [2]State Key Laboratory of Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences; [3]Department of Materials Science and Engineering, National Chiao Tung University; [4]Department of Mechanical Science and Bioengineering, Osaka University

Phase Transformation Across Multiscale Material Interfaces – Nanoscale Interfaces, Grain Boundaries and Coatings

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Soumya Nag, GE Global Research; Sudarsanam Babu, The University of Tennessee, Knoxville; Gregory Thompson, University of Alabama; Mohsen Asle Zaeem, Missouri University of Science and Technology; Niyanth Sridharan, Oak Ridge National Laboratory

Tuesday AM
March 13, 2018
Room: 126C
Location: Phoenix Convention Center

Session Chairs: Pradeep Gokuldoss, Max Planck Institute for Iron Research GmbH; Mitra Taheri, Drexel University; Diana Farkas, Virginia Tech.

8:30 AM Invited
Morphological Evolution and Mechanical Behavior of Co-sputtered Cu-Mo Thin Films: *Amit Misra*[1]; [1]University of Michigan

9:00 AM Invited
Structure and Mechanical Response of Highly Defective Grain Boundaries: *Diana Farkas*[1]; [1]Virginia Tech

9:30 AM Invited
Grain Boundary Microstates under Irradiation: Which Came First?: *Mitra Taheri*[1]; Osman El-Atwani[2]; Asher Leff[1]; Khalid Hattar[3]; James Nathaniel[1]; Blas Uberuaga[2]; [1]Drexel University; [2]Los Alamos National Laboratory; [3]Sandia National Laboratories

10:00 AM Break

10:20 AM Invited
Nanoscale Interfacial Phase Structures in Roll-bonded Metallic Glass Composite Materials: Sina Shahrezaei[1]; *Suveen Mathaudhu*[1]; [1]University of California, Riverside

10:50 AM
Atom Probe Tomography Study of Interface Diffusion Assisted Self-healing Behaviour of Cr2Al(Si)C MAX Phase Coatings: *Pradeep Konda Gokuldoss*[1]; [1]Max Planck Institute for Iron Research GmbH

11:10 AM
The Effect of Diffusion on the Microstructure and Properties of a NiAl-based Anchor Phase Coating for CMSX-4: *Megan McGregor*[1]; Matthew Hancock[2]; Lloyd Pallett[2]; William Clegg[1]; [1]University of Cambridge; [2]Rolls-Royce plc.

Phase Transformations and Microstructural Evolution – Phase Transformations in Non-ferrous Systems I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Tuesday AM
March 13, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chairs: Hao Chen, Tsinghua University; Peeyush Nandwana, ORNL

8:30 AM
Precipitation of Dispersoids in Multicomponent Al-Mg-Si-Mn-Fe Alloys: *Warren Poole*[1]; Chenglu Liu[1]; Qiang Du[2]; Nick Parson[3]; [1]The University of British Columbia; [2]SINTEF M&K; [3]Rio Tinto Aluminium

8:50 AM
Quantitative Transmission Electron Microscopy of Microstructure Evolution in Al-Cu Alloys during Laser-induced Rapid Thermal Transients Characteristic of Additive Manufacturing: *Jorg Wiezorek*[1]; Kai Zweiacker[2]; Can Liu[1]; Joseph McKeown[3]; Geoffrey Campbell[3]; [1]University of Pittsburgh; [2]EMPA; [3]LLNL

9:10 AM
Precipitation Kinetics and Strengthening: Beyond the Textbook Description: *Alexis Deschamps*[1]; Frederic De Geuser[1]; [1]Grenoble Institute of Technology

9:30 AM
In Situ TEM Investigation of Microstructural Evolution in Gas Atomized Al-6061 Powder Particles: *Sriram Vijayan*[1]; Benjamin Bedard[1]; Mark Aindow[1]; [1]University of Connecticut

9:50 AM
Phase Transformation Behaviors, Crystal Orientation Relationships, Elements Spatial Distributions, and Strengthening Mechanisms in a High Strength Cu-Ni-Si Alloy: *Qian Lei*[1]; [1]University of Michigan

10:10 AM Break

10:30 AM
Understanding the Initial Development of γ/γ' Microstructures in Cobalt-based Superalloys: *Andrea Jokisaari*[1]; Eric Lass[2]; Peisheng Wang[2]; Peter Voorhees[1]; Olle Heinonen[3]; [1]Northwestern University; [2]National Institute of Standards and Technology; [3]Argonne National Laboratory

10:50 AM
Long-term Thermal Stability of Nickel-base Superalloys: *Alison Wilson*[1]; Mark Hardy[2]; Howard Stone[1]; [1]University of Cambridge; [2]Rolls-Royce plc

11:10 AM
Microstructural Evolution of Nickel during Multiple Annealing Stages from Three-dimensional X-ray Microscopy: *Aditi Bhattacharya*[1]; C.M. Hefferan[2]; S.F. Li[3]; J. Lind[4]; Yufeng Shen[1]; R.M. Suter[1]; G.S. Rohrer[1]; [1]Carnegie Mellon University; [2]R. J. Lee Group; [3]Ditto Inc.; [4]Lawence Livermore National Laboratory

11:30 AM
Modifying the Microstructure in Polycrystalline Nickel Base Superalloys Using a Stepped Cooling Rate: *Bader Alabbad*[1]; Sammy Tin[1]; [1]illinois institute of technology

11:50 AM
Coherent DO22 Superlattice in an Aged Ni-Cr-W-Ti Superalloy with High Strength: *Gao Xiangyu*[1]; Hu Rui[1]; [1]Northwestern Polytechnical University

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Metal Powder Production

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Tuesday AM
March 13, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Yafeng Yang, Chinese Academy of Sciences; Stefan Gulizia, CSIRO, Australia

8:30 AM
A Review of the Preparation Methods of WC Powders: *Yijie Wu*[1]; Jie Dang[1]; Zepeng Lv[1]; Shengfu Zhang[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]Chongqing University

8:50 AM Invited
Advanced Melt-less Powder Manufacturing Technologies: *Stefan Gulizia*[1]; Christian Doblin[1]; Peter King[1]; Robert Wilson[1]; Anselm Oh[1]; Leon Prentice[1]; [1]CSIRO

9:20 AM Keynote
Development of Gas Atomization for Generating Reactive Metal Powders for Additive Manufacturing and Powder Processing: *Iver Anderson*[1]; Emma White[1]; Tim Prost[1]; Jordan Tiarks[1]; Trevor Riedemann[1]; David Byrd[1]; Ross Anderson[1]; [1]Ames Laboratory

10:00 AM Break

10:20 AM Invited
Production of Ti-6Al-4V Alloy Powder by Mechanical Alloying and Plasma Spheroidisation: *Hilda Chikwanda*[1]; Linda Mahlatji[1]; Silethelwe Chikosha[1]; [1]Council for Scientific and Industrial Research (CSIR)

10:50 AM
Numerical Modeling of Gas-atomized Metal Powders: Powder Size Distribution: *Taher Abu-Lebdeh*[1]; Joseph Pinkney[1]; Vincent Lamberti[2]; Sameer Hamoush[1]; Roland Seals[2]; [1]North Carolina A&T State University; [2]Y-12 National Security Complex

11:10 AM Keynote
The Fabrication of Core-shell Special Powders and their Potential Applications: *Yafeng Yang*[1]; [1]Institute of Processing Engineering, Chinese Academy of Science

11:50 AM
Technologies for the Processing of Sieve Residues: A Novel Approach for Cost-effective Production of 3D Printing Powders: *Ivan Mikhailov*[1]; [1]LMTI / UC RUSAL

Rare Metal Extraction & Processing – Base and Rare Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Hojong Kim, The Pennsylvania State University; Bradford Westrom, Freeport-McMoRan Copper & Gold; Shafiq Alam, University of Saskatchewan; Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto; Neale Neelameggham, Ind LLC; Shijie Wang, Rio Tinto Kennecott Utah Copper; Xiaofei Guan, ShanghaiTech University

Tuesday AM
March 13, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chairs: Shafiq Alam, University of Saskatchewan; Xiaofei Guan, ShanghaiTech University

8:30 AM
Thermodynamic Study of Ga Extraction for Trace Element Analysis by ICP-MS: *Kyungjean Min*[1]; David Johnson[1]; Kevin Trumble[1]; [1]Purdue University

8:55 AM
Electrodeposition of γ-MnO2 from Manganese Nodule Leach Liquor: Surface Modification and Electrochemical Applications: A. Baral[1]; B.C. Tripathy[1]; *M.K. Ghosh*[1]; [1]CSIR-Institute of Minerals and Materials Technology

9:20 AM
Recovery of Manganese from Scrap Batteries of Mobile Phones: *Deblina Dutta*[1]; Rekha Panda[2]; Manis Kumar Jha[2]; Sudha Goel[1]; [1]Indian Institute of Technology (IIT), Kharagpur; [2]CSIR-National Metallurgical Laboratory

9:45 AM
The Management of Lead Concentrate Acquisition in "Trepca": *Ahmet Haxhiaj*[1]; Bajram Haxhiaj[1]; [1]University of Pristina

10:10 AM Break

10:30 AM
The Recovery of Cesium Salts from the Taron Deposit: *David Dreisinger*[1]; Mohammad Mokmeli[1]; Bill McWilliam[2]; [1]University of British Columbia; [2]Cascadero Copper Corporation

10:55 AM
Recovery of Lithium from Brine with MnO2 Nanowire Ion Sieve Composite: *Rajashekhar Marthi*[1]; York Smith[1]; [1]University of Utah

11:20 AM
FEM Simulation of Nodulation in Copper Electrorefining: *Ken Adachi*[1]; Yuya Nakai[1]; Atsushi Kitada[1]; Kazuhiro Fukami[1]; Kuniaki Murase[1]; [1]KyotoUniversity

Recent Developments in Biological, Structural and Functional Thin Films & Coatings – Functional Coatings for Green Technology and Sustainability

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas - El Paso; Heinz Palkowski, Clausthal University of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology; Vikas Tomar, Purdue University; Gerald Ferblantier, Strasbourg University - ICube Laboratory

Tuesday AM
March 13, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Heinz Palkowski, TU Clausthal; Nancy Michael, University of Texas at Arlington

8:30 AM Keynote
Approaches to Dry Metal Forming as Measure for Sustainable Production: *Frank Vollertsen*[1]; [1]BIAS GmbH

9:10 AM
Selective Oxidation of Tool Steel Surfaces under Protective Gas Atmosphere: *Simon Schoeler*[1]; Deniz Yilkiram[1]; Hans Jürgen Maier[1]; Bernd-Arno Behrens[1]; [1]Leibniz University Hannover

9:30 AM
Electro-deposited Cr Coating Layer to Hinder Fuel Cladding Chemical Interaction in Sodium Fast Reactor (SFR): *Sunghwan Yeo*[1]; Junhwan Kim[1]; [1]Korea Atomic Energy Research Institute

9:50 AM
Corrosion Studies of Martensitic Stainless Steel Blades: *Dhruv Kothari*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

10:10 AM Break

10:30 AM Keynote
Applications for Multifunctional Systems: Balancing Industrial Need, Cost, Complexity and Sustainability: *Vannessa Goodship*[1]; [1]University of Warwick

11:10 AM
Extending the Scope of Application of Thermal Sprayed Coatings by Using their Magnetic Properties: *Gian Luigi Angrisani*[1]; Piriya Taptimthong[1]; Marc Christopher Wurz[1]; Kai Möhwald[1]; [1]Leibniz Universität Hannover

11:30 AM
Grain Boundary Engineering of Corrosion Resistant Aluminum Alloys: *Joel Bahena*[1]; Andrea Hodge[1]; [1]University of Southern California

11:50 AM
Formation & Characterization of Black Silicon by Reactive Ion Etching: *Sita Rajyalaxmi Marthi*[1]; Asahel Banobre[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Scandium Extraction and Use in Aluminum Alloys – Aluminium Scandium Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: John Grandfield, Grandfield Technology Pty Ltd; Aleksandr Krokhin, Rusal GM; Dmitry Eskin, Brunel University London; Antoine Allanore, Massachusetts Institute of Technology; Nigel Ricketts, Scandium International Mining Corp

Tuesday AM
March 13, 2018
Room: 222B
Location: Phoenix Convention Center

Session Chairs: Dmitry Eskin, Brunel University; Greg Hilderman, Performance Power Materials

8:30 AM Introductory Comments

8:35 AM
Sc Applications in Aluminum Alloys: Overview of Russian Research in the 20th Century: *Dmitry Eskin*[1]; [1]Brunel University

9:05 AM
Effect of Treatment Parameters on Structure, Mechanical and Corrosion Properties of Al-Mg-Sc Alloy Forgings with Reduced Concentration of Scandium: *Aleksandr Krokhin*[1]; Viktor Mann[1]; Dmitry Ryabov[1]; Nikolay Babitskiy[2]; [1]UC RUSAL; [2]RUSAL ETC LLC

9:25 AM
Mechanical Properties and Applications of Aluminum Scandium Alloys at Elevated Temperatures: *Gregory Hildeman*[1]; Ken Koldenhoven[1]; [1]Performance Power Materials,Inc.

9:45 AM
Novel Heat Treatments for Scandium Containing Al-Si Alloys (Including 6xxx Series Alloys): *Timothy Langan*[1]; Mahendra Ramajayam[2]; Thomas Dorin[2]; [1]Clean TeQ; [2]Deakin University

10:05 AM Break

10:20 AM
Scandium-enriched Nano-precipitates in Aluminum Provide Enhanced Coarsening and Creep Resistance: *David Dunand*[1]; David Seidman[1]; [1]Northwestern University

10:40 AM
The Effect of Scandium and Zirconium on the Microstructure, Mechanical Properties and Formability of a Model Al-Cu Alloy: *Thomas Dorin*[1]; Mahendra Ramajayam[1]; Timothy Langan[2]; [1]Deakin University; [2]CleanTeQ

11:00 AM
Influence of the Al3(Sc,Zr) Dispersoids and the Stretching on the Natural Ageing Behavior of a Binary Al-4wt%Cu Alloys: *Baptiste Rouxel*[1]; Thomas Dorin[1]; [1]Institut of Frontier Material - Deakin Univiersity

11:20 AM
An Examination of the Effect of Solidification Processing upon the Strengthening of AlMgSc Alloys: Vahid Fallah[1]; Andrew Howells[1]; *Mark Gallerneault*[1]; [1]Alcereco Inc.

11:40 AM
The Effect of Scandium on the Electrical Conductivity and Mechanical Properties of Al-Sc Alloys: *Tao Ying*[1]; Lidong Gu[1]; Xiaoqin Zeng[1]; [1]Shanghai Jiao Tong University

12:00 PM
Design and Processing Conditions of Hypoeutectic Al-Cu-Sc Alloys for Maximum Benefit of Scandium: *Abdoul-Aziz Bogno*[1]; Jonas Valloton[1]; Hani Henein[1]; Douglas Ivey[1]; A. Locock[1]; M. Gallerneault[2]; [1]University of Alberta; [2]Alcereco Inc.

Surface Engineering for Improved Corrosion Resistance – Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Carlos Schvezov, Institute of Materials of Misiones; Arvind Agarwal, Florida International University

Tuesday AM
March 13, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Sandip Harimkar, Oklahoma State University; Krista Limmer, US Army Research Laboratory

8:30 AM Invited
Nanostructured Al-alloy Coatings for Corrosion Protection of High-strength Al and Mg Alloys: *Rose Roy*[1]; Joshua Abbott[1]; Robert Hilty[1]; [1]Xtalic Corporation

8:50 AM
Passivity of Al-transition Metal Alloys and Al-inhibitor Composites: Javier Esquivel[1]; Mohammad Umar Farooq Khan[1]; *Rajeev Gupta*[1]; [1]The University of Akron

9:10 AM
Advanced Surface Mechanical Treatments and Grain Boundary Engineering for Improved Resistance to Corrosion and Stress Corrosion Resistance of FCC Alloys: Abhishek Telang[1]; Qin Yang[2]; Richard Chiang[2]; Sebastien Teysseyre[3]; Seetha Mannava[2]; Dong Qian[4]; *Vijay Vasudevan*[2]; [1]Integer; [2]University of Cincinnati; [3]Idaho National Laboratory; [4]University of Texas at Dallas

9:30 AM Invited
Predict Corrosion Phenomena and Surface Properties of Al-based Alloys: *Lan Li*[1]; Thiago da Silva[1]; Mike Hurley[1]; [1]Boise State University

9:50 AM
Oxidation and Corrosion Phenomena in Powder-processed Icosahedral-phase-strengthened Aluminum Alloys: *Sarshad Rommel*[1]; Hannah Leonard[1]; Thomas Watson[2]; Venkat Vedula[3]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt & Whitney; [3]UTC Aerospace Systems

10:10 AM Break

10:30 AM
Corrosion Behavior of CP-copper with CG and UFG Grain Size after Irradiation by High Current Pulsed Electron Beam: *Yue Zhang*[1]; Fuyang Yu[1]; Fuyu Dong[1]; Shengzhi Hao[2]; Jingtao Wang[3]; Chuang DONG[2]; [1]Shenyang University of Technology; [2]Dalian University of Technology; [3]Nanjing University of Science & Technology

10:50 AM
Aqueous Corrosion Behaviour of Pulse Electrodeposited Nanocrystalline Ni-W and Ni-W/SiC Nanocomposite Coatings: *Sundararajan Govindan*[1]; Nitin Wasekar[2]; Vamsi M.V.N[3]; [1]Indian Institute of Technology Madras; [2]ARCI; [3]McGill university

11:10 AM
Corrosion Behavior of Laser Surface Melted Inconel 718 Superalloy: *Sumit Sharma*[1]; Koushik Biswas[1]; A Nath[1]; Jyotsna Dutta Majumdar[1]; [1]Indian Institute of Technology Kharagpur

11:30 AM
Effect of Voltage and Charge Densities on Nanoporous Oxide Pore Diameter on AA1050: *Mustafa Kocabas*[1]; Michele Curioni[2]; Nurhan Cansever[3]; [1]Selcuk University; [2]University of Manchester; [3]Yildiz Technical University

Thermo-mechanical Response of Materials with Special Emphasis on In-situ Techniques – High Temperature Mechanical Properties of Materials I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Bruker Nano Surfaces ; Jeff Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Dongchan Jang, Korea Advanced Institute of Science and Technology; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Tuesday AM
March 13, 2018

Room: 101A
Location: Phoenix Convention Center

Session Chairs: Sanjit Bhowmick, Bruker Nano Surfaces; Josh Kacher, Georgia Tech

8:30 AM Introductory Comments

8:35 AM Keynote
Real Time 3-D X-ray Computed Micro-tomography Study of the Strength and Toughness of Nuclear Graphite between 25° and 1000 °C: Dong Liu[1]; Bernd Gludovatz[2]; Harold Barnard[3]; Martin Kuball[4]; *Robert Ritchie*[5]; [1]Oxford University; [2]University of New South Wales; [3]Lawrence Berkeley National Laboratory; [4]University of Bristol; [5]University of California, Berkeley

9:10 AM
Local Dislocation Configurations and their Contribution to Early Stage Globularization in Alpha Beta Titanium Alloys: *Victoria Miller*[1]; Adam Pilchak[2]; Jordan Moering[3]; [1]University of California, Santa Barbara; [2]Air Force Research Laboratory; [3]Protochips

9:30 AM
An Analysis of Thermo-mechanical Fatigue Crack Growth in the Titanium Alloy Ti-6246: *Jennie Palmer*[1]; Jonathan Jones[1]; Mark Whittaker[1]; Steve Williams[2]; [1]Swansea University; [2]Rolls-Royce plc

9:50 AM
Design and Fabrication of MEMS-based Symmetric Structure for In-situ Nanomechanical Tensile Experiments: *Minsoo Kim*[1]; Dongchan Jang[1]; Hansuek Lee[1]; Daegon Kim[1]; [1]KAIST(Korea Advanced Institute of Science and Technology)

10:10 AM Break

10:30 AM Invited
In-situ Deformation and Characterisation of Carbon Controlled Steels: Jim Hickey[1]; *T Ben Britton*[1]; [1]Department of Materials, Imperial College

11:00 AM
Developing Thermo-mechanical Fatigue Crack Growth Techniques: *Jonathan Jones*[1]; Mark Whittaker[1]; Robert Lancaster[1]; Svjetlana Stekovic[2]; Daniel Leidermark[2]; Daniel Child[3]; Stephen Pattison[3]; Christopher Hyde[4]; James Rouse[4]; Stephen Williams[3]; [1]Swansea University; [2]Linkoping University; [3]Rolls-Royce plc; [4]Nottingham University

11:20 AM
Predicting Bulk Mechanical Properties of Ferritic-martensitic Steel Using In-situ TEM Tensile Experiments and Crystal Plasticity Modeling: *Heungrok Kwon*[1]; Woojin Jeong[2]; Myoung-Gyu Lee[2]; Dongchan Jang[1]; [1]KAIST; [2]Korea University

11:40 AM
Rationalization of Heterogeneous Creep Deformation Behavior of Dissimilar Metal Welds: *Mohan Subramanian*[1]; Sudarsanam Suresh Babu[1]; Jonathan Galler[1]; John DuPont[1]; Zhili Feng[1]; Xinghua Yu[1]; [1]University of Tennessee

Ultrafine-grained Materials X – Temperature Effects and Thermal Stability

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Tuesday AM
March 13, 2018

Room: 103B
Location: Phoenix Convention Center

Session Chairs: Janelle Wharry, Purdue University; Avinash Dongare, University of Connecticut

8:30 AM Invited
The Impact of Severe Plastic Deformation and Subsequent Annealing on Elevated Temperature Deformation Behavior of Al-Mg Alloys: Chenlu Meng[1]; Stefanie Sandloebes[1]; Sandra Korte-Kerzel[1]; *Günter Gottstein*[1]; [1]RWTH Aachen University

9:00 AM Invited
Are Selected Laser-melted (SLM) Alloys UFG?: *Sean Agnew*[1]; Md Shamsujjoha[1]; James Fitz-Gerald[1]; [1]University of Virginia

9:30 AM
Negative Temperature Dependence of Recrystallized Grain Size: Theoretical Formulation and Experimental Confirmation: *Jing Tao Wang*[1]; [1]Nanjing University of Science and Technology

9:50 AM
Severe Deformation at Elevated Temperatures - the Key to Extremely Elongated Nanostructures: *Oliver Renk*[1]; Pradipta Ghosh[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

10:10 AM Break

10:30 AM Invited
Anomalous Deformation Behavior of Thermally Stable Nanocrystalline Immiscible Alloys: *Kiran Solanki*[1]; Kris Darling[2]; [1]Arizona State University; [2]Army Research Laboratory

11:00 AM Invited
Development of Al and Mg-based Nanostructured Alloys: *Aashish Rohatgi*[1]; Nicole Overman[1]; Scott Whalen[1]; Suveen Mathaudhu[2]; [1]Pacific Northwest National Laboratory; [2]University of California, Riverside

11:30 AM
Oxygen and Zirconium Clustering in Nanocrystalline Fe-Zr Alloys and its Impact on Microstructural Stability and High Temperature Mechanical Properties: *Yuzeng Chen*[1]; Guibin Shan[1]; Anna Ceguerra[2]; Simon Ringer[2]; Feng Liu[1]; [1]Northwestern Polytechnical University; [2]Chongqing University

11:50 AM
Bulk Nanocrystalline Metals Cast under Slow Cooling: *Chezheng Cao*[1]; Gongcheng Yao[1]; Abdolreza Javadi[1]; Xiaochun Li[1]; [1]University of California, Los Angeles

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – Design and Synthesis of 2D Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Tuesday PM
March 13, 2018
Room: 101B
Location: Phoenix Convention Center

Session Chairs: Stephen McDonnell, University fo Virginia; Wenda Tan, University of Utah

2:00 PM Invited
Functional Interfacial, Electromechanical, and Phase Change Properties of a Spectrum of 2D Materials: Gowoon Cheon[1]; Yao Zhou[1]; Daniel Rehn[1]; Austin Sendek[1]; *Evan Reed*[1]; [1]Stanford University

2:30 PM Invited
Noncovalent Interactions in Functional Nanomaterials: *Valentino Cooper*[1]; [1]Oak Ridge National Laboratory

3:00 PM
Data-driven Discovery of New Two- and One-dimensional Materials and Lattice-commensurate Heterostructures: *Gowoon Cheon*[1]; Karel-Alexander Duerloo[2]; Austin Sendek[1]; Chase Porter[1]; Yuan Chen[1]; Evan Reed[1]; [1]Stanford University; [2]Boston Consulting Group

3:20 PM Break

3:40 PM Invited
Silicene, Graphene and Nanospheres: Nanomaterials Investigations with Surface Science Approaches: *Petra Reinke*[1]; [1]University of Virginia

4:10 PM
Atomic Level Point Defect Identification in Graphene Materials: *Srinivasa Rao Singamaneni*[1]; [1]The University of Texas at El Paso

4:30 PM Invited
Low-temperature Growth of Two-dimensional Layered Materials Toward Phase-engineered Hybrid Films: *Yu-Lun Chueh*[1]; [1]National Tsing Hua University

5:00 PM Invited
Synthesis and Application of Large-area 2D Materials: *Eric Vogel*[1]; [1]Georgia Institute of Technology

9th International Symposium on High Temperature Metallurgical Processing – Fundamental Research on High Temperature Metallurgical Processing

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Tuesday PM
March 13, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Jerome Downey, Montana Tech of the University of Montana; Chenguang Bai, Chongqing University

2:00 PM Introductory Comments

2:05 PM
Dissolution Rate of Carbon in Molten Iron-manganese Alloys: *Hamideh Kaffash*[1]; Merete Tangstad[1]; [1]NTNU

2:25 PM
Irreversibilities in Copper Matte Smelting and Settling: *Paul Mather*[1]; Matthew Krane[1]; [1]Purdue University

2:45 PM
Degradation Mechanisms of Refractories in a Bottom Blown Copper Smelting Furnace: *Mao Chen*[1]; Zhixiang Cui[2]; Chuandong Wei[2]; Baojun Zhao[1]; [1]University of Queensland; [2]Dongying Fangyuan Nonferrous Metals Co. Ltd

3:05 PM
The Dissolution Behavior of MgO into Molten High Titanium Slag: *Gangqiang Fan*[1]; Xuewei Lv[1]; Jian Wang[1]; Shengping Li[1]; Wei Lv[1]; Kai Hu[1]; Chenguang Bai[1]; [1]Chongqing University

3:25 PM Break

3:45 PM
Refractory Wear in a High Carbon Ferromanganese Smelting Furnace: *Dean Gregurek*[1]; Karl Budna[1]; Daniel Kreuzer[1]; Alfred Spanring[1]; [1]RHI AG

4:05 PM
High Temperature Dielectric Property Measurement System: *Liu Chenhui*[1]; Libo Zhang[2]; Jiyun Gao[1]; Jinhui Peng[2]; [1]Yunnan Minzu University; [2]Kunming University of Science and Technology

4:25 PM
Reaction Routes of CaO-Fe2O3-TiO2 and Calcium Ferrite-TiO2 System in Continuous Heating Process: *Chengyi Ding*[1]; Xuewei Lv[1]; Gang Li[1]; Chenguang Bai[1]; Senwei Xuan[1]; Kai Tang[1]; Yang Xu[1]; [1]Chongqing University

4:45 PM
Thermodynamic Calculations on Electric Furnace Smelting Separation of Chromium-bearing Vanadium Titanium Magnetite: *Wenchao He*[1]; Xuewei Lv[1]; Yu Zhang[1]; Xueqin Li[1]; [1]Chongqing University

5:05 PM
Preparation for High Activity Lime and Its Effect on Desulfurization of Hot Metal Pretreatment: *Su-ju Hao*[1]; Jiann-Yang Hwang[1]; Wu-feng Jiang[2]; Yu-zhu Zhang[2]; [1]Michigan Technological University; [2]North China University of Science and Technology

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

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Tuesday PM
March 13, 2018
Room: 102A
Location: Phoenix Convention Center

Session Chairs: Micah Hackett, TerraPower; Assel Aitkaliyeva, University of Florida

2:00 PM
Dislocation Loop Formation in Proton Irradiated Pure Zirconium: *Hattie Xu*[1]; Michael Preuss[1]; Philipp Frankel[1]; Tamás Ungár[1]; [1]University of Manchester

2:25 PM
Enhanced Dynamic Recovery of Radiation Damage in Silicon Carbide under Accelerated Testing Using Ion Beams: *William Weber*[1]; Eva Zarkadoula[2]; Haizhou Xue[1]; Yanwen Zhang[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

2:50 PM
Self-Organization of Gas Bubble Superlattices: *David Sprouster*[1]; K Hattar[2]; C Sun[3]; Y Gao[3]; C Jiang[3]; L He[3]; Y Zhang[3]; J Gan[3]; L Ecker[1]; [1]Brookhaven National Laboratory; [2]Sandia National Laboratories; [3]Idaho National Laboratory

3:15 PM
Microstructural Characterization of the Processes, Stability, and End-of-range Effects in Heavily Irradiated Pyrochlores: *Terry Holesinger*[1]; James Valdez[1]; Cortney Kreller[1]; Matthew Janish[1]; Yongqiang Wang[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

3:40 PM Break

4:00 PM Invited
Microstructural and Nanoindentation Properties of a Lanthanum-containing Nanostructured Ferritic Steel Irradiated by High Dose Iron Ions: *Somayeh Pasebani*[1]; Indrajit Charit[2]; Yaqiao Wu[3]; Jatuporn Burns[4]; Darryl Butt[5]; James Cole[6]; Lin Shao[7]; [1]Oregon State University; [2]University of Idaho; [3]Boise State University; [4]Center for Advanced Energy Studies ; [5]University of Utah; [6]Idaho National Laboratory; [7]Texas A&M

4:30 PM
Irradiation Temperature Influence on Nanolayered Response in Select MAX Phase Ceramics to High Fluence Self-ion Irradiation: *William Hanson*[1]; William Weber[1]; Yanwen Zhang[2]; [1]The University of Tennessee; [2]Oak Ridge National Lab

4:55 PM
3D Study of Neutron-irradiated Fe-9Cr Alloy and 316 Stainless Steel Using Far-field and Near-field High-energy X-ray Diffraction Microscopy: *Xuan Zhang*[1]; Chi Xu[2]; Yiren Chen[1]; Meimei Li[1]; Jun-Sang Park[1]; Peter Kenesei[1]; Hemant Sharma[1]; Jonathan Almer[1]; [1]Argonne National Lab; [2]University of Florida

Accident Tolerant Fuels for Light Water Reactor – Structural Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Tuesday PM
March 13, 2018
Room: 104A
Location: Phoenix Convention Center

Session Chairs: Yukinori Yamamoto, Oak Ridge National Laboratory; Kevin Field, Oak Ridge National Laboratory

2:00 PM Invited
Ex-situ and In-situ Determination of α' Phase Formation/Dissolution in High-Cr Ferritic Alloys Using Small-angle Neutron Scattering: *Kevin Field*[1]; Kenneth Littrell[1]; Samuel Briggs[2]; [1]Oak Ridge National Laboratory; [2]Sandia National Laboratory

2:30 PM
Quantitative Characterization of Y and Ti Inclusions in a 14Cr-YWTi Nanostructured Ferritic Alloy and their Effect on High Temperature Fracture: *Soupitak Pal*[1]; MD Alam[1]; G Odette[1]; [1]University of California, Santa Barbara

2:50 PM
Relationship Between Reactive Element Particle Dispersions and Irradiation-induced Defects in Neutron Irradiated Commercial APMT Alloy: *Dalong Zhang*[1]; Samuel Briggs[2]; Richard Howard[1]; Kevin Field[1]; [1]Oak Ridge National Laboratory; [2]Sandia National Laboratories

3:10 PM
Effects of Ce Addition on the Microstructure and Mechanical Properties of Accident-tolerance Fe-Cr-Al Fuel Cladding Materials: *Naimeng Liu*[1]; ZhongWu Zhang[1]; Yang Zhang[1]; Ye Cui[1]; Dan Chen[1]; Yu Zhao[1]; SongSong Xu[1]; Hao Guo[1]; [1]Harbin Engineering University

3:30 PM Break

3:50 PM
Quality Optimization of Seamless Thin-wall Tube Production of ATF Wrought FeCrAl Alloys: *Yukinori Yamamoto*[1]; Zhiqian Sun[1]; Maxim Gussev[1]; Kevin Field[1]; Bruce Pint[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory

4:10 PM
Impact Toughness of Model and Commercial FeCrAl Alloys: *Zhiqian Sun*[1]; Yukinori Yamamoto[1]; [1]Oak Ridge National Laboratory

4:30 PM
ODS FeCrAl Fabrication Methodology for Optimizing Ductility and Sink Strength: *Caleb Massey*[1]; Sebastien Dryepondt[2]; Philip Edmondson[2]; Kurt Terrani[2]; Steven Zinkle[1]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Laboratory

4:50 PM
Effect of Dynamic Strain Aging on Mechanical Properties of Zircaloy-4: *Nilesh Kumar*[1]; Abdullah Alomari[1]; Korukonda Murty[1]; [1]NC State University

5:10 PM
Thermal Aging Embrittlement in a Friction Stir Processed Al-bearing, High-Cr Stainless Steel: *Anumat Sittiho*[1]; Vedavyas Tungala[2]; Aniket Dutt[2]; Peyman Samimi[3]; Somayeh Pasebani[3]; Indrajit Charit[1]; Rajiv Mishra[2]; [1]University of Idaho; [2]University of North Texas; [3]Oregon State University

5:30 PM
Development of Alumina-forming Duplex Stainless Steels as Potential ATF Cladding Materials: Preliminary Assessments of High Temperature Steam Corrosion Behavior and Tensile Property: *Hyunmyung Kim*[1]; Gokul Obulan Subramanian[1]; Chaewon Kim[1]; Changheui Jang[1]; [1]KAIST

Acta Materialia Symposium – Acta Materialia Award Session

Tuesday PM
March 13, 2018
Room: 129B
Location: Phoenix Convention Center

Session Chairs: To be announced.

3:15 PM
To be announced.

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – High Temperature Alloys and Properties

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Tuesday PM
March 13, 2018
Room: 230
Location: Phoenix Convention Center

Session Chairs: Chantal Sudbrack, NASA Glenn Research Center; Clay Houser, QuesTek Innovations

2:00 PM Invited
Electron Beam Melting of High-gamma Prime Ni-base Superalloys: *Michael Kirka*[1]; Duncan Greeley[1]; Manuel Villalpando[1]; Matthew Ireland[2]; Alex Plotkowski[1]; Andrew Scopel[2]; Yousub Lee[1]; Charles Hawkins[1]; Peeyush Nandwana[1]; Ryan Dehoff[1]; [1]Oak Ridge National Laboratory; [2]University of Maine

2:30 PM
Direct Metal Laser Melting of Gamma Prime Strengthened Superalloys; An Assessment of Microstructure Response through Additive Manufacturing and Heat Treatment: *Laura Dial*[1]; Ian Spinelli[1]; Michael Larsen[1]; Daniel Ruscitto[1]; [1]GE Global Research

2:50 PM
Heterogeneous Microstructure and Indentation Hardness of SLE-Deposited Rene80 Superalloy: *Andriy Dotsenko*[1]; Suman Das[1]; Ranadip Acharya[1]; [1]Georgia Tech

3:10 PM
Microstructure Investigation of Powder Bed Fusion Processed Rene 65: *Andrew Wessman*[1]; Behrang Poorganji[1]; Mahdi Jamshidinia[1]; [1]GE Additive

3:30 PM Break

3:50 PM
Location-specific Microstructure and the Effect of Heat Treatment on Electron-beam Melted Ni-based Superalloy LSHR: *Chantal Sudbrack*[1]; Michael Kirka[2]; S. Lee Semiatin[3]; Timothy Gabb[1]; [1]NASA Glenn Research Center; [2]Oak Ridge National Laboratory; [3]Air Force Research Laboratory

4:10 PM
Laser Additive Manufacturing of Titanium Aluminides: *Silja-Katharina Rittinghaus*[1]; Andreas Vogelpoth[1]; [1]Fraunhofer ILT (Institute for Laser Technology)

4:30 PM
Relations between Microstructure and Oxidation Resistance of an Additive Manufactured Nickel-based Superalloy: Zhenyu Liu[1]; Satia Soltanattar[1]; Brian Gleeson[1]; *Guofeng Wang*[1]; [1]University of Pittsburgh

4:50 PM
Potential Contributors to Creep Resistance in DMLS Processed IN718 Revealed through Modeling of Creep Test Data: *Blake Rogers*[1]; Amaneh Tasooji[1]; [1]ASU

5:10 PM
Flow Stress Asymmetry Dependance on Post-processing Parameters and Deformation Conditions of a Selective Laser Melting Additive Manufactured Inconel 718: *Omar Rodriguez*[1]; Sharniece Holland[2]; Omar Mireles[1]; Lin Li[2]; Paul Allison[2]; [1]NASA MSFC; [2]The University of Alamaba

Additive Manufacturing of Metals: Fatigue and Fracture – Session III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International; John Lewandowski, Case Western Reserve University

Tuesday PM
March 13, 2018
Room: 232A
Location: Phoenix Convention Center

Session Chair: Nima Shamsaei, Auburn University

2:00 PM Invited
Accounting for Thermal Process Induced Residual Stress in Additive Manufacturing Based Laser Cladding Repair of High-strength AerMet®100 Steel: *Kevin Walker*[1]; Stephen Sun[2]; Milan Brandt[2]; Adrian DeWald[3]; Michael Hill[3]; [1]Defence Science and Technology Group; [2]RMIT University; [3]Hill Engineering

2:30 PM
The Influence of Build Orientation on the Thermal Fatigue Behavior of Additively Manufactured AlSi10Mg Coupons: *Joy Forsmark*[1]; Wei-Jen Lai[1]; Carlos Engler-Pinto[1]; John Cornell[1]; Mark Madin[1]; Wolfram Buschhaus[1]; [1]Ford Motor Company

2:50 PM
Strength, Fatigue, Fracture, and Microstructure of Additively Manufactured Austenitic Stainless Steel: *Chris San Marchi*[1]; Thale Smith[1]; Julie Schoenung[2]; Joshua Sugar[1]; [1]Sandia National Laboratories; [2]University of California, Irvine

3:10 PM
Evaluation of the Cyclic Stress-strain Behavior of Additively Manufactured AlSi10Mg: *Matilde Scurria*[1]; Benjamin Möller[2]; Rainer Wagener[2]; Tobias Melz[1]; [1]Technische Universität Darmstadt, Research Group of System Reliability, Adaptive Structures and Machine Acoustics SAM; [2]Fraunhofer Institute for Structural Durability and System Reliability LBF

3:30 PM Break

3:50 PM Invited
Fatigue Behavior of DMLS IN718 and Ti-6Al-4V through Coupled Modeling and In Situ Experiments: *Michael Sangid*[1]; [1]Purdue University

4:20 PM
Study on Dominant factors on Fatigue Strength of Additive Manufactured Ti-6Al-4V Alloy: *Junichi Ozaki*[1]; Takehisa Yamada[1]; Masahiro Takanashi[1]; Ryoji Kakiuchi[1]; Akihiro Sato[1]; [1]IHI Corporation

4:40 PM
Fatigue Crack Growth Anisotropy in Selective Laser Melting Produced Alloy 718 at Ambient and Elevated Temperatures: *Halsey Ostergaard*[1]; Jamie Kruzic[1]; [1]University of New South Wales

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Modeling in Additive Manufacturing

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Tuesday PM
March 13, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chairs: Wayne King, LLNL; Peter Collins, Iowa State University

2:00 PM Invited
Accelerating Qualification of Additively Manufactured Metal Parts: *Wayne King*[1]; Andrew Anderson[1]; Robert Ferencz[1]; Neil Hodge[1]; Saad Khairallah[1]; Manyalibo Matthews[1]; Alexander Rubenchik[1]; Otis Walton[1]; Morris Wang[1]; [1]Lawrence Livermore National Laboratory

2:30 PM
Online Monitoring of Powder Bed Fusion Processes and Validation of Numerically Predicted Heating and Cooling Rates - Implications on As-built Work Piece: *Mustafa Megahed*[1]; Christoph Beetz[1]; Narcisse N'Dri[1]; Hans-Wilfried Mindt[1]; Mark Cola[2]; Lars Jaquemetton[2]; James Craig[3]; Thomas Wakeman[3]; Peralta Alonso[4]; James Neumann[4]; [1]ESI Group; [2]Sigma Labs, Inc.; [3]Stratonics Inc; [4]Honeywell Aerospace

2:50 PM
Predicting Deformation and Cracking as a Function of Additive Manufacturing Process Parameters: *Richard Otis*[1]; Cornelia Altenbuchner[1]; Andrew Shapiro[1]; [1]Jet Propulsion Laboratory

3:10 PM
Validation of Laser Powder Bed Fusion Finite Element Model: *Li Ma*[1]; Kevontrez Jones[2]; Jarred Heigel[1]; Brandon Lane[1]; Richard Ricker[1]; Greta Lindwall[1]; Carelyn Campbell[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology; [2]Northwestern University

3:30 PM Break

3:50 PM Invited
(Some of) The ICME Building Blocks to Qualify the Process and Materials of Additive Manufacturing: *Peter Collins*[1]; [1]Iowa State University

4:20 PM
Automated Material, Geometry and Process Qualification in Metal Melting Based Additive Manufacturing Technologies Using Experimentally Validated Simulation Tools: *Deepankar Pal*[1]; Javed Akram[1]; Pradeep Chalavadi[1]; Abdul Khan[1]; Chong Teng[1]; Brent Stucker[1]; [1]3DSIM

4:40 PM
Modeling the Life Cycle of High throughput Tensile Specimens Produced by Laser Powder Bed Fusion: From Fabrication to Performance: *Kyle Johnson*[1]; Bradley Jared[1]; John Emery[1]; Jonathan Madison[1]; Carl Jacques[1]; Burke Kernen[1]; Kurtis Ford[1]; Joseph Bishop[1]; [1]Sandia National Laboratories

5:00 PM
Finite Element Modelling of the Laser Metal Directed Energy Deposition Process: *Edison Bonifaz*[1]; [1]Universidad San Francisco de Quito

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Dislocations and Planar Faults

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Tuesday PM
March 13, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Analyzing Subsurface Dislocation Content of Ti-5Al-2.5Sn Alloy Using Micro-Laue Diffraction Based Streak Anlaysis and Transmission Electron Microscopy: *Chen Zhang*[1]; Shanoob Nair[1]; Hongmei Li[1]; Philip Eisenlohr[1]; Martin Crimp[1]; Carl Boehlert[1]; Ruqing Xu[2]; Thomas Bieler[1]; [1]Michigan State University; [2]Argonne National Lab

2:20 PM
Electron Microscopy Image Simulation Using Atomistic Simulation Data: *Joseph Tessmer*[1]; Saransh Singh[1]; Marc De Graef[1]; [1]Carnegie Mellon University

2:40 PM
3D Dislocation Crystallography: *Zongqiang Feng*[1]; Chengwei Lin[1]; Guilin Wu[1]; Xiaoxu Huang[1]; [1]Chongqing University

3:00 PM
Three-dimensional X-ray Diffraction Imaging of Dislocations in Polycrystalline Metals Under Tensile Loading: *Mathew Cherukara*[1]; Reeju Pokharel[2]; Timothy S'O.Leary[2]; Kevin Baldwin[2]; Evan Maxey[1]; Wonsuk Cha[1]; Jorg Maser[1]; Ross Harder[1]; Saryu Fensin[2]; Richard Sandberg[2]; [1]Argonne National Lab; [2]Los Alamos National Laboratory

3:20 PM Break

3:40 PM Invited
Atomic Scale Modeling and Experimental Observations of Deformation Mechanisms in Ni Base Superalloys: You Rao[1]; T. M. Smith[1]; M. J. Mills[1]; *Maryam Ghazisaeidi*[1]; [1]Ohio State University

4:10 PM
Analysis of Dislocation Slip Across Boundaries in Tantalum Using ECCI and CC-EBSD: *Bret Dunlap*[1]; Martin Crimp[1]; [1]Michigan State University

4:30 PM
TEM 3D Visualization Using Two Micrographs: *Benjamin Eftink*[1]; Kaan Unal[1]; George Gray[1]; Stuart Maloy[1]; [1]Los Alamos National Laboratory

4:50 PM
Evolution of Stacking Faults during Thermomechanical Processing of Biomedical Co–Cr–Mo Alloys Studied by X-ray Diffraction Line-profile Analysis: *Kenta Yamanaka*[1]; Mmanami Mori[2]; Kazuo Yoshida[1]; Shigeo Sato[3]; Akihiko Chiba[1]; [1]Tohoku University; [2]National Institute of Technology, Sendai College; [3]Ibaraki University

5:10 PM
Detection of the Onset of Plasticity in Micro-crystals: In-situ Deformation of InSb Micro-pillars under Synchrotron Coherent X-ray Nanobeam: *Ludovic Thilly*[1]; Vincent Jacques[2]; Christoph Kirchlechner[3]; [1]Pprime Institute - University of Poitiers; [2]LPS-Orsay; [3]MPIE Düsseldorf

Advanced High-strength Steels – Medium Mn Steels

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Tuesday PM
March 13, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Young-Kook Lee, Yonsei university; Cem Tasan, Massachusetts Institute of Technology

2:00 PM Invited
Tensile Properties of Tempered-martensitic Medium Mn Lightweight Steel: Sukjin Lee[1]; Seok-Hyeon Kang[1]; Jae-Hoon Nam[1]; Sang-Min Lee[1]; *Young-Kook Lee*[1]; [1]Yonsei University

2:25 PM
Strengthening Mechanism of a Medium Mn Steel with a Yield Strength of 2.2 GPa and Uniform Elongation of 16%: *M.X. Huang*[1]; Binbin He[1]; [1]The University of Hong Kong

2:45 PM
In Situ μ-DIC Measurements of Strain Partitioning in Medium Mn Steel: *Aniruddha Dutta*[1]; Dirk Ponge[1]; Stefanie Sandlöbes[2]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Institut für Metallkunde und Metallphysik, RWTH Aachen

3:05 PM
The Impact of Aluminum on the Microstructure and Deformation Behavior in Medium-Mn TRIP Steels: Devesh Misra[1]; *Bing Yu*[1]; Yashwanth Injeti[1]; [1]University of Texas at El Paso

3:25 PM
Comparison of the Hot-stamped Boron-alloyed Steel and the Warm-stamped Medium-Mn Steel on Microstructure and Mechanical Properties: *Ying Chang*[1]; Cunyu Wang[2]; Xiaodong Li[1]; Guojun Zheng[1]; Han Dong[2]; [1]Dalian University of Technology; [2]Central Iron & Steel Research Institute

3:45 PM Break

4:00 PM
Effects of Annealing Time and Strain Rate on Alloy Partitioning and Mechanical Properties of a Medium-Mn Steel: *Jake Benzing*[1]; Aniruddha Dutta[2]; Lutz Morsdorf[2]; Alisson Kwiatkowski da Silva[2]; Dirk Ponge[2]; Jeongho Han[3]; Whitney Poling[4]; Bill Luecke[4]; Dierk Raabe[2]; Jim Wittig[1]; [1]Vanderbilt University; [2]Max-Planck-Institut für Eisenforschung; [3]Chungnam National University; [4]National Institute of Standards and Technology

4:20 PM
Investigation on Sheared Edge Crack Susceptibility of the Third-generation Automobile Medium-Mn Steel: *Xiaodong Li*[1]; Shuo Han[1]; Cunyu Wang[2]; Ying Chang[1]; Han Dong[2]; [1]Dalian University of Technology; [2]Central Iron & Steel Research Institute

4:40 PM
Enhanced Formability of Duplex Light-weight Steels by Warm-rolling: *Yongmoon Lee*[1]; Chong Soo Lee[1]; [1]Postech

5:00 PM
Development, Characterization and Mechanical Property Evaluation of a Medium Mn High Si Multicomponent Steel for Automotive Applications: *Nicky Kisku*[1]; Sumantra Mandal[1]; K.K Ray[1]; [1]Indian Institute of Technology, Kharagpur

5:20 PM
Resetting Microstructures and Properties in TRIP-assisted Advanced High Strength Steels: *Menglei Jiang*[1]; C. Cem Tasan[1]; [1]MIT

Advanced Magnetic Materials for Energy and Power Conversion Applications – Alloy Development and Application of Magneto-thermal Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Tuesday PM
March 13, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: TV (Jay) Jayaraman, University of Michigan

2:00 PM Introductory Comments

2:05 PM Invited
Methods for Characterizing the Hysteresis of Magnetocaloric Materials: *Victorino Franco*[1]; Jia Yan Law[1]; Luis M. Moreno-Ramírez[1]; Alejandro Conde[1]; [1]Sevilla University

2:35 PM Invited
Efficient Energy-conversion Near Room-temperature with Transition Metal Based Magnetic Materials: *Ekkes Brück*[1]; [1]Delft University of Technology

3:05 PM Invited
Optimisation of Magnetically Hard Pyromagnets: *Karl Sandeman*[1]; Dominique Givord[2]; Laurent Ranno[2]; Nora Dempsey[2]; [1]City University of New York, USA; [2]Université Grenoble Alpes, CNRS, Institut Néel

3:35 PM Break

3:55 PM Invited
Spin Seebeck Effect and Anisotropy in Magnetic Oxides: Vijaysankar Kalappattil[1]; Raja Das[1]; Manh-Huong Phan[1]; *Hariharan Srikanth*[1]; [1]University of South Florida

4:25 PM
Magnetocaloric Effect and Local Structure in B/In-substituted Gd-Co-Al Metallic Glasses: *Jason Douglas*[1]; Eric Lass[1]; Robert Shull[1]; [1]National Institute of Standards and Technology

4:45 PM
Severe Plastic Deformation as a Tool for Production Advanced Magnetic Materials: *Sergey Taskaev*[1]; Konstantin Skokov[2]; Vladimir Khovaylo[3]; Oliver Gutfleisch[2]; [1]Chelyabinsk State University; [2]TU Darmstadt; [3]NITU MISIS

5:05 PM
Influence of Co-doping on the Crystal Structure, Magnetocaloric Properties and Elastic Moduli of the La(Fe,Si)13 Compound: *Dan Huang*[1]; Ronghui Kou[1]; Jianrong Gao[1]; Jiaqiang Yan[2]; Veerle Keppens[2]; David Mandrus[2]; Yang Ren[3]; [1]Northeastern University; [2]University of Tennessee; [3]Argonne National Laboratory

5:25 PM
Magnetocaloric Properties of (Fe,Mn)3Al Based Alloys under Hydrostatic Pressure: Vinay Sharma[1]; *Raju Ramanujan*[1]; [1]Nanyang Technological University

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Quality and Reliability of Advanced Microelectronic Packaging II

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Tuesday PM
March 13, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: Kwang-Lung Lin, National Cheng Kung University ; C. Robert Kao , National Taiwan University

2:00 PM
Multi Axis Loading Impact in Via-in Pad Plated Over (VIPPO) Board Design on Thermal Cycling Performance: *Tae-Kyu Lee*[1]; Mohamed Sheikh[1]; Andy Hsiao[1]; Weidong Xie[2]; Steven Perng[2]; [1]Portland State University; [2]Cisco Systems

2:20 PM
Characterization of X-ray Impact on Memory Retention Time for External In-package DRAM: *George Vakanas*[1]; Jaeho Lee[2]; Purushotham Kaushik Muthur Srinath[1]; Mahesh Deshmane[1]; Gunnar Zimmermann[1]; Elah Bozorg-Grayeli[1]; Leslie Lau[1]; Shereen Elhalawaty[1]; Jiraporn Seangatith[1]; Prasad Ramanathan[1]; Wonyong Choi[2]; Oungsic Cho[2]; Yeongkee Chang[2]; Saikumar Jayaraman[1]; [1]INTEL Corporation; [2]SK Hynix

2:40 PM
The Effect of Bump Metallurgy on First Level Interconnect Solder Bump Integrity: *Shereen Elhalawaty*[1]; George Vakanas[1]; Jiraporn Seangatith[1]; Prasad Ramanathan[1]; Elah Bozorg-Grayeli[1]; Bharat Penmecha[1]; Pilin Liu[1]; Charles Zhang[1]; [1]Intel Corporation

3:00 PM
Resistance Changes of Pd-coated Cu and Ag Bonding Wires in High Temperature Storage: *Stevan Hunter*[1]; Michael Hook[2]; Michael Mayer[2]; [1]ON Semiconductor; [2]University of Waterloo

3:20 PM
Understand the Corrosion-induced Disappearance of Cu9Al4 from the Cu-Al Ball Bond Interface: *Yuelin Wu*[1]; Andre Lee[1]; [1]Michigan State University

3:40 PM Break

4:00 PM
A Study of Ag Alloy Wire with Flash Au after Sulfidation Test: *Yu-Hsien Wu*[1]; Fei-Yi Hung[1]; Truan-Sheng Lui[1]; [1]National Cheng Kung University

4:20 PM
Thermal Cycling Reliability of Solder and NiSn Solid□liquid Interdiffusion Joints with Thermal Coefficient Mismatch: Influence of Mechanical Properties of Joint Materials: *Hirofumi Ito*[1]; Makoto Kuwahara[1]; Masanori Usui[1]; [1]Toyota Central R&D Labs., Inc.

4:40 PM
Observations of Microstructure Evolution and Damage during Creep Testing and Thermal Loading of SAC 305 Solder Alloys: *Tianhong Gu*[1]; Grey Chen[1]; Chris Gourlay[1]; Ben Britton[1]; [1]Imperial College London

5:00 PM
In Situ X-ray Microtomography of Thermal and Power Cycling of Silver-based Thermal Interface Materials: *Irene Lujan Regalado*[1]; Jason Williams[1]; Yanghe Liu[2]; Shailesh Joshi[2]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Toyota Research Institute of North America

5:20 PM
Corrosion Resistance of Surface Finishes for High Reliability Devices: *Tsan-Hsien Tseng*[1]; Albert T. Wu[1]; [1]National Central University

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Solidification and Microstructure I

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Tuesday PM
March 13, 2018
Room: 231C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Modeling the Effects of Alloying on Microstructure Formation under Additive Manufacturing Conditions: *Richard LeSar*[1]; Matthew Rolchigo[1]; Michael Mendoza[1]; Peter Collins[1]; [1]Iowa State University

2:30 PM Invited
The Effect of Boron on the Grain Size and Texture in Additively Manufactured ß-Ti Alloys: Srinivas Aditya Mantri[1]; Talukder Alam[1]; Deep Choudhuri[1]; Christopher Yannetta[1]; Calvin Mikler[1]; Peter Collins[2]; *Rajarshi Banerjee*[1]; [1]University of North Texas; [2]Iowa State University

3:00 PM
Predicting the Solidification Microstructure of Pulsed-LPBF Ti-6Al-4V Alloy Using Phase-field Modelling: *Dany Rasmussen*[1]; Nikolas Provatas[1]; Mathieu Brochu[1]; [1]McGill University

3:20 PM Break

3:35 PM Invited
Microstructure Characterisation and Mechanical Properties of Ti-6Al-4V with Grain Refinement Made by Direct Laser Fabrication: *Kai Zhang*[1]; Tom Jarvis[1]; Sheng Cao[1]; Xinhua Wu[1]; [1]Monash University

4:05 PM Invited
Tuning Microstructural Evolution in Additively Manufactured Ti Alloys Using High throughput Experimental Approaches: Brian Welk[1]; Kevin Chaput[2]; Samuel Kuhr[1]; *Hamish Fraser*[1]; [1]The Ohio State University; [2]AFRL/RX

4:35 PM
Effect of Scan Patterns on Microstructure Evolution of Ti6Al4V Alloy: *Javed Akram*[1]; Deepankar Pal[1]; Pradeep Chalavadi[1]; Brent Stucker[1]; [1]3DSIM, LLC

4:55 PM
Titanium Based Metal-matrix Composites via In-situ Nitridation: Microstructure and Tribological Properties: *Tushar Borkar*[1]; Thomas Scharf[2]; Rajarshi Banerjee[2]; [1]Cleveland State University; [2]University of North Texas

Algorithm Development in Materials Science and Engineering – DFT and Atomistic Algorithms for Study and Design of Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee

Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Tuesday PM
March 13, 2018

Room: 130
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
An Explicit Methodology for Hierarchical Bridging between Ab Initio and Atomistic Scales: *Mark Horstemeyer*[1]; Christopher Barrett[1]; Ric Carino[1]; Imran Aslam[1]; Doyl Dickel[1]; Michael Baskes[1]; [1]Mississippi State University

2:30 PM
Large-scale Real-space Electronic Structure Calculations: Bikash Kanungo[1]; Phani Motamarri[1]; *Vikram Gavini*[1]; [1]University of Michigan

2:50 PM
Parallel Algorithms for Hyperdynamics in LAMMPS: *Steve Plimpton*[1]; Danny Perez[2]; Art Voter[2]; [1]Sandia National Laboratories; [2]Los Alamos National Laboratory

3:10 PM
Accelerated Quantum Molecular Dynamics: *Enrique Martinez Saez*[1]; Christian Negre[1]; Danny Perez[1]; Marc Cawkwell[1]; Arthur Voter[1]; Anders Niklasson[1]; [1]Los Alamos National Laboratory

3:30 PM Break

3:50 PM Invited
Computational Phonon Manipulation: *Peter Chung*[1]; Francis VanGessel[1]; Jie Peng[1]; Rose Gallagher[1]; [1]University of Maryland in College Park

4:20 PM
Computing the Lattice Green Function in Complex Materials: *Anne Marie Tan*[1]; Dallas Trinkle[1]; [1]University of Illinois, Urbana-Champaign

4:40 PM
Automated Calculation of First-principles Based Diffusion Coefficients in Non-dilute Alloys: *Brian Puchala*[1]; Sanjeev Kolli[2]; John Goiri[2]; Naga Sri Harsha Gunda[2]; Julija Vinckeviciute[2]; John Thomas[2]; Anton Van der Ven[2]; [1]University of Michigan, Ann Arbor; [2]University of California, Santa Barbara

5:00 PM
Transition State Redox during Dynamical Processes in Semiconductors and Insulators: *Guangfu Luo*[1]; Thomas Kuech[1]; Dane Morgan[1]; [1]University of Wisconsin-Madison

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Session IV

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Tuesday PM
March 13, 2018

Room: 226B
Location: Phoenix Convention Center

Session Chairs: Takao Mori, National Institute for Materials Science; Philippe Jund, Université de Montpellier

2:00 PM Invited
Effect of Oxygen on the Doping Mechanisms of Thermoelectric Materials via Ab Initio Simulations: Application to ZnSb and NiTiSn.: *Philippe Jund*[1]; Alexandre Berche[1]; [1]Université Montpellier 2 - ICGM

2:20 PM Invited
Ni-interstials Making Strong Influence on Thermoelectric Properties of TiNiSn Half Heuslers: *Yinglu Tang*[1]; Xiaoshuang Li[1]; Lukas Martin[2]; Christian Leinenbach[1]; Toni Ivas[1]; Shashwat Anand[3]; Jeffrey Snyder[3]; Corsin Battaglia[1]; [1]EMPA; [2]ETH; [3]Northwestern University

2:40 PM
Effect of Magnetic Ion Doping on the Thermoelectric Properties of Zintl Phase Materials: *Gabin Guélou*[1]; Takao Mori[1]; [1]National Institute for Materials Science

3:00 PM Invited
Phonon Scattering and Propagation Considerations for Thermoelectrics: *Yanzhong Pei*[1]; [1]Tongji University

3:20 PM Invited
Anisotropic Thermal Expansion and Bond Softening in Thermoelectric Materials: *Alexandra Zevalkink*[1]; [1]Michigan State University

3:40 PM Break

4:00 PM Invited
Tailoring Thermoelectric Properties of Telluride-based Materials from Bulk to Thin Films: *Li-Chyong Chen*[1]; Deniz Wong[2]; Kuei-Kuan Wu[2]; Kuei-Hsien Chen[2]; [1]National Taiwan University; [2]Academia Sinica

4:20 PM Invited
Thermoelectric Borides and Sulfides; Role of Magnetism and Disorder: *Takao Mori*[1]; [1]National Institute for Materials Science (NIMS)

4:40 PM Invited
Suppressing Bipolar Effects by Deep Defect State for High Thermoelectric Efficiency: *Qian Zhang*[1]; [1]Harbin Institute of Technology (Shenzhen)

5:00 PM
Enhancement of Thermoelectric Performance Through Optimization of Hot-pressing Parameters in the Gas Atomized Bi0.5Sb1.5Te3 Alloys: *Peyala Dharmaiah*[1]; D.W Shin[1]; M Babu[1]; C.H. Lee[1]; Soon-Jik Hong[1]; [1]Kongju National University

Aluminum Alloys, Processing and Characterization – Aluminum Alloy Development

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Tuesday PM
March 13, 2018
Room: 221B
Location: Phoenix Convention Center

Session Chair: Hiromi Nagaumi, Soochow University

2:00 PM Invited
A Study of Sensitization in Naturally Aged 5xxx Alloys: *William Golumbfskie*[1]; Emily Holcombe[1]; Mitra Taheri[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]Drexel University

2:30 PM Invited
Phase Formation of Monotectic Al-In and Al-Ga-In Alloys and Implications Thereof: *Xiaoming Wang*[1]; Xingtao Liu[1]; [1]Purdue University

2:50 PM
Effect of Ultrasonic Melt Treatment, Mn and Cooling Rate on the Formation of Fe-containing Intermetallics in Hypereutectic Al-Si Alloy: *Carmelo Todaro*[1]; Mark Easton[1]; Dong Qiu[1]; Ma Qian[1]; [1]RMIT University

3:10 PM
Investigations on Pb-free 6000 Series Aluminum Alloy for Machining Applications: *Saikat Adhikari*[1]; Anirban Giri[1]; V Siva Raman[2]; Pramod Koparde[3]; Sachin Gupta[3]; L Vijayaraghavan[2]; S Sankaran[2]; [1]Aditya Birla Science and Technology Company Pvt. Ltd.; [2]Indian Institute of Technology, Madras; [3]Hindalco Industries Ltd.

3:30 PM Break

3:50 PM
Optimization in Novel Partial-solid High Pressure Aluminum Die Casting by Taguchi Method: *Yekta Suslu*[1]; Mehmet Acar[2]; Mithat Senol[2]; Muammer Mutlu[2]; Ozgul Keles[1]; [1]Istanbul Technical University; [2]Mita Kalip ve Dokum Sanayii A.S.

4:10 PM
Microstructural Characteristics of Direct-electrolytic Eutectic Al-12%Si Alloy and its Mechanical Properties: *Ru yao Wang*[1]; Wei hua Lu[1]; [1]Donghua University

4:30 PM
New Aluminum Alloys for High Pressure Casting: *Alexander Alabin*[1]; Viktor Mann[1]; Anton Frolov[1]; Aleksandr Krokhin[1]; [1]UC RUSAL

4:50 PM
Application of the Hot Stamping Process to Aluminum Alloy Structural Components: *Ehab Samuel*[1]; [1]National Research Council Canada

Aluminum Reduction Technology – Joint Session: Alumina Quality

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Tuesday PM
March 13, 2018
Room: 221C
Location: Phoenix Convention Center

Session Chair: Claude Fradet, Rio Tinto Aluminium

2:00 PM Introductory Comments

2:05 PM Keynote
KN1: Alumina Quality: *James Metson*[1]; [1]University of Auckland

2:40 PM Keynote
KN2: Alumina Dissolution: *Laszlo Kiss*[1]; [1]University of Quebec in Chicoutimi

3:15 PM Panel Discussion: Led by Claude Fradet, Panel members include Jim Metson, Lazlo Kiss, and Alessio Scarsella

3:45 PM Break

4:00 PM
Discussion on Alumina Dissolution and Diffusion in Commercial Aluminum Reduction Cell: *Youjian Yang*[1]; Bingliang Gao[1]; Zhaowen Wang[1]; Zhongning Shi[1]; Xianwei Hu[1]; Wenju Tao[1]; Fengguo Liu[1]; [1]Northeastern University

4:25 PM
Investigation of Alumina Concentration Gradients within Hall-Héroult Electrolytic Bath: *Jayson Tessier*[1]; Katie Cantin[1]; Davíð Þór Magnússon[1]; [1]Alcoa

4:50 PM
Study of Alumina Dissolution in Cryolitic Bath to Aluminum Production Process: *Diego Marinho*[1]; Marcelo Mourão[2]; [1]Votorantim Metais CBA; [2]Universidade de São Paulo (USP)

5:15 PM
Impacts of Sodium on Alumina Quality and Consequences for Current Efficiency: *Grant McIntosh*[1]; Hasini Wijayaratne[1]; Gordon Agbenyegah[1]; Margaret Hyland[1]; James Metson[1]; [1]Light Metal Research Centre

Application of Solidification Fundamentals to Challenges in Metal Additive Manufacturing – Solidification Modeling

Sponsored by: TMS: Additive Manufacturing Bridge Committee
Program Organizers: Alex Plotkowski, University of Tennessee - Knoxville; Kevin Chaput, Materials and Manufacturing Directorate; Lang Yuan, GE Global Research

Tuesday PM
March 13, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Lang Yuan, GE Global Research

2:00 PM Invited
Phase-field Modeling of Solidification Microstructures during Additive Manufacturing: Yanzhou Ji[1]; Feng-Yi Yu[1]; Huiliang Wei[1]; Yanhong Wei[2]; Tarasankar Debroy[1]; *Long Qing Chen*[1]; [1]Penn State University; [2]Nanjing University of Aeronautics & Astronautics

2:30 PM
Simulating Grain Formation during Metal Additive Manufacturing (AM): Potential Pathways for Producing Equiaxed Grain Structures: *David StJohn*[1]; Arvind Prasad[1]; Lang Yuan[2]; Peter Lee[3]; [1]University of Queensland; [2]GE Global Research; [3]University of Manchester

2:50 PM
Microstructural Modeling of the Solidification of Alloys in Additive Manufacture: Alojz Ivankovic[1]; Denis Dowling[1]; *David Browne*[1]; [1]University College Dublin

3:10 PM
Phase-field Modeling of Solidification under SLM Conditions: *Guillaume Boussinot*[1]; Jonas Zielinski[2]; Markus Apel[1]; [1]Access e.V.; [2]Fraunhofer Institut fuer Lasertechnik

3:30 PM Break

3:50 PM
Fluid Dynamics Effects on Microstructure Prediction in the Laser Additive Manufacturing Process: *Adrian Sabau*[1]; Lang Yuan[2]; Srdjan Simunovic[1]; John Turner[1]; Neil Carlson[3]; [1]Oak Ridge National Laboratory; [2]GE Global Research; [3]Los Alamos National Laboratory

4:10 PM
Heat Transfer and Fluid Flow during Fabrication of Overhang Structure in Laser-powder Bed Fusion Additive Manufacturing: *Yi Li*[1]; Yousub Lee[2]; Wei Zhang[1]; [1]The Ohio State University; [2]Oak Ridge National Laboratory

4:30 PM
Dynamics of Melting and Resolidification: Application to the Interlayer Band Microstructure in Laser Metal Deposition: *Guillaume Boussinot*[1]; Ulrike Hecht[1]; Markus Apel[1]; Silja-Katharina Rittinghaus[2]; Oleg Stryzhyboroda[1]; [1]Access e.V.; [2]Fraunhofer-Institut fuer Lasertechnik

4:50 PM
Experimental and Simulation Study of Solidification and Microstructural Evolution of Liquid Metal Alloys for Additive Manufacturing Process Simulation and Materials Design: *Jonathan Raush*[1]; Sanjeev Tulasigeri[1]; Boliang Zhang[2]; Shengmin Guo[2]; Wenjin Meng[2]; [1]University of Louisiana at Lafayette; [2]Louisiana State University

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials – Novel Applications and Modelling

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Haiming Wen, Missouri University of Science and Technology; Simon Ringer, The University of Sydney; Gregory Thompson, University of Alabama; Arun Devaraj, Pacific Northwest National Laboratory; Keith Knipling, U.S. Naval Research Laboratory; Gang Sha, Nanjing University of Science and Technology; David Seidman, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center

Tuesday PM
March 13, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: Dieter Isheim, Northwestern University; Gregory Thompson, University of Alabama

2:00 PM Invited
New Experimental APT Methods for the Analysis of Nanoparticles: *Peter Felfer*[1]; Jan Joosten[1]; Chandra Macaulay[1]; Taulant Sinani[1]; [1]FAU Erlangen-Nürnberg

2:35 PM Invited
Studying the Distribution of Trace Elements in Zircon: Deformation and Standards: *Julie Cairney*[1]; Alexandre La Fontaine[1]; Florant Exertier[1]; Sandra Piazolo[2]; Patrick Trimby[3]; Limei Yang[1]; [1]The University of Sydney; [2]The University of Leeds; [3]Oxford Instruments Nanoanalysis

3:10 PM Invited
Chemical Imaging of Interfaces and Interphases in Tooth Biominerals: *Derk Joester*[1]; [1]Northwestern University

3:45 PM Break

4:05 PM
Advanced APT Simulations by Combining Electrostatics with Molecular Dynamics: *Christian Oberdorfer*[1]; Travis Withrow[1]; Emmanuelle Marquis[2]; Wolfgang Windl[1]; [1]The Ohio State University; [2]University of Michigan

4:25 PM
Non-diffusive Drag Effect in APT of AlCu Alloy: Travis Withrow[1]; Christian Oberdorfer[1]; Emmanuelle Marquis[2]; *Wolfgang Windl*[1]; [1]The Ohio State University; [2]University of Michigan

4:45 PM Invited
Modeling Atom Probe Tomography: A Path for Diagnosis and Treatment of Reconstruction Artifacts Symptoms: *François Vurpillot*[1]; Benoit Gervais[2]; Constantinos Hatzoglou[1]; Stefan Parviainen[1]; [1]GPM UMR 6634; [2]CIMAP UMR 6252

Biological Materials Science – Bones, Teeth, and Dental Materials

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Tuesday PM
March 13, 2018
Room: 225B
Location: Phoenix Convention Center

Session Chairs: Vinoy Thomas, University of Alabama, Birmingham; Dwyane Arola, University of Washignton

2:00 PM Invited
Tooth Enamel: Imaging a Highly Graded Structure at the Nanoscale: *Derk Joester*[1]; [1]Northwestern University

2:30 PM
Spatial Variations in Aging of Teeth about the Arch: Weishi Yan[1]; Marit Oilo[2]; Avina Paranjpe[1]; Hai Zhang[1]; *Dwayne Arola*[1]; [1]University of Washington; [2]University of Bergen

2:50 PM
Finite Element Simulations and 3D-printed Models of Bone as an Interpenetrating Composite: *Frances Su*[1]; Fereshteh Sabet[2]; Rachel Hsiong[1]; Justin Salim[1]; Iwona Jasiuk[2]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]University of Illinois at Urbana-Champaign

3:10 PM
The Influence of Plastic Deformation Mechanisms on the Collagen Formation in Osteoblast Cells: *Benay Uzer*[1]; Felipe Monte[2]; Kamal Awad[3]; Pranesh Aswath[2]; Venu G. Varanasi[4]; Demircan Canadinc[1]; [1]Koc University; [2]University of Texas at Arlington; [3]University of Texas at Arlington, National Research Centre, Giza, Egypt; [4]Texas A&M University

3:30 PM Break

3:50 PM Invited
Damage Tolerance in Dental Restorative Materials: *Jamie Kruzic*[1]; Carina Tanaka[1]; [1]UNSW Sydney

4:20 PM
Osteoblast Functions on Bioactive 3D Printed Porous Ti-6Al-4V Scaffolds: *Krishna Chaitanya Nune*[1]; Devesh Misra[1]; SJ Li[2]; Yl Hao[2]; W Zhang[2]; [1]University of Texas at El Paso; [2]Chinese Academy of Sciences

4:40 PM
Reduction of Osteoporosis by Means of Hydrogels and Nanohydroxyapatite with Integration of Magnesium: *Gerardo Presbitero*[1]; Laura Peña[2]; Cristina Piña[1]; M. A. L. Hernandez-Rodríguez[3]; [1]National Autonomous University of Mexico; [2]Universidad de Monterrey; [3]Universidad Autónoma de Nuevo León

5:00 PM
Synthesis and Evaluation of Polypyrrole-hydroxyapatite Composite Developed through Electro-deposition for Use as Bio-compatible Coating over Metallic Orthopaedic Implant Surfaces: *Rajib Chakraborty*[1]; Partha Saha[1]; [1]Indian Institute of Technology- Kharagpur

Bulk Metallic Glasses XV – Structures and Mechanical Properties I

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Tuesday PM
March 13, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Takeshi Egami, The University of Tennessee, Knoxville; Koichi Tsuchiya, NIMS

2:00 PM Keynote
Ductility of Metallic Glasses: *Takeshi Egami*[1]; [1]University of Tennessee

2:30 PM Invited
Elastic Heterogeneities in Bulk Metallic Glasses: Peter Tsai[1]; Kelly Kranjc[1]; *Katharine Flores*[1]; [1]Washington University

2:50 PM Invited
Mechanically-induced Structural Rejuvenation by HPT Deformation in Zr-Cu-Al Bulk Metallic Glass: *Koichi Tsuchiya*[1]; Jian Qiang[2]; [1]NIMS; [2]University of Tsukuba

3:10 PM Invited
Spatio-temporal Correlation in Rheology of Metallic Glasses: Shuangxi Song[1]; *Mingwei Chen*[2]; [1]Shanghai Jiao Tong University; [2]Johns Hopkins University

3:30 PM Break

3:50 PM Invited
Research on the Deformation Behaviors and Shear Band Multiplication of Bulk Metallic Glasses: *Ke-Fu Yao*[1]; Guan-Nan Yang[1]; Yang Shao[1]; [1]Tsinghua University

4:10 PM Invited
Mixed-mode Fracture Studies of Plastic Bulk Metallic Glass: *Upadrasta Ramamurty*[1]; [1]Indian Institute of Science

4:30 PM
Linking Macroscopic Rejuvenation to Nano-elastic Fluctuations in a Metallic Glass: Perry Ross[1]; Stefan Kuechemann[1]; Peter Derlet[2]; Haibin Yu[3]; Walter Arnold[4]; Peter Liaw[5]; Konrad Samwer[6]; *Robert Maass*[1]; [1]University of Illinois at Urbana-Champaign; [2]Paul Scherrer Institute; [3]Huazhong University of Science and Technology; [4]Saarland University; [5]University of Tennessee; [6]University of Göttingen

4:50 PM Invited
High Pressure Quenched Metallic Glasses: *Wojciech Dmowski*[1]; Stanislaw Gierlotka[2]; Yoshihiko Yokoyama[3]; Takeshi Egami[1]; [1]University of Tennessee; [2]Institute of High Pressure Physics; [3]Tohoku University

5:10 PM Invited
Ductile Fracture in Notched Bulk Metallic Glasses: *Jie Pan*[1]; Yi Li[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

5:30 PM Invited
Cluster Connectivity in Metallic Glass: Xiaoya Wei[1]; Si Lan[1]; *Xun-Li Wang*[1]; [1]City University of Hong Kong

Cast Shop Technology: Recycling and Sustainability Joint Session – Cast Shop Technology: Recycling and Sustainability Joint Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Mark Badowski, Hydro Aluminium; Elsa Olivetti, Massachusetts Institute of Technology

Tuesday PM
March 13, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Elsa Olivetti, Massachusetts Institute of Technology

2:00 PM Introductory Comments

2:05 PM
Recycling of Oxide from Dross into Aluminum Electrolysis Cells: *Martin Syvertsen*[1]; Bjarte Øye[1]; [1]SINTEF Materials and Chemistry

2:30 PM
Behavior of Mg-Si-rich Phases in Aluminum Can Sheets and Their Impact on Metal Oxidation during Industrial Thermal Pre-treatment: *Jan Steglich*[1]; Christiane Matthies[1]; Marcel Rosefort[1]; Bernd Friedrich[2]; [1]TRIMET Aluminium SE; [2]RWTH Aachen University

2:55 PM
Potential for Handheld Analyzer to Address Emerging Positive Material Identification (PMI) Challenges: *Leslie Brooks*[1]; Gabrielle Gaustad[1]; [1]Rochester Institute of Technology

3:20 PM
Dissipative Use of Critical Metals in the Aluminum Industry: *Ayo Arowosola*[1]; Alexandra Leader[1]; Leslie Brooks[1]; Gabrielle Gaustad[1]; [1]Rochester Institute of Technology

3:45 PM Break

4:00 PM
In-situ Observation of Dross Formation during Melting of Al-Mg Alloy: *Takehito Hiraki*[1]; Hitomi Noguchi[2]; Nobuhiro Maruoka[3]; Tetsuya Nagasaka[1]; [1]Graduate School of Engineering, Tohoku University; [2]Institute for Materials Research, Tohoku University; [3]Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

4:25 PM
The Implementation of a Comprehensive Dross Management Program at Constellium Ravenswood: *James Herbert*[1]; Steve Tua[2]; [1]ALTEK LLC; [2]Constellium Ravenswood

4:50 PM
Environmental Impacts of Aluminum Dross after Metal Extraction: *Mohamed Hassan*[1]; Nour Attia[1]; Kareem Hassan[1]; [1]Masdar Institute of Science and Technology

CFD Modeling and Simulation in Materials Processing – Processing II

*Sponsored by:*TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Koulis Pericleous, University of Greenwich; Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, Colorado School of Mines

Tuesday PM
March 13, 2018
Room: 228B
Location: Phoenix Convention Center

Session Chairs: Konstantin Redkin, Whemco; Adrian Sabau, Oak Ridge NL

2:00 PM Invited
Recent Development and Applications of CFD Simulation for Friction Stir Welding: *Gaoqiang Chen*[1]; Qingyu Shi[1]; Shuai Zhang[1]; [1]Tsinghua University

2:30 PM
Numerical Investigation of Oxygen Transport Behavior and Composition Changes in Protective Gas Electroslag Remelting Process: Xuechi Huang[1]; *Baokuan Li*[1]; Zhongqiu Liu[1]; [1]Northeastern University

2:50 PM
Modeling of Argon Gas Behavior in Continuous Casting of Steel: *Hyunjin Yang*[1]; Surya Vanka[1]; Brian Thomas[1]; [1]University of Illinois at Urbana Champaign

3:10 PM
CFD Modeling of Transport Phenomena and Inclusion Removal in a Gas-stirred Ladle: *Qing Cao*[1]; Laurentiu Nastac[1]; [1]The University of Alabama

3:30 PM Break

3:50 PM
An Innovative Modeling Approach for Predicting the Desulfurization Kinetics in an Argon-stirred Ladle Furnace: *Qing Cao*[1]; Laurentiu Nastac[1]; [1]The University of Alabama

4:10 PM
Simulation of Non-metallic Inclusion Deposition and Clogging of Nozzle: Hadi Barati[1]; Menghuai Wu[2]; *Tobias Holzmann*[2]; Abdellah Kharicha[2]; Andreas Ludwig[2]; [1]K1-MET GmbH; [2]Montanuniversitaet Leoben

4:30 PM
Research on the Flow Properties and Erosion Characteristics in Combined Blown Converter at Steelmaking Temperature: *Shaoyan Hu*[1]; Rong Zhu[1]; Runzao Liu[1]; Kai Dong[1]; [1]University of Science and Technology Beijing China

4:50 PM
Effect of Shrouding Nozzles Arrangement on Flow Field and Stirring Ability of Coherent Jet in EAF Steelmaking Process: *Fuhai Liu*[1]; Rong Zhu[1]; [1]University of Science & Technology Beijing

Characterization of Minerals, Metals, and Materials – Characterization of Polymer and Composite Materials

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

Tuesday PM
March 13, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chairs: Sergio Monteiro, Military Institute of Engineering ; Mingming Zhang, ArcelorMittal

2:00 PM Introductory Comments

2:05 PM
Development and Performance of the Polycarbonate Composites Containing High Amount of Sisal Fiber: Noan Simonassi[1]; Flavio Ramos[1]; *Sergio Monteiro*[1]; Édio Lima Junior[1]; Dayana Rodrigues[2]; [1]Militar Institute of Engineering; [2]Universidade Federal do Rio de Janeiro

2:25 PM
Viscoplastic Response of Two Phase Metal-metal Composites: A Comparison between Finite Element (FE) and Fast Fourier Transform (FFT) Based Predictions: *Sihwa Sung*[1]; Myeongjin Lee[1]; Gaeun Son[1]; Sukbin Lee[1]; [1]Ulsan National Institute of Science and Technology

2:45 PM
Dynamic-mechanical Analysis of Epoxy Composites Reinforced with PALF Fibers: *Gabriel Glória*[1]; Maria Carolina Teles[1]; Felipe Lopes[1]; Carlos Maurício Vieira[1]; Frederico Margem[2]; Sérgio Monteiro[3]; Maycon Gomes[4]; [1]State University of the Northern Rio de Janeiro; [2]Faculdade Redentor; [3]Instituto Militar de Engenharia, IME; [4]Instituto Federal Fluminense, IFF

3:05 PM
Characterization of PCBs from Obsolete Computers Aiming the Recovery of Precious Metals: Mariana Carvalho[1]; Marcos Paulo Caldas[1]; *Jorge Tenório*[1]; Denise Espinosa[1]; [1]University of São Paulo

3:25 PM
IZOD Impact Test Comparative Analyzis of Epoxy and Polyester Matrix Composites Reinforced with Hemp Fibers: Dhyemila Mantovani[1]; Janaina Vieira[1]; Lucas Pontes[1]; Lázaro Rohen[1]; Anna Carolina Neves[1]; *Carlos Maurício Vieira*[1]; Frederico Margem[1]; Sergio Monteiro[1]; [1]Universidade Estadual do Norte Fluminense

3:45 PM Break

4:00 PM
Effect of Neomycin in PVP Hydrogel as Wound Dressing: *Angélica Zafalon*[1]; Vinicius Santos[1]; Ademar Lugao[1]; Duclerc Parra[1]; Vijaya Rangari[2]; [1]Nuclear and Energetic Research Institute; [2]Tuskegee University

4:20 PM
Comparative Mechanical Analysis of Epoxy Composite Reinforced with Malva/Jute Hybrid Fabric by Izod and Charpy Impact Test: *Janaina da Silva Vieira*[1]; Ygor Macabú de Moraes[1]; Felipe Perissé Duarte Lopes[1]; Sergio Neves Monteiro[2]; Frederico Muylaert Margem[3]; Djalma Souza[1]; Jean Igor Margem[4]; [1]State University of the Northern Rio de Janeiro; [2]Military Institute of Engineering; [3]UniREDENTOR; [4]Institutos Superiores de Ensino do CENSA

4:40 PM
Comparison Between Epoxy Matrix Composites Reinforced with Ramie Fabric under Pressure and Vacuum: *Caroline Gomes de Oliveira*[1]; Janine Feitosa de Deus[1]; Felipe Perissé Duarte Lopes[1]; Lucas de Almeida Pontes[1]; Sérgio Neves Monteiro[2]; Frederico Muylaert Margem[3]; [1]UENF - Universidade Estadual do Norte Fluminense; [2]Military Institute of Technology - IME; [3]Faculdade Redentor

5:00 PM
Charpy Impact Test in Polyester Matrix Composites Reinforced With Hybrid Blanket of the Jute and Malva Fibers: *Jean Margem*[1]; Ygor Moraes[2]; Frederico Margem[2]; Sergio Monteiro[3]; Marina Margem[4]; [1]Isecensa Institute for High Education of the Censa; [2]Uenf; [3]Ime Military institute of Engineering; [4]UFF - Universidade Federal Fluminense

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Methodology and Chemistry of Materials

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Tuesday PM
March 13, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Zhimin Ao, Guangdong University of Technology; Susan Sinnott, Penn State University

2:00 PM Invited
Advances in Atomic-scale Methods for Materials Chemistry: *Susan Sinnott*[1]; [1]Penn State University

2:30 PM
Development of Molecular Dynamics Methods for the Thermal Characterization of Materials: Jonathan Severin[1]; *Philippe Jund*[2]; [1]University of Montpellier, Total; [2]University of Montpellier

2:50 PM
High-throughput Computational Studies of Structural, Electrical, Phonon and Thermal Properties of Two-dimensional Materials: *Lan Li*[1]; [1]Boise State University

3:10 PM
Sub-lattice Parallel Trajectory Splicing: Accelerated Molecular Dynamics for the Exascale: *Richard Zamora*[1]; [1]Los Alamos National Laboratory

3:30 PM Break

3:50 PM Invited
DFT Calculations on Carbon Materials for Gas Monitoring and Organic Pollutants Degradation: *Zhimin Ao*[1]; [1]Guangdong University of Technology

4:20 PM
TiO2 in Biomass Conversion: Why Catalyst Reduction Helps: *Hsin-Yi Tiffany Chen*[1]; Gianfranco Pacchioni[1]; [1]National Tsing Hua University

4:40 PM
Dispersion Corrected Density Functional Theory Study of \946-PVDF/ Ionic Liquid Complexes: *Ranjini Sarkar*[1]; Tarun Kundu[1]; [1]Indian Institute of Technology, Kharagpur

5:00 PM
Cluster Variation Method Applied to Phase Transformations: *Tetsuo Mohri*[1]; [1]Tohoku University

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Multiscale Modeling

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Tuesday PM
March 13, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chairs: David Fullwood , Brigham Young University; Thien Duong, Texas A&M University

2:00 PM Invited
Multiscale Simulations of Plastic Deformation in Polycrystalline Metals Using Databases: *Surya Kalidindi*[1]; Marat Latypov[2]; David Montes de Oca Zapiain[1]; Evdokia Popova[1]; [1]Georgia Institute of Technology; [2]University of Lorraine

2:30 PM
Multi-scale Modelling of a Material Performance in a Cutting Edge of a Mining Bucket Loader: *Matti Lindroos*[1]; Anssi Laukkanen[1]; Tom Andersson[1]; Tatu Pinomaa[1]; Tuukka Verho[1]; [1]VTT Research Center of Finland

2:50 PM
Scale-parity Preserving Multiscale Models for Investigating the Mechanical Properties of Geopolymers: Mohammad Sadat[1]; Sourav Gur[1]; *Krishna Muralidharan*[1]; George Frantziskonis[1]; Lianyang Zhang[1]; [1]University of Arizona

3:10 PM Invited
Macro and Meso-scale Performance of a Super-dislocation Model for Tracking Dislocation Evolution and Interactions: *David Fullwood*[1]; Landon Hansen[1]; Hyuk Jong Bong[2]; Eric Homer[1]; Robert Wagoner[2]; [1]Brigham Young University; [2]Ohio State University

3:40 PM Break

4:00 PM
From Process to Performance: A Scale Bridging Numerical Framework for Addressing Joint Formation and Electromigration in Cu/Sn/Cu Interconnections: *Vahid Attari*[1]; Thien Doung[1]; Raymundo Arroyave[1]; Zachary Morgan[2]; Yongmei Jin[2]; [1]Texas A&M University; [2]Michigan Technological University

4:20 PM
Effect of Porosity on the Stress-strain Response and Hysteretic Energy Dissipation Capacity of NiTi Shape Memory Alloys: George Frantziskonis[1]; Sourav Gur[1]; *Krishna Muralidharan*[1]; [1]University of Arizona

4:40 PM
Accelerated Shape Memory Modeling by Kinetic Monte Carlo and FEM: Towards Experimentally-relevant Length Scales in Three Dimensions: *Thomas Hardin*[1]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design of Materials: Machine Learning

*Sponsored by:*Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Tuesday PM
March 13, 2018
Room: 131C
Location: Phoenix Convention Center

Session Chairs: Bryce Meredig, Citrine Informatics; Dongwon Shin, ORNL

2:00 PM Invited
Computational Thermodynamic and Machine Learning Approach to Accelerate the Design of High-temperature Alloys: *Dongwon Shin*[1]; Sangkeun Lee[1]; Yukinori Yamamoto[1]; Michael Brady[1]; [1]Oak Ridge National Laboratory

2:30 PM Invited
Atomate: A High-level Interface to Generate, Execute, and Analyze Computational Materials Science Workflows: *Kiran Mathew*[1]; Joseph Montoya[1]; Zi-Kui Liu[2]; Jeffrey Neaton[1]; Shyue Ping Ong[3]; Kristin Persson[1]; Anubhav Jain[1]; [1]Lawrence Berkeley Lab; [2]The Pennsylvania State University; [3]University of California San Diego

3:00 PM
Alloy Design Strategy to Accelerate Nitriding of Fe alloys : A Combined DFT and CALPHAD Study: *Hyuck Mo Lee*[1]; Ku Kang[1]; Changsoo Lee[1]; [1]KAIST

3:20 PM
The Fundamental Thermodynamic Investigation on the Grade 91 Alloy: *Andrew Smith*[1]; Yu Zhong[1]; [1]Florida International University

3:40 PM Break

4:00 PM Invited
Machine Learning as the "I" in ICME: Integrating Experiment, Simulation, and Theory for Alloy Design: *Bryce Meredig*[1]; [1]Citrine Informatics

4:30 PM
A Path Planning Algorithm for Functionally Graded Materials Design: *Tanner Kirk*[1]; Edgar Galvan[1]; Richard Malak[1]; Raymundo Arroyave[1]; [1]Texas A&M University

4:50 PM
On the Fly Efficient Global Optimization Techniques to Accelerate Materials Design: *Anjana Talapatra*[1]; Shahin Boluki[1]; Thien Duong[1]; Raymundo Arroyave[1]; Xiaoning Qian[1]; Edward Dougherty[1]; [1]Texas A&M University

5:10 PM
Multiscale Modeling for Systematic Design of Metallic Microstructures to Provide Resistance to Fatigue and Wear: *Anssi Laukkanen*[1]; Tom Andersson[1]; Matti Lindroos[1]; Tatu Pinomaa[1]; [1]VTT

Computational Materials Discovery and Optimization – Materials for Energy Technologies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Arizona State University; Arunima Singh, Lawrence Berkeley National Laboratory; Eric Homer, Brigham Young University; Francesca Tavazza, National Institute of Standards and Technology

Tuesday PM
March 13, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chair: Richard Hennig, University of Florida

2:00 PM Invited
Software Tools for High-throughput Materials Data Generation and Data Mining: *Anubhav Jain*[1]; [1]LBNL

2:30 PM
Structure-property Linkages for Porous Membranes Using the Materials Knowledge Systems Framework: *Yuksel Yabansu*[1]; Patrick Altschuh[2]; Johannes Hötzer[2]; Britta Nestler[2]; Surya Kalidindi[1]; [1]Georgia Institute of Technology; [2]Karlsruhe Institute Of Technology

2:50 PM Invited
Light-metal Complex Hydrides: Computational Structure Prediction and Interaction with Functionalized Nanoporous Hosts: *Eric Majzoub*[1]; [1]University of Missouri - St. Louis

3:20 PM Break

3:40 PM Invited
Holistic Computational Structure Screening of More than 12 000 Candidates for Solid Lithium-ion Conductor Materials: Austin Sendek[1]; Qian Yang[1]; Ekin Cubuk[1]; Karel-Alexander Duerloo[1]; Yi Cui[1]; *Evan Reed*[1]; [1]Stanford University

4:10 PM
Improving the Ductility of Boron Carbide from Computational Design: *Qi An*[1]; William Goddard III[2]; [1]University of Nevada, Reno; [2]California Institute of Technology

4:30 PM
Fabricating Optimized Crystallographic Textures through Heterogeneous Templated Grain Growth: *Dallin Frandsen*[1]; Oliver Johnson[1]; [1]Brigham Young University

Computational Materials Science and Engineering for Nuclear Energy – Structural Materials II

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Tuesday PM
March 13, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Malcolm Stocks, Oak Ridge National Laboratory; Nigel Marks, Curtin University

2:00 PM Invited
Atomistic Modeling of Primary Damage in Fe-based Ferritic Alloys: Yaxuan Zhang[1]; Daniel Schwen[2]; *Xian-Ming Bai*[1]; [1]Virginia Tech; [2]Idaho National Laboratory

2:30 PM
Sink Density Effect on Radiation-induced Segregation and Precipitation in Fe-Cr Alloys: *Enrique Martinez Saez*[1]; Oriane Senninger[2]; Alfredo Caro[1]; Frédéric Soisson[2]; Maylise Nastar[2]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory; [2]Commissariat a l'Energie Atomique

2:50 PM
Dislocation Loop Bias in BCC Fe: *Andrew Ervin*[1]; Luis Casillas-Trujillo[1]; Haixuan Xu[1]; [1]University of Tennessee

3:10 PM
Density Functional Theory Study of the Magnetic Moment of Solute Mn in BCC Fe: *Daniel King*[1]; Thomas Whiting[1]; Simon Middleburgh[2]; Patrick Burr[3]; Paul Fossati[1]; Yi Cui[1]; Mark Wenman[1]; [1]Imperial College London; [2]Westinghouse Electric; [3]University of New South Wales

3:30 PM Break

3:50 PM
Discrete Dislocation Sinks in Spatially Resolved Cluster Dynamics Simulations: *Aaron Kohnert*[1]; Laurent Capolungo[1]; [1]Los Alamos National Laboratory

4:10 PM
Kinetics of Point Defect Absorption by Sinks: Effect of Point Defect Properties and Surrounding Microstructure: *Denise Carpentier*[1]; Thomas Jourdan[1]; Yann Le Bouar[2]; Mihai-Cosmin Marinica[1]; [1]CEA Saclay; [2]LEM CNRS/ONERA

4:30 PM
Breaking the Power Law: Multiscale Simulations of Self-ion Irradiated Tungsten: *Miaomiao Jin*[1]; Michael Short[1]; Cody Permann[2]; [1]Massachusetts Institute of Technology; [2]Idaho National Lab

4:50 PM Invited
Flux Effect on RIS in a Fe3%Ni Model Alloy: CD Modelling of the T Shift: Lisa Belkacémi[1]; *Estelle Meslin*[1]; Brigitte Décamps[2]; Bertrand Radiguet[3]; Jean Henry[1]; [1]CEA; [2]CSNSM-Université Paris Saclay; [3]GPM-Université de Rouen

Coupling Advanced Characterization and Modeling Tools for Understanding Fundamental Phase Transformation Mechanisms: An MPMD Symposium in Honor of Hamish Fraser – Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Gregory Thompson, University of Alabama; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; Soumya Nag, GE Global Research; Rajarshi Banerjee, University of North Texas

Tuesday PM
March 13, 2018
Room: 127A
Location: Phoenix Convention Center

Session Chair: Peter Collins, Iowa State University

2:00 PM Invited
The ß to α Transformation in Titanium Alloys: *Dipankar Banerjee*[1]; [1]Indian Institute of Science

2:30 PM Invited
Computational Investigation of Omega Phase Evolution in Ti-Mo and Ti-V Systems: Deep Choudhuri[1]; S Banerjee[1]; R Banerjee[1]; *Srinivasan Srivilliputhur*[1]; [1]University of North Texas

3:00 PM Invited
Evolution of Microstructure and Transformation Texture in Titanium Alloys: Rongpei Shi[1]; Dong Wang[2]; Yufeng Zheng[1]; Rajarshi Banerjee[3]; Hamish Fraser[1]; *Yunzhi Wang*[1]; [1]The Ohio State University; [2]Xi'an Jiaotong University; [3]University of North Texas

3:30 PM Break

3:50 PM Invited
Quantitative Characterization of Microstructure in Near-alpha and Alpha+Beta Titanium Alloys: *Adam Pilchak*[1]; Daniel Evans[1]; [1]Air Force Research Laboratory

4:20 PM Invited
New Techniques for Interrogation of Structure in Additively Manufactured Materials: Andrew Polonsky[1]; Marie-Agathe Charpagne[1]; Brent Goodlet[1]; *Tresa Pollock*[1]; [1]University of California, Santa Barbara

4:50 PM Invited
Qualification of Topology Optimized Titanium Parts Made by Additive Manufacturing through In-situ Process Monitoring: *Sudarsanam Babu*[1]; Sean Yoder[1]; Ryan Dehoff[2]; Peeyush Nandwana[2]; Vincent Paquit[2]; Michael Kirka[2]; [1]The University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory

Coupling Experiments and Modeling to Understand Plasticity and Failure – Dislocation Scale Plasticity

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

Tuesday PM
March 13, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chairs: Philip Eisenlohr, Michigan State University; Maryam Ghazisaeidi, Ohio State University

2:00 PM Invited
New Observations of Phase Transformations during Deformation in Superalloys and High Entropy Alloys: Experiments: *Michael Mills*[1]; Jiashi Miao[1]; Tim Smith[2]; Connor Slone[1]; Maryam Ghazisaeidi[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

2:25 PM Invited
New Observations of Phase Transformations during Deformation in Superalloys and High Entropy Alloys: Modeling: Changning Niu[1]; Carlyn LaRosa[1]; You Rao[1]; T. M. Smith[1]; Jiashi Miao[1]; M. J. Mills[1]; *Maryam Ghazisaeidi*[1]; [1]Ohio State University

2:50 PM
A Direct Connection between In-situ TEM and Dislocation Simulations: *Stefan Sandfeld*[1]; Daniel Kiener[2]; Rachel Derby[1]; Dominik Steinberger[1]; [1]TU Freiberg; [2]University of Leoben

3:10 PM
Continuum Dislocation Dynamics at Finite Deformation and the Path toward Localization and Failure in Metals: *Anter El-Azab*[1]; [1]Purdue University

3:30 PM Break

3:50 PM Invited
Concurrent Multi-scale Modeling: Towards a Procedure to Test Modeling Hypothesis at the Mesoscale: *Laurent Capolungo*[1]; Hi Vo[1]; John Graham[2]; Richard Lesar[2]; [1]Los Alamos National Laboratory; [2]Iowa State University

4:15 PM
Experimental and Computational Analysis of Deformation in Solid Solution and Precipitation Strengthened Ni-Cr-Co Alloys: *Connor Slone*[1]; Supriyo Chakraborty[1]; Stephen Niezgoda[1]; Michael Mills[1]; [1]The Ohio State University

4:35 PM
Mechanical Behavior of Polycrystalline Microscale Silver Pillars: *Md Sadeq Saleh*[1]; Mehdi Hamid[2]; Hussein Zbib[2]; Rahul Panat[1]; [1]Carnegie Mellon University; [2]Washington State University

4:55 PM
Plasticity of BCC Metals at Low Temperatures - Coupling Theory with Experiments: *Roman Gröger*[1]; Zdenek Chlup[1]; Ivo Kubena[1]; Tomas Kruml[1]; [1]Academy of Sciences of the Czech Republic

5:15 PM
Improved Understanding of the Portevin–Le Châtelier Effect though Modelling Using Discrete Diffusion Coupled with Discrete Dislocation Dynamics: *William White*[1]; Daniel Balint[1]; Ben Britton[1]; [1]Imperial College

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 4A: Characterization of Creep Deformation & Damage in Ni-based Superalloys. 4B: Characterization of Creep or Fatigue Deformation & Damage in Ni-based Superalloys

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Tuesday PM
March 13, 2018
Room: 126A
Location: Phoenix Convention Center

Session Chairs: Michael Titus, Purdue University; Mark Hardy, Rolls-Royce plc

2:00 PM Invited
Are Ni-based SX Superalloys Always Stronger in Creep?: Louis Thébaud[1]; Patrick Villechaise[2]; *Jonathan Cormier*[2]; Coraline Crozet[1]; Alexandre Devaux[1]; Denis Béchet[1]; Jean-Michel Franchet[3]; Anne-Laure Rouffié[3]; Mike Mills[4]; [1]Aubert et Duval; [2]ENSMA / Institut Pprime - UPR CNRS 3346; [3]SAFRAN Tech; [4]Ohio State University

2:30 PM
Integrated Modeling of Creep in Ni-base Superalloys: *Pengyang Zhao*[1]; Chen Shen[2]; Michael Mills[1]; Yunzhi Wang[1]; Stephen Niezgoda[1]; [1]The Ohio State University; [2]GE Global Research

2:50 PM
A Physics-oriented Creep Damage Model for Single Crystal Superalloys: *Jean-Briac le Graverend*[1]; [1]Texas A&M University

3:10 PM
Assessment of the Remaining Creep Life for DZ125 Superalloy Based on Microstructural Degradation: *Chao Fu*[1]; Yadong Chen[1]; Qiang Feng[1]; [1]University of Science and Technology Beijing

3:30 PM Break

3:50 PM
Microstructural Damage Evolution during High-temperature Creep in Nickel-based Single Crystal Superalloys: A Phase Field Study: *Harikrishnan Rajendran*[1]; Jean-Briac le Graverend[1]; [1]Texas A&M University

4:10 PM
Effects of Ageing on Microstructure, Elemental Distribution and Low Cycle Fatigue Behavior and Corresponding Deformation Mechanisms of Haynes-282 at Elevated Temperatures: *Shreya Mukherjee*[1]; Sujoy Kar[1]; Soumitra Tarafder[2]; S. Sivaprasad[2]; Puspendu Sahu[3]; [1]Indian Institute of Technology Kharagpur, India; [2]CSIR- National Metallurgical Laboratory , Jamshedpur, India; [3]Jadavpur University , Jadavpur, India

4:30 PM
The Effects of Aging Heat Treatments on the Mechanical Performance of an Inconel 740 Casting: *Kyle Rozman*[1]; Martin Detrois[1]; Paul Jablonski[1]; Jeffrey Hawk[1]; [1]NETL

4:50 PM
Oxidation Impact on Fatigue Mechanisms of DS200+Hf Alloy: *Lorena Mataveli Suave*[1]; Jonathan Cormier[2]; Guillaume Benoit[2]; Denis Bertheau[2]; Patrick Villechaise[2]; [1]Safran; [2]Institut Pprime

5:10 PM
The Performance of a New γ' Bond Coating on Single Crystal Ren e N5 in Sustained Peak Low-cycle Fatigue: *Marissa Lafata*[1]; David Jorgensen[2]; Akane Suzuki[3]; Don Lipkin[3]; Tresa Pollock[1]; [1]University of California, Santa Barbara; [2]Honeywell Aerospace; [3]GE Global Research

Design for Mechanical Behavior of Architectured Materials via Topology Optimization – Recent Advancements and Material Applications of Topology Optimization (TO)

*Sponsored by:*TMS Structural Materials Division, TMS: Additive Manufacturing Bridge Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Natasha Vermaak, Lehigh University; Andrew Gaynor, U.S. Army Research Laboratory

Tuesday PM
March 13, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: Natasha Vermaak, Lehigh University

2:00 PM Invited
Topology Optimization of Architected Materials with Application-specific Tailored Properties: *James Guest*[1]; [1]Johns Hopkins University

2:40 PM
Topology Optimization with RVE Lattice Structures Subject to Additive Manufacturing and Stress Design Constraints: *David Weinberg*[1]; Nam-Ho Kim[1]; [1]Autodesk, Inc.

3:10 PM
Topology Optimization of Multi-material Truss Lattice Structures via Geometry Projection: *Hesaneh Kazemi*[1]; Julián Norato[1]; Ashkan Vaziri[2]; [1]University of Connecticut; [2]Northeastern University

3:40 PM Break

3:55 PM
Topology Optimization of Cellular Materials with Tailored Band Gaps: James Guest[1]; *Stavros Gaitanaros*[1]; Alireza Bayat[1]; [1]Johns Hopkins University

4:25 PM Invited
A Level Set Based Topology Optimization Framework to Design Extreme Thermos-elastic Microstructure: Influence of Graded Interfaces and Multi-materials: Alexis Faure[1]; *Rafael Estevez*[1]; Georgios Michailidis[1]; Guillaume Parry[1]; Natasha Vermaak[2]; [1]Universite Grenoble Alpes; [2]Lehigh University

5:05 PM
A Panel Discussion for the Design of Materials via Topology Optimization: *Natasha Vermaak*[1]; Andrew Gaynor[2]; [1]Lehigh University; [2]U.S. Army Research Laboratory

Dynamic Behavior of Materials VIII – Effect of Microstructure of Dynamic Response II

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Tuesday PM
March 13, 2018
Room: 127B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Experimental and Computational Spectroscopy for Deciphering Amorphization in Boron Carbide due to Dynamic Loading: *Ghatu Subhash*[1]; [1]University of Florida

2:40 PM
Non-equilibrium Simulations of Shock-induced Horizontal Defects and Amorphization in 4H Silicon Carbide: *Rachel Flanagan*[1]; Shiteng Zhao[1]; Eric Hahn[2]; Carlos Ruestes[3]; Chris Wehrenberg[4]; Bruce Remington[4]; Marc Meyers[1]; [1]UCSD; [2]Los Alamos National Laboratories; [3]National University of Cuyo , Mendoza; [4]Lawrence Livermore National Laboratories

3:00 PM
Shock-wave Energy Dissipation in Metal-organic Frameworks and Network Forming Ionic Liquids: *Karthik Guda Vishnu*[1]; Kiettipong Banlusan[1]; Alejandro Strachan[1]; [1]Purdue University

3:20 PM Invited
Powerful Laser-driven Shock Induced Amorphization: *Shiteng Zhao*[1]; Bimal Kad[1]; Eric Hahn[2]; Bruce Remington[3]; Christopher Wehrenberg[3]; Jerry Lasalvia[4]; Karren More[5]; Marc Meyers[1]; [1]University of California, San Diego; [2]Los Alamos National Lab; [3]Lawrence Livermore National Lab; [4]Army Reserach Lab; [5]Oak Ridge National Lab

3:40 PM Break

4:00 PM
Effects of Microstructure and Strain Rate on the Dynamic Deformation and Fracture Mechanisms in Dual Phase Steels: *Sukanya M. Sharma*[1]; Shrikant P. Bhat[2]; Arun Gokhale[1]; Naresh Thadhani[1]; [1]Georgia Tech; [2]ArcelorMittal

4:20 PM Invited
The Effect of Plastic Deformation and Transformed Martensite on the Mechanical Response of Lean Duplex Stainless Steel 2101: Ali Ameri[1]; *J.P. Escobedo-Diaz*[1]; M. Ashraf[1]; Z. Quadir[2]; [1]University of New South Wales-Canberra; [2]Curtin University

4:40 PM
Mechanical Properties and Shear Localization of High Entropy Alloy CoCrFeMnNi Prepared by Powder Metallurgy: *Bingfeng Wang*[1]; Xiaoxia Huang[1]; Yong Liu[1]; Bin Liu[1]; [1]Central South University, China

5:00 PM
Investigation of Dynamic Mechanical Response in Al0.1CoCrFeNi High Entropy Alloy: *Sindhura Gangireddy*[1]; Deep Choudhuri[1]; Daniel Whitaker[1]; Whitley Green[1]; Rajiv Mishra[1]; [1]University of North Texas

Electrode Technology Symposium for Aluminum Production – Anode Materials and Properties

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xianan Liao, Elkem Carbon

Tuesday PM
March 13, 2018
Room: 222C
Location: Phoenix Convention Center

Session Chair: Jianhong Yang, Jiangsu University

2:00 PM Introductory Comments

2:05 PM
Challenges and Successes of Conducting Trials for Anode Design Modification: *David Molenaar*[1]; Beverley Pillay[2]; Yusuke Tsuji[3]; Yutong Zhu[1]; [1]CSIRO; [2]South32; [3]Mitsubishi

2:30 PM
Study on Optimization of Anode Structure for Aluminum Reduction Cell: *Jing Liu*[1]; Hui Dong[2]; Yu Mao[2]; Jihong Mao[2]; Yungang Ban[2]; [1]1 School of Mechanical Engineering and Automation Northeastern University 2 Northeastern University Engineering & Research Institute Co., Ltd.; [2]Northeastern University Engineering & Research Institute Co., Ltd.

2:55 PM
Effect of Cover Material on the Oxidation Speed of Prebaked Anodes: *Changlin Li*[1]; Yunfeng Zhou[1]; Yanfang Wang[1]; Dengpeng Chai[1]; [1]Zhengzhou Nonferrous Metals Research Institute Ltd of Chalco

3:20 PM
Interaction between Anode Aggregate and Binder in the Sessile Drop Wetting Test: *Bruno Rausch*[1]; Juraj Chmelar[1]; Hogne Linga[1]; Lorentz Petter Lossius[1]; Rebecca Thorne[2]; Viktorija Tomkute[1]; [1]Hydro Aluminium AS; [2]NILU

3:45 PM Break

4:00 PM
Development and Application of Large-scale Shaft Kilns: Guanghui Lang[1]; Rui Liu[1]; Yujing Jiang[1]; *Yan Li*[1]; Ronald Logan[1]; [1]Sunstone

4:25 PM
Study on the Property and Desulfurization Mechanisms of Petroleum Cokes with Different Sulfur Contents from 1200□to 2800□: *Shoulei Gao*[1]; Jilai Xue[1]; Guanghui Lang[1]; Rui Liu[1]; Chongai Bao[1]; Zhiguo Wang[1]; Fali Zhang[1]; [1]Sunstone Development Co., Ltd

4:50 PM
The Current Status and Development Trend of the Prebaked Anode Market in China: Zhang Shuchao[1]; *Dong Wei*[2]; [1]Elkem Carbon (China) Co.,LTD; [2]Elkem Carbon (China) Co.,LTD

Energy Technologies and CO_2 Management Symposium – Technologies for Energy Efficiency

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Donna Guillen, Idaho National Laboratory; Tao Wang, Nucor Steel; Neale Neelameggham, Ind LLC; John Howarter, Purdue University

Tuesday PM
March 13, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: Chang Liu, IMR-CAS, China; Yulin Zhong, Griffith University

2:00 PM Invited
Modeling Key Atomic Processes in Titanium Alloys for Energy Efficiency: *Hao Wang*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

2:20 PM
Improving Energy Efficiency in Direct Method for Continuous Casting of Lead Sheets: *Arun Prabhakar*[1]; Joanna Mielnicka[1]; Mark Jolly[1]; Konstantinos Salonitis[1]; [1]Cranfield University

2:40 PM
Research on High Efficiency Energy Conversion Technology for Modern Hot Blast Stove: *Fuming Zhang*[1]; Xin Li[1]; Zurui Hu[1]; [1]Shougang Group

3:00 PM
Effect of Heat Input on the Microstructure of EH36 Shipbuilding Steel: *Xiaodong Zou*[1]; Cong Wang[1]; [1]Northeastern University

3:20 PM Break

3:40 PM
An Exergy Study of Cowper Stove Operations with an Iron Blast Furnace: *Patrick Krane*[1]; Matthew Krane[1]; [1]Purdue University

4:00 PM
Simulation Based Method for Analyzing Energy-utilization Feature in Steelmaking-continuous Casting Process: *Zhaojun Xu*[1]; Zhong Zheng[1]; Xiaoqiang Gao[2]; Jipeng Fan[1]; [1]College of Materials Science and Engineering, Chongqing University; [2]College of Economics and Business Administration, Chongqing University

4:20 PM
Waste Heat Recovery from Aluminum Production: *Miao Yu*[1]; Maria Gudjonsdottir[2]; Pall Valdimarsson[2]; Gudrun Saevarsdottir[2]; [1]Tianjin University; [2]Reykjavik Universiry

4:40 PM
Leaching and Carbonation of Electric Arc Furnace(EAF) Slag under a Microwave Field for Mineral Carbonation: Zhibo Tong[1]; Guojun Ma[1]; Xiang Zhang[1]; Junjie Liu[1]; *Langsha Shao*[1]; [1]Wuhan University of Science and Technology

Environmentally Assisted Cracking: Theory and Practice – Hydrogen Embrittlement

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Tuesday PM
March 13, 2018
Room: 105A
Location: Phoenix Convention Center

Session Chairs: Khalid Hattar, Sandia National Laboratories; Chris San Marchi, Sandia National Laboratories

2:00 PM Invited
Comparison of Hydrogen Introduction Techniques for In-situ TEM Straining Experiments: *Khalid Hattar*[1]; Christopher Barr[1]; Daniel Bufford[1]; Brittany Muntifering[1]; Kathryn Small[1]; Ai Leen Koh[2]; Richard Karnesky[1]; [1]Sandia National Laboratories; [2]Stanford Univeristy

2:40 PM
Hydrogen-dislocation Interaction Revisited by Quantitative Mechanical Tests inside TEM: *Degang Xie*[1]; Ju Li[1]; Evan Ma[1]; Zhiwei Shan[1]; [1]Center for Advancing Materials Performance from the Nanoscale (CAMP Nano)

3:00 PM
Evaluating the Effect of Sensitizing Time on the Hydrogen Embrittlement of Austenitic Stainless Steels: *Osama Alyousif*[1]; [1]Kuwait University

3:20 PM Break

3:40 PM Invited
Dispelling Myths about Gaseous Hydrogen Environmental Fracture and Fatigue: *Chris San Marchi*[1]; Joe Ronevich[1]; [1]Sandia National Laboratories

4:20 PM
Trapping against Hydrogen Embrittlement: *Zahra Hosseini*[1]; Kevin Nibur[2]; Richard Gangloff[3]; Mohsen Dadfarnia[1]; Brian Somerday[4]; Petros Sofronis[1]; [1]University of Illinois, Urbana-Champaign; [2]Hy-Performance Materials Testing; [3]University of Virginia; [4]Southwest Research Institute

4:40 PM
Hydrogen and Dislocation Assisted Grain Boundary Crack Initiation Mechanism: Liang Wan[1]; Wen-Tong Geng[1]; Nobuyuki Ishikawa[1]; Hajime Kimizuka[1]; *Shigenobu Ogata*[1]; [1]Osaka University

5:00 PM
Effect of Hydrogen on Ideal Shear Strength of Metals: An Ab-initio Study: Pulkit Garg[1]; *Ilaksh Adlakha*[1]; Kiran Solanki[1]; [1]Arizona State University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Relationships among Processing, Microstructure, and Fatigue Properties

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Tuesday PM
March 13, 2018
Room: 125B
Location: Phoenix Convention Center

Session Chair: Jean-Briac le Graverend, Texas A&M University

2:00 PM Invited
Statistical Characterization of Microstructure and Fatigue of Wire and Arc Additive Manufactured Stainless Steel 304: Jerard Gordon[1]; Christina Haden[1]; Jacob Hochhalter[2]; *D Gary Harlow*[1]; [1]Lehigh University; [2]NASA Langley Research Center

2:20 PM
Fatigue Strength Scaling and Deformation at the Nanoscale – Nanotwinned and Nanocrystalline Metals: *Nathan Heckman*[1]; Christopher Barr[1]; Timothy Furnish[1]; Khalid Hattar[1]; Stephen Foiles[1]; Fadi Abdeljawad[1]; Christoph Eberl[2]; Andrea Hodge[3]; Brad Boyce[1]; [1]Sandia National Laboratories; [2]Fraunhofer Institute for Mechanics of Materials IWM; [3]University of Southern California

2:40 PM
Microstructural and Mechanical Properties of Linear Friction Welded Ti-6Al-2Sn-4Zr-6Mo: *Toby Webster*[1]; [1]University of Birmingham

3:00 PM
Effect of Advanced Mechanical Surface Treatments on Room and Elevated Temperature Residual Stress, Microstructure, Strength, and Fatigue Behavior of ATI 718Plus Alloy: *Micheal Kattoura*[1]; Seetha Ramaiah Mannava[1]; Dong Qian[2]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]University of Texas at Dallas

3:20 PM Break

3:40 PM
Influence of Cold Spray on the Enhancement of Corrosion Fatigue of the AZ31B Cast Mg Alloy: *Sugrib Shaha*[1]; S.B. Dayani[1]; H. Jahed[1]; [1]University of Waterloo

4:00 PM
Fatigue Behavior of Ti6Al4V with Surface Modified by Femtosecond LASER: Alan Santos[1]; Leonardo Campanelli[1]; Paulo Sergio Silva[1]; *Claudemiro Bolfarini*[1]; [1]Universidade Federal de São Carlos

4:20 PM
Effects of Cooling Condition on Fatigue Crack Propagation Behaviors of ß-processed Ti-6Al-4V Alloys: Daeho Jeong[1]; *Hyokyung Sung*[1]; Jehyun Lee[2]; Sangshik Kim[1]; [1]Gyeongsang National University; [2]Changwon National University

Fracture: 65 Years after the Weibull Distribution and the Williams Singularity – Session IV

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Brad Boyce, Sandia National Laboratories; Ellen Cerreta, Los Alamos National Laboratory; Jacob Hochhalter, NASA LaRC; Jonathan Zimmerman, Sandia National Laboratories

Tuesday PM
March 13, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chairs: Jonathan Zimmerman, Sandia National Labs; Frank Del Rio, NIST

2:00 PM Invited
A Probability Model for Stress Rupture Failure of Carbon Composites, Incorporating Weibull Fiber Strength Statistics, Local Fiber Load Sharing, and Matrix Creep: *Amy Engelbrecht-Wiggans*[1]; Leigh Phoenix[1]; [1]Cornell University

2:30 PM
Use of Weibull Distribution to Characterize High Performance Fibers: Krishan K Chawla[1]; *Nikhilesh Chawla*[2]; Irene Lujan Regalado[2]; [1] University of Alabama at Birmingham; [2]Arizona State University

2:50 PM Invited
Predicting Joint Strength: Evaluating Interface Corner Stress Intensity Factor and Cohesive Zone Modeling Approaches: *Earl Reedy*[1]; [1]Sandia National Laborabories

3:20 PM Break

3:40 PM Invited
Applicability of Weibull Statistics for Micro- and Nano-scale Silicon Components: *Frank DelRio*[1]; Robert Cook[1]; Brad Boyce[2]; [1]National Institute of Standards and Technology; [2]Sandia National Laboratories

4:10 PM
Fracture Toughness of Silicon by Variable Temperature Micropillar Splitting: Carmen Lauener[1]; Ming Chen[1]; *Jeff Wheeler*[1]; [1]ETH Zurich

4:30 PM
Limitations and Applicability of LEFM to Spalling Fracture in Single Crystal Semiconductors: *Corinne Packard*[1]; [1]Colorado School of Mines

4:50 PM
Weibull Analysis of High Strength Ni- and Fe-based Bulk Metallic Glasses: *Henry Neilson*[1]; John Lewandowski[1]; [1]Case Western Reserve University

5:10 PM
Comparison of Methods to Find the Weibull Stress Parameters: *Carey Walters*[1]; Okko Coppejans[1]; [1]TNO

Frontiers in Advanced Functional Thin Films and Nanostructured Materials – Session IV

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Ritesh Sachan, Army Research Office; Srinivasa Rao Singamaneni, The University of Texas at El Paso; Haiyan Wang, Purdue University; Nuggehalli Ravindra, New Jersey Institute of Technology; Raj Singh, Oklahoma State University; Amit Pandey, LG Fuel Cell Systems Inc.

Tuesday PM
March 13, 2018
Room: 103A
Location: Phoenix Convention Center

Session Chairs: Haiyan Wang, Purdue University; Adele Moatti, North Carolina State University

2:00 PM Invited
Point Defect Energetics at Oxide Heterointerfaces: Tim McMaster[1]; Gaurav Arora[1]; *Dilpuneet Aidhy*[1]; [1]University of Wyoming

2:30 PM Invited
Epitaxial Growth of Advanced Ceramic and Metal Films: *Xinghang Zhang*[1]; Jin Li[1]; Haiyan Wang[1]; [1]Purdue University

3:00 PM Invited
Oxide Epitaxy with Large Mismatch: Bronze-phase VO2 on SrTiO3: *Matthew Chisholm*[1]; Hunter Sims[2]; Xiang Gao[1]; Shinbuhm Lee[1]; Sokrates Pantelides[2]; Ho Nyung Lee[1]; [1]Oak Ridge National Laboratory; [2]Vanderbilt University

3:30 PM Break

3:50 PM Invited
Physiochemical and Antioxidant Properites of CNPs Modulated by Anions of the Precursor: *Sudipta Seal*[1]; Swetha Barkam[1]; Ritesh Sachan[2]; Amitava Adhikary[1]; [1]University of Central Florida; [2]Army Research Office

4:10 PM
Kinetic Modeling of the Structural Transition in VO2 Thin Films: *Adele Moatti*[1]; Ritesh Sachan[1]; John Prater[1]; Jagdish Narayan[1]; [1]NCSU

4:30 PM
Functionalization of Transparent Oxide Thin Films Using Silicon Doped Nanoparticles: *Gerald Ferblantier*[1]; Fabien Ehrhardt[1]; Corinne Ulhaq-Bouillet[2]; Emilie Steveler[1]; Yann Le Gall[1]; Daniel Mathiot[1]; [1]Strasbourg University - ICube Laboratory; [2]Strasbourg University - IPCMS

4:50 PM
Effect of Process Parameters on Phase Stability and Metal-insulator Transition of Vanadium Dioxide (VO2) Thin Films by Pulsed Laser Deposition (PLD): *Ryan McGee*[1]; Ankur Goswami[1]; Kalvin Schofield[1]; Thomas Thundat[1]; [1]University of Alberta

5:10 PM
A Structural Analysis of the Epitaxial Ni/VO_2 Heterostructure Integrated on Si(001): *Gabrielle Foley*[1]; Srinivasa Singamaneni[2]; Adele Moatti[1]; John Prater[3]; Jagdish Narayan[1]; [1]NCSU; [2]The University of Texas at El Paso; [3]Army Research Office

5:30 PM Invited
Unraveling Self-Assembly Dynamics to Direct Higher Order: *Philip Rack*[1]; [1]The University of Tennessee; Oak Ridge National Laboratory

Frontiers in Solidification Science and Engineering – Eutectic and Dendritic Growth

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

Tuesday PM
March 13, 2018
Room: 126C
Location: Phoenix Convention Center

Session Chair: Mohsen Asle Zaeem, Missouri University of Science and Technology

2:00 PM Introductory Comments

2:10 PM
Spacing Homogenization in Lamellar Eutectics with Anisotropic Interfaces: Maxime Ignacio[1]; *Mathis Plapp*[1]; [1]CNRS/Ecole Polytechnique

2:30 PM
Analysis of Microstructure Rearrangement Processes during Velocity Variations of Directionally Solidified Eutectic Alloys: *Johannes Hötzer*[1]; Philipp Steinmetz[2]; Michael Kellner[2]; Anne Dennstedt[3]; Britta Nestler[2]; [1]University of Applied Science Karlsruhe; [2]Karlsruhe Institute of Technology; [3]German Aerospace Center

2:50 PM
Impurities at Work: Integrated Imaging of Eutectic Modification: *Saman Moniri*[1]; Xianghui Xiao[2]; Ashwin Shahani[3]; [1]University of Michigan, Department of Chemical Engineering; [2]Advanced Photon Source, Argonne National Laboratory; [3]University of Michigan, Department of Materials Science & Engineering

3:10 PM
Effect of Interphase Boundary Anisotropy on Three-phase Eutectic Microstructures: Samira Mohagheghi[1]; *Melis Serefoglu*[1]; [1]Koc University

3:30 PM Break

3:50 PM
Extension of Jackson-Hunt analysis for Curved Interfaces: *Sumanth Nani Enugala*[1]; Britta Nestler[1]; [1]Karlsruhe Institute of Technology

4:10 PM
Modeling of Eutectic Growth Kinetics in Multicomponent Alloys with Thermodynamic Couplings: *Oriane Senninger*[1]; Gildas Guillemot[1]; Charles-André Gandin[1]; [1]CEMEF

4:30 PM
In Situ X-ray Tomographic Examination and Modeling of Dendrite Patterns during Solidification in Co and Ni Alloys: *Mohammed Azeem*[1]; Shyamprasad Karagadde[2]; Nghia Vo[3]; Robert Atwood[3]; Peter Lee[1]; [1]Manchester University; [2]Indian Institute of Technology Bombay; [3]Diamond Light Source

4:50 PM
Dendrite Orientation Selection and Growth Dynamics of Al-based Alloys: *Maike Becker*[1]; Stefan Klein[2]; Matthias Kolbe[1]; Sebastian Wiese[3]; Florian Kargl[1]; [1]Deutsches Zentrum für Luft- und Raumfahrt; [2]DGM - Deutsche Gesellschaft für Materialkunde e.V.; [3]Rheinisch-Westfaelische Technische Hochschule Aachen

5:10 PM
Solidification of a Mushy Zone in a Static Temperature Gradient: Phase-field Simulations: *Guillaume Boussinot*[1]; Markus Apel[1]; Alexandre Viardin[1]; [1]Access e.V.

High Entropy Alloys VI – Structures and Mechanical 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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Tuesday PM
March 13, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: Easo George, Ruhr University Bochum; Rajiv Mishra, University of North Texas

2:00 PM Keynote
Relating Elementary Deformation Mechanisms to Macroscopic Mechanical Properties in High- and Medium-entropy Alloys: *E. P. George*[1]; G. Laplanche[2]; A. Kostka[2]; [1]Oak Ridge National Laboratory; [2]Ruhr University Bochum

2:20 PM Invited
Deformation Behavior of the Modified and FCC Structured CoCrFeMnNi Alloys: Choi Minku[1]; *Nokeun Park*[1]; [1]Yeungnam University

2:40 PM
Experimental and Computational Studies of Microstructures and Mechanical Behavior of AlxCoCrFeNi High-entropy Alloys (HEAs): Haoyan Diao[1]; Tingkun Liu[1]; Yanfei Gao[1]; Jonathan Poplawsky[2]; Wei Guo[2]; Rui Feng[1]; Karin A. Dahmen[3]; *Peter K. Liaw*[1]; [1]The University of Tennessee, Knoxville; [2]Oak Ridge National Laboratory; [3]University of Illinois at Urbana–Champaign

3:00 PM Invited
Size Effects in High-entropy Alloys and Quasicrystals: *Yu Zou*[1]; [1]University of Toronto

3:20 PM
Microstructure and Mechanical Properties of FeCoNiCr High-entropy Alloy Strengthened by Nano-Y2O3 Dispersion: *Xiong-Jun Liu*[1]; Bei Jia[1]; Hui Wang[1]; Yuan Wu[1]; Zhao-Ping Lu[1]; [1]University of Science and Technology Beijing

3:40 PM Break

4:00 PM Invited
Investigation of Plastic Deformation Modes in Al0.1CoCrFeNi High Entropy Alloy: *Deep Choudhuri*[1]; Mageshwari Komarasamy[1]; Victor Ageh[1]; Rajiv Mishra[1]; [1]University of North Texas

4:20 PM
Investigation of Dynamic Mechanical Response in Al0.3CoCrFeNi High Entropy Alloy: *Sindhura Gangireddy*[1]; Bharat Gwalani[1]; Rajiv Mishra[1]; [1]UNT Denton

4:40 PM
Mechanical Properties and Oxidation Resistance of NbTiZr-contaning Refractory High Entropy Alloys with Varying Al, Cr and Mo Content: Ulanbek Auyeskhan[1]; *Hojin Ryu*[1]; [1]Korea Advanced Institute of Science and Technology

5:00 PM
On the Temperature Dependence of Fatigue-crack Propagation in the CrMnFeCoNi High-entropy Alloy: *Keli Thurston*[1]; Bernd Gludovatz[2]; Easo George[3]; Robert Ritchie[4]; [1]University of California, Berkeley; [2]University of New South Wales; [3]Oak Ridge National Laboratory; [4]Lawrence Berkeley National Laboratory

5:20 PM
Work Hardening Behavior and Strain Localization in Single Crystalline High Entropy Alloys: *Sezer Picak*[1]; Ceylan Hayrettin[1]; Jun Liu[1]; Demircan Canadinc[1]; Yury I. Chumlyakov[1]; Ibrahim Karaman[1]; [1]Texas A&M

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – Computational Thermodynamic Approaches

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Tuesday PM
March 13, 2018

Room: 127C
Location: Phoenix Convention Center

Session Chairs: Arthur Pelton, Ecole Polytechnique; Long Qing Chen, Penn State University

2:00 PM Invited
The Application of Computational Thermodynamics to Design Reactive-element Doped High-temperature Alloys: Hf Additions to NiCrAl: *Brian Gleeson*[1]; Thomas Gheno[2]; Austin Ross[3]; Zi-Kui Liu[3]; [1]University of Pittsburgh; [2]CEA; [3]Penn State University

2:30 PM Invited
Thermodynamic Modeling of the History of 3.45-billion-year-old Meteorites: *Hiroshi Ohmoto*[1]; Uschi Graham[2]; Takeshi Kakegawa[3]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]University of Kentucky; [3]Tohoku University

3:00 PM Invited
Thermodynamic Theory of Mechanical Destrain: Fei Xue[1]; Yanzou Ji[1]; *Long Qing Chen*[1]; [1]Penn State University

3:30 PM Break

3:50 PM Invited
Thermodynamic Calculation of Aqueous Phase Diagrams: *Arthur Pelton*[1]; Gunnar Eriksson[2]; Klaus Hack[2]; Christopher Bale[1]; [1]Ecole Polytechnique; [2]GTT-Technologies

4:20 PM Invited
The Application of Computational Thermodynamics to the Cathode-electrolyte in Solid Oxide Fuel Cells: *Yu Zhong*[1]; [1]Worcester Polytechnic Institute

4:50 PM Invited
Calphad in FCC High Entropy Alloys: From Binary Alloys to Multi-principal-component Alloys: *Zhijun Wang*[1]; [1]Northwestern Polytechnical University

Integrative Materials Design III: Performance and Sustainability – Role of ICME, Data Management & Integrative Design for Fatigue and High Temperature Performance

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee

Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Tuesday PM
March 13, 2018

Room: 132A
Location: Phoenix Convention Center

Session Chairs: Anthony Spangenberger, Worcester Polytechnic Institute; Sammy Tin, Illinois Institute of Technology

2:00 PM Invited
Application of Integrated Computational Materials Engineering (ICME) and Accelerated Insertion of Materials (AIM) Tools to the Design and Development of Cost-effective Advanced Materials with Improved Performance and Sustainability: *Jason Sebastian*[1]; James Saal[1]; Greg Olson[2]; [1]QuesTek Innovations LLC; [2]QuesTek Innovations LLC and Northwestern University

2:20 PM Invited
Phase-based Data: One Size Doesn't Fit All: *Ursula Kattner*[1]; Carelyn Campbell[1]; [1]National Institute of Standards and Technology

2:40 PM Invited
Design of Fatigue Resistant Ni-base Superalloys via Meso-scale Engineering: *Sammy Tin*[1]; Martin Detrois[1]; Mike Sangid[2]; John Rotella[2]; [1]Illinois Institute of Technology; [2]Purdue University

3:00 PM Invited
Integrative Materials Design of Mo-Si-B Alloys: *Richard Neu*[1]; Kyle Brindley[1]; [1]Georgia Institute of Technology

3:20 PM Invited
Microstructure-sensitive Models for Predicting Near Surface Residual Stress Redistribution in P/M Nickel-base Superalloys: *Micheal Burba*[1]; Dennis Buchanan[2]; Michael Caton[1]; Reji John[1]; Robert Brockman[2]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute

3:40 PM Break

3:55 PM Invited
Integrating Computational and Experimental Methods to Quantify Microstructure Sensitivity of Thin Fatigue-critical Components: *Jacob Hochhalter*[1]; Saikumar Yeratapally[2]; Patrick Leser[1]; Geoffrey Bomarito[1]; Timothy Ruggles[2]; Richard Russell[3]; David Dawicke[4]; [1]NASA LaRC; [2]National Institute of Aerospace; [3]NASA Kennedy Space Center; [4]AS&M, Inc

4:15 PM Invited
Probabilistic Prediction of Effect of Stress Ratio and Notches on Minimum Fatigue Life of Ti-6Al-4V: *Reji John*[1]; Sushant Jha[2]; Patrick Golden[1]; William Porter[2]; Dennis Buchanan[2]; James Larsen[1]; [1]Air Force Research Laboratory; [2]University of Dayton Research Institute

4:35 PM
Fatigue Crack Growth in Structural Cast Aluminum Alloys: Microstructural Mechanisms, Modeling Strategies, and Integrated Design: *Anthony Spangenberger*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

4:55 PM Invited
A Microstructure-sensitive Location-specific Design Tool for Predicting the Yield and Creep Behavior of LSHR Ni-base Superalloy: *T. Parthasarathy*[1]; Reji John[2]; [1]UES, Inc.; [2]Air Force Research Laboratory

5:15 PM
Fatigue Crack Growth Modeling and Mechanisms in Al and Ni Engine Materials under Hot Compressive Dwell Conditions: *Xiang Chen*[1]; Diana Lados[1]; Richard Pettit[2]; David Dudzinski[3]; [1]Worcester Polytechnic Institute, Integrated Materials Design Center; [2]FractureLab, LLC; [3]Derivation Research Laboratory Inc

Looking through the Kaleidoscope: Discovering Your Path to Leadership – Afternoon Session

Program Organizers: Emily Bautista, Virginia Tech; Mackenzie Jones, Virginia Tech; Thomas Maulbeck, Virginia Tech; Rose Roberts, Virginia Tech

Tuesday PM
March 13, 2018
Room: 124B
Location: Phoenix Convention Center

Session Chairs: Thomas Maulbeck, Virginia Tech; Mackenzie Jones, Virginia Tech; Emily Bautista, Virginia Tech

2:00 PM Invited
The Art and Science of Leadership: Influence and Disruption: *Karen Maud*[1]; [1]GE

2:20 PM
The Leader Inside: Determining Your Specifc Skills and How to Apply Them (Interactive Session): Emily Bautista[1]; *Karen Maud*[2]; [1]Virginia Tech; [2]GE Power

3:00 PM Invited
Perspectives on Contrasting Leadership in Industry, Academia, and Government: *Amy Clarke*[1]; [1]Colorado School of Mines

3:20 PM Invited
The Many Facets of Effective Leadership: A View from Two Perspectives: *George Spanos*[1]; [1]TMS

3:40 PM Break

4:00 PM Invited
Park & Diamond: *David Hall*[1]; Jordan Klein[1]; [1]Park & Diamond

4:20 PM Invited
Leadership along the Academic Track: *Tresa Pollock*[1]; [1]University of California, Santa Barbara

4:40 PM Invited
An Internship Program for Laboratory Technicians at the Oak Ridge National Laboratory: *Edgar Lara-Curzio*[1]; [1]Oak Ridge National Laboratory

5:00 PM Question and Answer Period

5:10 PM Concluding Comments

Magnesium Alloy Development: An LMD Symposium in Honor of Karl Kainer – Wrought Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Alan Luo, The Ohio State University

Tuesday PM
March 13, 2018
Room: 223
Location: Phoenix Convention Center

Session Chairs: Jiehua Li, University of Leoben; Mert Celikin, McGill University

2:00 PM
Alloy Design for the Development Heat Treatable Mg Sheet Alloy with Excellent Room Temperature Formability and Strength: Byeong-Chan Suh[1]; Ming-Zhe Bian[1]; Taiki Nakata[2]; *Taisuke Sasaki*[1]; Shigeharu Kamado[2]; Kazuhiro Hono[1]; [1]National Institute for Materials Science; [2]Nagaoka University of Technology

2:20 PM
Development of Magnesium Sheets: *Dietmar Letzig*[1]; Jan Bohlen[1]; Gerrit Kurz[1]; Jose Victoria-Hernandez[1]; Sangbong Yi[1]; [1]MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht

2:40 PM
Effects of Severe Plastic Deformation on Mechanical Properties and Corrosion Behavior of Magnesium Alloys: *Kwang Seon Shin*[1]; Ahmad Bahmani[1]; [1]Seoul National University

3:00 PM
Enhancing Impact Toughness of Mg-3%Al-1%Zn Alloy by Grain Structure Modification: Tomoya Maeda[1]; Naoko Ikeo[1]; Yoshiaki Osawa[2]; *Toshiji Mukai*[1]; [1]Kobe University; [2]National Institute for Materials Science

3:20 PM Break

3:35 PM
Toward Development of Heat-treatable Magnesium Sheet Alloys with Excellent Room Temperature Formability: *Ming-Zhe Bian*[1]; Taisuke Sasaki[1]; Byeong-Chan Suh[1]; Taiki Nakata[2]; Shigeharu Kamado[2]; Kazuhiro Hono[1]; [1]National Institute for Materials Science (NIMS); [2]Nagaoka University of Technology

3:55 PM
Interaction between Propagating Twins and Non-shearable Precipitates in Magnesium Alloys: *Matthew Barnett*[1]; Huan Wang[1]; [1]Deakin University

Magnesium Technology 2018 – Alloy Design

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Tuesday PM
March 13, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Sean Agnew, University of Virginia; Suveen Mathaudhu, University of California – Riverside

2:00 PM Introductory Comments

2:05 PM Invited
Material Design for Enhancing Toughness of Mg Alloy and Application for Biodegradable Devices: *Toshiji Mukai*[1]; [1]Kobe University

2:25 PM
Developmentof BioMg 250 Bioabsorbable Implant Alloy: *Raymond Decker*[1]; S.E. LeBeau[1]; [1]nanoMag, LLC

2:45 PM
Effect of Ca on the Microstructure and Mechanical Properties in Mg Alloys: *Eleftherios Andritsos*[1]; Guy Skinner[1]; Anthony Paxton[1]; [1]King's College London

3:05 PM
Influences of Yttrium Content on Microstructure and Mechanical Properties of As-cast Mg-Ca-Y-Zr Alloys: *Sihang You*[1]; Yuanding Huang[1]; Karl Kainer[1]; Norbert Hort[1]; [1]Helmholtz-Zentrum Geesthacht

3:25 PM Break

3:45 PM
Experimental Study of the Solidification Microstructure in the Mg-rich Corner of Mg-Al-Ce System: *Charlotte Wong*[1]; Mark Styles[2]; Suming Zhu[1]; Trevor Abbott[3]; Kazuhiro Nogita[4]; Stuart McDonald[4]; David StJohn[4]; Mark Gibson[2]; Mark Easton[1]; [1]RMIT University; [2]CSIRO; [3]Magontec Limited; [4]University of Queensland

4:05 PM
Investigation of Grain Refinement Method for AZ91 Alloy using Carbide Inoculation: *Jun Ho Bae*[1]; Young Min Kim[1]; Ha Sik Kim[1]; Bong Sun You[1]; [1]Korea Institute of Materials Science

4:25 PM
Strengthening and Toughening Behaviors of the Mg-9Al Alloy Containing Oxygen Atoms: S. W. Kang[1]; *Donghyun Bae*[1]; [1]Yonsei University

4:45 PM
Investigations on Microstructure and Mechanical Properties of Non-flammable Mg-Al-Zn-Ca-Y Alloys: *Stefan Gneiger*[1]; Nikolaus Papenberg[1]; Simon Frank[1]; Rudolf Gradinger[1]; [1]AIT Austrian Institute of Technology

5:05 PM
Surface and interfacial energies of $Mg_{17}Al_{12}$-Mg system: *Fangxi Wang*[1]; Bin Li[1]; [1]University of Nevada Reno

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials I

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Tuesday PM
March 13, 2018
Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Progress in Developing High Dose Radiation Tolerant Ferritic Steels for Nuclear Applications: *Stuart Maloy*[1]; Eda Aydogan[1]; Ben Eftink[1]; Tarik Saleh[1]; Mychailo Toloczko[2]; Thak-Sang Byun[2]; Curt Lavender[2]; G. Robert Odette[3]; MD E. Alam[3]; Soupitak Pal[3]; Dave Hoelzer[4]; [1]Los Alamos National Laboratory; [2]PNNL; [3]University of California, Santa Barbara; [4]ORNL

2:20 PM
Irradiation of Additively Manufactured Grade 91 Ferritic/Martensitic Steel: *Benjamin Eftink*[1]; Eda Aydogan[1]; Daniel Vega[1]; Jordan Weaver[1]; Todd Steckley[1]; Di Chen[1]; Matthew Chancey[1]; Yongqiang Wang[1]; Carly Cady[1]; Thomas Lienert[1]; Stuart Maloy[1]; [1]Los Alamos National Laboratory

2:40 PM
Neutron irradiation Induced Microstructures in Ferritic/Martensitic Steel HT9: Ce Zheng[1]; *Djamel Kaoumi*[1]; [1]North Carolina State Univeristy

3:00 PM
Effects of Proton Irradiation on Microstructure in Additively Manufactured 316L Stainless Steel Made by Laser Powder Bed Fusion: *Miao Song*[1]; Mi Wang[1]; Gary Was[1]; Xiaoyuan Lou[2]; Raul Rebak[3]; [1]University of Michigan; [2]Corromet LLC; [3]GE Global Research

3:20 PM
In Situ EBSD Analysis of Deformation Mechanisms in Highly Irradiated Austenitic Steels: *Maxim Gussev*[1]; Philip Edmondson[1]; Keith Leonard[1]; [1]Oak Ridge National Laboratory

3:40 PM Break

4:00 PM
Ar Bubble Effects on Precipitation Reactions in Solubilized AISI 316L Steel Irradiated with Heavy Ions: Ítalo Oyarzabal[1]; Mariana Timm[1]; William Pasini[1]; Franciele Oliveira[1]; Francine Tatsh[1]; Livio Amaral[1]; Clarice Kunioshi[2]; *Paulo Fichtner*[1]; [1]Universidade Federal do Rio Grande do Sul; [2]Centro Tecnologico da Marinha em Sao Paulo

4:20 PM
Microstructural and Mechanical Integrity of Laser Weldment of Neutron Irradiated AISI 304 SS: *Keyou Mao*[1]; Paula Freyer[2]; Frank Garner[3]; Janelle Wharry[1]; [1]Purdue University; [2]Westinghouse Electric Company LLC; [3]Texas A&M University

4:40 PM
Shear Punch Measurement of the Mechanical Properties of Irradiated Cladding Material from ATR Irradiations: *Tarik Saleh*[1]; Stuart Maloy[1]; G. Odette[2]; Tobias Romero[1]; Matthew Quintana[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

5:00 PM
Dual Ion Beam Irradiation of Commercial-grade Austenitic Alloys Relevant to LWR Core Components at High Dose: *Calvin Lear*[1]; Miao Song[1]; Mi Wang[1]; Gary Was[1]; [1]University of Michigan

Materials for Energy Conversion and Storage – Energy Storage II

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Tuesday PM
March 13, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Partha Mukherjee , Purdue University; Leela Arava, Wayne State University

2:00 PM Invited
Analysis of Discharge Reactions and Electrolyte Effects at the Cathode of Li/S Batteries: *Perla Balbuena*[1]; Saul Perez Beltran[1]; Ethan Kamphaus[1]; Jaebeom Han[1]; [1]Texas A&M University, Artie McFerrin Department of Chemical Engineering

2:25 PM Invited
Atomic Scale Simulations of Solid Electrolytes: Mechanical Properties and Beyond: *Donald Siegel*[1]; [1]University of Michigan

2:50 PM Invited
Cathode Design from Atomistic to Mesoscale Dimensions: *Sarbajit Banerjee*[1]; [1]Texas A&M University

3:15 PM Invited
Chemomechanical Behaviors of Composite Electrodes in Li-ion Batteries: Experiments and Modeling: *Kejie Zhao*[1]; [1]Purdue University

3:40 PM Break

3:55 PM Invited
Advanced Study on Complex Hydrides for All-Solid-State Secondary Batteries: *Atsushi Unemoto*[1]; Koji Yoshida[2]; Shohei Suzuki[1]; Jun Kawaji[1]; Shin-ichi Orimo[3]; [1]Research and Development Group, Hitachi Ltd; [2]Advanced Institute for Materials Research (AIMR), Tohoku University; [3]IMR, Tohoku University

4:15 PM
Effect of Sonication Power on Al2O3 Coated LiNi0.5Mn0.3Co0.2O2 Cathode Material for LIB: *Dila Sivlin*[1]; Ozgul Keles[1]; [1]ITU

4:35 PM
Electrode-crosstalk in High Energy Lithium Ion Batteries: *Kaushik Kalaga*[1]; Daniel Abraham[1]; [1]Argonne National Laboratory

4:55 PM Invited
Hybrid Nanostructured Materials for High Performance Na-ion Batteries: Binson Babu[1]; KP Lakshmi[1]; *Manikoth Shaijumon*[1]; [1]IISER Thiruvananthapuram

5:20 PM
Investigation of Dynamic Load Effect on Performance and Safety of Lithium- Ion Battery with Raman Spectroscopy: *Bing Li*[1]; Vikas Tomar[1]; [1]Purdue University

5:40 PM
Microstructure and Thermoelectric Properties of Se/Te-doped $CoSb_3$ Skutterudites Synthesized by Self-propagating High-temperature Synthesis: *Miroslaw Kruszewski*[1]; Lukasz Ciupinski[1]; Radoslaw Zielinski[1]; Rafal Zybala[1]; Marcin Chmielewski[2]; [1]Warsaw University of Technology; [2]Institute of Electronic Materials Technology

Materials Processing Fundamentals – Alloy Processing and Properties Modeling

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

Tuesday PM
March 13, 2018
Room: 228A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Improvement of Tensile Properties of Vertical-twin-roll-cast Ti/Al Clad Sheets: *Dae Woong Kim*[1]; Dong Ho Lee[2]; Jung Su Kim[3]; Seok Su Sohn[1]; Hyoung Seop Kim[1]; Sung Hak Lee[1]; [1]POSTECH; [2]POSCO; [3]Korea Technology Finance Corporation

2:20 PM
Yield Strength Prediction in 3D during Local Heat Treatment of Structural A356 Alloy Components in Combination with Thermal-stress Analysis: *Tobias Holzmann*[1]; Andreas Ludwig[1]; Peter Raninger[2]; [1]Montanuniversität Leoben; [2]Materials Center Leoben Forschung GmbH

2:40 PM
Thermodynamic Properties of Magnetic Semiconductors $Ag_2FeSn_3S_8$ and Ag_2FeSnS_4 Determined by the EMF Method: *Mykola Moroz*[1]; Fiseha Tesfaye[1]; Pavlo Demchenko[2]; Myroslava Prokhorenko[3]; Daniel Lindberg[1]; Oleksandr Reshetnyak[2]; Leena Hupa[1]; [1]Åbo Akademi University; [2]Ivan Franko National University of Lviv; [3]Lviv Polytechnic National University

3:00 PM
Study on the Heat Treatment of UNS N 10003 Alloy after Cold Working: *Jianping Liang*[1]; Kexin Chen[2]; Jinhui Fan[2]; Zhijun Li[1]; Chaowen Li[1]; Shuangjian Chen[1]; [1]Shanghai Institute of Applied Physics, Chinese Academy of Sciences (CAS); [2]Donghua University

3:20 PM
Effects of Heat Treatment on the Electrochemical Performance of Al Based Anode Materials for Air-battery: *Xingyu Gao*[1]; Jilai Xue[1]; Xuan Liu[1]; Gaojie Shi[1]; [1]University of science and technology Beijing

3:40 PM Break

4:00 PM
Microstructure Characterization and Mechanical Properties of Mg-9Al (wt.%) Alloy during Low-temperature Equal Channel Angular Extrusion (ECAE): *Suhas Eswarappa Prameela*[1]; Xiaolong Ma[1]; Laszlo Kecskes[2]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]US Army Research Laboratory

4:20 PM
Highly Productive Machining of the Newest, Super Hard Intractable Composite-ceramic Materials: *David Butskhrikhidze*[1]; [1]Georgian Technical University

4:40 PM
Design and Enhancement of Impression Forged Cylindrical Blanks: *Ahmed Elkholy*[1]; [1]Kuwait University

5:00 PM
Manufacturing of a New Type of High Strength High Conductivity Cu–Cr Alloy: *Huiming Chen*[1]; Dawei Yuan[1]; Mingmao Li[1]; Hang Wang[1]; Bin Yang[1]; [1]Jiangxi University of Science and Technology , China

Mechanical Behavior at the Nanoscale IV – 2D and Unique Structured Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Tuesday PM
March 13, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Christopher Weinberger, Colorado State University; Nan Li, Los Alamos National Laboratory

2:00 PM Invited
Dislocation Structure in Layered Chalcogenides: *Douglas Medlin*[1]; [1]Sandia National Laboratories

2:30 PM
Nanomechanical Characterization of Two Dimensional Materials: *Jun Lou*[1]; [1]Rice University

2:50 PM
Mechanical Testing of a Nanostructured Lyotropic Mesophase Material from an Ionic Liquid Monomer: *Bineh Ndefru*[1]; Millicent Firestone[1]; Veronica Livescu[1]; George Gray[1]; James Valdez[1]; [1]Los Alamos National Laboratory

3:10 PM
Mechanical Response of Highly Dense Vertically Aligned Carbon Nanotube (VACNT) Brushes Reinforced by Intertube Bridging: *Cayla Harvey*[1]; Cordero Nuanez[1]; William Mook[2]; Johann Michler[3]; Yury Gogotsi[4]; Siddhartha Pathak[1]; [1]Chemical and Materials Engineering, University of Nevada, Reno; [2]Sandia National Laboratories; [3]Laboratory for Mechanics of Materials and Nanostructures, EMPA - Swiss Federal Laboratories for Materials Science and Technology; [4]Department of Materials Science and Engineering and A.J. Drexel Nanotechnology Institute, Drexel University

3:30 PM Break

3:50 PM
Impact of Point Defects on the Mechanical Properties of 122-superconductors: *Ian Bakst*[1]; Christopher Weinberger[1]; Seok-Woo Lee[2]; John Sypek[2]; Paul Canfield[3]; [1]Colorado State University; [2]University of Connecticut; [3]Iowa State University

4:10 PM
Micro-mechanical Characterization of Novel ThCr2Si2-structured Intermetallic Compounds: Fundamental Understanding of Superelasticity by Experiment and Computer Simulation: *Keith Dusoe*[1]; Ian Bakst[2]; John Sypek[2]; Paul Canfield[3]; Christopher Weinberger[2]; Seok-Woo Lee[1]; [1]University of Connecticut; [2]Colorado State University; [3]Iowa State University

4:30 PM
Superelasticity and Micaceous Plasticity of the Novel Intermetallic Compound $CaFe_2As_2$ at Small Length Scales: *John Sypek*[1]; Christopher Weinberger[2]; Paul Canfield[3]; Sergey Bud'ko[3]; Seok-Woo Lee[1]; [1]University of Connecticut; [2]Colorado State University; [3]Ames National Lab

4:50 PM
Diffusive Plasticity in Nanometer-sized Metallic Crystals: *Scott Mao*[1]; Li Zhong[1]; Frederic Sansoz[2]; Yang He[1]; Chongmin Wang[3]; Ze Zhang[4]; [1]University of Pittsburgh; [2]University of Vermont; [3]Pacific Northwest National Laboratory; [4]Zhejiang University

Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao – Mechanical Properties

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jiann-Yang Hwang, Michigan Technological University; Bowen Li, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

Tuesday PM
March 13, 2018
Room: 123
Location: Phoenix Convention Center

Session Chairs: Eren Kalay, METU; Pasquale Spena, Free University of Bozen-Bolzano

2:00 PM Invited
Integration of Metallography, Fractography and Mechanical Properties Tests as a Key to Failure Analysis of Quenched and Tempered Large Steel Components: *Donato Firrao*[1]; Paolo Matteis[1]; [1]Politecnico di Torino - DISAT

2:40 PM
Microstructure and Mechanical Properties of Low-carbon Ferritic and Bainitic Steels with Different Contents of Mo, Ti and Nb for Seismic and Fire-resistant Applications: *Jun Yeon Kim*[1]; Chang Hoon Lee[2]; Joon Oh Moon[2]; Hyun Uk Hong[1]; [1]Changwon National University; [2]Korea Institute of Materials Science

3:00 PM
Embrittlement in Cast Superaustenitic Stainless Steel: Mertcan Baskan[1]; Scott Chumbley[2]; *Eren Kalay*[1]; [1]METU; [2]Iowa State University

3:20 PM Break

3:40 PM
Thermo-Calc of the Phase Diagrams of the Nb-N System: *Shadia Ikhmayies*[1]; [1]Al Isra University

4:00 PM
Finding the Small Charge Explosion Center by Analyzing Occurrence of Mechanical Twins in FCC Metals: *Donato Firrao*[1]; Paolo Matteis[1]; Graziano Ubertalli[1]; [1]Politecnico di Torino - DISAT

Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr. – Mechanical Behavior of Metal Matrix Composites

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Srivatsan Tirumalai, The University of Akron; Yuzheng Zhang, Gamma Alloys; William Harrigan, Gamma Technology, LLC

Tuesday PM
March 13, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: Steve Siebeck, TU Chemnitz; Martins Sarma, Helmholtz-Zentrum Dresden - Rossendorf

2:00 PM Invited
Influence of Boron to the Creep Behavior of Particle Reinforced Aluminum Matrix Composites (AMCs): Guntram Wagner[1]; *Steve Siebeck*[1]; [1]Chemnitz University of Technology

2:30 PM
Effect of Matrix Properties and Sliding Counterface on the Wear Behavior of Magnesium Alloy-based Metal Matrix Composites: S. Jayalakshmi[1]; R. Arvind Singh[1]; *Tirumalai Srivatsan*[2]; [1]Kumaraguru College of Technology (KCT); [2]The University of Akron

2:50 PM
Characterization in Drilling Process of Carbon Fiber Reinforced Plastic Composite Materials: *Kamlesh Phapale*[1]; [1]Bharat Forge Ltd.

3:10 PM
Synthesis and Microstructural Development of Particulate Reinforced Metal-matrix Composites Using the Technique of Spray Atomization and Deposition: Tirumalai Srivatsan[1]; Yaojun Lin[2]; Fei Chen[2]; *Enrique Lavernia*[2]; [1]The University of Akron; [2]University of California, Irvine

3:30 PM Break

3:50 PM
Magnetically Induced Cavitation for the Dispersion of Particles in Liquid Metals: *Martins Sarma*[1]; Gunter Gerbeth[1]; Ilmars Grants[2]; Andris Bojarevics[2]; [1]Helmholtz-Zentrum Dresden - Rossendorf; [2]Institute of Physics

4:10 PM
An Engineered Magnesium Alloy Nanocomposite: Mechanisms Governing Microstructural Development and Mechanical Properties: Sravya Tekumalla[1]; Shikhar Bharadwaj[1]; Tirumalai Srivatsan[2]; *Manoj Gupta*[1]; [1]National University of Singapore; [2]The University of Akron

4:30 PM
Investigation of the Mechanical Properties of Al_2O_3 Reinforced Nickel Composite Coatings: *Olgun Yilmaz*[1]; Metehan Erdogan[2]; Ishak Karakaya[1]; [1]Middle East Technical University; [2]Yildirim Beyazit University

4:50 PM
The Tensile Response and Fracture Behavior of a Copper-Niobium Microcomposite: Role of Surface Modification: Paul Arindam[1]; *Tirumalai Srivatsan*[1]; [1]The University of Akron

5:10 PM
Fundamental Issues and Highlights of Reactive Wetting in Carbon-based Composites: *Khurram Iqbal*[1]; [1]University of Karachi

Multi-material Additive Manufacturing: Processing and Materials Design – Architectured and Mesostructured Materials

Sponsored by: TMS: Additive Manufacturing Bridge Committee
Program Organizers: Hang Yu, Virginia Tech; Nanci Hardwick, Aeroprobe Corporation; Steven Boles, Hong Kong Polytechnic University; Blake Barnett, Army Research Laboratory; Michael Gibson, Desktop Metal

Tuesday PM
March 13, 2018
Room: 232C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Strong and Robust Nanoarchitectures: *Ruth Schwaiger*[1]; [1]Karlsruhe Institute of Technology (KIT)

2:30 PM Invited
Design and Fabrication of Lightweight, Hierarchical Multi-material Composites with Tunable Thermal Mechanical Properties: *Rayne Zheng*[1]; [1]Virginia Tech

3:00 PM
Multi Phase Materials with Architectured Micro Scale Interfaces: *Niyanth Sridharan*[1]; David Gandy[2]; Maxim Gussev[1]; Sudarsanam Babu[3]; [1]Oak Ridge National Laboratory; [2]Electric Power Research Institute; [3]University of Tennessee, Knoxville

3:20 PM Break

3:40 PM Invited
Multi-material Topology Optimization for 3D Printed Multi-functional Architected Materials and Components: Saranthip Koh[1]; Josephine Carstensen[1]; Christopher Williams[2]; *James Guest*[1]; [1]Johns Hopkins University; [2]Virginia Tech

4:10 PM Invited
Understanding and Predicting the Heterogeneous Local Ligament-level Deformation Response in Metal Lattice Structures: *Holly Carlton*[1]; Jonathan Lind[1]; Mark Messner[1]; Nickolai Volkoff-Shoemaker[1]; Nathan Barton[1]; Mukul Kumar[1]; [1]Lawrence Livermore National Laboratory

4:40 PM
Meso-scale Design of Heterogeneous Material Systems in Multi-material Additive Manufacturing: *David Garcia*[1]; Mackenzie Jones[1]; Yunhui Zhu[1]; Hang Yu[1]; [1]Virginia Tech

5:00 PM
Design and Optimization of Fiber Reinforced Polymers Enabled by Additive Manufacturing: *William Hartley*[1]; David Garcia[1]; Hang Yu[1]; [1]Virginia Tech

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Metallic and Ceramic Nanocomposites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

Tuesday PM
March 13, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
In-situ Study on Mechanical Behavior of Flash-sintered Yttria Stabilized-zirconia at Elevated Temperature: *Jaehun Cho*[1]; Qiang Li[1]; Han Wang[1]; Zhe Fan[1]; Jin Li[1]; Sichuang Xue[1]; Haiyan Wang[1]; Troy Holland[2]; Amiya Mukherjee[3]; Xinghang Zhang[1]; [1]Purdue University; [2]Colorado State University; [3]UC Davis

2:20 PM
Precipitation Phenomena in Al-Zn-Mg Alloy Matrix Composites Reinforced with B4C Particles: *Chuandong Wu*[1]; Kaka Ma[2]; Dalong Zhang[3]; Guoqiang Luo[1]; Fei Chen[1]; Qiang Shen[1]; Lianmeng Zhang[1]; Enrique Lavernia[4]; [1]Wuhan University of Technology; [2]Colorado State University; [3]Oak Ridge National Laboratory; [4]University of California-Irvine

2:40 PM
Nanoparticle Reinforced Nanocomposites by Means of Sputtering and Nanoparticle Co-deposition: *Mikhail Polyakov*[1]; Rachel Schoeppner[1]; Xavier Maeder[1]; Johann Michler[1]; [1]EMPA

3:00 PM
Effects of Reinforcement Size and Volume Fraction on Tensile Behavior of Al-SiC Composites: *Conrad Park*[1]; Erica Bindas[1]; Ji Xia[1]; Corey Meyer[1]; Don Hashiguchi[2]; Kyung Chung[2]; John Lewandowski[1]; Matthew Willard[1]; [1]Case Western Reserve University; [2]Materion Brush Incorporated

3:20 PM Break

3:40 PM
Characterization of Magnetic Microstructure in Near Eutectoid Co-Pt Ordered Alloys: *Isha Kashyap*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

4:00 PM
Nanoindentation Creep Response of Magnesium/Boron Nitride Nanocomposites: *Meysam Haghshenas*[1]; Manoj Gupta[2]; [1]University of North Dakota; [2]National University of Singapore,

4:20 PM
The Mechanical Behavior of Hierarchical Mg Matrix Nanocomposite with High Volume Fraction Reinforcement: *Jinling Liu*[1]; Xu He[1]; Leigang Zhang[1]; Xi Luo[1]; Linan An[2]; [1]Southwest Jiaotong University; [2]University of Central Florida

Non-equilibrium Features of Grain Boundaries – Mechanical Responses of Non-equilibrium Grain Boundaries - Part II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Liang Qi, University of Michigan; Yue Fan, University of Michigan, Ann Arbor; Josh Kacher, Georgia Tech; Elizabeth Holm, Carnegie Mellon University; Irene Beyerlein, University of California, Santa Barbara; Shigenobu Ogata, Osaka University

Tuesday PM
March 13, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Dislocations, Twins, Grain Boundaries and their Interactions in HCP Rhenium: Julian Sabisch[1]; Lu Jiang[1]; Liang Qi[2]; Joshua Kacher[3]; Andrew Minor[1]; Daryl Chrzan[1]; *Mark Asta*[1]; [1]University of California, Berkeley; [2]University of Michigan; [3]Georgia Technological Institute

2:30 PM Invited
The Influence of 3-D Structure on the Mechanical Behavior of Layered Nanocomposites: *Nathan Mara*[1]; Youxing Chen[2]; Nan Li[2]; Jon Baldwin[2]; Ben Liu[2]; Richard Hoagland[2]; [1]University of Minnesota and Los Alamos National Laboratory; [2]Los Alamos National Laboratory

2:50 PM Invited
Dislocation Interactions with Bi-phase Interfaces Using Phase Field Dislocation Dynamics (PFDD): *Abigail Hunter*[1]; Irene Beyerlein[2]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

3:20 PM Break

3:40 PM
Continuum Framework for Dislocation Structure, Energy and Dynamics of Dislocation Arrays and Low Angle Grain Boundaries: *Yang Xiang*[1]; Luchan Zhang[1]; [1]Hong Kong University of Science and Technology

4:00 PM Invited
Competing Effects of Nonmetal Impurities and Planned Metallic Dopants on Grain Boundary Deformation: *Timothy Rupert*[1]; [1]University of California, Irvine

4:30 PM Invited
Characterization of Single Grain Boundary and Interface Mechanical Properties Using In-situ TEM: *Shen Dillon*[1]; [1]University of Illinois at Urbana-Champaign

5:00 PM
Understanding the Effects of Hydrogen on the Plasticity of Individual Crystals within a Polycrystalline Nickel Aggregate Using High Energy X-ray Diffraction and High Pressure Torsion: *Timothy Long*[1]; Matthew Miller[1]; [1]Cornell University

Perfluorocarbon Generation and Emissions from Industrial Processes – PFC Generation Mechanisms from Industrial Processes

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Pascal Lavoie, Light Metals Research Centre - The University of Auckland; David Wong, University of Auckland; Pernelle Nunez, International Aluminium Institute

Tuesday PM
March 13, 2018
Room: 222B
Location: Phoenix Convention Center

Session Chair: David Wong, The University of Auckland

2:00 PM Introductory Comments

2:05 PM
Conditions and Mechanisms of Gas Emissions from Didymium Electrolysis and its Process Control: *Ksenija Milicevic*[1]; Dominic Feldhaus[1]; Bernd Friedrich[1]; [1]RWTH Aachen University

2:30 PM
Perfluorocarbon Formation during Rare Earth Electrolysis: *Karen Osen*[1]; Ana Maria Martinez[1]; Henrik Gudbrandsen[1]; Anne Store[1]; Ole Kjos[1]; Camilla Sommerseth[1]; Heiko Gaertner[1]; Thor Anders Aarhaug[1]; Pierre Chamelot[2]; Mathieu Gibilaro[2]; Massot Laurent[2]; [1]SINTEF; [2]Laboratoire de Génie Chimique, Université de Toulouse

2:55 PM
PFC Evolution Characteristics during Aluminium and Rare Earth Electrolysis: *Ole Kjos*[1]; Asbjørn Solheim[1]; Thor Aarhaug[1]; Karen Osen[1]; Ana Maria Martinez[1]; Camilla Sommerseth[1]; Henrik Gudbrandsen[1]; Anne Støre[1]; Heiko Gaertner[1]; [1]SINTEF

3:20 PM
Evaluation of Time Consistency when Quantifying Emissions of Perfluorocarbons Resulting from Low Voltage Anode Effects: *Lukas Dion*[1]; Pernelle Nunez[2]; Simon Gaboury[3]; David Wong[4]; Alexey Spirin[5]; [1]Université du Québec à Chicoutimi; [2]International Aluminium Institute; [3]Rio Tinto; [4]Light Metal Research Center; [5]UC RUSAL

3:45 PM Break

Phase Transformations and Microstructural Evolution – Phase Transformations in Non-ferrous Systems II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Tuesday PM
March 13, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chairs: Ashwin Shahani, University of Michigan; Samantha Lawrence, LANL

2:00 PM
The Completeness of ω Phase Transformation in Metastable β Titanium Alloys Studied by X-ray Diffraction: *Jana Šmilauerová*[1]; Václav Holý[1]; Petr Harcuba[1]; Dominik Kriegner[1]; [1]Charles University

2:20 PM
Role of Initial Microstructure on the Stability of Pressure Induced ω-phase Zirconium: *M. Arul Kumar*[1]; N Hilairet[2]; Yanbin Wang[3]; Rodney McCabe[1]; Irene Beyerlein[4]; Carlos Tome[1]; [1]Los Alamos National Laboratory; [2]Université Lille ; [3]Argonne National Laboratory; [4]University of California, Santa Barbara

2:40 PM
Dynamic Precipitation in a Mg-9wt.%Al Alloy during Low-temperature Equal Channel Angular Extrusion (ECAE): *Xiaolong Ma*[1]; Suhas Eswarappa-Prameela[1]; Nicholas Krywopusk[1]; Laszlo Kecskes[2]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]US Army Research Laboratory

3:00 PM Demonstration Poster preview. Each poster presenter is given 2 minutes to highlight his/her poster that will be presented later that evening. An opportunity for attendees to get a "sneak peek" of the posters.

3:30 PM Break

3:50 PM
Elastic Modulus and Structural Changes upon Age Hardening of a Palladium-based Alloy, Paliney 7: *Patrick Bowen*[1]; David Birdsall[1]; Edward Laitila[2]; Edward Smith[1]; [1]Deringer-Ney Inc; [2]Michigan Technological University

4:10 PM
Effects of Low-cost Coherent L12-structured Nano-precipitates in Commercial Aluminum Alloys: *Nhon Vo*[1]; Evander Ramos[1]; Francisco Flores[1]; David Seidman[2]; David Dunand[2]; [1]NanoAl LLC; [2]Northwestern University

4:30 PM
Phase-field Modeling of Widmanstätten Growth: *Hocine Lebbad*[1]; Benoît Appolaire[1]; Alphonse Finel[1]; Yann Le Bouar[1]; [1]ONERA/CNRS

4:50 PM
Application of a Generalized Interface Model for Calculation of Solid-liquid Interfacial Free Energy in Alloys: *Ning Ma*[1]; Jeff Hoyt[2]; Sumathy Raman[1]; Mark Asta[2]; [1]Corporate Strategic Research, ExxonMobil Research & Engineering Company; [2]University of California, Berkeley

5:10 PM
Phase Transformation Modeling of Technical Al Alloy during Solidification: *Jiwon Park*[1]; Chang-Seok Oh[1]; [1]Korea Institute of Materials Science

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Aluminium Powder Metallurgy and Composites

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Tuesday PM
March 13, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Tim Sercombe, The University of Western Australia; Katsuyoshi Kondoh, Osaka University

2:00 PM
Microstructural and Chemical Analysis of Gas Atomized and Heat Treated Aluminum Alloy Powders: *Benjamin Bedard*[1]; Alexis Ernst[1]; Tyler Flanagan[1]; Sumit Suresh[1]; Avinash Dongare[1]; Seok-Woo Lee[1]; Harold Brody[1]; Aaron Nardi[2]; Victor Champagne[3]; Mark Aindow[1]; [1]Materials Science and Engineering, and Institute of Materials Science, University of Connecticut, Storrs, CT; [2]United Technologies Research Center, 411 Silver Lane, East Hartford, CT 06108; [3]U.S. Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Ground, Aberdeen, MD.

2:20 PM Invited
AA5083 Powder Sintering Comparison Using AC and DC Currents: *Frank Kellogg*[1]; Michael Kornecki[1]; Selva Vennila Raju[2]; Brandon McWilliams[3]; Ray Brennan[3]; [1]SURVICE Engineering; [2]ORAU; [3]US Army Research Laboratory

2:50 PM Keynote
Aluminum Matrix Composites by Both Powder Metallurgy (PM) and Additive Manufacturing (AM) Methods: *Tim Sercombe*[1]; Xiaopeng Li[2]; [1]The University of Western Australia; [2]University of NSW

3:30 PM Break

3:50 PM Keynote
Solid-state Sintering of Al Alloy Powder and AlN Synthesis in Sintering: *Katsuyoshi Kondoh*[1]; [1]Osaka University

4:30 PM
Mechanical Characterization of Cold Sprayed Aluminum Alloy Powders Using In-situ Micropillar Compression and Tension: *Tyler Flanagan*[1]; Benjamin Berdard[1]; Alexis Ernst[1]; Sumit Suresh[1]; Mark Aindow[1]; Avinash Dongare[1]; Harold Brody[1]; Aaron Nardi[2]; Victor Champagne[3]; Seok-Woo Lee[1]; [1]University of Connecticut; [2]United Technologies Research Center; [3]U.S. Army Research Laboratory

4:50 PM
Influence of Hot Rolling on Mechanical Behavior and Strengthening Mechanism in Boron Carbide Reinforced Aluminum Matrix Composites: *Hao Guo*[1]; JianNeng Zhang[1]; Yang Zhang[1]; Ye Cui[1]; Dan Chen[1]; Yu Zhao[1]; SongSong Xu[1]; NaiMeng Liu[1]; ZhongWu Zhang[1]; [1]Key laboratory of Superlight Materials and Surface technology, Ministry of Education, College of Materials Science and Chemical Engineering, Harbin Engineering University

5:10 PM
Synthesis and Characterization of Dual Matrix In-situ Al-based Nanocomposites: *Suprabha Lakra*[1]; Tapas Bandyopadhyay[1]; Karabi Das[1]; [1]IIT Kharagpur

5:30 PM
Mesoscale Modeling of Single Particle Impact Induced Microstructural Evolution during Cold Spray of Aluminum Powders: *Sumit Athikavil Suresh*[1]; Jie Chen[1]; Benjamin Bedard[1]; Alexis Ernst[1]; Tyler Flanagan[1]; Seok-Woo Lee[1]; Mark Aindow[1]; Harold Brody[1]; Victor Champagne[1]; Avinash Dongare[1]; [1]University of Connecticut

Rare Metal Extraction & Processing – Ti, V, Mo & W

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Hojong Kim, The Pennsylvania State University; Bradford Wesstrom, Freeport-McMoRan Copper & Gold; Shafiq Alam, University of Saskatchewan; Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto; Neale Neelameggham, Ind LLC; Shijie Wang, Rio Tinto Kennecott Utah Copper; Xiaofei Guan, ShanghaiTech University

Tuesday PM
March 13, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chairs: Bradford Wesstrom, Freeport-Mcmoran; Neale Neelameggham, IND LLC

2:00 PM
Present Status and Development of Preparation Technologies of Titanium-rich Materials: Shiju Zhang[1]; Shiju Zhang[2]; Songli Liu[2]; *Wenhui Ma*[1]; Wenhui Ma[3]; Wenhui Ma[4]; Yongnian Dai[1]; Yongnian Dai[3]; Yongnian Dai[4]; [1]Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology; [2]Resources and Environmental Engineering College, Panzhihua University; [3]State Key Laboratory of Complex Nonferrous Metal Resources Cleaning Utilization in Yunnan Province, Kunming University of Science and Technology; [4]Engineering Research Center for Silicon Metallurgy and Silicon Materials of Yunnan Provincial Universities, Kunming University of Science and Technology

2:25 PM
Effect of CaO Additive on the Interfacial Reaction between the BaZrO3 Refractory and Titanium Enrichment Melt: *Guangyao Chen*[1]; Juyun Kang[1]; Pengyue Gao[1]; Wajid Ali[1]; Ziwei Qin[1]; Xionggang Lu[1]; Chonghe Li[1]; [1]Shanghai Univeristy

2:50 PM
Extracting Uranium and Molybdenum from Refractory U-Mo Associated Ore: *Kang Liu*[1]; Zhiping Yang[1]; Fengqi Zhao[1]; Liuyin Shi[1]; Yan Song[1]; Xing Fan[1]; [1]BeiJing Research Institute of Chemical Engineering and Metallurgy

3:15 PM
Thermodynamics Analysis on the Process of Decarburization and Vanadium Protection by CO_2: *Liu Zhuolin*[1]; Zhang Ting'an[1]; Niu Liping[1]; Lv Guozhi[1]; Dou Zhihe[1]; Pan Xijuan[1]; [1]School of Metallurgy of Northeastern University

3:40 PM Break

4:00 PM
Purification of a Nigerian Wolframite Ore for Improved Industrial Applications: *Alafara Baba*[1]; Muhammed Muhammed[1]; Mustapha Raji[1]; Kuranga Ayinla[1]; Misitura Lawal[2]; Folahan Adekola[1]; Abdul Alabi[3]; Rafiu Bale[1]; [1]University of Ilorin, Nigeria.; [2]Kebbi State University of Sc. & Tech.; [3]Kwara State University, Malete

4:25 PM
Extraction of Vanadium and Chromium from the Material Containing Chromium, Titanium and Vanadium: *Sheng Huang*[1]; Shengfan Zhou[1]; Bianfang Chen[1]; Biao Liu[1]; Qi Ge[1]; Mingyu Wang[1]; Xuewen Wang[1]; [1]Central South University

4:50 PM
Extraction Separation of V and Fe in High Acid and High Iron Solution: *Weiguang Zhang*[1]; Zhang Ting'an[1]; Guozhi Lyu[1]; Yajing Tian[1]; Biyu Long[1]; Xuejiao Cao[1]; [1]Northeastern University

5:15 PM
Batch Studies for Removing Vanadium(V) and Chromium(VI) from Aqueous Solution Using Anion Exchange Resin: *Yang Yang*[1]; Hong-Yi Li[1]; Min-Min Lin[1]; Bing Xie[1]; [1]Chongqing University

Recent Developments in Biological, Structural and Functional Thin Films & Coatings – Functional Films & Coatings II

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas - El Paso; Heinz Palkowski, Clausthal University of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology; Vikas Tomar, Purdue University; Gerald Ferblantier, Strasbourg University - ICube Laboratory

Tuesday PM
March 13, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Gerald Ferblantier, Université de Strasbourg ICube; Ramana Chintalapalle, University of Texas at El Paso El Paso - UTEP

2:00 PM Keynote
Control of Thin MoSe2 Layer in Cu(InGa)Se2-based Thin Film Solar Cell: *Woo Kyoung Kim*[1]; Jaseok Koo[1]; [1]Yeungnam University

2:40 PM
Modeling, Deposition, and Characterization of Nano-crystalline Nitrides for Use in Optical Coatings: *Neil Murphy*[1]; Lirong Sun[2]; John Jones[1]; John Grant[3]; [1]Air Force Research Laboratory; [2]General Dynamics Information Technology; [3]Azimuth Corporation

3:00 PM
Rare Earth-doped Tin Oxide and Zinc Oxide Thin Films for Photovoltaic Applications: *Gerald Ferblantier*[1]; Karima Bouras[1]; Abdelilah Slaoui[1]; Guy Schmerber[2]; [1]Strasbourg University - ICube Laboratory; [2]Strasbourg University - IPCMS

3:20 PM
Tunable Optical Constants and Solar Selectivity of Multilayer Films for Smart Window Applications: *P. Dubey*[1]; C. Grijalva[1]; C. Ramana[1]; [1]University of Texas at El-Paso

3:40 PM Break

4:00 PM Invited
Functional Thin Film Enabled Sensor Technologies for Harsh Environment Sensing Applications: *Paul Ohodnicki*[1]; [1]National Energy Technology Laboratory

4:30 PM
Characterization and Performance Evaluation of Titanium Doped ß-Ga2O3 Thin Films for Oxygen Sensors in Extreme Environment: *Sandeep Manandhar*[1]; Anil Battu[1]; Chintalapalle Ramana[1]; [1]University of Texas at El Paso

4:50 PM
Structural and Optical Properties of Tungsten Doped Hafnium Oxide Nanocrystalline Thin Films: *Marlyn Torres*[1]; Ann Uribe[1]; Chintalapalle Ramana[1]; [1]University of Texas at El Paso

5:10 PM
Effect of Refractory Metal Incorporation on Structural and Mechanical Properties of ß-Ga2O3 Nanocrystalline Films for Extreme Environment Applications: *Anil Krishna Battu*[1]; Sandeep Manandhar[1]; Ramana Chintalapalle[1]; [1]University of Texas at El Paso

5:30 PM
Magnetic Field Assisted Directed and Deterministic Assembly: *Balraj Mani*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Surface Engineering for Improved Corrosion Resistance – Session III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Carlos Schvezov, Institute of Materials of Misiones; Arvind Agarwal, Florida International University

Tuesday PM
March 13, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Xiaobo Chen, RMIT University; Rajeev Gupta, The University of Akron

2:00 PM Invited
Development of Linseed Oil Based Self-healing Coatings to Improve Corrosion Protection: *Qixin Zhou*[1]; Haoran Wang[1]; [1]University of Akron

2:20 PM
Mechanical and Corrosion Behavior of 304 Austenitic Stainless Steel Processed by Cryogenic Rolling: Rahul Singh[1]; Deepak Sachan[1]; Raviraj Verma[2]; *Abhishek Kumar*[1]; [1]Motilal Nehru National Institute of Technology Allahabad; [2]IIT Roorkee

2:40 PM
Corrosion Inhibition of Martensitic Stainless Steel by Ammonium Benzoate in Acidic Solution: Solanum Tuberosum Extract as Surfactant: *Olaitan Akanji*[1]; Cleophas Loto[2]; Patricia Popoola[1]; Andrei Kolesnikov[1]; [1]Tshwane University of Technology; [2]Covenant University

3:00 PM
Severe Plastic Deformation Surface Treatment on Corrosion and Environmental Cracking of Oilfield Alloys: *Ting Chen*[1]; Kripa Varanasi[1]; [1]Massachusetts Institute of Technology

3:20 PM
Anti-corrosion Properties of Rosemary Oil and Vanillin on low carbon steel in Dilute Acid Solutions: *Roland Loto*[1]; Cleophas Loto[1]; Bryan Ayozie[1]; Tayo Sanni[1]; [1]Covenant University

3:40 PM Break

3:55 PM
Stainless Steel Corrosion Resistance in 0.5 M H2SO4 Using Cassia Fistula Extract: *Olugbenga Omotosho*[1]; Joshua Okeniyi[1]; Cleophas Loto[1]; Sunday Afolalu[1]; Emmanuel Obi[1]; Oluwatobi Sonoiki[1]; Oluwatobi Sonoiki[1]; Segun Oladipupo[1]; Timi Oshin[1]; Adebanji Ogbiye[1]; [1]Covenant University, Ota

4:15 PM
Synergistic Effect of Benzonitrile and Benzothiazole on the Corrosion Inhibition of 316 Stainless Steel in 6M HCl Solution: *Roland Loto*[1]; Cleophas Loto[1]; Alexander McPepple[1]; Akanji Olaitan[1]; Gabriel Olanrewaju[1]; [1]Covenant University

4:35 PM
Corrosion Resistance of Aluminium in 0.5 M H2SO4 in the Presence of Cassia Fistula Extract: *Olugbenga Omotosho*[1]; Joshua Okeniyi[1]; Cleophas Loto[1]; Abimbola Popoola[2]; Adeoluwa Oni[1]; Ayomide Alabi[1]; Abisola Olarewaju[1]; [1]Covenant University, Ota; [2]Department of Chemical, Metallurgical & Materials Engineering, Tshwane University of Technology, Pretoria, South Africa

4:55 PM
An Assessment on the Effect of Lecaniodiscus Cupaniodes Extract in Corrosion Inhibition of Normalized Mild Steel in 0.5 M HCl: *Olufunmilayo Joseph*[1]; O.S.I Fayomi[1]; Olakunle Olaleye Joseph[2]; Adeyemi Omisore[1]; [1]Covenant University; [2]Federal University of technology, Akure

5:15 PM
Graphene Ultra-thin Coating for Remarkable Corrosion Resistance: Current Status and Challenges: *RK Singh Raman*[1]; [1]Monash University

Thermal and Mechanical Stability of Nanocrystalline Materials – Thermal Stability of Nanocrystalline Metals I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Tuesday PM
March 13, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
An Atom Probe Tomography Prospective to Nanogranular Thermal Stability: *Gregory Thompson*[1]; Xuyang Zhou[1]; Thomas Koenig[1]; Monica Kapoor[1]; Florian Vogel[1]; Brad Boyce[2]; Blythe Clark[2]; Kris Darling[3]; B. Chad Hornbuckle[3]; [1]University of Alabama; [2]Sandia National Laboratories; [3]Army Research Laboratory

2:30 PM
Atom Probe Tomography Investigation of Diamantane Induced Stability in Nanocrystalline Aluminum: Torben Boll[1]; Martin Heilmaier[2]; Ali Yousefiani[3]; *James Earthman*[4]; [1]Karlsruhe Institute of Technology (KIT) and Karlsruhe Nano Micro Facility; [2]Karlsruhe Institute of Technology (KIT); [3]Boeing Research & Technology; [4]University of California, Irvine

2:50 PM
Synthesis, Characterization and Thermal Stability of Nanocrystalline Mg-Zn Thin Films: *Xiujuan Jiang*[1]; Libor Kovarik[1]; Arun Devaraj[1]; Mark Bowden[1]; Aashish Rohatgi[1]; [1]Pacific Northwest National Laboratory

3:10 PM Invited
Investigating the Thermal Stability of FCC and BCC Nanocrystalline Thin Films by In Situ TEM Annealing and Post Mortem TKD Analysis: *Josh Kacher*[1]; Jordan Key[1]; [1]Georgia Tech

3:40 PM Break

4:00 PM Invited
The Mechanisms of Thermal Stability and Strength of Nanocrystalline Immiscible Alloys: K. Darling[1]; K. Solanki[2]; R. Koju[3]; *Yuri Mishin*[3]; [1]US Army Research Laboratory; [2]Arizona State University; [3]George Mason University

4:30 PM Invited
Thermal Stability of Nanocomposite Metals: In Situ Observation of Anomalous Residual Stresses Relaxation during Annealing Under Synchrotron Radiation: *Ludovic Thilly*[1]; Pierre-Olivier Renault[1]; Florence Lecouturier[2]; [1]Pprime Institute - University of Poitiers; [2]LNCMI-Toulouse

Thermo-mechanical Response of Materials with Special Emphasis on In-situ Techniques – High Temperature Mechanical Properties of Materials II

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Bruker Nano Surfaces ; Jeff Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Dongchan Jang, Korea Advanced Institute of Science and Technology; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Tuesday PM
March 13, 2018
Room: 101A
Location: Phoenix Convention Center

Session Chairs: Bob Wheeler, Microtesting Solutions; Jeff Wheeler, ETH Zurich

2:00 PM Invited
Deformation Mechanisms of Cu/Nb Nanoscale Metallic Multilayers as a Function of Temperature and Layer Thickness: *Miguel Monclus*[1]; Jeromy Snel[1]; Miguel Castillo-Rodriguez[1]; Nathan Mara[2]; Irene Beyerlein[3]; Javier Llorca[1]; Jon Molina-Aldareguia[1]; [1]IMDEA Materials; [2] Los Alamos National Laboratory; [3]University of California, Santa Barbara

2:30 PM
Combinatorial In Situ Micromechanics of the Al-Cu System at Low Temperatures: Yuan Xiao[1]; Bin Gan[2]; Alla Sologubenko[1]; *Jeff Wheeler*[1]; [1]ETH Zurich; [2]Northwestern Polytechnic University

2:50 PM
Size Effects in Ion-irradiated 800H Steel at High Temperatures Utilizing Microcompression Testing: *Anya Prasitthipayong*[1]; David Frazer[1]; Hi Vo[1]; Scott Tumey[2]; Andrew Minor[1]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Lawrence Livermore National Lab

3:10 PM
Nanomechanical Properties of Graphene Oxide and Carbon Nanotube Scaffolds: *Sanjit Bhowmick*[1]; Chandra Sekhar Tiwary[2]; Syed Asif[1]; Pulickel Ajayan[2]; [1]Bruker Nano Surfaces; [2]Rice University

3:30 PM Break

3:50 PM Invited
Metals under High-pressure, High Temperature and during Plastic Deformation: In-situ Studies of Thermo-mechanical Response by Neutron and Synchrotron Quantum Beams: *Klaus-Dieter Liss*[1]; [1]Australian Nuclear Science and Technology Organisation

4:20 PM Invited
The Effect of Strain Rate on the Tensile Properties of Single Crystal Ni – an In Situ Study: *Dhriti Bhattacharyya*[1]; Alan Xu[1]; Joel Davis[1]; Michael Saleh[1]; [1]Australian Nuclear Science and Technology Organisation

4:50 PM
High throughput Study of Underlying Mechanisms of Serrated Flow in Nickel-based Diffusion Multiple via High Temperature Nanoindentation: *Bin Gan*[1]; Yuan Xiao[2]; Miguel A. Monclus[3]; Jeffrey Wheeler[2]; [1]Northwestern Polytechnical University; [2]ETH Zurich; [3]IMDEA Materials Institute

5:10 PM
Analysis of Longitudinal Twinning in γ -TiAl by Micropillar Compression up to 700 °C with Strain and Crystal Orientation Mapping: Thomas Edwards[1]; Fabio Di Gioacchino[1]; Nigel Martin[2]; Mark Dixon[2]; William Clegg[1]; [1]University of Cambridge; [2]Rolls-Royce plc

Ultrafine-grained Materials X – Early Career Scientist

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Tuesday PM
March 13, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chairs: Irene Beyerlein, University of California, Santa Barbara; Srikanth Patala, North Carolina State University

2:00 PM
Achieving Ultra-high Strengthening of A2024 Alloy through Combination of High-pressure Torsion and Subsequent Aging Treatment: *Takahiro Masuda*[1]; Xavier Sauvage[2]; Zenji Horita[1]; [1]Kyushu University; [2]CNRS, University of Rouen

2:20 PM
Compositionally Tailoring the Mechanical Properties of Nanotwinned Metal Thin Films for Preliminary Micro-cantilever MEMS Devices: *Gianna Valentino*[1]; Jessica Krogstad[2]; Timothy Weihs[1]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]University of Illinois at Urbana-Champaign

2:40 PM
Thermodynamical Instability of a Single-phase, Nanocrystalline TiZrNbHfTa Alloy and its Impact on the Mechanical Properties: *Benjamin Schuh*[1]; Bernhard Völker[1]; Juraj Todt[2]; Loic Perriere[3]; Jean-Philippe Couzinié[3]; Anton Hohenwarter[1]; [1]Montanuniversität Leoben; [2]Erich-Schmid-Institute of Materials Science, Austrian Academy of Sciences; [3]Université Paris Est, ICMPE (UMR 7182), CNRS, UPEC

3:00 PM
Mechanical Behavior of Bulk Mg-based Ultra-fine Layered Composites: *Brandon Leu*[1]; Irene Beyerlein[1]; Nathan Mara[2]; John Carpenter[2]; Arulkumar Mariyappan[2]; [1]University of California, Santa Barbara; [2]Los Alamos National Laboratory

3:20 PM Break

3:40 PM
Microstructural Evolution and Thermal Stability of Accumulatively Roll-bonded Cu-Nb Nanolaminates
: *Jaclyn Avallone*[1]; Thomas Nizolek[2]; Irene Beyerlein[3]; Nathan Mara[2]; Tresa Pollock[1]; [1]UCSB; [2]Los Alamos National Lab; [3]University of California, Santa Barbara

4:00 PM
Averting Plastic Flow Localization in Metal Nanocomposites by Tailoring Microstructure Morphology: *Ian McCue*[1]; Mengying Liu[1]; Michael Demkowicz[1]; [1]Texas A&M University

4:20 PM
Microstructure, Hardness, and Recrystallization of Tungsten Processed by ECAE to High Strain at Very Low Homologues Temperature: *Zachary Levin*[1]; Karl Hartwig[1]; [1]Texas A&M University

4:40 PM
Evolution of Structural Instabilities during Cyclic Deformation of UFG Metals: *Marlene Kapp*[1]; Oliver Renk[1]; Thomas Leitner[1]; Pradipta Ghosh[1]; Bo Yang[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science

5:00 PM
Strengthening and Toughening Effects of Twin Mesh Structures in Polycrystalline Mg: *Xin Wang*[1]; Lin Jiang[1]; Dalong Zhang[1]; Chase Cooper[1]; Ruilin Wang[1]; Ali Hernandez[1]; Timothy Rupert[1]; Subhash Mahajan[1]; Irene Beyerlein[2]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California, Irvine; [2]University of California, Santa Barbara

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – Nanomaterials, Characterization, and Applications

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Wednesday AM
March 14, 2018
Room: 101B
Location: Phoenix Convention Center

Session Chairs: Lanxia Cheng, University of Texas at Dallas; Stephen McDonnell, University fo Virginia

8:30 AM
Anisotropic and Shape-selective Nanomaterials: Structure-property Relationships: *Simona Hunyadi Murph*[1]; [1]Savannah River National Laboratory & University of Georgia

8:50 AM Invited
Cubic Boron Nitride / Diamond Heterostructures via Plasma-Enhanced Chemical Vapor Deposition: *Robert Nemanich*[1]; Joseph Shammas[1]; Yu Yang[1]; Xingye Wang[1]; Franz Koeck[1]; Martha McCartney[1]; David Smith[1]; [1]Arizona State University

9:20 AM
Optimization of Gold Surface Density on SiO_2@Au Core-Shell Nanoparticles for Holographic Fabrication of Ordered Arrays for Plasmonic Metamaterials: *Kyle Iwamoto*[1]; Prakash Nallathamby[2]; Eveline Rigo[3]; Gregory Timp[3]; Ryan Roeder[2]; [1]University of Notre Dame, Department of Chemical and Biomolecular Engineering; [2]University of Notre Dame, Department of Aerospace and Mechanical Engineering, Bioengineering Graduate Program; [3]University of Notre Dame, Department of Electrical Engineering

9:40 AM Invited
Atomic Layer Semiconductors and Heterostructures for Engineering Tunable 2D Nanoelectromechanical Systems (NEMS): *Philip Feng*[1]; [1]Case Western Reserve University

10:00 AM Break

10:20 AM
Mechanical Buckling of Si Nanoribbons on a Compliant Substrate: *Siang Yee Chang*[1]; Lin Yang[2]; Deyu Li[2]; Terry T. Xu[1]; [1]The University of North Carolina at Charlotte; [2]Vanderbilt University

10:40 AM
2-D Nanosheets and Rod-like WO_3 Obtained via Chemical Precipitation Method for Detecting Formaldehyde: *HuiMin Yu*[1]; JianZhong Li[1]; [1]Northeastern University

11:00 AM
Oxidation of Silicon for Application on Atomic Layer Deposition: *Su Min Hwang*[1]; Xin Meng[1]; Aotonio Lucero[1]; Harrison Kim[1]; Jiyoung Kim[1]; [1]The University of Texas at Dallas

11:20 AM
Site Selection by Epitaxial Group IV Quantum Dots on Patterned Si (001) Surfaces - the Roles of Lengthscales and Surface Morphology: Jatin Amatya[1]; *Jerrold Floro*[1]; [1]University of Virginia

11:40 AM
Study on the Stress-induced Ferroelectric Polarization of Hafnium Zirconate Thin Films Realized at Low Temperature: *Jaidah Mohan*[1]; Si Joon Kim[1]; Dushyant Narayan[2]; Jaegil Lee[3]; Jiyoung Kim[1]; Scott Summerfelt[4]; [1]University of Texas at Dallas; [2]University of Colorado Boulder; [3]Seoul National University; [4]Texas Instruments Inc.

9th International Symposium on High Temperature Metallurgical Processing – Extraction and Recovery of Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Wednesday AM
March 14, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland

8:30 AM Introductory Comments

8:35 AM
An Industry Overlook of Secondary Lead Pyrometallurgical Processing: *Camille Fleuriault*[1]; [1]Gopher Resource

8:55 AM
Recovery of Aluminium and its Compounds with Hydro and Pyrometalurgical Methods from Non-metallic Residue: *Osman Celik*[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

9:15 AM
Purification of Molten Zinc Chloride-Alkali Chloride by Cementation Reaction: *Gen Kamimura*[1]; Hiroyuki Matsuura[1]; [1]The University of Tokyo

9:35 AM
Sulfation Roasting of Nickel Sulfide Concentrate in the Presence of Sodium Sulfate: *Guangshi Li*[1]; Hongwei Cheng[1]; Xionggang Lu[1]; Qian Xu[1]; [1]Shanghai University

9:55 AM Break

10:15 AM
Thermodynamic Analysis of Smelting of Spent Catalysts for Recovery of Platinum Group Metals: *Zhiwei Peng*[1]; Zhizhong Li[1]; Xiaolong Lin[1]; Yutian Ma[2]; Yan Zhang[2]; Yuanbo Zhang[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University; [2]Jinchuan Group Co. Ltd.

10:35 AM
Preparation of Titanium Foams through Direct Electrolysis of the Sintered CaO-TiO2 in Molten Salt CaCl2: *Zhengfeng Qu*[1]; Meilong Hu[1]; Leizhang Gao[1]; Pingsheng Lai[1]; Chenguang Bai[1]; [1]Chongqing University

10:55 AM
Experimental Study on Oxidative Desulfurization and Selective Reduction of Molten Copper Slag: *Wang Yun*[1]; Zhu Rong[1]; Chen Qizhou[1]; [1]University Of Science and Technology Beijing

11:15 AM
Recycling SiO2 and Al2O3 from the Metallurgical Slag of Nickel Laterite Ores in Molten Sodium Hydroxides: *Donggen Fang*[1]; Jilai Xue[1]; [1]University of Science and Technology Beijing

11:35 AM
Remove Sulfur in Copper Dross from Refining Lead by Converting Process: *Baoqiang Xu*[1]; Xutao Guo[1]; Yong Deng[1]; Hen Xiong[1]; Bin Yang[1]; Dachun Liu[1]; Wenlong Jiang[1]; [1]National Engineering Laboratory for Vacuum Metallurgy, Key Laboratory of Nonferrous Metals Vacuum Metallurgy of Yunnan Province, Kunming University of Science and Technology

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Mechanical Behavior and Technique Development

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Wednesday AM
March 14, 2018
Room: 102A
Location: Phoenix Convention Center

Session Chairs: Peter Hosemann, University of California Berkeley; Elaine West, Naval Nuclear Laboratory

8:30 AM
Linking RIS and Grain Decohesion Using In Situ TEM 4-point Beams: *Kayla Yano*[1]; Janelle Wharry[1]; [1]Purdue University

8:55 AM
Localized Helium Implantation Utilizing a Helium Ion Beam Microscope to Evaluate Swelling and Mechanical Property Changes: *Peter Hosemann*[1]; David Frazer[1]; Yun Yang[1]; Mehdi Balooch[1]; Manfred Ambad[1]; [1]University of California, Berkeley

9:20 AM
Characterizing Displacement Cascade Damage via Virtual Diffraction Techniques: *James Stewart*[1]; Remi Dingreville[1]; [1]Sandia National Laboratories

9:45 AM
Quantifying Radiation Damage in Materials Using Stored Energy Fingerprints: *Charles Hirst*[1]; Rachel Connick[1]; Logan Abel[1]; Sean Lowder[1]; Ki-Jana Carter[1]; Kangpyo So[1]; Penghui Cao[1]; Michael Short[1]; [1]Massachusetts Institute of Technology

10:10 AM Break

10:30 AM Invited
Characterizing the Defect Structure and Defect Density in Neutron and Proton Irradiated Zr Alloys by X-ray Line Profile Analysis: *Tamás Ungár*[1]; Gábor Ribárik[2]; Matthew Tpping[1]; Rebecca Johns[1]; Rory Hulse[1]; Hattie Xu[1]; Levente Balogh[3]; Philipp Frankel[1]; Christopher Race[1]; Michael Preuss[1]; [1]University of Manchester; [2]Eötvös University Budapest; [3]Chalk River Nuclear Laboratories

11:00 AM
Carbon Contamination in Ferritic/Martensitic Steels during Ion Irradiation: Characterization and Mitigation: *Jing Wang*[1]; Mychailo Toloczko[1]; Karen Kruska[1]; Daniel Schreiber[1]; Yuanyuan Zhu[1]; Danny Edwards[1]; Zihua Zhu[1]; [1]Pacific Northwest National Laboratory

11:25 AM
Towards In-situ Thermo-mechanical Property Monitoring during Ion Irradiation: *Cody Dennett*[1]; Kangpyo So[1]; Khalid Hattar[2]; Michael Short[1]; [1]Massachusetts Institute of Technology; [2]Sandia National Laboratories

Accident Tolerant Fuels for Light Water Reactor – Ceramic Cladding & Coatings

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Wednesday AM
March 14, 2018
Room: 104A
Location: Phoenix Convention Center

Session Chairs: Kumar Sridharan, University of Wisconsin; Yutai Katoh, Oak Ridge National Laboratory

8:30 AM Invited
Transient Swelling of SiC/SiC Composites and its Implications to Fuels and Core Designs: *Yutai Katoh*[1]; Takaaki Koyanagi[1]; Gyanender Singh[1]; Ken Yueh[2]; [1]Oak Ridge National Laboratory; [2]Electric Power Research Institute

9:00 AM
Experimental Characterization of Micro-scale Failure Mechanisms and Governing Properties in SiC/SiC Composites: *Joseph Kabel*[1]; Peter Hosemann[1]; Takaaki Koyanagi[2]; Yutai Katoh[2]; Christian Deck[3]; [1]University of California, Berkeley; [2]Oak Ridge National Laboratory; [3]General Atomics

9:20 AM
Radiation Effects on SiC/SiC Composites for Advanced Accident Tolerant Fuel Cladding Tubes: *Shradha Agarwal*[1]; William Weber[1]; [1]UTK and ORNL

9:40 AM
Simulation of SiC-SiC Composite Micro-pillar Compression as an Investigation of Fiber/Matrix Interface Properties: *Ian Love*[1]; Brian Bay[1]; Peter Hosemann[2]; Joey Kabel[2]; Christian Deck[3]; Julie Tucker[1]; [1]Oregon State University; [2]University of California, Berkeley; [3]General Atomics

10:00 AM Break

10:20 AM Invited
Development of Cold Spray Coatings for Accident Tolerant Fuel (ATF) Cladding: *Kumar Sridharan*[1]; Benjamine Maier[1]; Greg Johnson[1]; Hwasung Yeom[1]; Tyler Dabney[1]; Mia Lenling[1]; Payton Scallon[1]; Samantha Joers[1]; Kyle Blomstrand[1]; Javier Romero[2]; Hemant Shah[2]; Jorie Walters[2]; Peng Xu[2]; [1]University of Wisconsin-Madison; [2]Westinghouse Electric Company

10:50 AM Invited
Multilayer Metal-ceramic Coatings for Accident Tolerant Fuel: Francisco Garcia Ferré[1]; Javier Romero[2]; Jonna Partezana[2]; Peng Xu[2]; *Fabio Di Fonzo*[1]; [1]Istituto Italiano di Tecnologia; [2]Westinghouse Electric Company LLC

11:20 AM
$ZrSiO_4$ as an Efficient Barrier Coating for Nuclear Applications: Sumit Bhattacharya[1]; Michael Pellin[1]; *Abdellatif Yacout*[1]; [1]Argonne National Laboratory

11:40 AM
Enhanced Accident Tolerant Zirconium-silicide Coated LWR Fuel Cladding: *Hwasung Yeom*[1]; Cody Lockhart[1]; Robert Mariani[2]; Xianming Bai[3]; Peng Xu[4]; Kumar Sridharan[1]; [1]University of Wisconsin-Madison; [2]Idaho National Laboratory; [3]Virginia Polytechnic Institute and State University; [4]Westinghouse Electric Company

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Post-build Thermal Processing: Effects on Microstructure and Properties

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Wednesday AM
March 14, 2018

Room: 230
Location: Phoenix Convention Center

Session Chair: Eric Lass, National Institute of Standards and Technology

8:30 AM Invited
Building Parts by Welding Millions of Little Bits of Metal Together: What Could Possibly Go Wrong?: *Lyle Levine*[1]; [1]National Institute of Standards and Technology

9:00 AM
Microstructural Characterization of Ti64 Following Hot Isostatic Pressing: *Brad Baker*[1]; Joel Schubbe[1]; [1]US Naval Academy

9:20 AM
Microstructure and Mechanical Properties of Selectively Laser Melted IN718 Alloy before and after Heat Treatment: *Le Zhou*[1]; Abhishek Mehta[1]; Yongho Sohn[1]; [1]University of Central Florida

9:40 AM
Spatial Heterogeneity of Microstructure and Mechanical Properties in Inconel 718 Fabricated by Selective Laser Melting: *Sharniece Holland*[1]; Lin Li[1]; [1]The University of Alabama

10:00 AM Break

10:20 AM
Microstructural Evolution during Post-built Thermal Processing of Additively Manufactured Inconel 625: *Eric Lass*[1]; Mark Stoudt[1]; Daniel Ng[1]; Maureen Williams[1]; [1]National Institute of Standards and Technology

10:40 AM
Reversion in Ternary Alloys using Phase-field and CALPHAD Methods: *Trevor Keller*[1]; Greta Lindwall[1]; Ursula Kattner[1]; Jonathan Guyer[1]; [1]National Institute of Standards and Technology

11:00 AM
The Effects of Pore Morphology in 316L AM Builds: *Richard Fonda*[1]; David Rowenhorst[1]; Scott Olig[1]; Jerry Feng[1]; [1]US Naval Research Laboratory

11:20 AM
Fabrication of Large Additively Manufactured Stainless Steel Structures Using Directed Energy Deposition: *Zakariya Khayat*[1]; Todd Palmer[1]; [1]Applied Research Lab Penn State University

11:40 AM
The Effects of Hot Isostatic Pressing on the Microstructure and Tensile Properties of Additively Manufactured 2205 Duplex Stainless Steel: *Andrew Iams*[1]; Todd Palmer[1]; [1]Penn State University

12:00 PM
Microstructural Development in Heat-treated 17-4 PH Stainless Steel Parts Prepared by Selective Laser Melting: *Yu Sun*[1]; Mark Aindow[1]; Rainer Hebert[1]; [1]University of Connecticut

Additive Manufacturing of Metals: Fatigue and Fracture – Session IV

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International; John Lewandowski, Case Western Reserve University

Wednesday AM
March 14, 2018

Room: 232A
Location: Phoenix Convention Center

Session Chair: Mohsen Seifi, Case Western Reserve University

8:30 AM Invited
3D Printing of Metallic Glasses by Thermoplastic Forming: *Jan Schroers*[1]; mike Gibson[2]; Nicholas Mykulowycz[2]; Richard Fontana[2]; Jonah Myerberg[2]; Ric Fulop[2]; Yet-Ming Chiang[3]; Chris Schuh[3]; John Hart[3]; [1]Yale University; [2]Desktop Metal; [3]Massachusetts Institute of Technology

9:00 AM
Influence of Build-angle on Charpy Impact Fracture of Laser Powder Bed 3D-printed Stainless Steel and Aluminum Cast Alloy: *Brahmananda Pramanik*[1]; Kristofer Kuelper[1]; MD. Salahuddin[1]; Bruce Madigan[1]; [1]Montana Tech of the University of Montana

9:20 AM
Mechanical Property and Microstructural Comparison of Additive Manufactured Titanium (Ti64) Lattices: *Michael Brand*[1]; Robin Pacheco[1]; Cameron Knapp[1]; John Carpenter[1]; [1]Los Alamos National Laboratory

9:40 AM
Tensile and Fatigue Performance Ti-6Al-4V ELI and Non-ELI Material Manufactured by Selective Laser Melting: *Oscar Quintana*[1]; Weidong Tong[1]; [1]DePuy Synthes Joint Reconstruction

10:00 AM Break

10:20 AM Invited
Fatigue Properties of Ti-6Al-4V Additively Manufactured by Selective Electron Beam Melting: *Ma Qian*[1]; Yingying Sun[1]; Hui Ping Tang[2]; Stefan Gulizia[3]; [1]RMIT University (Royal Melbourne Institute of Technology); [2]State Key Laboratory of Porous Metal Materials, Northwest Institute for Non-ferrous Metal Research, Xian, China; [3]Commonwealth Scientific and Industrial Research Organisation (CSIRO)

10:50 AM
Evaluation of The Mechanical Properties of 15Cr-5Ni Stainless Steel Produced by Direct Metal Laser Sintering: *Davoud Mashhadi Jafarlou*[1]; Victor Champagne[2]; Ian R. Grosse[1]; [1]Department of Mechanical and Industrial Engineering, University of Massachusetts Amherst; [2]US Army Research Laboratory, Aberdeen, USA

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Metals in Additive Manufacturing I

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Wednesday AM
March 14, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Assessment of the Material Performance upon Additive Manufacturing – Are Post-treatments Always Required?: *Thomas Niendorf*[1]; Stefan Leuders[2]; Liang Wu[2]; Johannes Günther[1]; Florian Brenne[1]; [1]University of Kassel; [2]voestalpine Additive Manufacturing Center GmbH

9:00 AM
Characterization of Strut, Node, and Cell Geometry and Mechanical Properties in 3D EBM Printed Ti64 Lattices: *Connie Dong*[1]; Rachel Collino[1]; Matthew Begley[1]; [1]University of California, Santa Barbara

9:20 AM
Mechanical Properties of AM Metals: *Jay Carroll*[1]; Lisa Deibler[1]; Andrea Exil[1]; Brad Boyce[1]; Bradley Salzbrenner[1]; [1]Sandia National Laboratories

9:40 AM
Structure / Property (Constitutive and Dynamic Strength / Damage) Characterization of Additively Manufactured (AM) Tantalum: *George Gray*[1]; Cameron Knapp[1]; Veronica Livescu[1]; David Jones[1]; Saryu Fensin[1]; Carl Trujillo[1]; Daniel Martinez[1]; [1]Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited
Parameter Development of Wire-based Laser Metal Deposition and Characterization of Ti6Al2Sn4Zr2Mo: *Irmela Burkhardt*[1]; Stefan Riekehr[1]; Volker Ventzke[1]; Nikolai Kashaev[1]; Josephin Enz[1]; [1]Helmholtz-Zentrum Geesthacht Center for Materials and Coastal Research

10:50 AM
A Comparison of the Microstructures, Tensile Properties, and Fatigue Crack Growth Mechanisms in Ti-6Al-4V Alloys Fabricated by Three Powder-Based Additive Manufacturing Technologies: *Robert Warren*[1]; Yuwei Zhai[1]; Haize Galarraga[1]; Diana Lados[1]; Ryan Dehoff[2]; Michael Kirka[2]; Eric Brown[3]; Gregory Vigilante[3]; [1]Worcester Polytechnic Institute; [2]Oakridge National Laboratory; [3]Benét Laboratories

11:10 AM
High-Temperature Tensile, Creep and Microstructural Characterization of Additively Manufactured 15-5 PH Stainless Steel: *Dallas Roberts*[1]; Martin Taylor[1]; Indrajit Charit[1]; Jing Zhang[2]; [1]University of Idaho; [2]Indiana University - Purdue University Indianapolis (IUPUI)

11:30 AM
Effects of Laser Beam Intensity Profile on the Evolution of Microstructure and Defects in 316L SS Components Fabricated via Laser Engineered Net Shaping: *Baolong Zheng*[1]; Nancy Yang[2]; Josh Yee[2]; James Haley[1]; Thale Smith[1]; Yizhang Zhou[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]University of California; [2]Sandia National Laboratories

11:50 AM
Revealing Martensite Decomposition in Ti-6Al-4V Alloys Additively Manufactured with Electron Beam Melting by X-ray and Neutron Diffraction: *Kenta Yamanaka*[1]; Manami Mori[2]; Yusuke Onuki[3]; Shigeo Sato[3]; Akihiko Chiba[1]; [1]Tohoku University; [2]National Institute of Technology, Sendai College; [3]Ibaraki University

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Constitutive Behavior I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Wednesday AM
March 14, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Understanding the Role of Interfaces on Fully Lamellar TiAl Alloys through Micromechanical Testing: *Jon Molina-Aldareguia*[1]; Alberto Palomares[1]; Teresa Pérez-Prado[1]; [1]IMDEA Materials Institute

9:00 AM
Microstructural Evolution of Ti-7Al Under Cyclic Loading: *Rachel Lim*[1]; Yufeng Shen[1]; He Liu[1]; Robert Suter[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

9:20 AM
Role of Grain Boundary Sliding in Deformation of Polycrystalline Materials: *Ajey Venkataraman*[1]; Marissa Linne[2]; Samantha Daly[3]; Michael Sangid[1]; [1]Purdue University; [2]University of Michigan; [3]University of California, Santa Barbara

9:40 AM
Time Dependent Plasticity and Cold Dwell Fatigue in Ti-alloys: *David Collins*[1]; Edmund Tarleton[1]; Angus Wilkinson[1]; [1]University of Oxford

10:00 AM Break

10:20 AM
Effect of Heterogeneous Microstructure on Deformation Twinning in HCP Titanium: *M. Arul Kumar*[1]; M Wronski[2]; Rodney McCabe[1]; K Wierzbanowski[2]; Laurent Capolungo[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory; [2]AGH University of Science and Technology

10:40 AM
In Situ TEM Study of Dislocation – {10-12} Twin Boundary Interaction in Mg: *Fulin Wang*[1]; Rodney McCabe[2]; Christopher Barrett[3]; Haitham El Kadiri[3]; Sean Agnew[1]; [1]Department of Materials Science and Engineering, University of Virginia, Charlottesville, VA, USA; [2]Materials Science and Technology Division, Los Alamos National Laboratory, Los Alamos, NM, USA; [3]Department of Mechanical Engineering, Mississippi State University, Starkville, MS, USA

11:00 AM
Direct Measurement of Critical Resolved Shear Stress Values in a Mg Alloy by In Situ 3D-XRD: *Leyun Wang*[1]; Zhonghe Huang[1]; Sangbong Yi[2]; Jun-Sang Park[3]; Alireza Maldar[1]; Xiaoqin Zeng[1]; [1]Shanghai Jiao Tong University; [2]Helmholtz-Zentrum Geesthacht; [3]Argonne National Laboratory

11:20 AM
Twinning-detwinning Behavior during the Low-cycle Fatigue Testing of Pure Magnesium Using High Energy X-Ray Diffraction: *Aeriel Murphy*[1]; Darren Pagan[2]; Armand Beaudoin[3]; Matthew Miller[2]; John Allison[1]; [1]University of Michigan; [2]Cornell University; [3]University of Illinois Urbana-Champaign

11:40 AM
In-situ Neutron Diffraction of Pure Mg during ECAE Processing: *Nicholas Krywopusk*[1]; Laszlo Kecskes[2]; Matthew Frost[3]; Alexandru Stoica[3]; Todd Hufnagel[1]; Ke An[3]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]Army Research Laboratory, Aberdeen Proving Ground; [3]Oak Ridge Laboratory

12:00 PM
Micro-compression Testing of Mg-Nb Multilayered Nano-composites for Ultra-high Strength, Formability and Ductility: *Manish Jain*[1]; Nenad Velisavljevic[2]; Marko Knezevic[3]; Irene Beyerlein[2]; Nathan Mara[2]; Siddhartha Pathak[1]; [1]University of Nevada Reno; [2]Los Alamos National Laboratory; [3]University of New Hampshire, NH

Advanced High-strength Steels – Hydrogen Embrittlement, Fracture and Damage

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Wednesday AM
March 14, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Damien Fabregue, MATEIS, INSA Lyon

8:30 AM Invited
Hydrogen Trapping and Desorption due to Nanometer-sized Copper Particles in Quenched-and-tempered Martensite Steel: *Hung-Wei Yen*[1]; Yu-Chen Lin[1]; Hsin-Chih Lin[1]; [1]National Taiwan University

8:55 AM
Ab Initio Insights into Hydrogen Trapping by Precipitates in High-strength Steels: *Tilmann Hickel*[1]; Eunan McEniry[1]; Poulumi Dey[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

9:15 AM
Unravelling Hydrogen Enhanced Failure of Pipe-line Steels Using Advanced Microstructural Characterisation Tools: *Jim Hickey*[1]; T Ben Britton[1]; Mary Ryan[1]; [1]Imperial College London

9:35 AM
Hydrogen Embrittlement in a Model Advanced High Strength Steels: Peng Gong[1]; Arjan Rijkenberg[2]; *William Rainforth*[1]; [1]University of Sheffield; [2]Tata Steel

9:55 AM
Studying Hydrogen Embrittlement in Nano-twinned Polycrystalline Fe-12.5Mn-1.2C Austenitic Steel: *Mahmoud Khedr*[1]; Li Wei[1]; Jin XueJun[1]; [1]Shanghai Jiao Tong University

10:15 AM Break

10:30 AM Invited
Prediction of Strength and Fracture Mode of Heterogeneous Spot Welds Made of AHSS by Finite Elements Simulation: *Damien Fabregue*[1]; Thibaut Huin[1]; Sylvain Dancette[1]; Thomas Dupuy[2]; [1]MATEIS, INSA Lyon; [2]ARCELORMITTAL

10:55 AM
Liquid Metal Embrittlement in TRIP Steels: *Nathaniel Briant*[1]; Luke Brewer[1]; Mark Barkey[1]; [1]University of Alabama

11:15 AM
Microscale Evaluation of Hydrogen Susceptibility of Martensitic Sheet Steels: *Yiran Lu*[1]; Shrikant Bhat[2]; Sharvan Kumar[1]; [1]Brown University; [2]ArcelorMittal, Global R&D

11:35 AM
Elucidating the Effect of Liquid Metal Embrittlement on Fatigue Behavior in Resistance Spot Welding of Advanced High Strength Steel: *JB Jordon*[1]; Luke Brewer[1]; Conner Cleek[1]; Mitchell Roze[1]; Mark Barkey[1]; [1]The University of Alabama

11:55 AM
Non-metallic Inclusion and their Effect on Fatigue Strength for CAS-hardened Carbon Steel in Gears: *Izudin Dugic*[1]; Robin Berndt[1]; Simon Josefsson[1]; Martin Hedstrom[2]; [1]Linnaeus University; [2]China Euro Vehicle Technology AB

12:15 PM
Void Formation Mechanisms during Tensile Testing of a Cold-rolled Dual Phase Steel: Hamid Ashrafi[1]; M. Shamanian[1]; R. Emadi[1]; *Seyed Alireza Etesami*[2]; [1]Isfahan University of Technology; [2]University of Memphis

Advanced Magnetic Materials for Energy and Power Conversion Applications – Additive Manufacturing and Advanced Processing of Permanent Magnetic Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Wednesday AM
March 14, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: Francis Johnson, GE Global Research

8:30 AM Introductory Comments

8:40 AM Invited
Fabrication of Nanocomposite Magnets with High Energy Density: Challenges and Approaches: *J.Ping Liu*[1]; [1]University of Texas-Arlington

9:10 AM Invited
Additive Manufacturing of Highly Reactive Lanthanides: *Amy Elliott*[1]; Michael Benedict[2]; Ayyoub Momen[1]; [1]Oak Ridge National Laboratory; [2]GE Appliances

9:40 AM Invited
Additive Manufacturing of High Performance NdFeB Bonded Magnets: *M. Parans Paranthaman*[1]; [1]Oak Ridge National Laboratory

10:10 AM Break

10:30 AM Invited
Single-crystalline Nd-Fe-B Nanoparticles via Low-energy Ball Milling: *Jeff Shield*[1]; Meiyu Wang[1]; Li Zhang[1]; Ye Lin[1]; [1]University of Nebraska

11:00 AM Invited
Energy Dense Processing of Magnetic Materials: *Raju Ramanujan*[1]; X Tan[1]; H Parmar[1]; Y Zhong[1]; V Chaudhary[1]; [1]Nanyang Technological University

11:30 AM Invited
Additive Manufacturing for Superior Alnico Magnets: *Emma White*[1]; Aaron Kassen[1]; Emrah Simsek[1]; Wei Tang[1]; Ryan Ott[1]; Michael Kirka[2]; Ryan Dehoff[2]; Iver Anderson[1]; [1]Ames Laboratory of US DOE; [2]Oak Ridge National Laboratory

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Emerging Interconnects

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Wednesday AM
March 14, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: Won-sik Hong, Korea Electronics Technology Institute; Eric Cotts, Binghamton University

8:30 AM
Low Temperature Bonding Material with Submicron Copper Particles: *Kei Anai*[1]; Shinichi Yamauchi[1]; Takahiko Sakaue[1]; Yoichi Kamikoriyama[1]; Katsuaki Suganuma[2]; [1]Mitsui Mining & Smelting Co.,Ltd.; [2]Osaka University

8:50 AM
Copper-to-copper Direct Bonding on Highly (111) Oriented Nano-twinned Copper in N2 Ambient: *Jing-Ye Juang*[1]; Chia-Ling Lu[1]; Kuan-Ju Chen[1]; Chih Chen[1]; King-Ning Tu[2]; [1]National Chiao Tung University; [2]University of California at Los Angeles

9:10 AM
Low-temperature and Pressureless Cu-to-Cu Bonding by Electroless Plating: *H. T. Hung*[1]; S. Yang[1]; C. R. Kao[1]; [1]National Taiwan University

9:30 AM
Electroplated (111)-oriented Au Films in Au-Au Direct Bonding: *John Wu*[1]; Chih Chen[1]; [1]National Chiao Tung University

9:50 AM
Effect of Orientation on the Bondability of the Sputtered Nano-twinned Copper: *Leh-Ping Chang*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

10:10 AM Break

10:30 AM
Thermal Stable Ag-Ag Joints Bonded by Ultrasound-assisted Stress Migration Bonding: *Hao Zhang*[1]; Norio Asatani[1]; Yukiharu Kimoto[1]; Aiji Suetake[1]; Shijo Nagao[1]; Tohru Sugahara[1]; Katsuaki Suganuma[1]; [1]The Institute of Scientific and Industrial Research (ISIR) Osaka University

10:50 AM
Cu-to-Cu Direct Bonding by <111>-oriented Nanotwinned Copper Films with Chemical-mechanical Polishing: *Shih-Yang Chang*[1]; Chih Chen[1]; [1]National Chiao Tung University

11:10 AM
Nanoscale Soldering of Self-assembled Multi-segment Metallic Nanowires: *Jirui Wang*[1]; Fan Gao[1]; Chefu Su[1]; Junwei Su[1]; Hongwei Sun[1]; Zhiyong Gu[1]; [1]University of Massachusetts Lowell

11:30 AM
Electromigration Behavior of Printing Ag Nanoparticles Interconnects: *Wan-Hsuan Lin*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

Advanced Real Time Optical Imaging – Iron and Steelmaking I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee
Program Organizers: Jinichiro Nakano, US Department of Energy National Energy Technology Laboratory; David Alman, National Energy Technology Laboratory; Il Sohn, Yonsei University; Hiroyuki Shibata, Tohoku University; Antoine Allanore, Massachusetts Institute of Technology

Wednesday AM
March 14, 2018
Room: 123
Location: Phoenix Convention Center

Session Chairs: Jinichiro Nakano, USDOE National Energy Technology Laboratory; Hiroyuki Shibata, Tohoku University

8:30 AM
Introduction to Advanced Real Time Optical Imaging: *Jinichiro Nakano*[1]; [1]US Department of Energy National Energy Technology Laboratory

8:50 AM Invited
Mass Transfer in High-temperature Laser Confocal Microscopy: Stephano Piva[1]; Deepoo Kumar[1]; Dai Tang[1]; *P. Chris Pistorius*[1]; [1]Carnegie Mellon University

9:20 AM Invited
Direct Observation of Iron Solidification under Molten Slag: *Takeshi Yoshikawa*[1]; [1]The University of Tokyo

9:50 AM
Using High-temperature Confocal Scanning Laser Microscopy to Study Transient Phenomena: Swelling and Spontaneous Emulsification: Stephen Spooner[1]; Ian Moore[1]; Sridhar Seetharaman[1]; *Zushu Li*[1]; [1]University of Warwick

10:10 AM Break

10:30 AM Invited
In-situ Studies of Selective Oxidation in Advanced High Strength Steels: Mary Story[1]; *Bryan Webler*[1]; [1]Carnegie Mellon University

11:00 AM
Agglomeration Behavior of Non-metallic Inclusions in Liquid High Carbon Steel: *Yasuhiro Tanaka*[1]; Farshid Pahlevani[1]; Veena Sahajwalla[1]; [1]University of New South Wales

11:20 AM
Agglomeration of Non-metallic Inclusions at the Liquid Steel/Ar Gas Interface: A Summary of In-situ Observation Experiments and a Theoretical Study: *Wangzhong Mu*[1]; Neslihan Dogan[1]; Kenneth Coley[1]; [1]McMaster University

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – ICME for Additive Manufacturing

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Wednesday AM
March 14, 2018
Room: 231C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
ICME Design, Modeling, and Accelerated Qualification of Additively Manufactured Ti-based Alloys: *Ricardo Komai*[1]; Jeffrey Doak[1]; David Snyder[1]; Greg Olson[1]; [1]QuesTek Innovations LLC

9:00 AM Invited
Scientifically Based Probability Modeling for Additive Manufacturing of Ti-6Al-4V: *D Gary Harlow*[1]; Peter Collins[2]; [1]Lehigh University; [2]Iowa State University

9:30 AM Invited
Platforms for High throughput Structure-property Characterizations to Support Machine Learning Approaches to Additive Manufacturing: *Aaron Stebner*[1]; [1]Colorado School of Mines

10:00 AM Break

10:15 AM Invited
Thermodynamic Database for Multi-component Ti-Based Alloys and TiAl-based Materials: Yang Yang[1]; Qing Chen[1]; *Paul Mason*[2]; [1]Thermo-Calc Software AB; [2]Thermo-Calc Software Inc.

10:45 AM Invited
Sensitivity of Ti-6Al-4V Components to Oxidation during out of Chamber Wire Arc Additive Manufacturing: *Michael Bermingham*[1]; [1]The University of Queensland

11:15 AM
A Fully Integrated Model for the Prediction of Location-specific Yield Strength in Electron Beam Additively Manufactured Ti-6Al-4V: *Thomas Ales*[1]; Peter Collins[1]; [1]Iowa State University

11:35 AM
Optimization of Additive Manufacturing Process for Ti-6Al-4V via Integrated Computational Materials Engineering and Sequential Minimum Energy Design Approach: *Kai Wing Kelvin Leung*[1]; Azadeh Keshtgar[1]; Luca Airoldi[1]; Nicole Apetre[1]; Nagaraja Iyyer[1]; Jonathan Pegues[2]; Nima Shamsaei[2]; [1]Technical Data Analysis Inc.; [2]Auburn University

Algorithm Development in Materials Science and Engineering – Atomistic Algorithms for Study and Design of Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Wednesday AM
March 14, 2018
Room: 130
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Three-dimensional Structure and Motion of Defect Loops on the {10-12} Twin Boundary in Magnesium: *Douglas Spearot*[1]; Khanh Dang[1]; Laurent Capolungo[2]; Carlos Tome[2]; [1]University of Florida; [2]Los Alamos National Laboratory

9:00 AM
A New Method of Quantifying Solid-solution Hardening at Various Solute Concentrations Using Molecular Dynamics: *Edwin Antillon*[1]; Christopher Woodward[2]; Satish Rao[1]; Brahim Akdim[1]; Triplicane Parthasarathy[1]; [1]AFRL/UES; [2]AFRL

9:20 AM
Plastic Material Spin in Atomistic Simulations: *Doyl Dickel*[1]; Mark Horstemeyer[1]; [1]Mississippi State University

9:40 AM
Integrating Molecular Dynamics and Phase-Field Modeling to Study Oxidation of Iron: Fan Xie[1]; Alireza Toghraee[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

10:00 AM Break

10:20 AM
A Computational Framework for Predicting Failure Behavior of 2D Tin+1Cn Materials: *Ning Zhang*[1]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology

10:40 AM
Plasticity Analysis in Molecular Dynamics via Simple Shear Field Decomposition: *Christopher Barrett*[1]; [1]Mississippi State University

11:00 AM
Algorithms to Simulate the Structure and Mobility of Nanoscale Dislocation Shear Loops via Atomistic Simulations: *Khanh Dang*[1]; Laurent Capolungo[2]; Douglas Spearot[1]; [1]University of Florida; [2]Los Alamos National Laboratory

11:20 AM
Atomistic Cross-scale Simulations of Crystal Plasticity: *Alexander Stukowski*[1]; Luis Zepeda-Ruiz[2]; Tomas Oppelstrup[2]; Vasily Bulatov[2]; [1]Darmstadt University of Technology; [2]Lawrence Livermore National Laboratory

Alloy Development and Powder Manufacture for Additive Manufacturing – ICME General Approaches

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Paul Prichard, Kennametal; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; James Foley, Los Alamos National Laboratory

Wednesday AM
March 14, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Peter Collins, Iowa State University

8:30 AM Invited
Computational Design of High-performance Aluminum Alloys for Additive Manufacturing: *David Snyder*[1]; Gregory Olson[1]; [1]QuesTek Innovations LLC

9:00 AM
Development and Application of Techniques for Rapid Alloy Screening via Novel Bicombinatorial Approaches: *Brian Martin*[1]; Peter Collins[1]; [1]ISU

9:20 AM
Microstructural Optimization and Design of Metallic Materials for AM: *Fuyao Yan*[1]; Wei Xiong[2]; Gregory Olson[1]; [1]Northwestern University; [2]University of Pittsburgh

9:40 AM
Rapid Solidification of Cu-Sn(-Ti) Based Alloys: Towards Alloy Design for Selective Laser Melting: *Xiaoshuang Li*[1]; Adriaan Spierings[2]; Konrad Wegener[3]; Christian Leinenbach[1]; [1]Empa-Swiss Federal Laboratories for Materials Science and Technology; [2]Inspire AG, Innovation Center for Additive Manufacturing Switzerland; [3]ETH Zurich, Institute for Machine Tools and Manufacturing

10:00 AM Break

10:20 AM Invited
Relationship between Alloy Composition and Solidification Conditions: *Mathieu Brochu*[1]; [1]McGill University

10:50 AM Invited
Alloy Design Principles for Additive Manufacturing – Lessons from Learned from Welding Metallurgy: *Sudarsanam Babu*[1]; Alex Plotkowski[1]; [1]The University of Tennessee, Knoxville

11:20 AM
Microstructural and Orientation Changes by Modifications on Composition and Processing Parameters In Additive Manufactured Materials: *Michael Mendoza*[1]; Iman Ghamarian[1]; Matthew Rolchigo[1]; Richard LeSar[1]; Peter Collins[1]; [1]Iowa State University

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Session V

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Wednesday AM
March 14, 2018
Room: 226B
Location: Phoenix Convention Center

Session Chairs: Lan Li, Boise State University; Sinn-wen Chen, National Tsing Hua University

8:30 AM Invited
Thermoelectric Properties of SnSe: Understanding and Tuning: *Yongsheng Zhang*[1]; [1] Institute of Solid State Physics, Chinese Academy of Sciences

8:50 AM Invited
Tuning Electrical and Thermal Properties in Atomic Layer Materials: *Lan Li*[1]; Matthew Lawson[1]; Ying Rui[1]; [1]Boise State University

9:10 AM
Composite of ZnO/Au Hybrid Structure on Silk Textile for Flexible Photocatalyst Application: *Wan-Ting Chiu*[1]; Yuma Tahara[2]; Chun-Yi Chen[1]; Tso-Fu Mark Chang[1]; Tomoko Hashimoto[2]; Hiromichi Kurosu[2]; Masato Sone[1]; [1]Tokyo Institute of Technology; [2]Nara Women's University

9:30 AM
Thin Film Heusler Systems: Boosting ZT: *Ernst Bauer*[1]; Bernhard Hinterleitner[1]; Igor Knapp[1]; Michael Poneder[1]; Mathieu Taupin[1]; Christoph Eisenmenger-Sittner[1]; Christian Nöbauer[1]; [1]Vienna University of Technology

9:50 AM
Prediction of Thermoelectric Transport Properties in Layered Complex Nitrides: *Isao Ohkubo*[1]; Takao Mori[1]; [1]National Institute for Materials Science (NIMS)

10:10 AM Break

10:30 AM Invited
Molecular-dynamics Simulations of Liquid-like Copper Diffusion in Copper Chalcogenides: Keenan Zhuo[1]; Jing Wang[1]; Jianping Gao[1]; Uzi Landman[1]; *Mei-Yin Chou*[2]; [1]Georgia Institute of Technology; [2]Academia Sinica

10:50 AM Invited
Optimization of Thermoelectric Performance for SnTe Alloys and Simulation of the TEG Module with Single SnTe Legs: *Hongchao Wang*[1]; Teng Wang[1]; Xue Wang[1]; Wenbin Su[1]; Woochul Kim[2]; Chunlei Wang[1]; [1]Shandong University; [2]Yonsei University

11:10 AM Invited
Inorganic Halide Double Perovskites for Thin Film Solar Cell Application: *Feng Yan*[1]; [1]The University of Alabama

11:30 AM Invited
MIP Infrastructure and High-throughput Study on Diamond-like Thermoelectric Chalcogenides: *Jiong Yang*[1]; [1]Shanghai University

11:50 AM
Room Temperature Orientation-dependent Thermal Conductivity of Thermoelectric SnSe: *Yi Li*[1]; Bin He[1]; Joseph Heremans[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

12:10 PM Concluding Comments

Alumina & Bauxite – Valorisation of Bayer Process Residues: Red Mud Treatment and Scandium Extraction

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Linus Perander, Outotec

Wednesday AM
March 14, 2018
Room: 221A
Location: Phoenix Convention Center

Session Chairs: Peter-Hans ter Weer, TWS Services and Advice; Antoine Allanore, Massachusetts Institute of Technology

8:30 AM Introductory Comments

8:35 AM
Expertimental Investigation on Reduction of Cast Iron from Bayer Red Mud and Laterite Nickel: *Jianmin Zeng*[1]; Jiacheng Wang[1]; Aoping He[1]; [1]Guangxi University

9:00 AM
Analyzing the Bauxite Residue Amendment through the Addition of Ca and Mg Hydroxides Followed by Carbonation: *Luis Venancio*[1]; Jose Antonio Silva Souza[2]; Emanuel Macedo[2]; Fernando Botelho[2]; Raíssa Fonseca[1]; Lucas Martins[1]; Mateus Tavares[1]; Lucas Emanuel Soares[1]; [1]Federal University of Maranhao; [2]Federal University of Pará

9:25 AM
Comprehensive Utilization of Red Mud: Current Research Status and a Possible Way Forward for Non-hazardous Treatment: *Zhang Ting'an*[1]; Yanxiu Wang[1]; Guozhi Lyu[1]; Yan Liu[1]; Weiguang Zhang[1]; Qiuyue Zhao[1]; [1]Northeastern University

9:50 AM
Alumina, Iron and Titanium Extracting from Bauxite Residue with Low Lime Sinter Method: Di Zhang[1]; Wei Zhang[1]; Xin Hou[1]; Daming Liu[1]; Guanyi Liu[1]; *Bo Wang*[1]; [1]Hebei University of Science and Technology

10:15 AM Break

10:30 AM
Developing New Process for Selective Extraction of Rare Earth Elements from Bauxite Residue Based on Functionalized Ionic Liquids.: *Panagiotis Davris*[1]; Efthymios Balomenos[2]; Dimitrios Panias[1]; Ioannis Paspaliaris[1]; [1]National Technical University of Athens; [2]Aluminum of Greece

10:55 AM
Effects of Reductive Roasting with Sodium Salts on Leaching Behavior of Non-ferrous Elements in Bauxite Ore Residue: *Bona Deng*[1]; Tao Jiang[1]; Guanghui Li[1]; Qing Ye[1]; Foquan Gu[1]; Mingjun Rao[1]; Zhiwei Peng[1]; [1]Central South University

11:20 AM
Specific Features of Scandium Behavior during Sodium Bicarbonate Leaching of Red Mud: Andrey Panov[1]; *Aleksandr Suss*[1]; Aleksandr Kozyrev[1]; Nataliya Kuznetsova[1]; Sergey Gorbachev[1]; [1]RUSAL Engineering & Technology Centre

Aluminum Alloys, Processing and Characterization – Microstructures and Mechanical Properties of Aluminum Alloys

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Wednesday AM
March 14, 2018

Room: 221B
Location: Phoenix Convention Center

Session Chair: Dimitry Sediako, University of British Columbia

8:30 AM Invited
Effect of Addition of Mn and Cr on Precipitation Behavior of Dispersoids in Al-Mg-Si-Cu Alloy: *Hiromi Nagaumi*[1]; Han Yi[2]; Tongguang Zhai[3]; Guo Shijie[1]; [1]Soochow University; [2]Suzhou Research Institute for Nonferrous Metals; [3]University of Kentucky

9:00 AM Invited
Comparison of ASTM Grid and ISO Digital Image Correlation Methods on Determination of Forming Limit Curves for an Aluminum Alloy: *Randall Bowers*[1]; Xiyu Wen[2]; Shridas Ningileri[1]; [1]Secat, Inc.; [2]University of Kentucky

9:20 AM
Failure of 5000 and 6000 Series Aluminum Alloys in Modular Wastewater Treatment Aeration Tanks: John Pavelich[1]; *John Nychka*[1]; [1]University of Alberta

9:40 AM
Grain Refinement of Al–Si–Mg Cast Alloys by Al3Ti3B Master Alloy: *Xixi Dong*[1]; Shouxun Ji[1]; [1]Brunel Centre for Advanced Solidification Technology (BAST), Brunel University London, Uxbridge, Middlesex, UB8 3PH, United Kingdom

10:00 AM Break

10:20 AM
Improving Bendability of Al-Mg-Si Alloy Sheet by Minor Alloying Element Addition: *Sazol Das*[1]; Matthew Heyen[1]; Rajeev Kamat[1]; Richard Hamerton[1]; [1]Novelis

10:40 AM
Indentation Deformation of Cold Rolled AA 6061 Aluminum Alloy: *Diaoyu Zhou*[1]; Wenwen Du[2]; Xiyu Wen[2]; Wei Liang[1]; Fuqian Yang[2]; [1]Taiyuan University of Technology; [2]University of Kentucky

11:00 AM
Effect of Tooling Size and Geometry on the Determination of Forming Limit Curves for an Aluminum Alloy: *Randall Bowers*[1]; Xiyu Wen[2]; Shridas Ningileri[1]; [1]Secat, Inc.; [2]University of Kentucky

11:20 AM
Deep Drawing and Anodizing Quality Improvement in AA3003-O Alloy by Optimization of Homogenization, Rolling and Annealing: *Anirban Giri*[1]; Saikat Adhikari[1]; Manu Saxena[2]; Sachin Gupta[2]; Sudhir Jain[2]; [1]Aditya Birla Science and Technology Company Pvt. Ltd.; [2]Hindalco Industries Ltd.

Aluminum Reduction Technology – Cell Design & Modelling

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Wednesday AM
March 14, 2018

Room: 221C
Location: Phoenix Convention Center

Session Chair: Marc Dupuis, Genisim

8:30 AM Introductory Comments

8:35 AM
Alucell: A Unique Suite of Models to Optimize Pot Performances and Design: *Steeve Renaudier*[1]; Steve Langlois[1]; Benoit Bardet[1]; Marco Picasso[2]; Alexandre Masserey[3]; [1]Rio Tinto; [2]EPFL; [3]Ycoorsystems

9:00 AM
Anode Bottom Burnout Shape and Velocity Field Investigation in a High Amperage Electrolysis Cell: *Valdis Bojarevics*[1]; Evgeniy Radionov[2]; Yaroslav Tretiyakov[2]; [1]University of Greenwich; [2]Rusal ETC

9:25 AM
CFD Modelling of Alumina Feeding: *Kristian Etienne Einarsrud*[1]; Sindre Engzelius Gylver[1]; Eirik Manger[2]; [1]Norwegian University of Science and Technology (NTNU); [2]Hydro Aluminium, Primary Metal Technology, Norway

9:50 AM
Effect of Steel Multi-collector Bars on Current Density and Magnetohydrodynamic Stability in an Aluminum Reduction Cell: *Meijia Sun*[1]; Baokuan Li[1]; Linmin Li[1]; Jian-ping Peng[1]; [1]Northeastern University

10:15 AM Break

10:30 AM
MHD Generation of Liquid Metal Droplets in Aluminium Reduction Cell: *Abdellah Kharicha*[1]; [1]University of Leoben

10:55 AM
Numerical Simulation Study on Gas Collecting System of 400kA Grade Aluminum Electrolytic Cell: Hongliang Zhang[1]; *Kena Sun*[1]; Jie Li[1]; Tianshuang Li[1]; Ling Ran[1]; Fengqi Ding[1]; Zhong Zou[1]; [1]Central South University

11:20 AM
Study on 3D Full Cell Ledge Shape Calculation and Optimal Design Criteria by Coupled Thermo-flow Model: Hongliang Zhang[1]; *Ling Ran*[1]; Jinding Liang[1]; Tianshuang Li[1]; Kena Sun[1]; Jie Li[1]; [1]Central South University

11:45 AM
The Successful Implementation of Energy Saving Technology Based on Steady Flow and Heat Preservation: *Dengpeng Chai*[1]; Zhirong Shi[1]; Yanan Zhang[1]; Yanfang Zhang[1]; Guanghui Hou[1]; Yanfang Wang[1]; Qingtao Hu[1]; Bin Fang[1]; [1]Zhengzhou Non-ferrous Metals Research Institute Co. Ltd of CHALCO

12:10 PM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials – Light-weight Alloys

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Haiming Wen, Missouri University of Science and Technology; Simon Ringer, The University of Sydney; Gregory Thompson, University of Alabama; Arun Devaraj, Pacific Northwest National Laboratory; Keith Knipling, U.S. Naval Research Laboratory; Gang Sha, Nanjing University of Science and Technology; David Seidman, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center

Wednesday AM
March 14, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: Keith Knipling, U.S. Naval Research Laboratory; James Coakley, Northwestern University

8:30 AM Invited
Phase Transformations in Titanium Alloys: *James Coakley*[1]; Dieter Isheim[2]; Anna Radecka[3]; David Dye[4]; Paul Bagot[5]; Howard Stone[1]; David Seidman[2]; [1]University of Cambridge; [2]Northwestern University; [3]Rolls-Royce plc.; [4]Imperial College London; [5]Oxford University

9:05 AM
Direct Observation of Hydrogen in Ti Alloys by Atom Probe Tomography: *Yanhong Chang*[1]; Baptiste Gault[1]; Andrew Breen[1]; Dirk Ponge[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

9:25 AM
Spinodal Decomposition and Periodic Segregation in Grain Boundaries on Al Alloy: *Huan Zhao*[1]; Dirk Ponge[1]; Baptiste Gault[1]; Agnieszka Szczepaniak[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

9:45 AM
Deformation-induced Mg Redistribution in Al-Mg Alloys Revealed Using Atom Probe Tomography: *Shenbao Jin*[1]; Jing Xue[1]; Min Zha[2]; Xianghai An[3]; Xiaozhou Liao[3]; Jiehua Li[4]; Gang Sha[1]; [1]Nanjing University of Science and Technology; [2]Jilin University; [3]The University of Sydney; [4]Institute of Casting Research, Montanuniversität Leoben

10:05 AM Break

10:25 AM
Multi-dimensional Multi-scale Investigation on Solute Partitioning Behaviours and Redistribution ahead of Solidification Fronts: *Jiehua Li*[1]; [1]University of Leoben

10:45 AM
Effect of Pre-strain on the Solute Clustering, Mechanical Properties, and Work-hardening of a Naturally Aged Al-Cu-Mg Alloy: *Di Shao*[1]; Gang Liu[1]; Gang Sha[2]; [1]Xi'an Jiaotong University; [2]Nanjing University of Science and Technology

11:05 AM
Partitioning Behavior of Group VB Transition Metals in $L1_2$-Strengthened Aluminum Alloys: *Dinc Erdeniz*[1]; Anthony De Luca[1]; David Seidman[1]; David Dunand[1]; [1]Northwestern University

11:25 AM
Core/Triple Shell Precipitates in Al-Er-Sc-Zr-(V,Nb,Ta) Alloys: *Keith Knipling*[1]; [1]U.S. Naval Research Laboratory

Biodegradable Materials for Medical Applications – Magnesium Alloys I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund; Jan Seitz, Syntellix AG; Norbert Hort, Helmholtz-Zentrum Geesthacht; Huinan Liu, University of California-Riverside

Wednesday AM
March 14, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Jaroslaw Drelich, Michigan Technological University; Frank Witte, Charite - Universitätsmedizin Berlin

8:30 AM Keynote
Resoloy – the Resorbable Mg Alloy for Stents: *Michael Stekker*[1]; Norbert Hort[2]; Frank Feyerabend[2]; Dirk Steglich[2]; Clemens Meyer-Kobbe[1]; [1]MeKo Laser Material Processing; [2]Helmholtz-Zentrum Geesthacht

9:10 AM Invited
Mechanical and Corrosion Property Profile of Biodegradable, Open-porous Scaffolds Made of Sintered Magnesium Short Fibers: *Gabor Szakacs*[1]; Frank Witte[1]; [1]Charite - Universitätsmedizin Berlin

9:40 AM
Biodegradable Mg-implants – Current Market Experiences: *Jan Seitz*[1]; Martin Kirschner[1]; [1]Syntellix AG

10:00 AM Break

10:20 AM Invited
Development of a New Biodegradable Surgical Clip Made of a Magnesium Alloy: Evaluation of its Safety and Tolerability for Canine Cholecystectomy: *Takumi Fukumoto*[1]; Toshihiko Yoshida[1]; Takeshi Urade[1]; Naoko Ikeo[1]; Toshiji Mukai[1]; [1]Kobe University

10:50 AM
Comparative Study on Corrosion Behavior WE33 in Immersion and Polarization Influenced by Heat Treatment: *Petra Maier*[1]; Maximilian Bechly[1]; Benjamin Hess[1]; Norbert Hort[2]; [1]University of Applied Sciences Stralsund; [2]Helmholtz-Zentrum Geesthacht

11:10 AM
Metal Injection Molding (MIM) of Mg-alloys for Biomedical Applications: *Martin Wolff*[1]; Johannes Schaper[1]; Eshwara Nidadavolu[1]; Monika Luczak[1]; Frank Feyerabend[1]; Michael Dahms[2]; Thomas Ebel[1]; Regine Willumeit-Römer[1]; Thomas Klassen[3]; [1]Helmholtz-Zentrum Geesthacht; [2]University of Applied Sciences, FH-Flensburg; [3]Helmut Schmidt University, Hamburg

11:30 AM
Biological Response of Surface Modified Mg-Sr Alloy for Orthopedic Applications: *Krishna Chaitanya Nune*[1]; Devesh Misra[1]; Lili Tan[2]; Weidan Wang[2]; Xiaoming Yu[2]; Ke Yang[2]; [1]University of Texas at El Paso; [2]Chinese Academy of Sciences

11:50 AM
Corrosion Properties of Mg-Ca-Gd Alloy Applied to Biodegradable Implants: *Ana Caroline Almeida*[1]; Carlos Elias[1]; Daniel Fernandes[1]; Paulo Soares[2]; [1]Instituto Militar de Engenharia; [2]Pontifícia Universidade Católica do Paraná

Biological Materials Science – Functional Biological Materials

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Wednesday AM
March 14, 2018
Room: 225B
Location: Phoenix Convention Center

Session Chairs: Steven Naleway, University of Utah; Jing Du, Penn State University

8:30 AM Invited
From Superhydrophobic to Superhydrophilic: Synthesis of Multifunctional Surfaces Inspired from Carnivorous Plants: *Po-Yu Chen*[1]; Zheng-Jun Shih[1]; Yu-Min Lin[1]; Po-Yi Chen[1]; [1]National Tsing Hua University

9:00 AM
Design and Testing of Bio-inspired Flexible Armors: *Susana Estrada*[1]; Alexander Ossa[1]; Dwayne Arola[2]; Sean Ghods[2]; [1]Universidad EAFIT; [2]University of Washington

9:20 AM
3D Porosity Analysis of Fruit Tissues for Evaluation of Gas Exchange: *Tomas Silva Santisteban*[1]; Yogini Jaiswal[2]; Yanling Xue[3]; Tiqiao Xiao[3]; Leonard Williams[2]; [1]Thermo Fisher Scientific; [2]North Carolina Agricultural and Technical State University; [3]Shanghai Synchrotron Radiation Facility (SSRF), Shanghai Institute of Applied Physics, Chinese Academy of Sciences

9:40 AM
Optimizing the Structure-property Relationship of Shark Teeth Using Bio-inspired Design: *John Wood*[1]; Hongjoo Rhee[2]; A. McIntosh[1]; M. Horstemeyer[3]; M. Murphy[2]; R. Prabhu[1]; [1]Department of Agricultural and Biological Engineering; [2]Center for Advanced Vehicular Systems; [3]Department of Mechanical Engineering

10:00 AM Break

10:20 AM Invited
On the Dynamic Load Response of Fish Scales: Designed for Resistance to Puncture: Chris Son[1]; Alex Ossa[1]; Sandra Murcia[1]; Anqi Lin[1]; *Dwayne Arola*[1]; Sean Ghods[1]; [1]University of Washington

10:50 AM
Mechanism Controlling Ion Diffusion in Wood Cell Wall Layers: *Joseph Jakes*[1]; [1]USDA Forest Products Laboratory

11:10 AM
Modeling Water Absorption and Associated Mechanical Property Changes of Natural Fiber Reinforced Biocomposites: Nicole Robertson[1]; John Wolodko[1]; *John Nychka*[1]; [1]University of Alberta

Bladesmithing 2018 – Bladesmithing I

Program Organizers: Bharat Jasthi, South Dakota School of Mines and Technology; Roxana Ruxanda, Emerson; Garry Warren, University of Alabama; Michael West, South Dakota School of Mines and Technology; Eric Schmidt, Vallourec; Samuel Wagstaff, Novelis

Wednesday AM
March 14, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Michael West, South Dakota School of Mines and Technology; Garry Warren, University of Alabama

8:30 AM Introductory Comments

8:35 AM Keynote
DragonSlayer: The First 20 Years: *Greg Olson*[1]; [1]Northwestern University

9:00 AM
Bowie Knife Forged from a File: *David Sapiro*[1]; Mary Story[1]; [1]Carnegie Mellon University

9:20 AM
Damascus Razor Characterization: *Stuart Shirley*[1]; Tom Boundy[1]; [1]Colorado School of Mines

9:40 AM
Challenges of Using Black Hills Iron Ore in Bladesmithing:: *Daniel Nagel*[1]; George Bernard[1]; William Carpenter[1]; Aaron Frontier[1]; Austin Holmes[1]; Strauss Langrud[1]; Cole Osendorf[1]; Abigail Sherwood[1]; Meghan Strawniak[1]; George Tillman[1]; [1]South Dakota School of Mines and Technology

10:00 AM Break

10:15 AM
Forging a Multi-Layered Seax: *Hannah Goldstein*[1]; Anthony Petters[1]; Gabriel Garcia[1]; Benjamin Meffert[1]; Dane Sayre[1]; [1]University of Kentucky

10:35 AM
Keris: Legacy of Indonesia's Ancient Weapon in Metallurgical Point of View: Abrar Ridhollah[1]; Fauzan Kurniawan[1]; *Safira Firdausi*[1]; [1]Sepuluh Nopember Institute of Technology

10:55 AM
Pattern Welded Hunga Munga: *David Sapiro*[1]; [1]Carnegie Mellon University

11:15 AM
Investigating the Mechanical Properties of Knives in a Comparison Between Two SPD Methods: *Wojciech Lukaszczyk*[1]; [1]Illinois Institute of Technology

11:35 AM
Evaluation of Processing Methods on the Mechanical Properties and Corrosion Resistance of Various Steels: *Albert Ostlind*[1]; Matthew Dougherty[1]; Kerry-Ann Stirrup[1]; [1]New Mexico Institute of Mining and Technology

11:55 AM
East Meets West: *Calvin Belcher*[1]; Stoney Middleton[1]; Tucker Parris[1]; [1]Materials Science at UC Irvine

Building an ICME Infrastructure: Developing Tools that Integrate Across Length and Time Scales to Accelerate Materials Design – ICME Gap Analysis: Multiscale Modeling and Characterization of Structural Materials: I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Mark Carroll, Federal Mogul Powertrain; Adam Hope, Thermo-Calc Software; Hojun Lim, Sandia National Laboratories; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Dongwon Shin, Oak Ridge National Laboratory

Wednesday AM
March 14, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: Hojun Lim, Sandia National Laboratories

8:30 AM Invited
Need for Uncertainty Quantification in Multiscale Materials Modeling: *Stephen Foiles*[1]; [1]Sandia National Laboratories

9:10 AM Invited
Data Science and Informatics: Key Integrators of Multiscale Experiments and Multiscale Models in ICME: *Surya Kalidindi*[1]; [1]Georgia Institute of Technology

9:50 AM Break

10:10 AM Invited
Gaps in Multiscale Modeling to Address Mechanical Properties of Metal Alloys: *David McDowell*[1]; [1]Georgia Institute of Technology

10:50 AM Invited
Challenges in Multiscale Modeling of Emergent Phenomena in Solid Mechanics: *Joseph Bishop*[1]; [1]Sandia National Laboratories

11:30 AM Invited
Conceptual and Computational Challenges in Multiscale Modeling: *Richard LeSar*[1]; [1]Iowa State University

Bulk Metallic Glasses XV – Alloy Development and Application II

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Wednesday AM
March 14, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Frans Spaepen, Harvard School of Engrg & Appl Sciences; Joseph Poon, University of Virginia

8:30 AM Keynote
Stress Measurements on Colloidal Crystals and Glasses: J. Terdik[1]; David Weitz[1]; *Frans Spaepen*[1]; [1]Harvard School of Engrg & Appl Sciences

9:00 AM Invited
Synthesis and Processing of Roll-bonded Metal/ Metallic Glass Laminated Composites: Sina Shahrezaei[1]; Douglass Hofmann[2]; Stephanie O'Keeffe[3]; Irene Beyerlein[4]; *Suveen Mathaudhu*[1]; [1]University of California, Riverside; [2]NASA - Jet Propulsion Laboratory; [3]Liquidmetal Technologies, Inc.; [4]University of California, Santa Barbara

9:20 AM
Selective Laser Melting of Bulk Metallic Glass: *Tim Sercombe*[1]; [1]The University of Western Australia

9:40 AM Invited
Formation and Properties of Ni-free Ti-based Bulk Metallic Glasses for Biomedical Applications: *Shujie Pang*[1]; Ying Liu[1]; Peter K. Liaw[2]; Tao Zhang[1]; [1]Beihang University; [2]The University of Tennessee

10:00 AM Break

10:20 AM Invited
Damping, Elasticity, and Density of Sputtered Zr-Ni-Al Nano-films as Gleaned from Laser Interferometry: *Anthony Kwong*[1]; Matt Matheny[1]; John Sader[2]; Julia Greer[1]; [1]California Institute of Technology; [2]University of Melbourne

10:40 AM Invited
Amorphous Magnetic Films: *Joseph Poon*[1]; [1]University of Virginia

11:00 AM Invited
Catalytic Amorphous Metals in Energy Applications: Vahid Hasannaeimi[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

11:20 AM Invited
Exploring Novel Functionalities of Metallic Glasses: *Kostas Georgarakis*[1]; [1]Cranfield University

11:40 AM Invited
Structures and Dynamics in Ni-Nb System via Combinatorial and High-throughput Methods: *Fanqiang Meng*[1]; Emrah Simsek[1]; Matthew Besser[1]; Matthew Kramer[1]; Ryan Ott[1]; [1]Ames Laboratory

12:00 PM
Research on the Thermoplastic Formability of Lightweight Ti-based Bulk Metallic Glasses: *Pan Gong*[1]; Xin-yun Wang[1]; Ke-fu Yao[2]; [1]Huazhong University of Science and Technology; [2]Tsinghua University

Cast Shop Technology – Melt Treatment

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Badowski, Hydro Aluminium

Wednesday AM
March 14, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Johannes Morscheiser, Aleris Rolled Products Germany GmbH

8:30 AM Introductory Comments

8:35 AM
Constellium's R&D on the Use of Power Ultrasound in Liquid Aluminum: An Overview: *Philippe Jarry*[1]; Jean-Louis Achard[1]; [1]C-TEC

9:00 AM
Molten Metal Cleanliness: Recent Developments to Improve Measurement Reliability: Paul Evans[1]; *Phil Enright*[2]; Ricky Ricks[1]; [1]TSC; [2]NTec

9:25 AM
On-site Benchmark of LiMCA II vs. LiMCA III for Monitoring of Non-metallic Inclusions in Liquid Aluminium: Mark Badowski[1]; *Thien Dang*[2]; Nicholas Towsey[2]; Daniel Krings[1]; Klaus Hoffmann[2]; [1]Hydro Aluminium; [2]TRIMET Aluminium SE

9:50 AM
Discussion of Bi-film Index and LiMCA Data in Industrial Aluminum Remelting Trials: *Anne Kvithyld*[1]; Jan Anders Sæter[2]; Martin Syvertsen[1]; Harry Fossheim[2]; Arne Nordmark[1]; Ronny Sottar[2]; Thorvald Abel Engh[3]; [1]SINTEF; [2]Alcoa; [3]NTNU

10:15 AM Break

10:30 AM
Inclusion Composition Determination by In-line LIBS Measurement – Plant Assessment: *Pierre Le Brun*[1]; Joe Craparo[2]; Gary Parker[3]; Jimmy Landham[3]; Robert De Saro[2]; [1]Constellium Technology Center; [2]Energy Research Company; [3]Constellium Muscle Shoals

10:55 AM
An Innovative Ultrasonic Technology for the Continuous Quality Monitoring of Liquid Aluminum on Casting Lines: *Jean-Louis Achard*[1]; Fabio Taina[1]; Pierre Le Brun[1]; Pierre-Yves Menet[1]; [1]Constellium

11:20 AM
Ultrasonic Doppler Velocimetry in Liquid Aluminum: *Fabio Taina*[1]; Jean-Louis Achard[1]; Philippe Jarry[1]; [1]C-TEC, Constellium Technology Center

11:45 AM
Nitridation Reaction of Aluminum and Magnesium in 5XXX Series Aluminum Alloy: *Yu Matsui*[1]; Masaru Morobayashi[1]; Hirohisa Shiomi[1]; Koichi Takahashi[1]; [1]UACJ Corporation

CFD Modeling and Simulation in Materials Processing – Processing III

Sponsored by: TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee, TMS: Solidification Committee
Program Organizers: Laurentiu Nastac, The University of Alabama; Koulis Pericleous, University of Greenwich; Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, University of Science and Technology Beijing; Brian Thomas, Colorado School of Mines

Wednesday AM — Room: 228B
March 14, 2018 — Location: Phoenix Convention Center

Session Chairs: Ruigang Wang, The University of Alabama; Laurentiu Nastac, The University of Alabama

8:30 AM
Effect of Carbide Configuration on the Current Distribution in Submerged Arc Furnaces for Silicon Production – A Modelling Approach: *Yonatan Afework Tesfahunegn*[1]; Merete Tangstad[2]; Thordur Magnusson[3]; Gudrun Saevarsdottir[1]; [1]Reykjavik University; [2]Norwegian University of Science and Technology (NTNU); [3]United Silicon HF.

8:50 AM
Numerical Simulation of Volatilization of Fluoride Slag in Vacuum Electroslag Remelting Process and Its Laboratory Validation: *Xuechi Huang*[1]; Zhongqiu Liu[1]; Baokuan Li[1]; [1]Northeastern University

9:10 AM
Investigation of Combustion and Heat Transfer in an Industrial Reheating Furnace Using CFD: Yuchao Chen[1]; Xiang Liu[1]; Armin Silaen[1]; Kurt Johnson[2]; *Chenn Zhou*[1]; [1]Purdue University Northwest; [2]ArcelorMittal

9:30 AM
Finite Element Modelling of Electrokinetic Deposition of Zinc on Mild Steel with ZnO-*Citrus Sinensis* as Nano-additive: *Oluseyi Ajayi*[1]; Olasubomi Omowa[1]; Oluwabunmi Abioye[1]; Olugbenga Omotosho[1]; Esther Akinlabi[2]; Stephen Akinlabi[2]; Abiodun Abioye[1]; Felicia Owoeye[1]; Sunday Afolalu[1]; [1]Covenant University, Cananland, Ota; [2]University of Johannesburg

9:50 AM
Modeling of Cooling System in Nitrogen Cooled Aluminum Extrusion Molds and Investigation of Its Effect on Profile Surface: *Murat Konar*[1]; [1]Asas Alüminyum

10:10 AM Break

10:30 AM
Implementing CFD Modelling to Address Defect Formation in Core Injection Moulding: *Stefano Cademartori*[1]; Nicholas Humphreys[2]; Jean-Christophe Gebelin[2]; Jeffery Brooks[1]; [1]University of Birmingham; [2]Doncasters Group

10:50 AM
Mathematical Model for Gas Fired Rorary Hearth Furnace for Sponge Iron Production: *Sooraj Saleem*[1]; Gour Gopal Roy[1]; [1]Indian Institute of Technology, Kharagpur

11:10 AM
Numerical Simulation of Turbulence Flow and Solidification in a Bloom Continuous Casting Mould with Electromagnetic Stirring: *Shaoxiang Li*[1]; Peng Lan[1]; Jiaquan Zhang[1]; [1]University of Science & Technology Beijing

11:30 AM
Numerical Analysis of Heat and Mass Transfer on the Self-densification of Metal Hydride Tank: *Xi Lin*[1]; Dongke Sun[2]; Qian Li[1]; [1]Shanghai University; [2]Southeast University

Characterization of Minerals, Metals, and Materials – Analysis of Surfaces and Interfaces

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

Wednesday AM — Room: 122C
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Shadia Ikhmayies, Al Isra University

8:30 AM Introductory Comments

8:35 AM Invited
Applications of Aberration-corrected Low-energy Electron Microscopy for Metal Surfaces: *Zheng Wei*[1]; Tao Li[1]; Meng Li[1]; Xueli Cao[1]; Hanying Wen[1]; Guodong Shi[1]; Lei Yu[1]; Lin Zhu[1]; Wen-xin Tang[1]; Chenguang Bai[1]; [1]Chongqing University

8:55 AM
Surface Damage Layers Produced by Ga Ion and Xe-plasma FIB Milling of Al6061: *Alexis Ernst*[1]; Mei Wei[1]; Mark Aindow[1]; [1]University of Connecticut

9:15 AM
ZnO Thin Films of Flowered-Fibrous Micro/Nanowebs on Glass Substrates Using the Spray Pyrolysis Method: *Shadia Ikhmayies*[1]; [1]Al Isra University

9:35 AM
Examining Regional Weather Effects on Single Ply Roofing Membranes: *Gisica Abdallah*[1]; Holly Martin[1]; Jeffrey Meyers[2]; [1]Youngstown State University; [2]Simon Roofing

9:55 AM
Intergranular Cracking of High Strength Alloyed Brass Rods: *Athanasios Vazdirvanidis*[1]; George Pantazopoulos[1]; [1]ELKEME S.A.

10:15 AM Break

10:30 AM
Analytical Investigation of Coatings Defect: *Arif Mubarok*[1]; Brittany Sinagra[1]; [1]PPG Industries

10:50 AM
Recovery of Au(CN)2- from Gold Cyanidation Solution with Graphene Oxide and Reduced Graphene Oxide Hydrogels as Adsorbents: Lang Yang[1]; Kaige Sun[1]; Feifei Jia[1]; *Shaoxian Song*[1]; [1]Wuhan University of Technology

11:10 AM
Effect of Particle Integration on the Performance Characteristics of Zn-MgO-ZrO2 Nano-functional Coating on Mild Steel by Electrodeposition Route: *O.S.I Fayomi*[1]; Olufunmilayo Joseph[1]; A.P.I. Popoola[2]; A.O. Inegbenebor[1]; [1]Covenant University; [2]Tshwane University of Technology, Pretoria

11:30 AM
Characterization of Structural, Morphological, and Magnetic Properties of Rapidly Solidified $Ni_{50}Mn_{28}Ga_{22}$ Ferromagnetic Heusler Alloys: *Deepak Satapathy*[1]; Shampa Aich[1]; [1]Indian Institute of Technology Kharagpur

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Diffusion I

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Wednesday AM
March 14, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Qing-Miao Hu, Institute of Metal Research, Chinese Academy of Science; Chelsey Zacherl Hargather, New Mexico Institute of Mining and Technology

8:30 AM Invited
A Comprehensive First-principles Study of Solute Elements in Dilute Ni Alloys: Diffusion Coefficients and Their Implications to Tailor Creep Rate: *Chelsey Hargather*[1]; Shun-Li Shang[2]; Zi-Kui Liu[2]; [1]New Mexico Institute of Mining and Technology; [2]The Pennsylvania State University

9:00 AM
First-principles Investigation of Thermodynamics and Precipitation Kinetics in Al-Sc Alloys: *Ankit Gupta*[1]; Bengue Tas Kavakbasi[2]; Biswanath Dutta[1]; Blazej Grabowski[1]; Martin Peterlechner[2]; Tilmann Hickel[1]; Sergiy V. Divinski[2]; Gerhard Wilde[2]; J Neugebauer[1]; [1]Max-Planck Institute for Iron Research, Duesseldorf, Germany; [2]Institute of Materials Physics, University of M□uenster, Muenster, Germany

9:20 AM
Monte Carlo Simulation for i-s Clustering in Iron Based on the First-principles Calculation: *Masanori Enoki*[1]; Yohei Osawa[1]; Marcel Sluiter[2]; Hiroshi Ohtani[1]; [1]Tohoku University; [2]Delft University of Technology

9:40 AM
Mobility of Small Point Defect Clusters and Prismatic Dislocation Loops: *Jan Fikar*[1]; Roman Gröger[1]; Robin Schäublin[2]; [1]IPM; [2]ETHZ

10:00 AM Break

10:15 AM
Impurity Segregation in Copper: Theory vs. Experiment: *Vsevolod Razumovskiy*[1]; Sergiy Divinski[2]; Lorenz Romaner[1]; [1]Materials Center Leoben; [2]University of Münster

10:35 AM Invited
Atomic Diffusion and Its Effect on Creep Resistance of High Temperature Titanium Alloys: *Qing-Miao Hu*[1]; [1]Institute of Metal Research, Chinese Academy of Science

11:05 AM
The Kinetic Mechanism Underlying the Solid-state Precipitation of Core-shell Particle in Al-Zr-Er Alloy: *Shang-Yi Ma*[1]; Shao-Qing Wang[1]; [1]Chinese Academy of Sciences

11:25 AM
Thermally Activated Solute-drag Strengthening by Interstitial Impurities in BCC Cr: *Christian Brandl*[1]; [1]Karlsruhe Institute of Technology

11:45 AM
Simulation of Solidification/Devitrification in Ni-Nb Alloys: *Mikhail Mendelev*[1]; Tongqi Wen[1]; Cai-Zhuang Wang[1]; [1]Ames Laboratory

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Microstructure and Processing Simulations I

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Wednesday AM
March 14, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chairs: Avinash Dongare, University of Connecticut; Dongwon Shin, Oak Ridge National Laboratory

8:30 AM Invited
Unraveling the Evolution of Microstructure of Materials at the Mesoscales Using Quasi-coarse-grained Dynamics Simulations: *Avinash Dongare*[1]; Garvit Agarwal[1]; Sumit Suresh[1]; [1]University of Connecticut

9:00 AM
Simulating Phase Transformation and Texture Evolution during Forging of Ti6Al4V: *Connor Campbell*[1]; Xin (Tony) Yao[2]; Terry Lowe[1]; [1]Colorado School of Mines; [2]Weber Metals, Inc.

9:20 AM
Phase-field Simulation of Nanodomain Formation in Ti-Nb-O Alloys: *Yuya Ishiguro*[1]; Yuhki Tsukada[1]; Toshiyuki Koyama[1]; [1]Nagoya University

9:40 AM
Process Simulation of H13 Steel Dipping into Molten Aluminum and Prediction of its Thermal Fatigue Cracking: *Yan Lu*[1]; Alan Luo[1]; Keith Ripplinger[2]; Geoffrey Taber[1]; Yu Mao[1]; Duane Detwiler[3]; [1]The Ohio State University; [2]Honda Engineering North America, Inc.; [3]Honda R&D Americas, Inc

10:00 AM Break

10:20 AM Invited
Influence of Platinum Chaplet Pins on Recrystallization Defect in Single Crystal Turbine Blade Casting: *Runnan Wang*[1]; Qingyan Xu[1]; Baicheng Liu[1]; [1]Tsinghua University

10:50 AM
Microstructure Prediction for TMW-4M3 during Heat Treatment: *Takaaki Hara*[1]; Shinichi Kobayashi[1]; Tomonori Ueno[1]; Nobufumi Ueshima[2]; Katsunari Oikawa[2]; [1]Hitachi Metals, Ltd.; [2]Tohoku University

11:10 AM
Lattice Mismatch Modeling of Aluminum Alloys: *Dongwon Shin*[1]; Shibayan Roy[2]; Thomas Watkins[1]; Amit Shyam[1]; [1]Oak Ridge National Laboratory; [2]Indian Institute of Technology

11:30 AM
Meso Scale Modeling of Self-assembly and Mechanical Behavior of SWCNT Aerogels: *Ankit Gupta*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design: Microstructure and Mechanical Behaviors

*Sponsored by:*Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Wednesday AM
March 14, 2018
Room: 131C
Location: Phoenix Convention Center

Session Chairs: Yunzhi Wang, Ohio State University; Zhiqiang Han, Tsinghua University

8:30 AM Invited
Study on the Effect of Applied Pressure on Directional Dendritic Growth by In-situ Observation: Shan Shang[1]; Keyan Wu[1]; Leewei Kuo[1]; *Zhiqiang Han*[1]; [1]Tsinghua University

9:00 AM
Predicting Microstructural Evolution in Oxidation Resistant Coatings during Manufacturing and during Degradation in Service: *Rishi Pillai*[1]; Timur Galiullin[1]; Wencai Leng[1]; Daniel Grüner[1]; Dmitry Naumenko[1]; W.J. Quadakkers[1]; [1]Forschungszentrum Juelich GmbH

9:20 AM
Microstructure Evolution and Simulation in 22MnB5 Steel during Hot Stamping: *Kuanhui Hu*[1]; Rongdong Han[1]; [1]Wuhan Iron and Steel Co., LTD

9:40 AM
Modeling of Solute-dependent Fluidity and Hot Tearing Sensitivity of Conductive Aluminum Alloys: Hengcheng Liao[1]; *Qigui Wang*[2]; Xiaojin Suo[1]; Zixing Feng[1]; Qin Huang[1]; [1]Southeast University; [2]GM Global Propulsion Systems

10:00 AM Break

10:15 AM Invited
Computational Design and Simulation of Ultralow Modulus, Hysteresis-free, and Linear Pseudo-elastic Shape Memory Alloy: Jiaming Zhu[1]; Yipeng Gao[2]; Dong Wang[1]; Tong-Yi Zhang[3]; *Yunzhi Wang*[2]; [1]Xi'an Jiaotong University; [2]The Ohio State University; [3]Shanghai University

10:45 AM
Coupling Void Coalescence Criteria in Finite Element Models: Application to Tensile Test: *Ahmed Abdelkader*[1]; Chahinaz Saleh[2]; [1]Enppi; [2]Faculty of Engineering, Cairo University

11:05 AM
Prediction of the Abrasive Wear Behaviour of Heat Treated Aluminium-clay Composites: *Ademola Agbeleye*[1]; David Esezobor[1]; Johnson Agunsoye[1]; Olawale Balogun; Adeyanju Sosimi[1]; [1]University of Lagos

11:25 AM
Modelling of Mechanical Behavior at High Strain Rate of TI-6AL-4V Manufactured by Means of Direct Metal Laser Sintering Technique: *Nicola Bonora*[1]; Andrew Ruggiero[1]; Gianluca Iannitti[1]; Gabriel Testa[1]; Domenico Gentile[1]; [1]University of Cassino

11:45 AM
Optimizing Elastic Moduli of the Silicate Glasses through High-throughput Atomistic Modeling and Machine Learning Techniques: *Yong-Jie Hu*[1]; Ge Zhao[2]; Tyler Del Rose[1]; Maarten De Jong[3]; Liang Qi[1]; [1]University of Michigan; [2]The Pennsylvania State University; [3]Space Exploration Technologies (SpaceX)

Computational Materials Science and Engineering for Nuclear Energy – Novel Models and Method Development

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Wednesday AM
March 14, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Haixuan Xu, The University of Tennessee Knoxville; Izabela Szlufarska, University of Wisconsin-Madison

8:30 AM Invited
Experimentally Validated Computational Modeling of Advanced Alloys and Radiation Effects for Nuclear Energy Applications: *Steven Zinkle*[1]; Lizhen Tan[2]; Ying Yang[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

9:00 AM
Cluster Dynamics in Irradiated Materials: A Hybrid Deterministic/Stochastic Coupling Algorithm: *Pierre Terrier*[1]; Thomas Jourdan[2]; Manuel Athènes[2]; Gilles Adjanor[3]; Gabriel Stoltz[4]; [1]Ecole des Ponts Paristech & CEA, SRMP; [2]CEA Saclay; [3]EDF R&D; [4]Ecole des Ponts Paristech

9:20 AM
Rate-theory Modeling of Irradiation Damage Cascades and the Influence of the Underlying Microstructure using the MOOSE Framework: *Jesse Carter*[1]; Jared Tannenbaum[1]; Richard Smith[1]; [1]Bettis Laboratory, NNL

9:40 AM
A Phase Field Study of Void Superlattice Formation in Irradiated Materials: *Yipeng Gao*[1]; Daniel Schwen[1]; Chao Jiang[1]; Yongfeng Zhang[1]; [1]Idaho National Laboratory

10:00 AM Break

10:20 AM
Microstructure-sensitive Phase Field Fracture Model Including Anisotropic Elastic Properties: *Shuaifang Zhang*[1]; Wen Jiang[2]; Cheng Liu[3]; Izabela Szlufarka[3]; Michael Tonks[1]; [1]Pennsylvania State University; [2]Idaho National Lab; [3]University of Wisconsin-Madison

10:40 AM
Off-stoichiometric Cluster Dynamics in Irradiated Oxides: *Sarah Khalil*[1]; Todd Allen[2]; Anter El-Azab[3]; [1]Alexandria University - Egypt; [2]UW-Madison; [3]Purdue University

11:00 AM Invited
Real-space Diffusion-driven Models for Microstructural Evolution of Irradiated Materials: *Sergei Dudarev*[1]; [1]UK Atomic Energy Authority

Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions – Mathematical and Machine Learning Approaches Applied to UQ

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory; Richard Hennig, University of Florida; Avinash Dongare, University of Connecticut; Shawn Coleman, U.S. Army Research Laboratory; Niaz Abdolrahim, University of Rochester; Joseph Bishop, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Li Ma, National Institute of Standards and Technology

Wednesday AM
March 14, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chairs: Avinash Dongare, University of Connecticut; Li Ma, National Institute of Standard and Technology

8:30 AM Invited
Uncertainty Quantification for Additive Manufacturing Applications across Scales: *Laura Swiler*[1]; Kyle Johnson[1]; [1]Sandia National Laboratories

9:00 AM
Large Scale Sensitivity of Uncertain Parameters on Optimal Control Solutions: An Example in Additive Manufacturing: *Bart van Bloemen Waanders*[1]; Joseph Hart[2]; [1]Sandia National Laboratories; [2]North Carolina State University

9:20 AM Invited
The Role of Data Analysis in Uncertainty Quantification: Examples from Materials Science: *Paul Patrone*[1]; Andrew Dienstfrey[1]; [1]NIST

9:50 AM
Uncertainty Quantification in Materials Strength Models Using Bayesian Inference: *David Rivera*[1]; Jason Bernstein[1]; Katie Schmidt[1]; Nathan Barton[1]; Ana Kupresanin[1]; Jeff Florando[1]; [1]LLNL

10:10 AM Break

10:30 AM Invited
Machine Learning Based Atomistic Force Fields: *Rampi Ramprasad*[1]; Venkatesh Botu[1]; Rohit Batra[1]; James Chapman[1]; Huan Tran[1]; [1]University of Connecticut

11:00 AM Invited
It's a SNAP: Automated Generation of High-accuracy Interatomic Potentials Using Quantum Data: *Aidan P. Thompson*[1]; [1]Sandia National Laboratories

11:30 AM
Linear Scaling, Quantum-accurate Interatomic Potentials with SNAP; Reaching those Hard-to-reach Places in Classical Molecular Dynamics: *Mitchell Wood*[1]; Aidan Thompson[1]; [1]Sandia National Labs

Computational Thermodynamics and Kinetics – Phase Equilibria and Transformations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Wednesday AM
March 14, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: Shawn Coleman, U.S. Army Research Laboratory

8:30 AM Invited
ICME Design of High-performance Materials with Computational Materials Science: *James Saal*[1]; Greg Olson[1]; [1]QuesTek Innovations

9:00 AM
Developing *Ab-initio* Models for Precipitation in Alloys: *Anirudh Raju Natarajan*[1]; John Thomas[1]; Brian Puchala[2]; Anton Van der Ven[1]; [1]University of California, Santa Barbara; [2]University of Michigan, Ann Arbor

9:20 AM
Thermolab: A Matlab Toolbox for Experimenting Computational Thermodynamics: *Thien Duong*[1]; Raymundo Arroyave[1]; [1]Texas A&M University

9:40 AM
Effect of Precipitate Characteristics on the Sensitization of Austenitic Stainless Steels: *Satish Kumar Kolli*[1]; Vahid Javaheri[1]; Thomas Ohligschläger[2]; David Porter[1]; [1]University of Oulu, Oulu; [2]Outokumpu, Tornio R & D Center

10:00 AM Break

10:20 AM Invited
Efficient and Accurate Computation of Melting Temperatures and Enthalpies and Entropies of Fusion from Ab Initio: *Blazej Grabowski*[1]; Li-Fang Zhu[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

10:50 AM
Simulation of Grain Boundary Migration and Phase Transformation in Metals with Overdamped Langevin Dynamics: *Carolina Baruffi*[1]; Alphonse Finel[1]; Oguz Umut Salman[2]; Brigitte Bacroix[2]; [1]ONERA; [2]LSPM -Université Paris 13

11:10 AM
Transition Process from BCT Martensite to η Phase during Tempering in Fe-C Alloy: *Yohei Osawa*[1]; Michitoshi Saeki[1]; Masanori Enoki[1]; Marcel Sluiter[2]; Hiroshi Ohtani[1]; [1]Tohoku University; [2]Delft University of Technology

11:30 AM
Secondary Phase Dissolution in Al Alloys Using DICTRA Models: *Kyle Fitzpatrick-Schmidt*[1]; Danielle Cote[1]; Richard Sisson[1]; Victor Champagne[2]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

Coupling Advanced Characterization and Modeling Tools for Understanding Fundamental Phase Transformation Mechanisms: An MPMD Symposium in Honor of Hamish Fraser – Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Gregory Thompson, University of Alabama; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; Soumya Nag, GE Global Research; Rajarshi Banerjee, University of North Texas

Wednesday AM
March 14, 2018

Room: 127A
Location: Phoenix Convention Center

Session Chair: Sudarsanam Babu, University of Tennessee - Knoxville

8:30 AM Invited
Advanced Characterization and Modeling Tools in the Context of Corrosion: Oumaima Gharbi[1]; Shravan Kairy[1]; *Nick Birbilis*[1]; [1]Monash University

9:00 AM Invited
Deformation by Dislocations, Twinning, and Phase Transformations in Compositionally Concentrated FCC Solid Solutions: *Michael Mills*[1]; Jiashi Miao[1]; Connor Slone[1]; Tim Smith[2]; Maryam Ghazisaeidi[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

9:30 AM Invited
Phase Transformations, Microstructure Evolution and Mechanical Properties of Nickel-base Superalloys Studied by Analytical Scanning and Transmission Electron Microscopy: Micheal Kattoura[1]; Seetha Mannava[1]; Dong Qian[1]; *Vijay Vasudevan*[1]; [1]University of Cincinnati

10:00 AM Break

10:20 AM Invited
The Need for Advanced Techniques to Couple Multiscale Physics Based Structural Models: *Jaimie Tiley*[1]; [1]Air Force Office of Scientific Research

10:50 AM Invited
Progress with 3-dimensional Materials Science Tools for Aerospace Alloy Engineering: *Dennis Dimiduk*[1]; Michael Uchic[2]; Michael Groeber[2]; Paul Shade[2]; Sean Donegan[2]; Michael Jackson[1]; [1]BlueQuartz Software, LLC; [2]Air Force Research Laboratory

11:20 AM Invited
Probabilistic Methodology for Analyzing and Reconstructing Parent Microstructures from EBSD Maps of Transformation Products: *Stephen Niezgoda*[1]; Eric Payton[2]; Alex Brust[1]; Vikas Sinha[3]; [1]The Ohio State University; [2]Air Force Research Laboratory; [3]UES, Inc.

Coupling Experiments and Modeling to Understand Plasticity and Failure – Plasticity in HCP Alloys

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

Wednesday AM
March 14, 2018

Room: 126B
Location: Phoenix Convention Center

Session Chairs: Darren Pagan, CHESS; Michael Sangid, Purdue University

8:30 AM Invited
Comparison of Parameters Required for Computational Models for Modeling Heterogeneous Deformation in Titanium Obtained with Different Approaches: *Thomas Bieler*[1]; Chen Zhang[1]; Harsha Phukan[1]; Yang Su[1]; Hongmei Li[1]; Philip Eisenlohr[1]; Martin Crimp[1]; Carl Boehlert[1]; Leyun Wang[2]; Robert Suter[3]; Jonathan Lind[4]; Peter Kenesei[5]; Jun-Sang Park[5]; Ruqing Xu[5]; Wenjun Liu[5]; [1]Michigan State University; [2]Shanghai Jiao Tong University; [3]Carnegie Mellon University; [4]Lawrence Livermore National Laboratory; [5]Argonne National Laboratory

8:55 AM Invited
Reliability of Slip Resistance Determination in Hexagonal Materials: Chen Zhang[1]; Aritra Chakraborty[1]; *Philip Eisenlohr*[1]; Carl Boehlert[1]; Martin Crimp[1]; Thomas Bieler[1]; [1]Michigan State University

9:20 AM
Coupled Intergranular and Transgranular Fracture Modes in H.C.P. Alloys: *Ismail Mohamed*[1]; S. Ziaei[1]; Mohammed Zikry[1]; [1]North Carolina State University

9:40 AM
The Effect of Temperature on Deformation of CP-Ti: *Joao Fonseca*[1]; Alberto Orozco-Caballero[1]; [1]The University of Manchester

10:00 AM Break

10:20 AM Invited
Neighbour Effects on Grain Resolved Stress Distributions in Hexagonal Metals Revealed by 3D X-ray Diffraction Measurements: Hamidreza Abdolvand[1]; Jonathan Wright[2]; *Angus Wilkinson*[3]; [1]Western University; [2]ESRF; [3]University of Oxford

10:45 AM
The Influence of Elastic Interactions on Local Stresses and Deformation Mechanism during Tensile Loading of Two-phase Titanium Alloys: *William Joost*[1]; Maija Kuklja[2]; Sreeramamurthy Ankem[2]; [1]Pratt & Whitney; [2]University of Maryland

11:05 AM
Geometrically Necessary Dislocations (GNDs) and Crystal Plasticity in HCP Metals: *Wyatt Witzen*[1]; Curt Bronkhorst[2]; Tresa Pollock[1]; Irene Beyerlein[1]; [1]University of California, Santa Barbara; [2]Los Alamos National Laboratory

11:25 AM
Localized Deformation Fields in Hexagonal Close-packed Polycrystals: *Hamid Abdolvand*[1]; Angus Wilkinson[2]; [1]University of Western Ontario; [2]University of Oxford

11:45 AM
Study of the Deformation of Mg-Y by In Situ EBSD and Visco-plastic Self-consistent Modeling: *Bijin Zhou*[1]; Alireza Maldar[1]; Xiaoqin Zeng[1]; Leyun Wang[1]; [1]Shanghai Jiao Tong University

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 5A: Fe-based Superalloy Development & Properties. 5B: Deformation & Damage in Fe and Ni-based Superalloys

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Wednesday AM
March 14, 2018
Room: 126A
Location: Phoenix Convention Center

Session Chair: Yukinori Yamamoto, Oak Ridge National Laboratory

8:30 AM Invited
Microstructural Investigation and In-situ Neutron Diffraction on Novel Creep-resistant Ferritic Superalloys: *Peter Liaw*[1]; Shao-Yu Wang[1]; Gian Song[2]; David Dunand[3]; Gautam Ghosh[3]; Sungil Baik[3]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory; [3]Northwestern University

9:00 AM
Deformation and Damage Behavior during LCF, TMF and CF in an Advanced Heat Resistant Austenitic Stainless Steel: *Guocai Chai*[1]; Guocai Chai[2]; [1]Sandvik Materials Technology; [2]Linköping University

9:20 AM
Alloy Design Concepts of Creep-resistant, Alumina-forming Ferrous Alloys for High-temperature Structural Applications: *Yukinori Yamamoto*[1]; Michael Brady[1]; Govindarajan Muralidharan[1]; Bruce Pint[1]; Chih-Hsiang Kuo[2]; Benjamin Shassere[3]; Sudarsanam Babu[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]University Tennessee (currently at ORNL)

9:40 AM
Investigation on Creep Properties of Alloy 709 (Fe-25Ni-20Cr) at 1023 K: *Abdullah Alomari*[1]; Korukonda Murty[1]; Nilesh Kumar[1]; [1]North Carolina State University

10:00 AM Break

10:20 AM
Effects of Cr on High-temperature Tensile Properties in High-Ni-containing Austenitic Cast Steels: *Jisung Yoo*[1]; Won-Mi Choi[1]; Byeong-Joo Lee[1]; Yong-Jun Oh[2]; Seongsik Jang[3]; Sunghak Lee[1]; [1]a Center for Advanced Aerospace Materials Pohang University of Science and Technology; [2]Department of Advanced Materials Engineering Hanbat National University; [3]Research and Development Center Key Yang Precision

10:40 AM
High Temperature Creep Behavior of a Fe-20Cr-25Ni Based Austenitic Stainless Steel: *Martin Taylor*[1]; Harrison Pugesek[1]; Jose Ruiz Ramirz[1]; Nicholas Shaber[1]; Indrajit Charit[1]; Gabriel Potirniche[1]; Robert Stephens[1]; [1]University of Idaho

11:00 AM
Creep Behavior and Microstructural Characterization of Weld Transition Joints between P91 and AISI 304: *Javed Akram*[1]; Prasad Kalvala[2]; Mano Misra[2]; [1]3DSIM, LLC; [2]University of Utah

11:20 AM
Processing and Properties of Forged and Cast Haynes 282 Alloy for A-USC Steam Turbine Components: *Philip Maziasz*[1]; [1]Oak Ridge National Laboratory

Dynamic Behavior of Materials VIII – Dynamic Response of HCP Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Wednesday AM
March 14, 2018
Room: 127B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Characterisation and Understanding of Deformation Fields in Textured Zirconium Deformed at High Rate: Vivian Tong[1]; Euan Wielweski[2]; *T Ben Britton*[1]; [1]Department of Materials, Imperial College; [2]Glasgow University

9:10 AM
The Mechanical Behaviors and Microstructural Evolution of AZ31B Magnesium Alloy with Gradient Texture under Impact Loading: *Weiliang Zhang*[1]; Peijie Li[1]; [1]Tsinghua University

9:30 AM
Dynamic Deformation and Failure of Ultrafine-grained Titanium: *Zezhou Li*[1]; Bingfeng Wang[2]; Shiteng Zhao[1]; Ruslan Z. Valiev[3]; Kenneth S. Vecchio[1]; Marc A. Meyers[1]; [1]University of California,San Diego; [2]Central South China; [3]Institute of Physics of Advanced Materials, Ufa State Aviation Technical University

9:50 AM
Effect of Phase Transformation on High Temperature Dynamic Flow Stresses of CP-Ti: *Sindhura Gangireddy*[1]; Steven Mates[2]; [1]University of North Texas; [2]National Institute of Standards and Technology

10:10 AM Break

10:30 AM Invited
On the Microstructure-property Relationships in Shock Compressed Solids: *Cyril Williams*[1]; [1]U.S. Army Research Laboratory

11:10 AM
Effects of Thermo-mechanical Processing on the Dynamic Behavior of Additive Manufactured Ti-6Al-4V: *Andrew Brown*[1]; Adam Gregg[1]; Ali Ameri[1]; JP Escobedo[1]; Paul Hazell[1]; Daniel East[2]; Zakaria Quadir[3]; [1]UNSW Australia; [2]CSIRO ; [3]Curtin University

11:30 AM
Strain Rate and Stress Triaxiality Effects on Ductile Damage of Additive Manufactured Ti-6Al-4V: *Andrew Ruggiero*[1]; Gianluca Iannitti[1]; Gabriel Testa[1]; Nicola Bonora[1]; Domenico Gentile[1]; [1]University of Cassino

Electrode Technology Symposium for Aluminum Production – Cathode Materials and Properties

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xianan Liao, Elkem Carbon

Wednesday AM
March 14, 2018
Room: 222C
Location: Phoenix Convention Center

Session Chairs: Stian Madshus, Elkem Carbon; Mohamed Mahmoud, Emirates Global Aluminium

8:30 AM Introductory Comments

8:35 AM
Transport of Sodium in TiB2 Materials Investigated by a Laboratory Test and DFT Calculations: *Zhaohui Wang*[1]; Arne Petter Ratvik[1]; Jesper Friis[1]; [1]SINTEF Materials and Chemistry

9:00 AM
Multi-scale Modelling of TiB2 Degradation Using Crystal Elasticity Model and Density Functional Theory: Afaf Saai[1]; Zhaohui Wang[1]; Micol Pezzotta[1]; Jesper Friis[1]; *Arne Ratvik*[1]; Per Vullum[1]; [1]SINTEF MK

9:25 AM
Simulation on the Initial Stage of Sodium-Graphite Intercalation Using First Principle Calculation: *Jing Sun*[1]; Jilai Xue[1]; Liu Xuan[1]; Zengjie Wang[1]; Li Lu[1]; [1]University of Science and Technology Beijing (USTB)

9:50 AM
Cathode Structure Optimization Research for Aluminum Reduction Cell: *Yungang Ban*[1]; Jing Liu[1]; Yu Mao[1]; Jihong Mao[1]; [1]Northeastern University Engineering & Research Institute Co. Ltd

10:15 AM Break

10:30 AM
Research on the Penetration of Potassium-based Electrolyte into Dry Barrier Materials: *Bao Shengzhong*[1]; Chai Dengpeng[1]; Shi Zhirong[1]; [1]Zhengzhou Non-ferrous Metals Research Institute Co.Ltd of Chalco

10:55 AM
Development and Application of Electrocalciners with Increased Calcination Temperature: *Yi Yang*[1]; Shikai Gong[1]; Xiaosong Zhou[1]; Qianjin Ning[1]; [1]Guiyang Aluminum Magnesium Design and Research Institute

Environmentally Assisted Cracking: Theory and Practice – Stress Corrosion Cracking II

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Wednesday AM
March 14, 2018
Room: 105A
Location: Phoenix Convention Center

Session Chairs: Karl Sieradzki, Arizona State University; Sergei Shipilov, Oak Ridge National Laboratory

8:30 AM Invited
Dealloying Induced Stress Corrosion Cracking: *Karl Sieradzki*[1]; Nilesh Badwe[1]; Xiying Chen[1]; Erin Karasz[1]; Ariana Tse[1]; [1]Arizona State University

9:10 AM
Electrochemical-mechanical Interactions in an Aluminum Alloy under Slow Strain Rate Stress Corrosion Cracking: *Xinzhu Zheng*[1]; Homero Castaneda[1]; Ankit Srivastava[1]; [1]Texas A&M University

9:30 AM
Corrosion Crack Propagation Modeling Using Meshless Peridynamics Approach: *Srujan Rokkam*[1]; Michael Brothers[1]; Max Gunzburger[2]; Kishan Goel[3]; [1]Advanced Cooling Technologies, Inc.; [2]Florida State University; [3]Naval Air Systems Command

9:50 AM Break

10:10 AM Invited
From First Discoveries in the Late 1800s to Mechanistic Understanding and Radiation Effects in the Early 2000s: Over 140 Years of Stress Corrosion Cracking Research: *Sergei Shipilov*[1]; [1]Oak Ridge National Laboratory

10:50 AM
EAC Behavior of Modified Duplex Stainless Steel Bars in Seawater: *Kewei Gao*[1]; Haisheng Tong[1]; Xiaolu Pang[1]; Yanjing Su[1]; Yanhui Sun[1]; [1]University of Science and Technology Beijing

11:10 AM
Comparative Assessment of the Fracture Behaviour of API 5L X65 and Micro-alloyed Steels in E80 Simulated Fuel Ethanol Environment: *Olufunmilayo Joseph*[1]; John Ade Ajayi[2]; Cleophas Akin Loto[1]; Seetharaman Sivaprasad[3]; O.S.I Fayomi[1]; [1]Covenant University; [2]Federal University of Technology, Akure; [3]CSIR-National Metallurgical Laboratory

11:30 AM
The Stress Corrosion Cracking Mechanism of a Cu-free Al-Zn-Mg Alloy in Sodium Chloride Solutions: *Christoph Altenbach*[1]; Daniela Zander[1]; [1]RWTH Aachen University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Wednesday AM
March 14, 2018
Room: 125B
Location: Phoenix Convention Center

Session Chair: Antonios Kontsos, Drexel University

8:30 AM
Miniaturised Ultrasonic Fatigue Testing in Torsion: Tinger Wen[1]; *Jicheng Gong*[1]; Angus Wilkinson[1]; [1]University of Oxford

8:50 AM
The Effect of Grain Size on Low Cycle Fatigue and Cyclic Stress Strain Behavior of Unalloyed Mg: *Aeriel Murphy*[1]; John Allison[1]; [1]University of Michigan

9:10 AM
Nickel-titanium-hafnium Alloy Design for Tribological Systems: *Sean Mills*[1]; Christopher Dellacorte[2]; Ronald Noebe[2]; Aaron Stebner[1]; [1]Colorado School of Mines; [2]NASA Glenn Research Center

9:30 AM
Analysis of Crack Initiation and Early Growth in Ti Using Miniaturised Ultrasonic Fatigue Testing: *Arutyun Arutyunyan*[1]; Jicheng Gong[1]; Angus Wilkinson[1]; [1]University of Oxford

9:50 AM Break

10:10 AM
Fatigue Damage Precursor Effects on the Dynamic Properties of a-Iron: *Joseph Indeck*[1]; Cyril Williams[2]; Kavan Hazeli[1]; [1]University of Alabama in Huntsville; [2]U.S. Army Research Laboratory

10:30 AM
Cyclic Deformation Induced Twinning in an Austenitic Ferritic Two Phase Alloy during Low Cycle Fatigue: Guocai Chai[1]; *Guocai Chai*[2]; Lars Ewenz[3]; Katarina Persson[1]; Martina Zimmermann[3]; [1]Sandvik Materials Technology; [2]Linköping University ; [3]Dresden Technical University

Federation of European Materials Societies (FEMS) Keynote Symposium: Energy and Transportation from a European Materials Perspective – Keynote Session I

*Sponsored by:*Federation of European Materials Societies (FEMS)
Program Organizer: Brett Suddell, Federation of European Materials Societies (FEMS)

Wednesday AM — Room: 228A
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Brett Suddell, Federation of European Materials Societies (FEMS)

8:30 AM Introductory Comments
To be announced.

Frontiers in Solidification Science and Engineering – Nucleation and Grain Refinement

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

Wednesday AM — Room: 126C
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Damien Tourret, IMDEA Materials

8:30 AM
Nucleation Modes in a Hydrodynamic Phase-field Crystal Model of Solidification: Laszlo Granasy[1]; *Frigyes Podmaniczky*[1]; Gyula Tóth[1]; [1]Wigner Research Centre for Physics

8:50 AM
Investigating Nucleation Phenomena and Equilibrium/Non-equilibrium Phases in Rapid Solidification of Binary Al-Cu Alloys: Avik Mahata[1]; *Mohsen Asle Zaeem*[1]; Michael Baskes[2]; [1]Missouri University of Science and Technology; [2]University of California, San Diego

9:10 AM
Kinetic Factor in the Nucleation Rate of Stoichiometric Compounds: *Huajing Song*[1]; Yang Sun[1]; Feng Zhang[1]; Cai-zhuang Wang[1]; Kai-Ming Ho[2]; Mikhail Mendelev[1]; [1]Ames Laboratory, US Department of Energy; [2]Iowa State University

9:30 AM
Modeling of Twin Growth during Directional Solidification of Polycristalline Silicon: *Adrian Pineau*[1]; Gildas Guillemot[1]; Charles-Andre Gandin[1]; [1]MINES ParisTech

9:50 AM
Influence of Ta on Solidification Behaviour of Undercooled Ni-Ta Alloys: Matthias Kolbe[1]; *Masoumeh Faraji*[2]; Thomas Lierfeld[3]; Gunther Eggeler[4]; Dieter Herlach[1]; [1]German Aerospace Center; [2]Coventry University; [3]SGL Group; [4]Ruhr- Universität Bochum

10:10 AM Break

10:30 AM
Investigating the Impact of Inoculation on Al Based Alloys: *Mareike Wegener*[1]; Maike Becker[1]; Matthias Kolbe[1]; Florian Kargl[1]; [1]German Aerospace Center (DLR)

10:50 AM
Inoculation in Lab Scale Low Alloyed Steel Castings: *Marvin Gennesson*[1]; Dominique Daloz[2]; Julien Zollinger[2]; Bernard Rouat[2]; Hervé Combeau[2]; Joëlle Demurger[3]; Delphine Poirier[3]; [1]Institut Jean Lamour / Asco Industries; [2]Institut Jean Lamour; [3]Asco Industries

11:10 AM
Solidification of Al Alloys Investigated by HAADF-STEM, EELS, and APT: *Jiehua Li*[1]; [1]University of Leoben

High Entropy Alloys VI – Structures and Characterization I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Wednesday AM — Room: 121A
March 14, 2018 — Location: Phoenix Convention Center

Session Chairs: E-Wen Huang, National Chiao Tung University; Shou-Yi Chang, National Tsing Hua University

8:30 AM Invited
Sluggish Phase Transition in CoCrFeMnNi High Entropy Alloy: Collective Structural Modulation: *E-Wen Huang*[1]; Yu-Lun Jao[1]; Jayant Jain[2]; Wan Chuck Woo[3]; An-Chou Yeh[4]; [1]National Chiao Tung University; [2]IIT Delhi; [3]Korea Atomic Energy Research Institute; [4]National Tsing Hua University

8:50 AM
***In-situ* Synchrotron X-ray Diffraction Characterization of High Entropy Alloys for Hydrogen Storage Applications:** *Guilherme Zepon*[1]; Daniel Leiva[1]; Renato Strozi[2]; Vinicius Aranda[1]; Santiago Figueroa[3]; Walter Botta[1]; [1]Department of Materials Engineering - Federal University of São Carlos; [2]Graduate Program of Materials Science and Engineering - Federal University of São Carlos; [3]Brazilian Synchrotron Ligth Laboratory

9:10 AM Invited
Probing Local Lattice Distortion in High-entropy Alloys: *Yang Tong*[1]; Gihan Velisa[1]; Taini Yang[2]; Ke Jin[1]; Chenyang Lu[2]; Hongbin Bei[1]; J. Ko[3]; D. Pagan[3]; R. Huang[3]; Y. Zhang[1]; L. Wang[2]; F. Zhang[1]; [1]Oak Ridge National Laboratory; [2]University of Michigan; [3]Cornell University

9:30 AM Invited
Radiation Effects in High Entropy Alloys Revealed by Atom Probe Tomography: *Jonathan Poplawsky*[1]; Wei Guo[1]; Wei-Ying Chen[2]; Rui Feng[3]; Tengfei Yang[3]; Haoyin Diao[3]; Peter Liaw[3]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory; [3]The University of Tennessee

9:50 AM Invited
Real-time Mapping of Local Dissolution Processes in Al_xCoCrFeNi High-entropy Alloys: *Yunzhu Shi*[1]; Bin Yang[1]; Liam Collins[2]; Nina Balke[2]; Peter Liaw[3]; [1]University of Science and Technology Beijing; [2]Oak Ridge National Laboratory; [3]The University of Tennessee

10:10 AM Break

10:30 AM Invited
Loss of Crystallographic Anisotropy and Deformation Heterogeneity in FCC and BCC High-entropy Alloys: Chi-Huan Tung[1]; Wen-Ju Chen[1]; Tai-Jan Huang[1]; Yu-Chieh Lo[2]; *Shou-Yi Chang*[1]; [1]National Tsing Hua University; [2]National Chiao Tung University

10:50 AM
Measurement of Equilibrium Concentrations of Vacancies in High-entropy Alloy Co-Cr-Ni by In-situ Neutron Diffraction: *Yu-Lun Jao*[1]; E-Wen Huang[1]; [1]National Chiao Tung University

11:10 AM Invited
In Situ Ion Irradiation on Al-Co-Cr-Fe-Ni High Entropy Alloys: Jing Hu[1]; *Meimei Li*[1]; Rui Feng[2]; Mark Kirk[1]; Peter Liaw[2]; [1]Argonne National Laboratory; [2]University of Tennessee

11:30 AM Invited
Core Structure of ½<111> Screw Dislocations in Refractory BCC High Entropy Alloys: *Yi-Shen Lin*[1]; Vaclav Vitek[1]; [1]University of Pennsylvania

11:50 AM Invited
Separation of Static and Dynamic Displacements in CrMnFeCoNi: *Lewis Owen*[1]; Helen Playford[2]; Howard Stone[1]; Nicholas Jones[1]; [1]University of Cambridge; [2]ISIS Neutron and Muon Source

High Entropy Alloys VI – Structures and Modeling I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Wednesday AM
March 14, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: Michael Bakas, U.S. Army Research Office; Michael Widom, Carnegie Mellon University

8:30 AM Invited
Complex Multicomponent Alloys: From High-throughput Calculations to Microstructure Effects in High Entropy Alloys: *James Morris*[1]; [1]Oak Ridge National Laboratory

8:50 AM Invited
First-principles Prediction of High-entropy-alloy Stability: *Michael Widom*[1]; Rui Feng[2]; Peter Liaw[2]; Michael Gao[3]; [1]Carnegie Mellon University; [2]University of Tennessee; [3]National Energy Technology Lab

9:10 AM Invited
Atomistic Monte Carlo Modeling of the Microstructures of High Entropy Alloys: *Guofeng Wang*[1]; [1]University of Pittsburgh

9:30 AM Invited
The Melting of Ultra-high Temperature Refractory High Entropy Alloys: An Ab Initio Molecular Dynamics Study: *William Yi Wang*[1]; Bin Gan[1]; Jun Wang[1]; Deye Lin[2]; Bin Tang[1]; Shun-Li Shang[3]; Hongchao Kou[1]; Haifeng Song[2]; Xi-Dong Hui[4]; Yiguang Wang[1]; Jinshan Li[1]; Peter Liaw[5]; Zi-Kui Liu[3]; [1]Northwestern Polytechnical University; [2]Institute of Applied Physics and Computational Mathematics; [3]The Pennsylvania State University; [4]University of Science and Technology Beijing; [5]The University of Tennessee

9:50 AM Invited
Life at the Edge: Nudging High-entropy Alloy Systems along Different Pathways: *M. Kramer*[1]; Duane Johnson[1]; Pratik Ray[1]; [1]Iowa State University

10:10 AM Break

10:30 AM Invited
Predictive Modeling of the Elastic Properties of Refractory High Entropy Alloys
: *Wei Chen*[1]; Peter Liaw[2]; [1]Illinois Institute of Technology; [2]University of Tennessee

10:50 AM
Computational Investigations of Mechanical Behavior of AlxCrCoFeNi High-entropy Alloy: Yu-Chia Yang[1]; Cuixia Liu[1]; Chun-Yu Lin[1]; *Zhenhai Xia*[1]; [1]University of North Texas

11:10 AM
The Role of Short-range Order on the Dislocation Behavior in BCC and FCC Multicomponent Solid Solution Alloys Using Atomistic Simulations: *Edwin Antillon*[1]; Satish Rao[1]; Christopher Woodward[2]; Triplicane Parthasarathy[1]; Oleg Senkov[1]; Brahim Akdim[1]; [1]AFRL/UES; [2]AFRL

11:30 AM Invited
Chemical Short-range Orders and the Induced Structural Transition in High Entropy Alloys: *Qing Wang*[1]; Yue Ma[1]; Xiaona Li[1]; Chuang Dong[1]; Peter K. Liaw[2]; [1]Dalian University of Technology; [2]University of Tennessee

11:50 AM Invited
Atomistic Simulations of Dislocation Behavior in BCC and FCC Multicomponent Solid Solution Alloys: *Satish Rao*[1]; Edwin Antillon[1]; Christopher Woodward[2]; Brahim Akdim[1]; Triplicane Parthasarathy[1]; Oleg Senkov[1]; [1]UES Inc.; [2]Air Force Research Laboratory

High Temperature Corrosion of Structural Materials – Ni-base Alloys and Corrosive Environments at Elevated Temperatures

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee
Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Mark Weaver, University of Alabama; Steve Coryell, Special Metals; James Earthman, University of California, Irvine

Wednesday AM
March 14, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Oxide Scale Formation on Cast Ni-base Superalloys in High pO_2-environments: Effect of Alloying Additions and Presence of Water Vapor in the Test Gas: *Dmitry Naumenko*[1]; Katja Wollgarten[1]; Timur Galiullin[1]; Wojciech Nowak[2]; Willem Josef Quadakkers[1]; [1]Forschungszentrum Juelich GmbH; [2]Rzeszów University of Technology

9:00 AM
The Interaction between Applied Stress and Oxidation in a Coarse Grain Ni-based Superalloy at Temperatures above 700 °C: *Joshua Ramsay*[1]; Mary Taylor[1]; Hugh Evans[1]; Dan Child[2]; Hang Li[1]; Paul Bowen[1]; [1]University of Birmingham; [2]Rolls-Royce plc.

9:20 AM
The Effect of Titanium Additions on the Oxidation Properties of Ni-Cr-Al Ternary Alloys: *Thomas Reynolds*[1]; Mary Taylor[1]; Mark Hardy[2]; Hugh Evans[1]; [1]University of Birmingham; [2]Rolls-Royce plc

9:40 AM
Outward Diffusion through Protective Alumina on NiAl-alloys: *Torben Boll*[1]; Olof Bäcke[2]; Martin Heilmaier[1]; Krystyna Stiller[2]; [1]Karlsruhe Institute for Technology; [2]Department of Physics, Chalmers University of Technology

10:00 AM Break

10:20 AM
Oxidation Mechanism of NiAl-Mo Alloys: Insights from a Cellular Automaton Approach: *Pratik Ray*[1]; Mufit Akinc[2]; Matthew Kramer[1]; [1]Ames Laboratory, US-DOE; [2]Iowa State University

10:40 AM
Oxidation of Transient Liquid Phase Bonded Ni Alloys in High-temperature CO_2: *Ömer Dogan*[1]; Monica Kapoor[1]; Richard Oleksak[1]; Casey Carney[1]; Gordon Holcomb[1]; [1]National Energy Technology Laboratory

11:00 AM
Effects of CO_2 on Fatigue and Creep Properties of the Ni-base Alloy 282: *Kinga Unocic*[1]; Amit Shyam[1]; Sebastien Dryepondt[1]; Philip Maziasz[1]; [1]Oak Ridge National Laboratory

11:20 AM
Evaluating the Influence of CO_2 Purity on the Corrosion of Structural Alloys for Supercritical CO_2 Power Cycles: *Matthew Walker*[1]; Elizabeth Withey[1]; Alan Kruizenga[1]; [1]Sandia National Laboratories (Livermore)

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – Data Science and Diffusion

*Sponsored by:*TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Wednesday AM
March 14, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chairs: Suveen Mathaudhu, University of California, Riverside; Raymundo Arróyave, Texas A&M University

8:30 AM Invited
Alloy Design as the Solution to a Continuous Constraint Satisfaction Problem: *Raymundo Arroyave*[1]; Anas Abu-Odeh[1]; Tann Kirk[1]; Edgar Galvan[1]; Richard Malak[1]; [1]Texas A & M University

9:00 AM Invited
Rapid and Systematic Data Collection for Computational Thermodynamics and Kinetics: *Ji-Cheng Zhao*[1]; [1]The Ohio State University

9:30 AM Invited
Computational Thermodynamics: Humans and Machines: *Marius Stan*[1]; [1]Argonne National Laboratory

10:00 AM Break

10:20 AM Invited
Mass and Heat Diffusion and Thermotransport in Liquid Alloys: *Graeme Murch*[1]; [1]The University of Newcastle

10:50 AM Invited
First-principles Calculation of Self-diffusion of Oxygen in Zirconia: *Ying Chen*[1]; Hubin Luo[2]; Tetsuo Mohri[1]; [1]Tohoku University; [2]Chinese Academy of Sciences

11:20 AM Invited
The Future of Aerospace Applications of Additive Manufacturing: Opportunities, Optimization and Modeling: *Andrew Shapiro*[1]; [1]Jet Propulsion Laboratory

11:50 AM Invited
Mixed-space Approach to Phonons for Polar Materials and its Connection with the Calculations of Seebeck Coefficient: *Yi Wang*[1]; Long Qing Chen[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

Integrative Materials Design III: Performance and Sustainability – Integrative Materials Design and Manufacturing: Approaches, Advances, and Applications

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Wednesday AM
March 14, 2018
Room: 132A
Location: Phoenix Convention Center

Session Chairs: Wenjun Cai, University of South Florida; Brad Boyce, Sandia National Laboratories

8:30 AM Invited
Nuances in Addressing Multilevel Materials Design Problems: *David McDowell*[1]; [1]Georgia Institute of Technology

8:50 AM Invited
Hierarchical Microstructural Paradigms for Achieving Exceptional Strength and Ductility: *Rajiv Mishra*[1]; [1]University of North Texas

9:10 AM Invited
The Effects of Microstructural Evolution during Hot- and Warm-forming of Aluminum Alloy Sheet on Pervice Performance: *Eric Taleff*[1]; [1]The University of Texas at Austin

9:30 AM Invited
Improved Formability of Aluminium Alloys at Low Temperatures for Automotive Application: *Belinda Gruber*[1]; Florian Grabner[2]; Thomas Kremmer[1]; Stefan Kirnstötter[3]; Robert Schneider[4]; Robin Schäublin[5]; Peter Uggowitzer[5]; Stefan Pogatscher[1]; [1]Montanuniversitaet Leoben; [2]Leichtmetallkompetenzzentrum Ranshofen GmbH; [3]AMAG Rolling GmbH; [4]voestalpine Automotive Components Schwäbisch Gmünd GmbH & Co. KG; [5]ETH Zürich

9:50 AM Invited
Magnesium Based Metal Matrix Nanocomposites - Processing and Properties: Hajo Dieringa[1]; *Norbert Hort*[1]; [1]Helmholtz-Zentrum Geesthacht

10:10 AM Break

10:25 AM Invited
Thermodynamically Stable Nanocrystalline Al, Ni and Ag Alloys by Electrodeposition: Rose Roy[1]; *Robert Hilty*[1]; Alyssa Kelley[1]; [1]Xtalic Corporation

10:45 AM Invited
Optimizing Wear and Corrosion Resistance of Superlattice Coatings through Atomic-scale Design: *Wenjun Cai*[1]; [1]University of South Florida

11:05 AM Invited
Increased Materials Reliability via Shot Peening: Simulations and Experiments: Siavash Gahnbari[1]; Raheleh Rahimi[1]; *David Bahr*[1]; [1]Purdue University

11:25 AM Invited
Designing a Resilient Carburization Heat Treating Process: *Richard Sisson*[1]; Lei Zhang[1]; Jaiqi Ren[1]; Mei Yang[1]; [1]Worcester Polytechnic Institute, Center for Heat Treating Excellence

11:45 AM Invited
Microstructure Evolution of the High Temperature Intermetallic Phase $Al_4Fe_{1.7}Si$: *Sujeily Soto-Medina*[1]; Giulia Perina[1]; Nicholas Etrick[1]; Biswas Rijal[1]; Richard Hennig[1]; Michele Manuel[1]; [1]University of Florida

Magnesium Alloy Development: An LMD Symposium in Honor of Karl Kainer – Degradation and Microstructure

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Alan Luo, The Ohio State University

Wednesday AM
March 14, 2018

Room: 223
Location: Phoenix Convention Center

Session Chairs: Dietmar Letzig, MagIC - Magnesium Innovation Centre, Helmholtz-Zentrum Geesthacht; Mark Easton, Royal Melbourne Institute of Technology University

8:30 AM Keynote
Degradable Magnesium Implants - Assessment of the Current Situation: *Regine Willumeit-Roemer*[1]; Nezha Ahmad Agha[1]; Berengere Luthringer[1]; [1]Helmholtz-Zentrum Geesthacht

9:00 AM
Study on Mg-Si-Sr Ternary Alloys for Biomedical Applications: *Omer Van der Biest*[1]; Andrea Gil-Santos[1]; Norbert Hort[2]; Rainer Schmid-Fetzer[3]; Nele Moelans[1]; [1]K.U. Leuven; [2]Helmholtz-Zentrum Geesthacht; [3]Clausthal University of Technology

9:20 AM
Biodegradable Mg-Y and Mg-Li Alloys with the Addition of Ca and Zn to the Medical Application: *Sonia Boczkal*[1]; Michal Karas[1]; Anna M. Osyczka[2]; Marzena Lech-Grega[1]; [1]Institute of Non-Ferrous Metals, Light Metals Division, Skawina, Poland; [2]Jagiellonian University, Faculty of Biology and Earth Sciences, Cracow, Poland

9:40 AM Invited
Co-precipitation on the Basal and Prismatic Planes in Mg-Gd-Ag-Zr Alloy Subjected to Over-ageing: *Jiehua Li*[1]; [1]University of Leoben

10:00 AM Break

10:20 AM
Intermetallic Phase Characteristics in the Mg-Nd-Zn System: *Domonkos Tolnai*[1]; Samuel Hill[1]; Serge Gavras[1]; Tungky Subroto[1]; Ricardo Buzolin[2]; Norbert Hort[1]; [1]Helmholtz Zentrum Geesthacht; [2]Graz University of Technology

10:40 AM Invited
Solidification Analysis of Grain Refined AZ91D Magnesium Alloy via Neutron Diffraction: *Tyler Davis*[1]; Lukas Bichler[1]; Dimitry Sediako[1]; Levente Balogh[2]; [1]University of British Columbia; [2]Canadian Nuclear Laboratories

11:00 AM
Evolution of the Dislocation Structure during Compression in a Mg-Zn-Y Alloy with Long Period Stacking Ordered Structure: *Kristian Máthis*[1]; Moustafa El-Tahawy[2]; Gerardo Garcés[3]; Jeno Gubicza[2]; [1]Faculty of Mathematics and Physics, Charles University; [2]Eötvös Loránd University; [3]CENIM-CSIC

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Wednesday AM
March 14, 2018

Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Microstructure Evolution in Neutron Irradiated and Ion Irradiated Alloy T91: *Gary Was*[1]; Stephen Taller[1]; Zhijie Jiao[1]; Kevin Field[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

8:50 AM
The ATR-2 RPV Steel Irradiation Hardening Data Base: An Overview and Some Major Findings: *Nathan Almirall*[1]; Peter Wells[1]; Takuya Yamamoto[1]; David Gragg[1]; Kirk Fields[1]; G. R. Odette[1]; Randy Nanstad[2]; Keith Wilford[3]; Tim Williams[3]; [1]University of California, Santa Barbara; [2]Oak Ridge National Laboratory; [3]Rolls Royce

9:10 AM
Microstructure Based Hardening Models for Alloys Irradiated with Charged Particles an in the ATR and BOR60 Reactors: *Takuya Yamamoto*[1]; Peter Wells[1]; Emanuelle Marquis[2]; Dhriti Bhattacharyya[3]; Tarik Saleh[4]; Stuart Maloy[4]; G. Robert Odette[1]; [1]University of California, Santa Barbara; [2]University of Michigan; [3]ANSTO; [4]Los Alamos National Laboratory

9:30 AM
Effect of Neutron Irradiation on the Mechanical Properties and Microstructure of Friction Stir Processed ODS Alloys: *Ramprashad Prabhakaran*[1]; Mychailo Toloczko[1]; Yaqiao Wu[2]; Jatu Burns[2]; James Cole[3]; Indrajit Charit[4]; Rajiv Mishra[5]; KL Murty[6]; [1]Pacific Northwest National Laboratory; [2]Boise State University; [3]Idaho National Laboratory; [4]University of Idaho; [5]University of North Texas; [6]North Carolina State University

9:50 AM
Effect of 0.25 and 2.0 MeV He-ion Irradiation on Cr Atoms Distribution in Model Fe-Cr Alloys: *Stanislaw Dubiel*[1]; Jan Zukrowski[1]; Yves Serruys[1]; [1]AGH University of Science and Technology

10:10 AM Break

10:30 AM
Radiation Effects on HT9 Tempered Martensitic Steels as a Function of Initial Dislocation Density: *Eda Aydogan*[1]; Stuart Maloy[1]; Yongqiang Wang[1]; [1]Los Alamos National Laboratory

10:50 AM
Atom Probe Examinations of Zircaloy Irradiated at 358-410C: *Brian Cockeram*[1]; Phil Edmondson[2]; Keith Leonard[2]; Jim Hollenbeck[1]; [1]NNL Bettis Laboratory; [2]Oak Ridge National Laboratory

11:10 AM
Examining the Effects of Neutron Irradiation on Zirconium-alloy Oxide Film Microstructure Using Focused Ion Beam Techniques: *Gene Lucadamo*[1]; John Seidensticker[1]; Ram Bajaj[2]; Arash Parsi[3]; Jesse Carter[1]; [1]Bettis Laboratory, NNL; [2]Bettis Laboratory, NNL (retired); [3]Westinghouse Electric Company

11:30 AM
Post-irradiation Examination (PIE) of Irradiated Hafnium: *Ken Anderson*[1]; Brandon Miller[2]; Jeffery Aguiar[3]; Jason Gruber[1]; Richard Smith[1]; [1]Naval Nuclear Laboratory; [2]Idaho National Laboratory-Materials & Fuels Complex; [3]Idaho National Laboratory-Fuel Design and Development

Materials for Energy Conversion and Storage – Functional Materials I

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Wednesday AM
March 14, 2018

Room: 229B
Location: Phoenix Convention Center

Session Chairs: Kyle Brinkman, Clemson University; Ritesh Sachan, ARL, North Carolina

8:30 AM
An Intermediate-temperature Oxygen Transport Membrane Based on Rare-earth Doped Bismuth Oxide: *Kyle Brinkman*[1]; Mingyang Zhao[1]; Tao Hong[1]; Frank Chen[2]; Shumin Fang[3]; Siwei Wang[3]; Hailiang Zhang[3]; [1]Clemson University; [2]University of South Carolina; [3]Nanowise LLC

8:50 AM Invited
Understanding Elasticity of Novel Porous Ceramics at Different Physical Conditions: *Joseph Gladden*[1]; Ashoka Karunarathne[1]; Gautam Priyadarshan[1]; Amit Pandey[2]; [1]University of Mississippi; [2]LG Fuel Cell Systems Inc.

9:15 AM Invited
Interfacial Charge Transfer Dynamics in Graphene-inorganic 'Hybrids' with Transition Metal Oxides Using In-situ Raman Spectroelectrochemistry: *Sanju Gupta*[1]; [1]Western Kentucky University

9:40 AM
Superionicity Emanating from Jammed States: *Venkata Annamareddy*[1]; Jacob Eapen[1]; [1]North Carolina State University

10:00 AM Break

10:15 AM
Silicon/Graphite Nanocomposites with a Thin Carbon Shell: How Etching Enhances the Electrochemical Performance of Si-based Composite: *Maziar Ashuri*[1]; Qianran He[1]; Leon Shaw[1]; [1]Illinois Institute of Technology (IIT)

10:35 AM
Using a Catalyst to Enhance the Free Corrosion Dealloying Rate & Application of Nanoporous Materials as Alloy-type Anodes in Alkali Ion Batteries: *Eric Detsi*[1]; [1]UPenn

10:55 AM
***In Situ* Imaging and Spectroscopy of Carbon Deposition on a Ni/CeO_2 Catalyst**: *Ethan Lawrence*[1]; Peter Crozier[1]; [1]Arizona State University

11:15 AM
Combinatorial Development of Hetero-structured LSC-113 and LSC-214 Perovskite Cathode for High ORR Activity: *Dogancan Sari*[1]; Ziya Torunoglu[1]; Yunus Kalay[1]; Tayfur Ozturk[1]; [1]Middle East Technical University

11:35 AM
Formation and Corrosion Properties of $Zr_{50}Al_{10}Cu_{30}Au_{10}$ and $Zr_{41}Cu_{41}Al_8Ag_6Au_4$ Bulk Glassy Alloys: *El-Sayed Shalaan*[1]; Akihisa Inoue[2]; Fahad Al-Marzouki[1]; Saleh Al-Heniti[1]; Abdullah Obaid[1]; [1]King Abdulaziz University; [2]Josai International University

Mechanical Behavior at the Nanoscale IV – Material Properties in Small Dimensions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Wednesday AM
March 14, 2018

Room: 101C
Location: Phoenix Convention Center

Session Chairs: Seok-Woo Lee, University of Connecticut; Wendy Gu, Stanford University

8:30 AM Invited
Solution Growth of Single-crystalline Intermetallic Compounds and their Mechanical Behaviors at Small Length Scales: *Seok-Woo Lee*[1]; John Sypek[1]; Keith Dusoe[1]; Gyuho Song[1]; Paul Canfield[2]; Sergey Budko[3]; Christopher Weinberger[4]; [1]University of Connecticut; [2]Iowa State University; [3]Ames Laboratory; [4]Colorado State University

9:00 AM
Size-dependent Pseudo-elasticity in Gold Nanocrystals: *X. Wendy Gu*[1]; Lindsey Hanson[2]; A. Paul Alivisatos[3]; [1]Stanford University; [2]Trinity College; [3]UC Berkeley

9:20 AM
Stress-dependent Activation Volumes in Au Nanowires: *Christian Brandl*[1]; [1]Karlsruhe Institute of Technology

9:40 AM
Plasticity of Face-centered Cubic Metallic Nanoparticles under Uniaxial Compression: Selim Bel Haj Salah[1]; *Celine Gerard*[1]; Laurent Pizzagalli[1]; [1]Institut Pprime, CNRS - ENSMA - Université de Poitiers

10:00 AM Break

10:20 AM
Slip Dynamics in Small-scale Crystals and the Transition from Intermittent to Smooth Flow: Gregory Sparks[1]; *Robert Maass*[1]; [1]University of Illinois at Urbana-Champaign

10:40 AM
The Extreme Value Statistics of Intermittent Plasticity: *Peter Derlet*[1]; Robert Maass[2]; [1]Paul Scherrer Institut; [2]University of Illinois at Urbana-Champaign

11:00 AM
Ultrahigh Strength and Fracture of Metallic and Semiconductor Nanowires: *Yang Lu*[1]; [1]City University of Hong Kong

11:20 AM
Stress-strain Responses from Spherical Nanoindentation and Micro-pillar Compression Experiments in Fe-3% Si: A Comparative Study: *Soumya Varma*[1]; Jordan Weaver[2]; Johann Michler[3]; Surya Kalidindi[4]; Siddhartha Pathak[1]; [1]University of Nevada Reno; [2]Los Alamos National Laboratory; [3]EMPA – Swiss Federal Laboratories for Materials Testing and Research; [4]Woodruff School of Mechanical Engineering, Georgia Institute of Technology

Mechanical Behavior at the Nanoscale IV – Temperature, Rate and Environmental Effects

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Wednesday AM
March 14, 2018

Room: 103A
Location: Phoenix Convention Center

Session Chairs: Jaime Marian, UCLA; Nathan Mara, Los Alamos National Lab

8:30 AM Invited
Understanding the Fundamental Mechanisms of Serrated Flow in BCC Alloys Using Computational Modeling: *Jaime Marian*[1]; Yue Zhao[1]; Lucile Dezerald[2]; [1]University of California, Los Angeles; [2]Université de Lorraine

9:00 AM
Mechanical Properties of Rapidly Solidified Ni_5Ge_3 Intermetallic: *Nafisul Haque*[1]; Robert Cochrane[1]; Andrew Mullis[1]; [1]University of Leeds

9:20 AM
Determination of Crack Tip Stress around the Notch of IN-617 by Using Nano Mechanical Raman Spectroscopy: *Debapriya Mohanty*[1]; Yang Zhang[1]; Vikas Tomar[1]; [1]Purdue University

9:40 AM
Dynamic TEM In Situ Mechanical Testing: Characterization of Defects Motion at High Strain Rates: *Thomas Voisin*[1]; Michael D.[1]; Tian Li[1]; Jonathan Ligda[2]; Nicholas Lorenzo[2]; Brian Schuster[2]; Melissa Santala[1]; Yong Zhang[3]; Xiaolong Ma[3]; Geoffrey Campbell[1]; Timothy Weihs[3]; [1]Lawrence Livermore National Laboratory; [2]Army Research Laboratory; [3]Johns Hopkins University

10:00 AM Break

10:20 AM Invited
High-throughput Nanomechanical Characterization of Fe-alloys for Service under Extreme Conditions: *Nathan Mara*[1]; Doug Stauffer[2]; Youxing Chen[3]; Jordan Weaver[3]; Siddhartha Pathak[4]; Ashley Reichardt[5]; Peter Hosemann[5]; [1]Los Alamos National Laboratory and the University of Minnesota; [2]Bruker Nano Surfaces; [3]Los Alamos National Laboratory; [4]University of Nevada, Reno; [5]University of California, Berkeley

10:50 AM
Temperature Effect on the Stochastic Plasticity in BCC Micropillars: *Nicole Aragon*[1]; Ill Ryu[1]; [1]The University of Texas at Dallas

11:10 AM
Temperature Dependence of Indentation Size Effects on Polycrystalline Tungsten from 25 to 950 C: *Ben Beake*[1]; Adrian Harris[1]; Dave Armstrong[2]; Johnny Moghal[2]; [1]Micro Materials Ltd; [2]University of Oxford

11:30 AM
Instrumentation for In Operando Characterization: *Douglas Stauffer*[1]; Eric Hintsala[1]; Syed Asif[1]; [1]Bruker Nano Surfaces

Multi-material Additive Manufacturing: Processing and Materials Design – Non-beam Based and Emerging AM Technologies for Metals

Sponsored by: TMS: Additive Manufacturing Bridge Committee

Program Organizers: Hang Yu, Virginia Tech; Nanci Hardwick, Aeroprobe Corporation; Steven Boles, Hong Kong Polytechnic University; Blake Barnett, Army Research Laboratory; Michael Gibson, Desktop Metal

Wednesday AM
March 14, 2018

Room: 232C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Big Metal Additive Hybrid Manufacturing: *Slade Gardner*[1]; [1]Big Metal Additive

9:00 AM
Large-scale Additive Manufacture of MMC and Layered Multi-material Products: *Chase Cox*[1]; Nanci Hardwick[1]; [1]Aeroprobe Corporation

9:20 AM
Nanomechanical and EBSD Characterization of Thermo-mechanical Additive Manufactured Inconel 625: *Paul Allison*[1]; Zack McClelland[2]; Dustin Avery[1]; Oscar Rivera[3]; J.B. Jordon[1]; Luke Brewer[1]; Nanci Hardwick[4]; [1]University of Alabama; [2]US Army ERDC; [3]Sikorsky Aircraft Corporation; [4]Aeroprobe Corporation

9:40 AM
Novel High Temperature Drop on Demand Liquid Metal-jetting for the Production of Single and Multi-material 3D Objects: *Marco Simonelli*[1]; Mark East[1]; Nesma Aboulkhair[1]; Chris Tuck[1]; Richard Hague[1]; [1]University of Nottingham

10:00 AM Break

10:20 AM Invited
A Separable Support Strategy for 3D Printing of Complex Metal Parts: *Nihan Tuncer*[1]; Jay Tobia[1]; Michael Gibson[1]; Nicholas Mykulowycz[1]; Alexander Barbati[1]; Aaron Preston[1]; Dans Krause; Brian Kernan[1]; Mark Sowerbutts[1]; Dana Krause[1]; Richard Fontana[1]; Jonah Myerberg[1]; Ricardo Fulop[1]; Yet-Ming Chiang[1]; Christopher Schuh[1]; Animesh Bose[1]; Jan Schroers[1]; John Hart[2]; ; Jay Tobia[1]; [1]Desktop Metal, Inc.; [2]Massachusetts Institute of Technology

10:50 AM
Microstructure and Mechanical Properties of Additive Friction Stir Processed Dissimilar Metals: Biswajit Dalai[1]; Nanci Hardwick[2]; Jianqing Su[2]; Benjamin Sutton[3]; Nicholas Mohr[3]; Seetha Mannava[1]; Young-Sik Pyun[4]; *Vijay Vasudevan*[1]; [1]University of Cincinnati; [2]Aeroprobe Corp; [3]EPRI; [4]Sunmoon University

11:10 AM
Bonding Features and Microstructural Evolution in Cold Sprayed Metallic Coatings and Bulks: A New Materials Perspective: *Yu Zou*[1]; [1]University of Toronto

11:30 AM
Development of Novel Squeeze Cast High Tensile Strength Al-Si-Cu-Ni-Sr Alloys: Li Fang[1]; Luyang Ren[1]; Xinyu Geng[1]; *Henry Hu*[1]; Xueyuan Nie[1]; Jimi Tjong[1]; [1]University of Windsor

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Metal Matrix Nanocomposites

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

Wednesday AM
March 14, 2018

Room: 102C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Super Copper with Populous Self-dispersed Nanoparticles: *Gongcheng Yao*[1]; Chezheng Cao[1]; Abdolreza Javadi[2]; Xiaochun Li[2]; [1]Department of Materials Science and Engineering, University of California, Los Angeles, CA 90095, USA; [2]Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, CA 90095, USA

8:50 AM
How to Play with Grain Size and Texture to Tune Mechanical Properties of Architectured Materials: The Case of Cu-Nb (Nano)Composite Wires: *Ludovic Thilly*[1]; Pierre-Olivier Renault[1]; Florence Lecouturier[2]; [1]Pprime Institute - University of Poitiers; [2]LNCMI-Toulouse

9:10 AM
Rapid Synthesis of Lightweight Metal Matrix Nanocomposite Processed by High-pressure Torsion: *Megumi Kawasaki*[1]; Jae-il Jang[2]; Terence Langdon[3]; [1]Oregon State University; [2]Hanyang University; [3]University of Southampton

9:30 AM
Mechanochemical Synthesis of Intermetallic Phases in Systems Al - Nb - (Ti) via Mechanical Alloying: *Petra Hanusova*[1]; [1]Brno University of Technology, Faculty of Mechanical Engineering

9:50 AM
Synthesis and Characterization of Crystalline-amorphous Composite: *Taiwo Dada*[1]; Olanrewaju Ojo[1]; Chuang Deng[1]; [1]University of Manitoba

10:10 AM Break

10:30 AM
Fabrication of Super Al and Mg Powders with Self-dispersed Nanoparticles: *Abdolreza Javadi*[1]; Shuaihang Pan[1]; Chezheng Cao[1]; Gongcheng Yao[1]; Xiaochun Li[1]; [1]University of California, Los Angeles

10:50 AM
The Effects of Nano-Al_4C_3 on Precipitation Hardening and Mechanical Behaviors in Al-5.5Cu Composites: *Daeyoung Kim*[1]; Jun Yeon Hwang[2]; Hyunjoo Choi[1]; [1]School of Advanced Materials Engineering, Kookmin University; [2]Institute of Advanced Composite Materials, Korea Institute of Science and Technology

11:10 AM
Superplastic Behavior of Ultrafine Grained Aluminium Matrix Nano Composite: *Suman Deb*[1]; Sushanta Panigrahi[1]; Matthias Weiss[2]; [1]Indian Institute of Technology, Madras; [2]Deakin University

11:30 AM
Microstructure and Mechanical Properties of AA5083-Al_2O_3 Bulk Nanocomposites Produced by Two-step Ultrasonic Casting Technique: *Vishwanatha Hire Math*[1]; Jayakumar Eravelly[1]; Cheruvu Kumar[1]; Sudipto Ghosh[1]; [1]Indian Institute of Technology

Perfluorocarbon Generation and Emissions from Industrial Processes – PFC Measurements, Reduction and Abatement Methods

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Pascal Lavoie, Light Metals Research Centre - The University of Auckland; David Wong, University of Auckland; Pernelle Nunez, International Aluminium Institute

Wednesday AM
March 14, 2018

Room: 222B
Location: Phoenix Convention Center

Session Chair: Ana Maria Martinez, SINTEF

8:30 AM Introductory Comments

8:35 AM
Low Voltage PFC Measurements and Potential Alternative to Reduce Them at Alcoa Smelters: Eliezer Batista[1]; *Luis Espinoza-Nava*[1]; Chris Tulga[2]; Richard Marcotte[2]; Yan Duchemin[3]; Steven Starr[4]; Petre Manolescu[5]; [1]Alcoa Technical Center; [2]Alcoa Massena; [3]Alcoa ABI; [4]Alcoa TN; [5]Alcoa Iceland

9:00 AM
New Approach for Quantification of Perfluorocarbons Resulting from High Voltage Anode Effects: *Lukas Dion*[1]; Simon Gaboury[2]; László Kiss[1]; Sándor Poncsák[1]; Charles-Luc Lagacé[3]; [1]Université du Québec à Chicoutimi; [2]Rio Tinto; [3]Aluminerie Alouette inc.

9:25 AM
New Algorithm for Calculating CF4 Emissions from High Voltage Anode Effects: *Jerry Marks*[1]; Pernelle Nunez[2]; [1]J Marks & Associates; [2]International Aluminium Institute

9:50 AM
Validation of Online Monitoring of PFC by QCL with FTIR Spectroscopy: *Thor Anders Aarhaug*[1]; Alain Ferber[1]; Heiko Gaertner[1]; Steinar Kolås[2]; Sven Olof Ryman[2]; Peter Geiser[3]; [1]SINTEF; [2]Hydro Aluminium; [3]Neo Monitors

10:15 AM Break

10:30 AM
PFC Emission Reduction in the Semiconductor Industry: *Michael Czerniak*[1]; [1]Edwards

10:55 AM
Methodologies to Measure Greenhouse Gas (GHG) Emissions from Industrial Processes and Determine the GHG Emission Factors: *Brian Mader*[1]; [1]3M Company Environmental Laboratory

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII – Phase Stability of Advanced Electronic Interconnection I

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Worcester Polytechnic Institute; Hiroshi Nishikawa, Osaka University; Shien Ping Feng, The University of Hong Kong; Yee-Wen Yen, National Taiwan University of Science & Technology; Song-Mao Liang, Clausthal University of Technology

Wednesday AM
March 14, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Shih-kang Lin, National Cheng Kung University; Hiroshi Nishikawa, Osaka University

8:30 AM Introductory Comments

8:35 AM Invited
Sinter Joining and Wiring without Pressure Assist for GaN Power Device Interconnection: *Katsuaki Suganuma*[1]; [1]Osaka University

9:00 AM Invited
Interfacial Reaction Studies in SLID Bonding Processes Using Ga and In: *Sinn-wen Chen*[1]; Tsu-ching Yang[1]; Ji-min Lin[1]; [1]National Tsing Hua University

9:25 AM
Solid-solution Cu-to-Cu Interconnection Fabricated with Sub-micron Ga-based Pastes: *Shih-kang Lin*[1]; Che-yu Yeh[1]; Hseng-ming Liao[1]; Mei-jun Wang[1]; [1]National Cheng Kung University

9:45 AM
Mechanical Properties of In-33.7Bi Alloy for Low Melting Temperature Solder: Sanghun Jin[1]; Min-Su Kim[1]; Shutetsu Kanayama[2]; *Hiroshi Nishikawa*[1]; [1]Osaka University; [2]Panasonic Corporation

10:10 AM Break

10:30 AM
Microstructure Evolution due to Isothermal Reactive Diffusion between Solid Co and Liquid Sn: *Minho O*[1]; Noritomo Odashima[1]; Masanori Kajihara[1]; [1]Tokyo Institute of Technology

10:50 AM
Ga-doping Effect upon Sn-0.7Cu/Cu Interfacial Reactions and the Isothermal Section of Sn-Cu-Ga Ternary System: *Chih-han Yang*[1]; Yu-chen Liu[1]; Yi-kai Kuo[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

11:10 AM
Interfacial Reactions in the Au/Sn/Ni/Cu Multilayer Couples: Yi-Zhen Guo[1]; *Chu-Hsuan Wang*[1]; Yee-Wen Yen[1]; Yu-Chun Li[1]; [1]National Taiwan University of Science and Technology

Phase Transformations and Microstructural Evolution – Phase Transformations in Titanium I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Wednesday AM
March 14, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chairs: Mark Aindow, University of Connecticut; Rajarshi Banerjee, North Texas University

8:30 AM
The Microstructural Evolution and Mechanical Behavior of Beta Titanium Alloys Based on Ti-13Cr(wt.%): Vahid Khademi[1]; JoAnn Ballor[1]; *Carl Boehlert*[1]; Masahiko Ikeda[2]; [1]Michigan State University; [2]Kansai University

8:50 AM
Nano-scale Instabilities in Beta Titanium Alloys: *Yufeng Zheng*[1]; Rajarshi Banerjee[2]; Dipankar Banerjee[3]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas; [3]Indian Institute of Science

9:10 AM
Control of ß Phase Stability and Deformation Induced Martensitic Transformation in a Near-a titanium Alloy: *Fan Meng*[1]; Gregory Olson[1]; [1]Northwestern University

9:30 AM
Interface Characteristics in Ti6246: *Abigail Ackerman*[1]; Ioannis Bantounas[1]; Vassili Vorontsov[1]; David Rugg[2]; David Dye[1]; [1]Imperial College, London; [2]Rolls Royce Plc

9:50 AM
Effects of Grain Orientation during Spark Plasma Sintering Beta Phase Ti-Al-Nb Alloys: *Stoney Middleton*[1]; [1]University of California, Irvine

10:10 AM Break

10:30 AM
Thermo-mechanical Simulation of Solid-state Welding in Ti-17: *Samuel Kuhr*[1]; Gopal Viswanathan[1]; Jonathan Orsborn[2]; Thomas Broderick[3]; Hamish Fraser[1]; [1]CAMM / The Ohio State University; [2]CEMAS / The Ohio State University ; [3]GE Aviation

10:50 AM
Recrystallization and Phase Transformations in Linear Friction Welded Ti-64 and Ti-17 Alloys: *Riddhiman Bhattacharya*[1]; John Allison[1]; [1]University of Michigan, Ann Arbor

11:10 AM
Phase-field Approach Coupled with Crystal Plasticity for Three-dimensional Recrystallization in Ti-Al Alloys and Comparison with Experiment: *Arunabha Roy*[1]; Sriram Ganesan[1]; Pinar Acar[1]; Susan Gentry[1]; Anna Trump[1]; John Allison[1]; Katsuyo Thornton[1]; Veera Sundararaghavan[1]; [1]University of Michigan at Ann Arbor

11:30 AM
The Effect of Deformation-induced Adiabatic Heating on Microstructure Evolution of Ti-6Al-4V Alloy during Open-die Screw Press Forging: *Mykola Kulakov*[1]; Tatyana Konkova[2]; Giribaskar Sivaswamy[1]; Salaheddin Rahimi[1]; [1]Advanced Forming Research Centre, University of Strathclyde; [2]Department of Design, Manufacture & Engineering Management, University of Strathclyde

Phase Transformations and Microstructural Evolution – Special Topics in Phase Transformations I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Wednesday AM
March 14, 2018
Room: 124B
Location: Phoenix Convention Center

Session Chairs: Gregory Thompson, University of Alabama; Paul Gibbs, LANL

8:30 AM
Nucleation and Growth of Crystalline Carbonates from Amorphous Precursors: *Derk Joester*[1]; [1]Northwestern University

8:50 AM
Morphological Development of Quasicrystals in Powder-processed Icosahedral-phase-strengthened Aluminum Alloys: *Hannah Leonard*[1]; Sarshad Rommel[1]; Thomas Watson[2]; Venkat Vedula[3]; Mark Aindow[1]; [1]University of Conneticut; [2]Pratt & Whitney; [3]UTC Aerospace Systems

9:10 AM
In Situ Observation of Shear-driven Amorphization Process in Silicon Crystals: *Scott Mao*[1]; Yang He[1]; Feifei Fan[2]; Chongmin Wang[3]; Ting Zhu[2]; [1]University of Pittsburgh; [2]Georgia Institute of Technology; [3]Pacific Northwest National Laboratory

9:30 AM
Evolution of Martensitic Transformation Behavior in Cu-Zr-Ni Shape Memory Alloy Thin Films Evaluated Using Combinatorial Nanocalorimetry: Yucong Miao[1]; Anjana Talapatra[2]; Ruben Villareal[2]; Raymundo Arroyave[2]; *Joost Vlassak*[1]; [1]Harvard University; [2]Texas A&M University

9:50 AM
Deformation-induced Phase Transformations during Biaxial or Strain Path Change: HR-DIC and Synchrotron X-ray Diffraction: Efthymios Polatidis[1]; Wei-Neng Hsu[1]; Miroslav Smid[1]; Steven Van Petegem[1]; *Helena Van Swygenhoven*[1]; [1]Paul Scherrer Institut

10:10 AM Break

10:30 AM
Phase Stability and Microstructure of the Zeta Phase in Transition Metal Carbides and Nitrides: *Christopher Weinberger*[1]; Xiao-Xiang Yu[2]; Hang Yu[3]; Bradford Schulz[2]; Gregory Thompson[2]; [1]Colorado State University; [2]University of Alabama; [3]Drexel University

10:50 AM
Role of Anisotropic Mobility and Grain Orientation on Microstructure Evolution during Sintering: *Sudipta Biswas*[1]; Daniel Schwen[2]; Vikas Tomar[1]; [1]Purdue University; [2]Idaho National Laboratory

11:10 AM
Irradiation-induced Phase Reversal and Grain Boundary Formation in U-alloys: *Yipeng Gao*[1]; Yongfeng Zhang[1]; [1]Idaho National Laboratory

11:30 AM
The X-phase of Precipitates: *Qingfeng Xing*[1]; [1]Ames Laboratory

11:50 AM
Tuning Phase Transformation in Compositionally Complex Alloys for Superior Mechanical Properties: *Zhiming Li*[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Porous Metal Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Wednesday AM
March 14, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Ming Yan, South University of Science and Technology of China; Jianzhong Wang, State Key Laboratory of Porous Metal Materials, NIN, China

8:30 AM
Effects of Geometry Anisotropy on Fluid-flow and Mechanical Properties of Titanium Foams: *Chedtha Puncreobutr*[1]; Sedthawatt Sucharitpwatskul[2]; Anchalee Manonukul[2]; [1]Chulalongkorn University; [2]National Metal and Materials Technology Center (MTEC), National Science and Technology Development Agency (NSTDA)

8:55 AM
Fabrication of Porous Copper Structure by Using Powder Injection Molding and Space Holder Technology: *Hanlyun Cho*[1]; Seong Jin Park[1]; [1]Pohang University of Science and Technology

9:20 AM Keynote
Research Progress in High-performance Metal Powder Porous Materials: *H. P. Tang*[1]; Q.B. Wang[1]; J. Wang[1]; [1]Northwest Institute for Nonferrous Metal Research

10:00 AM Break

10:20 AM Invited
Effect of Gradient Structure on the Sound Absorption Coefficient of Porous Metal Fiber Materials: *Jianzhong Wang*[1]; Qingbo Ao[1]; Jun Ma[1]; Huiping Tang[1]; [1]Northwest Institute for Nonferrous Metal Research

10:50 AM
Processing and Characterization of Porous High Entropy Alloy Structures via Freeze-casting: *Mora Issa*[1]; Silvia Briseño Murguia[1]; Yoav Snir[2]; Marcus Young[1]; [1]University of North Texas, Department of Material Science and Engineering; [2]Department of Materials Science, Nuclear Research Center Negev (NRCN), Israel

11:10 AM
Preparation of Titanium Foams with Uniform and Fine Pore Characteristics through Powder Metallurgy Route Using Urea Particles as Space Holder: Guibao Qiu[1]; Tengfei Lu[1]; *Jian Wan*[1]; Chenguang Bai[1]; [1]Chongqing University

11:30 AM
A Novel Approach to Making Metal@titanium Core-shell Powder by Fluidized Bed Chemical Vapor Deposition: *Yafeng Yang*[1]; [1]Institute of Processing Engineering, Chinese Academy of Science

Stored Renewable Energy in Coal – Stored Renewable Energy in Coal

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Energy Committee
Program Organizers: Neale Neelameggham, Ind LLC; Sarma Pisupati, Penn State University; John Howarter, Purdue University; Huimin Lu, Beihang University

Wednesday AM
March 14, 2018

Room: 224B
Location: Phoenix Convention Center

Session Chairs: John Howarter, Purdue University; Sarma Pisupati, Pennsylvania State University

8:30 AM
Aluminum-silicon Alloys Prepared from High-aluminum Fly Ash to Extract Magnesium from Serpentine: *Huimin Lu*[1]; Wu Guangzhi[2]; Neale Ramaswami Neelameggham[3]; [1]Beihang University; [2]Inner Mongolia Xintai Construction and Installation (Group) Co., Ltd; [3]IND LLC

8:50 AM
Organic Agriculture Using Biomaterial Coal: *Neale Neelameggham*[1]; Brian Davis[2]; [1]Ind LLC; [2]Brian Davis Associates Consulting

9:10 AM
A Review on the State of Coal Use as Soil Amendment in East Africa and China: *Abebe Dakka*[1]; Neale, R. Neelameggham[2]; Lu Huimin[3]; Girma Balcha[4]; [1]Kotobe Metropolitan University (KMU) ; [2] Ind LLC, USA; [3] Beihang University of Aeronautics and Astronautics; [4]Environment, Climate Change and Coffee Forest Forum

9:30 AM
Extraction and Production of Rare Earth Elements from Coal Seam Bedrock and Caprock: *John Gordon*[1]; [1]JG Novel Solutions

9:50 AM Break

10:10 AM
Extraction and Thermal Dissolution of Low-rank Coal by N-methyl-2-pyrrolidinone: *Jun Zhao*[1]; Haibin Zuo[2]; Siyang Long[1]; Jingsong Wang[1]; Qingguo Xue[1]; [1]University of Science and Technology Beijing; [2]University of science and technology Beijing

10:30 AM
Enhancement of Coal Nanostructure and Investigation of its Novel Properties: *Manoj B*[1]; [1]Christ University

Thermal and Mechanical Stability of Nanocrystalline Materials – Thermal Stability of Nanocrystalline Metals II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Wednesday AM
March 14, 2018

Room: 128B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Grain Boundary Phases and their Thermal Stability: *Timofey Frolov*[1]; [1]LLNL

9:00 AM
Mesoscale Modeling of Grain Boundary Segregation: The Role of Anisotropy in Segregation: *Fadi Abdeljawad*[1]; Stephen Foiles[1]; Blas Uberuaga[2]; Enrique Martinez[2]; [1]Sandia National Laboratories; [2]Los Alamos National Laboratory

9:20 AM
The Role of Entropy on the Stability of Nanocrystalline Alloys: *Arvind Kalidindi*[1]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology

9:40 AM Invited
Stabilization of Nanocrystalline Alloys through the Incorporation of Grain Boundary Complexions: *Timothy Rupert*[1]; [1]University of California, Irvine

10:10 AM Break

10:30 AM Invited
Toward Understanding the Factors that Govern the Temperature Dependence of Mobility in FCC Metals: *Elizabeth Holm*[1]; Ian Chesser[1]; Yutong Bi[1]; Jonathan Humberson[1]; [1]Carnegie Mellon University

11:00 AM
The Effect of Free Volume and Interfacial Junctions on the Stability of Nanocrystalline Structures: *Günter Gottstein*[1]; Lasar Shvindlerman[1]; [1]RWTH Aachen University

11:20 AM
Polycrystal Plasticity with Grain Noundary Evolution: *Nikhil Chandra Admal*[1]; Jaime Marian[1]; [1]University of California, Los Angeles

Thermo-mechanical Response of Materials with Special Emphasis on In-situ Techniques – In-Situ TEM/SEM Nanomechanics

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Bruker Nano Surfaces ; Jeff Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Dongchan Jang, Korea Advanced Institute of Science and Technology; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Wednesday AM
March 14, 2018

Room: 101A
Location: Phoenix Convention Center

Session Chairs: Dongchan Jang, KAIST, S. Korea; Janelle Wharry, Purdue University

8:30 AM Invited
In Situ TEM Imaging and Quantitative Orientation Mapping of the Structural Evolution in Nanocrystalline Metals during Mechanical Deformation: *Christian Kuebel*[1]; Ankush Kashiwar[1]; Horst Hahn[1]; [1]KIT

9:00 AM Invited
Mechanics of Irradiated Alloys Studied through In Situ TEM Testing: *Janelle Wharry*[1]; Kayla Yano[1]; Priyam Patki[1]; Yaqiao Wu[2]; [1]Purdue University; [2]Boise State University, Center for Advanced Energy Studies

9:30 AM
Investigating Irradiation Creep by *In Situ* TEM: *Daniel Bufford*[1]; Baoming Wang[2]; Khalid Hattar[1]; Aman Haque[2]; [1]Sandia National Laboratories; [2]The Pennsylvania State University

9:50 AM
Studying Tensile Properties of Silicon via In-situ Microcompression Testing of Push-to-pull Pillar: *Ming Chen*[1]; Ralph Spolenak[1]; Jeffrey Wheeler[1]; [1]ETH Zurich

10:10 AM Break

10:30 AM Invited
High-resolution Digital Image Correlation: Advances in Quantifying the Strain Distribution at the Submicron–scale in Hexagonal Materials: *Alberto Orozco-Caballero*[1]; João Quinta da Fonseca[1]; [1]The University of Manchester

11:00 AM Invited
Deformation of Monatomic Metallic Glasses Processed through In-situ Ultrafast Liquid Quenching: *Scott Mao*[1]; [1]University of Pittsburgh

11:30 AM
In-situ ECCI Characterization of Microstructural Defects and their Effect on Superconducting Properties of SRF Cavity Niobium: *Mingmin Wang*[1]; Shreyas Balachandran[2]; Santosh Chetri[2]; Anatolii Polyanskii[2]; Peter Lee[2]; Christopher Compton[3]; Thomas Bieler[1]; [1]Michigan State University; [2]National High Magnetic Field Laboratory; [3]Facility for Rare Isotope Beams

11:50 AM
In Situ Observation on Temperature Dependence of Martensitic Transformation and Plastic Deformation in Superelastic NiTi Alloy: *Yao Xiao*[1]; Pan Zeng[1]; Liping Lei[1]; [1]Tsinghua University

Ultrafine-grained Materials X – Grain Boundary Diffusion and Migration: Joint Session with Non-Equilibrium Features on Grain Boundaries

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Wednesday AM
March 14, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chairs: Liang Qi, University of Michigan; Jason Trelewicz, Stony Brook University

8:30 AM Invited
Activation Volume Tensors for Atomistic Events at Grain Boundaries: Kathleen Alexander[1]; Sabrina Ball[1]; *Christopher Schuh*[1]; [1]MIT

9:00 AM Invited
Comparing Grain Growth Mechanisms in Nanocrystalline FCC Metals due to Ion Irradiation, Mechanical Loading, Conductive Heating, and Laser Heating: Daniel Bufford[1]; Abdeljawad Fadi[1]; Christopher Barr[1]; Patrick Price[1]; *Khalid Hattar*[1]; [1]Sandia National Laboratories

9:30 AM
Thermally Induced Grain Coarsening in Alpha Iron: *Yu-Feng Shen*[1]; S. Maddali[2]; David Menasche[3]; Aditi Bhattacharya[1]; G. Rohrer[1]; R. Suter[1]; [1]Carnegie Mellon University; [2]Argonne National Laboratory; [3]Hamilton, LLC

9:50 AM
Increased Defect Densities in SPD-processed Hydrogenated Palladium and their Impact to the Macroscopic Strength: *Wolfgang Ress*[1]; Erhard Schafler[1]; Wolfgang Sprengel[2]; Yuzeng Chen[3]; Reiner Kirchheim[4]; Michael Zehetbauer[1]; Daria Setman[1]; [1]University of Vienna; [2]Graz University of Technology; [3]Northwestern Polytechnical University; [4]Georg August Universitaet Goettingen

10:10 AM Break

10:30 AM Invited
Grain Boundary Statistical Mechanics: A Disconnection Dynamics Approach: *David Srolovitz*[1]; Jian Han[1]; Spencer Thomas[1]; Vaclav Vitek[1]; [1]University of Pennsylvania

11:00 AM Invited
Gaining New Insights into Structure/Property Relations by Mining and Analysis of Published Images: Ian McCue[1]; Joshua Stuckner[2]; Mitsu Murayama[2]; *Michael Demkowicz*[1]; [1]Texas A&M University; [2]Virginia Tech

11:30 AM
Grain Coarsening in Two-dimensional Phase-field Models with an Orientation Field: Bálint Korbuly[1]; *Tamás Pusztai*[1]; Hervé Henry[2]; Mathis Plapp[2]; Markus Apel[3]; László Gránásy[1]; [1]Wigner Research Centre for Physics; [2]École Polytechnique, CNRS, Université Paris-Saclay; [3]Access e.V.

11:50 AM
A New Mathematical Framework for Simulation of Grain Growth: *Mary Comer*[1]; Shruthi Kubatur[2]; [1]Purdue University; [2]Nikon Research Corporation of America

Ultrafine-grained Materials X – Rolling Studies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Irene Beyerlein, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Wednesday AM
March 14, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chairs: Caizhi Zhou, Missouri University of Science and Technology; Chong Soo Lee, POSTECH

8:30 AM Invited
Ultra-fine Laminated Mg/Nb Composites Produced via Accumulative Roll Bonding: *Marko Knezevic*[1]; Daniel Savage[1]; Nathan Mara[2]; Sven Vogel[2]; Rodney McCabe[2]; Irene Beyerlein[3]; [1]University of New Hampshire; [2]Los Alamos National Laboratory; [3]University of California, Santa Barbara

9:00 AM Invited
Tensile Characteristics of Ultrafine Grained Fe-Cr-Mn Stainless Steel Fabricated by Reverse Transformation: Jeom-Yong Choi[1]; Ik-Soo Shin[2]; *Kyung-Tae Park*[2]; [1]POSCO; [2]Hanbat National University

9:30 AM
Mechanical Properties of Mg-3%Gd with a Heterogeneous Lamella Structure: *Guilin Wu*[1]; Xuan Luo[1]; Zongqiang Feng[1]; Tianlin Huang[1]; Xiaoxu Huang[1]; [1]Chongqing University

9:50 AM
Atomistic Simulation of Driven Steady States in Rolled Cu-Nb Nanocomposites: *Ian Chesser*[1]; Elizabeth Holm[1]; Michael Demkowicz[2]; [1]CMU; [2]Texas A&M

10:10 AM Break

10:30 AM
Mechanical Behavior of 304L Austenitic Stainless Steel Processed by Cryogenic Rolling: Rahul Singh[1]; Sunkulp Goel[2]; *Abhishek Kumar*[3]; [1]MNNIT Allahabad; [2]Herbert Gleiter Institute of Nanoscience, Nanjing University of Science and Technology; [3]Motilal Nehru National Institute of Technology

10:50 AM
Effect of Cu on Structure and Mechanical Properties in an Al-0.3%Cu Alloy Cold Rolled to 98%: *Tianlin Huang*[1]; Linfei Shuai[1]; Guilin Wu[1]; Xiaoxu Huang[1]; [1]Chongqing University

11:10 AM
Investigation of Fatigue Micro-mechanisms in Ultrafine Grained CoCrxNi Medium Entropy Alloy: *Shivakant Shukla*[1]; Mageshwari Komarasamy[1]; Kaimiao Liu[1]; Rajiv Mishra[1]; [1]University of North Texas

11:30 AM
Mechanical Properties of Ultrafine Grained 2519 Aluminum Alloy: Gbadebo Owolabi[1]; *Temitayo Daramola*[1]; Nadir Yilmaz[1]; Horace Whitworth[1]; Ahmet Zeytinci[2]; [1]Howard University; [2]University of District Columbia

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – Joint with Bio-Nano Interface Engineering and Applications Symposium

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

Wednesday PM
March 14, 2018
Room: 101B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Nanoparticles-grafted Functionalized Graphene Coated with Nanostructured Polyaniline Layered Nanocomposites for High-performance Biosensors: *Sanju Gupta*[1]; Romney Meek[1]; [1]Western Kentucky University

2:20 PM
Transparent Titanium Dioxide Nanotubes: Processing, Characterization, and Application in Establishing Cellular Response Mechanisms: *Jevin Meyerink*[1]; Divya Kota[1]; Scott Wood[1]; Grant Crawford[1]; [1]South Dakota School of MInes & Technology

2:40 PM
Self-assembled Formate Dehydrogenase-metal Nanoparticle Hybrids Improved Enzyme Stability: *Rachel Lietz*[1]; Sarah VanOosten[1]; Erkan Mozioglu[1]; Brandon Tomas[1]; Kasra Alizadeh[1]; Mark Richter[1]; Candan Tamerler[1]; [1]University of Kansas

3:00 PM
Development of FRET Biosensor Based on Aptamer/Functionalized Graphene for Ultrasensitive Detection of Bisphenol A and Discrimination from Analogues: *Sanju Gupta*[1]; Rebecca Wood[1]; [1]Western Kentucky University

3:20 PM Break

3:40 PM
Effect of pH on the Green Synthesis of MPA –capped CdTe/CdSe Quantum Dots and Cell Viability of Fibroblast Histiocytoma Cells: Vuyelwa Ncapayi[1]; Sandile Songca[2]; Tetsuya Kodama[3]; *Oluwafemi Oluwatobi*[1]; [1]University of Johannesburg; [2]University of Zululand; [3]Tohoku University Sendai

4:00 PM
Large Scale Synthesis of Highly Fluorescent CuInS2/ZnS Quantum Dots - Porphyrin Conjugates for Photodynamic Therapy: *Ncediwe Tsolekile*[1]; Mangaka Matoetoe[2]; Oluwafemi Oluwatobi[1]; Sandile Songca[3]; [1]University of Johannesburg; [2]Cape-Peninsula University of Technology; [3]University of Zululand

9th International Symposium on High Temperature Metallurgical Processing – Treatment and Recycling of Metallurgical Slag/Solid Wastes

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Wednesday PM
March 14, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Rafael Padilla, University of Concepcion; Guanghui Li, Central South University

2:00 PM Introductory Comments

2:05 PM
Production of Titanium from Waste Slag: *Samuel Martin Treceno*[1]; Thomas Hughes[1]; Catherine Bishop[1]; Ian Brown[2]; Yaodong Jia[2]; Aaron Marshall[1]; Matthew Watson[1]; [1]University of Canterbury; [2]Callaghan Innovation

2:25 PM
Recovery of Fe-Cu Alloys from Copper Slags: *Mario Sanchez*[1]; Fernando Parada[2]; Jose Palacios[3]; [1]Universidad Andrés Bello; [2]Universidad de Concepcion; [3]Universidad Playa Ancha

2:45 PM
Physiochemical Properties of High Alumina Blast Furnace Slag: *Zhiming Yan*[1]; Zhengde Pang[1]; Xuewei Lv[1]; Guibao Qiu[1]; Chenguang Bai[1]; [1]Chongqing University

3:05 PM
Effect of Cooling Rate on the Acidolysis of Titania Slag: *Yu Zhang*[1]; Zhixiong You[1]; Jinsheng Wang[1]; Xuewei Lv[1]; [1]Chongqing University

3:25 PM Break

3:45 PM
Structural Analysis of Ge-containing Ferrous Calcium Silicate Magnesia Slag for Applications of Black Copper Smelting: Mohammad Al Hossaini Shuva[1]; *M Akbar Rhamdhani*[1]; Geoffrey A Brooks[1]; Syed H Masood[1]; Markus A Reuter[2]; [1]Swinburne University of Technology; [2]Helmholtz Institute Freiberg for Resource Technology

4:05 PM
Selective Recovery of P and Mn from Steelmaking Slag by Carbothermic Reduction: Shin-ya Kitamura[1]; *Dong Jun Shin*[1]; Xu Gao[1]; Shigeru Ueda[1]; [1]Tohoku University

4:25 PM
The Use of Zirconia-based Solid Electrolytes Oxygen Sensor in High Titanium Slag: *Kai Hu*[1]; Run Zhang[1]; Xuewei Lv[1]; [1]Chongqing University

4:45 PM
In-situ Observation of the Precipitation Behavior of Dy2O3 Containing Slag System: *Fei Wang*[1]; Bin Yang[1]; Bart Blanpain[2]; Muxing Guo[2]; [1]Kunming University of Science and Technology; [2]KU Leuven

5:05 PM
Recovery of Zn and Mn from Spent Alkaline Batteries: *Guozhu Ye*[1]; Marcel Magnusson[1]; Pekka Väänänen[2]; Yang Tian[3]; [1]Swerea MEFOS; [2]Isologistics; [3]Kuming University of Science and Technology

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Facility Overviews and Materials Development

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Wednesday PM Room: 102A
March 14, 2018 Location: Phoenix Convention Center

Session Chairs: Kevin Field, Oak Ridge National Laboratory; Jian Gan, Idaho National Laboratory

2:00 PM
Accelerated Advanced Nuclear Materials Development at LAMDA through the NSUF Mechanism: *Kory Linton*[1]; Kevin Field[1]; [1]Oak Ridge National Laboratory

2:25 PM
Deconvolution of Complex Environmental Effects Active in Nuclear Reactor Materials Through In-situ Ion Irradiation: Caitlin Taylor[1]; *Christopher Barr*[1]; Samuel Briggs[1]; Brittany Muntifering[1]; Khalid Hattar[1]; [1]Sandia National Laboratories

2:50 PM
TEM with In Situ Ion Irradiation of Nuclear Materials at the IVEM-tandem: *Meimei Li*[1]; Mark Kirk[1]; Jing Hu[1]; Peter Baldo[1]; Ed Ryan[1]; [1]Argonne National Lab

3:15 PM
Modeling and Validation on Role of Stoichiometry on Degradation in Ni-Cr Alloys for Nuclear Applications: *Fei Teng*[1]; Kevin Field[2]; Benjamin Spencer[3]; Octav Ciuca[4]; Grace Burke[4]; Emmanuelle Marquis[5]; Li-Jen Yu[5]; Leland Barnard[6]; Julie Tucker[1]; [1]Oregon State University; [2]Oak Ridge National Laboratory; [3]Idaho National Labortory; [4]University of Manchester; [5]University of Michigan - Ann Arbor; [6]Elysium Industries

3:40 PM Break

4:00 PM Invited
Simulation and Experimental Investigation on the Applications of Nonlinear Ultrasonic Techniques in Non-destructive Probes of Nuclear Materials: *Shenyang Hu*[1]; Wahyu Setyawan[1]; Yulan Li[1]; Chuck Henager[1]; [1]Pacific Northwest National Laboratory

4:20 PM
Effect of Alloying Elements on Defect Evolution in Ni-20X Concentrated Binary Alloys: *Taini Yang*[1]; Chenyang Lu[1]; Gihan Velisa[2]; Ke Jin[2]; Hongbin Bei[2]; Yanwen Zhang[2]; Lumin Wang[1]; [1]University of Michigan; [2]Oak Ridge National Lab

4:40 PM
Mechanical Properties, Damage and Morphology Details of Nanocrystalline and Ultrafine Tungsten Materials Exposed to Low Energy Helium and Heavy Ion Irradiation: *Osman El-Atwani*[1]; Erika Esquivel[1]; Mert Efe[2]; Jordan Weaver[1]; Jason Trelewicz[3]; Nathan Mara[1]; Stuart Maloy[1]; [1]Los Alamos National laboratory; [2]Middle East Technical University; [3]Stony Brook University

Accident Tolerant Fuels for Light Water Reactor – Cladding Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Wednesday PM Room: 104A
March 14, 2018 Location: Phoenix Convention Center

Session Chairs: Lingfeng He, Idaho National Laboratory; Meimei Li, Argonne National Laboratory

2:00 PM Invited
In Situ Ion Irradiation of Multilayer (TiN, TiAlN) Ceramic Coating for Accident Tolerant Zr-alloy Fuel Claddings: Jing Hu[1]; *Meimei Li*[1]; Douglas Wolfe[2]; Mark Kirk[1]; Arthur Motta[2]; [1]Argonne National Laboratory; [2]The Pennsylvania State University

2:30 PM
Mitigation of Oxidation of Zircaloy Cladding in High Temperature Steam via Cr and CrAl Coatings: *Weicheng Zhong*[1]; Peter Mouche[1]; Brent Heuser[1]; [1]University of Illinois

2:50 PM
Steam Oxidation and Heavy Ion Irradiation Behaviors of Ti2AlC Ceramics: *Bai Cui*[1]; Fei Wang[1]; Ziyad Smoqi[1]; Qing Su[1]; Michael Nastasi[1]; [1]University of Nebraska–Lincoln

3:10 PM
Crystallographic and Chemical Instabilities of MAX Phases during Proton Irradiation: Joseph Ward[1]; Michael Preuss[1]; Philipp Frankel[1]; Phillip Withers[1]; Simon Middleburgh[2]; Michel Barsoum[3]; *Maxwell Rigby*[1]; [1]University of Manchester; [2]Westinghouse; [3]Drexel University

3:30 PM Break

3:50 PM
New Zr-based MAX Phases as Accident Tolerant Fuel Cladding: *David Bowden*[1]; Tamas Ungar[2]; Shafqat Shah[3]; Michael Preuss[1]; Philipp Frankel[1]; [1]University of Manchester; [2]Eötvös University Budapest; [3]University of Cambridge

4:10 PM
Corrosion Products of FeCrAl Alloys in Simulated LWR Environments during In-situ Proton Corrosion-irradiation Experiment: *Peng Wang*[1]; Gary Was[1]; [1]University of Michigan

4:30 PM
Oxidation Behavior of FeCrAl Alloys at T= 300-600C for 100-1000 Hours: *Nan Li*[1]; Scott Parker[1]; Elizabeth Wood[1]; Andy Nelson[1]; [1]Los Alamos National Laboratory

4:50 PM
Modeling Radiation Defect Cluster Accumulation in Neutron Irradiated FeCrAl: *Dwaipayan Dasgupta*[1]; Brian Wirth[1]; [1]University of Tennessee

5:10 PM
Simulation of Iron-chrome-aluminum Alloy Cladding under LOCA Conditions Using the BISON Fuel Performance Code: *R. Sweet*[1]; Kurt Terrani[2]; Brian Wirth[1]; [1]University of Tennessee - Knoxville; [2]Oak Ridge National Laboratory

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Emerging Materials and Processes

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Wednesday PM
March 14, 2018

Room: 230
Location: Phoenix Convention Center

Session Chairs: Mark Stoudt, National Institute of Standards and Technology; Thien Phan, National Institute of Standards and Technology

2:00 PM Invited
Additive Manufacturing of Bulk Metallic Glasses (aka Amorphous Metals): A Novel Material Coming Full Circle: *Douglas Hofmann*[1]; Scott Roberts[1]; Andre Pate[1]; [1]NASA JPL/Caltech

2:30 PM
Development of Process-structure-property Relationships for Optimization of Alloy 17-4PH for SLM AM Process: *Abhinav Saboo*[1]; David Snyder; Greg Olson; [1]QuesTek Innovations LLC

2:50 PM
Processing of Fe-Co Soft Ferromagnetic Alloys Using Laser Engineered Net Shaping (LENS): *Andrew Kustas*[1]; Kyle Johnson[1]; Shaun Whetten[1]; Dave Keicher[1]; Mark Rodriguez[1]; Daryl Dagel[1]; Joseph Michael[1]; Allen Roach[1]; Nicolas Argibay[1]; Don Susan[1]; [1]Sandia National Laboratories

3:10 PM
Processing-microstructure-property Evolution in Laser Deposited Hiperco-50: Potential for Spatial Control of Magnetic Behavior: *Robert Dillon*[1]; Samad Firdosy[1]; Adam Herrmann[2]; Ryan Conversano[1]; Bryan McEnerney[1]; John Paul Borgonia[1]; Andrew Shapiro-Scharlotta[1]; [1]Jet Propulsion Laboratory; [2]University of Cincinnati

3:30 PM Break

3:50 PM
Laser Modulation Effects on the Morphology and Microstructure of Additively Manufactured Metals: *Tien Roehling*[1]; Sheldon Wu[2]; Saad Khairallah[2]; John Roehling[2]; Gabe Guss[2]; Michael Crumb[2]; Manyalibo Matthews[2]; [1]University of the Pacific; [2]Lawrence Livermore National Laboratory

4:10 PM
A Study on the Production of Oriented High-silicon Steel by Powder Bed Additive Manufacturing: *Marco Simonelli*[1]; Jannis Lemke[2]; Michele Garibaldi[1]; Ian Ashcroft[1]; Chris Tuck[1]; Richard Hague[1]; [1]University of Nottingham; [2]SAES Getters

4:30 PM
Additive Manufacturing of Tantalum: Differing Microstructure with Differing Build Parameters: *Roberta Beal*[1]; George Gray[1]; Bineh Ndefru[1]; Veronica Livescu[1]; Cameron Knapp[1]; John Carpenter[1]; [1]Los Alamos National Laboratory

4:50 PM
Direct Metal Writing: Controlling the Rheology through Microstructure: *Wen Chen*[1]; Luke Thornley[1]; Diran Apelian[1]; Andrew Pascall[1]; Eric Duoss[1]; Joshua Kuntz[1]; Christopher Spadaccini[1]; [1]Lawrence Livermore National Laboratory

5:10 PM
Additive Manufacturing of 3D Nano-architected Metals: *Andrey Vyatskikh*[1]; Stéphane Delalande[2]; Akira Kudo[1]; Xuan Zhang[3]; Julia Greer[1]; [1]California Institute of Technology; [2]PSA Group; [3]Tsinghua University

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Modeling of Additive Manufacturing Processes

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Wednesday PM
March 14, 2018

Room: 232A
Location: Phoenix Convention Center

Session Chairs: Behrang Poorganji, GE Additive; Trevor Keller, National Institute of Standards and Technology

2:00 PM Invited
Modeling and Simulation of Phase and Microstructure Formation in Ni and Ti Alloys during AM Using Finite Elements, Computational Thermodynamics and Phase Field Simulation: *Christian Leinenbach*[1]; Toni Ivas[1]; [1]Empa-Swiss Federal Laboratories for Materials Science and Technology

2:30 PM
Process Modeling, Microstructure Measurements, and Residual Stresses in Additively Manufactured Austenitic Stainless Steels: *Josh Sugar*[1]; Michael Stender[1]; Lauren Beghini[1]; Samuel Subia[1]; David Keicher[1]; Chris D'Elia[2]; Mike Hill[2]; Chris San Marchi[1]; [1]Sandia National Laboratories; [2]UC Davis

2:50 PM
Multi-physics Modeling of Wire Arc Additive Manufacturing (WAAM) Process: *Ranadip Acharya*[1]; Mike Klecka[1]; Alexander Staroselsky[1]; Vijay Jagdale[1]; John Sharon[1]; Tahany El-Wardany[1]; Joseph Mantese[1]; Sergei Burlatsky[1]; William Tredway[1]; [1]United Technologies Research Center

3:10 PM
Investigation of Grain Structure Development in Laser-based Manufacturing via Modeling and Experiment: *Wenda Tan*[1]; [1]University of Utah

3:30 PM Break

3:50 PM
Quantifying the Impact of Microstructure Variability and Local Micro-textures in Mechanical Performance of Additively Manufactured Metals: *Judith Brown*[1]; Theron Rodgers[1]; Joseph Bishop[1]; Kyle Johnson[1]; [1]Sandia National Laboratories

4:10 PM
Microstructure Evolution during Rapid Solidification: Developing Predictive Modeling Capabilities for Additive Manufacturing: *Joseph McKeown*[1]; Amy Clarke[2]; Jean-Luc Fattebert[1]; Aurelien Perron[1]; John Roehling[1]; Adam Stokes[2]; Patrice Turchi[1]; [1]Lawrence Livermore National Laboratory; [2]Colorado School of Mines

4:30 PM
High-fidelity Mesoscale Thermal/Fluid Modeling of the LENS Additive Manufacturing Process: *Bradley Trembacki*[1]; David Noble[1]; Daryl Dagel[1]; Shaun Whetten[1]; Mario Martinez[1]; [1]Sandia National Laboratories

4:50 PM
Multi Scale Solid Mechanics Models of Additive Manufacturing: *Kurtis Ford*[1]; Bradley Trembacki[1]; Kyle Johnson[1]; David Noble[1]; Mario Martinez[1]; Joe Bishop[1]; [1]Sandia

5:10 PM
Multi-scale Modeling of Selective Laser Melting of Inconel 718: *Kubra Karayagiz*[1]; Thien Duong; Vahid Attari[1]; Luke Johnson[1]; Brian Franco[1]; Gustavo Tapia[1]; Mohamad Mahmoudi[1]; Alaa Elwany[1]; Ji Ma[1]; Ibrahim Karaman[1]; Raymundo Arroyave[1]; [1]Texas A&M University

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Metals in Additive Manufacturing II

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Wednesday PM
March 14, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chairs: Roland Loge, EPFL; Suveen Mathaudhu, University of California, Riverside

2:00 PM Invited
Controlling Bulk Residual Stresses in SLM by 3D Laser Shock Peening: *Roland Loge*[1]; Nikola Kalentics[1]; Patrice Peyre[2]; Eric Boillat[1]; [1]EPFL; [2]CNRS-ENSAM Paristech

2:30 PM
Effect of Build Process Environment on Selective Laser Melted Inconel 718: *Glenn Bean*[1]; David Witkin[1]; Tait McLouth[1]; Dhruv Patel[1]; Woonsup Park[1]; Rafael Zaldivar[1]; [1]The Aerospace Corporation

2:50 PM
Issues of Spatter during Laser Powder Bed Fusion of Nickel-base Superalloys: *Alexander Gasper*[1]; Adam Clare[1]; Ian Ashcroft[1]; [1]University of Nottingham

3:10 PM
The Impact of Powder Feedstock Variability on Microstructure and Defects in Selective Laser Melted Superalloy 718: *Timothy Smith*[1]; Chantal Sudbrack[1]; [1]NASA Glenn Research Center

3:30 PM Break

3:50 PM Invited
High-throughput Testing and Characterization of Novel Additive Manufacturing Processes and Properties: Kendrick Mensink[1]; Guillermo Aguilar[1]; *Suveen Mathaudhu*[1]; [1]University of California, Riverside

4:20 PM Invited
Healing Defects within Powder Bed Fabrication: *Adam Clare*[1]; Richard Leach[1]; Ian Ashcroft[1]; Matthias Hirsch[1]; Rikesh Patel[1]; Steve Sharples[1]; [1]University of Nottingham

4:50 PM
The Role of Different Hot Isostatic Pressing and Post Heat Treatment Routes for SLM -built Alloy 718: *Magnus Ahlfors*[1]; [1]Quintus Technologies

5:10 PM
Influence of Processing in Selective Laser Melting on Cracking and Microstructure of Nickel Alloy Inconel 738LC: *Marcus Chun Wai Lam*[1]; Paul Rometsch[1]; Xinhua Wu[1]; [1]Monash University

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Plasticity Modeling / Experiments

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Wednesday PM
March 14, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
A New Numerical Integration Scheme for Fast Fourier Transform-based Crystal Plasticity Models: *Kaan Inal*[1]; Jaspreet Nagra[1]; Abhijit Brahme[1]; Ricardo[2]; [1]University of Waterloo; [2]Los Alamos National Laboratory

2:30 PM
Using Crystal Plasticity to Predict Local Deformation during Reverse Loading of an Aerospace Alloy: *Michael Atkinson*[1]; João Quinta da Fonseca[1]; [1]University of Manchester

2:50 PM
Simulations of Bi-crystal Nanoindentation and Polycrystalline Uniaxial Tensile Deformation with a Grain Boundary-aware Crystal Plasticity Model: *Yang Su*[1]; Philip Eisenlohr[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University

3:10 PM
Representative Volume Generation from 2D EBSD Maps and their Implementation in FFT Based Crystal Plasticity Models: *Simon Wyatt*[1]; T Ben Britton[1]; [1]Department of Materials, Imperial College

3:30 PM Break

3:50 PM
Tensile Behavior of Individual Grains in Austenitic Steel Studied by 3DXRD and Crystal Plasticity Simulations: *Nicolai Juul*[1]; Jette Oddershede[2]; Grethe Winther[1]; [1]Technical University of Denmark; [2]Xnovo Technology ApS

4:10 PM
Experimental and Crystal Plasticity Based Characterization of Heterogeneous Deformation in Hexagonal Titanium: *Harsha Phukan*[1]; Thomas Bieler[1]; Chen Zhang[1]; Ruqing Xu[2]; Philip Eisenlohr[1]; Martin Crimp[1]; Carl Boehlert[1]; [1]Michigan State University; [2]Argonne National Laboratory

4:30 PM
In-situ EBSD Analysis and Crystal Plasticity FE Simulations in a CP Titanium: *Joo-Hee Kang*[1]; Ji Hoon Kim[2]; Chan Hee Park[1]; Jong Woo Won[1]; Chang-Seok Oh[1]; [1]Korea Institute of Materials Science; [2]Pusan National University

4:50 PM
Comparison of Strain Maps from Digital Image Correlation and Modeling of Polycrystalline Metals: *Nathan Bieberdorf*[1]; Antonia Antoniou[1]; Laurent Capolungo[2]; Vincent Taupin[3]; Aurélien Villani[4]; Vadim Roytershteyn[5]; [1]Georiga Institute of Technology; [2]Los Alamos National Laboratory; [3]University of Lorraine; [4]Mines St. Etienne; [5]Space Science Institute

5:10 PM
A Study of Anisotropy in Tensile and Cyclic Deformation Behavior of Hexagonal Close Packed Titanium Using Electron Backscatter Diffraction and Elastoplastic Self-consistent Simulations: *Subhasis Sinha*[1]; Nilesh Gurao[1]; [1]Indian Institute of Technology Kanpur

Advanced High-strength Steels – Phase Transformation and Thermo-mechanical Processing

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Wednesday PM
March 14, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Matthias Militzer, The University of British Columbia; Feng Liu, Northwestern Polytechnical University

2:00 PM Invited
Microstructure and Mechanical Properties of the Coarse Grained Intercritically Annealed Heat Affected Zone in High Strength Pipeline Steels: Maddie Madhumanti[1]; Thomas Garcin[1]; Laurie Collins[2]; Matthias Militzer[1]; *Warren Poole*[1]; [1]The University of British Columbia; [2]Evraz NA

2:25 PM
Dynamic Transformation of Austenite during Plate Rolling of a High Nb X70 Pipeline Steel: *Samuel Rodrigues*[1]; Clodualdo Aranas Jr.[1]; Fulvio Siciliano[2]; John Jonas[1]; [1]McGill University; [2]Dynamic Systems Inc.

2:45 PM
A Computational Approach to Designing Martensitic Microstructures in Carbon Steels: *Shengyen Li*[1]; Steven Mates[1]; Mark Stoudt[1]; Carelyn Campbell[1]; [1]National Institute of Standards and Technology

3:05 PM
Microstructure of Flash Processed 10XX Steel: *Cullen Pearson*[1]; S Babu[1]; Ben Shassere[2]; Gary Cola[3]; [1]UTK; [2]Oak Ridge National Laboratory ; [3]SPF Works LLC

3:25 PM
Phase Transition Enhanced Ductility in a Superstrong Nanostructured Ferrous Alloy: *Weitong Lin*[1]; Linke Huang[1]; Feng Liu[1]; [1]Northwestern Polytechnical University

3:45 PM Break

4:00 PM Invited
Multi-scale Modeling for Microstructural Evolution in First-order Phase Transformations: Kang Wang[1]; Bo Lin[1]; *Feng Liu*[1]; [1]Northwestern Polytechnical University

4:25 PM
Advanced Materials for Oil and Gas Applications - Performance and Degradation: Shahrooz Nafisi[1]; *Anthony Roccisano*[2]; Reza Ghomashchi[2]; [1]University of Alberta; [2]The University of Adelaide

4:45 PM
Structure - Mechanical Property Relationship in Laser Welded T-250 Maraging Steel Joint: Devesh Misra[1]; *Kun Li*[1]; [1]University of Texas at El Paso

5:05 PM
Effects of Simulated Post-weld Heat Treatment on Microstructure and Mechanical Properties of 1.25Cr-0.5Mo Steel: *Yang Shen*[1]; Cong Wang[1]; [1]Northeastern University

5:25 PM
Influence of Austenitizing Temperature and Time on Microstructure and Mechanical Properties of an YP460 Grade Crack Arrest Steel: *Dan Chen*[1]; Wenqing Jiang[1]; Songsong Xu[1]; Naimeng Liu[1]; Hao Guo[1]; Ye Cui[1]; Yang Zhang[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

5:45 PM
The Evolution of Microstructure of an High Ni HSLA X100 Forged Steel Slab by Thermomechanical Controlled Processing: *Hashem Mousavi Anijdan*[1]; M. Sabzi[2]; [1]Young Researchers and Elites Club, Science and Research Branch, Islamic Azad University,; [2]Young Researchers and Elite Club, Dezful Branch, Islamic Azad University

Advanced Magnetic Materials for Energy and Power Conversion Applications – Additive Manufacturing and Advanced Processing of Soft Magnetic Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Wednesday PM
March 14, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: Alex Leary, NASA Glenn

2:00 PM Introductory Comments

2:05 PM Invited
Effect of Cooling Rate on the Magnetic and Mechanical Properties of Melt Spun Fe-6.5 wt.% Electric Steel: *Jun Cui*[1]; Gaoyuan Ouyang[1]; Brandt Jensen[2]; Kevin Dennis[2]; Lin Zhou[2]; Wei Tang[2]; Matthew Kramer[2]; Chad Macziewski[1]; Chaochao Pan[1]; [1]Iowa State University; [2]Ames Laboratory

2:35 PM Invited
Microstructural Stability of Additively Manufactured Soft Magnetic Composites: *Mitra Taheri*[1]; Kyle Matthews[1]; James Frishkoff[1]; Stephen Luckowski[2]; Jeffrey Schutz[2]; [1]Drexel University; [2]US Army ARDEC Picatinny Arsenal

3:05 PM Invited
The Advantages Offered by the Additive Manufacturing Approach in the Production of Soft Magnetic Silicon Steel Parts: from the Fabrication to the Magnetic and Mechanical Characterisation of the Printed Material: Michele Garibaldi[1]; Ian Ashcroft[1]; Marco Simonelli[1]; Leonidas Gargalis[1]; *Richard Hague*[1]; [1]University of Nottingham

3:35 PM Break

3:55 PM Invited
Field-annealed Amorphous and Nanocrystalline Ribbons and Composites with Improved Energy Performance: *Ivan Skorvanek*[1]; Irena Janotova[2]; Frantisek Andrejka[1]; Branislav Kunca[1]; Jozef Marcin[1]; Peter Svec[2]; Peter Svec Sr[2]; [1]Institute of Experimental Physics; [2]Institute of Physics, SAS

4:25 PM Invited
Comparing Binder Jetting and Laser Metal Deposition for Ni-Mn-based Functional Magnetic Materials: Jakub Toman[1]; Amir Mostafaei[1]; Katerina Kimes[1]; Erica Stevens[1]; *Markus Chmielus*[1]; [1]University of Pittsburgh

4:55 PM
Application Impact of Magnetic Ribbon Core Strain Annealing: *Richard Beddingfield*[1]; Kevin Byerly[2]; Subhashish Bhattacharya[1]; Paul Ohodnicki[2]; [1]North Carolina State University; [2]National Energy Technology Labs

5:15 PM
Laser Additive Manufacturing of Magnetic Materials: Calvin Mikler[1]; *Tushar Borkar*[2]; Raju Ramanujan[3]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Cleveland State University; [3]Nanyang Technological University

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Pb Free Solder Alloy I

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Wednesday PM
March 14, 2018

Room: 226C
Location: Phoenix Convention Center

Session Chairs: Christopher Gourlay, Imperial College London; Mehran Maalekian, AIM Solder

2:00 PM
Altering the Mechanical Properties of Pb-free Solder Alloys by Alloying with Bi and Sb: *Mehran Maalekian*[1]; Mert Çelikin[2]; Karl Seelig[1]; [1]AIM Metals & Alloys; [2]McGill University

2:20 PM
Study of the Solid-State Diffusion of Bi in Sn – The Effects of β-Sn Grain Orientation: *Andre Delhaise*[1]; Zhangqi Chen[2]; Doug Perovic[1]; [1]University of Toronto; [2]Ohio State University

2:40 PM
Role of Bi in Microstructural Evolution of Sn-Cu-Ni and Sn-Ag-Cu Solders and their Mechanical Performance: *Sergey Belyakov*[1]; Takatoshi Nishimura[2]; Keith Sweatman[2]; Tetsuya Akaiwa[2]; Christopher Gourlay[1]; [1]Imperial College London; [2]Nihon Superior Co., Ltd.

3:00 PM
Insights into the Heterogeneous Nucleation of ßSn in Solder Joints: *Christopher Gourlay*[1]; Zhaolong Ma[1]; Jingwei Xian[1]; Sergey Belyakov[1]; [1]Imperial College London

3:20 PM Break

3:40 PM
Effect of Strain Rate on Deformation Properties of Pb-free Solders: *Keith Sweatman*[1]; N Pavithiran[1]; Wayne Ng[1]; Tetsuya Akaiwa[1]; Takatoshi Nishimura[1]; Tetsuro Nishimura[1]; [1]Nihon Superior Co., Ltd

4:00 PM
Effect of Alloying Elements on Growth Kinetics of Intermetallics at Sn-Ag-Cu/Cu Interconnects: *Suresh Telu*[1]; Raghu Rangaraju[1]; Morgana Ribas[1]; Siuli Sarkar[1]; [1]Alpha Assembly Solutions

4:20 PM
The Microstructure and Hot Rolling Deformation Mechanism of AuSn Eutectic Alloy: *Yong Mao*[1]; Jiyang Xie[1]; Yanan Du[1]; Kai Xiong[1]; [1]Yunnan University

4:40 PM
In-situ high-voltage TEM Observations of Polymorphic Phase Transformations in Cu6Sn5 Solder Joints: *Flora Somidin*[1]; Hiroshi Maeno[2]; Mohd Arif Anuar Mohd Salleh[3]; Xuan Tran[1]; Stuart McDonald[1]; Syo Matsumura[2]; Kazuhiro Nogita[1]; [1]The University of Queensland; [2]Kyushu University; [3]Universiti Malaysia Perlis

Advanced Real Time Optical Imaging – High Temperature Phenomena

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee
Program Organizers: Jinichiro Nakano, US Department of Energy National Energy Technology Laboratory; David Alman, National Energy Technology Laboratory; Il Sohn, Yonsei University; Hiroyuki Shibata, Tohoku University; Antoine Allanore, Massachusetts Institute of Technology

Wednesday PM
March 14, 2018

Room: 123
Location: Phoenix Convention Center

Session Chairs: Il Sohn, Yonsei University; David Alman, US DOE National Energy Technology Laboratory

2:00 PM
Thermal Imaging Furnace for the Investigation of the Molten State: *Antoine Allanore*[1]; Bradley Nakanishi[1]; [1]Massachusetts Institute of Technology

2:20 PM Invited
High-temperature Microscopy Incorporating Differential Thermal Analysis: *Rian Dippenaar*[1]; Suk-Chun Moon[1]; Dominic Phelan[1]; [1]University of Wollongong

2:50 PM Invited
Real Time Observation of High Temperature Metallurgical Phenomenon at the University of Leuven: *Muxing Guo*[1]; [1]KULeuven

3:20 PM
In-situ Microscopic Study of Natural Hematite over Repeated Reduction-oxidation Gas Exposures: *Anna Nakano*[1]; Jinichiro Nakano[1]; James Bennett[1]; [1]US Department of Energy National Energy Technology Laboratory

3:40 PM Break

4:00 PM Invited
Real-time Observation of Solution Growth Interface of SiC Using Alloy Solvent: *Sakiko Kawanishi*[1]; Takeshi Yoshikawa[2]; Kazuki Morita[2]; [1]Tohoku University; [2]The University of Tokyo

4:30 PM
Insitu Tensile Performance of P91 Steel in CO_2 Environment, Utilizing Small Samples and a Confocal Microscope: *Kyle Rozman*[1]; Jinichiro Nakano[1]; Sajedur Akanda[1]; Omer Dogan[1]; Jeffery Hawk[1]; [1]NETL

4:50 PM
Determining Metastable Phase Transformation Temperature between Al4Sm-beta and Al4Sm-gamma: *Shihuai Zhou*[1]; Xiong Yang[1]; Fanqiang Meng[1]; Ryan Ott[1]; Matthew Kramer[1]; Ralph Napolitano[1]; [1]Ames Laboratory

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Solidification and Microstructure II

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Wednesday PM
March 14, 2018

Room: 231C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Characterization of Titanium Interpenetrating Phase Composites Formed through Additive Manufacturing and Spark Plasma Sintering: *Eric Faierson*[1]; [1]Quad City Manufacturing Laboratory - Western Illinois University

2:30 PM Invited
In-situ Microstructural Control in Ti-6Al-4V during Selective Laser Melting – from Fine Acicular α' Martensite to Various Forms of Lamellar α+ß: *Wei Xu*[1]; Edward Lui[2]; Milan Brandt[2]; Ma Qian[2]; [1]Macquarie University; [2]RMIT University

3:00 PM
Effects of Beam Focus and Shape on Microstructure and Defect Characteristics in an E-beam AM Ti-6Al-4V Alloy: A Synchrotron X-ray Micro-CT Study: *Rakesh Kamath*[1]; Kin-Ling Sham[1]; Hahn Choo[1]; Sean Yoder[2]; Ryan Dehoff[2]; Xianghui Xiao[3]; [1]Department of Materials Science and Engineering, University of Tennessee, Knoxville, TN 37996, USA; [2]Manufacturing Demonstration Facility, Oak Ridge National Laboratory, Oak Ridge, TN 37932, USA; [3]X-ray Science Division, Argonne National Laboratory, Argonne, IL 60439, USA

3:20 PM Break

3:35 PM
Additive Manufacturing of Ti-Cu Alloys: *Srinivas Aditya Mantri*[1]; Tushar Borkar[1]; James Williams[1]; Rajarshi Banerjee[1]; [1]University of North Texas

3:55 PM
Structure Evolution and Strain Relaxation in Biocompatible Ti-6Al-4V Alloys Manufactured by Selective Laser Melting with Different Built Orientation: *Nataliya Kazantseva*[1]; Igor Ezhov[1]; Nina Vinogradova[1]; Anatolii Volkov[2]; Alex Fefelov[3]; Maxim Ilyinikh[3]; [1]Institute of Metal Physics; [2]Scientific and Production Company Ruteni Ltd.; [3]Ural Federal University

4:15 PM
Microstructure, Defect and Mechanical Properties of Gamma TiAl Alloys Additively Manufactured by Selective Electron Beam Melting: *Kun Yang*[1]; Jian Wang[1]; Huiping Tang[1]; [1]Northwest Institute for Nonferrous Metal Research

Algorithm Development in Materials Science and Engineering – Atomistic and Micro Scale Algorithms and Models

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Wednesday PM
March 14, 2018
Room: 130
Location: Phoenix Convention Center

Session Chair: Ebrahim Asadi, The University of Memphis

2:00 PM Invited
Development and Parameterization of Phase-field-crystal Models: David Montiel[1]; Jason Luce[1]; Guanglong Huang[1]; *Katsuyo Thornton*[1]; [1]University of Michigan

2:30 PM Invited
Ordering and Properties of Pure and Binary Two Dimensional Honeycomb Films: *Ken Elder*[1]; [1]Oakland University

3:00 PM
Computational Performance of Phase Field Calculations using a Matrix-free (Sum-Factorization) Finite Element Method: *Stephen DeWitt*[1]; Katsuyo Thornton[1]; Shiva Rudraraju[2]; [1]University of Michigan - Ann Arbor; [2]University of Wisconsin - Madison

3:20 PM
Divergent Properties from Divergent Microstructures: The Effect of Polycrystal Instantiation Methods on Macroscopic Materials Properties: *Jacob Gruber*[1]; Fadi Abdeljawad[2]; Stephen Foiles[2]; Hojun Lim[2]; Garritt Tucker[1]; [1]Colorado School of Mines; [2]Sandia National Laboratories

3:40 PM Break

4:00 PM Invited
Algorithmic Extensions to Phase Field Dislocation Dynamics (PFDD) for Fcc and Bcc metals: *Abigail Hunter*[1]; Enrique Martinez Saez[1]; Irene Beyerlein[2]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

4:20 PM
Recent Advances in Polycrystal Plasticity Models and Algorithms: FFT-based and Self-consistent Approaches: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

4:40 PM
GPU Accelerated Phase Field Dislocation Dynamics: Application to Bi-metallic Interfaces: *Adnan Eghtesad*[1]; Kai Germaschewski[1]; Irene J. Beyerlein[2]; Abigail Hunter[3]; Marko Knezevic[1]; [1]University of New Hampshire; [2]University of California, Santa Barbara; [3]Los Alamos National Laboratory

5:00 PM
Discrete Dislocation Dynamics Based Polycrystal Plasticity: *John Graham*[1]; Laurent Capolungo[2]; Richard LeSar[1]; [1]Iowa State University; [2]Los Alamos National Lab

Alloy Development and Powder Manufacture for Additive Manufacturing – Powder Development

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Paul Prichard, Kennametal; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; James Foley, Los Alamos National Laboratory

Wednesday PM
March 14, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Jim Foley, Los Alamos National Laboratory

2:00 PM Invited
Developing Powder Rheology Relationships for Characterization of Metal Powder Feedstocks Used in Additive Manufacturing: Scott Meredith[1]; Bellamarie Ludwig[1]; *Todd Palmer*[1]; [1]Penn State

2:30 PM
RF Plasma Powder Metallurgy: An Overview of Applications for Material Development in Additive Manufacturing: *Jean-Francois Carrier*[1]; [1]Tekna

2:50 PM
Synchrotron Radiation, XPS Depth Profiling and TEM Characterization for Understanding the Powder Microstructures of Some Key Printable Ti materials, and their Implications for Additive Manufacturing: *Ming Yan*[1]; Yinghao Zhou[1]; Ma Qian[2]; [1]South University of Science and Technology of China; [2]RMIT University

3:10 PM
The Metalysis Process - a Flexible Distributed Manufacture Route for the Production of Novel AM Powders: *Ian Mellor*[1]; Greg Doughty[1]; Luke Benson Marshall[1]; Melchiorre Conti[1]; Stephen Repper[1]; Vanessa Linley[1]; [1]Metalysis Ltd

3:30 PM Break

3:50 PM Invited
Increasing Powder Yields and Quality for Additive Manufacturing by Fundamental Processing Research on Gas Atomization: *Iver Anderson*[1]; Emma White[1]; Jordan Tiarks[1]; Tim Prost[1]; Trevor Riedemann[1]; David Byrd[1]; [1]Ames Laboratory

4:20 PM
Performance of PTA AM Components for Mining and Energy Applications: Jose Mercardo Rojas[1]; Dylan Rose[1]; *Tonya Wolfe*[2]; Ahmed Qureshi[1]; Gary Fisher[2]; Hani Henein[1]; [1]University of Alberta; [2]InnoTech Alberta

4:40 PM
Progress toward the Use of Elemental Powders for Additive Manufacturing of Aluminum Alloys: *Christopher Roberts*[1]; David Bourell[1]; [1]University of Texas at Austin

5:00 PM
Thermal Stability of Laser Sintered Nanostructured Powder: *Kendrick Mensink*[1]; Sandip Harimkar[2]; Guillermo Aguilar[1]; Suveen Mathaudhu[1]; [1]University of California, Riverside; [2]Oklahoma State University

5:20 PM
Effect of Atomizing Media on Mechanical Properties of 17-4 PH Stainless Steel Additively Manufactured via Selective Laser Melting: *Milad Ghayoor*[1]; Somayeh Pasebani[1]; Sunil badwe[2]; Harish Irrinki[3]; Sundar Atre[3]; [1]Oregon State University; [2]North American Hoganas; [3]University of Louisville

5:40 PM
Characterization of Metal Additive Manufacturing Surfaces Using Synchrotron X-ray CT and Micromechanical Modeling: *Christopher Kantzos*[1]; Ross Cunningham[1]; Vahid Tari[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

Alumina & Bauxite – Processing of Low Grade Bauxite: Flotation and Pretreatment

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Linus Perander, Outotec

Wednesday PM
March 14, 2018
Room: 221A
Location: Phoenix Convention Center

Session Chair: Andrei Smirnov, RUSAL ETC

2:00 PM Introductory Comments

2:05 PM
Flotation Separation of Pyrite from Refractory High-sulfur Bauxite: Wencui Chai[1]; *Guihong Han*[1]; Jiongtian Liu[1]; Yanfang Huang[1]; Huilan Chen[1]; Zhen Yan[1]; [1]Zhengzhou University

2:30 PM
Research on the Desulfurization of High Sulfur Bauxite: *Yanfang Huang*[1]; Dianyuan Dang[1]; Guihong Han[1]; Shuzhen Yang[1]; [1]Zhengzhou University

2:55 PM
Research on the Interaction between 1-butyl-2-mercaptobenzimidazole and Pyrite: Tongtong Yang[1]; *Guihong Han*[1]; Jiongtian Liu[1]; Yanfang Huang[1]; Wencui Chai[1]; Weijun Peng[1]; [1]Zhengzhou University

3:20 PM
Flotation of Low-grade Bauxite Using Modified Humics as Depressant: Guihong Han[1]; Zhen Yan[1]; *Yanfang Huang*[1]; Dianyuan Dang[1]; [1]Zhengzhou University

3:45 PM Break

4:00 PM
Research on the Adsorption of Humic Acid on Pyrite Surface: Yanfang Huang[1]; Huilan Chen[1]; *Guihong Han*[1]; [1]Zhengzhou University

4:25 PM
Experimental Investigation on Desiliconization of Low-grade Bauxite by Flotation Process: *Guihong Han*[1]; Hongyang Wu[1]; Wenjuan Wang[1]; Yanfang Huang; Yanfang Huang[1]; [1]Zhengzhou University

4:50 PM
The Impact of Backwater Iron Ions on Bauxite Flotation: *Chaojun Fang*[1]; Leming Ou[1]; Qiming Feng[1]; Shichao Yu[1]; Jun Wang[1]; [1]Central South University

Aluminum Alloys, Processing and Characterization – Simulations and Studies of Processing

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Wednesday PM
March 14, 2018
Room: 221B
Location: Phoenix Convention Center

Session Chair: William Golumbfskie, US Naval Surface Warfare Center

2:00 PM Invited
Recent Developments and Future Challenges in the Design and Manufacture of Advanced Rolled Aluminum Products: *Richard Hamerton*[1]; [1]Novelis Inc.

2:30 PM
Understanding Large-strain Softening of Aluminum in Shear at Elevated Temperature: Michael Kassner[1]; *Roya Ermagan*[1]; [1]University of Southern California

2:50 PM
Assessments of Sc-containing Ternary Systems Al-Sc-Ti and Al-Sc-Zr within the Thermodynamic Database for Aluminium Alloys, TCAL5: Hai-Lin Chen[1]; Qing Chen[1]; *Paul Mason*[2]; [1]Thermo-Calc software AB; [2]Thermo-Calc Software Inc.

3:10 PM
Multiscale Model for Al-Li Material Processing Simulation under Forging Conditions: *Luke Borkowski*[1]; Alexander Staroselsky[1]; [1]United Technologies Research Center

3:30 PM Break

3:50 PM
Investigation of Effect of Aging Treatment on Deformation Behavior of Al-Mg-Si Alloy Using Quasi-2D Polycrystalline Sample: *Jiang Zheng*[1]; Lin Zhu[1]; Haoge Shou[1]; Jinsong Rao[1]; [1]Chongqing University

4:10 PM
Development of Innovative Aluminum Alloys with High Mechanical Properties: *Jozef Medved*[1]; Stanislav Kores[2]; Maja Voncina[1]; [1]University of Ljubljana, Faculty of Natural Sciences and Engineering; [2]Talum d.d.

4:30 PM
A General Formulation of Eutectic Silicon Morphology and Processing History: *José Spinelli*[1]; William Hearn[2]; Abdoul-Aziz Bogno[2]; Hani Henein[2]; [1]Federal University of São Carlos; [2]University of Alberta

4:50 PM
Evaluation of Hot Tearing Susceptibility of 6000 Series Aluminum Alloys Using Constrained Solidification Test: Leonel Stermann[1]; *Martín Iraizoz*[1]; [1]ALUAR

Aluminum Reduction Technology – Fundamentals, Electrolyte Chemistry & Market

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Wednesday PM
March 14, 2018
Room: 221C
Location: Phoenix Convention Center

Session Chair: Zlatko Cus, TALUM d.d.

2:00 PM Introductory Comments

2:05 PM
Current Efficiency in Hall-Héroult Cells: The Role of Mass Transfer at the Cathode: *Asbjorn Solheim*[1]; Henrik Gudbrandsen[1]; Karen Osen[1]; Ole Edvard Kongstein[1]; Egil Skybakmoen[1]; [1]SINTEF

2:30 PM
Effects of Current Density on Current Efficiency in Low Temperature Electrolysis with Vertical Electrode Structure: *Shengzhong Bao*[1]; Dengpeng Chai[1]; Zhirong Shi[1]; Junwei Wang[1]; Guisheng Liang[1]; Yanan Zhang[1]; [1]Zhengzhou Non-ferrous Metals Research Institute Co. Ltd of CHALCO

2:55 PM
Relationship between Aluminium Electrolysis Current Efficiency and Operating Condition in Electrolyte Containing High Concentration of Li and K: *Junqing Wang*[1]; Changlin Li[1]; Dengpeng Chai[1]; Yunfeng Zhou[1]; Bin Fang[1]; Qiang Li[1]; [1]Zhengzhou Non-ferrous Metals Research Institute Co. Ltd of CHALCO

3:20 PM
Evaluating Effects of Future Shared Mobility and Electrification Trends on Key Intermediate Indicator of Aluminum Transportation Demand: US Vehicle Fleet Size: *Suhrid Deshmukh*[1]; Rich Roth[1]; Michele Bustamante[1]; [1]MIT

3:45 PM Break

4:00 PM
Improvement in Smelter Process Analysis through EGA Lab Modernization: Najeeba Aljabri[1]; *Salma Almehairi*[1]; Shamsa Falasi[1]; Yazeed Yabroudi[1]; Frank Feret[1]; Tapan Sahu[1]; Almero Eybers[1]; [1]Dubal

4:25 PM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials – Fe-based Alloys and High-entropy Alloys

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Haiming Wen, Missouri University of Science and Technology; Simon Ringer, The University of Sydney; Gregory Thompson, University of Alabama; Arun Devaraj, Pacific Northwest National Laboratory; Keith Knipling, U.S. Naval Research Laboratory; Gang Sha, Nanjing University of Science and Technology; David Seidman, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center

Wednesday PM
March 14, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: Chantal Sudbrack, NASA Glenn Research Center; Gang Sha, Nanjing University of Science and Technology

2:00 PM
Application of APT in Understanding Thermal Embrittlement of a Duplex Stainless Steel: *Sha Gang*[1]; [1]Nanjing University of Science and Technology

2:20 PM
Issues with Atom Probe Quantification of Nitrogen in Steels: *Frederic Danoix*[1]; Raphaële Danoix[2]; Andrius Martinavicius[3]; Mohamed Goune[4]; Hugo Van Lendeghem[5]; François Vurpillot[2]; [1]CNRS - Université de Rouen; [2]Normandie Université; [3]Normandie Université & IJL Nancy; [4]ICMCB Bordeaux; [5]Université Grenoble Alpes

2:40 PM
Investigation of Carbon Redistribution in Martensite during Room Temperature Aging by Correlative TEM and APT: *Wenjun Lu*[1]; Michael Herbig[1]; Christian Liebscher[1]; Lutz Morsdorf[1]; Ross Marceau[2]; Gerhard Dehm[1]; Dierk Raabe[1]; [1]Max Planck Institute for Iron Research; [2]Deakin University

3:00 PM
Long-range Ordered Nanoscale Domains in an Fe-Co-Mo Maraging Steel, an Atom Probe Microscopy and Neutron Diffraction Study: *Sophie Primig*[1]; Felix Theska[1]; Christoph Turk[2]; Anna Ceguerra[3]; Simon Ringer[3]; [1]UNSW Sydney; [2]Boehler Edelstahl GmbH & Co KG; [3]The University of Sydney

3:20 PM Break

3:40 PM
Grain Boundary Chemistry of Dual Main Phase Nd-Ce-Fe-B As-sintered Magnets Revealed by Atom Probe Tomography: *Hansheng Chen*[1]; Rui Han[2]; Shengzhi Dong[2]; Fan Yun[1]; Jiangtao Qu[1]; Simon Ringer[1]; Wei Li[2]; Rongkun Zheng[1]; [1]The University of Sydney; [2]Central Iron and Steel Research Institute

4:00 PM
Correlative Transmission EBSD-APT Analysis of Grain Boundaries in Additively Manufactured Nickel-base Superalloy Inconel-738LC: *Avinash Hariharan*[1]; Jeroen Risse[2]; Eric Jägle[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Fraunhofer-Institut für Lasertechnik ILT

4:20 PM
Secondary Phase and Precipitate Characterization of a Fe25Co25Ni25Al10Ti15 HEA Using Atom Probe Tomography: *Andrew Hoffman*[1]; Haiming Wen[1]; [1]University of Missouri S&T

4:40 PM
Nanoscale Phase Separation and Precipitation in AlCoCrFeNi High Entropy Alloys as Studied by Atom Probe Tomography: *Keith Knipling*[1]; Joshua Tharpe[2]; Peter Liaw[2]; [1]U.S. Naval Research Laboratory; [2]University of Tennessee

Biodegradable Materials for Medical Applications – Magnesium Alloys II

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund; Jan Seitz, Syntellix AG; Norbert Hort, Helmholtz-Zentrum Geesthacht; Huinan Liu, University of California-Riverside

Wednesday PM
March 14, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Diego Mantovani, Laval University; Mauricio Vedani, Polytechnic of Milano

2:00 PM Keynote
Is Corrosion Fatique Relevant for Biodegradable Magnesium Implants?: *Frank Witte*[1]; [1]Charite - Universitätsmedizin Berlin

2:40 PM Invited
Microstructure Properties and In-vitro Degradation Behavior of the Bioresorbable Magnesium Alloy ZNdK100: *Christian Klose*[1]; Rainer Eifler[1]; Hans Jürgen Maier[1]; [1]Leibniz Universität Hannover

3:10 PM
Microstructure and Mechanical Properties of Mg-Gd Alloys as Biodegradable Implant Materials: *Yiyi Lu*[1]; Yuanding Huang[1]; Frank Feyerabend[1]; Regine Willumeit-Römer[1]; Karl-Ulrich Kainer[1]; Norbert Hort[1]; [1]Helmholtz-Zentrum Geesthacht

3:30 PM Break

3:50 PM Invited
Influence of Casting on Microstructure and Corrosion of Mg-Ca-Zn Alloys for Biomedical Application: *Daniela Zander*[1]; Naemi Zumdick[1]; [1]RWTH Aachen University

4:20 PM
Osteosynthesis in a Growing Ovine Model using Bioresorbable Rare-earth-free Magnesium Screws: Johannes Eichler[1]; Patrick Holweg[1]; Leopold Berger[2]; Martina Cihova[2]; Nicholas Donohue[1]; Nicole Grün[1]; Jörg Löffler[2]; *Annelie Weinberg*[1]; [1]Medical University of Graz; [2]ETH Zuerich

4:40 PM
The Preparation of a Mg-Zn-Nd Alloy Wire and its Potential Application in Medicine: *Zheng Ma*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

5:00 PM
Osteosynthesis in an Osteoporotic Rat Model Using Magnesium-based Pins: *Nicole Gruen*[1]; Daniela Hirzberger[1]; Johannes Eichler[1]; Nicholas Donohue[1]; Annelie-Martina Weinberg[1]; [1]Medical University of Graz

5:20 PM
Development of Porous and Biodegradable Hydroxyapatite/Mg Alloy Composite as Biodegradable Implants for Orthopaedic Applications: *Jae-Young Jung*[1]; Yajur Maker[1]; Sung Sik Hur[1]; Steven Naleway[2]; Gracia Innocentia[1]; Kathy Kang[1]; Marc Meyers[1]; Shu Chien[1]; Joanna McKittrick[1]; [1]University of California, San Diego; [2]The University of Utah

Biological Materials Science – Biomaterials and Biomedical Applications II

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

Wednesday PM
March 14, 2018
Room: 225B
Location: Phoenix Convention Center

Session Chairs: Jing Du, Penn State University; Steven Naleway, University of Utah

2:00 PM
Anchoring Tannic Acid to a Polymeric Backbone - a Novel Burn Wound Treatment: *Matthew Korey*[1]; [1]Purdue University

2:20 PM
The Study of the Effects of Cancer Drugs on the Structure and Mechanical Properties of Triple Negative Breast Cancer Cells (TNBCs): *Vanessa Uzonwanne*[1]; John Obayemi[1]; Jingjie Hu[2]; Ali Salifu[1]; Winston Soboyejo[1]; [1]Worcester Polytechnic Institute; [2]Princeton University

2:40 PM
Nanocomposite Heating Probes for Thermoablation of Cancerous Cells: *Kwabena Kan-Dapaah*[1]; Nima Rahbar[2]; Wole Soboyejo[2]; [1]Dept. of Biomedical Engineering, University of Ghana; [2]Worcester Polytechnic Institute

3:00 PM
An Anatomic Breast Phantom Mimicking Varying Levels of Radiographic Tissue Density for Translational Investigation of Contrast-enhanced Imaging Using Targeted Nanoparticles: *Lisa Irimata*[1]; Tyler Finamore[1]; Tyler Curtis[1]; Tracy Vargo-Gogola[1]; Ryan Roeder[1]; [1]University of Notre Dame

3:20 PM
Automatic Shape-based Cell Identification in Arabidopsis Thaliana Cotyledons Using 3D Moment Invariants: *Ryan Harrison*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

3:40 PM Break

3:55 PM
Cryo-drawn of CP Ti: A New Material for Medical Applications: *Mikael Grehk*[1]; Pasi Kangas[1]; Guocai Chai[1]; Lars Wikström[1]; [1]Sandvik Materials Technology

4:15 PM
A Novel Approach of Polymer Grafting on Selective Laser Melted Titanium Alloy Hip Implants for Improved Lubricity and Biocompatibility: *Subir Ghosh*[1]; Sylvester Abanteriba[1]; Shadi Houshyar[1]; [1]RMIT University

4:35 PM
Bio-functional Design for Metallic Biomaterials: Cu-bearing Metallic Biomaterials: *Ling Ren*[1]; Ke Yang[1]; [1]Institute of Metal Research CAS

4:55 PM
The Effect of the Thickness of the Magnetic Biological Patch on the Accumulation Mechanism of Magnetic Particles: *Lanlan Cai*[1]; Kai Yang[1]; Yongyong Gong[1]; Jiaqi Ma[2]; Zheyong Huang[2]; Ning Pei[1]; [1]Shanghai University; [2]Zhongshan Hospital, Fudan University

5:15 PM
A Novel In Vitro Fatigue Test for Biomimetic Implants Made of UHMWPE: *Marina Knyazeva*[1]; Dario Porchetta[1]; Ronja Scholz[1]; Frank Walther[1]; [1]TU Dortmund University

Building an ICME Infrastructure: Developing Tools that Integrate Across Length and Time Scales to Accelerate Materials Design – ICME Gap Analysis: Multiscale Modeling and Characterization of Structural Materials: II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Mark Carroll, Federal Mogul Powertrain; Adam Hope, Thermo-Calc Software; Hojun Lim, Sandia National Laboratories; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Dongwon Shin, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: Hojun Lim, Sandia National Laboratories

2:00 PM Invited
Accelerating the Process-structure-property Discovery Cycle: *Brad Boyce*[1]; Joseph Michael[1]; [1]Sandia National Laboratories

2:40 PM Invited
Yield Stress, Proportional Limit: Do They Exist?: *Robert Wagoner*[1]; [1]Ohio State University

3:20 PM Break

3:35 PM Invited
Modeling Plastic Anisotropy of Textured Polycrystalline Materials: *Oana Cazacu*[1]; Nitin Chandola[1]; [1]University of Florida

4:15 PM Invited
Prediction of Hole Expansion Ratio Using Microstructure Based Dual-scale Finite Element Approach: *Heung Nam Han*[1]; Siwook Park[1]; Jinwook Jung[1]; Sung Il Kim[2]; Seok-Jong Seo[2]; Myoung-Gyu Lee[3]; [1]Seoul National University; [2]POSCO; [3]Korea University

4:55 PM Invited
Differences between Measured and Simulated Elastic Strain States Using High Energy X-ray Diffraction in Titanium Using Crystal Plasticity Models: *Thomas Bieler*[1]; Chen Zhang[1]; Harsha Phukan[1]; Philip Eisenlohr[1]; Martin Crimp[1]; Carl Boehlert[1]; Fionn Dunne[2]; T. Britton[2]; Armand Beaudoin[3]; Darren Pagan[3]; Peter Kenesei[4]; Jun-Sang Park[4]; Ruqing Xu[4]; Wenjun Liu[4]; [1]Michigan State University; [2]Imperial College; [3]Cornell High Energy Synchrotron Source; [4]Argonne National Laboratory

5:35 PM Invited
Current Status of ICME Infrastructure in the Aerospace Industry: *Vasisht Venkatesh*[1]; X. Liu[1]; R. Noraas[1]; A. Peles[1]; S. Mosbah[1]; David Furrer[1]; [1]Pratt & Whitney

Bulk Metallic Glasses XV – Structures and Mechanical Properties II

Sponsored by: TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Hahn Choo, University of Tennessee; Yanfei Gao, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Wednesday PM
March 14, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Juergen Eckert, Montanuniversität Leoben; Jinn Chu, National Taiwan University of Science and Technology

2:00 PM Invited
Manipulating Structures and Mechanical Properties in Metallic Glasses: *Juergen Eckert*[1]; [1]Montanuniversität Leoben

2:20 PM
Dynamics of Inherent Structure Energy Evolution in Metallic Glasses: *Yue Fan*[1]; [1]University of Michigan, Ann Arbor

2:40 PM Invited
Intermediate Temperature Brittleness in Metallic Glasses: *Jianzhong Jiang*[1]; Chao Wang[1]; Qingping Cao[1]; Xiaodong Wang[1]; Dongxian Zhang[2]; Upadrasta Ramamurty[3]; Ramasubramanian Lakshmi Narayan[4]; [1]Zhejiang University; [2]State Key Laboratory of Modern Optical Instrumentation, Zhejiang University; [3]Department of Materials Engineering, Indian Institute of Science; [4]Carnegie Mellon University

3:00 PM Invited
On the Effect of Sample Size on the Fracture Toughness of Bulk Metallic Glasses: Bernd Gludovatz[1]; Jamie Kruzic[1]; *Robert Ritchie*[2]; [1]UNSW Sydney; [2]Lawrence Berkeley National Laboratory

3:20 PM Invited
Effects of Annealing and Irradiation on the Mechanical and Microstructural Properties of Bulk Metallic Glass Alloys: *Jamieson Brechtl*[1]; Miguel Crespillo[1]; Hui Wang[1]; Tengfei Yang[1]; Luis Mora[2]; Yanwen Zhang[1]; Hongbin Bei[2]; Yongqiang Wang[3]; Joerg Neuefeind[2]; Wojciech Dmowski[2]; Takeshi Egami[2]; Peter Liaw[1]; Steven Zinkle[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

3:40 PM Break

3:55 PM Invited
Density Evolution, Strain Hardening, and Plastic Flow of a Metallic Glass in a Notched Tensile Test: Yonghao Sun[1]; Mantong Zhao[1]; Peter Kenesei[2]; Jun-Sang Park[2]; *Todd Hufnagel*[1]; [1]Johns Hopkins University; [2]Argonne National Laboratory

4:15 PM Invited
Thin-film Metallic Glass with Ultra-high Plasticity under Shearing and Nanoindentation at Room Temperature: Chia-Chi Yu[1]; *Jinn Chu*[1]; J. E. Greene[2]; Peter K. Liaw[3]; [1]National Taiwan University of Science and Technology; [2]University of Illinois at Urbana-Champaign; [3]The University of Tennessee

4:35 PM Invited
Strain Delocalization and Fracture Behaviors of Laminated Metallic Glass Composites: *Xinghang Zhang*[1]; Zhe Fan[1]; Jian Wang[2]; Jin Li[1]; Haiyan Wang[1]; [1]Purdue University; [2]University of Nebraska, Lincoln

4:55 PM Invited
Strengthening and Toughening via Phase Separation and Beta Relaxation in Zr-based Bulk Metallic Glasses: *Xidong Hui*[1]; Tuo Wang[1]; Yanhui Liu[2]; [1]University of Science and Technology Beijing; [2]Institute of Physics, Chinese Academy of Sciences

5:15 PM Invited
Tailoring Crystallization Pathways of Metallic Glass Nanorods via Nucleus Starvation: *Sungwoo Sohn*[1]; Yujun Xie[1]; YeonWoong Jung[2]; Jan Schroers[1]; Judy Cha[1]; [1]Yale University; [2]University of Central Florida

Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session – Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Andre Phillion, McMaster University; Mark Badowski, Hydro Aluminium; Mohsen Asle Zaeem, Missouri University of Science and Technology

Wednesday PM
March 14, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Andre Phillion, McMaster University

2:00 PM Introductory Comments

2:05 PM Invited
In-situ Study of Solidification Kinetics of Al-Cu and Al-Ce Alloys with Application of Neutron Diffraction: Joshua Stroh[1]; Tyler Davis[1]; Alexandra McDougall[1]; *Dimitry Sediako*[1]; [1]University of British Columbia

2:30 PM
Quantifying Effects of Grain Refiner Addition on Fe-rich Intermetallics Solidification of Al-Si-Cu Alloys Using *In Situ* Synchrotron X-ray Tomography: *Surada Chuaypradit*[1]; Chedtha Puncreobutr[1]; André Phillion[2]; Julie Fife[3]; Peter Lee[4]; [1]Chulalongkorn University; [2]McMaster University; [3]Paul Scherrer Institut; [4]The University of Manchester

2:55 PM
An Investigation on Si Refinement Mechanism of Hypereutectic Al-Si via Applying Ultrasonic Vibrations: *Reza Haghayeghi*[1]; Leandro De Paula[2]; Eugenio Zoqui[2]; [1]Islamic Azad University; [2]University of Campinas

3:20 PM
Observations of Microhardness and Segregation in Al-Zn and Zn-Al Specimens with Columnar-to-Equiaxed Grain Transition: Roberto Rozicki[1]; Alex Kociubczyk[2]; Gustavo Kramer[2]; *Alicia Ares*[2]; [1]FCEQyN-UNaM; [2]CONICET/FCEQyN-UNaM

3:45 PM Break

4:00 PM
Impact of Inlet Flow On Macrosegregation Formation Accounting for Grain Motion and Morphology Evolution in DC Casting Of Aluminium: *Akash Pakanati*[1]; Knut Omdal Tveito[1]; Mohammed M'Hamdi[2]; Hervé Combeau[3]; Miha Založnik[3]; [1]NTNU; [2]SINTEF; [3]Institut Jean Lamour

4:25 PM
Effects of Microstructure on Hot Cracking Behavior in Al-Zn-Mg-Cu Alloys: *David Gildemeister*[1]; [1]Arconic Technology Center

4:50 PM
Effective Nanoparticles Feeding Treatment in Casting of A356/ZrO2 Nano-reinforced Composite: H. Toweri[1]; W. Hoziefa[2]; Adel El-Shabasy[1]; *Iman El Mahallawi*[3]; [1]Ain Shams University; [2]Al-Azhar; [3]Cairo University

Characterization of Minerals, Metals, and Materials – Characterization Methods II

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

Wednesday PM
March 14, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chairs: Juan Escobedo-Diaz, University of New South Wales; Jeongguk Kim, Korea Railroad Research Institute

2:00 PM Introductory Comments

2:05 PM Invited
Design of Road Defect Scanning System through Multiple Application of Nondestructive Evaluation (NDE) Techniques: *Jeongguk Kim*[1]; Jaesun Lee[1]; [1]Korea Railroad Research Institute

2:25 PM Invited
Towards High throughput Quantitative Metallography for Complex Microstructures with Deep Semantic Segmentation Models: A Case Study in Ultrahigh Carbon Steel: *Brian DeCost*[1]; Toby Francis[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

2:45 PM
Microbeam X-ray Laue Diffraction Analysis of a Fatigue Crack Interaction with Microstructure in Duplex Stainless Steel Using a pnCCD Detector: *Ali Abboud*[1]; Ullrich Pietsch[1]; Hans-Juergen Christ[1]; Jean-Sébastien Micha[2]; Lothar Strüder[3]; Benjamin Dögnes[1]; [1]University of Siegen; [2]CEA-GrenobleINACSprAM; [3]PNSensor GmbH

3:05 PM
Study on the Toughening Mechanisms of Collagenous Materials by Using Real-time X-ray Characterization and Imaging: *Wen Yang*[1]; Haocheng Quan[1]; Elizabeth Zimmermann[2]; Eric Schaible[2]; Marc Meyers[1]; Robert Ritchie[3]; [1]University of California, San Diego; [2]Lawrence Berkeley National Laboratory; [3]University of California, Berkeley

3:25 PM
In Situ Diagnostics of Melting/Solidification and Segregation during Crystal Growth by Energy-resolved and Conventional Neutron Imaging: *Sven Vogel*[1]; Anton S. Tremsin[2]; Drew Onken[3]; Didier Perrodin[4]; Adrian S. Losko[1]; Greg Bizarri[4]; Edith Bourret-Courchesne[4]; [1]Los Alamos National Laboratory; [2]UC Berkeley; [3]Wake Forest University; [4]Lawrence Berkeley National Laboratory

3:45 PM Break

4:00 PM
AstroEBSD: A Novel EBSD Pattern Indexing Routine Launched from an Astronomical Approach: Vivian Tong[1]; Jim Hickey[1]; Alex Foden[1]; Angus Wilkinson[2]; *T Ben Britton*[1]; [1]Department of Materials, Imperial College; [2]Department of Materials, University of Oxford

4:20 PM
Non-destructive Characterization Techniques for Identification of Metal Inclusions in Plastic-bonded Explosives: *Genevieve Watt*[1]; Adrian Losko[1]; Amanda Duque[1]; Sven Vogel[1]; John Yeager[1]; [1]Los Alamos National Laboratory

4:40 PM
Exploring Thermal Loading of Composites by the Acoustic Emission Technique: *Frantisek Chmelik*[1]; Michal Knapek[1]; Patrik Dobron[1]; [1]Charles University

5:00 PM
Computational Polarized Light Microscopy Technique for Determining the C-axis Orientation of Uni-axial Materials: *Ke-Wei Jin*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

Characterization of Minerals, Metals, and Materials – Characterization of Powder Materials

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

Wednesday PM
March 14, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chairs: Chenguang Bai, Chongqing University; Rajiv Soman, Purity Survey Analysis

2:00 PM Introductory Comments

2:05 PM
Three Dimensional Characterization of Powder Al Alloys and the Effects of Thermal Processing: *Caitlin Walde*[1]; Danielle Cote[1]; Victor Champagne[2]; Richard Sisson[1]; [1]WPI; [2]US Army Research Laboratory

2:25 PM
Characterization of HPGR Pre-treated Sinter Feed: *Mingming Zhang*[1]; Kodukula Bhaskar[1]; Marcelo Andrade[1]; [1]ArcelorMittal Global R&D

2:45 PM
Thermogravimetric Analysis on Reduction Behavior of Powdery Dicalcium Ferrite: *Chengyi Ding*[1]; Xuewei Lv[1]; Gang Li[1]; Chenguang Bai[1]; Senwei Xuan[1]; Kai Tang[1]; Yang Xu[1]; [1]Chongqing University

3:05 PM
MC Carbide Characterization in a High Refractory Content Powder Processed Ni-based Superalloy: *Stoichko Antonov*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

3:25 PM Break

3:40 PM
Study on Application of Iron Ore Fine in Pelletizing: *Gele Qing*[1]; Yunqing Tian[1]; Weidong Zhang[1]; Xiangjuan Dong[1]; Wenbin Huang[1]; Yan Zhang[1]; [1]Shougang Research Institute of Techonogly

4:00 PM
Research with Scanning Rate on SLM Property of 316L Stainless Steel Metal Powder: *Junfu Chen*[1]; [1]Huazhong University of Science and Technology

Characterization of Minerals, Metals, and Materials – Mechanical Behaviors of Materials

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

Wednesday PM
March 14, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chairs: Donato Firrao, Politecnico di Torino - DISAT; Tomoko Sano, U.S. Army Research Laboratory

2:00 PM Introductory Comments

2:05 PM
Advanced Mechanical Characterization for High Temperature Materials: Philip Blosser[1]; Andrew Rosenberger[2]; *Michael Shepard*[3]; Jonathan Spowart[2]; Larry Zawada[4]; [1]University of Dayton Research Institute; [2]US Air Force Research Laboratory; [3]MTS Systems Corporation; [4]Universal Technology Corporation

2:25 PM
Characterization of Deformation Mechanisms of Stainless Steels Assisted by Phase Transformation by Means of EBSD Analysis Combined with Nanoindentation: *Marina Knyazeva*[1]; David Nowak[1]; Frank Walther[1]; [1]TU Dortmund University

2:45 PM
In-situ TEM Study of Precipitation Behavior in Alloy 690-based MA Powders: *Man Wang*[1]; Heung Nam Han[2]; Hee-Suk Chung[3]; Young Bum Chun[1]; Chang Hee Han[1]; Jinsung Jang[1]; [1]KAERI; [2]Seoul National University; [3]Korea Basic Science Institute

3:05 PM
Determination of Microstructure-based Constitutive Models Using Temperature Rise Distribution in Plane Strain Machining: Sepideh Abolghasem[1]; *Juan Camilo Osorio Pinzon*[1]; Juan Pablo Casas Rodriguez[1]; [1]Universidad de los Andes

3:25 PM Break

3:40 PM
Mechanical Properties and Time-dependent Behavior of Vapor-deposited TPD Glass: *Chaiyapat Tangpatjaroen*[1]; Diane Walters[1]; Jaritza Gómez[1]; David Grierson[1]; Mark Ediger[1]; Izabela Szlufarska[1]; [1]University of Wisconsin - Madison

4:00 PM
Precipitating Behaviour of Second Phase Particles in Lightweight Fe-Mn-Al-C-N Stainless Steel: *Wei Hou*[1]; Jingtao Wang[1]; Xiaoyu Han[1]; Jun Bao[1]; [1]Chongqing Universitity

4:20 PM
Local Texture Evolution and Mechanical Performance of Ultra-High-Speed Friction Stir Weld of AA 6111-T4 Sheets: *Jingyi Zhang*[1]; Yuri Hovanski[2]; Piyush Upadhyay[3]; David Field[1]; [1]Washington State University; [2]Brigham Young University; [3]Pacific Northwest National Laboratory

4:40 PM
Bending Mechanical Behavior of Epoxy Matrix Reinforced with Fique Fabric: *Marcos Vinícius Ferreira*[1]; Rúben Jesus Sánchez Rodríguez[1]; Maria Carolina Andrade Teles[1]; Gilson Vieira Fernades[1]; Felipe Perissé Duarte Lopes[1]; Sérgio Neves Monteiro[2]; Frederico Margem[1]; [1]State University of the Northern Rio de Janeiro - UENF; [2]Military Institute of Engineering - IME

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Diffusion II

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Wednesday PM
March 14, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Qing Jiang, Jilin University; Graeme Murch, The University of Newcastle

2:00 PM Invited
Determination of the Diffusion Mechanisms in Liquid Alloys: *Graeme Murch*[1]; Irina Belova[1]; [1]The University of Newcastle

2:30 PM
First Principles Molecular Dynamics Study for Oxidation on Ti Surface at Elevated Temperature: *Somesh Bhattacharya*[1]; Ryoji Sahara[1]; Kyosuke Ueda[2]; Takayuki Naushima[2]; [1]National Institute for Materials Science; [2]Tohoku University

2:50 PM
Properties of Liquid TiAl Alloys from Classical MD Simulation and Comparison to Electrostatic Levitation (ESL) Experiments: *Brian Novak*[1]; Jonathan Raush[2]; Xiaoman Zhang[1]; Wenjin Meng[1]; Shengmin Guo[1]; Dorel Moldovan[1]; [1]Louisiana State University; [2]University of Louisiana at Lafayette

3:10 PM
Mass and Heat Transport in Ternary Liquid Alloys: *Irina Belova*[1]; Graeme Murch[1]; [1]University of Newcastle

3:30 PM Break

3:45 PM
Simulation of Close Defect Pair Recombination in Beryllium: Christopher Stihl[1]; Rohit Kumar[2]; *Pavel Vladimirov*[1]; [1]Karlsruhe Institute of Technology; [2]Indian Institute of Technology Roorkee

4:05 PM Invited
Design of Fast Ion Conducting Electrode Materials: *Qing Jiang*[1]; [1]Jilin University

4:35 PM
Theoretical Investigation of Ag-Li-Sb System as the Anode Materials for Lithium-ion Batteries: *Marcela Trybula*[1]; Monika Bugajska[2]; Przemyslaw Fima[2]; [1]1. Institute of Metallurgy and Materials Science Polish Academy of Sciences, Krakow, Poland 2. Department of Materials Science and Engineering, Division of Materials, KTH Royal Institute of Technology, Stockholm, Sweden; [2]Institute of Metallurgy and Materials Science Polish Academy of Sciences

4:55 PM
The Effect of Chemical Doping on the Lithiation Processes of the Crystalline Si Anode: A First-principles Study: *Chin-Lung Kuo*[1]; [1]National Taiwan University

5:15 PM
Protein Dynamics under Nanoconfinement and Its Contribution to the Toughness of Nacre: *Arvand Navabi*[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Microstructure and Processing Simulations II

Sponsored by: Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Wednesday PM
March 14, 2018

Room: 131B
Location: Phoenix Convention Center

Session Chairs: Alan Luo, The Ohio State University; Fadi Abdeljawad, Sandia National Laboratories

2:00 PM
Sintering Dynamics in Direct Write Additive Manufacturing Processes: A Phase Field Model: *Fadi Abdeljawad*[1]; Dan Bolintineanu[1]; Adam Cook[1]; Harlan Brown-Shaklee[1]; Daniel Kammler[1]; [1]Sandia National Laboratories

2:20 PM
Multi-scale Phase-field Modeling of Microstructure Evolution of Additively Manufactured Metals: *Lei Chen*[1]; Zhuo Wang[1]; [1]Mississippi State University

2:40 PM
Smoothed Particle Hydrodynamics Simulation of Impact Welding Process: *Ali Nassiri*[1]; Tim Abke[2]; [1]The Ohio State University; [2]Honda R&D Americas, Inc.

3:00 PM
Study on the Effects of Contact Pressure and Process Parameters on the Casting-mold Interfacial Heat Transfer in Squeeze Casting: Feifan Wang[1]; Xuyang Wang[1]; Keyan Wu[1]; *Zhiqiang Han*[1]; [1]Tsinghua University

3:20 PM
Phase Field and Atomistic Simulation to Study Solidification in Undercooled Titanium: *Sepideh Kavousi*[1]; Brian Novak[1]; Mohammad Dodaran[1]; Dorel Moldovan[1]; [1]Louisiana State University

3:40 PM Break

4:00 PM
CALPHAD Coupled Phase Field Modeling of Sigma Phase Precipitation in Commercial 2507 Super Duplex Stainless Steel Alloy: *Amer Malik*[1]; Jan Jonson[2]; Joakim Odqvist[3]; Staffan Hertzman[1]; [1]Swerea KIMAB AB; [2]Outokumpu Stainless AB; [3]KTH Royal Institute of Technology

4:20 PM
Multi-scale Materials Modeling to Study the Influence of Microscopic Parameters on the Mechanical Properties of DP Steels under Different Strain Rates: Parametric Study and Optimization: *Tarek Belgasam*[1]; Hussein Zbib[1]; [1]Washington State University

4:40 PM
2D Simulation of Gradient Zone Formation in Cemented Carbides with Conventional and Alternative Binders: *Armin Salmasi*[1]; Henrik Larsson[1]; Stella Sten[1]; Andreas Blomqvist[2]; [1]KTH Royal institute of technology; [2]Sandvik Coromant R&D

5:00 PM
Continuum Scale Modelling of Diffusion-reaction Processes during Coating Deposition: *Axel Forslund*[1]; Henrik Larsson[1]; [1]KTH Royal Institute of Technology

Computational Design and Simulation of Materials (CDSM 2018): Computational Design of Materials – Computational Design: Tools and Data

Sponsored by: Chinese Society for Metals
Program Organizers: Alan Luo, The Ohio State University; Suveen Mathaudhu, University of California, Riverside; Yong Du, Central South University; Raymundo Arroyave, Texas A & M University; Dianzhong Li, Institute of Metal Research, Chinese Academy of Sciences; Zi-Kui Liu, The Pennsylvania State University

Wednesday PM
March 14, 2018

Room: 131C
Location: Phoenix Convention Center

Session Chairs: Yu Zhong, WPI; Alex Greaney, University of California, Riverside

2:00 PM Invited
Automated Computer Design of Kinematically Active Molecular Materials: Charles Manion[1]; Laura de Sousa Oliveira[2]; Brady Gibbons[1]; Matthew Campbell[1]; *P Greaney*[2]; [1]Oregon State University; [2]University of California, Riverside

2:30 PM
SEGROcalc: A Software Tool for Integrated Computational Grain Boundary Engineering: *Daniel Scheiber*[1]; Anatol Drlicek[1]; Nada Kulo[1]; Jürgen Spitaler[1]; Vsevolod Razumovskiy[1]; Lorenz Romaner[1]; [1]Materials Center Leoben Forschungs GmbH

2:50 PM
Diffusion Couple Experiments to Support the Development of a Diffusion Mobility Database for the Co-Al-W-Ni-Cr-Ta System: *Kil-won Moon*[1]; Greta Lindwall[1]; Maureen Williams[1]; Carelyn Campbell[1]; Peisheng Wang[2]; Ursula Kattner[1]; [1]National Institute of Standards and Technology; [2]Northwestern University

3:10 PM
Computational Microstructure Characterization and Reconstruction for Multi-scale Analysis of Multi-phase AHSS: *Hongshan Zhao*[1]; Han Dong[1]; Wei Li[2]; Xuejun Jin[2]; [1]Shanghai University; [2]Shanghai Jiao Tong University

3:30 PM Break

3:50 PM
Quantitative Defect Chemistry Analysis of (La1-xCax)yFeO3±d Perovskite: *Shadi Darvish*[1]; Yu Zhong[2]; [1]Florida International University; [2]Worcester Polytechnic Institute

4:10 PM
Theoretical Investigation of Vacancy Concentration and its Effect on the Kinetics of B2 – $L2_1$ Ordering in Ni-Co-Mn-In MetaMagnetic Shape Memory Alloys: *Yuhao Wang*[1]; Daniel Salas[1]; Bharat Medasani[2]; Ibrahim Karaman[1]; Thien Duong[1]; Raymundo Arroyave[1]; [1]Texas A&M University; [2]Pacific Northwest National Laboratory

4:30 PM
Separation Oxide and Fluride and Sulfur Gases with Hydrogen in Aluminium Industry by Carbon Nano Tube (Monte Carlo Simulation): *Mohsen Amerisiahooei*[1]; Khirollah Baharvand[1]; Mohammad Yousefi[1]; [1]Islamic Azad University

4:50 PM
Design of a New Multi-element Beta Titanium Alloy Based on D-electron Method: *Saeed Sadeghpour*[1]; Seyed Mahdi Abbasi[1]; Maryam Morakabati[1]; [1]Malek Ashtar University of Technology

Computational Materials Science and Engineering for Nuclear Energy – Fundamentals of Radiation Effects I

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Sergei Dudarev, Culham Centre for Fusion Energy (CCFE); James Morris, Oak Ridge National Laboratory

2:00 PM Invited
Evolution of Grain Boundary Structure and Composition in Irradiated SiC: *Izabela Szlufarska*[1]; Xing Wang[2]; Hao Jiang[1]; Tomonori Baba[1]; [1]University of Wisconsin; [2]Oak Ridge National Laboratory

2:30 PM
Effects of Oxygen on the Density of States and Elastic Properties of Hafnium—First Principles Calculations: *Yang Zhang*[1]; Yajie Wen[1]; Naimeng Liu[1]; Hao Guo[1]; Ye Cui[1]; Dan Chen[1]; Zhongwu Zhang[1]; [1]Harbin Engineering University

2:50 PM
Quantitative Phase Field Modeling of Void Growth in Irradiated Solids: *Anter El-Azab*[1]; [1]Purdue University

3:10 PM
Multiscale Simulations of Sequential Dislocation/Obstacle Interactions in FCC Metals: *Shuozhi Xu*[1]; David McDowell[2]; Irene Beyerlein[1]; [1]University of California, Santa Barbara; [2]Georgia Institute of Technology

3:30 PM Break

3:50 PM
Thermomechanical Analysis of the Multi-metallic Layered Composite Fuel Cladding for Improved Accident Tolerance of LWRs: *Aashique Rezwan*[1]; Michael Tonks[1]; Michael Short[2]; [1]The Pennsylvania State University; [2]Massachusetts Institute of Technology

4:10 PM
The Thermodynamic and Kinetic Properties of Spinels as They Relate to CRUD: Ghanshyam Pilania[1]; *Blas Uberuaga*[1]; David Andersson[1]; [1]Los Alamos National Laboratory

4:30 PM
Computer Simulations of Dislocation-obstacle Interactions in the Hardening and Recovery of BWR-irradiated 304L SS: *Justin Hesterberg*[1]; Jesse Carter[2]; Denise Paraventi[2]; Richard Smith[2]; Gary Was[1]; [1]University of Michigan; [2]Naval Nuclear Laboratory

4:50 PM Invited
Interstitial-mediated Diffusion and Aggregation Mechanism for Transmutation Elements Rhenium and Ormium Precipitation in Tungsten: *Guanghong Lu*[1]; Hongbo Zhou[1]; Yuhao Li[1]; [1]Beihang University

Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions – Development, UQ and Validation of Classical Potential

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory; Richard Hennig, University of Florida; Avinash Dongare, University of Connecticut; Shawn Coleman, U.S. Army Research Laboratory; Niaz Abdolrahim, University of Rochester; Joseph Bishop, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Li Ma, National Institute of Standards and Technology

Wednesday PM
March 14, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chair: Fadi Abdeljawad, Sandia National Laboratories

2:00 PM Invited
Machine Learning Methods for Interatomic Potentials: Application to Boron Carbide: *Michael Widom*[1]; [1]Carnegie Mellon University

2:30 PM
Machine Learnt Interatomic Potentials for Stanene and Germanene to Study Thermal Conductivity and Growth: *Mathew Cherukara*[1]; Badri Narayanan[1]; Alper Kinaci[2]; Kiran Sasikumar[1]; Stephen Gray[1]; Maria Chan[1]; Subramanian Sankaranarayanan[1]; [1]Argonne National Lab; [2]Northwestern University

2:50 PM Invited
The OpenKIM Testing Framework for Interatomic Potentials: *Ellad Tadmor*[1]; Ryan Elliott[1]; Daniel Karls[1]; James Sethna[1]; [1]University of Minnesota

3:20 PM Break

3:40 PM Invited
New Advances in Semi-empirical Interatomic Potentials - the Modified Embedded Atom Method (MEAM): *Michael Baskes*[1]; [1]Mississippi State University, Mississippi State, MS; Los Alamos National Laboratory, Los Alamos, NM; UCSD, La Jolla, CA; University of North Texas, Denton, Tx

4:10 PM Invited
Errors of Molecular Dynamics Simulations, and Development of "Accurate" Analytical Bond Order Potentials for Al-Cu-H and Mg-H Systems: *Xiaowang Zhou*[1]; Brandon C. Wood[2]; Foster E. Michael[1]; Mark. D. Allendorf[1]; Tae Wook Heo[2]; Shinyoung Kang[2]; [1]Sandia National Laboratories; [2]Lawrence Livermore National Laboratory

4:40 PM
Development of a Semi-empirical Potential for Simulation of Ni Solutes Segregated in Ag Grain Boundaries: *Mikhail Mendelev*[1]; Valery Borovikov[1]; Zhiliang Pan[2]; Frederic Sansoz[2]; [1]Ames Laboratory; [2]University of Vermont

5:00 PM
Calibration of a Titanium Modified Embedded Atom Method Potential to High Temperature Behavior: *Doyl Dickel*[1]; Mark Tschopp[2]; Mark Horstemeyer[1]; [1]Mississippi State University; [2]Army Research Laboratory

Computational Thermodynamics and Kinetics – Thermochemistry and Thermomechanics

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Wednesday PM
March 14, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Oxygen Off-stoichiometry and Defect Entropies in Solar Thermochemical Water Splitting Materials: *Chris Wolverton*[1]; [1]Northwestern University

2:30 PM
Computationally Tractable Methods for Studying the Roles of Water Molecules on Aqueous Phase Heterogeneous Catalysis: *Tianjun Xie*[1]; Rachel Getman[1]; [1]Clemson University

2:50 PM
Density Functional Theory Study of Oxygen Reduction Reaction on Non-precious Transition Metal/Nitrogen Doped Carbon Electrocatalysts: *Guofeng Wang*[1]; Kexi Liu[1]; [1]University of Pittsburgh

3:10 PM
Thermodynamic Stabilization of Precipitates through Interface Segregation: Chemical Effects: *Sourabh Kadambi*[1]; Srikanth Patala[1]; [1]North Carolina State University

3:30 PM Break

3:50 PM Invited
Towards Accurate First Principles Energetics in Transition Metal Compounds: Yi Xia[1]; Liang Li[1]; *Maria Chan*[1]; [1]Argonne National Laboratory

4:20 PM
Investigation of the Effect of Sintering Aids and Impurities on the Sintering of B4C by Applying the CALPHAD Approach: *Mohammad Asadikiya*[1]; Yu Zhong[1]; [1]Florida International University

4:40 PM
Investigation of the Thermodynamic Stability of LSM-YSZ Mixture by Applying the CALPHAD Approach: *Mohammad Asadikiya*[1]; Yu Zhong[1]; [1]Florida International University

5:00 PM
Optimization of Thermo-mechanical Properties of Alloy Systems via a Computational Strengthening Model: *Derek Tsaknopoulos*[1]; Bryer Sousa[1]; Danielle Cote[1]; Richard Sisson[1]; Victor Champagne[1]; [1]Worcester Polytechnic Institute

Coupling Advanced Characterization and Modeling Tools for Understanding Fundamental Phase Transformation Mechanisms: An MPMD Symposium in Honor of Hamish Fraser – Session IV

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Gregory Thompson, University of Alabama; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; Soumya Nag, GE Global Research; Rajarshi Banerjee, University of North Texas

Wednesday PM
March 14, 2018
Room: 127A
Location: Phoenix Convention Center

Session Chair: Yunzhi Wang, The Ohio State University

2:00 PM Invited
Applications of Ordering Tie Lines to Represent ALCHEMI Data in Intermetallic Compounds and Complex Oxides: *Mark Aindow*[1]; Louis Gambino[2]; Yanling Hu[3]; Lichun Zhang[1]; [1]University of Connecticut; [2]Johnson Matthey; [3]Xiamen University of Technology

2:30 PM Invited
Coupled Characterization and Modeling of the Crystallography of Phase Transformations: *Eric Payton*[1]; Stephen Niezgoda[2]; Adam Pilchak[1]; Gert Nolze[3]; Victoria Yardley[4]; [1]Air Force Research Laboratory; [2]Ohio State University; [3]Federal Institute for Materials Research and Testing (BAM); [4]Ruhr-Universitaet Bochum

3:00 PM Invited
Effects of Ternary Element Additions on the Precipitation of α and ω Phases in Ti-Mo Alloys: Mariana de Mello[1]; Camilo Salvador[1]; Kaio Campo[1]; *Rubens Caram*[1]; [1]University of Campinas

3:30 PM Break

3:50 PM Invited
Progress in the Application of ICME in the Titanium Industry: *Stephen Fox*[1]; [1]Titanium Metals Corporation

4:20 PM Invited
Phase and Intrinsic Stress Stability in Thin Multilayered Films: *Gregory Thompson*[1]; Li Wan[1]; Qianying Guo[1]; Xiao-xiang Yu[1]; [1]University of Alabama

4:40 PM Invited
Advances in TiAl- based Alloys: *Soumya Nag*[1]; Akane Suzuki[1]; Manuel Acosta[2]; Michael Weimer[2]; Bernard Bewlay[1]; [1]GE Global Research; [2]GE Aviation

5:00 PM Invited
How I Learned to Stop Worrying and Love the Metallurgical Play Pen: *Peter Collins*[1]; [1]Iowa State University

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – 6A:Ni-based Superalloy Development & Properties. 6B: Microstructure & Properties of Co-based Superalloys.

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018

Room: 126A
Location: Phoenix Convention Center

Session Chairs: Kevin Bockenstedt, ATI Specialty Materials; Michael Titus, Purdue University

2:00 PM Invited
Design Approaches for Advanced Polycrystalline Ni-base Superalloys: *Sammy Tin*[1]; [1]Illinois Institute of Technology

2:30 PM
Accelerated Design and Testing of New Nickel Superalloys with Increased Creep Resistance: *Sabin Sulzer*[1]; Roger Reed[1]; Angus Wilkinson[1]; [1]University of Oxford

2:50 PM
Investigation of Deformation Pathways of Gamma' Phase in Ni-, Co- and Co-Ni-base Superalloys: *Longsheng Feng*[1]; Duchao Lv[2]; Robert Rhein[3]; Michael Titus[4]; Tresa Pollock[3]; Yunzhi Wang[1]; [1]The Ohio State University; [2]Computherm Llc; [3]University of California, Santa Barbara; [4]Purdue Univeristy

3:10 PM
The Extent of Individual Strengthening Mechanisms in Model Quinary Nickel-based Superalloys: *Amy Goodfellow*[1]; Katerina Christofidou[1]; Enrique Galindo-Nava[1]; Nick Jones[1]; Chad Boyer[2]; Mark Hardy[3]; Howard Stone[1]; [1]University of Cambridge; [2]Canadian Neutron Beam Centre; [3]Rolls-Royce plc

3:30 PM Break

3:50 PM Invited
Mechanical Properties and Deformation Mechanisms of Polycrystalline $L1_2$-strengthened Co-based Superalloys: *Steffen Neumeier*[1]; Lisa Freund[1]; Mathias Göken[1]; [1]Friedrich-Alexander-Universität Erlangen-Nürnberg

4:20 PM
$L1_2$ Phase Stability and Coarsening Behavior in Co-Al-W-base Superalloys: *Katelun Wertz*[1]; Donald Weaver[1]; S. Lee Semiatin[1]; Michael Mills[2]; Stephen Niezgoda[2]; Rajiv Shivpuri[2]; [1]Air Force Research Laboratory; [2]The Ohio State University

4:40 PM
Grain Boundary Environmental Cracking Resistance in Co/Ni Superalloys: *Lucy Reynolds*[1]; Ioannis Bantounas[1]; Mark Hardy[2]; David Dye[1]; [1]Imperial College; [2]Rolls-Royce plc

5:00 PM
Lattice Misfit and In Situ Synchrotron Creep Deformation of \947\/\947\8242 Co-Al-W-Ta Superalloy Single Crystals: *Christopher Zenk*[1]; Michael Mills[1]; Mathias Göken[2]; Steffen Neumeier[2]; [1]The Ohio State University; [2]FAU Erlangen-Nürnberg

5:20 PM
Effect of Tertiary Gamma Prime on Dwell Crack Growth Performance of a Recently Developed Co:Ni-base Superalloy: *Ioannis Bantounas*[1]; Vassili Vorontsov[1]; Suyang Yu[2]; Hangyue Li[2]; Paul Bowen[2]; Mark Hardy[3]; David Dye[1]; [1]Imperial College London; [2]The University of Birmingham; [3]Rolls-Royce Plc

Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session – Urban Mining and Electronic Waste

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Pyrometallurgy Committee
Program Organizers: Elsa Olivetti, Massachusetts Institute of Technology; John Howarter, Purdue University; Fiseha Tesfaye, Åbo Akademi University

Wednesday PM
March 14, 2018

Room: 224B
Location: Phoenix Convention Center

Session Chairs: Fiseha Tesfaye, Abo Akademi University; Mingming Zhang, ArcelorMittal

2:00 PM Keynote
Novel Technologies for Technospheric and Urban Mining of Rare Earth Elements from Phosphogypsum, Red Mud, Hybrid Car Batteries, and Wind Turbine Magnets: Yuxiang Yao[1]; Sable Reid[1]; Mugdha Walawalkar[1]; Nina Farac[1]; Feixiong Zhang[1]; Brittny Carter[1]; *Gisele Azimi*[1]; [1]University of Toronto

2:30 PM Invited
Recovery of REE from the Ferrous Fraction of Processed WEEE: *Gabriella Tranell*[1]; [1]Norwegian University of Science & Technology

2:55 PM Invited
Urban Mining for a Circular Economy: Activities at SINTEF: Anne Kvithyld[1]; *Ana Maria Martinez*[1]; [1]SINTEF

3:20 PM
Mechanisms for Advancing Recovery of Resources from Small Sized End-of-life (EoL) Equipment: *Fiseha Tesfaye*[1]; Azadeh Rostami[2]; Joseph Hamuyuni[2]; Daniel Lindberg[1]; Guven Akdogan[3]; Pekka Taskinen[2]; Leena Hupa[1]; [1]Åbo Akademi University; [2]Aalto University; [3]Stellenbosch University

3:40 PM Break

3:55 PM
Towards Commercialization of Indium Recovery from Waste Liquid Crystal Display Screens: *Thomas Boundy*[1]; Patrick Taylor[1]; [1]Colorado School of Mines

4:15 PM
Comminution and Separation of Photovoltaic Panel Materials for Recycling: *Pamela Bogust*[1]; York Smith; [1]University of Utah

4:35 PM
Recovery of Gallium and Arsenic from Gallium Arsenide Semiconductor Scraps: Dachun Liu[1]; Guozheng Zha[1]; Liang Hu[1]; *Wenlong Jiang*[1]; [1]Kunming University of Science and Technology

4:55 PM
Engineering, Scientific, and Policy Inputs for Developing a Levelized Cost of Energy Storage Model: John Howes[1]; *Timothy Ellis*[2]; [1]Redland Energy Group; [2]RSR Technologies, Inc.

5:15 PM
Investigation into the Recovery of Valuable Metals from Waste Mobile Phone Printed Circuit Boards (PCBs) – a Feasibility Study: *Maryam Ghodrat*[1]; Bijan Samali[1]; [1]Western Sydney University

Dynamic Behavior of Materials VIII – Effect of Microstructure of Dynamic Response III

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

Wednesday PM
March 14, 2018
Room: 127B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Characterization of Defect Motion at High Strain Rate In Situ inside a TEM: *Thomas Voisin*[1]; Michael Grapes[1]; Tian Li[1]; Jonathan Ligda[2]; Nicholas Lorenzo[2]; Brian Schuster[2]; Melissa Santala[1]; Yong Zhang[3]; Xiaolong Ma[3]; Geoffrey Campbell[1]; Timothy Weihs[3]; [1]Lawrence Livermore National Laboratory; [2]Army Research Laboratory; [3]Johns Hopkins University

2:40 PM
A Low-cost, Laboratory-scale Method to Identify Regions of Microstructural Changes in Response to Dynamic Loading Conditions: *Benjamin Lund*[1]; Judith Schneider[1]; [1]University of Alabama in Huntsville

3:00 PM
Viscous Sliding Flow of Shear Bands in Metals: *Dinakar Sagapuram*[1]; Koushik Viswanathan[2]; [1]Texas A&M University; [2]Purdue University

3:20 PM Break

3:40 PM Invited
Using Dynamic X-ray Imaging to Reveal the Mesoscale of Shock-compressed Granular Materials: *Daniel Eakins*[1]; [1]Imperial College London

4:00 PM
Spall Failure Mediated by Vacancy Clustering and Subsequent Nano-void Growth: *Sara Adibi*[1]; Justin Wilkerson[1]; [1]University of Texas at San Antonio

4:20 PM
The Search for the Elusive Supersonic Dislocation: *Marc Meyers*[1]; Carlos Ruestes[2]; Eric Hahn[3]; Shiteng Zhao[1]; [1]University of California, San Diego; [2]U. of Cuyo; [3]Los Alamos National Laboratory

Electrode Technology Symposium for Aluminum Production – Anode Forming and Baking

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xianan Liao, Elkem Carbon

Wednesday PM
March 14, 2018
Room: 222C
Location: Phoenix Convention Center

Session Chair: Marc Dupuis, GeniSim Inc

2:00 PM Introductory Comments

2:05 PM
3D Transient Modelling of a Complete Fire Line for Anode Baking Furnace Design and Optimization: *Arnaud Bourgier*[1]; Sandra Besson[1]; Jean-Philippe Schneider[1]; [1]Rio Tinto Aluminium

2:30 PM
A Study of Anode Baking Gas Composition: *Thor Anders Aarhaug*[1]; Trond Brandvik[2]; Heiko Gaertner[1]; Ole Sigmund Kjos[1]; Arne Petter Ratvik[1]; [1]SINTEF Materials and Chemistry; [2]NTNU

2:55 PM
Improved Compaction Method for the Production of Large Scale Anode Paste Samples for Thermo-mechanical Characterization: *Bowen Chen*[1]; Donald Picard[1]; Soufiane Zaglafi[1]; Houshang Alamdari[1]; Donald Ziegler[1]; Mario Fafard[1]; [1]Laval University

3:20 PM
Systemic Analysis for the Selection of Anode Baking Furnace Refractories: *Mariana Braulio*[1]; Valerie MacNair[2]; Victor Pandolfelli[3]; [1]4Cast - Technical Consultancy on Refractories; [2]Alcoa; [3]Federal University of São Carlos

3:45 PM Break

4:00 PM
Numerical Investigation of the Thermomechanical Behaviour of Anode Butt: *Simon-Olivier Tremblay*[1]; Daniel Marceau[1]; Patrick Coulombe[2]; Jules Côté[2]; Duygu Kocaefe[1]; [1]University of Québec at Chicoutimi; [2]Aluminerie Alouette Inc

4:25 PM
Method of Defining the Degree of Impregnation of the Dry Aggregate with Pitch in the Process of Anode Production: *Viktor Buzunov*[1]; Sergey Khramenko[1]; Semyon Zykov[1]; [1]RUSAL "Engeneering and Technological Center"

4:50 PM
Research and Application for Large Scale, High Efficiency and Energy Saving Baking Furnace Technology: *Liu Chaodong*[1]; Cui Yinhe[1]; Zhou Shanhong[1]; Xu Haifei[1]; Sun Yi[1]; [1]Shenyang Aluminium and Magnesium Engineering and Research Institute Co. Ltd

5:15 PM
Opportunities and Challenges Associated to Green Anode Plant Upgrade for Smelter Amperage Creeping: *Christophe Bouche*[1]; Bertrand Somnard[1]; Pasquale Calo[1]; Fabienne Virieux[1]; [1]Fives Solios

Environmentally Assisted Cracking: Theory and Practice – Environmental Degradation of Structural Materials

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Wednesday PM
March 14, 2018
Room: 105A
Location: Phoenix Convention Center

Session Chairs: Yiren Chen, Argonne National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

2:00 PM Invited
Cracking Behavior and Fracture Toughness of Irradiated Austenitic Stainless Steels in LWR Environments: *Yiren Chen*[1]; Bogdan Alexandeanu[1]; Ken Natesan[1]; Yong Yang[2]; Appajosula Rao[3]; [1]Argonne National Laboratory; [2]University of Florida; [3]Nuclear Regulatory Commission

2:40 PM
Environment Induced Degradation in Maraging Steel Grade 18Ni1750: *Ramkumar Devendranath*[1]; Gopi G[2]; Trilochana Jena[2]; Ravi Prasad Valluri[2]; Nageswara Muktinutalapati[1]; [1]VIT University; [2]DRDL, Hyderabad

3:00 PM
Influence of MC Carbides and γ' on Hydrogen Trapping in Nickel Alloys and Superalloys: Experiment and Alloy Design: *Franck Tancret*[1]; Miles Stopher[2]; Edern Menou[3]; Gérard Ramstein[1]; Pedro Rivera-Díaz-del-Castillo[4]; [1]Université de Nantes; [2]University of Cambridge; [3]CNRS; [4]University of Lancaster

3:20 PM Break

3:40 PM
Correlative 3D Imaging of Iodine-induced Stress Corrosion Cracks in Zr Alloys: *Alistair Garner*[1]; Conor Gillen[1]; Philipp Frankel[1]; [1]University of Manchester

4:00 PM
Effect of Frequency on Corrosion Fatigue Behavior of Steel 1.4016 in E85 Biofuel up to the Very High Cycle Fatigue Regime: *Sven Kaefer*[1]; Tobias Melz[1]; [1]Technische Universität Darmstadt

4:20 PM
Phase Field Modeling of Pitting & Crevice Corrosion: *San-Qiang Shi*[1]; [1]The Hong Kong Polytechnic University

4:40 PM
Role of Nitrogen on Hydride Nucleation and Stability in Pure Niobium by First-principles Calculations: *Pulkit Garg*[1]; Ilaksh Adlakha[1]; Kiran Solanki[1]; [1]SEMTE

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Fatigue Behaviors in Engineering Materials

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

Wednesday PM — Room: 125B
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM
Subcycle Fatigue Crack Growth Formulation under Positive and Negative Stress Ratios: Karthik Rajan Venkatesan[1]; *Yongming Liu*[1]; [1]Arizona State University

2:20 PM
Fatigue-assisted Discontinuous Grain Growth in Al Alloys: *Ramasis Goswami*[1]; C Feng[1]; Syed Qadri[1]; Chandra Pande[1]; [1]Naval Research Laboratory

2:40 PM
Low Cycle Fatigue of Friction Stir Welded Aluminum Lithium 2099: *Abby Cisko*[1]; Brian Jordon[2]; Zackery McClelland[1]; Paul Allison[2]; Dustin Avery[2]; [1]U.S. Army Engineer Research and Development Center; [2]University of Alabama

3:00 PM
Fatigue of a Transient Liquid Phase Bonded Superalloy for Use in a Microchannel-heat Exchanger: *Kyle Rozman*[1]; Monica Kapoor[1]; Sajedur Akanda[1]; Omer Dogan[1]; Jeffrey Hawk[1]; [1]NETL

3:20 PM Break

3:40 PM
3-D Understanding of Fatigue Crack Initiation from Inclusions in Inconel 718 Alloy: *Pei Cai*[1]; Yan Jin[1]; Alfonso Ngan[2]; Tongguang Zhai[1]; [1]University of Kentucky; [2]The University of Hong Kong

4:00 PM
Crack Growth under Rolling Contact Fatigue: 3D Characterisation and Modelling: *Pedro Rivera-Diaz-del-Castillo*[1]; Jakub Rydel[2]; Gael Guetard[3]; Hanwei Fu[1]; Haiwen Luo[4]; [1]Lancaster University; [2]University of Cambridge; [3]Erasteel Kloster AB; [4]University of Science & Technology Beijing

4:20 PM
Modelling Microstructural Alterations in Bearing Steels under Rolling Contact Fatigue: *Hanwei Fu*[1]; Wenwen Song[2]; Enrique Galindo-Nava[3]; Pedro Rivera-Díaz-del-Castillo[1]; [1]Lancaster University; [2]RWTH Aachen University; [3]University of Cambridge

Federation of European Materials Societies (FEMS) Keynote Symposium: Energy and Transportation from a European Materials Perspective – Keynote Session II

*Sponsored by:*Federation of European Materials Societies (FEMS)
Program Organizer: Brett Suddell, Federation of European Materials Societies (FEMS)

Wednesday PM — Room: 228A
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Brett Suddell, Federation of European Materials Societies (FEMS)

2:00 PM Introductory Comments
To be announced.

Frontiers in Solidification Science and Engineering – Effect of Microgravity and/or Convection on Solidification

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

Wednesday PM — Room: 126C
March 14, 2018 — Location: Phoenix Convention Center

Session Chair: Mohsen Asle Zaeem, Missouri University of Science and Technology

2:00 PM
Anomalous Dendrite Growth in Undercooled Al-Ni Melts: *Dieter Herlach*[1]; Marcus Reinartz[2]; Peter Galenko[2]; Markus Rettenmayr[2]; [1]Deutsches Zentrum für Luft- und Raumfahrt; [2]Friedrich Schiller Universität

2:20 PM
Investigation of the Columnar-to-equiaxed Transition during Solidification in Microgravity: *Emine Gulsoy*[1]; Yuze Li[2]; Thomas Cool[1]; Zachary Thompson[1]; Nathalie Mangelinck-Noel[2]; Henri Nguyen-Thi[2]; Gerhard Zimmenmann[3]; Laszlo Sturz[3]; [1]Northwestern University; [2]Institut Materialux Microelectronique Nanosciences de Provence; [3]ACCESS e.V

2:40 PM
Liquid Demixing in Undercooled Co-Cu Alloys: *Matthias Kolbe*[1]; Christoph Dreissigacker[1]; Stefan Burggraf[1]; Mareike Wegener[1]; Florian Kargl[1]; [1]German Aerospace Center

3:00 PM
In Situ Observations and Phase-field Modeling of Three-dimensional Grain-boundary Instability and Solitary Cell Dynamics during Directional Solidification of Binary Alloys: *Younggil Song*[1]; Fatima Lisboa Mota[2]; Jorge Pereda[2]; Jean-Marc Debierre[2]; Nathalie Bergeon[2]; Rohit Trivedi[3]; Bernard Billia[2]; Alain Karma[1]; [1]Northeastern University; [2]Aix-Marseille Université and CNRS; [3]Iowa State University

3:20 PM
Modeling Dendritic Solidification in Microgravity and Terrestrial Conditions: *Ryan Lenart*[1]; Mohsen Eshraghi[1]; Sergio Felicelli[2]; [1]California State University, Los Angeles; [2]The University of Akron

3:40 PM Break

4:00 PM
Modeling of TEMHD Flow Velocities and Its Influence on Dendritic Growth Velocities in Free Solidification of Pure Metals under Static Magentic Fields: *Jianrong Gao*[1]; Rijie Zhao[1]; Andrew Kao[2]; Koulis Pericleous[2]; [1]Northeastern University; [2]University of Greenwich

4:20 PM
A Lattice Boltzmann Model with Multiple Grids and Time Steps for Dendritic Solidification: *Elaheh Dorari*[1]; Mohsen Eshraghi[2]; Sergio Felicelli[1]; [1]University of Akron; [2]California State University, Los Angeles

4:40 PM
Permeability Prediction of Dendrite Structure by Large-scale Phase-field Lattice Boltzmann Simulation: *Tomohiro Takaki*[1]; Shinji Sakane[1]; Munekazu Ohno[2]; Yasushi Shibuta[3]; Takashi Shimokawabe[3]; Takayuki Aoki[4]; [1]Kyoto Institute of Technology; [2]Hokkaido University; [3]The University of Tokyo; [4]Tokyo Institute of Technology

5:00 PM
A Phase-field Lattice Boltzmann Model for Bubble-dendrite Interaction during Solidification of Binary Alloys: *Seyed Amin Nabavizadeh*[1]; Mohsen Eshraghi[2]; Sergio Felicelli[1]; [1]The University of Akron; [2]California State University

High Entropy Alloys VI – Mechanical and Other Properties I

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Alloy Phases Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Lab; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Wednesday PM
March 14, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: Jeffrey Hawk, National Energy Technology Lab; Hyoung Kim, POSTECH

2:00 PM
Investigation of Phase Behavior in Al-Cr-Co-Ni-Ti Multi-principal Element Alloys Using the CALPHAD Approach with Key Experiments: *Wei Xiong*[1]; Yunhao Zhao[1]; [1]University of Pittsburgh

2:20 PM Invited
Structures, Thermodynamics, and Kinetics of Liquid High-entropy Alloys: *Michael Gao*[1]; Mike Widom[2]; Lizhi Ouyang[3]; Jeffrey Hawk[1]; [1]National Energy Technology Lab; [2]Carnegie Mellon University; [3]Tennessee State University

2:40 PM
Microstructural Evolution and Mechanical Behavior of NbTaTiV Refractory High-entropy Alloy at Elevated Temperatures: *Chanho Lee*[1]; Gian Song[2]; Michael Gao[3]; Rui Feng[1]; Peiyong Chen[1]; Yan Chen[2]; Ke An[2]; Wei Guo[4]; Jonathan Poplawsky[4]; Song Li[5]; Alice Hu[5]; Wei Chen[6]; Hahn Choo[1]; Peter Liaw[1]; [1]University of Tennessee; [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory; [3]National Energy Technology Laboratory/AECOM; [4]Center for Nano-phase Materials Sciences, Oak Ridge National Laboratory; [5]The City University of Hong Kong; [6]The Illinois Institute of Technology

3:00 PM Invited
Strain Rate Dependent Deformation Mechanism of CoCrFeMnNi High-entropy Alloy: *Hyoung Seop Kim*[1]; Jongun Moon[1]; Sun Ig Hong[2]; Jae Wung Bae[1]; Min Ji Jang[1]; Dami Yim[1]; [1]POSTECH; [2]Chungnam National University

3:20 PM Invited
Microstructure and Mechanical Properties of a Nanostructured High Entropy Alloy Processed via Severe Plastic Deformation: *Yaojun Lin*[1]; Zhigang Yan[2]; Fei Chen[1]; Enrique Lavernia[3]; [1]Wuhan University of Technology; [2]Yanshan University; [3]University of California, Irvine

3:40 PM Break

4:00 PM Invited
Microstructures and Properties of As-Cast AlCrFeMnV, AlCrFeTiV, and AlCrMnTiV High Entropy Alloys: *Keith Knipling*[1]; Prithvi Narayana[2]; Lily Nguyen[1]; [1]U.S. Naval Research Laboratory; [2]Thomas Jefferson High School for Science and Technology

4:20 PM
Microstructure and Mechanical Properties of Refractory HfMo0.5NbTiV0.5Six High-entropy Composites: *Yuan Liu*[1]; [1]Tsinghua University

4:40 PM
Mechanical Properties and Deformation Twinning Behavior of As-cast CoCrFeMnNi High-entropy Alloy at Low and High Temperatures: *Jeoung Han Kim*[1]; Young-Sang Na[2]; Ka-Ram Lim[2]; Jong Woo Won[2]; [1]Hanbat National University; [2]Korea Institute of Materials Science

5:00 PM
Hydrogen Resistance of C-doped and Undoped CoCrFeMnNi High-entropy Alloys: Hong Luo[1]; *Zhiming Li*[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung

5:20 PM
Mechanical Behavior and Thermal Stability of a Dual-phase Complex High Entropy Alloy: Benjamin MacDonald[1]; Zhiqiang Fu[1]; Zhiming Li[2]; Weiping Chen[3]; Yizhang Zhou[1]; Dierk Raabe[2]; Horst Hahn[4]; *Enrique Lavernia*[1]; [1]University of California Irvine; [2]Max-Planck-Institut Für Eisenforschung; [3]South China University of Technology; [4]Karlsruhe Institute of Technology

High Entropy Alloys VI – Structures and Characterization 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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Wednesday PM
March 14, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: David Shifler, Office of Naval Research; Jeff DeHosson, University of Groningen

2:00 PM Invited
Polymorphism in a High-entropy Alloy: *Qiaoshi Zeng*[1]; [1]Center for High Pressure Science & Technology Advanced Research

2:20 PM Invited
Twin and Dislocation Evolution for Interrupted Compression Experiments of Alx(CrCoFeNi)1-x High Entropy Alloys (HEAs): *Omar Rodriguez*[1]; Haoyan Diao[2]; Peter Liaw[2]; Lin Li[3]; Paul Allison[3]; [1]NASA MSFC; [2]University of Tennessee; [3]The University of Alabama

2:40 PM Invited
Deformation Mechanism of Transformation-induced Plasticity-assisted, Dual-phase High-entropy Alloy (TRIP-DP-HEA) by In-situ Neutron Diffraction: Sichao Fu[1]; Hongbin Bei[1]; *Ke An*[1]; [1]Oak Ridge National Laboratory

3:00 PM Invited
Abstract Title: Advanced Scanning Electron Microscopy Characterization of the Microstructure of High Entropy Alloys: *Václav Ocelík*[1]; Jeff DeHosson[1]; [1]University of Groningen

3:20 PM
Combinatorial Assessment of FeMnCoCrAl High Entropy Alloy: *Marshal Amalraj*[1]; Pradeep Konda Gokuldoss[1]; Jochen Schneider[1]; [1]Materials Chemistry, RWTH Aachen University.

3:40 PM Break

4:00 PM
Diffusion in CoCrFeNi Based High Entropy Alloys: *Abhishek Mehta*[1]; Le Zhou[1]; Esin Schulz[1]; Yongho Sohn[1]; [1]University of Central Florida

4:20 PM
Microstructural Evolution and Resulting Mechanical Behavior in Nanocrystalline CoCrCuFeNi High-entropy Alloys after Heat Treatments: *Seungjin Nam*[1]; Moon Kim[2]; Jun Yeon Hwang[3]; Hyunjoo Choi[1]; [1]Kookmin University; [2]The University of Texas at Dallas; [3]Korea Institute of Science and Technology

4:40 PM Invited
Effect of Extreme Disorder on the Lattice Dynamics and Phonon Scattering in Concentrated Solid Solution Alloys: G. Malcolm Stocks[1]; *Sai Mu*[1]; Raina Olsen[1]; Biswanath Dutta[2]; German Samolyuk[1]; Tom Berlijn[1]; Lucas Lindsay[1]; Tilmann Hickel[2]; Bennett Larson[1]; [1]Oak Ridge National Laboratory; [2]Max-Planck-Institut fur Eisenforschung GmbH

5:00 PM
Processing, Microstructure and Mechanical Characterization of MgAlLiZnCaCu High Entropy Alloy: K. Tun[1]; Tirumalai Srivatsan[2]; A. Yadav[3]; A. Sharma[3]; *Manoj Gupta*; [1]National University of Singapore; [2]University of Akron; [3]National Institute of Technology

5:20 PM
Combinatorial Exploration of High Entropy Alloys: *Sebastian Kube*[1]; Sungwoo Sohn[1]; Punnathat Bordeenithikasem[1]; Yanhui Liu[2]; Ellen Scanley[3]; Christine Broadbridge[3]; Jan Schroers[1]; [1]Yale University; [2]Chinese Academy of Sciences; [3]Southern Connecticut State University

High Temperature Corrosion of Structural Materials – Fe-base Alloys, Effect of CO_2, and Coatings

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee
Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Mark Weaver, University of Alabama; Steve Coryell, Special Metals; James Earthman, University of California, Irvine

Wednesday PM
March 14, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Long-term Behavior of Structural Alloys in Supercritical CO_2 at 750°C: *Bruce Pint*[1]; Robert Brese[1]; James Keiser[1]; [1]Oak Ridge National Laboratory

2:30 PM
Oxidation Resistance of FeCrAl Alloys in Air and Steam from 800 to 1300°C: *Raul Rebak*[1]; Vipul Gupta[1]; [1]GE Global Research

3:00 PM
A New Facility for Comparing Water Treatments in Ultra-supercritical Steam Boilers: *Stephen Raiman*[1]; Bruce Pint[1]; [1]Oak Ridge National Laboratory

3:20 PM
Cyclic Oxidation Resistance of Chromia Forming Alloys in a Flowing High Temperature Exhaust Gas Environment: *Jordan Graham*[1]; Savko Malinov[1]; Roy Douglas[1]; Andrew Woods[2]; [1]Queen's University Belfast; [2]Catagen

3:40 PM Break

4:00 PM
The Influence of External Stress on High Temperature Hydrogen Attack (HTHA) Cracking: *Raymond Thompson*[1]; Dustin Nolen[1]; [1]Vista Engineering

4:20 PM Invited
Electroless Ni-plating in Combination with Diffusion Coatings for Corrosion Protection of Steels for SO2 and Cl-rich High Temperature Environments: Tobias Meissner[1]; Xabier Montero[1]; Diana Faehsing[1]; *Mathias Galetz*[1]; [1]Dechema Forschungsinsitut

4:50 PM
Thermocouples in Gas Turbines: The Oxidation of Materials for Sensors in Thermal Cyclic Conditions: *Michele Scervini*[1]; [1]University of Cambridge

Hume-Rothery Award Symposium: Computational Thermodynamics and Its Implications to Kinetics, Properties, and Materials Design – Early Career Scientist

Sponsored by: TMS Functional Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Michael Gao, National Energy Technology Lab; Chelsey Hargather, New Mexico Institute of Mining and Technology; Richard Hennig, University of Florida; James Saal, QuesTek Innovations; Dongwon Shin, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chairs: Zi-Kui Liu, Penn State University; Suveen Mathaudhu, University of California, Riverside

2:00 PM Invited
Scattering Study of Phonon Confinement in Group IV Materials: *Chen Li*[1]; [1]University of California, Riverside

2:25 PM Invited
Semi-automated CALPHAD Modeling of Alloy Systems: *Richard Otis*[1]; Brandon Bocklund[2]; Zi-Kui Liu[2]; [1]Jet Propulsion Laboratory; [2]Pennsylvania State University

2:50 PM Invited
High-throughput CALPHAD and its Applications in Materials Design: *Wei Xiong*[1]; [1]University of Pittsburgh

3:15 PM Invited
Strengthening Mg by Self-dispersed Nano-lamellar Faults: *William Yi Wang*[1]; Shun-Li Shang[2]; Yi Wang[2]; Kristopher Darling[3]; Bin Tang[1]; Hongchao Kou[1]; Xi-Dong Hui[4]; Suveen Mathaudhu[5]; Laszlo Keckes[3]; Jinshan Li[1]; Zi-Kui Liu[2]; [1]Northwestern Polytechnical University; [2]The Pennsylvania State University; [3]U.S. Army Research Laboratory; [4]University of Science and Technology Beijing; [5]University of California, Riverside

3:40 PM Break

4:00 PM Invited
Solute-induced Solid-solution Softening and Hardening in BCC Tungsten: *Yong-Jie Hu*[1]; Michael Fellinger[2]; Brady Bulter[3]; Yi Wang[4]; Kristopher Darling[3]; Laszlo Kecskes[3]; Dallas Trinkle[2]; Zi-Kui Liu[4]; [1]University of Michigan; [2]University of Illinois at Urbana-Champaign, Urbana; [3]U.S. Army Research Laboratory; [4]The Pennsylvania State University

4:25 PM Invited
Anharmonic Phonons in Cuprite: *Claire Saunders*[1]; Dennis Kim[1]; Olle Hellman[1]; Hillary Smith[1]; Tian Lan[2]; Doug Abernathy[3]; Brent Fultz[1]; [1]California Institute of Technology; [2]Ginkgo LLC; [3]Oak Ridge National Laboratory

4:50 PM Invited
Diffusion Coefficients of Alloying Elements in Dilute Mg Alloys from First-principles: A Comparative Study of 8-frequency Model, 13-frequency Model, and Kinetic Monte Carlo: *Bi-Cheng Zhou*[1]; Irina Belova[2]; Shun-Li Shang[3]; Yi Wang[3]; Graeme Murch[2]; Zi-Kui Liu[3]; [1]Northwestern University; [2]The University of Newcastle; [3]The Pennsylvania State University

Integrative Materials Design III: Performance and Sustainability – Energy and Sustainability Considerations in Integrative Materials Design and Manufacturing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Diana A. Lados, Worcester Polytechnic Institute; Brad Boyce, Sandia National Laboratories; Corbett Battaile, Sandia National Laboratories; Anastasios Gavras, Riley Power

Wednesday PM
March 14, 2018
Room: 132A
Location: Phoenix Convention Center

Session Chairs: Anastasios Gavras, Riley Power, Inc.; Pierre-Marie Nigay, Worcester Polytechnic Institute

2:00 PM Invited
Structure/Property Relationships and Failure Mechanisms in Multifunctional Materials: From Metallic Foams to Metallic Thin Films for Stretchable/Flexible Electronics, Solar Cells/LEDs and MEMS: *Winston Soboyejo*[1]; [1]Worcester Polytechnic Institute

2:20 PM Invited
Electric Vehicle Battery Design for Disassembly in Support of Materials Reuse: Mikaela DeRousseau[1]; Yan Wang[1]; Diran Apelian[1]; *Brajendra Mishra*[1]; [1]Worcester Polytechnic Institute

2:40 PM Invited
Thermally Reliable Materials of Clay and Organic By-products for Thermal Energy Storage: *Pierre-Marie Nigay*[1]; Ange Nzihou[2]; Claire White[3]; Winston Soboyejo[1]; [1]Worcester Polytechnic Institute; [2]Mines Albi; [3]Princeton University

3:00 PM Invited
Materials Design for Advanced Energy Generating Systems: *Gabriel Ilevbare*[1]; [1]Idaho National Laboratory

3:20 PM Invited
Characterization of Recycled Additive Manufacturing Product: *Noah Budiansky*[1]; Joel Forman[1]; Steven Kruzer[1]; Theodoros Koutsoukis[2]; Ryan Spray[1]; [1]Exponent; [2]IPG Photonics, Corp.

3:40 PM Break

3:55 PM Invited
Cermets as Model Materials for Integrative Materials Design: *Sean Agnew*[1]; Liang Dong[1]; Haydn Wadley[1]; [1]University of Virginia

4:15 PM Invited
A New Methodology for Design of Cermets: 'Green' Replacement for Cobalt Binder in WC: *Heather Murdoch*[1]; Kristopher Darling[1]; [1]Army Research Lab

4:35 PM
Improving Power Plants' Reliability through Root Cause Metallurgical Failure Analysis: *Anastasios Gavras*[1]; [1]Riley Power Inc.

4:55 PM Invited
Holistic Assessment of Beneficial Use of Industrial Byproducts in Structural Materials: *Elsa Olivetti*[1]; [1]Massachusetts Institute of Technology

5:15 PM Invited
"Alternative" Materials in the Green Building and Construction Sector: Examples, Barriers, and Environmental Analysis: *Gabrielle Gaustad*[1]; Adam Stoker[1]; Kate Krueger[1]; [1]Rochester Institute of Technology

5:35 PM
Integration of Materials Properties in an Architecture, Engineering, and Construction Project: *Pnina Ari-Gur*[1]; Jiansong Zhang[2]; Xiaoyun Shao[1]; [1]Western Michigan University; [2]Purdue University

Magnesium Technology 2018 – Primary Production and Casting

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Wednesday PM
March 14, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Neale Neelameggham, Ind LLC; Elsa Olivetti, MIT

2:00 PM Introductory Comments

2:05 PM Invited
Study on Metal Smelting Process under Microwave Irradiation: *Satoshi Fujii*[1]; Eiichi Suzuki[1]; Naomi Inazu[1]; Shuntaro Tsubaki[1]; Masahiko Maeda[2]; Yuji Wada[1]; [1]Tokyo Institute of Technology; [2]Oricon

2:25 PM
Experimental Study on the Reversion Reaction between Magnesium and CO Vapor in the Carbothermic Reduction of Magnesia under Vacuum: *Yang Tian*[1]; Yong Deng[1]; Bin Yang[1]; Hai Liu[1]; [1]Kunming University of Science and Technology

2:45 PM
The Electrolytic Production of Magnesium from MgO: *James Withers*[1]; John Laughlin[1]; Jeffery Babis[1]; [1]ATS-MER, LLC

3:05 PM
Study on the Production of Metallic Magnesium from Nickel - Containing Serpentine: *Huimin Lu*[1]; Wu Guangzhi[2]; [1]Beihang University; [2]Inner Mongolia Xintai Construction and Installation (Group) Co., Ltd

3:25 PM Break

3:45 PM
Fabrication of Mg(OH)2 by Electrolysis Using MgCl2 Aqueous Solution: *Xijuan Pan*[1]; Zhang Ting'an[1]; Zhihe Dou[1]; Yukun Ren[1]; Guozhi Lyu[1]; Junjie Zhang[1]; Long Wang[1]; Xiuxiu Han[1]; [1]Northeastern University

4:05 PM
The Morphology and Distribution of Al8Mn5 in High Pressure Die Cast AM50 and AZ91: Guang Zeng[1]; Xiangzhen Zhu[2]; Shouxun Ji[2]; *Christopher Gourlay*[1]; [1]Imperial College London; [2]Brunel University London

4:25 PM
Thermogravimetric Analysis of Simultaneous Decomposition and Formation of MgB2: *Muhammad Imam*[1]; Ramana Reddy[1]; [1]The University of Alabama

4:45 PM
Empirical Examination of the Formation of Mechanical Properties of Heated Twin-roll-cast Magnesium Strips: *Claudia Kawalla*[1]; Marie Teuber[1]; Michael Höck[1]; [1]TU Bergakademie Freiberg

5:05 PM
An Experimental Study on Penetration Resistance Characteristics of Full Production Scale Magnesium Alloy AMX602: *Tyrone Jones*[1]; [1]US Army Research Laboratory

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials III

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018

Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Advanced Manufacturing of HT9 Steel for Extreme Environments: *Niyanth Sridharan*[1]; Kevin Field[1]; Maxim Gussev[1]; [1]Oak Ridge National Laboratory

2:20 PM
Recrystallization of a Nanostructured Ferritic Alloy after Cold Work: *Clarissa Yablinsky*[1]; Eda Aydogan[1]; Sven Vogle[1]; G. Robert Odette[2]; David Hoelzer[3]; Connor Rietema[4]; Kester Clarke[4]; Stuart Maloy[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara; [3]Oak Ridge National Laboratory; [4]Colorado School of Mines / Los Alamos National Laboratory

2:40 PM
Characterization of the Microstructure and Grain Boundary Character of 14-YWT Nanostructured Ferritic Alloys Following Different Deformation Processing Paths: *Soupitak Pal*[1]; MD Alam[1]; Stuart Maloy[2]; David Hoelzer[3]; John Lewandowski[4]; G Odette[1]; [1]University of California, Santa Barbara; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory; [4]Case Western University

3:00 PM
Fabrication of ODS FeCrAl Tube for Accident Tolerant Fuel Cladding Applications: *Sebastien Dryepondt*[1]; Caleb Massey[2]; Philip Edmondson[1]; Maxim Gussev[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

3:20 PM
Additive Stainless Steel for Nuclear: From Material Aspects to Quality Part: *Xiaoyuan Lou*[1]; Raul Rebak[2]; Myles Connor[3]; Francis Bolger[3]; David Webber[3]; Gary Was[4]; Miao Song[4]; Mi Wang[4]; Frederick List[5]; [1]CorroMet LLC; [2]GE Global Research; [3]GE Hitachi Nuclear Energy; [4]University of Michigan; [5]Oak Ridge National Lab

3:40 PM Break

4:00 PM Invited
Very High Temperature Steam Oxidation of LWR FeCrAl Fuel Cladding: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

4:20 PM
A Study on the High Energy Ball Milling and Spark Plasma Sintering of Fe-Cr Based Alloys: *Arnab Kundu*[1]; Indrajit Charit[1]; Brian Jaques[2]; Chao Jiang[3]; [1]University of Idaho; [2]Boise State University; [3]Idaho National Laboratory

4:40 PM
In-situ Characterization of Dispersoid Evolution during Annealing of ODS FeCrAl Mechanical Alloyed Powders: *Caleb Massey*[1]; Sebastien Dryepondt[2]; Matthew Frith[2]; Philip Edmondson[2]; Kurt Terrani[2]; Steven Zinkle[1]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Laboratory

5:00 PM
Development of Laves and B2 Manipulated Advanced Ferritic Alloys: *Tianyi Chen*[1]; Lizhen Tan[1]; Ying Yang[1]; Mo-Rigen He[2]; Kumar Sridharan[2]; [1]Oak Ridge National Laboratory; [2]University of Wisconsin-Madison

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials IV

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Wednesday PM
March 14, 2018

Room: 103A
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Low Cycle Fatigue Resistance of Zircaloy-4 under Uniaxial and Torsion Loading: *Brian Cockeram*[1]; Bruce Kammenzind[2]; [1]NNL Bettis Laboratory; [2]Bechtel-Bettis

2:20 PM
High-temperature Mechanical Properties of Zirconium Hydrides Studied with Nanoindentation: *Mahmut Cinbiz*[1]; Mehdi Balooch[2]; Xunxiang Hu[1]; Kurt Terrani[1]; Aida Amroussia[3]; [1]UT-Battelle ORNL; [2]University of California, Berkeley; [3]UT-Battelle ORNL and Michigan State University

2:40 PM
Mechanical Property Measurements of Zicaloy Hydride Structure by Using Nanoindentation and Nano Mechanical Raman Spectroscopy: *Hao Wang*[1]; Vikas Tomar[1]; [1]Purdue University

3:00 PM
Ion Irradiation Effects on the Structure and Thermal Properties of Zirconium Diboride: *Joseph Graham*[1]; Miguel Crespillo-Almenara[2]; [1]Missouri University of Science and Technology; [2]The University of Tennessee, Knoxville

3:20 PM
Radiation Response of Nanoporous Metals: *Xinghang Zhang*[1]; Jin Li[1]; Haiyan Wang[1]; [1]Purdue University

3:40 PM Break

4:00 PM
Using Synchrotron X-ray Diffraction and Transmission Electron Microscopy to Study the Dislocation Structures Found in Proton Irradiated Zr-Nb Alloys: *Rebecca Jones*[1]; Tamas Ungar[1]; Philipp Frankel[1]; [1]University of Manchester

4:20 PM
Atom Probe Tomography Study of Microstructural Evolution of Cast Duplex Stainless Steels after 10,000 Hour Thermal Aging: *Timothy Lach*[1]; Thak Byun[1]; Arun Devaraj[1]; [1]Pacific Northwest National Laboratory

4:40 PM
In-situ TEM Observation and MD Simulation of the Radiation Defects near Carbon Nanotube in Aluminum: *Kang Pyo So*[1]; Penghui Cao[1]; Yang Yang[1]; Mingda Li[1]; Jong Gil Park[2]; Young Hee Lee[2]; Long Yan[3]; Xiaohui Liu[4]; Mike Short[1]; Ju Li[1]; [1]Massachusetts Institute of Technology; [2]Sungkyunkwan University; [3]Shanghai Institute of Applied Physics; [4]Shanghai Jiao Tong University

Materials for Energy Conversion and Storage – Energy Harvesting I

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Wednesday PM
March 14, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chair: Surojit Gupta, University of North Dakota: UND

2:00 PM Invited
Disordered Structure Oxides for Energy Conversion and Storage: *Ritesh Sachan*[1]; William Weber[2]; Matthew Chisholm[3]; Yanwen Zhang[3]; [1]Army Research Office; [2]Univ of Tennessee ; [3]Oak Ridge National Laboratory

2:25 PM
Effect of Nano-graphite Dispersion on the Thermal Solar Selective Absorbance of Polymeric-based Coating Material: *Iman El Mahallawi*[1]; Ahmed Abdel-Rehim[2]; N. Khattab[3]; Nadia Rafat[1]; Hussein Badr[1]; [1]Cairo University; [2]The British University in Egypt; [3]National Research Centre

2:45 PM
Elucidating the Tailoring of Electrical Properties of MoOx Carrier Selective Contacts in Silicon Solar Cells Using Density Functional Theory Calculations: *Daniel Lambert*[1]; Patrick Burr[1]; Alison Lennon[1]; [1]University of New South Wales

3:05 PM
Synthesis of MoAlB Particulates and Their Porous Derivatives by Selective Deintercalation of Al from MoAlB: *Surojit Gupta*[1]; Matt Fuka[1]; [1]University of North Dakota

3:25 PM Break

3:40 PM
Synthesis, Characterization and Thermoelectric Behavior of Polyaniline and Polyaniline/Nano Filler Material Composites: Mahmoud Sorour[1]; Hussein Badr[1]; *Iman El Mahallawi*[1]; Ahmed Abdel-Rehim[2]; [1]Cairo University; [2]The British University in Egypt

4:00 PM
Comparison of AlN and TiN Solar Selective Absorber Coatings: *Iman El Mahallawi*[1]; Hanan Youssef[1]; Hisham Mohamed[2]; Mostafa Shazli[2]; Waleed Khalifa[1]; [1]Cairo University; [2]The British University in Egypt

4:20 PM
Nano-structurally Decorated Fuel Cell Membranes for Improved Performance: Leila Ladani[1]; *Shiuan Duo Chiang*[1]; Kenneth Reifsnider[1]; Yanhai Du[2]; [1]University of Texas at Arlington; [2]Kent State University

4:40 PM
Nanogalvanic Aluminum Alloys for Power Generation and Self-cannibalizing Robotic Applications: *Anit Giri*[1]; Anthony Roberts[1]; Joseph Marsico[2]; Chad Hornbuckle[1]; Scott Grendahl[1]; Kris Darling[1]; [1]US Army Research Laboratory; [2]ORISE

5:00 PM
Structure-Reactivity Relationships in Pt-functionalized Graphitic Carbon Nitrides for Solar Hydrogen Production: *Diane Haiber*[1]; Peter Crozier[1]; [1]Arizona State University

5:20 PM
Electrochemical Characterization of Capacitive Properties of Silicon Carbide-mullite-carbon Composite Electrodes: *Fatai Aramide*[1]; Patricia Popoola[2]; [1]Federal University of Technology; [2]Tshwane University of Technology

Materials Processing Fundamentals – Extractive and Recovery Processing

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

Wednesday PM
March 14, 2018
Room: 228B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
A Current Efficiency Prediction Model Based on Electrode Kinetics for Iron and Copper during Copper Electrowinning: *Zongliang Zhang*[1]; Joshua Werner[2]; Michael Free[1]; [1]University of Utah; [2]University of Kentucky

2:20 PM
The K_2SO_4-$CaSO_4$ System and Its Role in Fouling and Slagging During High-Temperature Processes: *Fiseha Tesfaye*[1]; Daniel Lindberg[1]; Leena Hupa[1]; [1]Åbo Akademi University

2:40 PM
Waste Lithium-ion Battery Recycling in JX Nippon Mining & Metals Corporation: *Yasufumi Haga*[1]; Kazuhiro Hatano[1]; Katsumi Saito[1]; [1]JX Nippon Mining & Metals Corporation

3:00 PM
Recovery of Platinum Group Metals Out of Automotive Catalytic Converters Scrap: A Review on Australian Trends and Challenges: *Maryam Ghodrat*[1]; Pezhman Sharafi[1]; Bijan Samali[1]; [1]Western Sydney University

3:20 PM
Leaching Recovery of Silver from Used Radiographic Films: *Abraham Adeleke*[1]; [1]Obafemi Awolowo University

3:40 PM Break

4:00 PM
The Study of Copper Leaching from Conichalcite and Chalcopyrite Using Alternative Lixiviants: *Junmo Ahn*[1]; Isabel Barton[1]; Doyun Shin[1]; Jaeheon Lee[1]; [1]University of Arizona

4:20 PM
Effect of Chloride Ions on the Copper Extraction Using LIX 984N and Acorga M5910: *Maria Ruiz*[1]; Jose Risso[1]; Rodrigo Sanchez[1]; Rafael Padilla[1]; [1]University of Concepcion

4:40 PM
$CaCl_2$-O_2 Roasting of Stibnite and a Complex Copper Concentrate at 500-650°C: *Rafael Padilla*[1]; Galo Brito[1]; Maria Ruiz[1]; [1]University of Concepcion

5:00 PM
Research on Sulfur Conversion Behavior in the Oxygen Pressure Acid Leaching Process for the High Indium Sphalerite: *Liu Yan*[1]; Yangyang Fan[1]; Junfu Qi[1]; Lei Tian[1]; Zhang Ting'an[1]; [1]Northeastern University

Mechanical Behavior at the Nanoscale IV – Damage, Failure and Fracture

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Wednesday PM
March 14, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Josh Kacher, Georgia Tech; Jonathan Zimmerman, Sandia National Laboratories

2:00 PM Invited
Multiscale In Situ Electron Microscopy Investigation of Deformation in Al 6061: *Josh Kacher*[1]; Yung Suk Yoo[1]; John Emery[2]; Jay Carroll[2]; [1]Georgia Tech; [2]Sandia National Laboratories

2:30 PM
Nanoscale Deformation Behavior in Aluminum Alloys Using Micromechanical Testing and Transmission X-ray Microscopy (TXM): C. Shashank Kaira[1]; Tyler Stannard[1]; Vincent De Andrade[2]; Francesco De Carlo[2]; *Nikhilesh Chawla*[1]; [1]Arizona State University; [2]Argonne National Laboratory

2:50 PM
Microstructure and Fracture Toughness of Electrodeposited Ni-W Thick Films Using In-situ Microcantilever Bend Tests: *Denise Yin*[1]; Christopher Marvel[2]; Richard Vinci[2]; Martin Harmer[2]; [1]Lehigh University; Currently at the U.S. Army Research Laboratory; [2]Lehigh University

3:10 PM
Failure Behavior and Flaw Tolerance of Polycrystalline Yttria-Stabilized Tetragonal Zirconia Nanopillars under Compressive Deformation: Ning Zhang[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

3:30 PM Break

3:50 PM
Investigation of Grain Growth in Nanocrystalline Alloys through Coupled In-situ TEM Fatigue and Crystallographic Orientation Mapping: *Christopher Barr*[1]; Daniel Bufford[1]; William Mook[1]; Brad Boyce[1]; Khalid Hattar[1]; [1]Sandia National Laboratories

4:10 PM
Estimating the Fracture Toughness of Complex Thermoelectric Materials from Ideal Stress-strain Calculations: *Matthias Agne*[1]; Guodong Li[1]; G. Jeffrey Snyder[1]; [1]Northwestern University

4:30 PM
Art Skilled Mechanical Behaviors of the Structural Calcites, Aragonites and Organics within Indonesia White-pearl Oyster: *Guowei Chen*[1]; [1]Beihang University

4:50 PM
Mechanical Behavior of Nanolaminates with Alternating Oxide Layers: *Jeong-Hyun Woo*[1]; Ju-Young Kim[1]; [1]UNIST

Multi-material Additive Manufacturing: Processing and Materials Design – Extrusion, Stereolithography, Binder Jetting, and Others

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Hang Yu, Virginia Tech; Nanci Hardwick, Aeroprobe Corporation; Steven Boles, Hong Kong Polytechnic University; Blake Barnett, Army Research Laboratory; Michael Gibson, Desktop Metal

Wednesday PM
March 14, 2018
Room: 232C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Machine, Material, and Toolpath Design for High-throughput Extrusion Additive Manufacturing: *A. John Hart*[1]; [1]MIT

2:30 PM Invited
Liquid-solid Phase Metamaterials Fabricated by Two-photon Lithography: Matthew Berwind[1]; Felix Schiebel[2]; *Chris Eberl*[1]; [1]University of Freiburg; [2]Fraunhofer IWM

3:00 PM
Extrusion of Direct-write Inks with Particle Gradients: *Leanne Friedrich*[1]; Matthew Begley[1]; [1]University of California, Santa Barbara

3:20 PM Break

3:40 PM Invited
Realizing Multi-functional Products via Multi-material Additive Manufacturing Processes: *Christopher Williams*[1]; [1]Virginia Tech

4:10 PM Invited
Fabrication of WC-Co Metal Matrix Composites via Melt Infiltration Using Binder Jet Additive Manufacturing: *Amy Elliott*[1]; Peeyush Nandwana[1]; Derek Siddel[1]; Christopher Shafer[1]; Richard Lowden[1]; [1]Oak Ridge National Laboratory

4:40 PM
Processing of High Melting Temperature Polymer with Ceramic Particles as Processing Aid in Selective Laser Sintering: *Jian Yu*[1]; Lisa Willis[2]; Ricardo Rodriguez[3]; [1]US Army Research Laboratory; [2]Navajo Technical University; [3]3D Systems

5:00 PM
Dynamic Microstructural Control in Printable Colloidal Structures via Acoustic Focusing: *Drew Melchert*[1]; Leanne Friedrich[1]; Rachel Collino[1]; Tyler Ray[2]; Matthew Begley[1]; Daniel Gianola[1]; [1]University of California, Santa Barbara; [2]Northwestern University

Perfluorocarbon Generation and Emissions from Industrial Processes – PFC Emissions Accounting Methods and Global Inventory

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Pascal Lavoie, Light Metals Research Centre - The University of Auckland; David Wong, University of Auckland; Pernelle Nunez, International Aluminium Institute

Wednesday PM
March 14, 2018
Room: 222B
Location: Phoenix Convention Center

Session Chairs: Michael Czerniak, Edwards; Pernelle Nunez, International Aluminium Institute

2:00 PM Introductory Comments

2:05 PM
Attributing PFC Emissions to Different Industries: How Bottom-up Trends Can Complicate Top-down Analyses: *Deborah Ottinger*[1]; Stephanie Bogle[1]; [1]USEPA

2:30 PM
Challenges in Estimating Global CF4 and C2F6 Emissions: *Eleni Michalopoulou*[1]; [1]University of Bristol

2:55 PM
Fluorinated Gas Production: Underestimated Source of PFCs?: *Deborah Ottinger*[1]; Karen Schaffner[2]; [1]USEPA; [2]RTI International

3:20 PM
An Estimation of PFC Emission by Rare Earth Electrolysis: *Hanno Vogel*[1]; Bernd Friedrich[2]; [1]TRIMET Aluminium SE; [2]IME Process Metallurgy and Metal Recyling, RWTH Aachen University

3:45 PM Break

4:00 PM
Updated Factors for Calculating PFC Emissions from Primary Aluminum Production: *Jerry Marks*[1]; Pernelle Nunez[2]; [1]J Marks & Associates; [2]International Aluminium Institute

4:25 PM
PFCs from the Chinese Aluminium Sector – Challenges in Emissions Accounting and Further Characteristics: *David Wong*[1]; Xiping Chen[2]; Bofeng Cai[3]; Xin Bo[3]; Pernelle Nunez[4]; [1]University of Auckland; [2]Central South University Institute; [3]Ministry for Environmental Protection; [4]International Aluminium Institute

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII – Electromigration and Stability of Electronic Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Worcester Polytechnic Institute; Hiroshi Nishikawa, Osaka University; Shien Ping Feng, The University of Hong Kong; Yee-Wen Yen, National Taiwan University of Science & Technology; Song-Mao Liang, Clausthal University of Technology

Wednesday PM
March 14, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Ming-Tzer Lin, National Chung Hsing University; Chih-Ming Chen, National Chung Hsing University

2:00 PM Invited
Structural Stability and Chemical Reactivity of Nanoscale Twinning Structure in Copper Nanowires: Wei-Lun Weng[1]; Jheng-Syun Lee[1]; *Chien-Neng Liao*[1]; [1]National Tsing Hua University

2:25 PM
Alloy Phase Stability under Electric Currents: *Shih-kang Lin*[1]; Yu-chen Liu[1]; [1]National Cheng Kung University

2:50 PM
Electric Current-induced Slip/Twin Transition: An In Situ EBSD Study: *Yu-chen Liu*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

3:10 PM
The Investigation of Electromigration Defects on Cu/Sn and Cu/Ag IMC due to Currents Stress and Temperature: De-Yu Tseng[1]; Wei-Jhen Chen[1]; Ti-Yuan Wu[1]; *Ming-Tzer Lin*[1]; [1]National Chung Hsing University

3:30 PM Break

3:50 PM
A Phase-field Model on Electromigration-induced Transgranular Void Migration in Interconnects: *Jaykumar Santoki*[1]; Daniel Schneider[1]; Arnab Mukherjee[2]; Michael Selzer[2]; Britta Nestler[1]; [1]Karlsruhe Institute of Technology (KIT); [2]Karlsruhe University of Applied Sciences

4:10 PM
Microstructure Evolution of Al Wire Bonded on Cu Metallization under Electromigration Test: *Lu Yu Hsien*[1]; Tsau Yan-Wen[1]; Ouyang Fan-Yi[1]; [1]National Tsing Hua University

4:30 PM
On the Existence of a Two-phase Field in Binary α-Cu(Al) Solid Solutions: *Valery Ouvarov-Bancalero*[1]; Choong-Un Kim[1]; [1]The University of Texas at Arlington

Phase Transformations and Microstructural Evolution – Phase Transformations in Titanium II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Wednesday PM
March 14, 2018
Room: 129A
Location: Phoenix Convention Center

Session Chairs: S. Suresh Babu, University of Tennessee; Yufeng Zheng, The Ohio State University

2:00 PM
On the Deformation Mechanisms of a New Metastable Beta Titanium Alloy with High Strength and High Strain Hardening Rate: *Junheng Gao*[1]; Mark Rainforth[1]; [1]University of Sheffield

2:20 PM
Dynamic Transformation of Ti-6Al-4V Alloy in theTwo-phase Region: *Baoqi Guo*[1]; Clodualdo Aranas Jr[1]; John Jonas[1]; [1]McGill University

2:40 PM
On Dual-phase "Strain-transformable" Titanium Alloys for Enhanced Mechanical Properties: Design Principles, Microstructural Optimization and Deformation Mechanisms: *Lola Lilensten*[1]; Yolaine Danard[1]; Jean-Marc Joubert[2]; Fan Sun[1]; Cédrik Brozek[1]; Loïc Perrière[2]; Philippe Vermaut[1]; Frédéric Prima[1]; [1]Chimie ParisTech — CNRS, Institut de Recherche de Chimie Paris; [2]ICMPE - UMR7182 CNRS-UPEC

3:00 PM
Influence of Sn on Martensitic Phase Transformation and Super-elasticity of Beta Ti Alloys: *Song Cai*[1]; J Schaffer[1]; [1]Fort Wayne Metals Research Products Corp.

3:20 PM Break

3:40 PM
Isothermal Omega Phase Formation in Ti-Nb-Fe Alloys: *Camilo Fernandes Salvador*[1]; Mariana Dal Bó[1]; Yufeng Zheng[2]; Éder Lopes[1]; Rubens Caram[1]; Hamish Fraser[2]; [1]University of Campinas; [2]The Ohio State University

4:00 PM
Complexion-mediated Martensitic Phase Transformation in Titanium: *Jian Zhang*[1]; Xiangdong Ding[1]; Dierk Raabe[2]; Jun Sun[1]; [1]Xi'an Jiaotong University; [2]Max-Planck-Institut für Eisenforschung

4:20 PM
Detailed Investigation of Alpha Phase Formation in Metastable Beta Ti Alloys Using Advanced Characterization Techniques: *Petr Harcuba*[1]; Jana Smilauerova[1]; Jozef Vesely[1]; Pavel Zhanal[1]; [1]Charles University in Prague

4:40 PM
Using Multiparadigmatic Approach in Microstructure Evolution Prediction of Two-Phase Titanium Alloys: Linking Artificial Neural Networks, 2-point Statistics, Multiphase-field Methods and Self-consisting Analytical Models. Building Integrated Computational Materials Engineering (ICME) and Materials Data Infrastructure (MDI): *Anton Ektov*[1]; Surya R. Kalidindi[2]; Yuksel C. Yabansu[2]; Xinyi Gong[2]; Jeoung-Han Kim[3]; [1]VSMPO-AVISMA Corp.; [2]Georgia Institute of Technology; [3]Hanbat National University

Phase Transformations and Microstructural Evolution – Special Topics in Phase Transformations II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

Wednesday PM
March 14, 2018
Room: 124B
Location: Phoenix Convention Center

Session Chair: Gregory Thompson, University of Alabama

2:00 PM
B19' Strain Glass Transition and Associated Phase Diagram in Deformed TiNi SMA with Unique Properties: *Qianglong Liang*[1]; Dong Wang[1]; Jian Zhang[1]; Xiaobing Ren[2]; Yunzhi Wang[3]; [1]Xi'an Jiaotong University; [2]National Institute for Materials Science (NIMS); [3]The Ohio State University

2:20 PM
Evolution of Microstructure and Hardness in Ni-rich NiTi Shape Memory Alloy at Various Thermal Conditions: *Ben Fraj Boutheina*[1]; Slim Zghal[2]; Zoubeir Tourki[1]; [1]Mechanical Laboratory of Sousse; [2]Laboratory of Multifunctional Materials and Applications

2:40 PM
Effect of Wire Diameter on Phase and Kirkendall Pore Evolution in Titanium Coated Nickel Wires: *Dinc Erdeniz*[1]; Arun Bhattacharjee[2]; Aaron Yost[1]; David Dunand[1]; Ashley Paz y Puente[2]; [1]Northwestern University; [2]University of Cincinnati

3:00 PM
Tuning Microstructure and Composition of (La0.8Sr0.2)0.98CrxFe1-xO3±d with Using Thermodynamic Modelling: *Hooman Sabarou*[1]; Yu Zhong[1]; [1]Florida International University

3:20 PM
Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres: *Rahul Basu*[1]; [1]VTU

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Powder Metallurgy Processes of Various Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Wednesday PM
March 14, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Dr Fei Yang , University of Waikato ; Dr Pei Sun, University of Utah

2:00 PM
On the Synthesis of Lithium Boron Nitride (Li3BN2): Challenges and Opportunities: Karan Sahni[1]; *Maziar Ashuri*[1]; Satyanarayana Emani[1]; James Kaduk[1]; Károly Németh[1]; Leon Shaw[1]; [1]Illinois Institute of Technology (IIT)

2:20 PM
Optimization of Manufacturing Process for the High Magnetic Properties of Nd-Fe-B Bonded Magnets Using High-energy Compaction Method: *Dong-won Shin*[1]; Dong-soo Kim[2]; Jar-myung Koo[1]; Soon-jik Hong[1]; [1]Kongju National University; [2]Convergence Research Center for Development of Mineral Resources

2:40 PM
The Mechanism and Characteristics of Mn-Zn Ferrite Powder Compacts Heated by Microwave: *Jiamin Zhang*[1]; Jianhong Yi[1]; Guoyou Gan[1]; Kun Ma[1]; Wenjin Ma[1]; [1]Kunming University of Science and Technology

3:00 PM
Effect of Minor Titanium Addition on Copper/Diamond Composites Prepared by Hot Forging: *Fei Yang*[1]; Wei Sun[1]; Ajit Singh[1]; Leandro Bolzoni[1]; [1]The University of Waikato

3:20 PM
Characterization of the Liquid Phase Sintered Tungsten Heavy Alloys Prepared by an Electrochemically Produced Tungsten Powder: Mahmut Erol[1]; *Metehan Erdogan*[1]; Ishak Karakaya[2]; [1]Yildirim Beyazit University; [2]Middle East Technical University

3:40 PM Break

4:00 PM
Leaching Characteristics of Non Ferrous Metals Recovery from Korean Municipal Solid Waste Incineration Bottom Ash Samples: Thriveni Thenepalli[1]; *Ahn Ji Whan*[2]; [1]Hanil Cement Co Ltd.,; [2]Korea Research Institute of Geoscience and Mineral Resources(KIGAM)

4:20 PM
Implementation of a Multi-physics Model for Simulating Microstructural Evolution during Sintering
: *Sudipta Biswas*[1]; Daniel Schwen[2]; Hao Wang[1]; Vikas Tomar[1]; [1]Purdue University; [2]Idaho National Laboratory

4:40 PM Invited
Fabrication of Functional Materials Powder by Powder Metallurgical Process, and Investigation of their Bulk Properties: Babu Madavali[1]; Chul-Hee Lee[1]; Peyala Dharmaiah[1]; Kap-Ho Lee[2]; Jar-Min Koo[1]; *Soon-Jik Hong*[1]; [1]Kongju National University and Institute for Rare Metals; [2]Chungnam National University

5:10 PM
Experimental Characterization of Polymeric Particles with Micro Compression Tester: *Vikas Kumar Reddy Yettella*[1]; Marcial Gonzalez[1]; Vikas Tomar[1]; [1]Purdue University

5:30 PM
Mechanism and Characteristics of Mn-Zn Ferrite Powder Compacts Heated by Microwave: *Jiamin Zhang*[1]; Jianhong Yi[1]; Guoyou Gan[1]; Kun Ma[1]; Wenjin Ma[1]; [1]Kunming University of Science and Technology

Recent Advances in Functional Materials for Printed, Flexible and Wearable Electronics – Printed Electronics and Additive Manufacturing

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Nuggehalli Ravindra, New Jersey Institute of Technology; Jud Ready, Georgia Institute of Technology; Amit Pandey, LG Fuel Cell Systems Inc.; Suresh Sitaraman, Georgia Institute of Technology

Wednesday PM
March 14, 2018
Room: 226B
Location: Phoenix Convention Center

Session Chairs: Pooran Joshi, Oak Ridge National Laboratory; Nuggehalli Ravindra, New Jersey Institute of Technology; Pavel Dutta, University of Houston

2:00 PM Invited
Additive Manufacturing with Aerosol Jet: From Prototyping to Production: *Kelley McDonald*[1]; M. Schrandt[1]; M. Renn[1]; [1]Optomec, Inc.

2:30 PM Invited
Printable Functional Materials for Smart Fabrics: *Chih-hung Chang*[1]; Rajiv Malhotra[2]; [1]Oregon State University; [2]Rutgers University

3:00 PM
Recent Advancement on Printed, Stretchable, and Wearable Electronics in 2D Materials: *Barbara Nichols*[1]; Madan Dubey[1]; Robert Burke[1]; Matthew Chin[1]; Alin Chipara[1]; Alex Mazzoni[1]; Sina Najmaei[1]; Eugene Zakar[1]; [1]U.S. Army Research Laboratory

3:20 PM Break

3:40 PM Invited
3D Printing of Soft Ionic Actuators/Sensors for Soft Robotic Applications: *Kwang Kim*[1]; Sarah Trabia[1]; Zakai Olsen[1]; [1]University of Nevada

4:10 PM Invited
Textile-enabled Wearable Energy Storage Devices: *Xiaodong Li*[1]; [1]University of Virginia

4:40 PM Invited
3D Printing of Metals and Metal Oxides from Solution for Energy and Biomedical Applications: *Konstantinos (Kostas) Sierros*[1]; [1]West Virginia University

5:10 PM Invited
3D Electronics and Sensor Circuits by Combining Conventional PCB Technology with Low Temperature Embedding and Forming: Bart Plovie[1]; Frederick Bossuyt[1]; *Jan Vanfleteren*[1]; [1]Centre for Microsystems Technology, IMEC and Ghent University

Solar Cell Silicon – Silicon Photovoltaics

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC; York Smith, University of Utah

Wednesday PM
March 14, 2018
Room: 223
Location: Phoenix Convention Center

Session Chairs: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC

2:00 PM Invited
Enhancement of Efficiency in Nanostructured-Si Solar Cells by Employing Doped-graphene Transparent Conductive Electrodes: *Suk-Ho Choi*[1]; [1]Kyung Hee University

2:40 PM
Influence of Chemical and Heat Treatment on the Properties of Disi Raw Sandstones in Jordan: *Shadia Ikhmayies*[1]; Abdulkader Abed[2]; Belal Amireh[2]; [1]Al Isra University; [2]University of Jordan

3:00 PM
Three-dimensional Crystal-plasticity based Model for Intrinsic Stresses in Multi-junction Photovoltaic: Khaled Khafagy[1]; *Tarek Hatem*[1]; [1]British University in Egypt

3:20 PM Break

3:40 PM
Ultrathin Crystalline Silicon Solar Cell Preparation through Molten Salt Electrolysis: *Ji Zhao*[1]; Donald Sadoway[1]; [1]MIT

4:00 PM
A Low-cost and Novel Strategy for Inverted Pyramid Arrays Texturing of DWS mc-Si Wafers: *Shaoyuan Li*[1]; Yuxin Zou[1]; Fengshuo Xi[1]; Wenhui Ma[1]; Kuixian Wei[1]; [1]Kunming University of Science and Technology

Thermal and Mechanical Stability of Nanocrystalline Materials – Joint Session with Non-equilibrium Features of Grain Boundaries

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Wednesday PM
March 14, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Impact of Segregation on Grain Boundary Motion: *Stephen Foiles*[1]; David Jacobson[2]; Fadi Abdeljawad[1]; Gregory Thompson[2]; [1]Sandia National Laboratories; [2]University of Alabama

2:30 PM
The Influence of Grain Boundary Segregation on the Mechanical Behavior of Nanocrystalline Metals: Yang Zhang[1]; Wenbo Wang[1]; *Jason Trelewicz*[1]; [1]Stony Brook University

2:50 PM
Sub-ablation Femtosecond Laser Processing of Nanocrystalline Alloys: *Glenn Balbus*[1]; McLean Echlin[1]; Charlette Grigorian[2]; Timothy Rupert[2]; Tresa Pollock[1]; Daniel Gianola[1]; [1]University of California, Santa Barbara; [2]University of California, Irvine

3:10 PM Invited
Grain Boundary (GB) Complexions: From Developing GB 'Phase' Diagrams to Understanding Embrittlement and Stabilizing Nanoalloys: *Jian Luo*[1]; [1]University of California, San Diego

3:40 PM Break

4:00 PM Invited
Grain Boundary Phase Transformations and their Impact on Thermodynamics and Kinetics: J. Hickman[1]; *Yuri Mishin*[1]; [1]George Mason University

4:30 PM
Probing the Interfacial-driven Radiation Tolerance of Nanocrystalline Metals: *Jacob Gruber*[1]; Greg Vetterick[2]; Pranav Suri[2]; Mitra Taheri[2]; Garritt Tucker[2]; [1]Colorado School of Mines; [2]Drexel University

4:50 PM Invited
Irradiation Creep in Nanostructures Measured Using In-situ TEM: *Shen Dillon*[1]; Khalid Hattar[2]; [1]University of Illinois at Urbana-Champaign; [2]Sandia National Laboratories

Thermo-mechanical Response of Materials with Special Emphasis on In-situ Techniques – Nanomechanics with Synchrotron Diffraction

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Sanjit Bhowmick, Bruker Nano Surfaces ; Jeff Wheeler, ETH Zurich; María Teresa Pérez Prado, IMDEA Materials Institute; Dongchan Jang, Korea Advanced Institute of Science and Technology; Robert Wheeler, MicroTesting Solutions LLC; Josh Kacher, Georgia Tech

Wednesday PM
March 14, 2018
Room: 101A
Location: Phoenix Convention Center

Session Chairs: Bob Wheeler, Micotesting Solutions; Josh Kacher, Georgia Tech

2:00 PM Invited
Experimental Techniques to Asses Long Range Internal Stresses in Plastically Deformed Crystalline Solids: *Michael Kassner*[1]; Lyle Levine[2]; [1]University of Southern California; [2]NIST

2:30 PM Invited
Mechanical Behavior of Stainless Steel 709 through In-situ Synchrotron Diffraction: Ryan Smith[1]; *Djamel Kaoumi*[1]; Mahmut Cinbiz[2]; Jun-Sang Park[3]; Jonathan Almer[3]; [1]North Carolina State Univeristy; [2]Oak Ridge National Laboratory; [3]Argonne National Laboratory

3:00 PM
Phase Transformation during Thermal Treatment of Medium Mn Steels Studied by In-situ Synchrotron Experiments and Thermodynamic Modeling: *Xiaohua Hu*[1]; Kyoo Sil Choi[1]; Guang Cheng[1]; Xin Sun[2]; Josh Mueller[3]; Emmanuel de Moor[3]; Jon Speer[3]; David Matlock[3]; [1]Pacific Northwest National Laboratory; [2]Oak Ridge National Lab; [3]Colorado School of Mines

3:20 PM
"In Situ" Measurement of Electrical Resistivity, Dilatometry and Thermal Analyses of Cast Iron: *Primoz Mrvar*[1]; Mitja Petric[1]; [1]University of Ljubljana

3:40 PM Break

4:00 PM Invited
Studying the Micromechanics of Martensitic Phase Transformatons Using High Energy Diffraction Microscopy: *Aaron Stebner*[1]; Ashley Bucsek[1]; Jinesh Dahal[1]; Harshad Paranjape[1]; Branden Kappes[1]; [1]Colorado School of Mines

4:30 PM
Emergence and Progression of Abnormal Grain Growth in Minimally Strained Nickel-200: *Jonathan Madison*[1]; Olivia Underwood[1]; Gregory Thompson[2]; [1]Sandia National Laboratories; [2]University of Alabama

4:50 PM
Order-disorder Transition in 18-carat Gold Studied by In Situ X-ray Scattering: *Marina Garcia-Gonzalez*[1]; Steven Van Petegem[1]; Ana Diaz[1]; Fanny Lalire[2]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]Varinor

Ultrafine-grained Materials X – Radiation Tolerance and Particulate Approaches

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Wednesday PM
March 14, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chair: Zhiqiang Fu, University of California, Irvine

2:00 PM Invited
On Interfaces and Radiation Damage: *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory

2:30 PM Invited
Development and Characterization of Nanostructured Steels for Nuclear Applications: *Haiming Wen*[1]; Andrew Hoffman[1]; Rinat Islamgaliev[2]; Marina Nikitina[2]; [1]Missouri University of Science and Technology; [2]Ufa State Aviation Technical University

3:00 PM
TEM In-situ Mechanical Testing of Proton Irradiated Nanocrystalline Copper Tantalum Alloy: *Priyam Patki*[1]; Janelle Wharry[1]; Yaqiao Wu[2]; [1]Purdue University; [2]Boise State University

3:20 PM Break

3:40 PM Invited
Manufacturing Fine-Grained Mg Rods Utilizing Multi-Pass Caliber-Rolling at Warm Temperatures: *Taekyung Lee*[1]; Sung Hyuk Park[2]; Jeong Hun Lee[3]; Chong Soo Lee[4]; [1]Pusan National University; [2]Kyungpook National University; [3]Korea Institute of Industrial Technology; [4]POSTECH

4:10 PM
Microstructural Evolution and Mechanical Behavior of a TiC/FeCoNi Composite Fabricated through In Situ Reinforcement Formation: *Zhiqiang Fu*[1]; Benjamin MacDonald[1]; Zhenfei Jiang[1]; Weiping Chen[1]; Julia Ivanisenko[1]; Yizhang Zhou[1]; Horst Hahn[1]; Enrique Lavernia[1]; [1]University of California, Irvine

4:30 PM
Zirconia Ceramic Toughened Nanocrystalline Iron: *Guibin Shan*[1]; Yuzeng Chen[1]; Feng Liu[1]; [1]Northwestern Polytechnical University

4:50 PM
Mechano-chemical Synthesis of Nb-oxide Cu Nanocomposites: *Qun Li*[1]; Xuekun Shang[2]; Robert Averback[1]; Pascal Bellon[1]; [1]UIUC; [2]University of Science and Technology Beijing

Ultrafine-grained Materials X – Surface Processing and Twinning Phenomena

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Irene Beyerlein, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Wednesday PM
March 14, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chairs: Xinkun Zhu, Kunming University of Science and Technology; Alexander Zhilaev, Fundació CTM Centre Tecnològic

2:00 PM Invited
Surface Structure Transitions during Sliding Contact of Nanostructured Metals: *Timothy Rupert*[1]; [1]University of California, Irvine

2:30 PM Invited
Nanocrystalline Cu Deformation Characterization Simulations: *Shawn Coleman*[1]; Daniel Foley[2]; Garritt Tucker[3]; Mark Tschopp[1]; [1]U.S. Army Research Laboratory; [2]Drexel University; [3]Colorado School of Mines

3:00 PM
The Mechanical Properties of Cu-Ni Multilayer Composite Materials: *Xinkun Zhu*[1]; [1]Kunming University of Science and Technology

3:20 PM Break

3:40 PM Invited
Crystal Plasticity of Microstructural Evolution via Twin Boundary Migration in Nanotwinned Metals: *Shailendra Joshi*[1]; Kartikey Joshi[1]; [1]National University of Singapore

4:10 PM
Fracture Behavior of Bulk Cu with Nanoscale Twins: S.S. Luo[1]; Z.S. You[2]; *Lei Lu*[1]; [1]Institute of Metal Research, CAS; [2]Nanjing University of Science and Technology

4:30 PM
Study on the Interface of ECAP Cold-welded Cu-Al and Ni-Cu Rods: *Alexander Zhilyaev*[1]; Th. Werner[2]; Jose-Maria Cabrera[2]; [1]Fundació CTM Centre Tecnològic; [2]Universitat Politècnica de Catalunya

4:50 PM
Production of Bulk Nanograined Si by High-pressure Torsion at Various Pressures: *Yoshifumi Ikoma*[1]; Terumasa Yamasaki[1]; Katsuhiko Saito[2]; Qixin Guo[2]; Zenji Horita[1]; [1]Kyushu University; [2]Saga University

9th International Symposium on High Temperature Metallurgical Processing – Ironmaking, Steelmaking and Casting

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Thursday AM
March 15, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Onuralp Yücel, Istanbul Technical University; Ender Keskinkilic, Atilim University

8:30 AM Introductory Comments

8:35 AM
Optimization of Exothermic Riser Sleeve Design Parameters: *Onuralp Yücel*[1]; Ahmet Turan[2]; K. Can Candeger[3]; [1]Istanbul Technical University; [2]Yalova University; [3]Smart Engineering

8:55 AM
Assessment of Gas-Slag-Metal Interaction during a Converter Steelmaking Process: *Lingling Cao*[1]; Yannan Wang[2]; Qing Liu[1]; Lefei Sun[3]; Sangsang Liao[3]; Weida Guo[4]; Keshe Ren[4]; Bart Blanpain[2]; Muxing Guo[2]; [1]University of Science and Technology Beijing; [2]KU Leuven; [3]Xinyu Iron and Steel Group Co.Ltd; [4]Shandong Iron and Steel Group

9:15 AM
On the Role of Nb on the Texture and Mechanical Properties of a Novel As-rolled Medium Carbon Wear Resistant Slurry Pipeline Steel: *Vahid Javaheri*[1]; Tun Tun Nyo[1]; David Porter[1]; [1]University of Oulu

9:35 AM
Role of Burden Distribution in Blast Furnace under Reduced Coke Consumption: Jae Kwon[1]; Ji Lee[1]; *Jeong Han*[1]; [1]Inha University

9:55 AM Break

10:15 AM
Viscosity of CaO-SiO_2-based Mold Flux with CeO_2 for Continuous Casting of RE Alloyed Heavy Rail Steels: *Zeyun Cai*[1]; Bo Song[1]; Zhen Liu[1]; Xiaokang Cui[1]; Lei Wang[1]; [1]University of Science and Technology Beijing

10:35 AM
A Statistical Analysis of Process Abnormalities in Slab Casting: *Ender Keskinkilic*[1]; [1]Atilim University

10:55 AM
Effect of Density Difference on Particle Segregation Behaviors at Bell-less Top Blast Furnace with Parallel-type Hopper: *Yang Xu*[1]; Kaihui Ma[1]; Chengfeng Sun[1]; Zhehan Liao[1]; Jian Xu[1]; Liangying Wen[1]; Chenguang Bai[1]; [1]Chongqing University

11:15 AM
The Effect of Austenitizing Temperature on Hardenability, Precipitation and Mechanical Properties of Boron Bearing Cr-Mo Alloy Steel: *Yaxu Zheng*[1]; Fuming Wang[1]; Changrong Li[2]; Dan Wu[2]; Xi Chen[1]; Shuai Liu[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing; [2]School of Materials Science and Engineering, University of Science and Technology Beijing

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Additive Manufacturing of Advanced Light-weight Materials

Sponsored by: TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Thursday AM
March 15, 2018
Room: 230
Location: Phoenix Convention Center

Session Chairs: Judy Schneider, University of Alabama in Huntsville; Alex Plotkowski, Oak Ridge National Laboratory

8:30 AM
Al-Ce Alloys for Additive Manufacturing: *Alex Plotkowski*[1]; Orlando Rios[1]; Zach Sims[2]; Sarah Foster[2]; Hunter Henderson[1]; Ryan Ott[3]; Suresh Babu[2]; Ryan Dehoff[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee - Knoxville; [3]Ames Laboratory

8:50 AM
Microstructure and Properties of Additively Manufactured Aluminum Alloy 2139: *Craig Brice*[1]; Milo Kral[2]; Catherine Bishop[2]; Ma Qian[3]; Milan Brandt[3]; Martin Leary[3]; [1]Lockheed Martin Space Systems Company; [2]University of Canterbury; [3]RMIT University

9:10 AM
Porosity Characterization and Reduction in AlSi10Mg Components Built Using Selective Laser Melting Systems: *Travis McFalls*[1]; Alexander Plotkowski[1]; Jonaaron Jones[1]; Avinash Prabhu[1]; Derek Morin[2]; Joshua McCoy[1]; Sudarsanam Babu[1]; [1]University of Tennessee Knoxville; [2]Y-12

9:30 AM
Parametric Study on Direct Energy Deposition of Aluminum Alloys: *Parnian Kiani*[1]; Jessica Bui[1]; Kaka Ma[2]; Julie Schoenung[1]; [1]University of California, Irvine; [2]Colorado State University

9:50 AM
Progresses in Wire Arc Additive Manufacturing (WAAM) of Aluminum Alloys Using Modern CMT Deposition System: *Amin S. Azar*[1]; Hans Fostervoll[1]; Ragnhild Aune[1]; Spyros Diplas[1]; Anette Gunnæs[2]; Martin Løvøy[2]; Tore Andre Kristensen[1]; Mohammed M'hamdi[1]; [1]SINTEF; [2]UiO

10:10 AM Break

10:30 AM
Additive Manufacturing of L12 Strengthened Aluminum Superalloy Addalloy™: *Seth Griffiths*[1]; Christian Leinenbach[1]; Nhon Vo[2]; Joe Croteau[2]; David Seidman[3]; David Dunand[3]; [1]EMPA; [2]NanoAl LLC; [3]Northwestern University

10:50 AM
The Possibility of Improving the Performance Characteristics of Synthesized Products from Aluminum Alloy Powders: *Ivan Redkin*[1]; Vladimir Korolev[1]; Aleksandr Evgenov[1]; Dmitriy Ryabov[1]; [1]RUSAL Global Management B. V.

11:10 AM
Heat Resistant Ti Based Alloy with Dispersed TiB Particles Utilizing Additive Manufacturing by Selective Electron Beam Melting: *Tadashi Fujieda*[1]; Yujie Cui[2]; Kenta Aoyagi[2]; Yuichiro Koizumi[2]; Akihiko Chiba[2]; [1]Hitachi, Ltd.; [2]Tohoku University

11:30 AM
Additive Manufacturing of Niobium Carbide Reinforced Ti6Al4V Metal Matrix Composites Using LENS: *Jose Avila*[1]; Thomas Gualtieri[1]; Amit Bandyopadhyay[1]; [1]Washington State University

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Qualification in Additive Manufacturing

Sponsored by: TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Thursday AM
March 15, 2018
Room: 231A
Location: Phoenix Convention Center

Session Chairs: Wesley Everhart, Kansas City National Security Campus; John Carpenter, LANL

8:30 AM Invited
A Methodology for Statistics Based Qualification for Selective Laser Melting of Metals: *Wesley Everhart*[1]; Elizabeth Fitzgerald[1]; Jordan Herrema[1]; [1]Kansas City National Security Campus

9:00 AM
From Art-to-part: Multidisciplinary Virtual Toolset for Laser Powder-bed Fusion Additive Manufacturing and Multi-Step Post Processing Certification: *Lang Yuan*[1]; Sam Anand[2]; Santanu Chaudhuri[3]; Susan Moehring[4]; Pinghai Yang[1]; Tyler Nelson[1]; Archak Goel[2]; Omkar Ghalsasi[2]; Botao Zhang[2]; Brian Mercer[3]; Dansong Zhang[3]; Pikee Priya[3]; Dan Scherrer[4]; Radu Pavel[4]; [1]GE Global Research; [2]University of Cincinnati; [3]University of Illinois at Urbana-Champaign; [4]TechSolve

9:20 AM
Material Qualification for Desktop Metal's AM Processing: *Michael Gibson*[1]; Nihan Tuncer[1]; Brian Kernan[1]; Jesse Cataldo[1]; Shashank Raghu[1]; Anna Trump[1]; Christopher Schuh[2]; Animesh Bose[1]; [1]Desktop Metal; [2]MIT

9:40 AM
Design-to-component, Closed-loop ICME Research and Development for Additively Manufactured Alloys: *Yongho Sohn*[1]; Ranganathan Kumar[1]; Kevin Coffey[1]; Tengfei Jiang[1]; Rajiv Mishra[2]; [1]University of Central Florida; [2]University of North Texas

10:00 AM Break

10:20 AM Invited
Qualification of Wire + Arc Additive Manufacture: Challenges and Outlook: *Paul Colegrove*[1]; Stewart Williams[1]; [1]Cranfield University

10:50 AM
Additive Manufacturing of Aluminosilicate-polymer and Carbon Composites: *Pratish Rao*[1]; Krishna Muralidharan[1]; Moe Momayez[1]; Douglas Loy[1]; [1]University of Arizona

11:10 AM
Reshaping Casting Industry by Additive Manufacturing: *Jinwu Kang*[1]; Chengyang Deng[1]; Haolong Shangguan[1]; Yongyi Hu[1]; [1]Tsinghua University

11:30 AM
Process-structure-property Relationships of Additively Manufactured Model Sandstone: Kevin Hodder[1]; *John Nychka*[1]; Rick Chalaturnyk[1]; [1]University of Alberta

11:50 AM
Additive Manufacturing of Three-dimensional Carbon Microlattices: *Akira Kudo*[1]; Federico Bosi[1]; Julia Greer[1]; [1]California Institute of Technology

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Constitutive Behavior II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

Thursday AM
March 15, 2018
Room: 122B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
In-TEM Observation on Twinning in Nano-sized BCC Crystal: *Scott Mao*[1]; Jiangwei Wang[1]; Christopher Weinberger[2]; Ting Zhu[3]; [1]University of Pittsburgh; [2]Drexel University; [3]Georgia Institute of Technology

8:50 AM
Mechanical Fields due to Double Twinning in Magnesium Alloy AZ31 as Revealed by Explicit Modeling of Twin Lamellae Using a Crystal Plasticity Finite Element Model: *Milan Ardeljan*[1]; Marko Knezevic[1]; [1]University of New Hampshire

9:10 AM
Intermittent Plasticity Associated with Collective Motion of Dislocation in bcc Alloys: *Takahito Ohmura*[1]; Takuya Suzuki[1]; [1]National Institute for Materials Science

9:30 AM
Effect of Local Stress on Fault Formation and Propagation within HCP Materials: *Heather Salvador*[1]; Christopher Lee[1]; Suveen Mathaudhu[1]; [1]University of California, Riverside

9:50 AM Break

10:10 AM
A Micromechanical Study for Twin Nucleation in hcp Metals: Development of Analytical Solution to Study Twin Bands Formation: *Yub Raj Paudel*[1]; Christopher Barrett[1]; Mark Tschopp[2]; Kaan Inal[3]; Haitham El Kadiri[1]; [1]Mississippi State University; [2]US Army Research Laboratory; [3]University of Waterloo

10:30 AM
Quantifying Microstructural Deformation in Cold Sprayed Aluminum-copper Alloy Coatings: *Tian Liu*[1]; Luke Brewer[1]; Jeffrey Bunn[2]; E. Payzant[2]; Lindsay Kolbus[2]; [1]University of Alabama; [2]Oak Ridge National Lab

10:50 AM
Impact of Microstructural Features on the Grain-orientation Dependent Strain Hardening and Softening Mechanisms in Al-Cu Alloys: *Brian Milligan*[1]; Dong Ma[2]; Lawrence Allard[1]; Amit Shyam[1]; [1]Materials Science and Technology Division, Oak Ridge National Laboratory; [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory

11:30 AM
Slip System Kinematic Hardening-based Simulation of Reverse Plasticity in Nanoindentation of ß-tin: *Zhuowen Zhao*[1]; Aritra Chakraborty[1]; Martin Crimp[1]; Thomas Bieler[1]; Philip Eisenlohr[1]; [1]Michigan State University

11:10 AM
Delayed Cracking and Earing Phenomena in Deep-drawn Stainless Steel Alloys: Interplay among Microstructure, Texture, Transformation Kinetics, Residual Stress, and Load Partitioning: *Peijun Hou*[1]; Yuan Li[1]; Dongchul Chae[2]; Yang Ren[3]; Ke An[4]; Hahn Choo[1]; [1]University of Tennessee; [2]POSCO Technical Research Laboratory; [3]Argonne National Laboratory; [4]Oak Ridge National Laboratory

Advanced High-strength Steels – Bainitic and Stainless Steels

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

Thursday AM
March 15, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Hung-Wei Yen, National Taiwan University; Mingxin Huang, The University of Hong Kong

8:30 AM
Resetting Aged Duplex Stainless Steels to Hinder Thermal Embrittlement: *Jaclyn Cann*[1]; Cem Tasan[1]; [1]Massachusetts Institute of Technology

8:50 AM
Design of Carbide-free Bainite Steels by Cool and Partitioning (C&P): *Kazuhiko Nishioka*[1]; Gregory Olson[1]; [1]Northwestern University

9:10 AM
Microstructural Characterization of Nanostructured Bainitic Steel under Repeated Frictional Sliding: *Kritika Singh*[1]; Aparna Singh[1]; [1]Indian Institute of Technology, Bombay, India

9:30 AM
Thermal Stability of Precipitated Austenite in Fe-10Ni-0.1C Steel: *Ian Harding*[1]; Sharvan Kumar[1]; [1]Brown University

9:50 AM
Relationship of Grain Size and Deformation Mechanism to the Fracture Behavior in High-strength High-ductility Nanostructured Austenitic Stainless Steel: Devesh Misra[1]; *Yashwanth Injeti*[1]; [1]University of Texas at El Paso

10:10 AM Break

10:25 AM
Bio-inspired Hierarchical Steels with Superior Strength and Ductility: *Shan Cecilia Cao*[1]; Jiabin Liu[2]; Jian Lu[3]; [1]University of California, Berkeley; [2]Zhejiang University; [3]City University of Hong Kong (CityU)

10:45 AM
Design of Duplex Stainless Steels with TRIP Effect: Link between Composition, Phase Stability and Plasticity: Audrey Lechartier[1]; *Alexis Deschamps*[2]; Marc Mantel[1]; Guillaume Parry[2]; Muriel Veron[2]; [1]Ugitech; [2]Grenoble Institute of Technology

11:05 AM
Wire Drawing at Cryogenic Temperatures: A New Production Rout for High Strength Stainless Steels: *Mikael Grehk*[1]; Pasi Kangas[1]; Guocai Chai[1]; Lars Wikström[1]; [1]Sandvik Materials Technology

11:25 AM
Elastoplastic Deformation of Micro-constituents in a Duplex Stainless Steel by Cyclic Nanoindentation: *Yunfei Jia*[1]; Yuanyuan Cui[1]; Fu-Zhen Xuan[1]; [1]East China University of Science and Technology

11:45 AM
Measurements of Mechanical Properties of Age Hardened 18Ni (350) Maraging Steel Using Nanoindentation Stress-strain Analysis: *Ali Khosravani*[1]; Sepideh Parvinian[1]; Hamid Garmestani[1]; Surya Kalidindi[1]; [1]Georgia Institute of Technology

12:05 PM
Effects of Matrix Microstructure on the Nanoscale Precipitation and Precipitation Strengthening in an Ultra-high Strength Steel: *Songsong Xu*[1]; Hao Guo[1]; Yu Zhao[1]; Naimeng Liu[1]; Dan Chen[1]; Ye Cui[1]; Yang Zhang[1]; Zhongwu Zhang[1]; [1]Key Laboratory of Superlight Materials and Surface Technology, Ministry of Education ,College of Materials Science and Chemical Engineering, Harbin Engineering University,Harbin, 150001, China

12:25 PM Concluding Comments

Advanced Magnetic Materials for Energy and Power Conversion Applications – Development and Application of Soft Magnetic Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Thursday AM
March 15, 2018
Room: 229A
Location: Phoenix Convention Center

Session Chair: Hunter Henderson, Oak Ridge National Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
Development of Iron-rich (Fe,Ni,Co)-based Nanocrystalline Magnets with Minimized Magnetostriction: Anthony Martone[1]; Bowen Dong[1]; Song Lan[1]; *Matthew Willard*[1]; [1]Case Western Reserve University

9:05 AM Invited
Accelerated Discovery of Magnetic Alloys with Decreased Critical Materials: *Ryan Ott*[1]; Fanqiang Meng[1]; Emrah Simsek[1]; Matthew Besser[1]; Matthew Kramer[1]; [1]Ames Laboratory (USDOE)

9:35 AM Invited
Imaging of Magnetic Domain Dynamics at Power Frequency: *Rudolf Schaefer*[1]; [1]Leibniz Institute for Solid State and Materials Research (IFW) Dresden

10:05 AM Break

10:25 AM Invited
Processing of Magnetic Materials Enhanced by Magnetic Fields or Electric Currents: *Konstantin Skokov*[1]; Oliver Gutfleisch[1]; [1]Technische Universität Darmstadt

10:55 AM
Compositionally Dependent Superparamagnetic Behavior of Fe-Ni Nanoparticles: *Huseyin Ucar*[1]; Alice Perrin[2]; [1]Florida Polytechnic University; [2]Carnegie Mellon University

11:25 AM
Crystallization Kinetics in (Fe70Ni30)80Nb4Si2B14 Metal Amorphous Nanocomposites (MANCs): *Natan Aronhime*[1]; Michael McHenry[1]; [1]Carnegie Mellon University

11:45 AM
Magnetic Domains and Microstructure in Nanocrystalline Soft Magnetic Fe-Si Alloys: *Trevor Clark*[1]; XiuJuan Jiang[2]; Nicole Overman[2]; Suveen Mathaudhu[1]; [1]University of California, Riverside; [2]Pacific Northwest National Laboratory

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Pb Free Solder Alloy II

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

Thursday AM
March 15, 2018
Room: 226C
Location: Phoenix Convention Center

Session Chairs: Kazuhiro Nogita, The University of Queensland; Sergey Belyakov, Imperial College London

8:30 AM
Interfacial Reaction of 68In32Bi and 33In67Bi Low Melting Alloy on Cu Substrate: *Albert T. Wu*[1]; Jyun-Jhe Huang[1]; Chih-Hao Chen[1]; Hsiang-Chuan Chen[2]; Chang-Meng Wang[2]; [1]National Central University; [2]SHENMAO Technology Inc.

8:50 AM
High Temperature Lead-free Die Attach Materials - a Review: *HongWen Zhang*[1]; Ning-Cheng Lee[1]; Jonathan Minter[1]; [1]Indium Corporation

9:10 AM
Sintered Silver-Indium Bonding Materials for High Temperature Applications: *Chun An Yang*[1]; C. Robert Kao[1]; Hiroshi Nishikawa[2]; [1]National Taiwan University; [2]Osaka University

9:30 AM
Properties of Joints Formed With Cu-Ni/Sn High Temperature Pb-free Composite Solder Paste: *Stephanie Choquette*[1]; Iver Anderson[1]; [1]Ames Lab

9:50 AM
The Microstructure and Tensile Properties of Zn-25Sn-xCu-yTi High Temperature Pb-Free Solder Alloy: *Jeng Chi Lin*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

10:10 AM Break

10:30 AM
High Temperature Mechanical Properties of Zn-based High Temperature Lead-free Solders: *Che-Wei Chang*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

10:50 AM
Wetting of Cu3Sn and Cu6Sn5 Compounds by Liquid Sn: Oleksii Liashenko[1]; *Fiqiri Hodaj*[1]; [1]Grenoble Institute of Technology

11:10 AM
The Wetting and IMC Growth Behaviors between Zn-25Sn-xCu-yTi High Temperature Pb-free Solder Alloys and Cu: *Darwin Sarwono*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

11:30 AM
Nucleation, Growth, and Structure of Beta-tin in Tin-based Solders: *Kathlene Reeve*[1]; Samuel Reeve[1]; Carol Handwerker[1]; [1]Purdue University

Advanced Real Time Optical Imaging – Iron and Steelmaking II

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee
Program Organizers: Jinichiro Nakano, US Department of Energy National Energy Technology Laboratory; David Alman, National Energy Technology Laboratory; Il Sohn, Yonsei University; Hiroyuki Shibata, Tohoku University; Antoine Allanore, Massachusetts Institute of Technology

Thursday AM
March 15, 2018
Room: 123
Location: Phoenix Convention Center

Session Chairs: Hiroyuki Shibata, Tohoku University; Jinichiro Nakano, US DOE National Energy Technology Laboratory

8:30 AM Invited
Wetting, Spreading and Penetrating Behavior of Slags in Contact with Refactory Ceramics: *Yongsug Chung*[1]; [1]Korea Polytechnic University

9:00 AM Invited
Current State Art of Double Hot Thermocouple Technology—Novel Way for the Study of Mold Flux High-temperature Properties: *Wanlin Wang*[1]; Lei Zhang[1]; Lejun Zhou[1]; [1]Central South University

9:30 AM Invited
In Situ Observation of Dissolution of Oxide Inclusions in Steelmaking Slags: *Neslihan Dogan*[1]; [1]McMaster University

10:00 AM Break

10:20 AM Invited
Investigation of Integrated Recycling Waste Heat and Slag Resources Using Single Hot Thermocouple Technique: *Zuotai Zhang*[1]; Yongqi Sun[1]; [1]Southern University of Science and Technology

10:50 AM Invited
In-situ Observation of Reduction or Oxidation of Molten CaO-FeOx-SiO2 Oxides at 1573 K: *Hiroyuki Matsuura*[1]; [1]The University of Tokyo

11:20 AM
Localized Concentration of Metal Cations of Steelmaking Slags and its Visualization Using Confocal Laser Scanning Microscope: *Il Sohn*[1]; [1]Yonsei University

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Emerging Methods and Materials

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

Thursday AM
March 15, 2018
Room: 231C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Investigation of Fabrication of Ti64 Components Using Hybrid Additive Manufacturing: *Joseph Newkirk*[1]; Frank Liou[1]; [1]Missouri University of Science and Technology

9:00 AM
Solid-state Additive Manufacturing and Repair of Titanium Alloys: *Nanci Hardwick*[1]; Chase Cox[1]; [1]Aeroprobe Corporation

9:20 AM
The Effects of Electrically-assisted Ultrasonic Nanocrystal Surface Modification on 3D-printed Ti-6Al-4V Alloy: Hao Zhang[1]; Jingyi Zhao[1]; Haifeng Qin[1]; Zhencheng Ren[1]; Gary Doll[1]; Yalin Dong[1]; *Chang Ye*[1]; [1]University of Akron

9:40 AM
Insight on Process Development of Titanium Aluminide Alloy(s) during Laser In-situ Alloying: *Monnamme Tlotleng*[1]; Sisa Pityana[1]; [1]Additive Manufacturing Research Group, Laser Enabled Manufacturing, CSIR, Pretoria, 0001

10:00 AM Break

10:15 AM
Intrinsic Heat Treatment of Titanium Alloys during Selective Laser Melting: *Pere Barriobero-Vila*[1]; Joachim Gussone[1]; Jan Haubrich[1]; Stefanie Sandlöbes[2]; Julio Da Silva[3]; Peter Cloetens[3]; Norbert Schell[4]; Guillermo Requena[1]; [1]German Aerospace Center; [2]Department and Chair of Physical Metallurgy and Metal Physics, RWTH Aachen University; [3]European Synchrotron Radiation Facility (ESRF); [4]Helmholtz-Zentrum Geesthacht

10:35 AM
Development of Bio-compatible Beta Ti Alloy Powders for Additive Manufacturing of for Application in Patient-specific Orthopaedic Implants: *Eugne Ivanov*[1]; Eduardo del-Rio[1]; [1]Tosoh

Algorithm Development in Materials Science and Engineering – Experimental and Computational Algorithms

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Thursday AM
March 15, 2018
Room: 130
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Data Fusion and Mining of In Situ Monitoring Sensors, Process Modeling, and Defect Characterization in Powder Bed Fusion Additive Manufacturing: *Sean Donegan*[1]; Michael Groeber[1]; Edwin Schwalbach[1]; [1]Air Force Research Laboratory

8:50 AM
Deep Learning and Dynamic Sampling for Smart Data Acquisition in Scanning Electron Microscopy: Yan Zhang[1]; G. M. Dilshan Godaliyadda[2]; Nicola Ferrier[1]; Emine Gulsoy[3]; Charles Bouman[2]; *Charudatta Phatak*[1]; [1]Argonne National Laboratory; [2]Purdue University; [3]Northwestern University

9:10 AM
Assessment of Heterogeneous Elastic Strains in Polycrystalline Ti-5Al-2.5Sn and Modeling with Taylor Gradient Enhanced Phenomenological Crystal Plasticity Model: *Chen Zhang*[1]; Philip Eisenlohr[1]; Martin Crimp[1]; Carl Boehlert[1]; Ruqing Xu[2]; Thomas Bieler[1]; [1]Michigan State University; [2]Argonne National Lab

9:30 AM
Segmentation for Large Datasets of X-ray Microscopes by Using a Deep Convolutional Neural Network: *Xiaogang Yang*[1]; Vincent De Andrade[1]; Francesco De Carlo[1]; Nikhilesh Chawla[2]; C. Shashank Kaira[2]; William Scullin[1]; Doga Gursoy[1]; [1]Argonne National Laboratory; [2]Arizona State University

9:50 AM Break

10:10 AM
Hierarchical Simplex Sampling: An Efficient Algorithm for Construction of Diverse Microstructural Sets and Delineation of Properties Closures: *Oliver Johnson*[1]; Christian Kurniawan[1]; Christopher Schuh[2]; [1]Brigham Young University; [2]Massachusetts Institute of Technology

10:30 AM
Developing a Workflow for Process-structure-property Linkage through Monte Carlo and Direct Numerical Simulations: *Theron Rodgers*[1]; Joseph Bishop[1]; Jonathan Madison[1]; [1]Sandia National Laboratories

10:50 AM
Concepts, Data Bases and Analysis Tools for Dislocation Micro Structures Across the Length Scales: *Stefan Sandfeld*[1]; [1]TU Freiberg

11:10 AM
PyCAC: The Concurrent Atomistic-continuum Simulator with a Python Scripting Interface: *Shuozhi Xu*[1]; Thomas Payne[2]; Hao Chen[3]; Yongchao Liu[2]; Liming Xiong[3]; Youping Chen[4]; David McDowell[2]; [1]University of California, Santa Barbara; [2]Georgia Institute of Technology; [3]Iowa State University; [4]University of Florida

Alloy Development and Powder Manufacture for Additive Manufacturing – Design of Aluminum Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Paul Prichard, Kennametal; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; James Foley, Los Alamos National Laboratory

Thursday AM
March 15, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Paul Prichard, Kennametal

8:30 AM
Aluminium Alloy Design for Selective Laser Melting: *Paul Rometsch*[1]; Kun Yang[1]; Qingbo Jia[1]; Xinhua Wu[1]; [1]Monash University

8:50 AM
Aluminium Alloy Development for Additive Manufacturing: *Qingbo Jia*[1]; Paul Rometsch[1]; Sheng Cao[1]; Kai Zhang[1]; John Shurvinton[1]; Tom Jarvis[1]; Xinhua Wu[1]; [1]Monash University

9:10 AM
Additive Manufacturing of a Quasicrystalline Phase Former Al-based Alloy Obtained Using Recycled Material: *Piter Gargarella*[1]; Leandro Michelotti[1]; Cláudio Kiminami[1]; Edson Santos[2]; [1]Federal University of São Carlos; [2]Instituto SENAI de Inovação em Laser

9:30 AM
Bridging the Gap Between Rapid Solidification and the Additive Manufacture of Novel Aluminum Alloys: *Joe Croteau*[1]; Nhon Vo[1]; Davaadorj Bayansan[1]; David Seidman[1]; David Dunand[1]; [1]NanoAl LLC

9:50 AM Break

10:10 AM
Preventing the Coarsening of Al_3Sc Precipitates by the Formation of a Zr-rich Shell during Laser Metal Deposition: *Philipp Kürnsteiner*[1]; Markus Benjamin Wilms[2]; Andreas Weisheit[2]; Eric Aimé Jägle[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Fraunhofer-Institut für Lasertechnik

10:30 AM
Hybrid AM Processing Reduces Stresses and Produces Equiaxed Microstructures: *James Withers*[1]; [1]ATS-MER, LLC

Aluminum Alloys, Processing and Characterization – Emerging Technologies

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

Thursday AM
March 15, 2018
Room: 221B
Location: Phoenix Convention Center

Session Chair: Amir Zadeh, Sapa Technology Americas

8:30 AM Invited
In-situ Fitness-for-Service Assessment of Aluminum Alloys Developed for Automotive Powertrain Lightweighting: Ermia Aghaie[1]; Joshua Stroh[1]; *Dimitry Sediako*[1]; Mathew Smith[1]; [1]University of British Columbia

9:00 AM Invited
Advances in Aluminum Extrusion Alloys and Processes: *David Lukasak*[1]; Amirreza Sanaty Zadeh[1]; [1]Sapa

9:30 AM
Research on the Effect of the Processing Parameters on Susceptibility of Liquation Cracking of Al Alloys during Refilled Friction Stir Spot Welding: *Tao Yuan*[1]; Wentao Gong[1]; Yinuo Li[1]; Shujun Chen[1]; [1]Beijing University of Technology

9:50 AM
Factors Influencing the Cast Duration of Horizontal Continuous Ingot Casters: *Benjamin Jaroni*[1]; Sascha Werner[1]; Elmar Schöll[1]; Georg Scheele[1]; [1]TRIMET Aluminium SE

10:10 AM Break

10:30 AM
High Volume Production Validation of Aluminum Tailor-welded Blanks: *Yuri Hovanski*[1]; Tom Luzanski[2]; Dustin Marshall[2]; Piyush Upadhyay[3]; [1]Brigham Young University; [2]TWB Company; [3]Pacific Northwest National Laboratory

10:50 AM
On Si Redistribution during Friction Stir Processing of Cast Al-7%Si-0.4%Mg Alloys: *Nelson Affonseca Netto*[1]; Murat Tiryakioglu[1]; [1]University of North Florida

11:10 AM
Equal Channel Angular Pressing of a Newly Developed Precipitation Hardenable Scandium Containing Aluminum Alloy: *Jahanzaib Malik*[1]; Bilal Mansoor[2]; Wahaz Nasim[1]; Ibrahim Karaman[1]; Dinc Erdeniz[3]; David Seidman[3]; David Dunand[3]; [1]Texas A&M University; [2]Texas A&M University at Qatar; [3]Northwestern University

11:30 AM
Stiffness Improvement Through Alloying Elements in Al Alloys: Sajjad Amirkhanlou[1]; *Shouxun Ji*[1]; [1]Brunel University London

Aluminum Reduction Technology – Environment, Gas Treatment & Alumina Transport

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Thursday AM
March 15, 2018
Room: 221C
Location: Phoenix Convention Center

Session Chair: Mohamad Hussein, Emirates Global Aluminium

8:30 AM Introductory Comments

8:35 AM
Two-stage Pot Gas Treatment Technology Allowing the Production of Sodium Sulfate: *Yurii Bogdanov*[1]; Viktor Mann[2]; Vitaliy Pingin[1]; Aleksey Zherdev[1]; Sergey Pavlov[1]; [1]RUSAL ETC LLC; [2]RUSAL Global Management B.V.

9:00 AM
Improved Abart Gas Treatment and Alumina Handling at the Karmøy Technology Pilot (KTP): *Anders Sorhuus*[1]; Sivert Ose[1]; [1]GE Power

9:25 AM
Alternative Roof-vent Emission Monitoring Method: *Gunn Iren Müller*[1]; Are Dyrøy[1]; Rachel Dosnon[2]; Michel Meyer[2]; Jean-Michel Jolas[2]; [1]Hydro Aluminium; [2]Rio Tinto Aluminium

9:50 AM
SPL: An Update: *Rudolf Pawlek*[1]; [1]TS+C

10:15 AM Break

10:30 AM
Bubble Dispersion States in the Zinc Oxide Desulfurization Injection Blow Tank: *Xuejiao Cao*[1]; Zhang Ting'an[1]; Yan Liu[1]; Yuhao Zhang[1]; Weiguang Zhang[1]; Dongxing Wang[1]; Kun Wang[1]; [1]Northeastern University

10:55 AM
Decision Matrix for Pneumatic Conveying and Distribution of Material: Arne Hilck[1]; *Jan Paepcke*[1]; Michael Altmann-Rinck[1]; [1]Claudius Peters Projects

11:20 AM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials – Nuclear Materials

*Sponsored by:*TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Nuclear Materials Committee, TMS: Phase Transformations Committee
Program Organizers: Haiming Wen, Missouri University of Science and Technology; Simon Ringer, The University of Sydney; Gregory Thompson, University of Alabama; Arun Devaraj, Pacific Northwest National Laboratory; Keith Knipling, U.S. Naval Research Laboratory; Gang Sha, Nanjing University of Science and Technology; David Seidman, Northwestern University; Chantal Sudbrack, NASA Glenn Research Center

Thursday AM
March 15, 2018
Room: 124A
Location: Phoenix Convention Center

Session Chairs: Arun Devaraj, Pacific Northwest National Laboratory; Haiming Wen, Missouri University of Science and Technology

8:30 AM Invited
From Imaging to Quantitative Atom Probe Tomography of Irradiated Microstructures: *Emmanuelle Marquis*[1]; Elaina Anderson[1]; G. Robert Odette[2]; Li-Jen Yu[1]; [1]University of Michigan; [2]University of California, Santa Barbara

9:05 AM Invited
Perspectives for APT Characterisation of Structural Materials for Nuclear Reactor Applications: *Michael Moody*[1]; Paul Bagot[1]; [1]University of Oxford

9:40 AM
APT Studies of Cu-Mn-Ni-Si Precipitate Phase Selection for the Wide Range of RPV Steel Compositions Irradiated in UCSB ATR-1 & ATR-2: *Nathan Almirall*[1]; Peter Wells[1]; Takuya Yamamoto[1]; David Gragg[1]; Kirk Fields[1]; G. R. Odette[1]; Randy Nanstad[2]; Keith Wilford[3]; Tim Williams[3]; [1]University of California, Santa Barbara; [2]Oak Ridge National Laboratory; [3]Rolls Royce

10:00 AM Break

10:20 AM Invited
A Critical Comparison of APT Characterization of Nanoscale Precipitates in Iron Based Alloys with a Range of Other Techniques: *G. Robert Odette*[1]; Peter Wells[1]; Nathan Almirall[1]; [1]University of California, Santa Barbara

10:55 AM
Atom Probe Tomography and Correlative Microscopy of Uranium-10 wt% Molybdenum Alloy Nuclear Fuels: *Arun Devaraj*[1]; Elizabeth Kautz[1]; Curt Lavender[1]; Vineet Joshi[1]; [1]Pacific Northwest National Laboratory

Biodegradable Materials for Medical Applications – Biodegradable Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund; Jan Seitz, Syntellix AG; Norbert Hort, Helmholtz-Zentrum Geesthacht; Huinan Liu, University of California-Riverside

Thursday AM
March 15, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Jan-Marten Seitz, Syntellix AG; Petra Maier, University of Applied Sciences Stralsund

8:30 AM Keynote
Fe-based Alloys: A New Class of High Strength Low-degradation Biodegradable Metals for Health Applications: Sergio Loffredo[1]; Malgorzata Sikora Jasinska[1]; Nicolas Gigueres[2]; Maurizio Vedani[3]; *Diego Mantovani*[1]; [1]Laval University; [2]Quebec Center for Metallurgy; [3]Polytechnic of Milan, Italy

9:10 AM Invited
Fundamentals of the Theory of Biodegradable Metals—Definition, Biodegradability and Biosafety Criteria and its Guidance on Material Design: *Yufeng Zheng*[1]; [1]Peking University

9:40 AM Invited
Opportunities Offered by Zinc Alloys for Degradable Implants: Recent Trends and Developments: Ehsan Mostaed[1]; Malgorzata Sikora-Jasinska[1]; Ana Laura Ramirez-Ledesma[1]; Lucie Lévesque[2]; Diego Mantovani[2]; *Maurizio Vedani*[1]; [1]Politecnico di Milano, Dipartimento di Meccanica; [2]Laval University

10:10 AM Break

10:30AM Invited
Progress in Absorbable Wire Technology for Next Generation Devices: *Adam Griebel*[1]; Jeremy Schaffer[1]; [1]Fort Wayne Metals

11:00 AM
Mechanical Properties of Nanocrystalline Bioresorbable Fe-Mn Alloy: *Anqi Yu*[1]; Christian Roach[1]; Sina Shahrezaei[1]; David Johnson[2]; Lia Stanciu[2]; Suveen Mathaudhu[3]; [1]UCR; [2]Purdue university; [3]University of California, Riverside

11:120AM
Effect of Additive Zinc on Mechanical Properties and Degradation Behavior of Magnesium: *Naoko Ikeo*[1]; Kengo Fujiwara[1]; YooJin Kim[2]; Toshiji Mukai[1]; [1]Kobe University; [2]Brown University

11:40 AM
Visualisation of Implant Failure by Synchrotron Tomography: *Regine Willumeit-Roemer*[1]; Julian Moosmann[1]; Berit Zeller-Plumhoff[1]; Florian Wieland[1]; Diana Krüger[1]; Björn Wiese[1]; Ann Wennerberg[2]; Niccolò Peruzzi[3]; Silvia Galli[2]; Felix Beckmann[1]; Jörg Hammel[1]; [1]Helmholtz-Zentrum Geesthacht; [2]Faculty of Odontology, Malmö University, Malmö, Sweden; [3]Clinical Sciences, Lund University

Building an ICME Infrastructure: Developing Tools that Integrate Across Length and Time Scales to Accelerate Materials Design – Materials Design Collaboration Platforms and Tools

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Mark Carroll, Federal Mogul Powertrain; Adam Hope, Thermo-Calc Software; Hojun Lim, Sandia National Laboratories; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Dongwon Shin, Oak Ridge National Laboratory

Thursday AM
March 15, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
The PRISMS Framework: An Integrated Multi-scale Capability for Accelerated Predictive Materials Science: *John Allison*[1]; [1]University of Michigan

9:10 AM
TAMMAL: High throughput Materials Design Suite: Raymundo Arroyave[1]; *Anjana Talapatra*[1]; Thien Duong[1]; Woongrak Son[1]; Ruben Villareal[1]; [1]Texas A&M University

9:30 AM
Integrated Computational Materials Engineering (ICME) in Support of Business Decision Making and Open Innovation Through Interdisciplinary Collaboration: *James Goddin*[1]; Will Marsden[1]; Najib Baig[1]; [1]Granta Design Ltd

9:50 AM
TESSRA: A Cloud-based Multiscale Platform for Modern Alloys Design: *Tarek Hatem*[1]; Khalil ElKhodary[1]; Ahmed Ali[1]; Khaled Khafagy[1]; AbdelHamid Hamdy[1]; Youssef Ibrahim[1]; Mohamed Hindy[1]; Amir Abdelmawla[1]; [1]TESSRA Technologies

10:10 AM Break

10:30 AM
Integrating Materials Microstructure Information into Engineering Design and Manufacturing: *Dennis Dimiduk*[1]; Marcus Hanwell[2]; Bob O'Bara[2]; TJ Corona[2]; Michael Jackson[1]; Glen Hansen[3]; Sean Donegan[4]; Michael Groeber[4]; [1]BlueQuartz Software, LLC; [2]Kitware, Inc; [3]Sandia National Laboratory ; [4]Air Force Research Laboratory

10:50 AM
Enabling Connection of Online Simulation Tools and Databases: nanoHUB.org: *Sam Reeve*[1]; David Guzman[1]; Ben Haley[1]; Karthik Guda Vishnu[1]; Austin Zadoks[1]; Gustavo Rico[1]; Alejandro Strachan[1]; [1]Purdue University

11:10 AM
Making Materials Science Resources Discoverable and Accessible with the NIST Materials Resource Registry: *Chandler Becker*[1]; Raymond Plante[1]; Alden Dima[2]; Laura Bartolo[3]; Sharief Youssef[2]; Andrea Medina-Smith[4]; Zachary Trautt[1]; Emily Brown[5]; Benjamin Long[2]; Robert Hanisch[1]; Mary Brady[2]; James Warren[1]; [1]Material Measurement Laboratory, National Institute of Standards and Technology; [2]Information Technology Laboratory, National Institute of Standards and Technology; [3]Center for Hierarchical Materials Design, Northwestern University; [4]Information Services Office, National Institute of Standards and Technology; [5]Chemistry Department, Centre College

11:30 AM
The Materials Commons: A Collaboration Platform and Information Repository for the Global Materials Community: *Brian Puchala*[1]; Glenn Tarcea[1]; Tracy Berman[1]; Terry Weymouth[1]; John Allison[1]; [1]University of Michigan

11:50 AM
Atomistic Polymer Simulations in the Cloud at nanoHUB.org: *Benjamin Haley*[1]; Lorena Alzate-Vargas[1]; Chunyu Li[1]; Alejandro Strachan[1]; [1]Purdue University

Bulk Metallic Glasses XV – Structures and Modeling

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; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Thursday AM
March 15, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chair: Alan Needleman, Texas A&M University

8:30 AM Invited
Nanoglass: An Alternative Path to Harden and Toughen Metallic Glasses by Spatial Patterning of Heterogeneities: *Mo Li*[1]; [1]Georgia Institute of Technology

8:50 AM Invited
A Combinatorial Approach to Evaluate the Glass-forming Ability of Multi-component Bulk Metallic Glasses: *Chuan Zhang*[1]; Fan Zhang[1]; Shuanglin Chen[1]; Weisheng Cao[1]; Jun Zhu[1]; Duchao Lv[1]; [1]Computherm

9:10 AM Invited
Effects of Pressure on the Structure and Properties of Metallic Glasses Examined by Computer Simulation: *Jun Ding*[1]; Mark Asta[2]; Robert Ritchie[1]; [1]Lawrence Berkeley National Laboratory; [2]UC Berkeley

9:30 AM
Composition Dependence and Structural Signature of Beta-relaxation in La-based Metallic Glasses: *Xiaodong Wang*[1]; Jin Zhang[1]; Qing Yu[1]; Qingping Cao[1]; Jianzhong Jiang[1]; [1]Zhejiang University

9:50 AM Break

10:10 AM Invited
Spatial Correlation of Elastic Heterogeneity Tunes the Deformation Behaviors of Metallic Glasses: Neng Wang[1]; Jun Ding[2]; *Lin Li*[1]; [1]University of Alabama; [2]Lawrence Berkeley National Laboratory

10:30 AM Invited
Deformation in Amorphous Notched Bars; A Discrete Shear Transformation Zone Plasticity Analysis: *Babak Kondori*[1]; Amine Benzerga[1]; Alan Needleman[1]; [1]Texas A&M University

10:50 AM Invited
The Atomistic Simulation of Stress Relaxation and Creep in a Model Binary Amorphous Solid: *Peter Derlet*[1]; [1]Paul Scherrer Institut

11:10 AM
Characteristics of Ideal Cluster Formulas for Zr-based Bulk Metallic Glasses: *Kaiming Han*[1]; Jianbing Qiang[1]; Yingmin Wang[1]; Qing Wang[1]; Chuang Dong[1]; [1]Dalian University of Technology

11:30 AM
The Mechanism of Free-volume Concentration by Controlling Shear Bands in Bulk Metallic Glasses: *Zhong Wang*[1]; Shuying Chen[2]; Jiaojiao Li[1]; Junwei Qiao[1]; Peter K. Liaw[2]; [1]Taiyuan University of Technology; [2]The University of Tennessee

Cast Shop Technology – Casting and Cast House Products

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Badowski, Hydro Aluminium

Thursday AM
March 15, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Samuel Wagstaff, Novelis Switzerland SA

8:30 AM Introductory Comments

8:35 AM
Experimental Study and Numerical Analysis of Cracking during DC Casting of Large Dimension 7075 Aluminium Billets: *Kjerstin Ellingsen*[1]; Qiang Du[1]; Mohammed M'Hamdi[1]; Britt-Elin Gihleengen[2]; Rune Ledal[2]; Knut Omdal Tveito[3]; Arild Håkonsen[2]; [1]SINTEF; [2]Hycast; [3]Hydro

9:00 AM
The Benefits of Ultrasonic Treatment of Molten Metal for Slabs Casting at UC RUSAL Facilities: *Igor Kostin*[1]; Viktor Mann[1]; Aleksandr Krokhin[1]; Aleksandr Sidorov[1]; Viktor Frolov[1]; Sergei Bochvar[1]; Mikhail Motkov[1]; Igor Bobkov[1]; Andrey Danilov[1]; [1]UC RUSAL

9:25 AM
Effect of Ultrasonic Melt-treatment and Cooling Rate on Microstructure of Multi-phase Reinforced Al Alloy: *Kwangjun Euh*[1]; Jae-Gil Jung[1]; Ju-Hye Kim[1]; Eun-Ji Baek[1]; Jung-Moo Lee[1]; [1]Korea Institute of Materials Science

9:50 AM
XPS Examination of the Oxide-Metal Interface of an Aluminum-Magnesium Alloy Containing Beryllium: *Nicholas Smith*[1]; Anne Kvithyld[2]; Gabriella Tranell[1]; [1]NTNU; [2]SINTEF

10:15 AM Break

10:30 AM
Innovative Technology for a Flawless Rolling Slab Casting Process: *Evgeny Pavlov*[1]; Dmitry Ivanov[1]; Pavel Gasanov[1]; [1]FSAE HE Siberian Federal University; UniMet LLC

10:55 AM
Robustness of Forged Part Mechanical Properties to Casting, Forging and Heat Treating Process Variation: Bill Betts[1]; *Lutz Müller*[2]; [1]Novelis; [2]Bharat Forge Aluminiumtechnik GmbH

11:20 AM
Analysis of Laser Marking Performance on Various Non-ferrous Metals: *Alex Fraser*[1]; Martin Hartlieb[2]; Julie Maltais[1]; Guy Robert[1]; [1]Laserax; [2]Viami International

11:45 AM
The Comparison of Intensive Riser Cooling of Castings after Solidification in Three Classic Metals: *Haolong Shangguan*[1]; [1]Tsinghua University

Characterization of Minerals, Metals, and Materials – Characterization of Ferrous Materials

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

Thursday AM
March 15, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chairs: Jiann-Yang Hwang, Michigan Technological University; Zhiwei Peng, Central South University

8:30 AM Introductory Comments

8:35 AM
Effect of Ball Indentation Test Parameters on Tensile Properties of Grade 92 Steel: *Dipika Barbadikar*[1]; [1]BITS Pilani Dubai Campus

8:55 AM
Effect of Heat Treatment condition on the Grain Boundary Characteristic Distribution in a Modified 9Cr-2W Steel: *Hyeongmin Heo*[1]; Junhwan Kim[2]; Sungho Kim[2]; Jongryoul Kim[1]; [1]Hanyang University; [2]KAERI

9:15 AM
Effect of Ultra-supercritical Units Precipitated Phase Ferritic Heat-resistant Steels B Micro-alloyed: *Yu Lin Ma*[1]; Yue Liu[1]; [1]Northeastern University

9:35 AM
High-temperature Magnetic Properties Study of Melt-spun Fe- (3 - 8 wt.%) Si Alloys: Vamsi Meka[1]; *Tanjore Jayaraman*[1]; Xiujuan Jiang[2]; Nicole Overman[2]; Suveen Mathaudhu[2]; [1]University of Michigan, Dearborn; [2]Pacific Northwest National Laboratory

9:55 AM Break

10:10 AM
The Role of Initial Recrystallized Texture on Dynamic Normal Grain Growth in an Interstitial-free Steel Sheet: *Ryann Rupp*[1]; Eric Taleff[1]; [1]The University of Texas at Austin

10:30 AM
Using Mechanical Serial Sectioning to Characterize AM 316L Stainless Steel: *Lily Nguyen*[1]; David Rowenhorst[2]; Richard Fonda[2]; [1]National Research Council / Naval Research Laboratory; [2]Naval Research Laboratory

10:50 AM
In Situ Lab Scale X-Ray Microtomography of a Cast Duplex Stainless Steel: *Qingdong Zhang*[1]; Sridhar Niverty[2]; Arun Singaravelu[2]; Jason Williams[2]; Tao Jing[1]; Nikhilesh Chawla[2]; [1]Tsinghua University; [2]Arizona State University

Characterization of Minerals, Metals, and Materials – Mineral Processing and Analysis

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

Thursday AM
March 15, 2018
Room: 125A
Location: Phoenix Convention Center

Session Chair: Shaoxian Song, Wuhan University of Technology

8:30 AM Introductory Comments

8:35 AM
Microstructure and Micromechanics of Shale Rock: Case Study on Marcellus Shale: *Hui Du*[1]; Mileva Radonjic[1]; [1]Louisiana State University

8:55 AM
Structural, Spectroscopic, Magnetic, and Thermal Characterizations of a Magnetite Ore from the Nagaland Region, India: Ritayan Chatterjee[1]; Dinabandhu Ghosh[2]; Surajit Biswas[3]; Sandeep Agarwal[4]; P.K. Mukhopadhyay[5]; *Saikat K. Kuila*[6]; [1]Heritage Institute of Technology Kolkata; [2]Jadavpur University; [3]University of Kalyani; [4]Ningbo Institute of Material Technology and Engineering; [5]S. N. Bose National Centre for Basic Sciences; [6]IIT Kharagpur

9:15 AM
Temperature Dependence of the AC Conductivity of an Illitic Clay with Calcite Addition: *Csaki Stefan*[1]; Ján Ondruška[2]; Patrik Dobron[1]; Viera Trnovcová[2]; Igor Štubna[2]; Tomáš Húlan[2]; Libor Vozár[2]; [1]Charles University; [2]Constantine the Philosopher University

9:35 AM
Humic Acid-based Silica Composite Aerogels--A Preliminary Study: Guihong Han[1]; Chaolei Lv[1]; *Yongsheng Zhang*[1]; Wei Wang[1]; [1]Zhengzhou University

9:55 AM
Characterization of Non-covalently Functionalized Halloysite: *Danae Francisco*[1]; Lucilene Paiva[2]; Wagner Aldeia[2]; Ademar Lugão[1]; Esperidiana Moura[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Institute for Technological Research of State of São Paulo

10:15 AM Break

10:30 AM
Characterization and Modification of a Brazilian Bentonite for its Use in Natural Rubber Nanocomposites: Adriana Almeida Cutrim[1]; Kleberson R. Oliveira Pereira[2]; Fabio Jose Esper[3]; Guillermo Ruperto Martin Cortes[3]; Maria das Gracas Silva Valenzuela[2]; *Francisco Valenzuela-Diaz*[2]; [1]Federal University of Campina Grande; [2]Universidade de Sao Paulo; [3]Centro Universitario Estacio e Universidade de Sao Paulo

10:50 AM
Synchrotron-based XRD and XANES Study of Bornite Leached by Mesophilic Mixed Bacteria: *Xingxing Wang*[1]; Jun Wang[1]; [1]Central South University

11:10 AM
Adsorption and Surface Area of Bentonite Modified Used as Bleaching Clay: *Christiano Gianesi Bastos Andrade*[1]; Samuel Marcio Toffoli[1]; Francisco Rolando Valenzuela Diaz[1]; [1]University of São Paulo

11:30 AM
Investigation for Removal of Organic Carbon from Carbonaceous Copper Sulphide Ore and Improving the Recovery of Copper through Flotation: *Refilwe Magwaneng*[1]; Kazutoshi Haga[1]; Altansukh Batnasan[1]; Atsushi Shibayama[1]; Masato Kosugi[2]; Ryo Kawarabuki[2]; Kohei Mitsuhashi[2]; Masanobu Kawata[2]; [1]Akita University; [2]Nittetsu Mining Co.Ltd

Characterization of Minerals, Metals, and Materials – Nanostructure and Characterization of Materials

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

Thursday AM
March 15, 2018
Room: 126B
Location: Phoenix Convention Center

Session Chair: Ramasis Goswami, Naval Research Laboratory

8:30 AM Introductory Comments

8:35 AM
Dynamical Diffraction Simulation and Dictionary Indexing of Quasicrystals: *Saransh Singh*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

8:55 AM
Determination of the Five Parameter Grain Boundary Character Distribution of Nanocrystalline Alpha-zirconium Thin Films Using Transmission Electron Microscopy: *Iman Ghamarian*[1]; Peyman Samimi[2]; Gregory Rohrer[3]; Peter Collins[2]; [1]University of Michigan; [2]Iowa State University; [3]Carnegie Mellon University

9:15 AM
Investigating Internal Domain Wall Transitions in Perpendicular Co/Ni Superlattices Using Lorentz TEM: *Maxwell Li*[1]; Marc De Graef[1]; Vincent Sokalski[1]; [1]Carnegie Mellon University

9:35 AM
Synthesis of Shuttle-like ZnO Microrods on Glass Substrates Using the Spray Pyrolysis Method: *Shadia Ikhmayies*[1]; [1]Al Isra University

9:55 AM
Overcoming the Challenges in High Temperature Nanomechanics to 1000C: *Ben Beake*[1]; Adrian Harris[1]; Tim Jochum[1]; [1]Micro Materials Ltd

10:15 AM Break

10:30 AM
Preparation of Nanosheet-montmorillonite Hydrogel for Removing Pb(II) from Water: Wei Wang[1]; Yunliang Zhao[1]; *Shaoxian Song*[1]; [1]Wuhan University of Technology

10:50 AM
Microwave Synthesis of Co-Ni Ferrite/Graphene Nanocomposite for Microwave Absorption: *Zhiwei Peng*[1]; Jianhui Peng[1]; Xiaolong Lin[1]; Zhizhong Li[1]; Zhongping Zhu[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University

11:10 AM
Fabrication of Monolithic Nanoporous Copper by Chemical Dealloying Cu-Y Metallic Glasses: *Ning Wang*[1]; Ye Pan[1]; [1]Southeast University

11:30 AM
Evaluation of Urea Encapsulation by Microcapsules of PHB/MMT and PHB/OMMT Nanocomposites: *Jessica Arjona*[1]; Francisco Valenzuela-Diaz[1]; Helio Wiebeck[1]; Wang Hui[1]; Maria Silva-Valenzuela[1]; [1]São Paulo University

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Defects and Microstructure

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Thursday AM
March 15, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Yasushi Shibuta, The University of Tokyo; Ting Zhu, Georgia Institute of Technology

8:30 AM Invited
Shape-selective Growth of Nanoscale Materials: Insights from Atomistic Simulations: *Kristen Fichthorn*[1]; [1]Penn State University

9:00 AM
In Situ Nanomechanics: Integrating Atomistic Modeling and In Situ Experiment: *Ting Zhu*[1]; [1]Georgia Institute of Technology

9:20 AM
Atomistic Simulations of the Mechanism of Twinning in FCC Metals and Microtwinning in 2-phase Superalloys: *Satish Rao*[1]; Wolfram Nohring[2]; Christopher Woodward[3]; Triplicane Parthasarathy[1]; William Curtin[2]; [1]UES Inc.; [2]EPFL; [3]Air Force Research Laboratory

9:40 AM
A Random Walk Model of Screw Dislocation Cross-slip in Face-centered Cubic Solid Solution Alloys: Wolfram Nöhring[1]; *William Curtin*[1]; [1]École polytechnique fédérale de Lausanne (EPFL)

10:00 AM Break

10:15 AM
First-principles Study of Dislocations in BCC Fe: *Michael Fellinger*[1]; Anne Marie Tan[1]; Louis Hector[2]; Dallas Trinkle[1]; [1]University of Illinois at Urbana-Champaign; [2]General Motors

10:35 AM Invited
Molecular Dynamics Approach to Solidification Microstructure: *Yasushi Shibuta*[1]; Shinji Sakane[2]; Eisuke Miyoshi[2]; Shin Okita[1]; Tomohiro Takaki[2]; Munekazu Ohno[3]; [1]The University of Tokyo; [2]Kyoto Institute of Technology; [3]Hokkaido University

11:05 AM
Interfacial Structures and Energetics of the Strengthening Precipitate Phase in Creep-resistant Mg-Nd-based Alloys: *Deep Choudhuri*[1]; R Banerjee[1]; S Srinivasan[1]; [1]University of North Texas

11:25 AM
First Principles Modeling of Non-basal Deformation Modes in Mg-Y Alloys: *Daniel Buey*[1]; Maryam Ghazisaeidi[1]; [1]The Ohio State University

11:45 AM
Ideal Strength and Ductility in Metals from Second- and Third-order Elastic Constants: *Ian Winter*[1]; Daryl Chrzan[1]; [1]University of Calfifornia, Berkeley

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Mechanical and Process Simulations

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Thursday AM
March 15, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chairs: Stephen DeWitt, University of Michigan, Ann Arbor; Yongwoo Kwon, Hongik University

8:30 AM
A Dislocation Density Based Multiscale Characterization of High Pressure Torsion and Cold Rolled Polycrystalline Copper Microstructure: *Mehdi Hamid*[1]; Maryam Jamalian[1]; Hussein Zbib[1]; David Field[1]; [1]Washington State University

8:50 AM
Crystal Plasticity Modeling of Precipitate-strengthened Alloys with Enhanced Mechanical Properties: *Benyamin Gholami Bazehhour*[1]; C Shashank Kaira[1]; Ilaksh Adlakha[1]; Nikhilesh Chawla[1]; Kiran N. Solanki[1]; [1]Arizona State University

9:10 AM
Ductile Fracture of Multiphase Steel Sheets under Bending: *Yu Liu*[1]; Alan Needleman[1]; Ankit Srivastava[1]; [1]Texas A&M University

9:30 AM
Understanding Slip Mediated Plasticity in Hexagonal Close Packed Crystals Using Phase Field Dislocation Dynamics: *Claire Weaver*[1]; [1]University of California, Santa Barbara

9:50 AM Break

10:10 AM
Statistical Behavior of Ideal Grain Growth: An Ultra-large-scale Phase-field Simulation Study: *Eisuke Miyoshi*[1]; Tomohiro Takaki[1]; Munekazu Ohno[2]; Yasushi Shibuta[3]; Shinji Sakane[1]; Takashi Shimokawabe[3]; Takayuki Aoki[4]; [1]Kyoto Institute of Technology; [2]Hokkaido University; [3]The University of Tokyo; [4]Tokyo Institute of Technology

10:30 AM
Transient Computational Model for the Prediction of Grain Structure Evolution during Bridgman Solidification of Gamma-TiAl Alloys: *Sara Battaglioli*[1]; Robin Mooney[1]; Anthony Robinson[1]; Shaun McFadden[2]; [1]Trinity College Dublin; [2]Ulster University

10:50 AM
Scaling of Molecular Dynamics Simulations to the Mesoscales Using Quasi Coarse Grained Dynamics: *Sumit Athikavil Suresh*[1]; Avinash Dongare[1]; [1]University of Connecticut

11:10 AM
Effect of Bricks' Waviness on the Mechanical Response of Nacre-inspired Composites: *Habibeh Ashouri Choshali*[1]; Sina Askarinejad[1]; Jessica Rosewitz[1]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute (WPI)

Computational Materials Science and Engineering for Nuclear Energy – Fundamentals of Radiation Effects II

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Haixuan Xu, University of Tennessee; Michael Tonks, Pennsylvania State University; Blas Uberuaga, Los Alamos National Laboratory; James Morris, Oak Ridge National Laboratory

Thursday AM
March 15, 2018
Room: 102B
Location: Phoenix Convention Center

Session Chairs: Mike Tonks, University of Florida; Jaime Marian, University of California Los Angeles

8:30 AM Invited
Molecular Dynamics Simulations of Effects of Stacking Fault Energies on Defect Formation Process in FCC Metals: *Taira Okita*[1]; Mitsuhiro Itakura[2]; Daiki Nakanishi[1]; Tomoya Kawabata[1]; [1]University of Tokyo; [2]Japan Atomic Energy Agency

9:00 AM
Morphological Study of Dispersion Phases in Heterogenous Waste Form Materials for Efficient Nuclear Waste Containment: *Krutarth Patel*[1]; Fazle Rabbi[1]; Kenneth Reifsnider[1]; Md Riaz Kayser[1]; Rassel Raihan[1]; [1]University of Texas at Arlington Research Institute

9:20 AM
Phase Field Modeling of Grain Boundary Evolution in Porous Oxides: Grain Growth and Pore Mobility Effects: *Anter El-Azab*[1]; Karim Ahmed[1]; [1]Purdue University

9:40 AM
Phase Transformation in Zirconium Oxide – A Mesoscale Study: *Mahmood Mamivand*[1]; Mohsen Asle Zaeem[2]; Haitham El Kadiri[3]; [1]Boise State University ; [2]Missouri University of Science and Technology; [3]Mississippi State University

10:00 AM Break

10:20 AM
Xe Bubble Behaviors in Single Crystal Molybdenum via Molecular Dynamics Simulation: *Wenhua Zhang*[1]; Xin Xie[1]; Dongyang Jiang[1]; Jiahui Zhang[1]; Di Yun[1]; [1]Xi'an Jiaotong University

10:40 AM
Grain Growth and Grain Subdivision in Triuranium Disilicide, a Potential Light Water Reactor Fuel: *Amani Cheniour*[1]; Michael Tonks[1]; Jie Lian[2]; Yongfeng Zhang[3]; [1]Pennsylvania State University; [2]Rensselaer Polytechnic Institute; [3]Idaho National Laboratory

11:00 AM Invited
Using Computational Modeling to Interpret Experimental Measurements of Irradiation Induced Hardening in Metals: *Jaime Marian*[1]; [1]University of California, Los Angeles

11:30 AM
Molecular Dynamics Study of Defect-grain Boundary Interactions in Irradiated PyC-like Configuration: *Rong Li*[1]; Li Yang[2]; Bing Liu[3]; Daniel Schappel[2]; Brian Wirth[4]; [1]Tsinghua University, University of Tennessee; [2]University of Tennessee; [3]Tsinghua University; [4]University of Tennessee, Oak Ridge National Laboratory

Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions – UQ of Quantum Calculations (DFT and Other Approaches)

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory; Richard Hennig, University of Florida; Avinash Dongare, University of Connecticut; Shawn Coleman, U.S. Army Research Laboratory; Niaz Abdolrahim, University of Rochester; Joseph Bishop, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Li Ma, National Institute of Standards and Technology

Thursday AM
March 15, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chairs: Francesca Tavazza, National Institute of Standard and Technology; Sugata Chowdhury, National Institute of Standard and technology

8:30 AM Invited
Uncertainty Quantification for Solute Transport Modeling: *Dallas Trinkle*[1]; [1]University of Illinois, Urbana-Champaign

9:00 AM
Uncertainty Quantification of the Effect of Charge Noise on Silicon Quantum Dots: *Erin Barker*[1]; Nathan Baker[1]; Marvin Warner[1]; Jennifer Webster[1]; Nicole Nichols[1]; Tim Shippert[1]; [1]Pacific Northwest National Laboratory

9:20 AM
Utilizing Error in First-principle Lattice Constants to Discover Novel Low-dimensional Materials: *Kamal Choudhary*[1]; Francesca Tavazza[1]; [1]National Institute of Standards and Technology

9:40 AM Invited
Extending the Reach of DFT to Molecular Simulations Using Neural Networks: *John Kitchin*[1]; [1]Carnegie Mellon University

10:10 AM Break

10:30 AM
Correlations of Numerical Precision in Material Properties Derived from Density Functional Theory: *Joshua Gabriel*[1]; Faical Yannick Congo[2]; Alex Sinnott[1]; Kiran Matthew[3]; Thomas Allison[2]; Francesca Tavazza[2]; Richard Hennig[1]; [1]University of Florida; [2]National Institute of Standards and Technology; [3]Lawrence Berkeley National Lab

10:50 AM
Lattice Thermal Conductivity: Uncertainty Quantification in First Principles Predictions and Experimental Validation: Yi Xia[1]; James Hodges[2]; Mercouri Kanatzidis[2]; *Maria Chan*[1]; [1]Argonne National Laboratory; [2]Northwestern University

11:10 AM
Benchmarking Density Functional Theory Based Methods to Predict Optical and Electronics Properties of 2H-TaX2 (X=S, Se): *Sugata Chowdhury*[1]; Kamal Choudhary[1]; Angela Hight Walker[1]; Francesca Tavazza[1]; [1]National Institute of Standard and Technology

Computational Thermodynamics and Kinetics – Phase Field

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

Thursday AM
March 15, 2018
Room: 128A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
A Sharp Interface Phase Field Method: *Alphonse Finel*[1]; Yann Le Bouar[2]; Benoît Dabas[1]; [1]ONERA; [2]CNRS

9:00 AM
A Phase Field Theory Based Study of the Role of Microalloying Elements in Determining the Microstructural Stability of Al-Cu Alloys: *Patrick Shower*[1]; James Morris[2]; Dongwon Shin[2]; Balasubramaniam Radhakrishnan[2]; Lawrence Allard[2]; Jonathan Poplawsky[2]; Amit Shyam[2]; [1]The Bredesen Center for Interdisciplinary Research and Graduate Education at Oak Ridge National Laboratory and the University of Tennessee; [2]Oak Ridge National Laboratory

9:20 AM
Effect of Melt Composition on Morphological Evolution during Liquid Metal Dealloying: *Longhai Lai*[1]; Bernard Gaskey[2]; Jonah Erlebacher[2]; Alain Karma[1]; [1]Northeastern University; [2]Johns Hopkins University

9:40 AM
Quantitative Evaluation of Interaction between Grain Boundary and Second-phase Particle at the Coherent Interface: *Kunok Chang*[1]; Junhyun Kwon[1]; Chang-Kyu Rhee[1]; [1]Korea Atomic Energy Research Institute

10:00 AM Break

10:20 AM
Phase Field of Modeling of Pore Annihilation in Nickel-base Superalloys during Hot Isostatic Pressing: *Yann Le Bouar*[1]; Antoine Ruffini[1]; Benoit Dabas[1]; Alphonse Finel[1]; Alexander Epishin[2]; Thomas Link[2]; Gert Nolze[3]; Bernard Fedelich[3]; Titus Feldmann[3]; Bernard Viguier[4]; Dominique Poquillon[4]; [1]LEM, CNRS/ONERA; [2]T/U Berlin; [3]BAM, Berlin; [4]CIRIMAT

10:40 AM
Application of Limited Solubility Model for Predicting Physicochemical Properties in Ternary Systems with Miscibility Gap: *Zhigang Yu*[1]; Kuo-Chih Chou[1]; Haiyan Leng[1]; [1]Shanghai University

Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session – Industrial Streams I

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Pyrometallurgy Committee
Program Organizers: Elsa Olivetti, Massachusetts Institute of Technology; John Howarter, Purdue University; Fiseha Tesfaye, Åbo Akademi University

Thursday AM
March 15, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: Dirk Verhulst, Verhulst; Randolph Kirchain, MIT

8:30 AM Introductory Comments

8:35 AM
Behavior of Co, Ni and Precious Metals in Copper Converting Process: Experimental Study: Keiran Holland[1]; *Dmitry Sukhomlinov*[1]; Ville Naakka[2]; Ari Jokilaakso[1]; Pekka Taskinen[1]; [1]Aalto University; [2]Boliden Harjavalta

8:55 AM
Recycling of EAF Dust through Source Separation: *Naiyang Ma*[1]; [1]ArcelorMittal

9:15 AM
A Sustainable Methodology for Recycling Electric Arc Furnace Dust: *Joseph Hamuyuni*[1]; Petteri Halli[2]; Fiseha Tesfaye[3]; Maria Leikola[2]; Mari Lundström[2]; [1]Aalto University ; [2]Aalto University; [3]Åbo Akademi University

9:35 AM Invited
Thermal Separation and Leaching of Valuable Elements from Waste-derived Ashes: *Daniel Lindberg*[1]; Emil Vainio[1]; Patrik Yrjas[1]; [1]Åbo Akademi University

10:00 AM Break

10:15 AM Invited
Recovery of Copper from Industrial Waste Water by Electrowinning: *Mari Lundström*[1]; [1]Aalto University

10:40 AM
Different Methods for the Characterization of Ash Compositions in Co-firing Boilers: *Jan-Erik Eriksson*[1]; Tooran Khazraie[1]; Leena Hupa[1]; [1]Åbo Akademi University

11:00 AM
Upgrading the Copper Value in a Waste Copper Smelter Dust Using the Falcon Concentrator: *Daniel Okanigbe*[1]; Abimbola Popoola[1]; [1]Tshwane University of Technology

11:20 AM
An Electrochemical Procedure for Copper Removal from Regenerated Pickling Solutions of Steel Plants: *Esra Karakaya*[1]; Mustafa Aras[2]; Metehan Erdogan[3]; Sedef Cift Karagul[4]; Merve Kolay Ersoy[4]; Ishak Karakaya[1]; [1]Middle East Technical University; [2]MEGAP Co.; [3]Yildirim Beyazit University; [4]Borusan Technology Development and R&D Co.

11:40 AM
Utilization CFA-derived Tobermorite Fiber as Crystallization Revulsive in Autoclaved Concrete Block Production: *Pengxu Cao*[1]; Jun Luo[1]; Guanghui Li[1]; Yijia Dong[1]; Mingjun Rao[1]; Zhiwei Peng[1]; [1]Central South University

Environmentally Assisted Cracking: Theory and Practice – Environmentally Assisted Cracking in Aluminum Alloys

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

Thursday AM
March 15, 2018

Room: 102A
Location: Phoenix Convention Center

Session Chairs: Jennifer Locke, The Ohio State University; Bai Cui, University of Nebraska–Lincoln

8:30 AM Invited
Metallurgical Factors and Changes Driving Susceptibly to Environment Assisted Cracking in Aluminum Alloys: Allison Akman[1]; Rebecca Bay[1]; Leslie Bland[1]; David Schrock[1]; *Jennifer Locke*[1]; [1]The Ohio State University

9:10 AM
Incorporating Detailed Experimental Grain Boundary ß-phase (Mg2Al3) Observations to Improve Sensitization Modeling of Aluminum AA5XXX Alloys: *Matthew Steiner*[1]; Ruifeng Zhang[2]; Nick Birbilis[2]; Sean Agnew[3]; [1]University of Cincinnati; [2]Monash University; [3]University of Virginia

9:30 AM
Sensitization Effects on Tensile
Behavior in 5XXX Series Aluminum Alloys: Environmentally Enhanced Cracking: *Benjamin Palmer*[1]; John Lewandowski[1]; [1]Case Western Reserve University

9:50 AM Break

10:10 AM
Effect of 3D Crystallographic Orientation and Microstructure on the Evolution of Corrosion in Aluminum Alloys: Tyler Stannard[1]; Hrishikesh Bale[2]; Nicolas Gueninchault[3]; Jeff Gelb[2]; Arno Merkle[2]; Erik Lauridsen[3]; *Nikhilesh Chawla*[1]; [1]Arizona State University; [2]Carl Zeiss X-Ray Microscopy; [3]Xnovo Technology ApS

10:30 AM
Effect of Mechanical Deformation on the Corrosion Behavior in Al 7075 – Ti6Al4V Galvanic Joint: *Chaitanya Kale*[1]; Ilaksh Adlakha[1]; Soundarya Srinivasan[1]; Kiran Solanki[1]; [1]Arizona State University

10:50 AM
3D Microstructural and Electrochemical Characterization of Accelerated Corrosion in Aluminum Alloys: *Sridhar Niverty*[1]; Chaitanya Kale[1]; Ilaksh Adlakha[1]; Kiran Solanki[1]; Nikhilesh Chawla[1]; [1]Arizona State University

11:10 AM Concluding Comments

Frontiers in Solidification Science and Engineering – Solidification Microstructures, Defects, Processing Methods, and Advanced Imaging

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

Thursday AM
March 15, 2018

Room: 126C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Solidification, Processing, and Characterization of High Entropy Alloys: Nicholas Derimow[1]; Abraham Munitz[2]; Louis Santodonato[3]; *Reza Abbaschian*[1]; [1]University of California, Riverside; [2]Nuclear Research Center-Negev; [3]Oak Ridge National Laboratory

8:50 AM
The Elimination of a Surface Defect in Traditional Open Sand Casting of Lead: *Arun Prabhakar*[1]; Konstantinos Salonitis[1]; Mark Jolly[1]; [1]Cranfield University

9:10 AM
Graphite Morphology in Directionally Solidified Cast Iron: *Subhojit Chaktaborty*[1]; Amber Genau[1]; [1]University of Alabama at Birmingham

9:30 AM
A Novel Counter Gravity Casting Approach with High-energy Efficiency: *Kostas Georgarakis*[1]; Jeremy Vian[1]; Alan Heaume[1]; Emanuele Pagone[1]; Konstantinos Salonitis[1]; Mark Jolly[1]; [1]Cranfield University

9:50 AM
Solidification of Aluminum Alloy A7050 Processed by Spray Forming: From Droplets to Dense Deposits: *Claudemiro Bolfarini*[1]; Guilherme Zepon[1]; Walter Botta[1]; Lucas Otani[1]; Claudio Kiminami[1]; [1]Universidade Federal de São Carlos

10:10 AM Break

10:30 AM
Solidification of Magma: From Crystal Growth to Bubble Formation: *Peter D. Lee*[1]; Biao Cai[1]; Matthew Pankhurst[1]; [1]The University of Manchester

10:50 AM
Probing the Growth and Dissolution Pathways of Quasicrystals in Real-time: Insung Han[1]; Xianghui Xiao[2]; *Ashwin Shahani*[1]; [1]University of Michigan; [2]Argonne National Laboratory

11:10 AM
Application of Fast X-ray Radiography to the In Situ and Real-time Observation of Ni-based Alloy Directional Solidification: *Guillaume Reinhart*[1]; Lara Abou-Khalil[1]; Vincent Maguin[2]; Gildas Guillemot[3]; Charles-André Gandin[3]; Vincent Fernandez[4]; Elodie Boller[4]; David Grange[5]; Ngadia Taha Niane[5]; Nathalie Mangelinck[1]; Henri Nguyen-Thi[1]; [1]IM2NP-CNRS-Aix-marseille University; [2]SAFRAN, CEMEF, Mines ParisTech; [3]CEMEF, Mines ParisTech; [4]ESRF; [5]SAFRAN

11:30 AM
Disrupting Solidification Microstructures via Magnet Fields Revealed by High Speed Synchrotron X-ray Tomography: *Biao Cai*[1]; Andrew Kao[2]; Koulis Pericleous[2]; Peter Lee[1]; [1]University of Manchester; [2]University of Greenwich

High Entropy Alloys VI – 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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Thursday AM
March 15, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Xie Xie, FCA US LLC

8:30 AM Invited
Corrosion, Erosion, and Wear Behavior of High Entropy Alloys: Aditya Ayyagari[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

8:50 AM Invited
Creep Behavior of Single Phase FCC Medium and High Entropy Alloys: *Kyle Rozman*[1]; Martin Detrois[1]; Paul Jablonski[1]; Jeffrey Hawk[1]; [1]NETL

9:10 AM
Serrated Flow and Creep Behavior under Nanoindentation Experiments in an Al0.5CoCrCuFeNi HEA High-entropy Alloy: *Shuying Chen*[1]; Xie Xie[1]; Weidong Li[1]; Jamieson Brechtl[1]; Guangfeng Zhao[2]; Peizhen Li[2]; Fuqian Yang[2]; Junwei Qiao[3]; Karin Dahmen[4]; Peter Liaw[1]; [1]University of Tennessee, Knoxville; [2]The University of Kentucky; [3]Taiyuan University of Technology; [4]University of Illinois at Urbana Champaign

9:30 AM
Evaluation of Friction and Wear Behavior of a Single-phase Equiatomic TiZrHfNb High-entropy Alloy Using Nanoscratch Technique: *Y.X. Ye*[1]; T.G. Nieh[1]; [1]The University of Tennessee

9:50 AM Invited
Mechanical and Corrosion Properties of CoCrFeNiTi-based High-entropy Alloy Additive Manufactured Using Selective Laser Beam Melting: *Tadashi Fujieda*[1]; Meichuan Chen[1]; Hiroshi Shiratori[1]; Kosuke Kuwabara[1]; Kenta Yamanaka[2]; Yuichiro Koizumi[2]; Akihiko Chiba[2]; Seiichi Watanabe[3]; [1]Hitachi, Ltd.; [2]Tohoku University; [3]Hokkaido University

10:10 AM Break

10:30 AM Invited
Single-crystal Mechanical Properties of the Equiatomic CrMnFeCoNi High-entropy Alloy with the FCC Structure: *Haruyuki Inui*[1]; Norihiko Okamoto[2]; Easo George[3]; [1]Kyoto University; [2]Tohoku University; [3]Oak Ridge National Laboratory

10:50 AM Invited
Fracture Behavior of Nanocrystalline BCC High-entropy Alloys: *Yuan Xiao*[1]; Huan Ma[1]; Ralph Spolenak[1]; Jeffrey Wheeler[1]; [1]ETH zürich

11:10 AM
Effect of Ti Addition on Microstructure and Properties of CoCrFeMnNi High Entropy Alloys: *Shikai Wu*[1]; Ye Pan[1]; [1]Southeast University

11:30 AM Invited
Oxidation Behavior of High Entropy Materials: *Pratik Ray*[1]; Matthew Kramer[1]; [1]Ames Laboratory, US-DOE

11:50 AM Invited
Elevated-temperature Tensile and Creep Behavior of Equiatomic Ni-Cr-Co: *Connor Slone*[1]; Michael Mills[1]; [1]The Ohio State University

High Entropy Alloys VI – Structures and Modeling 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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Thursday AM
March 15, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: M. Troparevsky, Oak Ridge National Laboratory; G. Stocks, Oak Ridge National Laboratory

8:30 AM Invited
First-principles Phonon Approach to High Entropy Alloys: *Yi Wang*[1]; Shun-Li Shang[1]; Zi-Kui Liu[1]; Long-Qing Chen[1]; [1]The Pennsylvania State University

8:50 AM Invited
Melts of High-entropy Alloys: Atomic Diffusion and Electronic/Atomic Structure from Ab Initio Simulation: *Jun Ding*[1]; Mark Asta[2]; Robert Ritchie[1]; [1]Lawrence Berkeley National Laboratory; [2]University of California, Berkeley

9:10 AM Invited
A Comprehensive Analysis and Modeling of the Serration Behavior in High Entropy Alloys and Other Material Systems: *Jamieson Brechtl*[1]; Xie Xie[1]; Shuying Chen[1]; Haoyan Diao[1]; Bilin Chen[1]; Yunzhu Shi[1]; Karin Dahmen[2]; Peter Liaw[1]; Steven Zinkle[1]; [1]University of Tennessee; [2]University of Illinois Urbana-Champaign

9:30 AM
First-principles Calculations of Stacking Fault Energies in Quinary High-entropy Alloy Systems: *Alexandra Scheer*[1]; Joshua Strother[1]; Chelsey Hargather[1]; [1]New Mexico Institute of Mining and Technology

9:50 AM
Phonon Broadening in High Entropy Alloys: *Fritz Körmann*[1]; Yuji Ikeda[2]; Blazej Grabowski[3]; Marcel Sluiter[4]; [1]Delft University of Technology, Max-Planck-Institut für Eisenforschung GmbH; [2]Kyoto University; [3]Max-Planck-Institut für Eisenforschung GmbH; [4]Delft University of Technology

10:10 AM Break

10:30 AM Invited
Effect of Extreme Chemical Disordering on Vacancies in a High Entropy Alloy: *Congyi Li*[1]; George Stocks[2]; Brian Wirth[3]; Steve Zinkle[3]; [1]Bredesen Center; [2]Oak Ridge National Lab; [3]University of Tennessee, Knoxville

10:50 AM Invited
Enhancing the Predictive Capabilities of Ab Initio Methods Towards the Search for Novel Multi-component Alloys: *M. Claudia Troparevsky*[1]; [1]Oak Ridge National Laboratory

11:10 AM Invited
Short-range Order in Multicomponent Solid-solution Alloys: *Zongrui Pei*[1]; Markus Eisenbach[1]; G. Malcolm Stocks[1]; [1]Oak Ridge National Laboratory

11:30 AM Invited
Multi-functional Optimization for Tailoring Properties in Multi-component Alloys: *Aayush Sharma*[1]; Rahul Singh[1]; Ganesh Balasubramanian[1]; [1]Iowa State University

11:50 AM Invited
Percolation Effects in Atomic Transport due to Vacancy Diffusion in Random Binary Alloys: *Yury Osetskiy*[1]; Laurent Béland[2]; Alexander Barashev[1]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory; [2]MIT-CNRS

High Temperature Corrosion of Structural Materials – Hot Corrosion, Materials Developed for Corrosive Environments at Elevated Temperatures, and Ti-alloys I

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee
Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Mark Weaver, University of Alabama; Steve Coryell, Special Metals; James Earthman, University of California, Irvine

Thursday AM
March 15, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
New Insights on Deposit-induced Hot Corrosion: *Brian Gleeson*[1]; Patrick Brennan[1]; Emily Kistler[1]; [1]University of Pittsburgh

9:00 AM
Evaluation of Hot Corrosion Resistance of Marine Alloys under Burner Rig Test Using Advanced Characterization Techniques: *Maryam Zahiri Azar*[1]; Daniel Mumm[1]; Kliah Soto Leytan[1]; [1]The University of California, Irvine

9:20 AM
Evaluation of Type I Hot Corrosion of Marinized Materials through Low Velocity Burner Rig Testing: *Kliah Soto Leytan*[1]; Max Venaas[1]; Daniel Mumm[1]; Vincent McDonell[1]; [1]University of California, Irvine

9:40 AM
Hot Corrosion Degradation of Turbine Materials Subject to Mixed-mode Exposures and Complex Corrosion Environments: *Daniel Mumm*[1]; Kliah Soto Leytan[1]; Maryam Azar[1]; [1]University of California, Irvine

10:00 AM Break

10:20 AM
Hot Corrosion of Alloy 617 OCC in Simulated USC Power Plant Environment: *Arivazhagan Natarajan*[1]; Hari P R[1]; Nageswara Rao M[1]; Pavan A H V[2]; [1]VIT University; [2]BHEL R&D Hyderabad

10:40 AM
Mechanism of High Temperature Corrosion of Steel by Naphthenic Acids and Sulfidation: *Peng Jin*[1]; Winston Robbins[1]; Gheorghe Bota[1]; [1]Institute for Corrosion and Multiphase Technology (ICMT), Ohio University

11:00 AM
Evolution of Thermally Grown Oxides in Novel Co-based γ-γ' Superalloys: *Colin Stewart*[1]; Akane Suzuki[2]; Tresa Pollock[1]; Carlos Levi[1]; [1]University of California, Santa Barbara; [2]GE Global Research

11:20 AM
Effect of Titanium Addition on Microstructure and Oxidation Behaviour of Nb-Si-Mo Alloys at 1300°C: *Kasturi Sala*[1]; Rahul Mitra[1]; [1]IIT Kharagpur

Magnesium Technology 2018 – Deformation Mechanisms

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Thursday AM
March 15, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Vineet Joshi, Pacific Northwest National Laboratory - PNNL; Kristián Máthis, Charles University

8:30 AM Introductory Comments

8:35 AM
In-situ Neutron Diffraction and Acoustic Emission during the Biaxial Loading of AZ31 Alloy: *Jan Capek*[1]; Tobias Panzner[2]; Karl Sofinowski[2]; Daria Drozdenko[1]; Kristián Máthis[1]; [1]Charles University; [2]Paul Scherrer Institut

8:55 AM
Dislocations in Mg Alloys with Rare-earth Element Addition: *Zhiqing Yang*[1]; [1]Institute of Metal Research

9:15 AM
Measurement of Twin Formation Energy Barriers Using Nudged Elastic Band Molecular Statics: *Deepesh Giri*[1]; Christopher Barrett[1]; Haitham El Kadiri[1]; [1]Mississippi State University

9:35 AM
Twin-slip Interaction at Low Stress Stage Deformation in an AZ31 Mg Alloy: *Peng Chen*[1]; Bin Li[1]; Duke Culbertson[1]; Yanyao Jiang[1]; [1]University of Nevada, Reno

9:55 AM Break

10:15 AM
Thermo-mechanical Treatment of Extruded Mg-1Zn Alloy: Cluster Analysis of AE Signals: *Patrik Dobron*[1]; Daria Drozdenko[1]; Marius Hegedus[1]; Juraj Olejnák[1]; Klaudia Horváth[2]; Jan Bohlen[3]; [1]Charles University; [2]Czech Academy of Sciences, Nuclear Physics Institute; [3]Helmholtz-Zentrum Geesthacht

10:35 AM
The Effect of Initial Texture on Deformation Behaviors of Mg Alloys under Erichsen Test: Jaiveer Singh[1]; Min-Seong Kim[1]; *Shi-Hoon Choi*[1]; [1]Sunchon National University, Suncheon, Republic of Korea

10:55 AM
Deformation and Recrystallization Mechanisms and their Influence on the Microstructure Development of Rare Earth Containing Magnesium Sheets: *Changwan Ha*[1]; Sangbong Yi[1]; Jan Bohlen[1]; Xiaohua Zhou[2]; Heinz-Günter Brokmeier[2]; Norbert Schell[1]; Dietmar Letzig[1]; Karl Ulrich Kainer[1]; [1]Helmholtz-Zentrum Geesthacht; [2]Clausthal University of Technology

11:15 AM
Microstructure, Mechanical Properties and Deformation Behavior of Mg-Gd-Y-Zn-Zr Alloy: Devesh Misra[1]; *Kun Li*[1]; [1]University of Texas at El Paso

11:35 AM
Acoustic Emission Study of High Temperature Deformation of Mg-Zn-Y Alloys with LPSO Phase: *Klaudia Horváth*[1]; Daria Drozdenko[1]; Kristián Máthis[1]; Gerardo Garcés[2]; Patrik Dobron[1]; [1]Charles University, Prague; [2]CENIM-CSIC

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Modeling

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Thursday AM
March 15, 2018

Room: 103A
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
A New Physically Based, Quantitatively Predictive Low Flux-high Fluence Model of RPV Embrittlement: *G. Robert Odette*[1]; Takuya Yamamoto[1]; Peter Wells[1]; Nathan Almirall[1]; [1]University of California, Santa Barbara

8:50 AM
A Unified Model for Irradiation Creep and Stress-free Growth in Zirconium Alloys: *Jesse Carter*[1]; John Hack[2]; Richard Smith[1]; [1]Bettis Laboratory, NNL; [2]Bettis Laboratory, NNL (deceased)

9:10 AM
Dislocation Dynamics of Alloys for High Temperature Nuclear Reactors: *Venkata Annamareddy*[1]; Jacob Eapen[1]; [1]North Carolina State University

9:30 AM
Kinetic Evolution of Transmutation Helium Accumulation at Y-Ti-O Oxides in Nanostructured Ferritic Alloys under Irradiation: Chris Nellis[1]; *Celine Hin*[1]; [1]Virginia Tech

9:50 AM
Effect of Grain Elastic Anisotropy on Stress Intensification at Intergranular Stress Corrosion Cracking Iinitiation Sites in Austenitic Stainless Steels and Nickel-based Alloys in Light Water Reactor Environment.: *Jean Claude van Duysen*[1]; Gabriel De Bellefon[2]; [1]University of Tennessee - Knoxville; [2]University of Wisconsin Madison

10:10 AM Break

10:30 AM
Implementation and Validation of a Physically-based Fuel Cladding Oxidation Model in BISON Nuclear Fuel Performance Code: *Léo Borrel*[1]; Adrien Couet[1]; [1]University of Wisconsin-Madison

10:50 AM
New Insights on Denuded Zone Formation in Polycrystalline Materials: *Enrique Martinez Saez*[1]; Osman El-Atwani[1]; Blas Uberuaga[1]; Erika Esquivel[1]; [1]Los Alamos National Laboratory

11:10 AM
Characterizing and Modelling Precipitation in Zirconium Alloys: *Zaheen Shah*[1]; Joseph Robson[1]; Michael Preuss[1]; Magnus Limbäck[2]; Mattias Alm[3]; [1]University of Manchester; [2]Westinghouse Electric Sweden AB; [3]AB Sandvik Materials Technology

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials V

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Thursday AM
March 15, 2018

Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Impact of Low Dose Ion Irradiation on Raman Spectra and Thermal Conductivity in 3C-SiC: *Vinay Chauhan*[1]; Xinpeng Du[1]; Changdong Wei[1]; Ji-Cheng Zhao[1]; Marat Khafizov[1]; [1]The Ohio State University

8:50 AM
Fabrication of PyC/SiC Diffusion Couples Using Fluidized Bed CVD Techniques for Radiation Enhanced Diffusion Testing: *Brian Jolly*[1]; Tyler Gerczak[1]; Anne Campbell[1]; Austin Schumacher[1]; [1]Oak Ridge National Laboratory

9:10 AM
Corrosion of SiC with Cr, CrN, and TiN Coatings in High Temperature Water: *Stephen Raiman*[1]; Peter Doyle[2]; Caen Ang[1]; Kurt Terrani[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

9:30 AM
Development of YSZ Environmental Barrier Coatings for the Molten Salt Fast Reactor: Orlando Castilleja-Escobedo[1]; Ana Salazar-Roman[1]; Lester Espinosa-Pérez[1]; Moises Valdes-Pech[1]; Francisco Gomez-Cano[1]; *Eddie Lopez-Honorato*[1]; [1]CINVESTAV

9:50 AM
Creep Related Microstructural Evolution of Alloy 617-based ODS Alloy: *Jinsung Jang*[1]; Man Wang[1]; Heung Nam Han[2]; Chang Hee Han[1]; Woo Gon Kim[1]; [1]KAERI; [2]Seoul National University

10:10 AM Break

10:30 AM
Multiscale Irradiation Effects of Tungsten Based Materials for Nuclear Power: *Osman El-Atwani*[1]; Erika Esquivel[1]; Mert Efe[2]; Eda Aydogan[1]; Stuart Maloy[1]; [1]Los Alamos National laboratory; [2]Middle East Technical University

10:50 AM
Investigation on the Damage Mechanism of Plasma-materials Interface by Multi-scale Electron Microscopy Methods: *Kun Wang*[1]; Chad Parish[1]; Russell Doerner[1]; Matthew Baldwin[1]; Fred Meyer[1]; [1]Oak Ridge National Laboratory, UT-Battelle

11:10 AM
Radiation Tolerance of Equiatomic Multicomponent Single Phase Alloys Subjected to Ion Irradiation at 16 K: *Gihan Velisa*[1]; Elke Wendler[2]; Ke Jin[1]; Hongbin Bei[1]; William Weber[3]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory; [2]Friedrich-Schiller-Universität Jena, Institut für Festkörperphysik; [3]University of Tennessee

11:30 AM
Radiation Resistant Elemental Combination High Entropy Complex Concentrated Alloys for Nuclear Applications: *James Withers*[1]; [1]ATS-MER, LLC

Materials for Energy Conversion and Storage – Energy Storage III

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Thursday AM
March 15, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Partha Mukherjee , Purdue University; Leela Arava, Wayne State University

8:30 AM Invited
Measurements of Stress and Fracture in High-capacity Li-ion Battery Anodes: *Matt Pharr*[1]; [1]Texas A&M University

8:55 AM
Mechanistic Understanding of Transport-mechanics Interactions in Li-S Cathodes: *Aashutosh Mistry*[1]; Partha Mukherjee[1]; [1]Purdue University

9:15 AM
Monolayers of Transition Metal Diselenides as Anchoring Surface for Lithium-sulfur Batteries: Naresh Thangavel[1]; Nirul Masurkar[1]; *Leela Mohana Reddy Arava*[1]; [1]Wayne State University

9:35 AM Invited
Multiparadigm Computational Approaches to Assess and Optimize Rechargeable Battery Electrodes: *Alejandro Franco*[1]; [1]Université de Picardie Jules Verne

10:00 AM Break

10:15 AM Invited
Surface Chemistry Evolution on Cathodes Characterized by In Situ XPS and AES: *Shen Dillon*[1]; [1]University of Illinois at Urbana-Champaign

10:40 AM Invited
The Transition from Unfavorable Lithium Plating to Destructive Lithium Dendrites: *Corey Love*[1]; Rachel Carter[1]; [1]U.S. Naval Research Laboratory

11:05 AM Invited
New Challenges to Future Battery System for Automotive Application: *Yuichiro Tabuchi*[1]; [1]Nissan Motor Co., Ltd

11:30 AM
Electrochemical Characterization of Lithium Diffusion in Ordered Nanoporous Carbons via Voltage-relaxation GITT: *Waruni Jayawardana*[1]; Christopher Carr[1]; Eric Majzoub[1]; [1]University of Missouri St. Louis

Mechanical Behavior at the Nanoscale IV – Crystallite Effects and the Nanoscale

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Thursday AM
March 15, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Marisol Koslowski, Purdue University; Yu Zou, MIT

8:30 AM Invited
Stress Relaxation Mechanisms in Thin Films: *Marisol Koslowski*[1]; Xiaorong Cai[1]; [1]Purdue University

9:00 AM
Synthesis and Mechanical Characterization of Metallic Films with Precisely Tailored Multimodal Microstructures: *Rohit Berlia*[1]; Ehsan Izadi[1]; Jagannathan Rajagopalan[1]; [1]Arizona State University

9:20 AM
A New Method for Selecting Grain Boundary Sets for Comparison of Decohesion Behavior in Molecular Dynamics Simulations: *Doruk Aksoy*[1]; Remi Dingreville[2]; Douglas Spearot[1]; [1]University of Florida; [2]Sandia National Laboratories

9:40 AM
Texture Dependent Grain Rotations in Ultrafine-grained Al Films Revealed by In Situ TEM with Automated Crystal Orientation Mapping: *Ehsan Izadi*[1]; Jagannathan Rajagopalan[1]; [1]Arizona State University

10:00 AM Break

10:20 AM
ECCI Analysis ff Dislocation Slip Transfer across Grain Boundaries in Commercially Pure Titanium: *Songyang Han*[1]; Martin Crimp[1]; [1]Michigan State University

10:40 AM
In-situ Brittle Fracture with Microscopic DIC: *Charles Spellman*[1]; Alex Arzoumanidis[1]; [1]Psylotech

11:00 AM
Mechanical Properties of Nanocrystalline Aluminum: Atomistic Simulations and Experimental Verification: *Wenwu Xu*[1]; Xiaoyan Song[2]; Lilian Dávila[3]; [1]San Diego State University; [2]Beijing University of Technology; [3]University of California, Merced

11:20 AM
Effect of Twist Boundary Stability of Dislocation Network under Unloading: *Jamie Gravell*[1]; Ill Ryu[1]; [1]University of Texas at Dallas

11:40 AM
Anatomizing Deformation Mechanisms in Metals at the Low End of the Nanoscale: *Rainer Birringer*[1]; Christian Braun[1]; Michael Deckarm[1]; Andreas Leibner[1]; [1]Saarland University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII – Phase Stability of Advanced Electronic Interconnection II

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Worcester Polytechnic Institute; Hiroshi Nishikawa, Osaka University; Shien Ping Feng, The University of Hong Kong; Yee-Wen Yen, National Taiwan University of Science & Technology; Song-Mao Liang, Clausthal University of Technology

Thursday AM
March 15, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Jae-Ho Lee, Hongik University; Chao-hong Wang, National Chung Cheng University

8:30 AM Invited
Nanoparticles and Nanowires Based on Ag and Cu in Printed Electronics and Transparent Electrode: *Hyuck Mo Lee*[1]; [1]KAIST

8:50 AM
Minor P-doping in the Electroplated Co(P) Layer to Strongly Suppress IMC Formation in Lead-free Solder Joints: *Chao-hong Wang*[1]; Che-yang Lin[1]; [1]National Chung Cheng University

9:10 AM
Fabrication and Characterization of (111)-oriented and Nanotwinned Cu by Periodic Reverse Electrodeposition: *Kuan-Ju Chen*[1]; [1]National Chiao Tung University

9:30 AM
Inter-diffusion at Ag/Cu Interface: *Erh-Ju Lin*[1]; Cheng-Yi Liu[1]; [1]National Central University

9:50 AM Break

10:10 AM
Effects of Electrochemical Parameters on the Physical Properties of Ni-Co Electroplating: Yong-Su Lee[1]; Hong-Wook Chun[1]; *Jae-Ho Lee*[1]; [1]Hongik University

10:30 AM
Electrochemical Etching of Solder Resist to Improve Adhesion of Electroless Copper Plating in PCB: Jong-Chan Choi[1]; *Jae-Ho Lee*[1]; [1]Hongik University

10:50 AM
Dissolution Kinetic of Ni Wire in Sn and Sn3.5Ag Solder: *Jyun Yang Wang*[1]; Cheng Yi Liu[1]; [1]National Central University

11:10 AM
The Study of Interfacial Reactions between Sn and C194 Alloy: Pei-Yu Chen[1]; *Chih-Hung Lin*[1]; Yee-Wen Yen[1]; [1]National Taiwan Univ. of Sci. & Tec., Dep. of Materials Sci. & Eng.

11:30 AM
Effect of Ag Additives on Dissolution Kinetic of Cu Wire in Sn and Sn3.5Ag Solder: *YiXuan Lin*[1]; ChengYi Liu[1]; [1]National Central University

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Titanium Powder Metallurgy and Additive Manufacturing I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Thursday AM
March 15, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: Dr Ben Thomas, University of Sheffield; Dr Josef Stráský , Charles University

8:30 AM
Characterization and Heat Treatment of Ti-6Al-4V Powders for Use in Cold Spray Deposition: *Satish Bhattiprolu*[1]; Grant Crawford[1]; [1]South Dakota School of Mines and Technology

8:50 AM
Cost-effective Titanium Alloy Components for Internal Combustion Engine Valve Trains: *Nick Weston*[1]; Ben Thomas[1]; Martin Jackson[1]; [1]University of Sheffield

9:10 AM
Densification of Near-net Shape Turbine Blades in TiAl by Spark Plasma Sintering: *Thomas Voisin*[1]; Jean-Philippe Monchoux[2]; Marc Thomas[3]; Alain Couret[2]; [1]Lawrence Livermore National Laboratory; [2]CNRS ; CEMES (Centre d'Elaboration de Matériaux et d'Etudes Structurales); [3]ONERA/DMSM

9:30 AM Invited
Fabrication of Powder Metallurgy Ti-6Al-4V Connecting Rod by Powder Forging Process: *Youngmoo Kim*[1]; Young-Beom Song[1]; Sung Ho Lee[1]; Young-Sam Kwon[2]; [1]Agency for Defense Development; [2]Cetatech Co.

10:00 AM Break

10:20 AM
FAST-*forge*: From Rutile Sand to Novel Titanium Alloy Aerospace Component in 3 Steps: *Nick Weston*[1]; Luke Benson Marshall[2]; Olga Bylya[3]; Malgorzata Rosochowska[3]; Sam Evans[4]; Martin Jackson[1]; [1]University of Sheffield; [2]Metalysis; [3]University of Strathclyde; [4]Safran Landing Systems

10:40 AM Invited
Producing High-quality Titanium Alloy by a Cost-effective Route Combining Fast Heating and Hot Processing: *Fei Yang*[1]; Stiliana Raynova[1]; Ajit Singh[1]; Qinyang Zhao[1]; Carlos Romero Villarreal[1]; Leandro Bolzoni[1]; [1]University of Waikato

11:10 AM Invited
Novel Continuous Extrusion of Titanium Powders for Wire Applications: *Ben Thomas*[1]; Martin Jackson[1]; [1]University of Sheffield

11:40 AM
Microstructure and Phase Transformations in Ti15Mo Alloy Prepared by Cryogenic Milling and SPS: *Josef Stráský*[1]; Jirí Kozlík[1]; Petr Harcuba[1]; Kristína Václavová[1]; Tomáš Chráska[1]; Miloš Janecek[1]; [1]Charles University

Recent Advances in Functional Materials for Printed, Flexible and Wearable Electronics – 2D/3D Sensors and Devices

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Nuggehalli Ravindra, New Jersey Institute of Technology; Jud Ready, Georgia Institute of Technology; Amit Pandey, LG Fuel Cell Systems Inc.; Suresh Sitaraman, Georgia Institute of Technology

Thursday AM
March 15, 2018
Room: 226B
Location: Phoenix Convention Center

Session Chairs: Jud Ready, Georgia Institute of Technology; Amit Pandey, LG Fuel Cell Systems Inc.; Megan Cordill, Erich Schmid Institute

8:30 AM Invited
Transparent Field Effect Biosensors Printed on Highly Curved Surfaces: *Gregory Herman*[1]; [1]Oregon State University

9:00 AM Invited
Single-crystalline-like Semiconductor Films on Flexible Substrates: A Route towards Roll-to-roll Manufacturing of High-performance Electronic Devices: *Pavel Dutta*[1]; M. Rathi[1]; D. Khatiwada[1]; Yan Yao; Y. Gao[1]; S. Sun[1]; Y. Li[1]; S. Pouladi[1]; J. Ryou[1]; Eduard Galstyan[1]; Venkat Selvamanickam[1]; [1]University of Houston

9:30 AM
3-D Printed Polymer-based Gas Sensors: *Patrick Dzisah*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

9:50 AM Break

10:10 AM Invited
Integrated and Flexible Biosensors for Point-of-care Diagnostics: *Vinay Gupta*[1]; [1]University of Delhi

10:40 AM
High Performance Sensors and Antennas by 2D and 3D Printing of Nanoparticles: *Md Taibur Rahman*[1]; Arya Rahimi[2]; Subhanshu Gupta[2]; Luke Renaud[2]; Deuk Heo[2]; C. V. Ramana[3]; Rahul Panat[1]; [1]Carnegie Mellon University; [2]Washington State University; [3]University of Texas at El Paso

11:00 AM Invited
Microheater Array Powder Sintering: A New Process for Printed Electronics: Nicholas Holt[1]; Lucas Marques[1]; Austin Van Horn[1]; *Wenchao Zhou*[1]; [1]University of Arkansas

11:30 AM Invited
3D Printed Anodes for Al-air Batteries: Y. Yu[1]; M. Chen[1]; S. Wang[1]; C. Hills[2]; J. Pooran[3]; *Anming Hu*[1]; [1]University of Tennessee; [2]Sichuan University; [3]Oak Ridge National Laboratory

Solar Cell Silicon – Silicon Recycling, Refining, and Impurity Removal

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC; York Smith, University of Utah

Thursday AM
March 15, 2018
Room: 223
Location: Phoenix Convention Center

Session Chairs: Leili Tafaghodi, University of British Columbia; Jijun Wu, Kunming University of Science and Technology

8:30 AM Invited
A Review of Solar Silicon Recycling: *York Smith*[1]; [1]University of Utah

9:10 AM
Removal Impurities from Metallurgical Silicon by Slag Treatment Combined with Acid Leaching: Zhenfei Xia[1]; *Jijun Wu*[1]; Wenhui Ma[1]; Kuixian Wei[1]; Yun Lei[1]; [1]Kunming University of Science and Technology

9:30 AM
Structure Nature of Boron Removal from Silicon in Slagging Refining: A Raman Spectroscopy and NMR Spectroscopy Study: *Guoyu Qian*[1]; Zhi Wang[1]; [1]Institute of Process Engineering, Chinese Academy of Sciences

9:50 AM Break

10:10 AM
Boron Removal from Ferrosilicon Alloy via Slag Treatment: *Ali Hosseinpour*[1]; Leili Tafaghodi[1]; [1]University of British Columbia

10:30 AM
The Mechanism of Boron Removal from Silicon Alloy by Electric Field Using Slag Treatment: *Junhao Liu*[1]; Zhi Wang[1]; Zhi Ge[1]; Bing Du[1]; [1]Institute of Process Engineering, Chinese Academy of Sciences

Thermal and Mechanical Stability of Nanocrystalline Materials – Mechanical Stability and Deformation Behavior

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Thursday AM
March 15, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Modulating Stability and Strength in Nanocrystalline FCC Metals: The Effects of Microstructure, Composition and Interfacial Character: Jacob Gruber[1]; *Garritt Tucker*[1]; [1]Colorado School of Mines

9:00 AM
Grain Boundary Stability Governs Hardening and Softening in Extremely-fine Nano-grained Metals: Jian Hu[1]; *Yinong Shi*[1]; Xavior Sauvage[2]; Gang Sha[3]; K. Lu[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; [2]Normandie University, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux; [3]Herbert Gleiter Institute of Nanoscience, Nanjing University of Science and Technology

9:20 AM
Insights into Deformation Induced Grain Boundary Migration in Ultrafine-grained Metals from a Strain Path Change – Does Texture Play a Role?: *Oliver Renk*[1]; Pradipta Ghosh[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

9:40 AM Invited
Effect of Temperature on the Deformation Response of Grain Boundary Networks: *Diana Farkas*[1]; [1]Virginia Tech

10:10 AM Break

10:30 AM Invited
Connecting Thermal Stability to Fatigue and Wear Resistance in Nanocrystalline Binary Alloys: *Brad Boyce*[1]; Nicolas Argibay[1]; Timothy Furnish[1]; Khalid Hattar[1]; Christopher Barr[1]; Michael Chandross[1]; Fadi Abdeljawad[1]; Stephen Foiles[1]; Blythe Clark[1]; [1]Sandia National Laboratories

11:00 AM
Initiation and Stagnation of Room-temperature Strain-induced Grain Coarsening in Thin Au Films: *Oleksandr Glushko*[1]; Rafael Soler[2]; Gerhard Dehm[2]; [1]Erich Schmid Institute; [2]Max-Planck-Institut für Eisenforschung

11:20 AM Invited
Commonalities in the Structure and Plastic Deformation in Disordered Materials and Interfaces: Glenn Balbus[1]; Daniel Strickland[2]; Daniel Magagnosc[2]; Robert Ivancic[2]; Andrea Liu[2]; *Daniel Gianola*[1]; [1]University of California, Santa Barbara; [2]University of Pennsylvania

Thermal and Mechanical Stability of Nanocrystalline Materials – Nanotwin and Oxide Induced Stabilization

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Thursday AM
March 15, 2018
Room: 127C
Location: Phoenix Convention Center

Session Chair: To Be Announced

8:30 AM
Effects of Nanotwinning and Nanocrystallinity on the Precipitation Behavior of a Ni-Mo-Cr Superalloy: *Megan Emigh*[1]; Jessica Krogstad[1]; [1]University of Illinois at Urbana Champaign

8:50 AM
The Mechanism of Anisotropic Single-crystal Growth in Nanotwinned Copper: *I-Hsin Tseng*[1]; Chih Chen[1]; Yun-Ting Hsu[1]; Jih-Perng Leu[1]; Tu King-Ning[2]; [1]National Chiao Tung Unirversity; [2]University of California, Los Angeles

9:10 AM
Thermal Cycling Test of Integrated Fan-out Wafer Level Package with Highly (111)-oriented Nano-twinned Copper: *Li Yu-Jin*[1]; Ying Ju Chen[1]; Kuan Ju Chen[1]; Chih Chen[1]; [1]National Chiao Tung Unirversity

9:30 AM
In-situ TEM Study of the Effects of W Solutes on Irradiation Induced Detwinning in Cu: *Gowtham Sriram Jawaharram*[1]; Khalid Hattar[2]; Robert Averback[1]; Shen Dillon[1]; [1]University of Illinois Urbana-Champaign; [2]Sandia National Laboratories

9:50 AM Break

10:10 AM Invited
Design Tough Nanoceramics by Reducing Grain Boundary Energy: *Ricardo Castro*[1]; [1]University of California, Davis

10:40 AM
Effect of Nanoscale Oxide Dispersion on Thermal Stability of Severely Deformed Fe-Y Alloy: *Anna Weiss*[1]; Stephen Kachur[1]; Yoosuf Picard[1]; Bryan Webler[1]; [1]Carnegie Mellon University

11:00 AM
A Microstructural Approach toward Improving the Nano Grain Size Stability of Fe14Cr4Hf Alloy: *Peiman Shahbeigi Roodposhti*[1]; Sina Shahbazmohamadi[1]; [1]University of Connecticut

Ultrafine-grained Materials X – High Pressure Torsion and Equal Channel Angular Extrusion/ Pressing Studies

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Irene Beyerlein, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Thursday AM
March 15, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chairs: Megumi Kawasaki, Oregon State University; Güney Güven Yapici, Özyegin University

8:30 AM
Role of Alloy Properties in Forced Chemical Mixing of Cu-X-Mo Ternary Alloys (X=Ni, Ag): *Nisha Verma*[1]; Robert S Averback[1]; Pascal Bellon[1]; [1]University of Illinois, Urbana-Champaign

8:50 AM
Micro-mechanical Response of Gamma-based TiAl Intermetallic Compound Processed by High-pressure Torsion: *Megumi Kawasaki*[1]; Jae-Kyung Han[2]; Xi Li[3]; Rian Dippenaar[3]; Klaus-Dieter Liss[4]; [1]Oregon State University; [2]Hanyang University; [3]University of Wollongong; [4]Australian Nuclear Science and Technology Organisation

9:10 AM
High-pressure Torsion of Copper-molybdenum Composites: *Julian Rosalie*[1]; Zaoli Zhang[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute for Materials Science

9:30 AM
Phase Transformations and Aging Behavior of Pure Ti and Ti-6Al-7Nb Processed by High-pressure Torsion: *Jorge Cubero-Sesin*[1]; Joaquín González-Hernández[1]; Alejandro Martínez[1]; Elena Ulate-Kolitsky[1]; Mildred Chaves[1]; Fernando Alvarado[1]; Héctor Agüero[1]; Mauricio Castro[1]; Daniela Murillo[1]; Jose Vega-Baudrit[1]; Kaveh Edalati[2]; Zenji Horita[2]; [1]Instituto Tecnológico de Costa Rica; [2]Kyushu University

9:50 AM
The Effect of Bismuth on Microstructure Evolution in Ultrafine-grained Copper: Anna Kosinova[1]; Boris Straumal[2]; Askar Kilmametov[2]; *Eugen Rabkin*[1]; [1]Technion; [2]Karlsruhe Institute of Technology

10:10 AM Break

10:30 AM
Mechanical Behavior of UFG Titanium at Elevated Temperatures: *G. Guven Yapici*[1]; S.V. Sajadifar[1]; T. Niendorf[2]; H.J. Maier[3]; [1]Ozyegin University; [2]Kassel University; [3]Hannover University

10:50 AM
Strategies to Improve the Fatigue Crack Growth Behavior of SPD-processed Metals: *Anton Hohenwarter*[1]; Thomas Leitner[1]; [1]Department of Materials Physics, Montanuniversität Leoben, Austria

11:10 AM
High-pressure Torsion as a Novel Technique for Processing High Strength Zn-based Alloys: *David Hernandez Escobar*[1]; Hakan Yilmazer[2]; Carl Boehlert[1]; Megumi Kawasaki[3]; [1]Michigan State University; [2]Yildiz University; [3]Hangyang University

11:30 AM
Effect of Subgrain Structure on Superplasticity of Ultrafine-grained Ti-6Al-4V: *Chong Soo Lee*[1]; Daehwan Kim[1]; Chan Hee Park[2]; Jae Keun Hong[2]; [1]POSTECH; [2]KIMS

11:50 AM
Annealing Behavior of Ultrafine-grained Aluminum Processed by Equal Channel Angular Extrusion: *Pei-Ling Sun*[1]; [1]National Sun Yat-Sen University

Ultrafine-grained Materials X – Texture Studies and Microstructural Evolution

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Thursday AM
March 15, 2018
Room: 102C
Location: Phoenix Convention Center

Session Chairs: Georgy Raab, Ufa State Aviation Technical University; Werner Skrotzki, Dresden University of Technology

8:30 AM
Crystal Plasticity Modeling of Tensile and Cyclic Behavior of Ultrafine Grained Films: Effects of Crystallographic Texture: Saul Opie[1]; Ehsan Izadi[1]; Jagannathan Rajagopalan[1]; *Pedro Peralta*[1]; [1]Arizona State University

8:50 AM
Development of Ultrafine Grain Structure with Weak Texture in New Mg-4Li-1Ca Alloy by Equal Channel Angular Pressing (ECAP): *Saurabh Nene*[1]; B Kashyap[2]; N Prabhu[2]; Y. Estrin[3]; T. Al-Samman[4]; [1]IITB-Moansh Research Academy; [2]IIT Bombay; [3]Moansh University; [4]RWTH Aachen University

9:10 AM
Effect of Texture on Inhomogeneous Shear in ECAP: Laura Lienshoeft[1]; Julius Huhn[1]; Philipp Frint[2]; Martin Franz-Xaver Wagner[2]; *Werner Skrotzki*[1]; [1]Dresden University of Technology; [2]Chemnitz University of Technology

9:30 AM
The Influence of Microstructure Characteristics on Plastic Deformation Mechanisms in Severely Deformed Aluminium: *Witold Chrominski*[1]; Malgorzata Lewandowska[1]; [1]Warsaw University of Technology

9:50 AM
Aging-induced Microstructure and Texture Evolution of AA 6201 after High Shear Deformation: *Rilee Meagher*[1]; Casey Davis[1]; Joel Grzenia[1]; Peter Rovira[1]; Gordon Campbell[1]; Mathew Hayne[1]; Tamás Ungár[2]; Shenjia Zhang[3]; Terry Lowe[1]; [1]Colorado School of Mines; [2]Eötvös University; [3]General Cable Technologies Corporation

10:10 AM Break

10:30 AM
Effect of SPD Processing Combined with Ultrasound on Structure Transformation in a Low-alloyed Chromium Bronze: *Georgy Raab*[1]; Tibor Donic[2]; Denis Aksenov[1]; Rashid Asfandiyarov[1]; [1]Ufa State Aviation Technical University; [2]University of Žilina

10:50 AM
Structural Stability of Ultra-fine Grained Metastable Beta Titanium Alloys: *Kristína Václavová*[1]; Josef Strasky[1]; Anna Terynkova[1]; Josef Vesely[1]; Petr Harcuba[1]; Irina Semenova[2]; Veronika Polyakova[2]; Milos Janecek[1]; [1]Charles University; [2]Ufa State Aviation Technical University

11:10 AM
Microstructure of Refined Ti15Mo Alloy for Biomedical Use: *Anna Terynková*[1]; Josef Stráský[1]; Kristína Václavová[1]; Miloš Janecek[1]; Michal Landa[2]; Michaela Janovská[2]; Irina Semenova[3]; Veronika Polyakova[3]; [1]Charles University; [2]Institute of Thermomechanics; [3]Ufa State Aviation Technical University

11:30 AM
Issues of Intermetallic and Precipitates Segregation inside Adiabatic Shear Bands of SPD-processed Al 6061: *Ramatou Ly*[1]; Karl T. Hartwig[1]; Homero Castaneda[1]; [1]Texas A&M University

9th International Symposium on High Temperature Metallurgical Processing – Agglomeration and Direct Reduction of Complex Iron Ores

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Thursday PM
March 15, 2018
Room: 227B
Location: Phoenix Convention Center

Session Chairs: Tao Jiang, Central South University; Hongming Long, Anhui University of Technology

2:00 PM Introductory Comments

2:05 PM
Carbothermic Direct Reduction of Chromite Using a Segregation Catalyst for the Production of Ferrochrome: *Dawei Yu*[1]; Dogan Paktunc[1]; [1]CanmetMINING

2:25 PM
Effect of Modified Humic Acid (MHA) Binder on Roasting Behavior Mongolian Tumurtei Iron Concentrate Briquettes: Bayaraa S[1]; *Guanghui Li*[1]; Mingjun Rao[1]; Tao Jiang[1]; [1]Central South University

2:45 PM
Enhancement of Yield by Improvement of Iron Ore Sinter Strength of Weak Layer in Sinter Bed: *Chong-Lyuck Park*[1]; Wan-Sung Kim[1]; [1]POSCO

3:05 PM
Study on Direct Reduction Melting Separation-leaching Process of Disposal Rare Earth Composite Iron Ore: Tengfei Ma[1]; *Xue-feng She*[1]; Fu Feng[1]; Jiongsong Wang[1]; [1]University of Science and Technology Beijing

3:25 PM Break

3:45 PM
Reduction Behavior of Garnierite Using Methane by Roasting-Magnetic Separation Method: *Li Bo*[1]; Yindong Yang[2]; Mansoor Barati[2]; Alexander McLean[2]; Yonggang Wei[1]; [1]Kunming University of Science and Technology; [2]University of Toronto

4:05 PM
Effect of Calculation Method of CaO Addition on Liquid Phase Fluidity: Lixin Qian[1]; Tiejun Chun[1]; Zhengwei Yu[1]; Huan Wang[1]; Yifan Wang[1]; *Hongming Long*[1]; Ping Wang[1]; [1]Anhui University of Technology

4:25 PM
Effect of Carbon Coating on Magnetite Reduction: Wu-feng Jiang[1]; *Su-ju Hao*[2]; Yu-zhu Zhang[1]; [1]North China University of Science and Technology; [2]Michigan Technological University

4:45 PM
Optimization Method for Iron Ore Blending Based on the Sintering Basic Characteristics of Blended Ore: Li Ning[1]; Li Jiaxin[1]; Long Hongming[1]; Chun Tiejun[1]; Mu Gutian[1]; *Yu Zhengwei*[1]; Wang Ping[1]; [1]Anhui University of Technology

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Advanced Characterization and Innovative Applications

*Sponsored by:*TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Thursday PM
March 15, 2018
Room: 230
Location: Phoenix Convention Center

Session Chairs: Eric Lass, National Institute of Standards and Technology; Kathryn Small, Drexel University

2:00 PM
Dynamics of Laser Powder Bed Fusion Additive Manufacturing Process: Qilin Guo[1]; Luis Escano[1]; Cang Zhao[2]; Lianghua Xiong[1]; Seyed Mohammad Hassan Hojjatzadeh[1]; Tao Sun[2]; *Lianyi Chen*[1]; [1]Missouri University of Science and Technology; [2]Argonne National Lab

2:20 PM
Effect of Heat Treatment on the Microstructural Evolution of a Nickel-based Superalloy Produced by Powder Bed Fusion Laser Sintering: *Fan Zhang*[1]; Lyle Levine[1]; Andrew Allen[1]; Eric Lass[1]; Mark Stoudt[1]; Greta Lindwall[1]; Michael Katz[1]; Maureen Williams[1]; Carelyn Campbell[1]; [1]National Institute of Standards and Technology

2:40 PM
Porosity Analysis of AM Powder Based on Machine Learning Approach and In-situ Annealing Technique for Observation of Property Evolution of AM Material: *He Liu*[1]; Yufeng Shen[1]; Ross Cunningham[1]; R.M Suter[1]; A. D. Rollett[1]; [1]Carnegie Mellon University

3:00 PM
Thermally-induced Microstructural Evolution of Additively Manufactured Inconel 718 via In-situ Bragg-edge Neutron Radiography and Diffraction: *Gian Song*[1]; Hassina Billeux[1]; Jean Bilheux[1]; Jiao Lin[1]; Qingge Xie[1]; Ke An[1]; Alexandru Stoica[1]; Louis Santodonato[1]; Ryan Dehoff[1]; Michael Kirka[1]; Sarma Gorti[1]; Balasubramaniam Radhakrishnan[1]; Anton Tremsin[2]; [1]Oak Ridge National Laboratory; [2]University of California, Berkeley

3:20 PM Break

3:40 PM
Residual Strain Characterization of Additively Manufactured Ni Superalloy Using HR-EBSD Analysis: *Kathryn Small*[1]; Jacob Hochhalter[2]; Ryan Carpenter[3]; Stephen Luckowski[3]; Matthew Clemente[3]; Elias Jelis[3]; Brian Jackson[4]; David Fullwood[4]; Mitra Taheri[1]; [1]Drexel University; [2]NASA Langley Research Center; [3]U.S. Army ARDEC; [4]Brigham Young University

4:00 PM
Properties and Microstructure in Thick Plate Inconel 718 Produced by Electron Beam Wire Feed: Brent Waters[1]; Jill Wen[2]; *Michael Miles*[2]; David Fullwood[2]; [1]Toyota Motor Manufacturing; [2]Brigham Young University

4:20 PM
Investigation of the SLM Process to Fabricate Multiperforated Plates in Aeroengines: *Marc Thomas*[1]; Cécile Davoine[1]; Océane Lambert[1]; Fabienne Popoff[1]; Philippe Reulet[1]; Olivier Léon[1]; Axel Vincent[1]; [1]ONERA

4:40 PM
Localized Porosity Control for Heat Pipe Manufacturing: *Scott Roberts*[1]; Eric Sunada[1]; Stefano Cappucci[1]; Ben Furst[1]; Andre Pate[1]; [1]JPL/NASA

Advanced Real Time Optical Imaging – Iron and Steelmaking III

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Alloy Phases Committee, TMS: Biomaterials Committee
Program Organizers: Jinichiro Nakano, US Department of Energy National Energy Technology Laboratory; David Alman, National Energy Technology Laboratory; Il Sohn, Yonsei University; Hiroyuki Shibata, Tohoku University; Antoine Allanore, Massachusetts Institute of Technology

Thursday PM
March 15, 2018
Room: 123
Location: Phoenix Convention Center

Session Chair: Il Sohn, Yonsei University

2:00 PM Invited
Wettability of Graphite-alumina Composites against Molten CaO-SiO2-Al2O3-MgO Slags: *Noritaka Saito*[1]; Kunihiko Nakashima[1]; [1]Kyushu University

2:30 PM Invited
In-situ Observation of Sulfide Formation during Solidification in Fe-Cr-Ni-Mn-S Alloys: *Kazuo Nakama*[1]; [1]Sanyo Special Steel

3:00 PM
Observations of Ferrite Formation and Growth in Inclusion-engineered Low Alloy Steels during In-situ Heat Treatments: *Wangzhong Mu*[1]; Peter Hedström[1]; Hiroyuki Shibata[1]; Pär Jönsson[1]; Keiji Nakajima[1]; [1]KTH Royal Institute of Technology

3:20 PM Panel Discussion

3:40 PM Break

4:00 PM Panel Discussion

Algorithm Development in Materials Science and Engineering – Applications of Microscale Algorithms and Models

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Phase Transformations Committee, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Mark Tschopp, Army Research Laboratory; Jonathan Zimmerman, Sandia National Laboratories; Ebrahim Asadi, University of Memphis; Mark Horstemeyer, Mississippi State University

Thursday PM
March 15, 2018
Room: 130
Location: Phoenix Convention Center

Session Chair: Mark Horstemeyer, Mississippi State University

2:00 PM
A Dislocation-based Finite Element Modelling of Hydrogen Embrittlement in High-strength Steel Alloys: Amir Abdelmawla[1]; *Tarek Hatem*[1]; Dierk Raabe[2]; [1]British University in Egypt; [2]Max-Planck-Institut fur Eisenforschung

2:20 PM
Simulation of Multi-component Microstructure Evolution Coupling Phase Field and Tensor Decomposition Techniques: *Yuan Yuan*[1]; Fusheng Pan[1]; Nico Vervliet[2]; Lieven Delathauwer[2]; Nele Moelans[2]; [1]Chongqing University; [2]KU Leuven

2:40 PM
Crack-tip Simulation Validations by XGP Multiscale Methods: *Jinghong Fan*[1]; Ross Stewart[2]; Taolong Xu[3]; [1]Alfred University; [2]Corning Inc.; [3]Southwest Petroleum University

3:00 PM
Three Dimensional Trefftz Voronoi Cell Finite Elements with Cylindrical Elastic/Rigid Inclusions &/or Voids for Micromechanical Modeling of Heterogeneous Materials: *Guannan Wang*[1]; Leiting Dong[2]; Satya Atluri[1]; [1]Texas Tech University; [2]Beihang University

3:20 PM
Phase Field Approach to Fracture and Interaction of Fracture and Phase Transformation: *Hossein Jafarzadeh*[1]; Valery Levitas[2]; Gholam Hossein Farrahi[1]; Mahdi Javanbakht[3]; [1]Sharif University of Technology; [2]Iowa State University; [3]Isfahan University of Technology

Alloy Development and Powder Manufacture for Additive Manufacturing – Design of Ni and Fe Alloys

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Paul Prichard, Kennametal; Sudarsanam Babu, The University of Tennessee, Knoxville; Peter Collins, Iowa State University; James Foley, Los Alamos National Laboratory

Thursday PM
March 15, 2018
Room: 232B
Location: Phoenix Convention Center

Session Chair: Suresh Babu, Oak Ridge National Laboratory

2:00 PM
Current Understanding and Status of Ni-base Superalloys for Additive Manufacturing: Towards Alloy Development for AM: *Michael Kirka*[1]; [1]Oak Ridge National Laboratory

2:20 PM
Microstructure Development in Isolated Melt Pools of Electron Beam Melted Inconel 718: *Andrew Polonsky*[1]; Narendran Raghavan[2]; William Lenthe[1]; McLean Echlin[1]; Michael Kirka[2]; Ryan Dehoff[2]; Tresa Pollock[1]; [1]University of California, Santa Barbara; [2]Oak Ridge National Laboratory

2:40 PM
Fabrication of Hastelloy X by Electron Beam Melting and Selective Laser Melting: *Sebastien Dryepondt*[1]; Mike Kirka[1]; Frederic List[1]; [1]Oak Ridge National Laboratory

3:00 PM
Microstructure and Mechanical Properties of BN Reinforced Inconel 718 Composites Processed by Laser Powder Bed Fusion (LPBF): *Joon-Phil Choi*[1]; Flavio Silva[1]; Ji-Hun Yu[2]; Mathieu Brochu[1]; [1]McGill University; [2]Korea Institute of Materials Science (KIMS)

3:20 PM Break

3:40 PM
Alloy Design Strategies for the Adaptation of Non-weldable Compositions for Additive Manufacturing: *Tim Prost*[1]; Ralph Napolitano[2]; Emma White[2]; Michael Kirka[3]; Ryan Dehoff[3]; Iver Anderson[2]; [1]US DOE Ames Laboratory; [2]Iowa State University/Ames Laboratory; [3]Oak Ridge National Laboratory

4:00 PM
Laser Engineered Net Shaping (LENS) of High Entropy Alloys: *Andrew Kustas*[1]; Mark Wilson[1]; Shaun Whetten[1]; Dave Keicher[1]; Michael Chandross[1]; Ping Lu[1]; Allen Roach[1]; Nicolas Argibay[1]; [1]Sandia National Laboratories

4:20 PM
Designing Fe-Ni-Al and Fe-Ni-Ti Maraging Steels for In-situ Precipitation Hardening during Laser Metal Deposition: *Philipp Kürnsteiner*[1]; Markus Benjamin Wilms[2]; Andreas Weisheit[2]; Eric Aimé Jägle[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Fraunhofer-Institut für Lasertechnik

4:40 PM
High Entropy Alloys for Additive Manufacturing: *Minh-Son Pham*[1]; [1]Imperial College London

Aluminum Reduction Technology – Cell Technology Development

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

Thursday PM
March 15, 2018
Room: 221C
Location: Phoenix Convention Center

Session Chair: Sergey Akhmetov, Emirates Global Aluminium

2:00 PM Introductory Comments

2:05 PM
Very Low Energy Consumption Cell Designs: The Cell Heat Balance Challenge: *Marc Dupuis*[1]; [1]GéniSim Inc

2:30 PM
APXe Cell Technology: 7 Years of Low Energy Operation: *Sebastien Becasse*[1]; Bertrand Allano[1]; Yves Caratini[1]; Olivier Martin[1]; Denis Tinka[1]; [1]Rio Tinto

2:55 PM
Development and Industrial Application of NEUI600 High Efficiency Aluminum Reduction Cell: *Yungang Ban*[1]; Jihong Mao[1]; Yu Mao[1]; Jing Liu[1]; Gaoqiang Chen[1]; [1]Northeastern University Engineering & Research Institute Co. Ltd

3:20 PM
RA-550 Cell Technology: UC RUSAL's New Stage of Technology Development: *Andrey Zavadyak*[1]; Iliya Puzanov[1]; Vitaly Platonov[1]; Vitaly Pingin[1]; Viktor Mann[1]; [1]RUSAL ETC LLC

3:45 PM Break

4:00 PM
DX+ Ultra Industrial Version: Preheat Start up and Early Operation: Michel Reverdy[1]; *Abdalla Alzarooni*[1]; Nadia Ahli[1]; Alexander Arkhipov[1]; Sajid Hussain[1]; Sergey Akhmetov[1]; Kamel Alaswad[1]; [1]Emirates Global Aluminium (EGA)

4:25 PM
Selecting Technology for Achieving 300,000 T/Year - Why Do We Need to Compete Pot Technology?: Sahala Sijabat[1]; *Rainaldy Harahap*[1]; Ari Sukotjo[1]; Faisal Hidayat[1]; Ivan Yudho[1]; [1]PT Inalum (Persero)

4:50 PM
AP44 Development at Alma: Pascal Thibeault[1]; Louis Guimond[1]; Véronique Dassylva-Raymond[1]; Joseph Langlais[1]; René Gariépy[1]; Olivier Martin[1]; [1]Rio Tinto

5:15 PM
EGA New D20+ Technology with Reduced Energy Consumption: *Ali Jassim*[1]; Ali Alzarouni[1]; Sergey Akhmetov[1]; Yousuf Ahli[1]; Alexander Arkhipov[1]; Abdallah Al Jaziri[1]; [1]Emirates Global Aluminium

5:40 PM Concluding Comments

Biodegradable Materials for Medical Applications – Polymers and Glasses

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund; Jan Seitz, Syntellix AG; Norbert Hort, Helmholtz-Zentrum Geesthacht; Huinan Liu, University of California-Riverside

Thursday PM
March 15, 2018
Room: 226A
Location: Phoenix Convention Center

Session Chairs: Huinan Liu, University of California Riverside; Jaroslaw Drelich, Michigan Technological University

2:00 PM Keynote
Development of a Bioresorbable Vascular Scaffold for Treating Coronary Artery Disease: A Case Study: *Mary Beth Kossuth*[1]; [1]Abbott Vascular

2:40 PM Invited
Surface Modification of Biomaterials by Plasma-based Technology: *Paul Chu*[1]; [1]City University of Hong Kong

3:10 PM
Study on Polylactide-coconut Fibre for Biomedical Applications: *Oluwashina Gbenebor*[1]; Rasaq Atoba[1]; Emmanuel Akpan[2]; Abraham Aworinde[3]; Samuel Olaleye[1]; Samson Adeosun[1]; [1]University of Lagos; [2]Institut fur Verbundwerkstoffe; [3]Department of Mechanical Engineering, Covenant University

3:30 PM Break

3:50 PM
Biocompatibility of Biodegradable Mg-Zn-Ca Metallic Glass: *Carlos Elias*[1]; Daniel Fernandes[1]; Celso Resende[1]; Ana Almeida[1]; Heraldo Elias[1]; [1]Instituto Militar de Engenharia

4:10 PM
Biodegradable Borate Glass for Wound Healing and Bone Regeneration Implants via Boronizing: *Bakr Rabeeh*[1]; Nora Abu Bakr[1]; Mahmoud M. Abu Elkhair[1]; [1]German University in Cairo, GUC

4:30 PM
Where Do We Stand on Development of Ideal Biodegradable Zinc Material for Vascular Stenting?: *Jaroslaw Drelich*[1]; Jeremy Goldman[1]; [1]Michigan Technological University

Building an ICME Infrastructure: Developing Tools that Integrate Across Length and Time Scales to Accelerate Materials Design – Integration Tools and Methods for Linking Processing-structure-property Relationships

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Carelyn Campbell, National Institute of Standards and Technology; Mark Carroll, Federal Mogul Powertrain; Adam Hope, Thermo-Calc Software; Hojun Lim, Sandia National Laboratories; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Dongwon Shin, Oak Ridge National Laboratory

Thursday PM
March 15, 2018
Room: 132C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Demonstration Vasisht Venkatesh: "Current Status of ICME Infrastructure in the Aerospace Industry"

2:40 PM
Modeling the Microstructural Evolution and Yield Strength in an Advanced Die Casting Aluminum Alloy: *Qianying Shi*[1]; Tracy Berman[1]; John Allison[1]; [1]University of Michigan

3:00 PM
A Coupled Experimental and Computational Investigation of Creep-resistant Mg-RE-Zn Alloy: *Deep Choudhuri*[1]; S Srinivasan[1]; M Gibson[1]; R Banerjee[1]; [1]University of North Texas

3:20 PM
Quantitative Approaches to Identification and Characterization of Microtexture Regions in Titanium Alloys: *Sean Donegan*[1]; Adam Pilchak[1]; Ashley Wissel[1]; [1]Air Force Research Laboratory

3:40 PM Break

4:00 PM
Coupled Crystal Plasticity-phase Field Method to Model Crack Initiation and Propagation in Ti64 Alloys: *Jiahao Cheng*[1]; Somnath Ghosh[1]; [1]Johns Hopkins University

4:20 PM Invited
Integration of ICME Tools for the Design of Co-base Single Crystals: Robert Rhein[1]; Colin Stewart[1]; Sean Murray[1]; Mike Titus[1]; Carlos Levi[1]; *Tresa Pollock*[1]; [1]University of California, Santa Barbara

5:00 PM
Uncertainty Quantification and Propagation through CALPHAD Thermodynamics and Integrated Computational Materials Engineering (ICME): *Jeff Doak*[1]; Abhinav Saboo[1]; Dana Frankel[1]; Nick Hatcher[1]; James Saal[1]; Greg Olson[1]; [1]QuesTek Innovations

5:20 PM
Application of Diffusion Multiples to the Study of Kinetics and Modulus Properties in the Ti-Mo-Nb-Ta-Zr System: *Zhangqi Chen*[1]; Ji-Cheng Zhao[1]; [1]The Ohio State University

Bulk Metallic Glasses XV – Modeling and Thermal Properties

*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; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Thursday PM
March 15, 2018
Room: 122A
Location: Phoenix Convention Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Weidong Li, The University of Tennessee, Knoxville

2:00 PM Invited
Theoretical Analysis of Shear-band Arrangements in Notched Bulk Metallic Glasses: *Weidong Li*[1]; Yanfei Gao[1]; Hongbin Bei[2]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory

2:20 PM Invited
Influence of Nanoscale Structural Heterogeneity on Shear Banding in Metallic Glasses: *Pengyang Zhao*[1]; Ju Li[2]; Jinwoo Hwang[1]; Yunzhi Wang[1]; [1]The Ohio State University; [2]MIT

2:40 PM Invited
Unique Crystallization Dynamics by Flash DSC in Zn-based Metallic Glass: *Meng Gao*[1]; John Perepezko[1]; [1]University of Wisconsin-Madison

3:00 PM
Tuning Metallic Glass Characteristics via Manipulating Icosahedral Order and Packing Density: *Geunhee Yoo*[1]; Eunsoo Park[1]; Ke-Fu Yao[2]; Chaewoo Ryu[1]; Jungsoo Lee[1]; JiaLun Gu[2]; [1]Seoul National University; [2]Tsinghua University

3:20 PM Invited
Comparison of Excess Entropy in Metallic and Oxide Glasses: *Hillary Smith*[1]; Marios Demetriou[2]; Brent Fultz[1]; [1]California Institute of Technology; [2]Glassimetal Technology

3:40 PM Break

4:00 PM
Features of Interfaces in a Cu-Zr-Al Based Metallic Glass Obtained by Densification of Amorphous Powders: *Jean-Marc Pelletier*[1]; Sandrine Cardinal[1]; Qing Wang[2]; Guoqiang Xie[3]; Jichao Q[4]; [1]INSA-Lyon; [2]City University; [3]Shenzhen Graduate School; [4]NPWU

4:20 PM
Isochronal Crystallization Kinetics of Fe – Based Amorphous Alloy Powder: Tanaji Paul[1]; Archana Loganathan[2]; Arvind Agarwal[2]; *Sandip Harimkar*[1]; [1]Oklahoma State University; [2]Florida International University

4:40 PM Invited
Tracking Metastable Phase Selection during Devitrification in a Metallic Glass: *Lin Zhou*[1]; Fanqiang Meng[1]; Shihuai Zhou[1]; Taehoon Kim[1]; Ryan Ott[1]; Ralph Napolitano[1]; Matthew Kramer[1]; [1]Ames Lab

5:00 PM
Relationship between STZ Properties, Beta Relaxation and Ductility of Metallic Glasses: *Tianjiao Lei*[1]; Luis DaCosta[1]; Michael Atzmon[1]; [1]University of Michigan

Bulk Metallic Glasses XV – Structures and Characterization

*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; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

Thursday PM
March 15, 2018
Room: 121C
Location: Phoenix Convention Center

Session Chairs: Robert Maass, University of Illinois at Urbana-Champaign; Xie Xie, FCA US LLC

2:00 PM Invited
Aging Dynamics around a Shear Band in a Metallic Glass: *Robert Maass*[1]; Stefan Kuechemann[1]; Chaoyang Liu[1]; Eric Dufresne[2]; Jeremy Shin[1]; [1]University of Illinois at Urbana-Champaign; [2]Argonne National Laboratory

2:20 PM Invited
A Total Scattering Study of Thermal Expansion of Bulk Metallic Glasses: *Dong Ma*[1]; Alexandru Stoica[1]; [1]Oak Ridge National Laboratory

2:40 PM Invited
Deformation Induced Structural Relaxation in La-based BMGs: *Hui Wang*[1]; Wojciech Dmowski[1]; Zengquan Wang[1]; Jichao Qiao[2]; Rongjie Xue[3]; Meng Gao[3]; Hongbin Bei[4]; Takeshi Egami[4]; [1]University of Tennessee, Knoxville; [2]Northwestern Polytechnical University; [3]Chinese Academy of Sciences; [4]Oak Ridge National Laboratory

3:00 PM
STEM RDF Mapping as a New Approach to Characterize Local Structural Variations in Metallic Glasses: Xiaoke Mu[1]; Di Wang[1]; *Christian Kuebel*[1]; [1]KIT

3:20 PM Invited
Nanostructure Characterization and Fracture Toughness Properties of a Thermomechanically Processed Zr-based Bulk Metallic Glass: *Jamie Kruzic*[1]; Bosong Li[1]; Simon Ringer[2]; Keita Nomoto[2]; Shenghui Xie[3]; [1]UNSW Sydney; [2]The University of Sydney; [3]Shenzhen University

3:40 PM Break

3:55 PM Invited
Effect of Co Addition on Martensitic Transformation in a B2-containing CuZr-based BMG Composite Revealed by In Situ Neutron Diffraction: *Gian Song*[1]; Dong Ma[1]; Ke An[1]; Chanho Lee[2]; Shuying Chen[2]; Peter Liaw[2]; Sung-Hwan Hong[3]; Ki Buem Kim[3]; [1]Oak Ridge National Laboratory; [2]University of Tennessee, Knoxville; [3]Sejong University

4:15 PM Invited
Local Dynamics in Metallic Liquids Studied by Inelastic Neutron Scattering: *Zengquan Wang*[1]; Wojciech Dmowski[1]; Hui Wang[1]; Takeshi Egami[1]; Kenneth Kelton[2]; [1]University of Tennessee, Knoxville; [2]Washington University in St. Louis

4:35 PM
DSC Studies of the Transformations of Short-range Orders in Pd-Ni-P BMGs: *L. Wang*[1]; X. Wang[1]; Hin Wing Kui[1]; [1]The Chinese University of Hong Kong

4:55 PM Invited
Solid State Joining of AMZ4 Bulk Metallic Glass to Crystalline Alloys by Power Ultrasonics: *Frank Balle*[1]; Michael Becker[1]; Alexander Kuball[2]; Ralf Busch[2]; Isabella Gallino[2]; [1]University of Kaiserslautern; [2]Saarland University

5:15 PM
Shear-band Thickness and Cavitation in a Zr-based Metallic Glass: *Chaoyang Liu*[1]; Vladimir Roddatis[2]; Peter Kenesei[3]; Robert Maass[1]; [1]University of Illinois at Urbana-Champaign; [2]University of Goettingen; [3]Argonne National Laboratory

Cast Shop Technology – Continuous Casting

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Badowski, Hydro Aluminium

Thursday PM
March 15, 2018
Room: 222A
Location: Phoenix Convention Center

Session Chair: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

2:00 PM Introductory Comments

2:05 PM
Continuous Casted Aluminum Flat Products Corrosion Characteristic According to Downstream Process: *Ali Ulus*[1]; Gökhan Orhan[2]; Gökçe Hapçi Agaoglu[2]; Sadik Kaan Ipek[1]; Hamdi Ekici[1]; [1]Teknik Aluminium; [2]Istanbul University

2:30 PM
Controlling the Microstructural Evolution during Soft Annealing of Cold Rolled Twin-roll Cast AlMnMg Alloys by Homogenization Heat Treatment: *Onur Meydanoglu*[1]; Cemil Isiksaçan[1]; Mert Günyüz[1]; Hatice Mollaoglu Altuner[1]; [1]Assan Alüminyum San. ve Tic. A.S.

2:55 PM
Investigation of Elemental Distribution in the Sheet Sections after Aluminum Continuous Sheet Casting, Cold Rolling and Heat Treatment Processes: *Ali Ulus*[1]; Ebubekir Koç[2]; Zafer Çagatay Öter[2]; Sadik Kaan Ipek[1]; Hamdi Ekici[1]; [1]Teknik Aluminium; [2]Fatih Sultan Mehmet University

3:20 PM
Tailoring the Materials Properties with a Holistic Approach From Casting to Back Annealing: *Cemil Isiksaçan*[1]; Onur Meydanoglu[1]; Onur Birbasar[1]; Mert Gülver[1]; [1]Assan Alüminyum San. ve Tic. A.S.

3:45 PM Break

Characterization of Minerals, Metals, and Materials – Thermal Processing and Analysis

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

Thursday PM
March 15, 2018
Room: 122C
Location: Phoenix Convention Center

Session Chair: John Carpenter, Los Alamos National Lab

2:00 PM Introductory Comments

2:05 PM Invited
Buildup Formation Mechanism of Carbon Sleeve in Continuous Annealing Furnace for Silicon Steel: *Mingsheng He*[1]; Guohua Xie[1]; Xuecheng Gong[1]; Wangzhi Zhou[1]; Jing Zhang[1]; Jian Xu[1]; [1]Wuhan Iron & Steel Co., Ltd.

2:25 PM
Effect of Casting Speed on Hot Ductility and Precipitation Kinetics of Micro-alloyed Steels during Continuous Casting: *Hossam Ibrahim*[1]; Heinz Palkowski[1]; [1]Clausthal University of Technology

2:45 PM
In-situ Measurement System for Prediction of the Hot Tearing Tendency of Steel: *Michel Wurlitzer*[1]; Babette Tonn[1]; [1]Clausthal University of Technology

3:05 PM
Pulse Parameter Characterization in Microdrilling of Maraging Steel 300 Alloy: *Shivraj Narayan Yeole*[1]; Nunna Nagabhushana Ramesh[2]; Banoth Balu Naik[3]; Ramya Alluru[1]; [1]VNR Vignana Jyothi Institute of Engineering & Technology; [2]Anurag Group of Institutions; [3]JNTU College of Engineering

3:25 PM
Physical and Chemical Properties of Melt-spun $Fe_{bal}Si_x$ (x = 3-8 wt. %) Soft Magnetic Ribbons: Nicole Overman[1]; *Xiujuan Jiang*[1]; Ravi Kukkadapu[1]; Trevor Clark[2]; Timethy Roosendaal[1]; Gregory Coffey[1]; Jeffrey Shield[3]; Suveen Mathaudhu[1]; [1]Pacific Northwest National Laboratory; [2]University of California-Riverside; [3]University of Nebraska-Lincoln

3:45 PM Break

4:00 PM
Interpretation of Coal Quality Using Laboratory Based Features over VNIR Bands: *Nafisa Begum*[1]; Debashish Chakravarty[1]; Bhabani Das[1]; [1]IIT Kharagpur

4:20 PM
Characterization of Coke-making Coals of High Reactivity from Northwest China: *Qiang Wu*[1]; Zizong Zhu[1]; Guojing Shi[1]; Feng Wang[1]; Yangyang Xie[1]; [1]Chongqing University

4:40 PM
Spherical Nanoindentation Investigation on Ti-Pt-Ni-Hf Shape Memory Alloys: *Ali Khosravani*[1]; Manu Mohan[2]; Dipankar Banerjee[2]; Surya Kalidindi[1]; [1]Georgia Institute of Technology; [2]Indian Institute of Science

5:00 PM
The Anodic Behavior of Electro-Deoxidation of Titanium Dioxide in Calcium Chloride Molten Salt: *Pingsheng Lai*[1]; Meilong Hu[1]; Leizhang Gao[1]; Zhengfeng Qu[1]; Chenguang Bai[1]; [1]Chongqing University

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Thermodynamics

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Thursday PM
March 15, 2018
Room: 131A
Location: Phoenix Convention Center

Session Chairs: Ying Chen, Tohoku University; Joerg Neugebauer, Max-Planck-Institut fuer Eisenforschung

2:00 PM Invited
Modelling Structural Materials in Realistic Environments by Ab Initio Thermodynamics: *Joerg Neugebauer*[1]; Fritz Koermann[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; Mira Todorova[1]; [1]Max-Planck-Institut fuer Eisenforschung

2:30 PM
Improvement of Energy Models for Magnetic Alloys and Nanoalloys: *Christine Goyhenex*[1]; Mariem Sansa[2]; Jacques René Eone II[1]; Guy Tréglia[3]; Bernard Legrand[4]; Adnene Dhouib[5]; Fabienne Ribeiro[6]; [1]Institut de Physique et Chimie des Matériaux de Strasbourg; [2]LSAMA; [3]CINaM; [4]CEA, DEN, Service de Recherches de Métallurgie Physique; [5]College of Science, Dammam; [6]IRSN

2:50 PM
Absolute Value Estimation of Thermodynamic Properties in Ni-Al Alloys Using a First Principles Renormalized Potential: *Ryoji Sahara*[1]; Toshio Osada[1]; Swastibrata Bhattacharyya[2]; Kaoru Ohno[2]; [1]National Institute for Materials Science; [2]Yokohama National University

3:10 PM
Phase Stability and Martensitic Transitions in NiTi from First Principles Simulations: *Justin Haskins*[1]; John Lawson[2]; [1]AMA Inc, NASA Ames Research Center; [2]NASA Ames Research Center

3:30 PM Break

3:45 PM
Phase Stability and Chemical Composition of Nanoprecipitates: A First Principles Study for the Example of Kappa Carbides: *Tilmann Hickel*[1]; Poulumi Dey[1]; Biswanath Dutta[1]; Martin Friák[2]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH; [2]Academy of Sciences of the Czech Republic

4:05 PM Invited
Stability and Effects of Substitutional Elements in $NdFe_{12}$-based Compounds: *Ying Chen*[1]; Arkapol Saengdeejing[1]; [1]Tohoku University

4:35 PM
Non-equilibrium Simulations of 4H Silicon Carbide: *Rachel Flanagan*[1]; Eric Hahn[2]; Shiteng Zhao[1]; Carlos Ruestes[3]; Chris Wehrenberg[4]; Bruce Remington[4]; Marc Meyers[1]; [1]UCSD; [2]Los Alamos National Laboratories; [3]National University of Cuyo , Mendoza; [4]Lawrence Livermore National Laboratories

4:55 PM
On the Behavior of Liquid Ga Precipitates in Solid Al: *Sanket Navale*[1]; Michael Demkowicz[2]; [1]Massachusetts Institute of Technology; [2]Texas A&M University

5:15 PM
Thermodynamics of Pb-Sn System in Molecular Dynamics Simulations: *Seyed-Alireza Etesami*[1]; Ebrahim Asadi[1]; [1]University of Memphis

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Transport

*Sponsored by:*Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

Thursday PM
March 15, 2018
Room: 131B
Location: Phoenix Convention Center

Session Chairs: Xingqiu Chen, Institute of Metal Research, Chinese Academy of Science; Wenqing Zhang, Southern Unversity of Science and Technology

2:00 PM Invited
Lattice Dynamics and Thermal Transport in Part-crystalline Part-liquid Materials through Molecular Dynamics Simulations: *Wenqing Zhang*[1]; Hongliang Yang[2]; Yancheng Wang[2]; [1]Southern Unversity of Science and Technology; [2]SICCAS

2:30 PM
Thermal Transport in Ni-containing FCC Concentrated Solid Solutions from First Principles: *German Samolyuk*[1]; Sai Mu[1]; Sebastian Wimmer[2]; Sergiy Mankovsky[2]; Hubert Ebert[2]; Malcolm Stocks[1]; [1]Oak Ridge National Laboratory; [2]Ludwig-Maximilians-Universitat Munchen

2:50 PM
A Predictive Computational Route to Quantitatively Evaluate the Effect of Doping on Reducing Thermal Conductivity of Ceramic Oxides: Guoqiang Lan[1]; *Jun Song*[1]; [1]McGill University

3:10 PM
Thermoelectric Model of High ZT Nanoengineered Bulk Silicon for High Temperature Applications: *Seyed Aria Hosseini*[1]; Jackson Harter[2]; Devin Coleman[1]; Todd Palmer[2]; Lorenzo Mangolini[1]; Alex Greaney[1]; [1]University of California, Riverside; [2]Oregon State University

3:30 PM Break

3:45 PM Invited
Topological Nodal Lines in Metals: *Xing-Qiu Chen*[1]; [1]Institute of Metal Research, Chinease Academy of Sciences

4:15 PM
Formation of Arsenene p-n Junctions via Organic Molecular Adsorption: *Gao Nan*[1]; [1]Changchun University

4:35 PM
Computational Approach to the Magnetic Properties of Ga-added Nd-Fe-B Sintered Magnets: *Yasutomi Tatetsu*[1]; Shinji Tsuneyuki[2]; Yoshihiro Gohda[1]; [1]Tokyo Institute of Technology; [2]The University of Tokyo

4:55 PM
Cu Substituted CeCo5: New Optimal Permanent Magnetic Material with Reduced Criticality: Rajiv Chouhan[1]; *Durga Paudyal*[1]; [1]Critical Materials Institute, Ames Laboratory, U. S. Department of Energy

5:15 PM
First-principles-based Novel Materials Design for Pb-free Perovskite Solar Cell: *Donghwa Lee*[1]; [1]Pohang University of Science and Technology (POSTECH)

Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions – UQ and Validation of Mesoscale Simulations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory; Richard Hennig, University of Florida; Avinash Dongare, University of Connecticut; Shawn Coleman, U.S. Army Research Laboratory; Niaz Abdolrahim, University of Rochester; Joseph Bishop, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Li Ma, National Institute of Standards and Technology

Thursday PM
March 15, 2018
Room: 132B
Location: Phoenix Convention Center

Session Chair: Joseph Bishop, Sandia National Laboratories

2:00 PM Invited
Dynamic Failure of High Energy Materials: Uncertainty Quantification and Stochastic Predictions: *Marisol Koslowski*[1]; Nicolo Grilli[1]; Camilo Duarte Cordon[1]; Akshay Dandekar[1]; [1]Purdue University

2:30 PM
Overcoming Singularities within Rate-independent Crystal Plasticity to Enable Realistic Latent Hardening: *Milovan Zecevic*[1]; Marko Knezevic[1]; [1]University of New Hampshire

2:50 PM
Bayesian Linear Regression and Kriging Methods for Uncertainty Quantification in Process-structure-property Linkages of Low Carbon Steels and Superalloys: *Yuksel Yabansu*[1]; Almambet Iskakov[1]; Sudhir Rajagopalan[2]; Anna Kapustina[2]; Surya Kalidindi[1]; [1]Georgia Institute of Technology; [2]Siemens Energy Inc

3:10 PM Invited
Parametrically Homogenized Models of Deformation and Failure of Metals and Alloys with Uncertainty-quantification: *Somnath Ghosh*[1]; [1]Johns Hopkins University

3:40 PM Break

4:00 PM
The Current State of Phase Field Benchmark Problems Developed by CHiMaD/NIST: *Andrea Jokisaari*[1]; Daniel Wheeler[2]; Peter Voorhees[1]; Jonathan Guyer[2]; James Warren[2]; Olle Heinonen[3]; [1]Northwestern University; [2]National Institute of Standards and Technology; [3]Argonne National Laboratory

4:20 PM
Property Localization: Quantifying the Uncertainty of Inferred Constitutive Models for Grain Boundaries: Christian Kurniawan[1]; *Oliver Johnson*[1]; [1]Brigham Young University

Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session – Industrial Streams II

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Pyrometallurgy Committee
Program Organizers: Elsa Olivetti, Massachusetts Institute of Technology; John Howarter, Purdue University; Fiseha Tesfaye, Åbo Akademi University

Thursday PM
March 15, 2018
Room: 224B
Location: Phoenix Convention Center

Session Chairs: John Howarter, Purdue; Elsa Olivetti, MIT

2:00 PM Introductory Comments

2:05 PM
Tannic Acid as a Flame Retardant - Deriving Value from Leather Tanning Waste: *Matthew Korey*[1]; John Howarter[1]; [1]Purdue University

2:25 PM
A New Technology for Cleaning Machining Metal Chips: Murray Small[1]; Matthew Kropf[1]; *Subodh Das*[1]; Ravi Verma[2]; [1]Phinix,LLC; [2]Boeing

2:45 PM
Kinetic Investigations on the Recovery of Residues from the Stainless Steel Industry: *Manuel Leuchtenmueller*[1]; [1]University of Leoben

3:05 PM
Mechanism of Residual Iron Oxides in Preparation of Tailings Glass Ceramics: *Jing Li*[1]; [1]University of Science&Technology Liaoning

3:25 PM Break

3:40 PM
Rapid Removal of Pb(II) from Acid Wastewater Using Vanadium Titanium-bearing Magnetite Particles Coated by Humic Acid (VTM-HA) Magnetic Particles: *Manman Lu*[1]; Yuanbo Zhang[1]; Zijian Su[1]; Bingbing Liu[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University

4:00 PM
Study on the Technology of Synthesizing $MgAl_2O_4$ Spinel Refractory Material from Waste Chromium Slag of a Certain Chrome Plant in China: *Meng Jinxia*[1]; [1]University of Science and Technology Beijing

4:20 PM
An Eco-friendly Extraction Method for Recovery of Valuable Metals from Spent Ni-W/Al2O3-SiO2 Catalysts: *Wenqiang Wang*[1]; Shengming Xu[1]; [1]Tsinghua University

4:40 PM
Effect of Ferrosilicon on Reduction of Cr_2O_3 in Steelmaking Slags: *Yue Yu*[1]; Jianli Li[1]; [1]Wuhan University of Science and Technology

5:00 PM
Complete Recycling of Waste Diamond Cutting Tools by an Electrochemical Method: Tansu Altunbasak[1]; Mehmet Kul[2]; Ishak Karakaya[1]; *Esra Karakaya*[1]; [1]Middle East Technical University; [2]Cumhuriyet University

Frontiers in Solidification Science and Engineering – Computational Modelling of Solidification: From Nano to Macro Scales

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

Thursday PM
March 15, 2018
Room: 126C
Location: Phoenix Convention Center

Session Chairs: Johannes Hötzer, Karlsruhe University of Applied Sciences; Mohsen Eshraghi, California State University, Los Angeles

2:00 PM
Anisotropic Interfaces in Coarse-grained Phase-field Crystal Models: *Nana Ofori-Opoku*[1]; James Warren[2]; Peter Voorhees[1]; [1]Northwestern University; [2]National Institute of Standards and Technology

2:20 PM
A Quantitative Phase-field Crystal Model to Study Particle Coarsening in Binary Systems: *Ahmad Nourian-Avval*[1]; Ebrahim Asadi[1]; [1]University of Memphis

2:40 PM
Phase-field Modelling of Intermetallic Solidification: *Andrew Mullis*[1]; Peter Jimack[1]; Peter Bollada[1]; [1]University of Leeds

3:00 PM
Variational Formulation of a Quantitative Phase-field Model for Non-isothermal Solidification in Multi-component Alloys and its Applications: *Munekazu Ohno*[1]; Tomohiro Takaki[1]; Yasushi Shibuta[2]; [1]Hokkaido University; [2]The University of Tokyo

3:20 PM
Multi-GPU Phase-field Simulation of Growth, Motion and Collision of Multiple Dendrites: *Shinji Sakane*[1]; Tomohiro Takaki[1]; Munekazu Ohno[2]; Yasushi Shibuta[3]; Takashi Shimokawabe[3]; Takayuki Aoki[4]; [1]Kyoto Institute of Technology; [2]Hokkaido University; [3]The University of Tokyo; [4]Tokyo Institute of Technology

3:40 PM Break

4:00 PM
Multiscale Dendritic Needle Network Model for Dendritic Solidification with Liquid Convection: *Damien Tourret*[1]; [1]IMDEA Materials Institute

4:20 PM
Multiscale Modeling of Dendritic Grain Structures by Coupling DNN-CA-FE Methods: Romain Fleurisson[1]; Gildas Guillemot[1]; *Charles-Andre Gandin*[1]; [1]MINES ParisTech

4:40 PM
Mesoscopic Envelope Model for Equiaxed and Columnar Dendritic Growth Coupled with Flow: *Alexandre Viardin*[1]; Miha Zaloznik[2]; Youssef Souhar[3]; Markus Apel[1]; Hervé Combeau[2]; [1]ACCESS e.V; [2]IJL; [3]ENSAM

5:00 PM
Simulation of Macrosegregation and Columnar to Equiaxed Transition in a Solidification Benchmark Problem: *Mahdi Torabi Rad*[1]; Christoph Beckermann[1]; [1]University of Iowa

High Entropy Alloys VI – Alloy Development and Applications III

*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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Thursday PM
March 15, 2018
Room: 121B
Location: Phoenix Convention Center

Session Chairs: Mitra Taheri, Drexel University; Eun Park, Seoul National Univerisity

2:00 PM Invited
Processing and Characterization of High Entropy Alloys for Extreme Environments: *Mitra Taheri*[1]; Elaf Anber[1]; Haoyan Diao[2]; Christopher Barr[3]; Shang-Hao Huang[1]; Peter Liaw[2]; Leslie Lamberson[1]; Junpeng Liu[4]; Yong Zhang[4]; [1]Drexel University; [2]University of Tennessee; [3]Sandia National Laboratory; [4]University of Science and Technology Beijing

2:20 PM
Derivation of Non-equiatomic MnFeCoNiCu High Entropy Alloy and its Relation to the Equiatomic Counterpart: *Artashes Ter-Isahakyan*[1]; Azin Akbari[1]; Thomas Balk[1]; [1]University of Kentucky

2:40 PM
Optimization of Strength and Ductility in Mo-Ta-Nb-V-Ti BCC High Entropy Alloys: *Sang Jun Kim*[1]; Hyun Seok Oh[1]; Eun Soo Park[1]; [1]Seoul National Univerisity

3:00 PM
Development of Oxidation Resistant Refractory High Entropy Alloys for High Temperature Applications: Recent Results and Development Strategy: *Bronislava Gorr*[1]; Franz Mueller[1]; Hans-Juergen Christ[1]; Hans Chen[2]; Alexander Kauffmann[2]; Dorothée Vinga Szabó[2]; Ruth Schweiger[2]; Martin Heilmaier[2]; [1]University Siegen; [2]Karlsruhe Institute of Technology

3:20 PM Break

3:40 PM Invited
Solution Strengthening in FCC High Entropy Alloys: *Celine Varvenne*[1]; Satish Rao[2]; Wolfram Nohring[3]; William Curtin[3]; [1]Aix-Marseille Univ.-CNRS; [2]Air Force Research Laboratory; [3]EPFL

4:00 PM
Resistance Spot Welding of Dissimilar FeCoNiCrCu0.5 High Entropy Alloys-to-AISI 304L Stainless Steel: Microstructural Evolution and Metallurgy Mode Analysis: *Jia-Chi Li*[1]; Chun-Ming Lin[1]; Cheng-Shun Chen[1]; [1]National Taipei University of Technology

4:20 PM
Manipulation of Deformation Mechanism in FCC HEA by Al Addition: *Kook Noh Yoon*[1]; Hyun Seok Oh[1]; Eun Soo Park[1]; [1]Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University

4:40 PM
Evolution of the Solid Solution Strengthening in FCC Multi-component Alloys: Towards High Entropy Alloys Design: *Guillaume Bracq*[1]; Mathilde Laurent-Brocq[1]; Loïc Perrière[1]; Rémi Pirès[1]; Jean-Marc Joubert[1]; Ivan Guillot[1]; [1]ICMPE

5:00 PM
Role of Copper in Nucleation and Stabilization of Ordered L12 Precipitates in HEAs: *Bharat Gwalani*[1]; Rajarshi Banerjee[1]; [1]University of North Texas Denton

High Entropy Alloys VI – Mechanical and Other Properties III

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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

Thursday PM
March 15, 2018
Room: 121A
Location: Phoenix Convention Center

Session Chairs: Che-Wei Tsai, National Tsing Hua University; Bernd Gludovatz, UNSW Sydney

2:00 PM Invited
Effect of Cellular Structure on Mechanical Property in None-equal Molar AlCoCrFeNiTi High Entropy Alloy: *Che-Wei Tsai*[1]; Chia-Ming Kuo[1]; [1]National Tsing Hua University

2:20 PM
Elastic Stability and Lattice Distortion of Refractory High Entropy Alloys: *Bojun Feng*[1]; Michael Widom[1]; [1]Carnegie Mellon University

2:40 PM
Flow Stress and Activation Volume of FCC Metals and Low to Medium Entropy Alloys: *Takahiro Kunimine*[1]; Kosei Tsujikawa[1]; Chihiro Watanabe[1]; Ryoichi Monzen[1]; [1]Kanazawa University

3:00 PM
Screening of Structure and Properties of FCC Thin Film HEAs Using Compositional Gradient Samples: *Azin Akbari*[1]; Artashes Ter-Isahakyan[2]; T. Balk[2]; [1]University of Kentucky ; [2]University of Kentucky

3:20 PM
Effects of Solidification Conditions on Microstructure and Properties of the CoCrFeMnNi Family of HEAs: *Anna Fraczkiewicz*[1]; Tomasz Stasiak[1]; Jerzy Latuch[2]; Dariusz Oleszak[2]; [1]MINES St-Etienne; [2]Warsaw Technical University

3:40 PM Break

4:00 PM Invited
On the Damage Tolerance of TRIP, TWIP and Dual-phase High-entropy Alloys: *Bernd Gludovatz*[1]; Hyunseok Oh[2]; Eun Soo Park[2]; Robert Ritchie[3]; [1]UNSW Sydney; [2]Seoul National University; [3]Lawrence Berkeley National Laboratory

4:20 PM Invited
Effect of NiAl Precipitates on Grain Refinement in AlxCoCrFeNi High Entropy Alloys: *Hiroyuki Yasuda*[1]; Hiroyuki Miyamoto[1]; Ken Cho[1]; Takeshi Nagase[1]; [1]Osaka University

4:40 PM
Effect of NbC on Microstructure and Mechanical Properties of Selected HEA Alloys from CoCrFeMnNi Family: *Julia Olszewska*[1]; Adrianna Lozinko[1]; Julia Olszewska[2]; Jean Denis Mithieux[2]; Anna Fraczkiewicz[1]; [1]MINES St Etienne; [2]APERAM

5:00 PM
Plastic Behavior of a CoCrFeMnNi Alloy under Monotonic-tension and Low-cycle-fatigue Loading: *Yu-Lun Jao*[1]; Stefanus Harjo[2]; E-Wen Huang[1]; [1]National Chiao Tung University; [2]Japan Proton Accelerator Research Complex (J-PARC)

High Temperature Corrosion of Structural Materials – Hot Corrosion, Materials Developed for Corrosive Environments at Elevated Temperatures, and Ti-alloys II

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee
Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Mark Weaver, University of Alabama; Steve Coryell, Special Metals; James Earthman, University of California, Irvine

Thursday PM
March 15, 2018
Room: 227C
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
High Temperature Degradation Mechanisms of Ceramic Matrix Composites: BN Effects: *Elizabeth Opila*[1]; [1]University of Virginia

2:30 PM
Oxidation Resistance of AlN Modified ZrB_2 -SiC Ultra High Temperature Ceramics: *Gaoyuan Ouyang*[1]; Pratik Ray[2]; Matthew Kramer[3]; Mufit Akinc[1]; [1]Iowa State University; [2]Ames Laboratory ; [3]Ames Laboratory

2:50 PM
Protection of Ti Based Materials Against High Temperature Oxidation by the Fluorine Effect: *Alexander Donchev*[1]; Mathias Galetz[1]; [1]Dechema-Forschungsinstitut

3:10 PM
Stability of Protective Oxide Scales Formed on Pure Titanium with Silicon-bearing Films: *Kathleen Chou*[1]; Peng-Wei Chu[1]; Carlos Levi[2]; Emmanuelle Marquis[1]; [1]University of Michigan; [2]University of California, Santa Barbara

3:30 PM Break

3:50 PM
Studies on Isothermal and Cyclic Oxidation Behavior of Titanium Aluminide Coating Developed by Laser Cladding: Jyotsna Dutta Majumdar[1]; *Anupama Dutta*[1]; [1]Indian Institute of Technology Kharagpur

4:10 PM
Effect of Near Service Environmental Conditions on the High Temperature Damage Behavior of an Intermetallic TiAl Alloy: *Christian Löfflf*[1]; Holger Saage[1]; Mathias Göken[2]; [1]University of Applied Sciences Landshut; [2]Friedrich-Alexander-University Erlangen-Nürnberg

4:30 PM
Kinetics of Pack-aluminized Coating Layer on Ti-6Al-4V Alloys and Oxidation Behaviors of the Coated Alloy: Jinsoo Park[1]; Kwangsoo Choi[2]; Minkyu Kim[2]; *Joon Sik Park*[2]; [1]Instech Co. Ltd.; [2]Hanbat National University

4:50 PM
CALPHAD Based Modelling of Oxidation: *Sedigheh Bigdeli*[1]; Reza Naraghi[2]; Lina Kjellqvist[2]; Amanda Persdotter[3]; Lars Höglund[4]; Torbjörn Jonsson[3]; Henrik Larsson[4]; [1]KTH Royal Institute of Technology ; [2]Thermo-Calc Software; [3]Chalmers University of Technology; [4]KTH Royal Institute of Technology

Magnesium Technology 2018 – Thermo-Mechanical Processing

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

Thursday PM
March 15, 2018
Room: 224A
Location: Phoenix Convention Center

Session Chairs: Kiran Solanki, Arizona State University; Vineet Joshi, Pacific Northwest National Laboratory - PNNL

2:00 PM Introductory Comments

2:05 PM
Mechanical Properties of Thermo-mechanically Treated Extruded Mg-Zn-based Alloys: *Daria Drozdenko*[1]; Patrik Dobron[1]; Juraj Olejnák[1]; Marius Hegedüs[1]; Klaudia Horváth[1]; Jan Bohlen[2]; [1]Charles University; [2]Helmholtz-Zentrum Geesthacht

2:25 PM
Strengthening of a Biodegradable Mg-Zn-Ca Alloy ZX50 after Processing by HPT and Heat Treatment: *Andrea Ojdanic*[1]; Erhard Schafler[1]; Jelena Horky[2]; Michael Zehetbauer[1]; Dmytro Orlov[3]; [1]University of Vienna; [2]AIT Austrian Institute of Technology; [3]University of Nova Gorica

2:45 PM
The Recrystallization and Grain Growth Behavior of Unalloyed Mg and a Mg-Al Alloy: *Aeriel Murphy*[1]; John Allison[1]; [1]University of Michigan

3:05 PM
Microstructure and Mechanical Properties of Mg-7.71Gd-2.39Nd-0.17Zr Alloy after the Different Heat Treatments: *Shifeng Luo*[1]; Guangyu Yang[1]; Lei Xiao[1]; Zhong Yu[2]; Wanqi Jie[1]; [1]State Key Laboratory of Solidification Processing, Northwestern Polytechnical University; [2]Northwestern Industrial Technology Research Institute, Northwestern Polytechnical University

3:25 PM Break

3:45 PM
Strain Heterogeneity Structures in Wrought Magnesium AZ31 under Reversed Loading: *Cahit Aydiner*[1]; [1]Bogazici University

4:05 PM
Influence of Low Temperature Forging on Microstructure and Low Cycle Fatigue Behavior of Cast AZ31B Mg Alloy: D. Toscano[1]; *Sugrib Shaha*[1]; S. Behravesh[1]; H. Jahed[1]; Bruce Williams[2]; [1]University of Waterloo; [2]CanmetMATERIALS, Natural Resources Canada

4:25 PM
Superplasticity in a Chip-consolidated $Mg_{97}Zn_1Y_2$ Alloy with LPSO Phase: *Kazuha Suzawa*[1]; Shin-ichi Inoue[1]; Yoshihito Kawamura[1]; Michimasa Miyanaga[2]; Katsuhito Yoshida[2]; Nozomu Kawabe[2]; Michiaki Yamasaki[1]; [1]Kumamoto University; [2]Sumitomo Electric Industries, LTD.

4:45 PM
Technological Solutions to Apply Magnesium Bulk Materials in Dynamic Bending and Axial Compression Load Cases: *Elmar Beeh*[1]; Friedrich Horst[1]; Philipp Strassburger[1]; William Altenhof[2]; Ping Zhou[3]; Michael Worswick[3]; Samuel Kim[3]; [1]DLR- Institute of Vehicle Concepts; [2]University of Windsor; [3]University of Waterloo

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Structural Materials VI

Sponsored by: TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

Thursday PM
March 15, 2018
Room: 104B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM
Chemical Compatibility of Refractory Carbides with Hydrogen at Very High Temperatures Relevant for Nuclear Thermal Propulsion Applications: *Kelsa Benensky*[1]; Steven Zinkle; Kurt Terrani[2]; [1]University of Tennessee Knoxville; [2]Oak Ridge National Laboratory

2:20 PM
Dynamic Strain Aging in Alloy 709 (Fe-25Ni-20Cr): *Abdullah Alomari*[1]; Korukonda Murty[1]; Nilesh Kumar[1]; [1]North Carolina State University

2:40 PM
High Temperature Strength Characterization of Alloy 709: *Nicholas Shaber*[1]; Harrison Pugesek[1]; Jose Ramirez[1]; Martin Taylor[1]; Robert Stephens[1]; Gabriel Potirniche[1]; Indrajit Charit[1]; [1]University of Idaho

3:00 PM
Irradiation Effects on Fe-9%Cr Grain Boundary Strength Measured via In-situ TEM Testing: *Jennifer Watkins*[1]; Brian Jaques[1]; Allyssa Bateman[1]; Yaqiao Wu[1]; Indrajit Charit[2]; Janelle Wharry[3]; Kayla Yano[1]; Wen Jiang[4]; Chao Jiang[4]; [1]Boise State University; [2]University of Idaho; [3]Purdue University; [4]Idaho National Laboratory

3:20 PM
Ti Effect on Microstructrue Stability and Mechanical Properties in Reduced Activation Ferritic-martensitic Steel: *HanKyu Kim*[1]; Ji-Won Lee[1]; Joon-Oh Moon[2]; Chang-Hoon Lee[2]; Hyun-Uk Hong[1]; [1]Changwon National University; [2]Korea Institute of Materials Science

3:40 PM Break

4:00 PM
Effect of Cold Working on the Corrosion and Carburization Behavior of Alloy 800HT in High Temperature CO_2 Environment: *Gokul Obulan Subramanian*[1]; Sung Hwan Kim[1]; Ho Jung Lee[2]; Changheui Jang[1]; [1]KAIST; [2]Central Research Institute, KHNP

4:20 PM
In-situ Testing of Fouling-resistant Coatings for PWR Fuel Cladding: *Max Carlson*[1]; Alexander Slocum[1]; Michael Short[1]; [1]Massachusetts Institute of Technology

4:40 PM
The Effect of Dpa and Dpa Rate on the Strength and Precipitates Stability in Ion-irradiated Inconel 718: *Hi Vo*[1]; Laurent Capolungo[2]; John Graham[3]; Nathan Almirall[4]; Scott Tumey[5]; Stuart Maloy[2]; G. Robert Odette[4]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Los Alamos National Laboratory; [3]Iowa State University; [4]University of California, Santa Barbara; [5]Lawrence Livermore National Laboratory

5:00 PM
In Situ Neutron Diffraction Analysis of Strain-induced Processes in 10.7-dpa Irradiated AISI 304L Steel: *Gabriel De Bellefon*[1]; Maxim Gussev[2]; Keith Leonard[2]; Matthew Frost[2]; Alexandru Stoica[2]; Kumar Sridharan[1]; Jean Claude van Duysen[3]; [1]University of Wisconsin Madison; [2]Oak Ridge National Laboratory; [3]University of Tennessee

Materials for Energy Conversion and Storage – Energy Storage IV

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

Thursday PM
March 15, 2018
Room: 229B
Location: Phoenix Convention Center

Session Chairs: Partha Mukherjee , Purdue University; Leela Arava, Wayne State University

2:00 PM Invited
Understanding Hollow Metal Oxide Nanomaterial Formation with *In Situ* Transmission Electron Microscopy: Lei Yu[1]; Ruixin Han[1]; Xiahan Sang[2]; Jue Liu[2]; Amita Patel[1]; Katherine Page[2]; *Beth Guiton*[1]; [1]University of Kentucky; [2]Oak Ridge National Laboratory

2:25 PM
Are We There Yet? — Predicting the Theoretical Limit for Na Storage of in Hard Carbon Anodes: Clement Bommier[1]; Woochul Shin[2]; Wesley Surta[2]; Michelle Dolgos[2]; Xiulei Ji[2]; *P Greaney*[3]; [1]Princeton University; [2]Oregon State University; [3]University of California, Riverside

2:45 PM
Evaluation of Thin-film Aluminum Anodes for Lithium-ion Batteries: Mohammad Hossein Tahmasebi[1]; Dominik Kramer[2]; Reiner Mönig[3]; *Steven Boles*[1]; [1]Department of Electrical Engineering, The Hong Kong Polytechnic University; [2]Helmholtz Institute Ulm for Electrochemical Energy Storage (HIU); [3]Institute for Applied Materials, Karlsruhe Institute of Technology (KIT)

3:05 PM Invited
Exploring the Impact of Transport Properties on the Cycling Dynamics of Redox-active Polymers Using Multi-scale Modeling: *Kyle Smith*[1]; [1]University of Illinois at Urbana-Champaign

3:30 PM Break

3:45 PM
Scalable Nano-electrocatalyst Engineering Technique for Activation and Stabilization of SOFC Cathode: *Shiwoo Lee*[1]; Navjot Sandhu[2]; Thomas Kalapos[1]; Kirk Gerdes[2]; Gregory Hackett[2]; [1]AECOM / National Energy Technology Laboratory; [2]National Energy Technology Laboratory

4:05 PM
Hydrogen Storage Using Alane Stabilized via Surface Functionalization of Nanoporous Ordered Hard Carbons: *Waruni Jayawardana*[1]; Christopher Carr[1]; Xander Benziger[2]; Paul Jelliss[2]; Hongyang Zou[3]; Samuel Emery[3]; Mark Conradi[3]; Eric Majzoub[1]; [1]University of Missouri- St. Louis; [2]Saint Louis University; [3]Washington University in St. Louis

4:25 PM Invited
Biomass-derived Lithium-sulfur Batteries with Enhanced Capacity and Extended Lifespan: *Xiaodong Li*[1]; [1]University of Virginia

4:50 PM
Novel N-rGO Sandwiched Biphasic Sn-SnSb Alloy Nanocomposite for Use as High Performance Anode in Li-ion Battery: *Sambedan Jena*[1]; Arijit Mitra[1]; S B Majumder[1]; Siddhartha Das[1]; [1]Indian Institute of Technology, Kharagpur

5:10 PM
Hydrogen Evolution Reaction Characteristics of WS2 Electrocatalysts Synthesized via Electrophoretic Deposition from WO3 Colloidal Solution: *Kyu Hwan Lee*[1]; Sung Mook Choi[1]; Nosang Myung[2]; [1]Korea Institute of Matarials Science; [2]UC Riverside

Mechanical Behavior at the Nanoscale IV – Atomistic Simulations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

Thursday PM
March 15, 2018
Room: 101C
Location: Phoenix Convention Center

Session Chairs: Lucas Hale, NIST; Seunghwa Ryu, KAIST

2:00 PM
How Strongly Does Calculation Method Influence Atomistic Predictions of Mechanical Properties?: *Lucas Hale*[1]; Chandler Becker[1]; Zachary Trautt[1]; [1]National Institute of Standards and Technology

2:30 PM
Effect of Surface and Internal Defects on the Mechanical Properties of Metallic Glasses: *Sunghwan Kim*[1]; Seunghwa Ryu[1]; [1]Korea Advanced Institute of Science and Technology

2:50 PM
Understanding Effect of Grain Boundaries on Deformation and Strength of Yttria-stabilized Tetragonal Zirconia Bicrystals: *Ning Zhang*[1]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology

3:10 PM
Molecular Dynamics Study on Temperature-dependent Screw Dislocation Behavior in Body-centered Cubic Metal Nanopillars: *Gyuho Song*[1]; Seok-Woo Lee[1]; [1]University of Connecticut

3:30 PM Break

3:50 PM
Size Dependent Strength and Plasticity in Nanocrystalline Metals with Amorphous Grain Boundary: *Afzal Hossain Neelav*[1]; Chuang Deng[1]; [1]University of Manitoba

4:10 PM
Loading Sequence Dependent Deformation Mode of FCC Nanowires: *Sangryun Lee*[1]; Ill Ryu[2]; Seunghwa Ryu[3]; [1] Korea Advanced Institute of Science and Technology; [2]University of Texas at Dallas; [3]Korea Advanced Institute of Science and Technology

4:30 PM
Effect of Ag and Zr Solutes on Dislocation Emission from the S11(332) [110] Symmetric Tilt Grain Boundary in fcc Cu.: *Valery Borovikov*[1]; Mikhail Mendelev[1]; Alexander King[1]; [1]The Ames Laboratory

4:50 PM
The Effect of the Misfit Dislocation on the In-plane Shear Response of the Ferrite/Cementite Interface: Jaemin Kim[1]; Keonwook Kang[2]; *Seunghwa Ryu*[1]; [1]KAIST; [2]Yonsei University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII – Phase Stability of Energy Materials

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Worcester Polytechnic Institute; Hiroshi Nishikawa, Osaka University; Shien Ping Feng, The University of Hong Kong; Yee-Wen Yen, National Taiwan University of Science & Technology; Song-Mao Liang, Clausthal University of Technology

Thursday PM
March 15, 2018
Room: 227A
Location: Phoenix Convention Center

Session Chairs: Yu Zhong, Worcester Polytechnic Institute; Songmao Liang, Clausthal University of Technology

2:00 PM Invited
Predication of the Intrinsic Properties of Multi-component Electrodes for Li-ion Batteries from Aspect of Thermodynamics: *Dajian Li*[1]; Weibin Zhang[1]; Thomass Reichmann[1]; Damian Cupid[1]; [1]Karlsruhe Institute of Technology

2:25 PM
Phase Equilibria of the Li-Si-C System for Advanced Anodes in Li-ion Batteries: *Song-Mao Liang*[1]; Artem Kozlov[1]; Martin Drüe[2]; Markus Rettenmayr[2]; Rainer Schmid-Fetzer[1]; [1]Clausthal University of Technology; [2]Friedrich Schiller University

2:45 PM
High-entropy Oxides Li(Ni0.2Mn0.2Co0.2Zn0.2Cu0.2)O2 as Cathode Materials for Lithium-ion Batteries: *Po-wei Huang*[1]; Ralph Nicolai Nasara[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

3:05 PM
Thermodynamic Stability Maps for the La0.6Sr0.4Co0.2Fe0.8O3±d–SO2–O2 System for Application in Solid Oxide Fuel Cells: *Shadi Darvish*[1]; Yu Zhong[2]; [1]Florida International University; [2]Worcester Polytechnic Institute

3:25 PM Break

3:45 PM
Liquidus Projection of Quaternary Ge-Sn-Co-Sb System and Thermoelectric Properties of Sn/Ge Doped Skutterudite CoSb3: *Ping-Yuan Deng*[1]; Hsin-Jay Wu[1]; [1]Department of Materials and Optoelectronic science, National Sun Yat-sen University

4:05 PM
The Role of Retained Structures in Phase Transition and Piezoelectric Properties of PMN-PT Single Crystals: *Hooman Sabarou*[1]; Vadym Drozd[1]; Dehua Huang[2]; Yu Zhong[1]; [1]Florida International University; [2]Navy Undersea Warfare Center

4:25 PM
Phase Equilibria and Thermodynamic Assessment of the Mo-Nb-Re Ternary System: Shao-yu Yen[1]; Shu-chang Wu[1]; M. Anshar Makhraja[1]; Kai-Chi Lo[2]; An-Chou Yeh[2]; Kyosuke Yoshimi[3]; Chuan Zhang[4]; Shih-kang Lin[5]; [1]Department of Materials Science and Engineering, National Cheng Kung University; [2]Department of Materials Science and Engineering, National Tsing Hua University; [3]Department of Materials Science, Graduate School of Engineering, Tohoku University; [4]CompuTherm LLC; [5]Department of Materials Science and Engineering, National Cheng Kung University; Center for Micro/Nano Science and Technology, National Cheng Kung University

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Titanium Powder Metallurgy and Additive Manufacturing II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

Thursday PM
March 15, 2018
Room: 225A
Location: Phoenix Convention Center

Session Chairs: James D. Paramore, United States Army Research Laboratory; Xin Lu, University of Science of Technology Beijing

2:00 PM Keynote
Powder Metallurgy of Titanium – Past, Present, and Future: *Zhigang Fang*[1]; Pei Sun[1]; [1]University of Utah

2:40 PM
Powder Metallurgy Ti-Fe alloys with Network-structured ß Phases: *Katsuyoshi Kondoh*[1]; Junko Umeda[1]; Shota Kariya[1]; [1]Osaka University

3:00 PM Invited
Selective Laser Melting Based Additive Manufacturing (SLM-AM) of Commercially Pure Titanium (CP-Ti): Development of Cost-affordable Ti Powder for AM , and High-strength As-printed CP-Ti: *Ming Yan*[1]; Yuhang Hou[1]; Dawei Wang[1]; [1]South University of Science and Technology of China

3:30 PM Break

3:50 PM Invited
Powder Metallurgy Porous Ti-10Mo Alloy for Orthopedic Applications: Structure Characterization, Mechanical Properties, Vitro Cytotoxicity and Vivo Osteointegration: *Xin Lu*[1]; Wei Xu[1]; Xuanhui Qu[1]; [1]University of Science and Technology, Beijing

4:20 PM Invited
Utilizing Hydrogen for Improved Properties of Titanium Alloys Produced via Powder Metallurgy: *James Paramore*[1]; Brady Butler[1]; Jonathan Ligda[1]; Z. Zak Fang[2]; Matthew Dunstan[1]; [1]United States Army Research Laboratory; [2]University of Utah

4:50 PM
Microstructure of Y_2O_3 Stabilized UFG CP Ti Prepared by Cryomilling and Spark Plasma Sintering: *Jirí Kozlík*[1]; Josef Stráský[1]; Petr Harcuba[1]; Miloš Janecek[1]; [1]Charles University

5:10 PM
Hot Deformation Behaviors of Powder Metallurgy Ti-6Al-4V Alloy with Different Microstructures: *Pei Sun*[1]; Omar Kergaye[1]; Z. Zak Fang[1]; Ali Yousefiani[2]; Austin Mann[2]; [1]University of Utah, Dept of Metallurgical Engineering; [2]The Boeing Company

Recent Advances in Functional Materials for Printed, Flexible and Wearable Electronics – Material, Process Integration, and Characterization

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Nuggehalli Ravindra, New Jersey Institute of Technology; Jud Ready, Georgia Institute of Technology; Amit Pandey, LG Fuel Cell Systems Inc.; Suresh Sitaraman, Georgia Institute of Technology

Thursday PM
March 15, 2018
Room: 226B
Location: Phoenix Convention Center

Session Chairs: Suresh Sitaraman, Georgia Institute of Technology; Anming Hu, University of Tennessee; Kostas Sierros, West Virginia University

2:00 PM Invited
Challenges in Gravure and Direct-write Printing of Nano-colloidal Inks: *P. Randall Schunk*[1]; Nelson Bell[1]; Adam Cook[1]; [1]Sandia National Laboratories

2:30 PM
Room-temperature Aerosol Deposition of PLZT Films on Polymer Substrates: *U. (Balu) Balachandran*[1]; [1]Argonne National Laboratory

2:50 PM
Nondestructive Examination Study in P(VDF-TrFE) Filter System and PM2.5 Spatial Resolution Technology by Using Synchrotron Transmission X-ray Microscopy: *E-wen Huang*[1]; Hui-Tzu Yeh[1]; Chun-Chieh Wang[2]; Wei-Chieh Huang[1]; [1]National Chiao Tung University; [2]National Synchrotron Radiation Research Center

3:10 PM Invited
Delaminated Inkjet Printed Lines with Improved Electro-mechanical Behavior: *Megan Cordill*[1]; [1]Erich Schmid Institute of Materials Science

3:40 PM Break

4:00 PM
Stretchable Wirings Prepared with PU and Silver Flakes: *Cai-Fu Li*[1]; Hao Zhang[1]; Wanli Li[1]; Zhi-Quan Liu[1]; Katsuaki Suganuma[1]; [1]Osaka University

4:20 PM
Structural-resolved Study Of Piezoelectric Properties Of P(VDF-TrFE) Films: Ying-Jhih Wang[1]; *E-Wen Huang*[1]; Wen-Tsung Chuang[2]; Wen-Ching Ko[3]; Jun-Yi Ke[4]; [1]National Chiao Tung University; [2]National Synchrotron Radiation Research Center; [3]Industrial Technology Research Institute; [4]National Taiwan University

4:40 PM
Ultrafast Pulsed Light Sintering of Thermoelectric Nanoparticles: Roozbeh Danaei[1]; Mostafa Ahmadzadeh[1]; Courtney Hollar[2]; Tony Varghese[2]; Craig Owen[1]; Md Sadeq Saleh[3]; Grant Norton[1]; John McCloy[1]; Yanliang Zhang[4]; *Rahul Panat*[3]; [1]Washington State University; [2]Boise State University; [3]Carnegie Mellon University; [4]University of Notre Dame

5:00 PM Invited
Materials Integration for Flexible Electronics: Cu-interconnects, Supercapacitors: *Tolga Aytug*[1]; M. Rager[1]; F. Brown[1]; W. Higgins[1]; H. Wang[1]; Z. Hood[1]; C. Rouleau[1]; Pooran Joshi[1]; [1]Oak Ridge National Laboratory

Solar Cell Silicon – Silicon Production, Crystallization, and Properties

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC; York Smith, University of Utah

Thursday PM
March 15, 2018
Room: 223
Location: Phoenix Convention Center

Session Chairs: York Smith, University of Utah; Wenzhou Yu, Chongqing University

2:00 PM Invited
Solar Silicon by Direct Carbothermic Reduction - Review and Outlook: *Jan-Philipp Mai*[1]; Neda Rezaii[1]; [1]JPM Silicon GmbH

2:40 PM
Thermo-Calc of the Phase Diagram of the Fe-Si System: *Shadia Ikhmayies*[1]; [1]Al Isra University

3:00 PM
Crystal Growth Mechanism of Si in Hypereutectic Al-Si Melt during the Electromagnetic Directional Solidification: Jie Li[1]; *Wenzhou Yu*[1]; Xuewei Lv[1]; [1]Chongqing University

3:20 PM Break

3:40 PM
Thermo-Calc of the Phase Diagram of Calcium Silicon (Ca-Si) System: *Shadia Ikhmayies*[1]; [1]Al Isra University

Thermal and Mechanical Stability of Nanocrystalline Materials – Composites and Heterophase Interfaces

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

Thursday PM
March 15, 2018
Room: 128B
Location: Phoenix Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Interfaces in HCP/BCC Structural Nanocomposites: *Irene Beyerlein*[1]; [1]University of California, Santa Barbara

2:30 PM
Exploring the Thermal Evolution of Nanomaterials: From Nanometallic Multilayers to Nanostructures: *J. Sebastian Riano*[1]; Andrea Hodge[1]; [1]University of Southern California

2:50 PM
Mechanical and Thermal Stability of Nanocrystalline High-entropy Alloys: *Yu Zou*[1]; Jeffrey Wheeler[2]; Huan Ma[2]; Ralph Spolenak[2]; [1]University of Toronto; [2]ETH Zurich

3:10 PM Invited
Thermal Stability of Thin Ni-Fe Films on Sapphire: Amit Sharma[1]; Aakash Kumar[2]; David Srolovitz[2]; *Eugen Rabkin*[1]; [1]Technion; [2]University of Pennsylvania

3:40 PM Break

4:00 PM Invited
Sensitization in Grain Size Gradients – Investigating the Effects of Low Temperature, Long Term Annealing on the Corrosion and Mechanical Response of Nanocrystalline Aluminum Alloys: *Heather Murdoch*[1]; Denise Yin[1]; B. Hornbuckle[1]; Joseph Labukas[1]; [1]Army Research Lab

4:30 PM
Microstructure Characterization and Mechanical Properties of Nanostructured Low Activation Steel Produced by Surface Mechanical Attrition Treatment: *Wenbo Liu*[1]; Di Yun[1]; Chaohui He[1]; Chi Zhang[2]; Zhigang Yang[2]; [1]Xi'an Jiaotong University; [2]Tsinghua University

4:50 PM Invited
Insights from Variable Temperature and Ultra-high Strain Rate Nanomechanical Testing of Model Nanocrystalline and Nanocomposite Materials Realized by Either Inert Gas Condensation or Alternating Atomic Layer Deposition, Sputtering and Inert Gas Condensation of Nanoparticles: Laszlo Petho[1]; Rachel Schoeppner[1]; Mikhail Polyakov[1]; Juri Wehrs[1]; Keith Thomas[1]; *Johann Michler*[1]; [1]Empa, Materials Science and Technology

Ultrafine-grained Materials X – Bulk Processing and Applications

*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, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

Thursday PM
March 15, 2018
Room: 103B
Location: Phoenix Convention Center

Session Chairs: Terry Lowe, Colorado School of Mines; Malgorzata Lewandowska, Warsaw University of Technology

2:00 PM
The Path to Generating Bulk Nanocrystalline Parts for Mechanical Testing: *B. Hornbuckle*[1]; Thomas Luckenbaugh[1]; Anthony Roberts[1]; Anit Giri[1]; Joseph Marsico[1]; Scott Grendahl[1]; Kris Darling[1]; [1]U.S. Army Research Laboratory

2:20 PM
Shear Assisted Processing and Extrusion (ShAPE): Bulk Property Enhancement through Tailored Microstructure: *Scott Whalen*[1]; Jens Darsell[1]; Nicole Overman[1]; Vineet Joshi[1]; Suveen Mathaudhu[1]; [1]Pacific Northwest National Laboratory

2:40 PM
Development of SPD Techniques for the Fabrication of Long-length Rods from UFG Materials: *Georgy Raab*[1]; Ruslan Valiev[1]; E. Fakhretdinova[1]; A. Raab[1]; [1]Ufa State Aviation Technical University

3:00 PM
Fabrication of Ultrafine Grained Plates with Low Anisotropy of Mechanical Properties: Malgorzata Lewandowska[1]; *Marta Ciemiorek*[1]; Witold Chrominski[1]; Lech Olejnik[1]; [1]Warsaw University of Technology

3:20 PM
Improving Mechanical and Functional Properties of Conductive Nanostructured Aluminum Alloys: *Maxim Murashkin*[1]; Nikolay Belov[2]; Georgy Raab[3]; Ruslan Valiev[3]; [1]Institute of Physics of Advanced Materials, Ufa State Aviation Technical University; [2]National University of Science and Technology "MISIS"; [3]Ufa State Aviation Technical University

3:40 PM Break

4:00 PM
Nanostructured SPD-processed Ti-Nb-based Alloys for Load-bearing Implant Applications: *Mariana Calin*[1]; Stefan Pilz[1]; Annett Gebert[1]; Michael Zehetbauer[2]; Jürgen Eckert[3]; [1]IFW Dresden; [2]Vienna University; [3]Montanuniversität Leoben

4:20 PM
Corrosion Behavior of Ultrafine Grained Aluminum and Magnesium Alloys: *Gaurav Argade*[1]; Rajiv Mishra[1]; [1]University of North Texas

4:40 PM
High Shear Deformation to Enhance Properties of a Bioabsorbable Magnesium Alloy: *Casey Davis*[1]; Joel Grzenia[1]; Jake Edick[2]; Tamás Ungár[3]; Terry Lowe[1]; [1]Colorado School of Mines; [2]nanoMAG LLC; [3]Eötvös University

5:00 PM
Mechanical Properties and Microstructures of a TiZr Alloy for Dental Implants: *Mathew Hayne*[1]; Casey Davis[1]; Rilee Meagher[1]; Peter Rovira[1]; Dean Wenger[1]; Gordon Campbell[1]; Michaela Rillings[1]; Kyle Haines[1]; Lenka Kunèická[2]; Radim Kocich[2]; Florian Dalla Torre[3]; Terry Lowe[1]; [1]Colorado School of Mines; [2]Technical University of Ostrava; [3]Institut Straumann AG

9th International Symposium on High Temperature Metallurgical Processing – Poster Session I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Monday PM
March 12, 2018
Room: Exhibit Hall E
Location: Phoenix Convention Center

Session Chair: Xuewei Lv, Chongqing University

Atomistic Insight into Structural Role of Boron in High Temperature CaO-SiO_2 Slag System: *Mengyi Zhu*[1]; [1]RWTH Aachen University

Controlled Synthesis of TiC Nanoparticles Using Solid Oxide Membrane Technology in Molten CaCl2: *Kai Zheng*[1]; Xingli Zou[1]; Xionggang Lu[1]; Shangshu Li[1]; Yinshuai Wang[1]; Zhongya Pang[1]; [1]Shanghai University

Effect of Chemical Components of Mould Flux on Dissolution Rate of Al_2O_3 into Molten Flux for High Manganese High Aluminum Steel: *Kun-peng Xu*[1]; Ya-bing Zhang[1]; Qian Wang[1]; Sheng-ping He[1]; [1]Chongqing University

Effect of Temperature on Oxidation Behavior of Cr-Mo-V Steel with Different Cr Contents for High-speed Train Brake Discs: *Dan Wu*[1]; Fuming Wang[1]; Changrong Li[1]; Yaxu Zheng[1]; Wei Shen[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

Electrochemical Preparation of Ti5Si3/TiC Composite from Titanium-rich Slag in Molten CaCl2: *Shangshu Li*[1]; Xingli Zou[1]; Xionggang Lu[1]; Kai Zheng[1]; Zhongya Pang[1]; Yinshuai Wang[1]; [1]Shanghai University

Evolution of Al-Ti-Mg-O Inclusions during Refining and Casting Process of Interstitial Free Steel: *Xiao Pengcheng*[1]; Xiaoyan Wu[1]; Liguang Zhu[1]; Qingjun Zhang[1]; Yihua Han[1]; [1]North China University of Science and Technology

Experimental Study on Carburization of Higher Vanadium-bearing Hot Metal: *Deng Ma*[1]; [1]Central Iron and Steel Research Group

Hematite Precipitation from High Iron Solution in Hydrometallurgy Process: *Zhigan Deng*[1]; [1]Kunming University of Science and Technology

Influence On The Crystallization Phase Of Mold Flux By Magnetic Fields: *LuMing Zhao*[1]; Li Zhao[1]; Yu Wang[1]; [1]Chongqing University

Kinetics Study on Limestone Decomposition in Early Converter Slag: Nan Wang[1]; Haohua Deng[1]; Min Chen[1]; Ming Chen[1]; Ying Wang[1]; *Cuihuan Huang*[1]; [1]Northeastern University

Mathematical Modeling and Analysis of Converter Slagging and Steelmaking Process by Replacing Part of Lime With Limestone: *Haohua Deng*[1]; Nan Wang[1]; Min Chen[1]; Lei Xu[1]; [1]Northeastern University

Research of Digital Platform and Process Guidance Model in EAF Steelmaking Process: *Lingzhi Yang*[1]; Rong Zhu[2]; Kai Dong[2]; Guangsheng Wei[2]; [1]Central South University; [2]University of Science and Technology Beijing

Research on Factors Affecting and Prediction Model of Silicon Content in Hot Metal of Corex: *Bingjie Wen*[1]; ShengLi Wu[1]; Heng Zhou[1]; Jiacong Zhang[1]; Kai Gu[1]; [1]University of Science and Technology Beijing

Research on the Long Life Blowpipe Liner of BF Air Supply Apparatus: *Li Zhu*[1]; Keng Wu[1]; Wenlong Zhan[2]; Guoyou Liu[3]; Kai Wang[3]; Yulin Guo[4]; [1]University of Science and Technology Beijing; [2]University of Science and Technology Liaoning; [3]Shouqin Metal Materials Co.Ltd.; [4] Beijing Yaxinda Industry and Trade Co., LTD.

Selection of Viscosity Model of Chromium-Containing Converter Slag and Investigation of the Effect of Compositions on Viscosity: *Bing Huang*[1]; Mingmei Zhu[1]; Peng Zhu[1]; [1]Chong Qing University

Studied on the Cooling Effect of CO_2 on the Temperature of Vanadium in Converter: *Zhenglei Guo*[1]; Yu Wang[1]; Weitong Du[1]; Shuchao Wang[1]; [1]Chongqing University

Study on Grain Size and Porosity of the Produced Lime from Limestone in Early Converter Slag: *Guangzong Zhang*[1]; Nan Wang[1]; Min Chen[1]; Haohua Deng[1]; Xiaoao Li[1]; [1]Northeastern University

Study on the Volatilization of Sb2S3 in Vacuum: Heng Xiong[1]; Zhengen Zhou[1]; Bin Yang[1]; Dachun Liu[1]; *Baoqiang Xu*[1]; Deng Yong[1]; Yang Jia[1]; [1]Kunming University of Science and Technology

The Effects of ZrO2, Y_2O_3 and Sc_2O_3 on the Properties of Mould Fluxes for High Manganese High Aluminum Steels: *Shaoda Zhang*[1]; Qian Wang[1]; Lilong Zhu[1]; Shengping He[1]; [1]Chongqing University

Thermodynamic Calculation on Reactivity between Slag and High Mn-high Al Steel: *Chun-jiang Guo*[1]; Shengping He[1]; Ya-Bing Zhang[1]; Qian Wang[1]; [1]ChongQing University

Thermogravimetric Analysis and Kinetic Study of the Calcification Roasting of Vanadium Slag: *Junyi Xiang*[1]; Qingyun Huang[2]; Wei Lv[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]School of Materials Science and Engineering, Chongqing University; [2]School of Metallurgical and Materials Engineering, Chongqing University of Science and Technology

Viscosity of Mould Flux under Electromagnetic Field: *Li Zhao*[1]; Yu Wang[1]; Luming Zhao[1]; [1]Chongqing University

9th International Symposium on High Temperature Metallurgical Processing – Poster Session II

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

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Tao Jiang, Central South University; Mark Kennedy, Proval Partners SA; Dean Gregurek, RHI Magnesita; Shijie Wang, Rio Tinto Kennecott Utah Copper; Baojun Zhao, The University of Queensland; Onuralp Yücel, ITU; Ender Keskinkilic, Atilim University; Jerome Downey, Montana Tech of the Univ of Montana; Zhiwei Peng, Central South University; Rafael Padilla, University of Concepcion

Monday PM
March 12, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

Session Chair: Mingjun Rao, Central South University

Alumino-thermic Reduction of SrO and $SrCO_3$: *Selim Ertürk*[1]; Rasit Sezer[2]; Cuneyt Arslan[1]; [1]Istanbul Technical University; [2]Karadeniz Technical University

Analysis of Microwave Drying Behavior of Nickel Laterite: *Wei Lv*[1]; Jinsheng Wang[1]; Junyi Xiang[1]; Xueming Lv[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]Chongqing University

Analysis of Operational Parameters Affecting Metallization Degree of DRI in Reduction Shaft of COREX Process and Improvement Measures: Shengli Wu[1]; *Jiacong Zhang*[1]; Mingyin Kou[1]; Bingjie Wen[1]; Heng Zhou[1]; [1]University of Science and Technology Beijing

Dechlorination of Zinc Oxide Dust by Microwave Rosating with RSM Optimization: *Aiyuan Ma*[1]; Tingfang Xie[2]; Guo Jiang[2]; Xuemei Zheng[1]; Libo Zhang[3]; Jinhui Peng[3]; [1]School of Chemistry and Materials Engineering, Liupanshui Normol University; [2]Yunnan Chihong Zn & Ge Co., Ltd; [3]Yunnan Provincial Key Laboratory of Intensification Metallurgy,Key Laboratory of Unconventional Metallurgy, Ministry of Education

Effect of TiO2 on the Viscous Behavior of High Alumina Blast Furnace Slag: *Zhiming Yan*[1]; Zhengde Pang[1]; Xuewei Lv[1]; Guibao Qiu[1]; Chenguang Bai[1]; [1]Chongqing University

Fundamental Research on the Iron Nugget Process from Carbon Composite Pellet: *Shihan Zhang*[1]; Guang Wang[1]; Yaxing Du[1]; Jingsong Wang[1]; Qingguo Xue[1]; [1]University of Science & Technology Beijing

Growth of Metallic Iron Particles during Reductive Roasting of Boron-bearing Magnetite Concentrates: Characterization and Kinetics: *Xin Zhang*[1]; Guanghui Li[1]; Mingjun Rao[1]; Zhiwei Peng[1]; Tao Jiang[1]; [1]Central South University

Influence of Coke Quality on Main Technical Indexes of Blast Furnace: *Kai Gu*[1]; Shengli Wu[1]; Mingyin Kou[1]; Heng Zhou[1]; Laixin Wang[1]; Shun Yao[1]; Binbin Du[1]; [1]University of Science and Technology Beijing

Kinetic Analysis of Blast Furnace Dust Recycling with Flash Reduction Process at High Temperature: *Jin Xu*[1]; Jianhua Xin[1]; Nan Wang[1]; Min Chen[1]; Hui Li[1]; Ming Chen[1]; [1]School of Metallurgy, Northeastern University

Novel Utilization Technology of Low Grade Nb-bearing Iron Concentrate from Bayan Obo Ore in China: *Guang Wang*[1]; Jingsong Wang[1]; Qingguo Xue[1]; [1]University of Science and Technology Beijing

Preparation and Characterization of Iron-coke Briquette: *Pei-ye Yan*[1]; Hui-qing Tang[1]; [1]University of Science and Technology Beijing

Preparation of Direct Reduced Iron Using Crumb Rubber Powder: *Xiufeng Fu*[1]; Huiqing Tang[1]; Zhiwei Yun[1]; [1]State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Preparation of Oxidized Pellets with Chrome Ore: *Ming-feng Ye*[1]; Guang-liang Wu[1]; [1]Central South University

Research and Application of Sintering Surface Steam Spraying Technology for Energy Saving and Quality Improvement: *Pei Dong*[1]; [1]Shougang China

Research on Bonding Mechanism of Sintering Grate: *Pei Dong*[1]; [1]Shougang China

Research on Optimizing Sinter Ore Matching Based on the High Temperature Characteristic Numbers: *Yong Zhao*[1]; Keng Wu[1]; Wenlong Zhan[2]; Chunen Zhu[1]; Xiaodong Du[1]; [1]University of Science and Technology Beijing; [2]University of Science and Technology Liaoning

Research on the Mineral Composition and Microstructure Changes of Iron Ore Sinter during the Gas-Solid Reduction: *Xia Zhao*[1]; Ze-jun Ma[2]; Yan-juan Yang[3]; Yong Zhao[2]; Wen Pan[2]; [1]Shougang Institute of Technology; [2]Shougang Research Institute of Technology; [3]Shougang Technician College

Roasting Kinetics of Molybdenite Concentrates: *Selçuk Kan*[1]; Kagan Benzesik[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

Study on Direct Reduction of Low-grade Iron Ore-coal Mini-pellets in Coal-based Rotary Kiln: *Zhikai Liang*[1]; Zhucheng Huang[1]; Lingyun Yi[1]; Tao Jiang[1]; Biao Lu[1]; Ronghai Zhong[1]; [1]Central South University

Study on Influences of Different Ti-bearing Materials on MgO-bearing Pellets Metallurgical Properties: Yan Zhang[1]; *Gele Qing*[1]; Wenbin Huang[2]; Yunqing Tian[1]; Wenwang Liu[2]; Ming Li[2]; Luyao Zhao[1]; Li Ma[1]; Haoyu Cai[1]; [1]Shougang Research Institute of technology; [2]Shougang Jingtang United Iron and Steel Co. Ltd

Supergravity Separation of Pb and Sn from Waste Printed Circuit Boards: *Long Meng*[1]; Zhe Wang[1]; Yiwei Zhong[1]; Kuiyuan Chen[1]; Zhancheng Guo[1]; [1]Uinversity of Science and Technology Beijing

The Effect of Temperature and Additive on Transport and Transformation of P of High-phosphorus Iron Ore during Carbothermic Reduction: *Yuanyuan Zhang*[1]; Qingguo Xue[1]; Guang Wang[1]; Jingsong Wang[1]; [1]University of Science and Technology Beijing

Thermodynamic Calculations on Direct Reduction of Chromium-bearing Vanadium Titanium Magnetite: *Wenchao He*[1]; Xuewei Lv[1]; Xueqin Li[1]; Yu Zhang[1]; [1]Chongqing University

Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: James Cole, Idaho National Laboratory; Peter Hosemann, University of California, Berkeley; Julie Tucker, Oregon State University; Elaine West, Knolls Atomic Power Laboratory

Monday PM
March 12, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

Current Status of In-situ Tritium Measurements from TMIST-3A: *Walter Luscher*[1]; David Senor[1]; Kevin Clayton[2]; Gary Hoggard[2]; [1]Pacific Northwest National Laboratory; [2]Idaho National Laboratory

Dose Effect on the Irradiation Induced Loop Density and Burgers Vector in Ion-irradiated Alloy T91 Irradiated In-situ in a TEM: *Djamel Kaoumi*[1]; Ce Zheng[1]; [1]North Carolina State Univeristy

Grain Boundary Influence on Displacement Cascades in ZrC: Raul Florez Meza[1]; *Joseph Graham*[1]; [1]Missouri University of Science and Technology

In Situ TEM study on the Radiation Response of Nanotwinned-nanovoid Cu: *Cuncai Fan*[1]; Youxing Chen[2]; Jin Li[3]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Purdue University; [2]Los Alamos National Laboratory; [3]Texas A&M University

Investigation of Helium-Defect Interactions in Tungsten through Coordinated Modeling and Experiment: *Jie Qiu*[1]; Xunxiang Hu[2]; Brian Wirth[1]; [1]University of Tennessee; [2]ORNL

Irradiation Response of Twin Boundaries in Face-centered Cubic Metals with Low Stacking Fault Energy: *Jin Li*[1]; Youxing Chen[2]; Kaiyuan Yu[3]; Cuncai Fan[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Purdue University; [2]Los Alamos National Laboratory; [3]China University of Petroleum-Beijing

Radiation Response in Single-phase Concentrated Solid Solution Alloys: *Chenyang Lu*[1]; Taini Yang[1]; Lumin Wang[1]; Yanwen Zhang[2]; Fei Gao[1]; Ke Jin[2]; Hongbin Bei[2]; William Weber[3]; [1]University of Michigan; [2]Oak Ridge National Laboratory; [3]University of Tennessee

Self-organization of Helium Precipitates into Elongated Channels within Metal Nano-layers: *Di Chen*[1]; Nan Li[1]; Dina Yuryev[2]; Kevin Baldwin[1]; Michael Demkowicz[3]; Yongqiang Wang[1]; [1]Los Alamos National Laboratory; [2]Department of Materials Science and Engineering, Massachusetts Institute of Technology; [3]Department of Materials Science and Engineering, Texas A&M University

Studying the Influence of In Situ Proton Irradiation on Corrosion in Molten Salt: *Weiyue Zhou*[1]; Michael Short[1]; [1]Massachusetts Institute of Technology

Swelling Quantification of High Dose Helium Implantation in Different Materials Using a Helium Ion Beam Microscope: *Manfred Virgil Ambat*[1]; David Frazer[1]; Mehdi Balooch[1]; Yun Yang[1]; Peter Hosemann[1]; [1]University of California, Berkeley

The Role of Oxides in Nanostructured Ferritic Alloys and Fe-Y2Ti2O7 Bilayers: Interfaces, Helium Partitioning and Bubble Formation: *Tiberiu Stan*[1]; Yuan Wu[2]; Jim Ciston[3]; Takuya Yamamoto[2]; Yongquiang Wang[4]; Richard Cox[5]; Robert Odette[2]; [1]Northwestern University; [2]University of California, Santa Barbara; [3]Lawrence Berkeley National Laboratory; [4]Los Alamos National Laboratory; [5]Pacific Northwest National Laboratory

Accident Tolerant Fuels for Light Water Reactor – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Nuclear Materials Committee
Program Organizers: Lingfeng He, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory; Kumar Sridharan, University of Wisconsin; Peng Xu, Westinghouse Electric Company

Monday PM
March 12, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

High Temperature Oxidation Behavior of Zirconium Silicides and their Coating by Laser Cladding on the Zircaloy-4 Tube: *JaeJoon Kim*[1]; Hyun Gil Kim[2]; Ho Jin Ryu[1]; [1]KAIST; [2]KAERI

Optimization of Process Parameters for Thin-wall Tube Fabrication of FeCrAl Alloys: *Zhiqian Sun*[1]; Yukinori Yamamoto[1]; [1]Oak Ridge National Laboratory

Additive Manufacturing of Metals: Establishing Location Specific, Processing-Microstructure-Property-Relationships III – Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Phase Transformations Committee, TMS: Shaping and Forming Committee, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Eric Lass, National Institute of Standards and Technology; Mark Stoudt, National Institute of Standards and Technology; Judith Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Behrang Poorganji, GE Additive; Clay Houser, QuesTek Innovations

Monday PM
March 12, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

Session Chair: Eric Lass, National Institute of Standards and Technology

Additive Manufacturing of Oxide Dispersion Strengthened (ODS) Steel via Selective Laser Melting: *Hannah Coe*[1]; Somayeh Pasebani[1]; [1]Oregon State University

Aluminium-molybdenum System by Friction Stir Surface Alloying Process: Mahesh V.P.[1]; *Amit Arora*[1]; [1]Indian Institute of Technology Gandhinagar

Application of the Small Punch Test to Estimate the Mechanical Properties of Additive Manufactured Materials: *Sean Davies*[1]; Robert Lancaster[1]; Spencer Jeffs[1]; Henry Illsley[1]; Gavin Baxter[2]; [1]Swansea University; [2]Rolls-Royce plc

Bead Formation in Powder Bed Melting of Inconel Material: Leila Ladani[1]; *Jafar Razmi*[2]; [1]University of Texas at Arlington; [2]University of Hartford

Deformation Mechanism of Inconel 718 Made by Additive Manufacturing and Investigated by In-situ Neutron Diffraction: *Qingge Xie*[1]; Yan Chen[1]; Alexandru Dan Stoica[1]; Gian Song[1]; Sarma Gorti[1]; Radhakrishnan Balasubramaniam[1]; Hassina Z Bilheux[1]; Michael M Kirka[1]; Ryan R Dehoff[1]; Jean-Christophe Bilheux[1]; Louis J. Santodonato[1]; Ke An[1]; [1]UT Battelle LLC

Design and Testing of Thin-walled Elements of Additively Manufactured: *Jalil Alidoost*[1]; Kevin Hemker[1]; James Guest[1]; Matthew Begley[2]; [1]Johns Hopkins University; [2]University of California, Santa Barbara

Direct Laser Cladding an Emerging Technique for Development of Component: *Jyotsna Dutta Majumdar*[1]; [1]Indian Institute of Technology Kharagpur

Effect of Heat Input in the Fusion Zone of Electron Beam Welded Commercially Pure Aluminum and AISI 304 Stainless Steel: *Aakash Rathore*[1]; Jyotsna Dutta Majumdar[1]; Gour Gopal Roy[1]; [1]IIT Kharagpur

Effects of Different Laser Parameters on Microstructure and Melt Pool of Additively Manufactured 316L Stainless Steel: *Filippo Vecchiato*[1]; Mark Wenman[1]; Paul Hooper[1]; [1]Imperial College London

Effects of Gas Pressure on Melt Track Shape and Quality in SLM: *Jonathan Gibbs*[1]; Christoph Meier[1]; Ryan Penny[1]; Stuart Baker[1]; Yu Zou[1]; Johannes Weinberg[1]; Reimar Weissbach[1]; Martin Feldmann[1]; A. John Hart[1]; [1]MIT

Efficiency of Use of High-strength Aluminum Powders at the Press of Details of the Aerospace Equipment: *Ivan Redkin*[1]; Aleksander Evgenov[1]; Vladimir Korolev[1]; Dmitriy Ryabov[1]; [1]RUSAL Global Management B. V.

Enhancement of Density and Pseudoelasticity of a Cu-Al-Ni-Mn Shape-memory Alloy Produced by Selective Laser (Re)Melting: *Tobias Gustmann*[1]; Holger Schwab[1]; Uta Kühn[1]; Simon Pauly[1]; [1]IFW Dresden

In-situ Synchrotron Transmission X-ray Microscopy and Self-consistent Modeling for Mechanical Behavior Study of Addictive Manufacturing Ti6Al4V Implants: Kuan Ying Tseng[1]; *E-Wen Huang*[1]; Chun Chieh Wang[2]; Pei Yi Tsai[3]; Shin Yi Huang[3]; Nan Yow Chen[4]; [1]National Chiao Tung University; [2]National Synchrotron Radiation Research Center; [3]Biomedical Technology and Device research Laboratories, Industrial Technology Research Institute; [4]National Center for High-Performance Computing

In Operando High-speed X-ray Imaging of Inconel 625 during Laser Powder Bed Fusion Additive Manufacturing: *Enyu Guo*[1]; Chu Lun Alex Leung[1]; Robert Atwood[2]; Peter Lee[1]; [1]University of Manchester; [2]Diamond Light Source Ltd

Local Micro-structure of Inconel Material Fabricated Using Powder Bed Laser Melting Process: Leila Ladani[1]; *Ali Keshavarz*[1]; [1]University of Texas at Arlington

Microstructural Investigation of Inconel 625 – Inconel 738 Functionally Graded Material Fabricated by Laser Metal Deposition: *Abhishek Ramakrishnan*[1]; Chaitanya Amilkanthwar[1]; Arpit Sethi[1]; Guru Dinda[1]; [1]Wayne State University

Microstructure Evolution of Metallic Parts Influenced by Rapid Solidification during Additive Manufacturing: *Matjaz Godec*[1]; Elena Chernyshova[2]; Jaka Burja[1]; Barbara Šetina Batic[1]; Bojan Podgornik[1]; [1]Institute of Metals and Technology; [2]National Institute of Chemistry

On the Relationships between Process Parameters, Microstructure and Properties of Selectively Laser-melted Ti-6V-4V: *Jonathan Stef*[1]; Angéline Poulon-Quintin[1]; Mohamed Gouné[1]; [1]ICMCB-CNRS

Prediction of Gas Entrapment during Selective Laser Melting by Meso-scale Simulation: *Juergen Jakumeit*[1]; Romuald Laqua[1]; Santhanu Jana[1]; Jonas Zielinski[2]; [1]Access e.V.; [2]Fraunhofer ILT

Understanding Silicon Reinforcement in Ti6Al4V to Enhance Wear Resistance: *Jose Avila*[1]; Zumurda Alrawahi[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

X-ray Powder Diffraction of Additively Manufactured (3D Printed) Inconel-718: Ryan Collette[1]; *Donna Guillen*[2]; Mohamed Elbakhshwan[3]; Lynne Ecker[3]; Jeff King[1]; [1]Colorado School of Mines; [2]Idaho National Laboratory; [3]Brookhaven National Laboratory

Additive Manufacturing of Metals: Fatigue and Fracture – Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Additive Manufacturing Bridge Committee
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International; John Lewandowski, Case Western Reserve University

Monday PM
March 12, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

Session Chair: Nikolas Hrabe, National Institute of Standards and Technology

Creep and Thermomechanical Fatigue of Functionally Graded Inconel 718 Produced by Additive Manufacturing: *V.A. Popovich*[1]; E. V. Borisov[2]; V. Heurtebise[3]; T. Riemslag[1]; A. A. Popovich[2]; V. Sh. Sufiiarov[2]; [1]Delft University of Technology; [2]Peter the Great Saint-Petersburg Polytechnic University; [3]SIGMA Clermont

Effect of Loading Direction and Heat Treatment on Fatigue Crack Growth Rate of CoCrW Alloy Additively Manufactured by Selective Laser Melting: *Ho Won Lee*[1]; Dong Jun Lee[1]; Seong-Hoon Kang[1]; Dongkyu Kim[2]; [1]Korea Institute of Materials Science; [2]Korea Atomic Energy Research Institute

Additive Manufacturing: Building the Pathway towards Process and Material Qualification – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS Extraction and Processing Division, TMS: Mechanical Behavior of Materials Committee, TMS: Additive Manufacturing Bridge 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 - Austin; Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science and Technology; James Sears, Carpenter Technology Coporporation; Christopher Tuck, University of Nottingham

Monday PM
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Room: Exhibit Hall E
Location: Phoenix Convention Center

Additive Manufacturing on Satellites: Current State, Future Applications, Gaps and Needs, and Transition Strategies: *Ben Jafek*[1]; Alexander Jafek[2]; [1]Brigham Young University; [2]University of Utah

AM Informatics – Optimizing Additive Manufacturing through Effective Use of Materials and Process Information: *Najib Baig*[1]; James Goddin[1]; Will Marsden[1]; [1]Granta Design

Applied Machine Vision and Machine Learning to the Characterization and Qualification of Additive Manufacturing Powder Feedstock: *Anna Smith*[1]; Brian DeCost[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

Characterization of Additive Manufactured Microstructures Using Ultrasonic Measurements: Hualong Du[1]; *Paul Panetta*[1]; Lisa Deibler[2]; Bradley Jared[2]; [1]Applied Research Associates, Inc.; [2]Sandia National Lab

Effect of Build Geometry on the Microstructure and Tensile Properties of 17-4 PH Stainless Steel Parts Prepared by Selective Laser Melting: *Yu Sun*[1]; Mark Aindow[1]; Rainer Hebert[1]; [1]University of Connecticut

Effects of Atomizing Pressure, Melt Temperature and Flow Rate on the Particle Size and Yield of Gas Atomized Aluminum Alloy Powders for Additive Manufacturing: *Sharon Park*[1]; Le Zhou[1]; Edward Dein[1]; Yongho Sohn[1]; [1]University of Central Florida

Net Shape 3D Printed NdFeB Permanent Magnet: Jacim Jacimovic[1]; Reinhard Simon[1]; Felix Greuter[1]; Lorenz Herrmann[1]; *Francisco Garcia Ferre*[1]; [1]ABB Corporate Research

The Influence of FDM Build Parameters on the Mechanical Properties of 3D-printed ABS: *Celeste Brown*[1]; Kemar Hibbert[1]; [1]Howard University

Understanding Properties and Effects of Reused Metal Powder in the LENS DED Process: *Katherine Terrassa*[1]; Sen Jiang[1]; Joshua Yee[2]; Nancy Yang[2]; Julie M. Schoenung[1]; [1]University of California, Irvine; [2]Sandia National Laboratories

Advanced Magnetic Materials for Energy and Power Conversion Applications – Poster Session - Magnetism in Energy Applications

*Sponsored by:*TMS Functional Materials Division, TMS: Magnetic Materials Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Orlando Rios, Oak Ridge National Laboratory; Francis Johnson, GE Global Research; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, NASA Glenn; Ian Ashcroft, University of Nottingham

Monday PM
March 12, 2018
Room: Exhibit Hall E
Location: Phoenix Convention Center

A Study on Microstructure of Nb-Ti Based Alloy with Strain and Heat-treatment: *Yong-Ho Kim*[1]; Hyo-Sang Yoo[1]; Hyeon-Taek Son[1]; Duk-Young Hwang[2]; [1]Korea Institute of Industrial Technology; [2]KAT Ltd.

Characterization of Novel Soft Magnetic and Magnetocaloric Composites: *Lukasz Hawelek*[1]; Marcin Polak[1]; Patryk Wlodarczyk[1]; Przemyslaw Zackiewicz[1]; Aleksandra Kolano-Burian[1]; [1]Institute of Non-Ferrous Metals

Development of Filaments for 3D Printing from Recycled Materials: Helena Khazdozian[1]; Juan Manzano[2]; Igor Slowing[1]; *Ikenna Nlebedim*[1]; [1]Ames Laboratory; [2]Iowa State University

High Temperature Performance of Dy-free $Nd_2Fe_{14}B$ Based-permanent Magnets: *Kinjal Gandha*[1]; Wei Tang[1]; Cajetan Nlebedim[1]; [1]Ames Laboratory

Investigating an Exchange-spring Magnet for Direct-drive Wind Turbine Generators: Helena Khazdozian[1]; Scott McCall[2]; Aditya Vedantam[3]; Devin Imholte[4]; Ananth Iyer[5]; *Ikenna Nlebedim*[1]; [1]Ames Laboratory; [2]Lawrence Livermore National Laboratory; [3]University at Buffalo; [4]Idaho National Laboratory; [5]Purdue University

Tuning of Magnetic Properties of Heusler-type Glass-coated Microwires: Valentina Zhukova[1]; Mihail Ipatov[1]; Juan del Val[1]; *Arcady Zhukov*[2]; [1]University of Basque Country; [2]Basque Country University and Ikerbasque

Advances in Additive Manufacturing of Titanium and Titanium Based Alloys – Poster Session

*Sponsored by:*TMS: Additive Manufacturing Bridge Committee
Program Organizers: Peter Collins, Iowa State University; Leon Prentice, CSIRO; Andrew Baker, The Boeing Company; Craig Brice, Lockheed Martin Space Systems Company

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Room: Exhibit Hall E
Location: Phoenix Convention Center

Validation of a High Integrity Joining/ Repair Process for Aerospace Materials: *Aran Johal*[1]; Helen Davies[1]; Peter Davies[1]; Silvia Marchisio[2]; [1]Swansea University; [2]Rolls Royce plc

Aluminum Alloys, Processing and Characterization – Poster Session I - Development of Aluminum Alloy Processing

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

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Aluminum Matrix Composites: *Cameron Shackleford*[1]; [1]Oak Ridge National Laboratory

Effect of Mg on Microstructure and Mechanical Property of Al-B Alloy: *Jae-Ik Cho*[1]; Cheol-Woo Kim[1]; Min-Suk Oh[1]; Jung-Han Kim[1]; [1]Korea Institute of Industrial Technology

Effects of ZnO Nanoparticles and its Decomposition on the Mechanical Behavior of A356 Gravity Casting Alloy: *Jeheon Jeon*[1]; Donghyun Bae[1]; [1]Yonsei University

Investigation on Mechanochemical Behavior of Al-Nb-B/B2O3 System Reactive Mixtures to Synthesize Metal Matrix Composites: *Petra Hanusova*[1]; [1]Brno University of Technology, Faculty of Mechanical Engineering

High Thermal Conductivity Aluminum Alloy for High Pressure Die Casting: *Cheol Woo Kim*[1]; Jae-Ik Cho[1]; Jung-Han Kim[1]; Min-Suk Oh[1]; Young-Chan Kim[1]; [1]KITECH

Study on the Process Parameters of Preparing Al-Mg-Sc Alloy by Electrodeposition: *Hao Ren*[1]; Li Jidong[1]; Wang Yiyong[1]; [1]University of Science and Technology Liaoning

Formation Mechanism of Surface Segregation in Heated Mold Continuous Casting Al–Cu Alloy: *Jihui Luo*[1]; [1]Yangtze Normal University

A Study on the Thermal Conductivity of Aluminum Die Casting Products with the Variation of Cooling Rate: *TaekWon Oh*[1]; JeHeon Jeon[1]; DongHyun Bae[1]; [1]Yonsei University

Mitigation of ß-AlFeSi Intermetallic Formation on Spray Formed 319 Aluminum Alloy with Different Iron Content: *Lucas Otani*[1]; Michele Matsuo[2]; Guilherme Zepon[2]; Claudio Kiminami[2]; Walter Botta[2]; Claudemiro Bolfarini[2]; [1]Postgraduate Program in Materials Science and Engineering (PPGCEM); [2]Federal University of São Carlos (UFSCar)

The Influence of Microstructure Length Scale on Dry Sliding Wear Behaviour of Monotectic Al-3.2Bi-3Cu Alloy: Vitor Pinotti[1]; Rodrigo Reyes[1]; Conrado Afonso[1]; Luiz Casteletti[2]; *José Spinelli*[1]; [1]Federal University of São Carlos; [2]University of São Paulo

Effect of Mg and Cu Additions into ADC12 on the Mechanical Properties during Heat Treatment after Die-casting: *JaeHwang Kim*[1]; JiWoo Im[1]; [1]Korea Institute of Industrial Technology

Friction Stir Welding of High Strength Al-7050 and Mg-WE43 Alloys: *Saurabh Nene*[1]; Michael Frank[1]; Rajiv Mishra[1]; R. Brennan[2]; K. Cho[2]; [1]University of North Texas; [2]U.S. Army Research Laboratory

Grain Size Modelling and Simulation during Hot Torsion of AW6082 Aluminium Alloy: *Sanjeev Kumar*[1]; Jules Franz Thierry Simonet Fotso[1]; Friedrich Krumphals[1]; Cecilia Poletti[1]; [1]Graz University of Technology, Graz Austria

A Comparison of Strain Profiles Obtained by Nanoindentation and Glancing Angle X-ray Diffraction in Hot Rolled Aluminum-magnesium Alloys: *Sepideh Parvinian*[1]; Eric Hoar[1]; David Tavakoli[1]; Hamid Garmestani[1]; [1]Georgia Institute of Technology

Direct Preparation of Pure Al and Si from Al-Si3O Alloy by Molten Salts Electrolysis: Guolong Liu[1]; Zheng Wang[1]; Wei Liu[1]; *Saijun Xiao*[1]; [1]Anhui University of Technology

Effect of Electromagnetic Stirring on the Distribution of Primary Silicon in Hypereutectic Aluminum Alloys Billet: *Jong Ho Kim*[1]; [1]Research Institute of Industrial Science and Technology

Aluminum Alloys, Processing and Characterization – Poster Session II - Characterizations of Aluminum Alloys

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Xiyu Wen, University of Kentucky

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Room: Exhibit Hall E
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Development of V-arm Manufacturing Technology for Heavy Truck Using High Vacuum Die Casting Technology: Min Seok Moon[1]; *MyeongHan Yoo*[1]; JoonHyuk Song[1]; JeHa Oh[1]; NaRa Park[1]; GunSung Chung[1]; DongChul Chung[1]; Young Choi[2]; [1]Korea Institute of Carbon Convergence Technology; [2]Korea Institute of Industrial Technology

Effect of Alloying Elements on Microstructure Adjacent to Grain Boundaries in Al-Mg-Si Based Alloys: *Shingo Ishizawa*[1]; Shigeru Kuramoto[1]; Goroh Itoh[1]; [1]Ibaraki University

Effect of Mg Amount on Interface Reaction between Molten Al Alloy and Tool Steel: *Young-Ok Yoon*[1]; Seong-Ho Ha[1]; Bong-Hwan Kim[1]; Hyun-Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

Effect of Stacking Fault Energy on the Deformation Behavior of Al-Mg-(Zn) Alloy Sheets: *Juhee Yun*[1]; Sangjun Lee[1]; Donghyun Bae[1]; [1]Yonsei University

Effects of Extrusion and Heat Treatment Conditions on Microstructure and Mechanical Properties of an Al-Zn-Mg-Cu-Er Alloy: S. Kord[1]; *Mohammad Alipour*[2]; M. H. Siadati[1]; Masumeh Kord[3]; Praveennath G. Koppad[4]; [1]Faculty of Materials Science and Engineering, K. N. Toosi University of Technology, Tehran, Iran; [2]Department of Materials Science and Engineering, University of Tabriz, Tabriz, Iran; [3]Department of Biomaterial, Pasteur Institute of Iran, Tehran, Iran; [4]Department of Mechanical Engineering, CMR Institute of Technology, Bangalore 560037, India

Effects of Rare Earth Er Additions on Microstructure and Mechanical Properties of an Al-5Cu-2Mg Alloy: S. Kord[1]; *Mohammad Alipour*[1]; M. H. Siadati[1]; Masumeh Kord[2]; [1]Department of Materials Engineering, Faculty of Mechanical Engineering, K.N. Toosi University of Technology, Tehran, Iran; [2]Department of Biomaterial, Pasteur Institute of Iran, Tehran, Iran

Effects of Rare Earth Er Additions on Microstructure and Mechanical Properties of an Al-Zn-Mg-Cu Alloy: S. Kord[1]; *Mohammad Alipour*[2]; M. H. Siadati[1]; Masumeh Kord[3]; Praveennath G. Koppad[4]; [1]Faculty of Materials Science and Engineering, K. N. Toosi University of Technology, Tehran, Iran; [2]Department of Materials Science and Engineering, University of Tabriz, Tabriz, Iran; [3]Department of Biomaterial, Pasteur Institute of Iran, Tehran, Iran; [4]Department of Mechanical Engineering, CMR Institute of Technology, Bangalore 560037, India

Particle Stimulated Texture Development in the Al-Si-Mg Alloy Sheets Containing Transition Metals: *Kwangmin Choi*[1]; Sangjun Lee[1]; Donghyun Bae[1]; [1]Yonsei University

Microstructure and Mechanical Properties of Three Dissimilar Aluminum Alloys by Accumulative Roll-bonding Process: *Jung-Han Kim*[1]; Min-Suk Oh[1]; Cheol-Woo Kim[1]; Jae-Ik Cho[1]; Hyeon-Taek Son[1]; [1]Korea Institute of Industrial Technology

Precipitation Processes and Strengthening Mechanisms in Al-Mg-Si Alloy Extruded to High Strains: *Witold Chrominski*[1]; Malgorzata Lewandowska[1]; [1]Warsaw University of Technology

Progress in Aluminum-cerium High-temperature Alloy Development: *Zachary Sims*[1]; David Weiss[2]; Scott McCall[3]; Jonathan Lee[3]; Hunter Henderson[1]; Eric Stromme[4]; Patrice Turchi[3]; Aurelien Perron[3]; Orlando Rios[1]; [1]Oak Ridge National Laboratory; [2]Eck Industries; [3]Lawrence Livermore National Laboratory; [4]United States Navy

Structural Refinement and Nanomechanical Response of Laser Remelted Al-Al2Cu Lamellar Eutectic Alloy: *Qian Lei*[1]; [1]University of Michigan

Study of Variable and Constant Blank Holding Force Techniques in Hydroforming of Cryorolled Aluminum-magnesium Alloy Sheets: *Fitsum Feyissa*[1]; Ravi Dagavalli[1]; [1]Indian Institute of Technology Delhi

Study on Fe-rich Phase in Al-Mg-Fe and Al-Mg-Mn-Fe Alloys: *Xiangzhen Zhu*[1]; Shouxun Ji[1]; [1]Brunel University London

The Effect of Waiting Time after Furnace Exit on Mechanical Properties of AA6082 Rod Profile: *Osman Celik*[1]; [1]Istanbul Technical University

Aluminum Reduction Technology – Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Abdalla Zarouni, Emirates Global Aluminium

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Session Chair: Zlatko Cus, TALUM d.d.

Current Distribution on the Anode Bottom of the Aluminium Cell in the Complicated Conditions of Electrolysis: *Peter Polyakov*[1]; Nikita Sharypov[1]; Illiya Puzanov[2]; Andrey Zavadyak[2]; Yuriy Mikhalev[1]; Andrey Polyakov[1]; Andrey Yasinskiy[1]; Jan Voushel[1]; [1]Siberian Federal University; [2]JC RUSAL

Investigate the Causes of Hole in Pots: *Mohsen Amerisiahooei*[1]; Tayeb Kamali[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

Potline Start up without Anode Effect Frequency: *Mohsen Amerisiahooei*[1]; Babak Bahman Nejad[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

Restarting Electrochemical Cell with a Cold Metal (D18 Cell): *Mohsen Amerisiahooei*[1]; Tayeb Kamali[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

The Impact of One Pot Tap out on the Secondary Alumina in Line Production: *Mohsen Amerisiahooei*[1]; Tayeb Kamali[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

The Influence of Potassium Additive on Cryolite Molten Salt Structure and Transport Properties: Hongliang Zhang[1]; *Tianshuang Li*[1]; Jie Li[1]; Kena Sun[1]; Fengqi Ding[1]; Zhong Zou[1]; [1]Central South University

Thermo-electrical Modeling of an Aluminum Reduction Cell: *Mohsen Amerisiahooei*[1]; Borzou Baharvand[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

Cast Shop Technology – Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Badowski, Hydro Aluminium

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Electrochemical Characterization of Al-Li-Cu-Mg Alloys: *Alicia Ares*[1]; Silvina Ramos[1]; Claudia Méndez[2]; [1]CONICET/FCEQyN-UNaM; [2]FCEQyN-UNaM

Evaluation of Stress Relief Processes Used on High Pressure Aluminum Die Casting Dies: *Thomas Watkins*[1]; Philip Maziasz[1]; Ercan Cakmak[1]; Jeffrey Cornett[1]; James Saylor[2]; [1]Oak Ridge National Laboratory; [2]Toyota | Bodine Aluminum TN

Introduction and Distribution of Non-metallic Nanoparticles in Aluminum Melt: Anton Khrustalev[1]; *Aleksander Vorozhtsov*[1]; Marina Khmeleva[1]; Ilya Zhukov[1]; Vladimir Promakhov[1]; [1]Tomsk State University

Shaping the Mechanical Properties of AlSi30 Alloy Cast by Rapid Solidification: *Boguslaw Augustyn*[1]; Marcin Szymanek[1]; Dawid Kapinos[1]; Sonia Boczkal[1]; [1]Institute of Non Ferrous Metals

Study of the Effect of the Surface-roughness of Dies and Tooling for HPDC on Soldering: Federico Simone Gobber[1]; Andrea Pisa[1]; Daniele Ugues[1]; Silvia Lombardo[2]; *Mario Rosso*[1]; [1]Politechnico di Torino; [2]FOMT

Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session – Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Andre Phillion, McMaster University; Mark Badowski, Hydro Aluminium; Mohsen Asle Zaeem, Missouri University of Science and Technology

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Homogenization Treatment of High-strength Aluminum Alloy with Casting Processes: *Myounggyun Kim*[1]; [1]RIST

Cast Shop Technology: Recycling and Sustainability Joint Session – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Mark Badowski, Hydro Aluminium; Elsa Olivetti, Massachusetts Institute of Technology

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Precious Technology; Recycling of Titanium from Medical Implant Industry, Challenges and Opportunities: *Erdogan Teke*[1]; M. Özgür Seydibeyoglu[1]; [1]Izmir Katip Celebi University

Promotion of Separation of Two Phase Liquid Metals by Applying Mechanical Vibration: *Yuichiro Murakami*[1]; Shuji Tada[1]; Mingjun Li[1]; Isao Matsui[1]; Naoki Omura[1]; [1]Advanced Industrial Science and Technology

Coupling Experiments and Modeling to Understand Plasticity and Failure – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Philip Eisenlohr, Michigan State University; Matthew Miller, Cornell University; Paul Shade, Air Force Research Laboratory

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Session Chair: Michael Sangid, Purdue University

A Domain Decomposition Parallel Implementation of an Elasto-visco-plastic Fast Fourier Transform Micromechanical Solver with Spectral Database Constitutive Representation: *Adnan Eghtesad*[1]; Timothy Barrett[1]; Kai Germaschewski[1]; Ricardo A. Lebensohn[2]; Rodney J. McCabe[2]; Marko Knezevic[1]; [1]University of New Hampshire; [2]Los Alamos National Laboratory

An Image Based Finite Element Model for Ni-based Superalloys Using a Two Scale Constitutive Model Accounting for Morphological Distributions of γ' Precipitates: *George Weber*[1]; Maxwell Pinz[1]; Akbar Bagri[1]; Somnath Ghosh[1]; [1]Johns Hopkins University

Annealing-detwinning due to Thermal Fluctuation of Incoherent Twin Boundary: Hao Sun[1]; *Chandra Singh*[1]; [1]University of Toronto

Finite Element Simulation of Global Plastic Behavior of Supercritical CO_2 Exposed P91 Metal-weld under Tensile Loading: *Sajedur Akanda*[1]; Monica Kapoor[1]; Kyle Rozman[1]; Ömer Dogan[1]; Jeffrey Hawk[1]; [1]National Energy Technology Laboratory

Grain-scale Investigations of Deformation Heterogeneities in Aluminum Alloys: *Baran Güler*[1]; Tuncay Yalçinkaya[1]; Mert Efe[1]; [1]Middle East Technical University

In-situ Characterization of Microstructural Damage in QP980 Steel: *Diyar Salehiyan*[1]; Javad Samei[1]; David Wilkinson[1]; [1]McMaster University

In Situ Mechanics at Atomic Scale – Experimental vs. Computational Molecular Dynamics: *Scott Mao*[1]; [1]University of Pittsburgh

Influence of the Aluminum Microstructure in Electronic Components on their Failure Behavior: Experiments and Crystal Plasticity Simulations: *Ewald Werner*[1]; Felix Meier[1]; [1]Technical University of Munich

Internal State Variable Plasticity-damage Modeling of AISI 4140 Steel Including Microstructure-property Relations: Temperature and Strain Rate Effects: *Reda Nacif el Alaoui*[1]; Luke Peterson[1]; Mark Horstemeyer[1]; [1]Mississippi State University

Investigation of Deformation Mechanisms in Columnar Aluminum: *Marissa Linne*[1]; Samantha Daly[2]; [1]University of Michigan; [2]UCSB

Mechanism-based Modeling of Solute Strengthening: Application to Thermal Creep in Zr Alloy: *Wei Wen*[1]; [1]Los Alamos National Laboratory

Molecular Dynamics (MD) Evaluation of the Effect of Titanium Oxide Stoichiometry on Fracture: *Natalia Tymiak Carlson*[1]; [1]Bettis Atomic Power Laboratory

New Approach for Modeling Texture Effect on Macroscopic Plastic Properties of Metals: *Nitin Chandola*[1]; Oana Cazacu[1]; Benoit Revil-Baudard[1]; [1]University of Florida

Rate Processes in Dislocation Dynamics: Effects on Dislocation Microstructure and Comparison with X-ray and TEM Data: *Anter El-Azab*[1]; [1]Purdue University

Strain Bursts Induce Quasi-elastic Non-linear Average Response in Nanopillar Compression: *Hengxu Song*[1]; Stefanos Papanikolaou[2]; [1]Johns Hopkins University; [2]West Virginia University

Strain Field Mapping and Modeling Around Laser-induced Keyhole Defects in Ti-7Al under Cyclic Loading: *Rachel Lim*[1]; Yufeng Shen[1]; Christopher Kantzos[1]; He Liu[1]; Robert Suter[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

Using Machine Learning Approaches towards Quantifying the Deformation History of Crystals: Examples from Discrete Dislocation Dynamics: *Michail Tzimas*[1]; Stefanos Papanikolaou[1]; Hengxu Song[1]; Andrew Reid[2]; Stephen Langer[2]; [1]West Virginia University; [2]National Institute of Standards and Technology

Deformation and Damage Mechanisms in High Temperature Ni, Co and Fe-based Superalloys – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Mark Hardy, Rolls-Royce plc; Kevin Bockenstedt, ATI Specialty Materials; Chantal Sudbrack, NASA Glenn Research Center; Michael Titus, Purdue University; Kinga Unocic, Oak Ridge National Laboratory; Yukinori Yamamoto, Oak Ridge National Laboratory

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Atomistic Modeling of Segregation and Diffusion in Ni-based Superalloys: *You Rao*[1]; Maryam Ghazisaeidi[1]; [1]The Ohio State University

Effect of Rhenium on Deformation Mechanisms during Creep in Ni-based Single-crystal Superalloys: *Vincent Huleux*[1]; Loïc Naze[1]; Vladimir Esin[1]; Vincent Maurel[1]; Virginie Jaquet[2]; Jérémy Rame[2]; [1]Centre des Matériaux des Mines de Paris; [2]Safran Tech

Exploring Thermo-mechanical Deformation Mechanism of a NiAl-Cr(Mo) Superalloy by In-situ Neutron Diffraction: *Dunji Yu*[1]; Ke An[1]; Xu Chen[2]; Hongbin Bei[1]; [1]Oak Ridge National Laboratory; [2]Tianjin University

Mechanical and Microstructural Evaluation of Friction Welded Future Nickel Disk Alloys: *Kate Franklin*[1]; [1]University of Birmingham, UK

On the Role of Environmental Damage in Selected Ni-based Superalloys: *Gopal Viswanathan*[1]; Michael Mills[1]; David Mills[2]; [1]The Ohio State University; [2]Rolls-Royce Corporation

Prediction of Incipient Melting Map and γ' Features of Ni-base Superalloys Using Molecular Orbital Method: *Mohammad Mostafaei*[1]; S. M. Abbasi[1]; [1]Malek Ashtar University of Technology

Predictive Equations of the Elastic Modulus for Individual γ and γ´ Phases in the Ni-Al-W System: *Takuma Saito*[1]; Makoto Osawa[2]; Tadaharu Yokokawa[2]; Toshiharu Kobayashi[2]; Hiroshi Harada[2]; Kyoko Kawagishi[2]; Yuhi Mori[1]; Shinsuke Suzuki[1]; [1]Waseda University, School of Fundamental Science and Engineering; [2]National Institute for Materials Science (NIMS)

Probing the Effects of Alloying Elements on Creep Properties Using Simplified Alloy Chemistries: *Ashton Egan*[1]; Jiashi Miao[1]; Maryam Ghazisaedi[1]; Yunzhi Wang[1]; Stephen Niezgoda[1]; Michael Mills[1]; [1]The Ohio State University

Tensile Properties and Fracture Behavior of ATI 718Plus Alloy at Room and Elevated Temperatures: *Micheal Kattoura*[1]; Seetha Ramaiah Mannava[1]; Dong Qian[2]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]University of Texas at Dallas

Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee, TMS: Pyrometallurgy Committee
Program Organizers: Elsa Olivetti, Massachusetts Institute of Technology; John Howarter, Purdue University; Fiseha Tesfaye, Åbo Akademi University

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Bacterial Degradation of Free Cyanide in Alkaline Medium Using *Bacillus Licheniformis* Strain: *Amzy Vallenas Arévalo*[1]; Carlos Rosario[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]University of Sao Paulo

Determination of Limiting Current Density of a Solution with Copper, Zinc and EDTA from the Effluent of Brass Electrodeposition: Kayo Barros[1]; Jorge Tenório[1]; *Denise Espinosa*[1]; [1]University of São Paulo (USP)

Effect of the PH on the Recovery of Al3+, Co2+, Cr3+, Cu2+, Fe3+, Mg2+, Mn2+, Ni2+ and Zn2+ by Purolite S950: *Isadora Perez*[1]; Mónica Maria Correa[1]; Jorge Alberto Tenório[1]; Denise Espinosa[1]; [1]University of São Paulo

Evaluation of the Occurrence of Fouling and Scaling on the Membrane HDX 200 for the Treatment of the Effluent of Brass Electrodeposition with EDTA as Complexing Agent: Kayo Barros[1]; Jorge Tenório[1]; *Denise Espinosa*[1]; [1]University of São Paulo (USP)

High Temperature Crystallization Kinetics of $MgSO_4.H_2O$: Kristine Wanderley[1]; Denise Espinosa[1]; *Jorge Tenório*[1]; [1]LAREX, University of São Paulo (USP)

Incorporation of Rubber Waste Powder from Scrap Tires into Heavy Clay Ceramics: *Carlos Maurício Vieira*[1]; Rosane Toledo[1]; Juliana Soares de Faria[1]; Sergio Neves monteiro[2]; [1]State University of the North Fluminense; [2]Military Engineering Institute

Method of Utilization of Waste Electronic Technique with the Assistance of Combined Electrochemical Reactions: *Rustam Sharipov*[1]; [1]Kazakh-British Technical University

Preparation of Glass-ceramic from Titanium-bearing Blast Furnace Slag by "Petrurgic" Method: *Kuiyuan Chen*[1]; Yu Li[1]; Long Meng[1]; Yaodong Yi[1]; Zhancheng Guo[1]; [1]University Of Science And Technology Beijing

Production of Antimicrobial Bioplastics from Agricultural Wastes for Medical Packaging: *Weizheng Shen*[1]; Zhigang Qi[1]; Carlo Montemagno[1]; [1]University of Alberta

Recovery of Copper from Nickel Laterite Leach Waste by Chemical Reduction Using Sodium Dithionite: Amilton Botelho Junior[1]; Iara Anes[1]; Denise Espinosa[1]; *Jorge Tenório*[1]; [1]University of São Paulo

Recovery of Nickel and Cobalt from a Waste Zone of Nickel Laterite Ore Using a Mixture of Extractants in Solvent Extraction Technique: *Paula Aliprandini*[1]; Mónica Jimenez Correa[1]; Jorge Tenório[1]; Denise Espinosa[1]; [1]University of Sao Paulo

Rural Water Pollution and its Strategies in China: *Li Zhaohua*[1]; Zhang Jin[1]; Zhao Liya[1]; Chen Hongbing[1]; [1]Hubei University

Study on the Passivation Effect of Cr6+ in the Waste Water of the Blood Meal: *Chen Hongbing*[1]; Li Yadong[1]; Li Sitong[1]; Shu Fangfang[1]; Wang Nan[1]; [1]Hubei University

White Ordinary Portland Cement Paste with Iron Oxide Powders Containing Arsenic Contents: *Manuela Castañeda Montoya*[1]; Henry Colorado[1]; [1]Universidad de Antioquia

Dynamic Behavior of Materials VIII – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Saryu Fensin, Los Alamos National Laboratory; George Gray, Los Alamos National Laboratory; Naresh Thadhani, Georgia Institute of Technology; Kenneth Vecchio, University of California, San Diego; Marc Meyers, University of California, San Diego

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Constitutive Model for Dynamic Tensile Behaviour and the Dynamic Tensile Ductile Fracture Behaviour of Press-hardening Steels: *Xing Wei*[1]; Jianhua Mo[1]; [1]WISCO

Development of a Dynamic Materials Processing and Testing Equipment: *Anupam Vivek*[1]; Stephen Niezgoda[1]; Alexander Koenig[1]; Geoffrey Taber[1]; Glenn Daehn[1]; [1]Ohio State University

Dynamic Response of AA2519-T8 Aluminum Alloy under High Strain Rate Loading: Gbadebo Owolabi[1]; Adewale Olasumboye[1]; *Temitayo Daramola*[1]; Horace Whitworth[1]; [1]Howard University

Effect of Stain Rate on the Compressive Behavior and Energy Absorption of Woven Flax-epoxy Laminate Composites: *Jianxing Hu*[1]; Sha Yin[1]; Jun Xu[1]; [1]Beihang University

Fragmentation in Ni-Al: Andrew Marquez[1]; Zezhou Li[1]; Christopher Braithwaite[2]; Timothy Weihs[3]; Nicholas Krywopusk[3]; David Gibbins[3]; *Marc Meyers*[1]; [1]University of California, San Diego; [2]Cambridge University; [3]Johns Hopkins University

Microstructural Evolution in Fe-10Ni-0.1C Steel during Dynamic Deformation: *Ian Harding*[1]; Sharvan Kumar[1]; [1]Brown University

New Insights to the Bonding Mechanisms in Metal-ceramic Composite Cold Spray: *Rohan Chakrabarty*[1]; Jun Song[1]; [1]McGill University

Prediction of Joint Properties Obtained in the High Velocity Impact Welding of Dissimilar Metals: *Varun Gupta*[1]; Kyoo Sil Choi[1]; Anupam Vivek[2]; Yu Mao[2]; Xin Sun[3]; Glenn Daehn[2]; [1]Pacific Northwest National Laboratory; [2]Ohio State University; [3]Oak Ridge National Laboratory

Shock-induced Mechanical Response and Substructural Evolution of Ti–6Al–4V Alloy: *Yu Ren*[1]; Shimeng Zhou[2]; Zhiyong Xue[1]; Chengwen Tan[3]; [1]North China Electric Power University; [2]No. 52 Institute of China Ordnance Industries; [3]Beijing Institute of Technology

The Effect of Mercerization of Sisal Fibers on the Ballistic Performance of Epoxy / Sisal Composites: *Luís Carlos Silva*[1]; Sérgio Neves Monteiro[1]; [1]IME

The Use of Circumferentially Notched Tension Specimen for Fracture Toughness Assessment of High Strength Steels: *V.A. Popovich*[1]; T. Opraus[1]; M. Janssen[1]; B. Hu[1]; A. C. Riemslag[1]; [1]Delft University of Technology

Uncovering Inertia of Dislocation Motion and Negative Mechanical Response in Crystals: *Yizhe Tang*[1]; [1]Shanghai Institute of Applied Mathematics and Mechanics,Shanghai University

Energy Technologies and CO_2 Management Symposium – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee
Program Organizers: Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Donna Guillen, Idaho National Laboratory; Tao Wang, Nucor Steel; Neale Neelameggham, Ind LLC; John Howarter, Purdue University

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A Novel Preparation of Bi_2O_3 and Their Potent Photocatalytic Activity under Visible-light Irradiation: Jun Chen[1]; *Jing Zhan*[1]; [1]Central South University

CaxSr1-xO Heterogeneous Catalysts Using Polymer Complex Method (PCM) for Biodiesel Production: *Maria Lourdes Potestades*[1]; Shih-Kang Lin[1]; Wen-Dung Hsu[1]; Masahiro Yoshimura[1]; [1]National Cheng Kung University

Energy Conservation in Sintering Ignition Process Based on Comprehensive Ignition Intensity: *Wen Pan*[1]; Xia Zhao[2]; Si-bin Zhang[3]; Jun-hua Zhao[4]; Huai-ying Ma[1]; Zhi-xing Zhao[1]; [1]Shougang Research Institute of Technology; [2]Shougang Institute of Technology; [3]Chief Engineer Office Shougang Group co., LTD; [4]Beijing Shougang co., LTD

Study of Seperation between Carbon Dioxide and Hydrogen by Carbon Nanotube in Aluminium Industry (Monte Carlo Simulation): *Mohsen Amerisiahooei*[1]; Khirollah Mehrani[1]; Mohammad Yousefi[1]; [1]Islamic Azad University

Study on Energy Utilization of High Phosphorus Oolitic Hematite by Gas-based Shaft Furnace Reduction and Electric Furnace Smelting Process: *Hui Sun*[1]; [1]Beijing Shenwu Environment & Energy Technology Co.,Ltd.

Environmental Challenges and Opportunities for the Magnesium Industry: Recycling and Sustainability Joint Session – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Magnesium Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Elsa Olivetti, Massachusetts Institute of Technology; Neale Neelameggham, Ind LLC

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Repaired Algorithm for Nonlinear to Predict the Displacement of Copper Ion in the Absorbtion Systerm of Treated Steel Slag: *Zhu Shu Jing*[1]; [1]Michigan Technological University

Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention – Poster Session

Sponsored by: TMS Structural Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Ashley Spear, University of Utah; Jean-Briac le Graverend, Texas A&M University; Antonios Kontsos, Drexel University; Tongguang Zhai, University of Kentucky

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Fatigue Crack Growth in a Low Density Aluminum Alloy Welded by Friction Spot Welding: *Sara Lage*[1]; Junjun Shen[2]; Paulo Sergio da Silva[1]; Leonardo Campanelli[1]; Armando Antonialli[1]; Jorge dos Santos[2]; Claudemiro Bolfarini[1]; [1]Federal University of São Carlos; [2]Helmholtz-Zentrum Geesthacht

Fatigue of the Beta Ti-15Mo and Ti-12Mo-6Zr-2Fe Alloys Treated above Beta Transus: *Leonardo Campanelli*[1]; Murilo Santos[1]; Paulo Sergio da Silva[1]; Claudemiro Bolfarini[1]; [1]Federal University of São Carlos

Prediction and Fatigue Response of Ti-6Al-4V Alloy with Surface Modified by Chemical Treatment: *Cesar Escobar Claros*[1]; Paulo Sergio Pereira da Silva[1]; Leonardo Campanelli[1]; Tales Ferreira[1]; Diego Pedreira Oliveira[1]; Claudemiro Bolfarini; Claudemiro Bolfarini[1]; [1]Universidade Federal de São Carlos

Fracture: 65 Years after the Weibull Distribution and the Williams Singularity – Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Brad Boyce, Sandia National Laboratories; Ellen Cerreta, Los Alamos National Laboratory; Jacob Hochhalter, NASA LaRC; Jonathan Zimmerman, Sandia National Laboratories

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High Temperature Cracking Damage of Calcium Aluminate Cements: *John Zapata*[1]; Henry Colorado[1]; [1]Universidad de Antioquia

On the Experimental Evaluation of the Fracture Toughness of Shape Memory Alloys: *Behrouz Haghgouyan*[1]; Ceylan Hayrettin[1]; Theocharis Baxevanis[2]; Ibrahim Karaman[1]; Dimitris Lagoudas[1]; [1]Texas A&M University; [2]University of Houston

Magnesium Alloy Development: An LMD Symposium in Honor of Karl Kainer – Poster Session

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Alan Luo, The Ohio State University

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Corroding Magnesium Implants – a New Class of Biomaterials: *Frank Witte*[1]; [1]Charite - Universitätsmedizin Berlin

Development and Characterization of Mg-4Zn-0.5Ca-0.16 Mn (wt. %) Alloy for Biomedical Applications: *Partha Duley*[1]; Souriddha Sanyal[1]; Tapas Kumar Bandyopadhyay[1]; Sumantra Mandal[1]; [1]Indian Institute of Technology Kharagpur

Development of Ultralight and Ultrafine Grained Mg-4Li-1Ca Alloy for Biomedical and Lightweight Applications: *Saurabh Nene*[1]; B Kashyap[2]; N Prabhu[2]; Y. Estrin[3]; T. Al-Samman[4]; [1]IITB-Moansh Research Academy; [2]IIT Bombay; [3]Moansh University; [4]RWTH Aachen University

Effect of Al Addition on the Microstructure and Compressive Properties of Mg-based AZ31 Alloy: *Md Ershadul Alam*[1]; Victor Hernandez[1]; Zephyr Li[1]; Irene Beyerlein[1]; AbdelMagid Hamouda[2]; Manoj Gupta[3]; [1]University of California, Santa Barbara; [2]Qatar University; [3]National University of Singapore

Magnesium Nanocomposites, Progress and Potential: *Andrew Sherman*[1]; Nick Farkas[1]; David Wolf[1]; [1]Terves Inc

Metal Injection Molding (MIM) of Mg-alloys: *Martin Wolff*[1]; Johannes Schaper[1]; Michael Dahms[2]; Thomas Ebel[1]; Regine Willumeit-Römer[1]; Thomas Klassen[3]; [1]Helmholtz-Zentrum Geesthacht; [2]University of Applied Sciences, FH-Flensburg; [3]Helmut Schmidt University, Hamburg

Microstructure Evolution and Mechanical Properties of Thin Strip Twin Roll Cast (TRC) Mg Sheet: Xinliang Yang[1]; *Chamini Mendis*[1]; Jayesh Patel[1]; Zhongyun Fan[1]; [1]Brunel University London

Orientation and Length Scale Effect in Deformation Mechanism in Pure Magnesium: *Ali Khosravani*[1]; Surya Kalidindi[1]; [1]Georgia Institute of Technology

Precipitate Strengthening Mechanisms in Different Mg Alloys by In Situ Synchrotron X-ray Diffraction: *Xiaoqin Zeng*[1]; Leyun Wang[1]; Jie Wang[1]; Bijin Zhou[1]; Wen Wen[2]; [1]Shanghai Jiao Tong University; [2]Shanghai Synchrotron Radiation Facility

The Effect of Shearable Plate-shaped Precipitates on the Strength of Mg Alloys: *Sean Agnew*[1]; Jishnu Bhattacharyya[1]; Fulin Wang[1]; [1]University of Virginia

Magnesium Technology 2018 – Poster Session

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Dmytro Orlov, Lund University; Vineet Joshi, Pacific Northwest National Laboratory; Kiran Solanki, Arizona State University; Neale Neelameggham, Ind LLC

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Session Chairs: Vineet Joshi, Pacific Northwest National Laboratory - PNNL; Neale Neelameggham, IND LLC

A Microtomography Analysis of Damage and Fracture in Notched AZ31: *Babak Kondori*[1]; Thilo Morgeneyer[2]; Amine Benzerga[1]; [1]Texas A&M University; [2]MINES ParisTech

Combustion of Regolith/Magnesium Mixtures for the Fabrication of Construction Materials on the Moon and Mars: *Sergio Cordova*[1]; Armando Delgado[1]; Evgeny Shafirovich[1]; [1]The University of Texas at El Paso

Deformation Mechanism of a Mg-Zn-Y Alloy Containing Large Long-period-stacking-ordered Structures under Shock Wave: *Fan Zhang*[1]; Chengwen Tan[2]; Mingwei Chen[3]; [1]Tohoku University; [2]Beijing Institute of Technology; [3]Johns Hopkins University

Deformation Processing of AZ31 and ZK60 Using a Novel Tube-equal Channel Angular Pressing (t-ECAP) Technique: *Abhinav Srivastava*[1]; Bilal Mansoor[2]; Matthew Vaughan[1]; Karl Hartwig[1]; Ibrahim Karaman[1]; [1]Texas A&M University; [2]Texas A&M University at Qatar

Deformation Twinning in Shock Compressed UFG Mg: *Chaitanya Kale*[1]; Cyril Williams[2]; Jonathan Ligda[2]; B. Hornbuckle[2]; Kiran Solanki[1]; [1]Arizona State University; [2]U.S. Army Research Laboratory

Development of a High-resolution Synchrotron X-ray Diffraction Technique for Deformation Mechanism Studies of Magnesium Alloys: *Zhiyang Wang*[1]; Peter Lynch; Matthew Barnett[1]; Justin Kimpton[1]; [1]Australian Synchrotron

Effect of Calcium on Resistance to Oxidation of Magnesium Alloys (AZ91): Hassan Saghafianlarijani[1]; *Shima Paridari*[1]; Ghasem Isaabadi B.[2]; [1]Iran University of Science and Technology; [2]Arak University

Effect of Confined Rolling on Microstructure and Mechanical Properties of Magnesium Alloys: *Pavitra Krishnan*[1]; Hanin Elathram[1]; Qiuming Wei[1]; Laszlo Kecskes[2]; [1]University of North Carolina at Charlotte; [2]Weapons and Materials Research Directorate, US Army Research Laboratory

Effect of Heat Treatment on the Grain Growth Kinetics and Mechanical Properties in Shear Assisted Processing and Extrusion (ShAPETM) ZK60 Tube: *Vineet Joshi*[1]; Scott Whalen[1]; Derek Neal[1]; Arun Devaraj[1]; Nicole Overman[1]; Curt Lavender[1]; [1]Pacific Northwest National Laboratory

Effect of Micro-alloyed Neodynium on the Microstructure and Texture of Magnesium-zinc-calcium Alloys: *Yang Liu*[1]; Jing Su[1]; Amjad Javaid[2]; Tim Skszek[3]; Stephen Yue[1]; [1]McGill University; [2]CanmetMATERIALS; [3]Magna International

Effects of Ageing Treatment on the Microstructure and Mechanical Properties of Mg-Li Based Alloys: *Mingyu Fan*[1]; Ye Cui[1]; Yang Zhang[1]; Hao Guo[1]; Zhongwu Zhang[1]; [1]Key laboratory of Superlight Materials and Surface technology, Ministry of Education, College of Materials Science and Chemical Engineering, Harbin Engineering University

Evolution of Microstructure and Mechanical Properties during the Casting and Rolling of the ZEK100 Sheet: *Amjad Javaid*[1]; Frank Czerwinski[1]; [1]CANMET Materials

Hot Forging Behavior of Mg-8Al-4Ba-4Ca (ABaX844) Alloy and Validation of Processing Map: *K.P. Rao*[1]; C. Dharmendra[1]; Y.V.R.K. Prasad[2]; Hajo Dieringa[3]; Norbert Hort[3]; [1]City University of Hong Kong; [2]processingmaps.com; [3]Helmholtz-Zentrum Geesthacht

Influence of Hot Rolling on Microstructure and Mechanical Properties Thixo-Casts Obtained from Mixed E21 and WE43 Magnesium Granules: *Lukasz Rogal*[1]; P. Bobrowski[1]; A. Tarasek[1]; M. Szlezynger[1]; [1]Institute of Metallurgy and Materials Science

Interaction of Glide Dislocations with Extended Precipitates in Mg-Nd Alloys: *Zhihua Huang*[1]; John Allison[1]; Amit Misra[1]; [1]University of Michigan

Macro and Micro C/A Ratios Induced by Solute Atoms in Mg Via Ab Initio Calculations: *Gang Zhou*[1]; Hao Wang[1]; Chunguang Bai[1]; [1]IMR

Microstructure and Mechanical Behavior of ECAP-processed Magnesium at the Ice-water Temperature: Dai Zuo[1]; *Diaoyu Zhou*[1]; Taotao Li[1]; Wei Liang[1]; Fuqian Yang[2]; [1]Taiyuan University of Technology; [2]University of Kentucky

Microstructure and Mechanical Properties of Magnesium-metal Laminated Nanocomposites: *Soodabeh Azadehranjbar*[1]; Jeffrey Shield[1]; Jian Wang[1]; [1]University of Nebraska-Lincoln

Nanostructured Mg-Gd Alloy Processed by ARB Processing: *Xuan Luo*[1]; Zongqiang Feng[1]; Tianlin Huang[1]; Guilin Wu[1]; Xiaoxu Huang[1]; [1]Chongqing University

Rate and Temperature Dependent Deformation Behavior of WE43 Magnesium-rear Earth Alloy: Experiments and Crystal Plasticity Modeling: *Marko Knezevic*[1]; Saeede Ghorbanpour[1]; Milan Ardeljan[1]; Brandon McWilliams[2]; [1]University of New Hampshire; [2]US Army Research Laboratory

Twin and Compressive Response of Nano-sized Al2O3 Added Mg-based AZ41 and AZ51 Alloys: *Md Ershadul Alam*[1]; Zephyr Li[1]; Victor Hernandez[1]; Irene Beyerlein[1]; Manoj Gupta[2]; Abdel Magid Hamouda[3]; [1]University of California, Santa Barbara; [2]National University of Singapore, Singapore 117576; [3]Mechanical and Industrial Engineering Department, Doha, Qatar

Understanding of Dynamic Recrystallization Characteristics of ZEK100 Magnesium Alloy Sheet during Warm Forming: *Jing Su*[1]; Yang Liu[1]; Timothy Skszek[2]; Stephen Yue[1]; [1]McGill; [2]Magna International

Materials and Fuels for the Current and Advanced Nuclear Reactors VII – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, 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; Anne Campbell, Oak Ridge National Laboratory

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Asymptotic Expansion Homogenization of the Stiffness Tensor and Thermal Conductivity of a 2D Exemplar-guided Digital Reconstruction of an Al3Hf-Al Microstructure with Comparison to Experiment: *William Harris*[1]; Donna Guillen[2]; Javier Morales[3]; [1]Massachusetts Institute of Technology; [2]Idaho National Laboratory; [3]University of Texas at San Antonio

Characterization of Stress and Microstructure of Zr-4 alloy Processed by Pulsed Laser: *Junkai Liu*[1]; Yang Du[1]; Hang Zang[1]; Wenbo Liu[1]; Di Yun[1]; [1]Xi'an Jiaotong University

Comprehensive Characterization of Irradiation Defects in Ferric Nuclear Alloy via STEM-based Microscopy: *Yuanyuan Zhu*[1]; Mychailo Toloczko[1]; Dan Edwards[1]; [1]Pacific Northwest National Laboratory

Effect of Pd on the Grain Boundary Character Distribution in SiC: Felix Cancino-Trejo[1]; David Navarro-Solis[1]; *Eddie Lopez-Honorato*[1]; [1]CINVESTAV

Experimentally Determined Properties of U-Pu-Zr Alloys: What Do We Know and How Well?: *Dawn Janney*[1]; Cynthia Adkins[1]; [1]Idaho National Laboratory

Investigation of the Role of Cr and Cr Carbides at Grain Boundaries in Alloy 600 for Stress Corrosion Cracking: *Hi Vo*[1]; Peter Chou[2]; Peter Hosemann[1]; [1]University of California, Berkeley; [2]Electric Power Research Institute

Materials for Energy Conversion and Storage – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Energy Conversion and Storage Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems Inc.; Guihua Yu, The University of Texas at Austin

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A New Economical Method for Fabricating High-purity Bi2O3 via Extraction-precipitation Stripping and Post Annealing: Jun Chen[1]; *Jing Zhan*[1]; [1]Central South University

High Capacitance Low-crystalline Iron Oxide Hydroxide Anodes for High-energy Density Supercapacitors: *Kwadwo Owusu*[1]; Longbing Qu[2]; Liqiang Mai[1]; [1]Wuhan University of Techology; [2]Monash University

In Situ Imaging and Spectroscopy of Nanostructured Pt/CeO_2 Catalysts Performing CO Oxidation: *Josh Vincent*[1]; [1]Arizona State University

Thermal Conductivity and Thermal Expansion of Ba($Ce_{0.8-x}Zr_xY_{0.2}$)$O_{3-\delta}$ Applicable for an Electrolyte of Solid Oxide Fuel Cells: *Hirotomo Sumikawa*[1]; Ken Kurosaki[2]; Yuji Ohishi[1]; Hiroaki Muta[1]; Shinsuke Yamanaka[3]; [1]Graduate School of Engineering, Osaka University; [2]Graduate School of Engineering, Osaka University, and JST, PRESTO; [3]Graduate School of Engineering, Osaka University, and Research Institute of Nuclear Engineering, University of Fukui

Materials Processing Fundamentals – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Electromet; Antoine Allanore, Massachusetts Institute of Technology; Jonghyun Lee, Iowa State University; Samuel Wagstaff, Novelis

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DEM Simulation of Dispersion of Cohesive Particles by Spontaneous Inter-particle Percolation in a 3D Random Packed Bed: *Heng Zhou*[1]; Shengli Wu[1]; Mingyin Kou[1]; Shun Yao[1]; Bingjie Wen[1]; Kai Gu[1]; Feng Chang[1]; [1]University of Science and Technology Beijing

Effects of High Energy Ag7+ Ion Irradiation on the Magnetic and Topographical Properties of Amorphous Co–Fe Thin Films: *Imaddin Al-Omari*[1]; G. Pookat[2]; T. Hysen[2]; S.H. Al-Harthi[1]; R. Lisha[2]; D.K. Avasthi[3]; M.R. Anantharaman[2]; [1]Sultan Qaboos University; [2]Cochin University of Science & Technolog; [3]Inter University Accelerator Centre, Aruna Asaf Ali Marg

Effects of Mn Content on the Formation of Nanoscale Precipitates and Matrix Microstructure in the Ultra-high Strength Steels: *Songsong Xu*[1]; Yu Zhao[1]; Hao Guo[1]; Naimeng Liu[1]; Xinghao Wei[1]; Zhongwu Zhang[1]; [1]Key Laboratory of Superlight Materials and Surface Technology, Ministry of Education ,College of Materials Science and Chemical Engineering, Harbin Engineering University,Harbin, 150001, China

Ground-based Experiments Using an Electrostatic Levitator and Numerical Modeling of Convection Inside Electromagnetically-levitated Molten Iron-cobalt Droplets in Support of Space Experiments: *Jonghyun Lee*[1]; Michael SanSoucie[2]; [1]Iowa State University; [2]NASA Marshall Space Flight Center

Hybrid Modeling for Endpoint Carbon Content Prediction in EAF Steelmaking: Wei Guangsheng[1]; Zhu Rong[1]; Yang Lingzhi[2]; *Tang Tianping*[1]; [1]University of Science & Technology Beijing; [2]Central South University

Time Evolution of the Microstructure of ZA27 during Heat Treatment Applied in the SIMA Process: Wilky Desrosin[1]; Gerardo Héctor Rubiolo[2]; *Carlos Enrique Schvezov*[3]; [1]IMAM (UNaM-CONICET) - Inst. Sabato-UNSAM; [2]Inst. Sabato - UNSAM; [3]IMAM (UNaM-CONICET)

Phase Transformations and Microstructural Evolution – Poster Session I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

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Bainite Transformation in Medium Carbon Microalloyed Steel: *Sachin Kumar*[1]; Shiv Singh[1]; [1]IIT Kharagpur, India

Changes in Microstructures and Mechanical Properties in T92 during Long-term Aging Treatment: *Cheoljun Bae*[1]; Rosa Kim[1]; Jongryoul Kim[1]; [1]Hanyang University

Effect of Precipitation on Creep Properties of Ferritic Steels: Maribel Saucedo-Muñoz[1]; Arturo Ortiz-Mariscal[1]; Shin-Ichi Komazaki[2]; *Victor Lopez-Hirata*[1]; [1]Instituto Politecnico Nacional (ESIQIE); [2]Kagoshima University

Effects of Additional Elements on the Phase Stability and Precipitation Behavior of C14 Laves Phase in High Cr Ferritic Alloys: *Ko Kato*[1]; Yaw Wang Chai[1]; Yoshisato Kimura[1]; [1]Tokyo Institute of Technology

Evolution of Microstructure in High Strength Bainitic Steel: *Sk Hasan*[1]; Shiv Singh[1]; [1]IIT Kharagpur

Nucleation and Growth of Austenite in a Fe-12Mn-3Al-0.06C Medium-Mn Steel Annealed at 585°C: Jake Benzing[1]; Lutz Morsdorf[2]; *Alisson Kwiatkowski da Silva*[2]; Dirk Ponge[2]; Dierk Raabe[2]; James Wittig[1]; [1]Vanderbilt University; [2]Max-Planck-Institut für Eisenforschung GmbH

Mechanical Behavior of Ultrafine-grained Ferritic Steel at Various Temperature and Strain Rate: *Shen Yongfeng*[1]; [1]Northeastern University

Physical Metallurgy of Segregation and Austenite Reversion in Medium Mn Steels: *Alisson Kwiatkowski da Silva*[1]; Dirk Ponge[1]; Gerhard Inden[1]; Baptiste Gault[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, RMIT University (Royal Melbourne Institute of Technology); Zak Fang , University of Utah ; Bowen Li, Michigan Technological University

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High-temperature Mechanical Properties of Powder Forged Ti-6Al-4V Alloys: *Sung Ho Lee*[1]; Youngmoo Kim[1]; Young-Beom Song[1]; Young-Sam Kwon[2]; [1]Agency for Defense Development; [2]Cetatech Co.

Magnesiothermic MASHS and Pressureless Sintering of Diborides of Zirconium and Hafnium: *Sergio Cordova*[1]; Evgeny Shafirovich[1]; [1]The University of Texas at El Paso

Rare Metal Extraction & Processing – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee
Program Organizers: Hojong Kim, The Pennsylvania State University; Bradford Wesstrom, Freeport-McMoRan Copper & Gold; Shafiq Alam, University of Saskatchewan; Takanari Ouchi, The University of Tokyo; Gisele Azimi, University of Toronto; Neale Neelameggham, Ind LLC; Shijie Wang, Rio Tinto Kennecott Utah Copper; Xiaofei Guan, ShanghaiTech University

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Session Chairs: Hojong Kim, The Pennsylvania State University; Bradford Wesstrom, Freeport-McMoRan

Effects of Preoxidation on the Kinetics of Iron Leaching from Ilmenite in Hydrochloric Acid Solution: *Junyi Xiang*[1]; Qinyun Huang[2]; Wei Lv[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]School of Materials Science and Engineering, Chongqing University; [2]School of Metallurgical and Materials Engineering, Chongqing University of Science and Technology

Experimental Modeling of Nodulation in Copper Electrorefining: *Yuya Nakai*[1]; Ken Adachi[1]; Atsushi Kitada[1]; Kazuhiro Fukami[1]; Kuniaki Murase[1]; [1]Kyoto University

Extraction of Vanadium from Vanadium-containing APV-precipitated Wastewater by W/O Microemulsion System: *Yun Guo*[1]; Hong-Yi Li[1]; Minmin Lin[1]; Bing Xie[1]; [1]Chongqing University

Microfluidic Solvent Extraction of Zinc from Low Concentration Sulfate Solution Using D2EHPA: *Feng Jiang*[1]; Libo Zhang[1]; Jian Jian[1]; Hongying Xia[1]; Shaohua Ju[1]; Jinhui Peng[1]; [1]Kunming University of Science and Technology

Thermal and Mechanical Stability of Nanocrystalline Materials – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Daniel Bufford, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Jessica Krogstad, University of Illinois, Urbana-Champaign; Christian Brandl, Karlsruhe Institute of Technology

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Control of Thermal Expansivity in Electroformed Fe-Ni Alloys for the Fine Metal Mask: *Yong Bum Park*[1]; In Gyeong Kim[1]; [1]Sunchon National University

Thermomigration of Cu-Sn and Ni-Sn Intermetallic Compounds during Reliability Test in SnAg Solder Joints: *Po-Ning Hsu*[1]; [1]National Chiao Tung University

2018 Symposium on Functional Nanomaterials: Discovery and Integration of Nanomaterials – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Nanomaterials Committee
Program Organizers: Stephen McDonnell, University of Virginia; Chang-Yong Nam, Brookhaven National Laboratory; Lanxia Cheng, University of Texas Dallas; Dong Lin, Kansas State University; Wenda Tan, University of Utah

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A Novel Adsorption-reduction Method for the Preparation of Nano-Bi@ super P Composites: *Chao Yang*[1]; Zhongliang Tian[1]; Yanqing Lai[1]; [1]Central South University

Co/Pd Multilayered Nanodot Formation by Block Copolymer Templating: *Subhadra Gupta*[1]; Allen Owen[1]; Hao Su[1]; [1]University of Alabama

Controlling Domain Wall Structure and Behavior in Magnetic Nanowires: *Liwei Geng*[1]; Yongmei Jin[1]; [1]Michigan Technological University

Development of Graphene Oxide Based Materials for the Adsorption of Arsenic in Water: Ana Reynosa-Martínez[1]; Ana Navarro-Tovar[1]; Waldo Gallegos-Perez[1]; *Eddie Lopez-Honorato*[1]; [1]CINVESTAV

Electrochemical Fabrication of micro/nanoporous Copper Film by Electrosynthesis-dealloying of Cu-Zn Alloy in Eutectic Deep Solvent: *Shujuan Wang*[1]; Xingli Zou[1]; Xueliang Xie[1]; Xionggang Lu[1]; Yinshuai Wang[1]; Qian Xu[1]; Chaoyi Chen[1]; Zhongfu Zhou[1]; [1]Shanghai University

Electrosynthesis of CuNP'S from E-Waste: *Pedro Ramirez Ortega*[1]; Mauricio Islas Hernández[1]; Laura García Hernández[1]; Mizraim Flores Guerrero[1]; [1]Universidad Tecnológica de Tulancingo

Experimental Investigation of the Effect of ZnO-*Citrus Sinensis* Nano-additive on the Electrokinetic Deposition of Zinc on Mild Steel in Acid Chloride: *Oluseyi Ajayi*[1]; Olasubomi Omowa[1]; Olugbenga Omotosho[1]; Oluwabunmi Abioye[1]; Esther Akinlabi[2]; Stephen Akinlabi[2]; Abiodun Abioye[1]; Felicia Owoeye[1]; Sunday Afolalu[1]; [1]Covenant University, Cananland, Ota; [2]University of Johannesburg

Formation of Quantum Dots-based Concentric Rings on Polymer-based Nanocomposite Films: Shaofu Zhang[1]; Weiling Luan[1]; Shaofeng Yin[1]; *Wenxin Cao*[2]; Fuqian Yang[2]; [1]Key Laboratory of Pressure Systems and Safety (MOE), School of Mechanical and Power Engineering, East China University of Science and Technology; [2]University of Kentucky

In-situ Studies of Transition Metal Dichalcogenides Grown by Molecular Beam Epitaxy: *Peter Litwin*[1]; Keren Freedy[1]; Stephen McDonnell[1]; [1]University of Virginia

Obtaining of Iron Nanoparticles (Fe NP's) for Treatment of Water Contaminated with As: *Daniel Barron Romero*[1]; Mizraim Uriel Flores Gerrero[1]; Iván Alejandro Reyes Domínguez[2]; Laura García Hernández[1]; Pedro Alberto Ramírez Ortega[1]; Angelina Gonzales Rosas[1]; Marcos Joel Cruz[1]; Nancy M. Escamilla[1]; [1]Universidad Tecnológica de Tulancingo; [2]Universidad Autónoma de San Luis Potosí

Soybean-derived Activated Carbon for Supercapacitors: *Wenxin Cao*[1]; Fuqian Yang[1]; [1]University of Kentucky

Synthesis of Gold Nanoparticles Using the Extract of Sedum Praeltum and its Deposition on a Ceramic Substrate: *Laura Garcia-Hernandez*[1]; Begoña Aguilar-Pérez[1]; Jaqueline Ramírez-Castro[1]; Pedro Alberto Ramírez-Ortega[1]; Diana Arenas-Islas[1]; Mizraim Uriel Flores-Guerrero[1]; [1]Universidad Tecnológica de Tulancingo

Advanced Characterization Techniques for Quantifying and Modeling Deformation – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Shaping and Forming Committee
Program Organizers: Rodney McCabe, Los Alamos National Laboratory; Thomas Bieler, Michigan State University; Marko Knezevic, University of New Hampshire; Irene Beyerlein, University of California Santa Barbara; Wolfgang Pantleon, Technical University of Denmark; Cem Tasan, Massachusetts Institute of Technology

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4D Imaging of Deformation in Polymeric Foams Using X-ray Synchrotron Tomography: *Arun Sundar Sundaram Singaravelu*[1]; Oldrich Sevecek[2]; Michal Kotoul[2]; Brian Patterson[3]; Xianghui Xiao[4]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Brno University of Technology; [3]Los Alamos National Laboratory; [4]Advanced Photon Source

Compression Testing of Single Crystals of β-Si_3N_4 on Micron Meter Scale by Means of FIB Machining Combined with EBSD Orientation Mapping: *Nobuyuki Kadota*[1]; Haruyuki Inui[1]; Norihiko Okamoto[1]; Isao Tanaka[1]; You Zhou[2]; Hideki Hyuga[2]; Kiyoshi Hirao[2]; [1]Kyoto University; [2]AIST

Correlative Microscopy in Materials Science: Will Harris[1]; *Jeff Gelb*[1]; Tobias Volkenandt[2]; Leah Lavery[1]; [1]Carl Zeiss X-ray Microscopy; [2]Carl Zeiss Microscopy

Development of a Constitutive Model for Plastic Deformation in Single Crystal Niobium: *Eureka Pai Kulyadi*[1]; Philip Eisenlohr[1]; [1]Chemical Engineering and Materials Science, Michigan State University, East Lansing, MI, 48823

Distribution of Cr Atoms in a Strained and Strain-relaxed Fe89.15Cr10.75 Alloy: Mössbauer Effect Study: *Stanislaw Dubiel*[1]; Jan Zukrowski[1]; [1]AGH University of Science and Technology

Extending EBSD's Phase Differentiation Capabilities Through the Dictionary Approach: *Farangis Ram*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

Influence of Strain Rate and Microstructure on the Substructure Evolution and Properties of Ti-407: *Zachary Kloenne*[1]; Gopal Viswanathan[1]; Matthew Thomas[2]; Hamish Fraser[1]; Michael Lorreto[3]; [1]The Ohio State University; [2]TIMET; [3]University of Birmingham

Investigating Internal Lattice Strains in DMLS IN718 Material in the as Built and Post-processed Conditions: *Priya Ravi*[1]; Diwakar Naragani[1]; John Rotella[1]; Peter Kenesei[2]; Jonathan Almer[2]; Michael Sangid[1]; [1]Purdue University; [2]Argonne National Laboratory

Time-dependent Characterization at the Mesoscale: The MaRIE Project at Los Alamos National Laboratory: *Cris Barnes*[1]; Ellen Cerreta[1]; [1]Los Alamos National Laboratory

Toward Development of an Optimum Biaxial Tensile Test Specimen Design: *Dilip Banerjee*[1]; Mark Iadicola[1]; Adam Creuziger[1]; Evan Rust[1]; [1]National Institute of Standards and Technology

Advanced High-strength Steels – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Steels Committee
Program Organizers: M.X. Huang, The University of Hong Kong; Tilmann Hickel, Max-Planck-Institut fuer Eisenforschung GmbH; Amy Clarke, Colorado School of Mines; Cem Tasan, Massachusetts Institute of Technology; Young-Kook Lee, Yonsei University; Matthias Militzer, The University of British Columbia

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Abnormal Deformation Heating and Dynamic Strain Aging in DP Steels at Forming Relevant Strain Rates and Temperatures: *Mert Efe*[1]; Caner Simsir[2]; [1]Middle East Technical University; [2]Atilim University

Correlationship of the Microstructural Features and Mechanical Properties with the Sliding Wear Resistance of a High Strength Low Alloy Steel: *Jayanta Mondal*[1]; Karabi Das[1]; Siddhartha Das[1]; [1]Indian Institute of Technology Kharagpur

Effect of Feeding Ca–Ba–RE–Zr and Ca-Si Composite Effect of Wire Injection to Liquid Steel on the Properties of Advanced High-strength Steel: *Zhizheng Yang*[1]; [1]BaoWu Steel China

Effect of Reheating Temperature and Cooling Treatment on the Microstructure, Texture and Impact Transition Behavior of Heat Treated Naval Grade HSLA Steel: *Md. Basiruddin Sk.*[1]; Abhijit Ghosh[1]; Nirmalya Rarhi[2]; R. Balamuralikrishnan[2]; Debalay Chakrabarti[1]; [1]IIT Kharagpur; [2]Defence Metallurgical Research Laboratory

Microstructural Evolution and Mechanical Properties of a Prototype 0.15C-6Mn-1Si-1Al Third Generation Steel: *Vivek Patel*[1]; Joseph McDermid[1]; Frank Goodwin[2]; [1]McMaster University; [2]International Zinc Association

Numerical Investigations of the Effects of Subtitionnal Elements on the Interface Conditions during Partitioning in Q&P Steels: *Steve Gaudez*[1]; Sébastien Allain[1]; Julien Teixeira[1]; Mohamed Gouné[2]; Michel Soler[3]; Frédéric Danoix[4]; [1]Institut Jean Lamour; [2]ICMCB; [3]Arcelormittal Maizières Research SA; [4]GPM

Quantitative Analysis of External Selective Oxidation of a CMnSi Advanced High Strength Steel Using a Novel Approach: *Mary Story*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

Reactive Wetting of Advanced High Strength Steels by a Zn-Al-Mg Bath: *Danielle De Rango*[1]; Joseph McDermid[1]; [1]McMaster University

Solidification Cracking in High-strength Low Alloy Steels: *Maddie McAllister*[1]; Eric Gulliver[1]; Michael Kottman[1]; Badri Narayanan[1]; [1]Lincoln Electric

Steels for Elevated Temperature Application: *Zixin Huang*[1]; [1]University of Cambridge

Strain Rate Dependence of Tensile and Serration Behaviors of an Austenitic Fe-22Mn-0.7C Twinning-induced Plasticity Steel: *Byoungchul Hwang*[1]; Seung-Yong Lee[2]; Sang-In Lee[1]; [1]Seoul National University of Science and Technology; [2]Korea Institue of Science and Technology

The Technology Study of Silicon Reduction of Chromite Powder in Microwave Field: *Hua Liu*[1]; [1]Kunming University of Science and Technology

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Yan Li, Intel; Tae-Kyu Lee, Portland State University; Albert T. Wu, National Central University; Kwang-Lung Lin, National Cheng Kung University; Chih Chen, National Chiao Tung Univ; Won Sik Hong, Korea Electronics Technology Institutue(KETI); Mehran Maalekian, AIM Metals & Alloys; Kazuhiro Nogita, The University of Queensland; Christopher Gourlay, Imperial College London

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Session Chairs: Fan-Yi Ouyang, National Tsing Hua University; Fu Guo, Beijing University of Technology

Flexible Electrodes Based on the Carbon/Polymer Composite for Wearable Devices: *Sungwook Mhin*[1]; Sehoon Yoo[1]; Kyoung Ryeol Park[1]; Jae Eun Jeon[1]; [1]Korea Institute of Industrial Technology

Lead-free Nano-Solder Pastes for the Soldering of Cu-Cu Thin Wires: *Edward Fratto*[1]; Evan Wernicki[1]; Yang Shu[1]; Fan Gao[1]; Zhiyong Gu[1]; [1]University of Massachusetts Lowell

Mechanical Properties and IMC Morphology of Sn-58Bi Solder Including Sn-decorated MWCNTs: *Hyun-Joon Park*[1]; Kyung-Deuk Min[1]; Choong-Jae Lee[1]; Seung-Boo Jung[1]; [1]Sunkyunkwan University

Theoretical and Experimental Study of Intermetallic Compound Grown by Electromigration, Thermomigration and Chemical Diffusion for Sn-0.7Cu Solders: Sung-Min Baek[1]; Min-Hyeok Heo[2]; *Namhyun Kang*[2]; Cheolmin Oh[3]; [1]Samsung Eletro-Mechanics; [2]Pusan National University; [3]Korea Electronics Technology Institute

Alloys and Compounds for Thermoelectric and Solar Cell Applications VI – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National University and Institute for Rare Metals; Philippe Jund, Université Montpellier 2; Lan Li, Boise State University; Takao Mori, National Institute for Materials Science (NIMS) ; Hsin-jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

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Session Chair: Sinn-wen Chen, National Tsing Hua University

Compressive Creep Behavior of Hot-pressed TAGS-85: Ming-Chiang Chang[1]; *Matthias Agne*[1]; Richard Michie[1]; David Dunand[1]; G. Jeffrey Snyder[1]; [1]Northwestern University

Determination of the Mg-Si-Sn Ternary Phase Diagram to Evaluate Phase Stability of Thermoelectric $Mg_2(Si,Sn)$ Compound
: *Natsumi Kaneko*[1]; Yosuke Kubo[1]; Yoshisato Kimura[1]; Yong-Hoon Lee[2]; Hiroyuki Matsunami[2]; Hirokuni Hachiuma[2]; [1]Tokyo Institute of Technology; [2]KELK Ltd.

Effect of Precipitates on Thermoelectric Properties in Nickel Based Alloy: *Tomoyuki Kanatani*[1]; Hiroaki Muta[1]; Yuji Ohishi[1]; Ken Kurosaki[2]; Shinsuke Yamanaka[3]; [1]Graduate School of Engineering, Osaka University; [2]Graduate School of Engineering, Osaka University and JST, PRESTO; [3]Graduate School of Engineering, Osaka University and Research Institute of Nuclear Engineering, University of Fukui

Improved Thermoelectric Properties of Bismuth-magnesium Eutectic Alloy by Melt Spinning and Spark Plasma Sintering: *Mohd Natashah Bin Norizan*[1]; Hiroaki Muta[1]; Yuji Ohishi[1]; Ken Kurosaki[1]; Shinsuke Yamanaka[1]; [1]Osaka University

Phase Diagrams of Ternary Zn-Sb-In Systems and Thermoelectric Properties of (Cu, In)-doped Zn4Sb3 Doped Zn4Sb3: *Su Hui Yi*[1]; Hsin-jay Wu[1]; You-Kai Su[1]; [1]National Sun Yat-sen University

Study of Cobalt Silicide by Grain Boundary Engineering: *Wang Yunxia*[1]; Muta Hiroaki[1]; Ohishi Yuji[1]; Kurosaki Ken[1]; Yamanaka Shinsuke[1]; [1]Osaka University

The Phase Diagram of Ge-Te-Sb and Enhanced Thermoelectric Properties of (Sb, In)-doped GeTe: *Yi-Fen Tsai*[1]; Hsin-Jay Wu[1]; Jie-Ru Deng[1]; [1]Department of Materials and Optoelectronic science, National Sun Yat-sen University

ZnO Synthesis on the Au Metallized Silk Textile for Flexible Photocatalyst Application: *Wan-Ting Chiu*[1]; Yuma Tahara[2]; Chun-Yi Chen[1]; Tso-Fu Mark Chang[1]; Tomoko Hashimoto[2]; Hiromichi Kurosu[2]; Masato Sone[1]; [1]Tokyo Institute of Technology; [2]Nara Women's University

Biodegradable Materials for Medical Applications – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jaroslaw Drelich, Michigan Technological University; Petra Maier, University of Applied Sciences Stralsund; Jan Seitz, Syntellix AG; Norbert Hort, Helmholtz-Zentrum Geesthacht; Huinan Liu, University of California-Riverside

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Designing Polymeric Membranes for Medical Applications: *Laís Pellizzer Gabriel*[1]; André Jardini[1]; Rubens MacielFilho[1]; [1]University of Campinas

Development of Biodegradable Operative Zinc Clips for Ligation: *Jeffrey Brookins*[1]; Jan-Marten Seitz[2]; Jeremy Goldman[1]; Jaroslaw Drelich[1]; [1]Michigan Technological University; [2]Syntellix AG

Long Term Biocompatibility of Zinc and its Alloys for Absorbable Vascular Scaffolds: *Roger Guillory*[1]; Jaroslaw Drelich[1]; Jeremy Goldman[1]; [1]Michigan Technological University

Microstructural Evolution and Mechanical Properties of Zn-Ti alloys for Biodegradable Stent Applications: *Zhiyong Yin*[1]; Jeremy Goldman[1]; Jaroslaw Drelich[1]; [1]Michigan Technological University

Biological Materials Science – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Holly Martin, Youngstown State University; Jing Du, Pennsylvania State University

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Session Chairs: Steven Naleway, University of Utah; Thomas Vinoy, University of Alabama, Birmingham; Holly Martin, Youngstown State University; Jing Du, Penn State University

Characterizing the Collagen Structure of Armored Carapace of the Boxfish: *Sean Garner*[1]; [1]University of Californi, San Diego

Density and Vessel Distribution Interactions in the Impact Resistance of Wood: *Albert Matsushita*[1]; Joanna McKittrick[1]; Yunlan Zhang[2]; Pablo Zavattieri[2]; [1]University of California, San Diego; [2]Purdue University

Freeze Casting of Bioinspired Porous Ring Structures through Ultrasound Directed Self-assembly: *Taylor Ogden*[1]; Milo Prisbrey[1]; Isaac Nelson[1]; Bart Raeymaekers[1]; Steven Naleway[1]; [1]Department of Mechanical Engineering, University of Utah

Numerical Investigation of Force Network in 3D Heterogeneous Cellularized ECM: *Hanqing Nan*[1]; Yang Jiao[1]; [1]Arizona State University

Silver and Potassium Ion Exchange in Aluminosilicate and Soda Lime Glasses for Antimicrobial Purpose: *Duygu Guldiren*[1]; Ipek Erdem[1]; Süheyla Aydin[1]; [1]Istanbul Technical University

Transparent Teeth of Deep-sea Dragonfish: *Audrey Velasco-Hogan*[1]; [1]UCSD

Bladesmithing 2018 – Poster Session

Program Organizers: Bharat Jasthi, South Dakota School of Mines and Technology; Roxana Ruxanda, Emerson; Garry Warren, University of Alabama; Michael West, South Dakota School of Mines and Technology; Eric Schmidt, Vallourec; Samuel Wagstaff, Novelis

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Abstract for Bladesmithing Symposium TMS 2017: *Brandon Ohl*[1]; [1]University of North Texas

Bulk Metallic Glasses XV – Poster Session

*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; Yunfeng Shi, Rensselaer Polytechnic Institute; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; Jianzhong Jiang, Zhejiang University; Robert Maass, University of Illinois at Urbana-Champaign

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A First-order Liquid-liquid Phase Transition in Undercooled Molten Pd-Ni-P Alloys: *Xingchen Wang*[1]; Y. Lo[1]; Zhenduo Wu[1]; W. Zhou[1]; Hin Wing Kui[1]; [1]The Chinese University of Hong Kong

Atomic Structure and Properties of CuZrAl Metallic Glasses and Composites: *Ivan Kaban*[1]; [1]IFW Dresden

Compositional Effect on Temperature-induced Atomic Structure Evolution in Liquid Ga-In, Ga-Sn and In-Sn Alloys: *Qing Yu*[1]; Xiaodong Wang[1]; Yu Su[1]; Dongxian Zhang[1]; Qingping Cao[1]; Jianzhong Jiang[1]; [1]Zhejiang University

Controllable Metal Nanostructures by Thermoplastic Drawing of Metallic Glasses: *Zhonglue Hu*[1]; Golden Kumar[1]; [1]Texas Tech Univeristy

Correlation between Structural Heterogeneities and Serration Flow Behavior in Zr-based Metallic Glass: *LeHua Liu*[1]; ZhiYuan Liu[2]; PeiJie Li[1]; [1]Tsinghua University; [2]ShenZhen University

Effect of Pressure on Viscous Deformation during Spark Plasma Sintering of Fe – Based Bulk Amorphous Alloy: *Tanaji Paul*[1]; Sandip Harimkar[1]; [1]Oklahoma State University

Fictive Temperature Controlling Ductility in Metallic Glasses: *Jittisa Ketkaew*[1]; Eran Bouchbinder[2]; Jan Schroers[1]; [1]Yale University; [2]Weizmann Institute of Science

Formation and Properties of Pd-Cu-Ag-Au-Si Glassy Alloys: *El-Sayed Shalaan*[1]; Akihisa Inoue[2]; Fahad Al-Marzouki[1]; Saleh Al-Heniti[1]; Abdullah Obaid[1]; [1]King Abdulaziz University; [2]Josai International University

Formation of Zr-Cu-Al-Ag-Ti Bulk Metallic Glass Composites with Deformation Induced Martensitic Transformation: *Haotian Nan*[1]; Iain Todd[1]; [1]The University of Sheffield

Friction and Wear Behavior of Ti-based In-situ Dendrite Amorphous Composites: *Jian Shang*[1]; [1]Liaoning University of Technology

Friction and Wear Behaviour of Ti-based Bulk Metallic Glass Composites: *Fufa Wu*[1]; [1]Liaoning University of Technology, China

Influence of Composition on Glass Formation and Structure in Zr-Al-Ni Alloys: *Juan Wang*[1]; Peter Tsai[1]; Anupriya Agrawal[1]; Katharine Flores[1]; [1]Washington University in Saint Louis

On Quantifying Amorphous to Crystalline Phase Transition during Micro Milling Zr-based Bulk Metallic Glasses: *David Yan*[1]; [1]San José State University

Probabilistic Modelling and Simulation of Microstructural Evolution in Zr Based Bulk Metallic Glass Matrix Composites during Solidification: *Muhammad Musaddique Ali Rafique*[1]; [1]RMIT University

Short-term Oxidation Behavior of Zr53.8Cu29.1Ni7.3Al9.8 Bulk Metallic Glass at High Temperature in Dry Air: *Haiyang Li*[1]; [1]Northeastern University

Spark Plasma Sintering of Ni Reinforced Fe Based Bulk Metallic Composites: *Himabindu Kasturi*[1]; Tanaji Paul[1]; Sandip Harimkar[1]; [1]OSU

Temperature Dependent Plastic Deformation of Bulk Metallic Glasses: *Chandra Sekhar Meduri*[1]; Golden Kumar[1]; [1]Texas Tech University

The Shape of the Liquid Metastable Miscibility Gap in Undercooled Molten Pd-Ni-P Alloys: *Yongxing Nie*[1]; Hin Wing Kui[1]; [1]Chinese University of Hong Kong

Thermodynamic Prediction of Novel Glass Forming Compositions in Zr-Co-Ti and its Bio-corrosion Studies: *Vincent Shantha Kumar*[1]; [1]BITS Pilani Dubai Campus

X-ray Diffraction Studies of the First-order Liquid-liquid Phase Transition in Undercooled Molten Pd-Ni-P: *Ka Chung*[1]; X. Wang[1]; Hin Wing Kui[1]; [1]The Chinese University of Hong Kong

Characterization of Minerals, Metals, and Materials – Poster Session

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

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

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Session Chairs: Eren Kalay, Middle East Technical University; Jian Li, CanmetMATERIALS

Addition of Dregs in Mixed Mortar: Evaluation of Physical and Mechanical Properties: Rodrigo Santos[1]; Rita de Cássia Alvarenga[1]; *Beatryz Mendes*[1]; José Maria Carvalho[1]; Leonardo Pedroti[1]; Afonso Azevedo[1]; [1]Universidade Federal de Viçosa

Adhesion Study at Advanced Ages in Multipurpose Mortars: Markssuel Marvila[1]; Jonas Alexandre[1]; *Afonso Azevedo*[1]; Euzébio Zanelato[1]; Sergio Monteiro[2]; Gustavo Xavier[1]; Melissa Goulart[1]; Beatriz Mendes[3]; [1]Universidade Estadual do Norte Fluminense Darcy Ribeiro; [2]Instituto Militar de Engenharia; [3]Universidade Federal de Viçosa

An Elastic Response of a Three-dimensional Polycrystalline Material: The Effect of Grain Boundary Curvature: *Myeongjin Lee*[1]; Gaeun Son[1]; Sihwa Sung[1]; Sukbin Lee[1]; [1]UNIST(Ulsan National Institute of Science and Technology)

Applications and Opportunities of Nanomaterials in Construction and Infrastructure: *Henry Colorado*[1]; Oscar Jaime Restrepo Baena[2]; Juan Nino[3]; [1]Universidad de Antioquia; [2]Universidad Nacional de Colombia; [3]University of Florida

Automated Optical Serial Sectioning Analysis of Phases in a Medium Carbon Steel: *Veeraraghavan Sundar*[1]; Satya Ganti[1]; Bryan Turner[1]; [1]UES Inc.

Ballistic Performance Evaluation of a Mutlilayered Armor System with PALF/Epoxy Composite: Fernanda da Luz[1]; *Sergio Monteiro*[1]; [1]Military Institute of Engineering, IME

Ballistic Test of Multilayered Armor with Intermediate Polyester Composite Reinforced with Fique Fabric: Artur Camposo Pereira[1]; *Sergio Neves Monteiro*[1]; Foluke Salgado de Assis[1]; [1]Instituto Militar de Engenharia

Characteristic of Tribological Properties of the Carbide-free Bainitic Steel: Wojciech Burian[1]; *Joanna Kulasa*[1]; Jaroslaw Marcisz[2]; Bartlomiej Walnik[2]; [1]Institute of Non-Ferrous Metals; [2]Instiute for Ferrous Metallurgy

Characterization of a Brazilian Bentonite for its Use in the Oil and Gas Industry: Adriana Almeida Cutrim[1]; Margarita Bobadilla[2]; Kleberson R. Oliveira Pereira[2]; Fabio Jose Esper[3]; Guillermo Ruperto Martin Cortes[3]; Maria das Gracas Silva Valenzuela[2]; *Francisco Valenzuela-Diaz*[2]; [1]Federal University of Campina Grande; [2]Universidade de Sao Paulo; [3]Centro Universitario Estacio e Universidade de Sao Paulo

Characterization of Different Clays for the Optimization of Mixtures for the Production of Ceramic Artifacts: *Afonso Azevedo*[1]; Jonas Alexandre[2]; Euzébio Zanelato[2]; Markssuel Marvila[2]; Leonardo Pedroti[3]; Gustavo Xavier[2]; Diogo Santos[2]; Sergio Monteiro[4]; Marcelo Peixoto[1]; [1]IFF; [2]UENF; [3]UFV; [4]IME

Characterization of Polyester Composite Reinforced with Fique Fiber Functional Groups by Infrared Spectroscopy: Artur Camposo Pereira[1]; *Sergio Neves Monteiro*[1]; Foluke Salgado de Assis[1]; [1]Instituto Militar de Engenharia

Characterization of Tensile Properties of Epoxy Matrix Composites Reinforced with Fique Fabric Fiber: *Maria Carolina Teles*[1]; Felipe Lopes[1]; Sérgio Monteiro[2]; Djalma Souza[1]; [1]State University of the Northern Rio de Janeiro; [2]IME

Clay Smectite Synthetic: Characterization and Application in Nanocomposites: Thamyres de Cavalho[1]; Edermarino Hidebrando[2]; Roberto Neves[2]; *Francisco Diaz*[1]; [1]Polytechnic School of the University of São Paulo; [2]Federal University of Pará

Comparison of Performance between Granite Waste Pigments Based Paints and Soils Pigments Based Paints: Márcia Maria Lopes[1]; Rita de Cássia Alvarenga[1]; Leonardo Pedroti[1]; *Beatryz Mendes*[1]; Fernando Cardoso[1]; Afonso Azevedo[2]; [1]Universidade Federal de Viçosa; [2]UENF

Comparison of the Analytical and Experimental Temperatures in the Process of Machining an Intexable Steel: Victor Souza[1]; *Niander Cerqueira*[2]; Juliana Ladeira[1]; Ricardo Sanches[1]; Jarilson Silva[1]; Afonso Azevedo[2]; Luis Felipe Silva[1]; [1]Uni Redentor; [2]Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF

Development and Characterization of Recycled-HDPE/EVA Foam Reinforced with Babassu Coconut Epicarp Fiber Residues: *Mariana Arantes*[1]; Julyana Santana[1]; Francisco Valenzuela-Díaz[2]; Vijay Rangari[3]; Olgun Guven[4]; Esperidiana Moura[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Universidade de São Paulo; [3]Tuskegee University; [4]Hacettepe University

Effects of Civil Construction Waste on Properties of Lining Mortars: *Afonso Azevedo*[1]; Jonas Alexandre[2]; Gustavo Xavier[2]; Beatryz Mendes[3]; Sergio Monteiro[4]; Niander Cerqueira[2]; [1]IFF; [2]UENF; [3]UFV; [4]IME

Electron Beam Effect on Mechanical and Thermical Properties of DGEBA/EPDM Compound: Anderson Mesquita[1]; Ian Cavalcante[1]; *Leonardo Silva*[1]; [1]Instituto de Pesquisas Energéticas e Nucleares - IPEN

Epoxy Adhesive Joint for Metal Parts: *Fabio Garcia Filho*[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering - IME

Evaluation of Microcapsules of PBSL/MMT-K and PBSL/OMMT-K Nanocomposites: *Bianca Michel*[1]; Maria das Graças Silva-Valenzuela[1]; Francisco Valenzuela-Diaz[1]; Wang Hui[1]; Hélio Wiebeck[1]; [1]Polytechnic Scholl of University of São Paulo

Evaluation of the Projectile's Loss of Energy in Polyester Composite Reinforced with Fique Fiber and Fique Fabric: Artur Camposo Pereira[1]; *Sergio Neves Monteiro*[1]; Foluke Salgado de Assis[1]; [1]Instituto Militar de Engenharia

Evaluation of the Quality of Concrete with Waste of Construction and Demolition: Niander Cerqueira[1]; *Victor Souza*[1]; Afonso Azevedo[2]; Renan Vicente[1]; Anna Carolina Rabello[1]; Amanda Camerini[1]; André Gomes[1]; [1]Uni Redentor; [2]UENF

Experimental Investigation of Low-velocity Ballistic Impact Response of Closed Cell Aluminium Foams for Various Shaped Projectile Tips: Md Ashraful Islam[1]; *Md Abdul Kader*[1]; Paul Hazell[1]; Juan Escobedo-Diaz[1]; Andrew Brown[1]; [1]UNSW Canberra

Evaluation of Two Different Pulsed Plasma Nitriding Conditions on Steel Properties: *Fabio Garcia Filho*[1]; Gabriel De Carvalho[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering - IME

Flexural Mechanical Characterization of Polyester Composites Reinforced with Jute Fabric: Foluke de Assis[1]; *Sergio Monteiro*[1]; Artur Pereira[1]; [1]Military Institute of Engineering

Grain Boundary Engineering through Thermo-mechanical Processing and its Implication on Sensitization in Alloy 600H: *Chandra Kaithwas*[1]; Pallabi Bhuyan[1]; Sumanta Pradhan[1]; Sumantra Mandal[1]; [1]IIT Kharagpur

Influence of Coupling Agent on the Modification Effects of Vanadium Tailing as a Polymer Filler: *Tiejun Chen*[1]; Min Lu[1]; PeiWei Hu[1]; [1]Wuhan University of Science and Technology

Influence of Electron-beam Irradiation on the Properties of LDPE/EDPM Blend Foams: *Julyana Santana*[1]; Marcus Seixas[2]; Vijay Rangari[3]; Francisco Valenzuela-Díaz[2]; Helio Wiebeck[2]; Esperidiana Moura[1]; [1]Center for Chemical and Environmental Technology (CQMA), Nuclear and Energy Research Institute – Sao Paulo, SP., Brazil.; [2]Metallurgical and Materials Engineering Department, Polytechnic School, University of Sao Paulo Sao Paulo, SP, Brazil; [3]Department of Materials Science and Engineering, Tuskegee University, Tuskegee, AL, USA

Influence of the Areal Density of Layers in the Ballistic Response of a Multilayered Armor System Using Box-behnken Statistical Design: *Fábio Braga*[1]; Pedro Henrique Lopes[1]; Fernanda Luz[1]; Édio Lima Jr.[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering (IME)

Influence of the Blocks and Mortar's Compressive Strength on the Flexural Bond Strength of Concrete Masonry: Gustavo Nalon[1]; Rita Alvarenga[1]; Leonardo Pedroti[1]; Marcelo Arruda[1]; Roseli Martins[1]; Carol Santos[2]; Igor Andrade[1]; *Beatryz Mendes*[1]; [1]Federal University of Viçosa; [2]University of Sao Paulo

Influence of Two Solubilization Conditions at 718 Superalloy Hardness and Microstructure: *Fabio Garcia Filho*[1]; Dian De Oliveira[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering - IME

Irradiation Influence on the Properties of HMS-Polypropylene Clay/AgNPs Nanocomposites: Washington Oliani[1]; *Duclerc Parra*[1]; Vijaya Rangari[2]; Nilton Lincopan[3]; Ademar Lugao[1]; [1]Nuclear Energy Research Institute – IPEN/USP; [2]Tuskegee University; [3]Department of Microbiology, Institute of Biomedical Sciences, University of Sao Paulo

Limit Speed Analysis and Absorbed Energy in Multilayer Armor with Epoxy Composite Reinforced with Mallow Fibers and Mallow and Jute Hybrid Fabric: Lucio Nascimento[1]; *Sérgio Monteiro*[1]; Luis Henrique Louro[1]; Édio Lima Jr.[1]; Fábio Braga[1]; Fernanda Luz[1]; Jheison Santos[1]; Rubens Marçal[1]; Hugo Freitas[1]; [1]Instituto Militar de Engenharia

Mechanical Characterization of Concrete Blocks with Addition on Residual Waste from the Marble Benefit: *Niander Cerqueira*[1]; Victor Souza[2]; Leonardo Pinheiro[2]; Victor Pinho[2]; Afonso Azevedo[1]; Luis Felipe Silva[2]; [1]Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF; [2]Uni Redentor

Mechanical, Thermal and Electrical Properties of Polymer (Ethylene Terephthalate - PET) Filled with Carbon Black: Anderson Mesquita[1]; *Leonardo Silva*[1]; Leila Miranda[2]; [1]Instituto de Pesquisas Energéticas e Nucleares - IPEN/USP; [2]Universidade Presbiteriana Mackenzie - UPM

Mineralogical Analysis of A Chrome Ore from South Africa: *Ming-feng Ye*[1]; Guang-liang Wu[1]; [1]Central South University

Multilayered Armors with Piassava Fiber Composite: *Fabio Garcia Filho*[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering - IME

Oxidation Behavior of Ti-based Bulk Metallic Glasses at Different Temperatures: *Haiyang Li*[1]; [1]Northeastern University

Pilot Trial of Detoxification of Chromium Slag in Cyclone Furnace and Preparation of Glass-ceramics with the Water-quenched Melt: *Guizhou Zhao*[1]; Lingling Zhang[1]; Daqiang Cang[1]; [1]University of Science and Technology, Beijing

Preparation of Refractory Material from Ferronickel Slag: Foquan Gu[1]; *Zhiwei Peng*[1]; Huimin Tang[1]; Lei Ye[1]; Weiguang Tian[2]; Guoshen Liang[2]; Mingjun Rao[1]; Yuanbo Zhang[1]; Guanghui Li[3]; Tao Jiang[1]; [1]Central South University; [2]Guangdong Guangqing Metal Technology Co.Ltd; [3]Central South University School of Minerals Processing and Bioengineering

Process Improvement Study on the Gradation Uniformity of Steel Slag Asphalt Concrete Aggregate: *Canhua Li*[1]; Ming-sheng He[2]; Huo-guo Pang[1]; Xiao-dong Xiang[1]; Xin-wei Jiang[1]; Hong-bo Jin[3]; [1]Wuhan University of Technology,China; [2]Frontier Technology Institute of Wuhan Branch of Baosteel Central Research Institute of Wuhan Iron and SteelCo.,Ltd; [3]Anhui Transport Consulting & Design Institute Co.,Ltd.,Hefei 230091,China

Recycling of Polypropylene: *Fabio Garcia Filho*[1]; Sergio Monteiro[1]; [1]Military Institute of Engineering - IME

Research on the Interaction of Humic Acid with Iron Minerals: *Guihong Han*[1]; Shengpeng Su[1]; Yijun Cao[1]; Yanfang Huang[1]; Xiangyu Song[1]; [1]Zhengzhou University

Serial Sectioning as a Characterization Method for Carbon Fiber Composites: *Veeraraghavan Sundar*[1]; Issa Hakim[2]; Satya Ganti[1]; Bryan Turner[1]; [1]UES Inc.; [2]Univeristy of Dayton

Study of Different Process Additives Applied to Polypropylene: Patricia Poveda[1]; Juliana Molari[2]; Deborah Brunelli[2]; *Leonardo Silva*[1]; [1]Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN-SP; [2]Instituto Tecnológico de Aeronáutica - ITA

Study of the Durability of Mortars with Effluent Sludge from Paper Industry Exposed to Salt Spray: *Afonso Azevedo*[1]; Jonas Alexandre[2]; Gustavo Xavier[2]; Euzébio Zanelato[2]; Markssuel Marvila[2]; Niander Cerqueira[2]; Beatryz Mendes[3]; Sergio Monteiro[4]; [1]IFF; [2]UENF; [3]UFV; [4]IME

Study of the Incorporation of Residue of Ornamental Rocks in Ceramic Tiles: Markssuel Marvila[1]; Jonas Alexandre[1]; *Afonso Azevedo*[1]; Euzébio Zanelato[1]; Sergio Monteiro[2]; Wellington Junior[1]; [1]Universidade Estadual do Norte Fluminense Darcy Ribeiro; [2]Instituto Militar de Engenharia

Study of the Incorporation of Smectite in Powder Coating: *Maria das Graças Silva-Valenzuela*[1]; Francisco Valenzuela-Diaz[2]; Simeão Ferreira[1]; [1]Federal University of ABC; [2]University of São Paulo

Study of the Mineralogical Composition of the Tailings of Coscotitlán, Hidalgo, Mexico: Aislinn Teja Ruiz[1]; Julio Cesar Juárez[1]; Martín Reyes[1]; Leticia Hernández C.[1]; *Mizraim Uriel Flores G.*[1]; Iván Alejandro Reyes D.[1]; Miguel Perez[1]; Raúl Moreno Tovar[1]; [1]Universidad Autónoma del Estado de Hidalgo

Study of Viability of the Addition of Sawing Residue in the Production of Structural Concrete: *Niander Cerqueira*[1]; Victor Souza[2]; Victor Bartolazzi[2]; André Gomes[2]; [1]Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF; [2]Uni Redentor

The Effect of Transition Metals in Devitrification of Al-TM-RE Marginal Glass Forming Alloys: Mustafacan Kutsal[1]; Bengisu Yasar[1]; *Eren Kalay*[1]; [1]METU

The Influence of Clay Reinforcement on the Properties of Recycled Polymer Foams: *Mariane Oide*[1]; Julyana Santana[1]; Renate Wellen[2]; Francisco Valenzuela-Díaz[3]; Olgun Guven[4]; Esperidiana Moura[1]; [1]Instituto de Pesquisas Energéticas e Nucleares; [2]Universidade Federal da Paraíba (UFPB) ; [3]Universidade de São Paulo; [4]Hacettepe University

The Mechanical and Thermal Properties of Bulk FeB: *Mitsuyuki Sugizaki*[1]; Yuji Ohishi[1]; Fumihiro Nakamori[1]; Hiroaki Muta[1]; Ken Kurosaki[2]; Shinsuke Yamanaka[3]; [1]Graduate School of Engineering, Osaka University; [2]Graduate School of Engineering, Osaka University & JST, PRESTO; [3]Graduate School of Engineering, Osaka University and Research Institute of Nuclear Engineering, University of Fukui

The Quality of Tiles in Red Ceramic in Northwest of Rio de Janeiro and Southeast of Minas Gerais: Niander Cerqueira[1]; *Priscila Celebrini*[2]; Dienifer Konzen[3]; Melissa Oliviera[3]; Afonso Azevedo[1]; Mairyanne Souza[1]; Victor Souza[3]; [1]Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF; [2]IME; [3]Uni Redentor

The Use of Polymeric Residues of High Density Polyethylene, in Substitution of Large Aggregate in Different Dosages in the Self-compacting Non-Structural Concrete: Thiago Silva[1]; Alex Sandro Silva[1]; *Michel Oliveira*[1]; Jose Carlos Bueno[1]; Niander Cerqueira[2]; André Viana[1]; [1]Uni Redentor; [2]Universidade Estadual Do Norte Fluminense Darcy Ribeiro - UENF

Computational Design and Simulation of Materials (CDSM 2018): Atomistic Simulations – Poster Session

Sponsored by: Chinese Society for Metals
Program Organizers: Dallas Trinkle, University of Illinois, Urbana-Champaign; Panthea Sepehrband, Santa Clara University; Ting Zhu, Georgia Institute of Technology; Xing-Qiu Chen, Institute of Metal Research, Chinease Academy of Sciences; Qing Jiang, Jilin University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

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Room: Exhibit Hall E
Location: Phoenix Convention Center

Ab Initio Investigation on Cubic MX-type Carbonitrides in Martensite Steels: *Hongwei Zhou*[1]; FengMei Bai[1]; YaXin Sun[1]; Yan Chen[1]; Hailian Wei[1]; [1]Anhui University of Technology

Atomic Structure and Electronic Properties of Hybrid Halide Perovskite Surface for Photovoltaic Applications: *Rabi Khanal*[1]; Sheila Briggs[1]; Nicholas Ayers[1]; Taufique Mohammad[2]; Soumik Banerjee[2]; Samrat Choudhury[1]; [1]University of Idaho; [2]Washington State University

Atomicrex - the General Purpose Tool for Constructing Atomic Interaction Models: *Alexander Stukowski*[1]; Paul Erhart[2]; [1]Darmstadt University of Technology; [2]Chalmers University of Technology

Atomistic Simulations of Carbon Diffusion and Segregation in a-Iron Grain Boundaries: Mohamed Hindy[1]; *Tarek Hatem*[1]; Jaafar El-Awady[2]; [1]British University in Egypt; [2]Johns Hopkins University

Bonding, Electronic Structure and Optical Properties of the Bi24FeO40 Sillenite Crystal: *Upasana Panigrahi*[1]; Shuichi Torii[1]; [1]Kumamoto University

Composition and Measurement Dependent Thermal Conductivity of Graphene Oxide: *Thomas Zhang*[1]; Chandra Singh[1]; [1]University of Toronto

Deformation Studies of Pd-Pt Alloy Nanowire Using Molecular Dynamics Simulations: *Jay Krishan Dora*[1]; Natraj Yedla[2]; Sudipto Ghosh[1]; [1]IIT Kharagpur; [2]Nit Rourkela

Effect of Pre-existing Defects in the Parent FCC Phase on the Martensitic Transformation in Pure Fe: A Molecular Dynamics Study: *Shivraj Karewar*[1]; Jilt Sietsma[1]; Maria Santofimia[1]; [1]TU Delft

Effect of Precipitation on Grain Boundary Diffusion in Al-based Alloy: Sergiy V. Divinski[1]; Vladislav Kulitcki[1]; Bengue Tas Kavakbasi[1]; *Ankit Gupta*[2]; Yulia Buranova[1]; Tilmann Hickel[2]; J Neugebauer[2]; Gerhard Wilde[1]; [1]Institute of Materials Physics, University of M□uenster, Muenster, Germany; [2]Max-Planck Institute for Iron Research, Duesseldorf, Germany

First-principles Investigation of Vanadium Segregation at (111) Twins in MgAl2O4-spinel: *Venkateswara Rao Manga*[1]; Tom Zega[1]; Keith Runge[1]; Krishna Muralidharan[1]; [1]University of Arizona

Formation of Fivefold Twins during Rapid Solidification of Aluminum, and Twinning/Detwinning in Solidified Aluminum by Tensile Deformation: Avik Mahata[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

Insights into the Effect of Zr on O-contaminated $MoSi_2$ Grain Boundaries from Density Functional Theory Calculations: *Hui Zheng*[1]; Richard Tran[1]; Balachandran Radhakrishnan[1]; Shyue Ping Ong[1]; [1]University of California, San Diego

Interface Design for Carbide and Nitride Precipitates in Ferritic and Austenitic Steels: First-principles Approach: *Oleg Kontsevoi*[1]; Gregory Olson[1]; [1]Northwestern University

Large Scale Atomistic Simulations of the Interaction of Glide Dislocations with Grain Boundaries in FCC Bipillars: *Satish Rao*[1]; Maxime Dupraz[2]; Christopher Woodward[3]; Helena Swygenhoven[2]; William Curtin[4]; [1]UES Inc.; [2]PSI; [3]Air Force Research Laboratory; [4]EPFL

On the Deformation Mechanisms and Scaling Law of Three-dimensional Nanoporous Metals: *Lijie He*[1]; Niaz Abdolrahim[1]; Haomin Liu[1]; [1]University of Rochester

Optimizing Processing Parameter in Laser Sintering Process by Molecular Dynamics Simulation: *Bowen Deng*[1]; David Hobbs[1]; Bruce Madigan[1]; [1]Montana Tech of the University of Montana

Pair Correlations in Metal Nanocrystals: *Alberto Flor*[1]; Paolo Scardi[1]; [1]University of Trento

Peak Intrinsic Thermal Conductivity in Non-metallic Solids and New Interpretation of Experimental Data for Argon: *Ahmed Hamed*[1]; Anter El-Azab[1]; [1]Purdue University

Predicting the Electronic Structure of CeO_2 Grain Boundaries for Comparison with Atomic Resolution EELS: *Tara Boland*[1]; [1]Arizona State University

The Adhesion Force in Nano-contact during Approaching and Retrieving Processes: *Biao Yang*[1]; Bailin Zheng[1]; Pengfei He[1]; Zhufeng Yue[2]; [1]Tongji University; [2]Northwestern Polytechnical University

Twinning and Phase Transformation in Single Crystal Ti Subjected to Multiaxial Loading Situations: Comparison of Interatomic Potentials: Sunil Rawat[1]; *Nilanjan Mitra*[1]; [1]Indian Institute of Technology Kharagpur

Understanding the Effect of Solid-solution on Mg Alloys' High Plastic Anisotropy: *Eleftherios Andritsos*[1]; Guy Skinner[1]; Anthony Paxton[1]; [1]King's College London

Computational Design and Simulation of Materials (CDSM 2018): Meso/Macroscale Simulations – Poster Session

*Sponsored by:*Chinese Society for Metals
Program Organizers: Katsuyo Thornton, University of Michigan; Mohsen Asle Zaeem, Missouri University of Science and Technology; Richard Hennig, University of Florida; Chengjia Shang, University of Science and Technology Beijing; Tong-Yi Zhang, Shanghai University; Zi-Kui Liu, The Pennsylvania State University; Alan Luo, The Ohio State University

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A Crystal Plasticity Finite Element Simulation of Deformation Behavior Using a Real Microstructure-based RVE in a Dual-phase Steel: *Jinwook Jung*[1]; Sang Sub Han[1]; Siwook Park[1]; MoonKi Bae[2]; Seung-Hyun Hong[2]; Kyu Hwan Oh[1]; Heung Nam Han[1]; [1]Seoul National University; [2]Hyundai Motor Group

A Finite Element Simulation for Induction Heat Treatment of Drive Shaft Considering Transformation Plasticity: *Siwook Park*[1]; Jinwook Jung[1]; Si-yup Lee[2]; Heung Nam Han[1]; [1]Department of Materials Science and Engineering, Seoul National University, Seoul 08826, Republic of Korea; [2]Automotive Research and Development Division, Hyundai Motor Group, Hwaseong-si, Gyeonggi-do 18280, Republic of Korea

A Quantitative Study of Strain Glass Transition of NiTi-base Shape Memory Alloys: *Chuanxin Liang*[1]; Dong Wang[1]; Zhao Wang[2]; Yunzhi Wang[3]; [1]Xi'an Jiaotong University; [2]Guangxi University; [3]The Ohio State University

Phase Field Study on the Formation of Lath Martensite: *Mingyu Cho*[1]; Pil-Ryung Cha[1]; Dong-Uk Kim[2]; Moon-Gi Bae[3]; Soon-Woo Kwon[3]; Min-Woo Kang[3]; Seung-Hyun Hong[3]; [1]Kookmin University; [2]University of Michigan; [3]Hyundai Kia Motors Namyang Institute

Computational Materials Discovery and Optimization – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Richard Hennig, University of Florida; Houlong Zhuang, Arizona State University; Arunima Singh, Lawrence Berkeley National Laboratory; Eric Homer, Brigham Young University; Francesca Tavazza, National Institute of Standards and Technology

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Room: Exhibit Hall E
Location: Phoenix Convention Center

Computational Design of Fatigue-resistant NiTi-based Shape Memory Alloys: *Chuan Liu*[1]; Gregory Olson[1]; [1]Northwestern University

Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Francesca Tavazza, National Institute of Standards and Technology; Mark Tschopp, Army Research Laboratory; Richard Hennig, University of Florida; Avinash Dongare, University of Connecticut; Shawn Coleman, U.S. Army Research Laboratory; Niaz Abdolrahim, University of Rochester; Joseph Bishop, Sandia National Laboratories; Fadi Abdeljawad, Sandia National Laboratories; Li Ma, National Institute of Standards and Technology

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Extending the Angular-embedded Atom Method (A-EAM) Framework to an Al-Mg-Si Ternary System: *Sumit Athikavil Suresh*[1]; Avinash Dongare[1]; [1]University of Connecticut

Computational Thermodynamics and Kinetics – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Elif Ertekin, University of Illinois; Shawn Coleman, U.S. Army Research Laboratory; Brent Fultz, California Institute of Technology; Richard Hennig, University of Florida; Suveen Mathaudhu, University of California, Riverside

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Coarsening Kinetics of Bicontinuous Microstructures via a Diffusion-controlled Monte Carlo Model: *Gaeun Son*[1]; Myeongjin Lee[1]; Sihwa Sung[1]; Sukbin Lee[1]; [1]Ulsan National Institute of Science and Technology

Compare the Energies of Different Oxofuoraluminium Structures in Aluminium Production Process: *Mohsen Amerisiahooei*[1]; Khirollah Mehrani[1]; Mohammad Yousefi[1]; [1]Islamic Azad University

First-principles Calculations of Non-dilute Solute Diffusion Coefficients in the Ag-Au System: *Harrison Lee*[1]; Chelsey Hargather[1]; John O'Connell[1]; Shun-Li Shang[2]; Zi-Kui Liu[2]; [1]New Mexico Institute of Mining and Technology; [2]The Pennsylvania State University

Interface Stability between $Yb_{14}MgSb_{11}$ and Ni Electrode: A Combined Study from First-principles Phonon Calculations, Thermodynamic Modeling, and Experiments: *Jorge Paz Soldan Palma*[1]; Yi Wang[1]; Zi-Kui Liu[1]; Kurt Star[2]; Vilapanur Ravi[3]; Samad Firdosy[2]; Jean-Pierre Fleurial[2]; [1]Pennsylvania State University; [2]Jet Propulsion Laboratory; [3]California State Polytechnic University

Manganese Influence on Equilibrium Partition Coefficient and Phase Transformation in Peritectic Steel: *Huabiao Chen*[1]; Mujun Long[1]; Wenjie He[1]; Dengfu Chen[1]; Huamei Duan[1]; Yunwei Huang[1]; [1]Chongqing University

Mathematical Modeling on the Fluid Flow and Desulfurization during KR Hot Metal Treatment: *Chao Fan*[1]; Lifeng Zhang[2]; Qingcai Liu[1]; Dayong Chen[1]; [1]Chongqing University; [2]University of Science and Technology Beijing

Design for Mechanical Behavior of Architectured Materials via Topology Optimization – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Additive Manufacturing Bridge Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Natasha Vermaak, Lehigh University; Andrew Gaynor, U.S. Army Research Laboratory

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Session Chairs: Natasha Vermaak, Lehigh University; Andrew Gaynor, ARL

Mechanical Properties of Work Hardened Steel Multilayers with Bimodal Grain Size: *Marcin Kwiecien*[1]; Janusz Majta[2]; [1]AGH; [2]Akademia Górniczo-Hutnicza im. Stanislawa Staszica w Krakowie

Environmentally Assisted Cracking: Theory and Practice – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Bai Cui, University of Nebraska–Lincoln; Raul Rebak, GE Global Research; Sebastien Dryepondt, Oak Ridge National Laboratory; Srujan Rokkam, Advanced Cooling Technologies, Inc.

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SCC Property Evolution of X70 Pipeline Steel in Simulated Deep-sea Environments: Zixuan Yang[1]; *Jinxu Li*[1]; [1]University of Science and Technology Beijing

Frontiers in Advanced Functional Thin Films and Nanostructured Materials – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Ritesh Sachan, Army Research Office; Srinivasa Rao Singamaneni, The University of Texas at El Paso; Haiyan Wang, Purdue University; Nuggehalli Ravindra, New Jersey Institute of Technology; Raj Singh, Oklahoma State University; Amit Pandey, LG Fuel Cell Systems Inc.

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Anisotropic Magnetic Properties in BiFeO3/SrRuO3 and La0.7Ca0.3MnO3/SrRuO3 Heterostructures: *Srinivasa Rao Singamaneni*[1]; S. Nori[2]; L. M. Martinez[1]; Jose Delgado[1]; D Kumar[3]; John Prater[4]; Jay Narayan[2]; [1]The University of Texas at El Paso; [2]North Carolina State University; [3]North Carolina A&T State University; [4]Army Research Office

Characterizing Nitrogen-vacancy (NV) Centers in Diamond Nanostructure Formed by Pulsed Laser Annealing Technique at Room Temperature and Ambient Pressure: *Anagh Bhaumik*[1]; Ritesh Sachan[2]; Jagdish Narayan[1]; [1]North Carolina State University; [2]Materials Science Division, Army Research Office

How Good those are Mechanically Exfoliated MoS_2 Mono Layered Devices at the Atomic Level?: *L. M. Martinez*[1]; C. Saiz[1]; J. van Tol[2]; Srinivasa Rao Singamaneni[1]; [1]The University of Texas at El Paso; [2]National High Magnetic Field Laboratory

Magnetic Anisotropy in Ni/VO_2 Heterostructures: Srinivasa Rao Singamaneni[1]; Gabrielle M. Foley[2]; S Nori[2]; *Cosio Adrian*[1]; D Kumar[3]; John Prater[4]; Jay Narayan[2]; [1]The University of Texas at El Paso; [2]North Carolina State University; [3]North Carolina A&T State University; [4]Army Research Office

Nitrogen Vacancy Induced Room-temperature Ferromagnetism in TiN Epitaxial Thin Films *via* Ultrafast Laser Melting: *Siddharth Gupta*[1]; Ritesh Sachan[2]; Adele Moatti[1]; Jagdish Narayan[1]; [1]North Carolina State University; [2]Materials Science Division, Army Research Office

Q-carbon Tribological Coatings on WC and Tool Steel: *Alexander Niebroski*[1]; Anagh Bhaumik[1]; Punam Pant[1]; Jagdish Narayan[1]; [1]North Carolina State University

Synthesis and Mechanical Behavior of a Freestanding, Nanocrystalline NiTi Film under Cyclic Tensile Deformation: *Paul Rasmussen*[1]; Jagannathan Rajagopalan[1]; Rohit Sarkar[1]; [1]Arizona State University

Frontiers in Solidification Science and Engineering – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Mohsen Asle Zaeem, Missouri University of Science and Technology; Damien Tourret, IMDEA Materials Institute; Mohsen Eshraghi, California State University, Los Angeles; Johannes Hötzer, University of Applied Science Karlsruhe

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Location: Phoenix Convention Center

Session Chair: Mohsen Asle Zaeem, Missouri University of Science and Technology

A Microstructural Approach toward Improving the Phase Stability of Planar Structure of the Peritectic Pb-Bi Alloys: *Peiman Shahbeigi Roodposhti*[1]; Harold Brody[1]; [1]University of Connecticut

Analysis of Formability of Glassy Alloys by Surface Heating under Convective Conditions: *Rahul Basu*[1]; [1]VTU

Numerical Investigation Of Macrosegregation Mechanisms In DC Casting for Different Alloy Systems: *Akash Pakanati*[1]; Mohammed M'Hamdi[2]; Hervé Combeau[3]; Miha Založnik[3]; [1]NTNU; [2]SINTEF; [3]Institut Jean Lamour

Solidification Study of Spray-formed Cast Irons: *Guilherme Zepon*[1]; Julia Fernandes[1]; Lucas Otani[2]; Claudemiro Bolfarini[1]; [1]Department of Materials Engineering - Federal University of São Carlos; [2]Graduate Program of Materials Science and Engineering - Federal University of São Carlos

Study on the Formation and Control of TiN Inclusion in Mushy Zone for High Ti Microalloyed Steel: *Tao Liu*[1]; Dengfu Chen[1]; Wenjie He[1]; Mujun Long[1]; Lintao Gui[1]; Huamei Duan[1]; Junsheng Cao[1]; [1]Chongqing University

General Poster Session – Poster Session

Tuesday PM
March 13, 2018

Room: Exhibit Hall E
Location: Phoenix Convention Center

A Mesoscale Model to Isolate Grain Boundary Effects in Material Failure: *Sabine Zentgraf*[1]; [1]University of Colorado, Colorado Springs

A Quantitative Phase-Field Model for Gas Bubble Evolution in Nuclear Fuels: *San-Qiang Shi*[1]; [1]The Hong Kong Polytechnic University

Additive Manufacturing of Epoxy Resin Matrix Reinforced with Magnetic Particles: *Jose Rua*[1]; Henry Colorado[1]; [1]Universidad de Antioquia

Admixture Optimization in Concrete Using Superplasticizers: *Andrea Munoz*[1]; Sergio Cifuentes[2]; Henry Colorado[1]; [1]Universidad de Antioquia; [2]Conasfaltos S. A.

Analysis of Plastic Deformation in Ti-Zr-Ni Quasicrystals: *Geunhee Yoo*[1]; Eunsoo Park[1]; Chaewoo Ryu[1]; Jinyeon Kim[1]; [1]Seoul National University

Ball Milling of Machine Chips as an Alternative Feedstock for Additive Manufacturing: Jessica Bui[1]; *Parnian Kiani*[1]; Kaka Ma[2]; Julie Schoenung[1]; [1]University of California, Irvine; [2]Colorado State University

Bayesian Inference Based Uncertainty Quantification and Propagation Analysis of a Polycrystal Plasticity Finite Element Model Used for High Cycle Fatigue Analysis of Ti-6Al-4V: *Ritwik Bandyopadhyay*[1]; Kartik Kapoor[1]; Barron Bichon[2]; Michael Sangid[1]; [1]Purdue University; [2]Southwest Research Institute

Characterization Study of Binder-jet Printed of TiC-Aluminum Cermet: *Cindy Waters*[1]; Cameron Shackleford[1]; [1]NCA&T State University

Chromatic Titanium Photoanode for a Hybrid Application in Solar Cell and Roof Engineering: Chih-Hsiang Huang[1]; *Chih-Ming Chen*[1]; [1]National Chung Hsing University

Control of Prior Particle Boundary Formation in Hot Iso-statically Pressed Nickel-based Superalloys: *Benjamin Georgin*[1]; Brian Welk[1]; Hamish Fraser[1]; [1]Center for Accelerated Maturation of Materials, The Ohio State University

Corrosion Assessment of AZ91 Mg Alloy under Different Thermo-mechanical Processing Conditions: *Yenny Paola Cubides Gonzalez*[1]; [1]Texas A&M University

Development of a Cu-alloy Seed Buffer Layer for Solder Bump Flip Chip Application: *Chon-Hsin Lin*[1]; [1]Asia-Pacific Institute of Creativity

Direct Metal Write of Aluminum Alloys with Enhanced Surface Stability: *Hunter Henderson*[1]; Michael Kesler[1]; Max Neveau[2]; Zachary Sims[2]; Wiliam Carter[1]; Scott McCall[3]; Lonnie Love[1]; Brian Post[1]; Randall Lind[1]; Mark Jaster[4]; David Weiss[5]; Orlando Rios[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]Lawrence Livermore National Laboratory; [4]PrintSpace 3D; [5]Eck Industries

Effect of Colony Size on Tensile Fracture Behavior in Lamellar and Bi-lamellar Microstructures of Ti-6Al-4V Alloys: *Jangho Yi*[1]; Yan Chong[1]; Nobuhiro Tsuji[2]; [1]Department of Materials Science & Engineering, Kyoto University; [2]Elements Strategy Initiative for Structural Materials (ESISM), Kyoto University

Effect of Process Parameters on Bead on Plate Electron Beam Welded Pure Niobium: *Jeetendra Kumar Singh*[1]; Jyotsna Dutta Majumdar[1]; Gour Gopal Roy[1]; [1]IIT KHARAGPUR

Effect of Surface Treatment of Copper and its Alloys on the Antimicrobial Properties of the Surfaces: *Monika Walkowicz*[1]; Piotr Osuch[1]; Beata Smyrak[1]; Andrzej Mamala[1]; Tadeusz Knych[1]; Anna Rozanska[2]; Agnieszka Chmielarczyk[2]; Dorota Romaniszyn[2]; Malgorzata Bulanda[2]; [1]AGH University of Science and Technology; [2]Jagiellonian University Medical College

Effect of Tin Content on Microstructure and Mechanical Properties of High Carbon Steels: *Lei Zhang*[1]; Hong-po Wang[1]; Cong-xiao Li[1]; Yu Wang[1]; Yi-yi Shu[2]; Yuan-hua Zhou[2]; [1]Chongqing University; [2]Chongqing Iron and Steel Co. Ltd.

Enhancement of Thermoelectric Properties of Mechanically Alloyed Bi0.4Sb1.6Te3 Nanocomposites by Addition of γ-Al2O3 Particles: *Pee-Yew Lee*[1]; [1]National Taiwan Ocean University

Evaluation of the Formation of Intermetallic Compounds in Aluminum-steel Joints According to the Joining Method: *Jose Rua*[1]; Edwar Torres[1]; [1]Universidad de Antioquia

Fabrication of Nb-Si-B Alloys by Solidification Process and SPS Process: *Myung-Jin Suk*[1]; Seong Lee[2]; Sung-Tag Oh[3]; Young Do Kim[4]; [1]Kangwon National University; [2]Agency for Defence Development; [3]Seoul National University of Science and Technology; [4]Hanyang University

Fatigue Strength Characteristics of Tandem Gas Metal Arc Welding in Automotive Chassis Parts: *Jaesoo Lee*[1]; Jong-deok Seo[1]; Dong-yoon Kim[2]; Dongcheol Kim[2]; Munjin Kang[2]; Young-min Kim[2]; [1]Shynyoung; [2]KITECH

Functional Requirements for Expected Properties of Antimicrobial Touch Surfaces Based on Copper and its Alloys: Monika Walkowicz[1]; *Piotr Osuch*[1]; Andrzej Mamala[1]; Beata Smyrak[1]; Tadeusz Knych[1]; Anna Rozanska[2]; Agnieszka Chmielarczyk[2]; Dorota Romaniszyn[2]; Malgorzata Bulanda[2]; [1]AGH University of Science and Technology; [2]Jagiellonian University Medical College

Gold Nanoparticles on Multilayer Graphene Sheets for Surface Enhanced Raman Spectroscopy of Glucose: *Laila Al-qarni*[1]; Zafar Iqbal[1]; [1]New Jersey Institute of Technology

Grain Evolution during Free-sintering of Nanoparticles: *Andrew Lange*[1]; [1]Lawrence Livermore National Laboratory

High Strain Rate Deformation of Automobile Grade Steels: *Anindya Das*[1]; Soumitro Tarafder[1]; S Sivaprasad[1]; Debalay Chakrabarti[2]; [1]CSIR - National Metallurgical Laboratory,India; [2]Indian Institute of Technology, Kharagpur, India

Highly Ordered Nickel Cobalt Sulfide Nanowires Grown Woven Kevlar Fiber Composites: *Hyung Park*[1]; [1]Ulsan National Institute of Science and Technology

Hot Corrosion in Weld Overlay and Wrought INCONEL 625 Alloy in a (Pb, Zn, O, Cl, S)-Rich Environment: *E. Mohammadi Zahrani*[1]; [1]The University of British Columbia

Hot Isostatic Pressing and Laser Additive Manufacturing of Niobium-Based Refractory Powders: *Calvin Mikler*[1]; Hamish Fraser[1]; Brian Welk[1]; Gopal Viswanathan[1]; [1]The Ohio State University

Improvement on Interfacial Structure of Sn-58Bi Solder Joints on Cu-Sn Compounds: *Fengjiang Wang*[1]; Luting Liu[1]; [1]Jiangsu University of Science and Technology

In-situ TEM Micocantilever Measurements of Al2O3- SmAlO3 Interfacial Toughness: *Yonghui Ma*[1]; Jiahu Ouyang[1]; Shen Dillon[2]; [1]Harbin Institute of Technology; [2]University of Illinois at Urbana-Champaign

Indentification of Gases Evolved during Firing Processes of Oxide Ceramics by Means of Thermal Analysis Coupled to Mass Spectrometry: *Ekkehard Post*[1]; [1]NETZSCH Geraetebau GmbH

Influence of Cold Spray on the Microstructure and Residual Stress of Resistance Spot Welded Steel-Mg: *Sugrib Shaha*[1]; Bahareh Marzbanrad[1]; Hamid Jahed[1]; [1]University of Waterloo

Investigation of Adiabatic Heat Rise and its Effect on Flow Stresses and Microstructural Changes during High Strain Rate Deformation of Ti6Al4V Alloy: *Ashish Dawari*[1]; [1]Bharat Forge Ltd, Pune

Investigation of Susceptibility of A533B SAteel to Temper Embrittlement: *Mikhail Sokolov*[1]; [1]Oak Ridge National Laboratory

Investigation of the Material Dependence in the Promotion of Clathrate Hydrate Nucleation: *Christina Cox*[1]; Ahmad Majid[1]; Carolyn Koh[1]; [1]Colorado School of Mines

Microstructural Influence on Cracking Resistance of Ti-6Al-4V ELI Alloy at Sour Environment: *Gyeong Hyeon Jang*[1]; [1]GIFT POSTECH

Microstructure and Mechanical Properties of Al-Mg Based Alloy Sheets Processed by Cold Rolling: *Hyeon-Taek Son*[1]; Yong-Ho Kim[1]; Hyo-Sang Yoo[1]; [1]Korea Institute of Industrial Technology

Nanostructured Steel Susceptibility to Sulfide Stress Cracking: *Arash Shadravan*[1]; Raymundo Case[1]; [1]Texas A&M University

Optimisation of Celestite Leaching by Using Respond Surface Methodology: *Rasit Sezer*[1]; Aysegul Bilen[2]; Selim Ertürk[2]; Cüneyt Arslan[2]; [1]Karadeniz Technical University; [2]Istanbul Technical University

Oxidation Behavior of Ti-based Bulk Metallic Glasses at Different Temperatures: *Haiyang Li*[1]; [1]Northeastern University

Real Time Estimation of Resistance Spot Weld Quality by Using Artificial Neural Network: *Munjin Kang*[1]; Dongcheol Kim[1]; In-sung Hwang[1]; Young-Min Kim[1]; [1]KITECH

Removal of Arsenic from Crude Tin by Vacuum Distillation: *Zhenghao Pu*[1]; Jibiao Han[1]; Yifu Li[1]; Bin Yang[1]; Yongnian Dai[1]; Anxiang Wang[1]; [1]Kunming University of Science and Technology

Resistance Spot Weldability of 980MPa Grade Steel with 24% Elongation: *Taekyung Kim*[1]; In-sung Hwang[2]; Dongcheol Kim[2]; Munjin Kang[2]; Young-Min Kim[2]; [1]Asan; [2]KITECH

Rheological and Fatigue Resistance of High Strength and High Conductivity Cu-Ag Alloys Wires: *Kinga Korzen*[1]; Andrzej Nowak[1]; Eliza Sieja-Smaga[1]; Artur Kawecki[1]; Tadeusz Knych[1]; Andrzej Mamala[1]; Beata Smyrak[1]; Bartosz Jurkiewicz[1]; [1]AGH University of Science and Technology

Robust Accumulation of Research Foundational Knowledge in the Thermo Material Sciences: *James Kahelin*[1]; [1]Planarity

Scoping the Response of Materials under Fission and Fusion Conditions via Inventory Simulations: *Mark Gilbert*[1]; [1]CCFE

Short-term Oxidation Behavior of Zr53.8Cu29.1Ni7.3Al9.8 Bulk Metallic Glass at High Temperature in Dry Air: *Haiyang Li*[1]; [1]Northeastern University

Study of Temperature Dependent Elastic Properties of SnSe Using Resonant Ultrasound Spectroscopy: *Ashoka Karunarathne*[1]; Joseph Gladden[1]; Gautam Priyadarshan[1]; Pai-Chun Wei[2]; Yang-Yuan Chen[2]; Sriparna Bhattacharya[3]; Apparao Rao[3]; [1]University of Mississippi; [2]Academia Sinica; [3]Clemson University

Study on Separation of Sn-Sb alloy by Vacuum Distillation and Ab Initio Molecular Dynamic Simulation: *Zhenghao Pu*[1]; Anxiang Wang[1]; Yifu Li[1]; Bin Yang[1]; [1]Kunming University of Science and Technology

Study on the High-frequency Heat Treatment Process for the Dual Phase High-pressure Pipe Fabrication: Min Seok Moon[1]; *MyoungHan You*[1]; JoonHyuk Song[1]; JeHa Oh[1]; DongChul Jung[1]; Kwang-Seok Kim[2]; [1]Korea Institute of Carbon Convergence Technology; [2]Korea Institute of Industrial Technology

Superelastic Scaffolds Prepared by Sintering of Metal Fibers for Biomedical Applications: *Tae-hyun Nam*[1]; Shuanglei Li[1]; [1]Gyeongsang National University

Synthesis and Characterization of Novel Phosphonated and Sulfonated Poly(styrene-isobutylene-styrene) Membranes for Fuel Cell and Protective Clothing Applications: *Eduardo Ruiz Colón*[1]; Maritza Pérez Pérez[1]; David Suleiman[1]; [1]University of Puerto Rico at Mayagüez

Synthesis of Nanoparticles Using Near-dry Electric Discharge Machining: Vineet Yadav[1]; *Pradeep Kumar*[1]; Akshay Dvivedi[1]; [1]Indian Institute of Technology, Roorkee

The Adhesion Force in Nano-contact during Approaching and Retrieving Processes: Biao Yang[1]; Bailin Zheng[1]; [1]Tongji University

The Effect of Complexion Transitions on Single Grain Boundary Fracture Toughness of Alumina: *Lin Feng*[1]; Shen Dillon[1]; [1]University of Illinois at Urbana-Champaign

The Effect of Cooling Rate on Microstructure and Physical Properties for Alloy 625 Casting: *Jaihyun Park*[1]; Yeungju Kim[1]; [1]RIST

The Effect of Thermal Treatment on Microstructure and Mechanical Properties of Infiltrated TiB2-steel Composites: *Helen Dilman*[1]; Or Rahamim[1]; Shmuel Hayun[1]; Nachum Frage[1]; [1]Ben Gurion University of Negev

The Influence of Frequency on Ultrasonic Vibration-assisted Laser Atomization of TI-alloy: *Seyyed Habib Alavi*[1]; Geremiah Charles[2]; Sandip Harimkar[1]; [1]Oklahoma State University; [2]Arizona State University

Treatment of High-arsenic Waste Acid by Formation of Gypsum and Precipitation of Scorodite: *Xing Zhu*[1]; Hua Wang[1]; [1]Kunming University of Science and Technology

Ultra-high Strength and High Conductivity Cu-Ag Alloys Wires Designed for the Construction of High Magnetic Fields Generators: *Eliza Sieja-Smaga*[1]; Artur Kawecki[1]; Tadeusz Knych[1]; Andrzej Mamala[1]; Kinga Korzen[1]; Krystian Franczak[1]; Grzegorz Kiesiewicz[1]; Pawel Kwasniewski[1]; [1]AGH University of Science and Technology

Wear Behavior of Additive Manufactured Orthopedic Ceramics: *Jessica Hammitt-Schiltz*[1]; [1]University of Notre Dame

High Entropy Alloys VI – Poster Session

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; Xie Xie, FCA US LLC; Gongyao Wang, Alcoa Technical Center; E-Wen Huang, National Chiao Tung University; Tirumalai Srivatsan, The University of Akron

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Room: Exhibit Hall E
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Ab Initio Assisted Design of Quinary Dual-phase High-entropy Alloys with Transformation-induced Plasticity: Zhiming Li[1]; *Fritz Körmann*[2]; Blazej Grabowski[1]; Jörg Neugebauer[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Delft University of Technology, Max-Planck-Institut für Eisenforschung GmbH

Ab Initio Calculations of the Structure and Elastic Properties of Low Density High Entropy Alloys: *Natalia Koval*[1]; Maite Alducin[1]; Iñaki Juaristi[1]; Ricardo Díez Muiño[1]; [1]Materials Physics Center, MPC/CFM

Contribution of Lattice Distortion to Solid Solution Strengthening in a Group of Body-centered Cubic (bcc) High Entropy Alloys: *Hans Chen*[1]; Alexander Kauffmann[1]; Stephan Laube[1]; In-Chul Choi[1]; Ruth Schwaiger[1]; Franz Müller[2]; Bronislava Gorr[2]; Hans-Jürgen Christ[2]; Martin Heilmaier[1]; [1]Karlsruhe Institute of Technology (KIT); [2]University of Siegen

Development of HEA Foam with Ultra-low TC and High Strength: *Kook Noh Yoon*[1]; Khurram Yaqoob[2]; Je In Lee[1]; Jin Yeon Kim[1]; Eun Soo Park[1]; [1]Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University; [2]School of Chemical and Materials Engineering, National University of Sciences and Technology

Development of High Entropy Alloy Coating Layer Using DC Magnetron Sputtering: *Young Seok Kim*[1]; Hae Jin Park[1]; Sang Chul Mun[1]; Sung Hwan Hong[1]; Hyo Soo Lee[2]; Jin Kyu Lee[3]; Ki Buem Kim[1]; [1]Sejong University; [2]Korea Institute of Industrial Technology (KITECH); [3]Kongju National University

Development of NbMoTaW Refractory High Entropy Alloys Matrix Composites Containing Nano-scale Oxides: *Aeran Roh*[1]; Daeyoung Kim[1]; Seungjin Nam[1]; Hyunjoo Choi[1]; [1]Kookmin University

Development of Transition Metal High-entropy Silicides: *Sang Jun Kim*[1]; Hyun Seok Oh[1]; Eun Soo Park[1]; [1]Seoul National Univerisity

Effect of TiB2 Addition on Tribological Properties of (AlCrFeMnV)100-xBix(x = 5 and 10) High Entropy Alloys: *Surekha Yadav*[1]; Arvind Kumar[1]; Krishanu Biswas[1]; [1]IIT Kanpur

Effects of Additional Elements on the Microstructure and Mechanical Properties of High Entropy Alloys Based on TiZrHfNiCu System: *Hae Jin Park*[1]; Young Seok Kim[1]; Sung Hwan Hong[1]; Ki Buem Kim[1]; [1]Sejong University

First-principles Calculations of Stacking Fault Energies in Refractory BCC High-entropy Alloy Systems: *Joshua Strother*[1]; Alexandra Scheer[1]; Chelsey Hargather[1]; [1]New Mexico Institute of Mining and Technology

High Thermal Stability and Sluggish Crystallization Kinetics of High-entropy Bulk Metallic Glasses: *Ming Yang*[1]; Xiongjun Liu[1]; Qing Du[1]; Yuan Wu[1]; Hui Wang[1]; Z.P. Lv[1]; [1]University of Science and Technology Beijing

Martensite Reinforced High Entropy Titanium Alloy with Multiple Deformation Mechanisms: *Yuhe Huang*[1]; Iain Todd[1]; [1]University of Sheffield

Measurement and Optimization of FeCoNiCrCu0.5 High Entropy Alloys-to-AISI 304L Stainless Steel Parameters of Dissimilar Resistance Spot Welds for Affecting Microstructural and Properties Using Hybrid Abductor Induction Mechanism: *Jia-Chi Li*[1]; Chun-Ming Lin[1]; Cheng-Shun Chen[1]; [1]National Taipei University of Technology

Microstructure and Magnetic Properties of FeNiCuMnTiSnx High Entropy Alloys: *Liang Liu*[1]; [1]Liaoning University of Technology

Microstructure Evolution, Phase Stability, and Hardness Variation of the A High Entropy Alloy: *Qian Lei*[1]; [1]University of Michigan

Microstructure of a New Ti-containing High Entropy Alloy: *Van Thuong Nguyen*[1]; Liqing Huang[1]; Ma Qian[2]; Jin Zou[1]; [1]The University of Queensland; [2]RMIT University

On the Evolution of Texture and Microstructure during Rolling of Dual Phase Al16Co21Cr21Fe21Ni21 High Entropy Alloy: *Rani Agarwal*[1]; Reshma Sonkusare[1]; Krishanu Biswas[1]; Nilesh Prakash Gurao[1]; [1]IIT Kanpur

SIM Transformation and Superelasticity of TiZrHfAlNb High Entropy Alloys: *Lu Wang*[1]; Qinjia Wang[1]; Xidong Hui[1]; [1]University of Science and Technology Beijing

Strategies for Design, Modelling and Optimisation of High Entropy Alloys: *Pedro Rivera-Diaz-del-Castillo*[1]; Isaac Toda[2]; Edern Menou[3]; Gérard Ramstein[3]; Franck Tancret[4]; [1]Lancaster University; [2]Materalia Group; [3]Institut des Matériaux de Nantes - Jean Rouxel; [4]Institut des Matériaux de Nantes - Jean Rouxel

Synthesis of FeCrVNbMn High Entropy Alloy by Mechanical Alloying and Study of their Microstructure and Mechanical Properties: *Ajay Kumar P.*[1]; Chandra Perugu[2]; [1]University of Wisconsin Milwaukee; [2]Indian Institute of Science, Bangalore India

Thermal and Structural Characterization of Magnetic High Entropy Alloys for Magnetocaloric Applications: *Alice Perrin*[1]; [1]Carnegie Mellon University

Understanding the Deformation Behavior of CoCuFeMnNi High Entropy Alloy by Investigating Mechanical Properties of Binary, Ternary and Quaternary Alloy Subsets: *Saumya Jha*[1]; Rani Agarwal[2]; Reshma Sonkusare[2]; Krishanu Biswas[2]; Nilesh Gurao[2]; [1]NIT Durgapur; [2]IIT Kanpur

High Temperature Corrosion of Structural Materials – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Corrosion and Environmental Effects Committee

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; David Shifler, Office of Naval Research; Mark Weaver, University of Alabama; Steve Coryell, Special Metals; James Earthman, University of California, Irvine

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An Analysis of Oxidation Mechanisms and their Influence on the Life of a Nickel-based Superalloy: *David Lewis*[1]; Mark Whittaker[1]; Daniel Child[2]; [1]Swansea University; [2]Rolls-Royce plc.

Effects of Boron and Copper on Pitting Corrosion of 9Cr-1Mo Weld Metal: *Byungrok Moon*[1]; Sungyong Ahn[2]; Namhyun Kang[1]; Ikmin Park[1]; Kwangho Kim[3]; Kyungmox Cho[1]; [1]Pusan National University; [2]Doosan Heavy Industries and Construction; [3]GFHIM, Pusan National University

Flame Resistance and YSZ and Pack Cementation Coated Steel: Kwangsoo Choi[1]; Minkyu Kim[1]; Jong won Lee[1]; *Joon Sik Park*[1]; [1]Hanbat National University

Great Performance of Nanostructured Multilayers (Ti-Cr-N) on P92 Steel for High Oxidation Temperature: S. Castañeda[1]; *Francisco Pérez Trujillo*[1]; [1]Complutense University of Madrid

High-temperature Coatings for Protection of Steels in Contact with a Novel Molten Salt under Static and Flow-accelerated Conditions for CSP Applications: V. Encinas-Sánchez[1]; M. Lasanta[1]; M. de Miguel[1]; G. García-Martín[1]; *Francisco Pérez Trujillo*[1]; [1]Complutense University of Madrid

Investigating Intergranular Corrosion of Stainless Steel Using Hard X-ray Nanoprobe: *Simerjeet Gill*[1]; Kotaro Sasaki[1]; Zhixiu Liang[1]; Hugh Isaacs[1]; Mingyuan Ge[1]; Yong Chu[1]; Kim Kisslinger[1]; Lynne Ecker[1]; [1]Brookhaven National Lab

Oxidation in Pure Steam Atmosphere at High Temperature of Protective Coatings: Influence of Pressure and the Architecture: A. Illana[1]; M. Gutiérrez[2]; I. Baraibar[2]; S. Mato[1]; *Francisco Pérez Trujillo*[1]; A. Agüero[2]; [1]Complutense University of Madrid; [2]Instituto Nacional de Técnica Aeroespacial

Oxide Performance of Alumina Forming Alloys for Coking Environments: *Kao Yang*[1]; [1]University of Wisconsin - Milwaukee

Role of Titanium on the Oxidation of Ni-based Superalloys: *Mary Taylor*[1]; Hugh Evans[1]; [1]The University of Birmingham

The Effect of Corrosion Damage on the High Temperature Fatigue Behaviour of a Ni-alloy for Disc Rotor Applications: *Michael Dowd*[1]; [1]Swansea

Mechanical Behavior at the Nanoscale IV – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Christopher Weinberger, Colorado State University; Qian Yu, University of Michigan, Ann Arbor; Garritt Tucker, Colorado School of Mines; Nan Li, Los Alamos National Laboratory; Yu Zou, ETH Zurich; Jonathan Zimmerman, Sandia National Laboratories; Scott Mao, University of Pittsburgh

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Session Chairs: Christopher Weinberger, Colorado State University; Garritt Tucker, Colorado School of Mines

High-strength and High-conductivity Sheets for High Field Bitter Magnets: *Eliza Sieja-Smaga*[1]; Kinga Korzen[1]; Artur Kawecki[1]; Tadeusz Knych[1]; Krystian Franczak[1]; Marek Gnielczyk[1]; Szymon Kordaszewski[1]; Bartosz Jurkiewicz[1]; [1]AGH University of Science and Technology

Plastic Flow in Cutting of Metals at Small Length Scales: *Gan Feng*[1]; Dinakar Sagapuram[1]; [1]Texas A&M University

Mechanical Characteristics and Application Properties of Metals and Non-metals for Technology: An EPD Symposium in Honor of Donato Firrao – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jiann-Yang Hwang, Michigan Technological University; Bowen Li, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

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Alumina Feeding System Changes in Aluminum Electrochemical Cell with D18 Technology for Energy Efficiency (Case Study: Almahdi- Hormozal Aluminum Smelter): *Mohsen Amerisiahooei*[1]; Borzou Baharvand[2]; [1]Islamic Azad University; [2]Almahdi Hormozal Aluminium Smelter

Young's Modulus and Hardness of Metal Amorphous Nanocomposites (MANCS) Determined by Nanoindentation: *Yuval Krimer*[1]; Michael McHenry[1]; [1]Carnegie Mellon University

Metal-Matrix Composites Innovations, Advances and Applications: An SMD Symposium in Honor of William C. Harrigan, Jr. – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Srivatsan Tirumalai, The University of Akron; Yuzheng Zhang, Gamma Alloys; William Harrigan, Gamma Technology, LLC

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Session Chairs: Yuzheng Zhang, Gamma Alloys; Tirumalai Srivatsan, The University of Akron

In-situ TiB Reinforced Titanium Matrix Composites with a Network-woven Architecture Design: *Liqing Huang*[1]; Van Thuong Nguyen[1]; Ma Qian[2]; Jin Zou[1]; [1]The University of Queensland; [2]RMIT University

Influence of Graphene Nanoplatelet Reinforcements on Microstructural Development and Wear Behavior of An Aluminum Alloy Nanocomposite: *Mohammad Alipour*[1]; Reza Eslami Farsani[1]; Yu. A. Abuzin[2]; [1]Department of Materials Engineering, Faculty of Mechanical Engineering, K.N. Toosi University of Technology, Tehran, Iran; [2]Faculty of Materials Science and Engineering, National University of Science & Technology (MISIS), Moscow. Russia

Microstructures and Thermal Properties of Ag-carbon/Cu Composite Fabricated by Friction Stir Processing: *Hyo-Soo Lee*[1]; Ki Buem Kim[2]; Jae-Ha Kim[1]; Yeo Reum Lee[1]; [1]KITECH; [2]Sejong University

Strengthening Behavior of Ti/MWCNTs Composites with Modified Interfacial Structure by Utilizing Mechanical Milling: *Miran Joo*[1]; Donghyun Bae[1]; [1]Yonsei University

Nanocomposites V: Structure-Property Relationships in Nanostructured Materials – Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Meisha Shofner, Georgia Institute of Technology; Nikhilesh Chawla, Arizona State University

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Effects of Surface-treated Graphene Nanoplatelets on the Flexural Properties of Basalt Fibers/Epoxy Composite: *S. Navid Hosseini Abbandanak*[1]; S.M. Hossein Siadati[1]; Reza Eslami-Farsani[1]; [1]K. N. Toosi University of Technology

Manufacturing Method and Characterization of Mechanical Properties of Laminated Metal Nanocomposites with Graded Layer Thickness: *Wojciech Dera*[1]; Dariusz Jarzabek[1]; Cezary Dziekonski[1]; [1]Institute of Fundamental Technological Research Polish Academy of Sciences

Microstructure and Mechanical Properties of High Conductivity Nanostructured Cu-Ag Alloys Wires: *Eliza Sieja-Smaga*[1]; Artur Kawecki[1]; Tadeusz Knych[1]; Beata Smyrak[1]; Kinga Korzen[1]; Bartosz Jurkiewicz[1]; Marek Gnielczyk[1]; Justyna Grzebinoga[1]; [1]AGH University of Science and Technology

On the Tensile Properties of Surface-treated Graphene Nanoplatelets/ Basalt Fibers/ Epoxy Nanocomposite System: *S. Navid Hosseini Abbandanak*[1]; S.M. Hossein Siadati[1]; Reza Eslami-Farsani[1]; [1]K. N. Toosi University of Technology

Pathways for Engineering Boron Nitride Nanotube Based High-strength Aluminum Composites: *Pranjal Nautiyal*[1]; Benjamin Boesl[1]; Arvind Agarwal[1]; [1]Florida International University

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVII – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Alloy Phases Committee
Program Organizers: Shih-kang Lin, National Cheng Kung University; Chao-hong Wang, National Chung Cheng University; Jae-Ho Lee, Hongik University; Chih-Ming Chen, National Chung Hsing University; Thomas Reichmann, Karlsruhe Institute of Technology; Yu Zhong, Worcester Polytechnic Institute; Hiroshi Nishikawa, Osaka University; Shien Ping Feng, The University of Hong Kong; Yee-Wen Yen, National Taiwan University of Science & Technology; Song-Mao Liang, Clausthal University of Technology

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Room: Exhibit Hall E
Location: Phoenix Convention Center

Session Chairs: Shih-kang Lin, National Cheng Kung University; Yee-wen Yen, National Taiwan University of Science and Technology

Interfacial Reactions between Lead-free Solders and Cu-xZn Alloys: *Chih-Hung Lin*[1]; William Yu[1]; Pei-Yu Chen[1]; Guan-Da Chen[1]; Yee-Wen Yen[1]; [1]National Taiwan University of Science and Technology

Microstructure and Optical Properties of Cr1-xAlxN Films Synthesized by Reactive Magnetron Sputtering: Ting-Kan Tsai[1]; Shu-Wei Yang[1]; *Yu Ru Li*[1]; [1]Nation Formosa University

The Electromigration Effect Revisited: An In Situ SEM and SR-based XRD Study: *Yu-chen Liu*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

Phase Transformations and Microstructural Evolution – Poster Session II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Phase Transformations Committee
Program Organizers: Gregory Thompson, University of Alabama; Mark Aindow, University of Connecticut; Sudarsanam Babu, The University of Tennessee, Knoxville; Rajarshi Banerjee, University of North Texas; Tushar Borkar, Cleveland State University; Hai Chen, Tsinghua University; Paul Gibbs, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Ashwin Shahani, University of Michigan; Yufeng Zheng, The Ohio State University

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Room: Exhibit Hall E
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An Overview of Microstructure, Mechanical and Physical Properties of Zr–Mo Alloys: Anderson Suzuki[1]; *Eder Lopes*[1]; [1]State University of Campinas

Deformation Twins Induced by High-density Pt2Mo-type Superlattice Mediated Portevin-Le Chatelier-like Effect in Ni-Cr-Mo Alloy: *Yuan Liang*[1]; Hu Rui[2]; Gao Xiangyu[2]; [1]Shaanxi University of Science and Technology; [2]Northwestern Polytechnical University

Effect of Film Thickness on Anisotropic Grain Growth in Electroplated (111) Nanotwinned Cu: *Chih-Han Tseng*[1]; Chih Chen[1]; [1]National Chiao Tung University

Impact of D019 Ordering in Hf-Sc-Ti-Zr Based Hexagonal Solid Solutions upon Addition of Al and Nb: *Lukasz Rogal*[1]; P. Bobrowski[1]; Fritz Körmann[2]; Blazej Grabowski[3]; [1]Institute of Metallurgy and Materials Science; [2]Delft University of Technology; [3]Max-Planck-Institut für Eisenforschung

Influence of Deformation and Heat Treatment on the Microstructure Evolution in the Nickel Superalloy 625: *Simon Malej*[1]; Jožef Medved[2]; Franc Tehovnik[1]; Jaka Burja[1]; Franci Vode[1]; Arh Boštjan[1]; Barbara Šetina Batic[1]; Elena Chernyshova[3]; Matjaž Godec[1]; [1]Institute of Metals and Technology; [2]Faculty of Natural Sciences and Engineering; [3]National Institute of Chemistry

Microstructural Evolution and Compositional Homogenization of As-cast Multicomponent Low Re-containing Ni-based Single Crystal Superalloy during Stepwise Solution and Aging Heat Treatments: *Xianglin Su*[1]; Qingyan Xu[1]; Baicheng Liu[1]; [1]Tsinghua University

Microstructural Evolution of a New Beta Titanium Alloy during the Beta Annealing, Slow Cooling and Aging Process: *Saeed Sadeghpour*[1]; Seyed Mahdi Abbasi[1]; Maryam Morakabati[1]; [1]Malek Ashtar University of Technology

Microstructural Evolution of Ti-Mo and Ti-Mo-Fe Alloys during Continuous Heating and Aging Heat Treatments: *Mariana Mello*[1]; Camilo Salvador[1]; Kaio Campo[1]; Rubens Caram[1]; [1]University of Campinas

Novel Consolidation and Material Homogenization observed via Shear Assisted Processing and Extrusion (ShAPE): *Nicole Overman*[1]; Scott Whalen[1]; Xiujuan (Hellen) Jiang[1]; Jens Darsell[1]; Trevor Clark[2]; Suveen Mathaudhu[2]; [1]Pacific Northwest National Laboratory; [2]University of California, Riverside

Study of Phase Transitions in Metastable β-Ti Alloy by Various In-situ Techniques: *Pavel Zhánal*[1]; Petr Harcuba[1]; Jana Šmilauerová[1]; Lukáš Horák[1]; Jozef Veselý[1]; Michal Hájek[1]; Miloš Janecek[1]; [1]Charles University in Prague

The Deformation-induced ß-a Martensite Transformation in a Metastableb Zr-Ti Alloy: *Zhongni Liao*[1]; Baifeng Luan[1]; Qing Liu[1]; [1]Chongqing University

The Effects of Alloying Element Additions and Heat Treatment Procedures on the Microstructural and Mechanical Development of Nickel-based Superalloys: *Rasim Eris*[1]; M. Vedat Akdeniz[1]; Amdulla O. Mekhrabov[1]; [1]Middle East Technical University

Recent Advances in Functional Materials for Printed, Flexible and Wearable Electronics – Poster Session

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Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Nuggehalli Ravindra, New Jersey Institute of Technology; Jud Ready, Georgia Institute of Technology; Amit Pandey, LG Fuel Cell Systems Inc.; Suresh Sitaraman, Georgia Institute of Technology

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Session Chair: Pooran Joshi, Oak Ridge National Laboratory

Highly Stretchable Metallic Interconnects on Polymer Substrates: Architecture and Mechanisms: *Yeasir Arafat*[1]; Rahul Panat[1]; Indranath Dutta[1]; [1]Washington State University

Recent Developments in Biological, Structural and Functional Thin Films & Coatings – Poster Session

*Sponsored by:*TMS Functional Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carradò, Université de Strasbourg IPCMS; Nancy Michael, University of Texas at Arlington; Ramana Chintalapalle, University of Texas - El Paso; Heinz Palkowski, Clausthal University of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology; Vikas Tomar, Purdue University; Gerald Ferblantier, Strasbourg University - ICube Laboratory

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Effect of Interaction of CO Gas Molecules on Schottky Barrier Modulation of Pt-SnO2 Nanostructure Device: *Avneet Singh*[1]; Monika Tomar[1]; Vinay Gupta[1]; [1]University of Delhi

Nickel Oxide Thin Film Based Electrode for Cholesterol Monitoring Using Electrochemical Biosensor: *Gurpreet Kaur*[1]; Monika Tomar[1]; Vinay Gupta[1]; [1]University of Delhi

Zinc Oxide Thin Film as a Guiding Layer for Love Wave Acoustic Biosensors: *Lokesh Rana*[1]; Reema Gupta[1]; Monika Tomar[1]; Vinay Gupta[1]; [1]University of Delhi

Solar Cell Silicon – Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, Ind LLC; York Smith, University of Utah

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High Temperature Pressure Filtration Applying for Separation of Silicon and Liquation Agent: *Tianyang Li*[1]; Zhancheng Guo[1]; [1]University of Science and Technology Beijing

Leaching of Indium from ITO Present in Amorphous Silicon Photovoltaic Modules: Pedro Forastieri de Almeida Prado[1]; *Jorge Alberto Soares Tenório*[1]; Denise Crocce Romano Espinosa[1]; [1]University of São Paulo

The Effect of Rapid Heat Treatment on Crystal Defect Evolution and Electrical Properties of the Original High Efficient Polycrystalline Silicon: Hongyuan Shen[1]; Longzhong Gao[1]; *Kuiixan Wei*[1]; Wenhui Ma[1]; Shaoyuan Li[1]; [1]Kunming University of Science and Technology

Surface Engineering for Improved Corrosion Resistance – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Carlos Schvezov, Institute of Materials of Misiones; Arvind Agarwal, Florida International University

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Effect of Coating Composition on Microstructure and Corrosion Resistance of Zn-Mg-Al Hot-dip Alloy Coated Steel Sheets: *Min-suk Oh*[1]; Jung-Han Kim[1]; Jae-Ik Cho[1]; Cheol-Woo Kim[1]; [1]Korea Institute of Industrial Technology

Surface Interactions in Materials – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Carlos Schvezov, Institute of Materials of Misiones; Sandip Harimkar, Oklahoma State University; Rajeev Gupta, The University of Akron

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Effect of Ultrasonic Vibration Assisted Laser Surface Texturing and Melting of Ti-6Al-4V ELI (Biomedical) Alloys on their Microstructural Evolution and Tribological Properties: *Sourabh Biswas*[1]; Seyyed Habib Alavi[1]; Sandip Harimkar[1]; [1]Oklahoma State University

Effects of Various Surface Treatment Methods on the Flexural Properties of Fiber Metal Laminates: *S. Navid Hosseini Abbandanak*[1]; Hamed Aghamohammadi[1]; Reza Eslami-Farsani[1]; S.M. Hossein Siadati[1]; [1]K. N. Toosi University of Technology

Ultrafine-grained Materials X – Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Shaping and Forming Committee
Program Organizers: Suveen Mathaudhu, University of California, Riverside; Irene Beyerlein, University of California, Santa Barbara; Avinash Dongare, University of Connecticut; Chong Soo Lee, POSTECH; Terry Lowe, Colorado School of Mines; Srikanth Patala, North Carolina State University; Lee Semiatin, US Air Force Research Laboratory; Jason Trelewicz, Stony Brook University; Janelle Wharry, Purdue University; Caizhi Zhou, Missouri University of Science and Technology

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Effect of Microalloying Additions on the Continuous Recrystallization during Severe High Strain-rate Plastic Deformation: Janusz Majta[1]; Carl Trujillo[2]; Ellen Cerreta[2]; Marcin Kwiecien[1]; *Krzysztof Muszka*[1]; [1]AGH University of Science and Technology; [2]Los Alamos National Laboratory

Manufacturing Method and Material Characterization of Nanocrystalline Nickel Coatings with Gradient Grain Size: *Cezary Dziekonski*[1]; [1]Institute of Fundamental Technological Research

Possibility of Manifestation of Dynamic Strain Aging under Severe Plastic Deformation of Low-carbon Steels: *Georgy Raab*[1]; Gennady Aleshin[1]; Arseniy Raab[1]; [1]Ufa State Aviation Technical University

Study of Densification and Microstructure of Cu-C Composite Prepared by Mechanical Alloying: *Evanildo Nunes*[1]; Franciné Costa[2]; Suveen Mathaudhu[3]; [1]UCR; [2]UFRN; [3]University of California, Riverside

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